OFFICIAL REPORT
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DRAFT

Net Zero, Energy and Transport Committee

Tuesday 9 September 2025

Session 6

The Scottish Parliament
Pàrlamaid na h-Alba

Tuesday 9 September 2025

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NET ZERO, ENERGY AND TRANSPORT COMMITTEE
26th Meeting 2025, Session 6

CONVENER

*Edward Mountain (Highlands and Islands) (Con)

DEPUTY CONVENER

*Michael Matheson (Falkirk West) (SNP)

COMMITTEE MEMBERS

*Bob Doris (Glasgow Maryhill and Springburn) (SNP)
Monica Lennon (Central Scotland) (Lab)
*Douglas Lumsden (North East Scotland) (Con)
*Mark Ruskell (Mid Scotland and Fife) (Green)
*Kevin Stewart (Aberdeen Central) (SNP)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Sarah Boyack (Lothian) (Lab) (Committee Substitute)
Professor Gabi Hegerl (University of Edinburgh)
Gillian Martin (Cabinet Secretary for Climate Action and Energy)
Dr Ellie Murtagh (Maynooth University)
Philip Raines (Scottish Government)
Professor Fabrice Renaud (University of Glasgow)
Dr Andrew Russell (Research Centre for Environmental Change and Communities)

CLERK TO THE COMMITTEE

Peter McGrath

LOCATION

The Mary Fairfax Somerville Room (CR2)

Scottish Parliament

Net Zero, Energy and Transport Committee

Tuesday 9 September 2025

[The Convener opened the meeting at 08:45]

Subordinate Legislation

Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025 [Draft]

The Convener (Edward Mountain): Good morning and welcome to the 26th meeting in 2025 of the Net Zero, Energy and Transport Committee.

I have received apologies from Monica Lennon, and I welcome her substitute, Sarah Boyack, to the meeting.

The first item on the agenda is an evidence session on the Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025. The regulations set the target levels for four five-year carbon budgets from 2026 to 2045, which is the statutory date for Scotland reaching net zero.

I hope that the first panel can help the committee to understand the bigger picture on the global and national challenge behind the rather abstract numbers that are set out in the regulations, the latest on the science of climate change, and what we need to do to prepare for climate change and adapt to it here in Scotland.

Last week, we took evidence from the Climate Change Committee on its advice, which informed the regulations. Today, we will hear from a panel of academic experts on the science of climate change and its impacts, before hearing from the Cabinet Secretary for Climate Action and Energy. We will consider the formal motion on the instrument under the next agenda item.

I am pleased to welcome Professor Gabi Hegerl, professor of climate systems science at the University of Edinburgh, and Professor Fabrice Renaud, professor of environmental risk and community resilience and the director of the national centre for resilience at the University of Glasgow. I also welcome Dr Andrew Russell, the director of the environmental change and communities research centre, and Dr Ellie Murtagh, a postdoctoral researcher at Maynooth University. Thank you all for joining us.

We have a huge amount of ground to cover this morning with this panel and the next. We definitely want to hear from you, but I encourage members and witnesses to make crisp contributions so that we can get through all the subject areas that we want to, because there are quite a few of them.

Before I move to questions, and just in case it comes up, I remind members of my entry in the register of members' interests that I am a member of a family farming partnership in Moray, where we grow crops and breed cattle for beef production.

The first questions this morning come from Mark Ruskell.

Mark Ruskell (Mid Scotland and Fife) (Green): Thank you for your time. I would like to start by asking you whether you think the goal of 1.5ºC is still alive. Who would like to start?

The Convener: Just to help me, when people are in the room, what usually happens is that everyone looks away and does not want to answer the question, and I pick the last one to look away. Unfortunately, that does not quite work when you are online, because you are all staring intently at the camera. If you want to answer a question, put your hand up or even just wave at me or the person asking the question, and they will bring you in. There you go. You have got your first wave, Mark.

Mark Ruskell: Thank you. Gabi, would you like to come in?

Professor Gabi Hegerl (University of Edinburgh): Okay, thank you. First of all, thank you for inviting me. Apologies, I could not make it to the Parliament, as I committed long ago to being in Switzerland right now.

There has been a recent publication on the carbon budget that gives us in the order of two or three years to run out of the remaining carbon budget. We have to face the fact that 1.5ºC is difficult to impossible—probably impossible. However, it is not a cliff edge. The closer we can stay to it, the better. It is quite tricky to navigate communication of the issue, but it is best to be realistic.

Mark Ruskell: Are there any other thoughts on that from the panel?

The Convener: Ellie Murtagh, do you want to come in? You sort of nodded; it is dangerous to nod if you do not want to come in. No one else wants to come in, Mark.

Mark Ruskell: That is fine; I will continue with my questions.

For context, Gabi Hegerl, you are saying that there are only two or three years left of the budget to stay within 1.5°. Where are we with the peaking of global emissions? If we are to have any chance of staying within, say, 2° or 2.5°, when do global emissions need to peak, and what policies and

actions need to be taken globally in order to have any chance of achieving that? Do you want to come in before I turn to others?

Professor Hegerl: I have unmuted my audio, which was probably reckless. There seems to be a flattening of some aspects. Greenhouse gases seem to be slightly flatter than they have been, and some optimistic voices have said that they may be about to peak. However, that is a long way from reaching net zero, as doing so would require not just a peak but a dropping down—basically, dropping off a cliff to zero, which is very difficult.

Methane seems to be increasing. There has been a comprehensive recent publication, in which I am not involved; it was led by Piers Forster, who is involved in the Climate Change Committee and who may have presented to you. We are quite far off. That is a source of anxiety among the climate research community, because we realise that, the closer we approach 2° or even 3°, the closer we approach an area of climate change in which it is difficult to predict exactly what the impacts are. Some of those impacts could be very painful, such as lethal heat in some parts of Asia.

As has been highlighted by some publications, there is also a risk of a tipping point: that we could face some changes that are hard to reverse, which accelerate once they are under way, or which are difficult to adapt to. The further out we go, the harder it will be, so staying as close as possible to our initial goal would be good.

Dr Andrew Russell (Research Centre for Environmental Change and Communities): The key issue is to do as much as we can. The arbitrary target is of secondary concern. Domestically, we should reduce our emissions as much as possible. Internationally, we should use our soft power—our influence in the world—to persuade others to join the journey to net zero. Staying below 1.5° would be fantastic, but being at 1.4° does not mean that we are all fine, and being at 1.6° does not mean that we are all doomed. We just need to start from where we are and do as much as we can.

That did not answer your question. I do not think that we will stay below 1.5°.

Dr Ellie Murtagh (Maynooth University): I agree, unfortunately. However, it is imperative to think about tipping points when speaking about carbon budgets, particularly in that timeline. Globally, tipping points range from things such as the collapse of the Greenland and West Antarctic ice sheets, the thawing of permafrost and the destabilisation of the Atlantic circulation that shapes our weather. Although those sound international and global, they will definitely have ramifications in Scotland from a rise in sea level of more than 1m by 2100, which would threaten the livability of coastal communities such as Montrose and the Western Isles or even put at risk key infrastructure such as Grangemouth—and, when it comes to global food insecurity, could push Scotland beyond our ability to cope. Adaptation costs would escalate.

The key point is that every fraction of a degree matters. Although there are tipping points at 1.5°, any reduction beyond that reduces our future burden of adaptation, which is key. Within 1.5°, there is still the ability to adapt and manage. At higher levels of warming—at 3° or more—the scale of flooding, heatwaves and sea level rise that we will experience in Scotland will be unmanageable and will overwhelm our ability to cope and adapt.

Professor Fabrice Renaud (University of Glasgow): One important aspect is that all the efforts that can be pursued in Scotland must be pursued, so that we meet our targets. However, we are affected by the emissions of other countries. If temperatures continue to rise, all the activities that can be done in Scotland to mitigate the effects can also contribute to adaptation. That is important to note, because we can get much more prepared for events such as the increased frequency of floods, droughts and heatwaves that are predicted for Scotland. In achieving that double objective, we will have communities that are much more adapted to the consequences of future climate change.

Mark Ruskell: We are considering a carbon budget to replace the previous interim targets for climate change. What is your analysis of Scotland's contribution? Is it about right? Are there areas in which we could go faster? Is there a moral imperative to go faster, given our contribution to industrial emissions globally? I am interested in your thoughts, as climate scientists, on where you see Scotland sitting, particularly given the carbon budget that is before us this morning. Ellie Murtagh, do you want to come in on that?

Dr Murtagh: As a resident of Scotland, I think that we have a moral imperative, particularly because of, as you say, our place in the industrial revolution—James Watt came up with the steam condenser in Glasgow Green—and the impact that that has had globally. We have a drive and a responsibility. Scotland has been leading the way, particularly at the 26th United Nations climate change conference of the parties—COP26—with the establishment of the loss and damage facility. Such things are just and appropriate, but we need commitment, action and progress, along with the goals that have been set. However, my research focus and practice has mostly been on climate adaptation, so I will defer to colleagues who are working more on the mitigation side.

Dr Russell: I do not work on carbon budgets either, but the other way of looking at this is that early adopters tend to win in these situations. If we look back at the Montreal protocol, when we phased out chlorofluorocarbons, it was the early adopters who came up with solutions to that problem who profited and came out well. Rather than looking at it as a problem that we need to suffer to solve, we should see the opportunities domestically and internationally from being an early adopter in the field.

Mark Ruskell: Are other countries around the world, in the early adopter space, seeing advantages of being the first mover, or is everybody sitting back and saying, "We don't want a competitive disadvantage?"

Dr Russell: The manufacturing arms race of solar panels and wind turbines is not my area, but I think that we all know who is forging ahead there.

Professor Renaud: On the moral imperative, we need to continue on the trajectory that we are on. A lot of what could be done has already been done, and that is where we are now in Scotland. However, when we look at what needs to be done in future, for the next carbon budget, actions really need to start being implemented now—principally, mitigation actions around nature-based solutions. Those need to be implemented as soon as possible, because the benefits will come later. If those actions have not been started or accelerated, there may be difficulties with future budgets.

Professor Hegerl: I agree. We should not just look at this as a burden—we should see it as an opportunity. History has shown that such situations could be used as an opportunity. For example, we have a fantastic wind power resource, which is doing really well. The system and the storage are tricky, but we have done a bit of research into that, and even there, long-term storage is not needed; we just need to bridge the rare days when it is not windy anywhere.

Very promising solutions are out there. The positive aspects should perhaps be emphasised a bit more than the problem of having to constrain ourselves to a budget, because there is a real opportunity here. In an international context, it is difficult to make moral arguments, because I have learned from my colleagues who work on climate politics that they do not seem to work very well. We have a long history of using fossil fuels, so the burden is more on countries such as Scotland, the United Kingdom and the US than on recently developed countries.

Mark Ruskell: Thank you.

09:00

Kevin Stewart (Aberdeen Central) (SNP): I have a very brief supplementary. Most of the panellists have said that net zero is a positive, that there are opportunities and that it is not so much of a burden. However, people out there are beginning to question our net zero targets. Some politicians are immensely sceptical and are firing up that view. How do we persuade people on the ground that our journey to net zero—our just transition—has positive aspects rather than being a burden?

Dr Russell: Fabrice Renaud started on the point that we need to bring together climate change mitigation—setting out carbon targets and then transitioning the energy infrastructure that we have, which is pretty dry—and the adaptation brief. We need to develop a vision of what a well-adapted, resilient Scotland or UK looks like and how that would improve people's lives. Even if—

Kevin Stewart: Could you give us some examples? That would be useful.

Dr Russell: Even if we are wrong about climate change, which we definitely are not, we need to transition our infrastructure away from polluting fossil fuels, which make our air quality worse and lead to hundreds of deaths. We need to integrate flood risk management infrastructure into our societies in order to stop people's physical and mental health being damaged by them losing their properties as a result of floods, which has always happened and will continue to happen. We need to make our coastal communities resilient to sea level rises, which we have seen are happening and which will accelerate in the future and carry on happening.

We can make the case that improving our housing stock with better insulation and dealing with heatwaves, which are becoming more frequent, is good for people's health and more efficient, so that the climate change part of the argument becomes almost irrelevant. We should be doing that stuff in order to better restructure our infrastructure and our society.

Dr Murtagh: In answer to your question about what we can do to engage the public, there are a few tangible actions, such as making it easy and affordable to act. Building on the points that have just been made, we need to highlight the benefits of mitigation and adaptation while ensuring that the burden on households does not increase. For example, we spoke about providing funding, grants and clear advice so that households can insulate, retrofit and switch to low-carbon heating in their homes without increasing maladaptation, such as damp or mould, and without increasing their bills.

Similarly, on transport, we can invest in safe walking and cycling routes and reliable public transport, which help shift the public away from private cars because they find that alternatives are more affordable. Similarly, we need to build awareness and trust through public climate information campaigns. It is reassuring to see the Scottish Government's climate engagement fund continue to fund such projects, because it supports community-level action. Funding for the Scottish Government's community climate action hubs needs to be expanded.

Kevin Stewart: All that is fine. I believe in climate change, and I believe that we have to reach these net zero targets. We should take a lead in the world and persuade others. However, none of the things that you have said today is, if you excuse the expression, particularly sexy for the public. We need to change that. We need to give the public the knowledge but also the vision of what net zero means and how it will be good for them.

Dr Murtagh: I totally appreciate that. With all due respect, there may be a fear that we are underestimating the public. I say that only because of some interesting and exciting research that will be published tomorrow, which I am privy to because I am on the board of a climate communications and engagement charity called Climate Outreach. Every year, it produces a toolkit and a report called Britain talks climate. Throughout the year, it does extensive engagement—about 7,000 people are polled, including a representative sample in Scotland. It asks the public what their opinions are and it makes sure that different groups are brought in.

I will quickly share some of the findings that will be published tomorrow. Climate Outreach tested different ways of talking about climate investment: 63 per cent of people who were polled in Scotland were supportive of the Scottish Government investing in climate change adaptation measures, with only 14 per cent opposed. That is higher than the average in Great Britain. Similarly, compared with the average across GB, more people in Scotland feel that action that is taken for climate adaptation should be used as an opportunity to reshape the way we live now: 57 per cent of people thought that it is an opportunity to change the systems that we operate in, rather than merely to protect the way we live.

Professor Hegerl: One thing that we could do a bit more of is to make it easier on people. For example, there is still not a perfect charging infrastructure for the electric transition—it seems to be going quite slowly. I am not really speaking about that as an expert; I am speaking as a resident of Scotland who realises that there are a lot of barriers to reducing carbon emissions in people's daily lives that we could still address somewhat better.

There is a lot of good will towards addressing climate change among many people who I speak to on a daily basis. It is just a question of the barriers. For example, there has been an enthusiastic resumption of air travel because it is virtually impossible to get to mainland Europe in an uncomplicated way by train. There are still high energy bills despite Scotland having a lot of very cheap wind energy. It would help if we could address some of those structural barriers so that people see the rewards of the transition, because there is a lot of disquiet about electricity bills.

Professor Renaud: The point about engagement with communities is important and key. It has to be done in a meaningful way—not just asking opinions but taking the opinions of communities into account. That is done more and more, particularly—although not only—in urban contexts, where heatwaves are becoming more of an issue in Scotland and globally in many other parts of the world.

A lot of urban areas are starting to adapt by deploying more blue and green infrastructure in cities. That is increasingly done through co-development with communities, neighbourhoods and citizens. That brings more buy-in from the communities and it also gives them an opportunity to put forward ideas—they are the people who live in urban centres. Once that infrastructure is deployed, it also provides clear benefits to the communities, who see the advantages of having access to parks—not only to protect themselves against the heat but just for everyday enjoyment. Communities see the benefits of the blue infrastructures.

Having engagement with communities and emphasising that the solutions will bring answers to the direct impacts of climate change and provide all those additional benefits is one way to show the public that the solutions can have multiple benefits.

Kevin Stewart: Thank you.

Sarah Boyack (Lothian) (Lab): My questions will focus on the projected impacts of climate change in Scotland over the next 10, 20 and 50 years. How do we begin to plan for that, and which of the changes are likely to be the most significant? We have already talked about flooding, forest fires, heatwaves and droughts. How do we plan for those, and how will their impacts be felt in different regions in Scotland? How do we prioritise taking action, in time and in the right areas?

Dr Murtagh, you are nodding your head very enthusiastically—that is a big mistake. [*Laughter.*]

Dr Murtagh: Thank you for the question and for indicating your commitment to adaptation and consideration alongside the carbon budgets. It is imperative to understand that mitigation and adaptation are two sides of the same coin. Mitigation can help us to avoid the unmanageable, but adaptation helps us to manage the unavoidable. Many climate change impacts are locked in, at least for the next 30 years, because of the lifespan of greenhouse gases in our atmosphere. As you say, that will have real-world consequences in Scotland.

An accessible resource that I would like to highlight is the UK CPA team climate change projections that Adaptation Scotland has summarised at the Scottish level, which are full of accessible infographics. The projections really make the case for how Scotland's climate has changed and how it will change in the future. As we have already spoken about, that means average temperatures increasing in all seasons, warmer and wetter winters, and changes in the frequency and intensity of extreme weather events.

Although all that is well documented in climate change projections, we have benefited from starting to consider what it means sectorally. We use the resources of OpenCLIM, which is a new climate science project that was developed as part of climate change risk assessment 3, and further as part of the forthcoming CCRA 4, to examine how climate change could affect different sectors, particularly agriculture. The project has recently released a report on the opportunities for changing agriculture in Scotland and what it might mean, particularly for the Scottish Borders, in terms of introducing new crops such as chickpeas and soybeans by later in the century. There is a lot of sectoral information out there.

As for the second part of your question, our regional planning is done through our commitment to place-based adaptation partnerships. The Scottish Government's Adaptation Scotland programme, which is delivered by Verture, has set up initiatives almost entirely across the country, such as climate ready Clyde and similar partnerships covering Tayside, south-east Scotland and Edinburgh. Those are fantastic resources to look at. They have been capturing local climate impacts through interactive maps and participatory exercises to collate people's lived experiences of climate change, and then working with scientists to bridge into exploring what that means for the future. Their approach is both bottom-up and top-down. We can learn a lot from those processes and share it internationally.

Sarah Boyack: Thanks. Would any other of our witnesses like to come in on that issue?

Dr Russell: We know about the big issues. You have already mentioned flooding and heatwaves. We have seen thousands of properties being flooded and there have been hundreds of excess deaths in the past few summers from those causes.

What is germane to the theme of this inquiry, and where we are opening a new area of vulnerability, is the electrification of our infrastructure. Where are we building new assets? Are they being made resilient to the hazards that we know exist? What are the implications for cascading risks? Given the recent storms, and the events on the Iberian peninsula where power grids have collapsed, we have seen that, if we are not resilient in developing new energy infrastructure, we open ourselves up to new and potentially unexpected cascading risks.

Sarah Boyack: How do we plan for that? We are building infrastructure that will be around for 30 or 50 years. One flood project failed to work because the flood level was worse than anticipated. How do we make sure that the people who are planning and building that infrastructure are ready to do it? How do we build in responding to the risks caused by differing temperature levels?

Dr Russell: We have covered the point a couple of times today. The artificial siloing of mitigation and adaptation is a new source of vulnerability. If we rush ahead with one thing without bringing in resilience, it will be a case of marry in haste, repent at leisure. We are seeing that sort of short-sighted decision being made regularly in Government.

One example of that is the UK Government's proposal to build 1.5 million new homes, which is a laudable aspiration. However, if we do not build climate resilience into the planning regulations and the way in which those homes are built, will they be fit for the future? It might all look great in the short term, and I do not think that many people would object to it, but if the housing is not resilient against the hazards that we see coming in the future, it will be just a short-sighted response to the problem. We will open ourselves up to the same accusation with energy infrastructure if we do not make that resilient to the threats that we know we will face over the next few decades.

09:15

Sarah Boyack: Does anyone else want to come in on that?

Professor Hegerl: Those are great points. I should also point out that our ecosystems—for example, our seabirds and our unique Scottish wildlife—are under stress from marine heatwaves, and we are going to see a lot more of them. The

systems are also under stress from other things such as overfishing and pollution, and we need to think about the extent to which we can reduce those stresses and give systems a bit of space to adapt to the climate change that is evolving. Therefore, we should not see climate change in isolation; instead, we should look at the nature crisis overall and try to address it through a combination of measures.

That said, as we move further along on this climate change path, we will see a lot more unpredictability and really dry years, like this one, coming after very wet years. That sort of thing really stresses our ecosystems, too, as well as our infrastructure and agriculture. It is going to be difficult; indeed—and we cannot even predict how likely this is to happen—if we change the ocean currents, all bets could be off in a completely different direction. How we can adapt well is quite a tricky issue, but I think that the more resilient our plans, the more we will be able to cope with the unpredictable future that is coming.

Sarah Boyack: The risk is that we build houses that are more energy efficient and warmer, and then suddenly we need air conditioning instead. Everything is shifting, and the question is how we plan for all of that and get the information out.

Professor Renaud, do you want to come in on that?

Professor Renaud: I would assume, with regard to the critical infrastructure at least, that things have been designed to take account of future projections of climate change and their impacts. That said, when we build critical infrastructure, we need to seriously consider how we avoid lock-in—being dependent on specific infrastructure for everything. As has been mentioned, if you have a completely centralised grid system, there can be dire consequences if it collapses, and having more geographically spread energy infrastructure could be a solution.

The lock-in issue is critical, and it can also be seen in the way in which we defend ourselves from, say, coastal hazards. Many countries around the world have engineered their way out of sea-level rises, storm surges et cetera and have put a lot of assets behind that approach; however, that has triggered development behind those barriers, because it is considered a safe space. Therefore, when problems arise, the consequences are extreme. Again, that is an aspect of lock-in—once you have put all this infrastructure in one place, it is almost as if you cannot pull out from it. That situation needs to be avoided at all costs, and having multiple systems delivering critical services will be essential in that respect.

Sarah Boyack: Thanks very much. We have had a lot of really good recommendations in those answers, which the committee will need to build into its own recommendations. Back to you, convener.

The Convener: We move to questions from our deputy convener, Michael Matheson.

Michael Matheson (Falkirk West) (SNP): Good morning. I want to stick with the themes of infrastructure and adaptation. It has become clear this morning that there is a need for investment in infrastructure to meet the growing change that we are witnessing in our own climate, and to mitigate some of the risks that will we face in the future. Have you a view on whether there should be a hierarchy of priority on what infrastructure we need to start to adapt now in order to meet the risks that we face? Perhaps I could come to Professor Renaud first on that, given his expertise in climate resilience.

Professor Renaud: I will give that a try. One aspect that is obvious to me, because we all depend on it, is water infrastructure. We must ensure that all our water infrastructure is protected from the consequences of climate change, which can mean dealing with having either too much water or not enough, and doing that in urban areas while also ensuring that rural ones are not left behind. That is one obvious priority. Another is the energy grid, as was mentioned before, which is essential. Those two things are critical in my mind. They are not the only ones, but they are the ones that I would prioritise.

Michael Matheson: Does anyone else have a view on what the hierarchy of priorities should be when we think about the areas of infrastructure that need to be adapted?

Dr Murtagh: I would like to interject. Domestic properties are important, as was mentioned previously. We know that 80 per cent of the homes that will exist in 2050 are already standing, so the issue is about not only building new infrastructure but revisiting what we already have. Further, it is about not only low-carbon retrofitting but ensuring that buildings are climate resilient. That is imperative because 9 per cent of residential properties in Scotland are at risk of flooding, which already costs about £324 million a year in damages and that cost is set to increase substantially in the future. What is less acknowledged is that 9 per cent of homes in Scotland suffer from damp and mould, which has significant implications for the health and wellbeing of our citizens. That is coupled with the fact that 35 per cent of Scottish homes suffer from fuel poverty, which is one of the highest rates in Europe.

There is a need to look for whole-system solutions and to consider how we can retrofit some of our existing homes and built environment

infrastructure in a way that is just and will lead to more positive health outcomes. Homes are both a major source of emissions and a front-line victim of climate change, so advancing both together will help us to create a low-carbon, resilient, affordable and fair world.

Secondly, I will quickly mention the importance of transportation systems. We often focus on mitigation, but resilience in those systems is important, too. There is a complex, two-way relationship there. We have spoken about decarbonisation measures such as electric vehicle charging hubs or the electrification of railway networks, which must be climate proof if they are to withstand floods and storms, but maladaptation can also be an issue. For example, new roads are being built to bypass landslide-prone areas such as the Rest and Be Thankful, which has again been affected by landslides, but such roads could lock in car dependency and undermine Scotland's target to reduce car kilometres. Similarly, active travel routes supported by green infrastructure reduce emissions while also managing floodwater and cooling urban heat.

Actions should be person centred, and we must ensure that we think about those who are most vulnerable. Even when we speak about mitigating and adapting transport systems, we often fail to account for equity issues, which increases the burden on low-income households. We must consider how climate change itself will exacerbate inequality and how some of our interventions could address that.

Michael Matheson: It seems that significant capital investment will be needed over a number of years to achieve those infrastructure changes.

I am also interested in people's views about how we can decarbonise the process of climate adaptation as part of infrastructure investment. Is there a risk that we might undermine the progress that we are seeking to make through investing in infrastructure to adapt to climate change and address some of the climate challenges that we are facing, and that we will actually end up increasing our carbon output? What must we do to not only adapt but ensure that the adaptation process reduces our carbon output?

Dr Russell: That sounds political to me. We have a carbon budget and must decide where to spend it. If adaptation is more important than other areas, that is where we should put the carbon in and it might have to be removed from the system later by using other mechanisms. It is about your appetite for risk and what you want to get out of it. If you are saving lives and making properties and infrastructure resilient to flooding and extreme heat, and you would rather do that than something else, that is a political decision.

Michael Matheson: Yes.

Professor Hegerl: I agree completely. It is also a timeline decision. We are looking at the carbon budget for the next few years, but we should look at what we are committing ourselves to. Any adaptations that help now are good, as is anything that reduces, for example, the number of cars being driven—in particular, petrol cars and other transport—in the future or that reduces heating requirements by using a little bit of carbon to insulate and adapt. That will all help in the future.

Although we are currently looking at this limited carbon budget, we have to look at the long-term picture and see what will get us on a sustainable path. I am not so concerned about the concrete spend on adaptation, for example, if that is needed. Nature-based solutions have been mentioned as being extremely helpful in this regard, and they are win-win situations where you do not even have that problem.

Michael Matheson: Perhaps I have been clumsy in the way in which I have phrased it. I am thinking about the fact that we have to decarbonise but, if we have to build a significant amount of new energy infrastructure, particularly on the grid side of things, what is the carbon output of the process of electrifying more of our society, and how do we reduce the carbon output from the electrification process? In a rush to decarbonise our society, we might end up producing more carbon as a result of that process in itself.

Professor Hegerl: We must consider and protect where carbon is stored—for example, peatlands and forests. If we balance the need for decarbonising infrastructure with preserving peatlands and forests—by not putting the infrastructure right on top, for example—that would go quite a bit of the way. However, it is quite tricky to balance the budget year to year, so you have to make investments.

Michael Matheson: Finally, how large a part can nature-based solutions play in our climate adaptation approach?

Professor Renaud: They can play quite a significant role. Peatlands have been mentioned, but it is not only about peatlands; there are also the coastal ecosystems and blue carbon. There is huge potential for carbon sequestration in all those systems.

It is important to note—I mentioned these before—all the additional benefits that you get when you deploy nature-based solutions. They are not a panacea, so they will not solve all our problems but, when integrated into a mix of solutions, they can really contribute to mitigation and adaptation.

In the peatlands example, there is a lot of research that shows that you can control greenhouse gas emissions from them with the water tables. Peatlands can contribute to reducing flood risk, depending on different scenarios, and the amount of carbon that they can store is quite significant and important for Scotland. That is just one example where really paying attention to nature-based solutions can allow you to achieve multiple objectives in Scotland.

Dr Russell: The method by which we assess the benefit of interventions has skewed us away from nature-based solutions. Thinking about flood risk management, for example, if we slap a big concrete barrier somewhere, we can easily calculate how many houses will be protected, put a value on them and that is it done. It is a case of, "Is it cost beneficial? Let's fund it".

If we are talking about beach recharge, restoring wetlands, fixing leaky dams or upstream storage, it is very likely that those actions will have a positive effect on flood risk management and other factors such as carbon sequestration, public health and public wellbeing. However, how do you put a value on those more intangible ends of the nature-based solutions?

When I worked at the Committee on Climate Change and we were putting together the previous climate change risk assessment, we had to make heroic assumptions about the value and the benefits of some of the more fuzzy interventions whereas, with hard engineering, you do not have those issues. There needs to be more openness to qualitative benefits of interventions as opposed to just adding up all the beans and seeing which one gives the best return.

09:30

Dr Murtagh: When investing in nature-based solutions, it is important to think about the longevity of those interventions and how funding and finance will be allocated appropriately. At least in local authorities, investment in nature-based solutions often has the capital or up-front investment but very limited allocations for maintenance. Unless some of those things are maintained and monitored, some of that is cost wastage. For some nature-based solutions to be effective, particularly urban greening, there needs to be an embedded long-term financial commitment.

The Convener: Mark Ruskell wants to come in with a supplementary, but I want to push a little bit on this. We seem to be pushing quite hard to develop wind farms on the very peatlands that we are trying to protect. We are shoving tonnes and tonnes of concrete into the peatlands, which destroys their attributes as sponges, and there is faster runoff along the tracks that are created to the wind farms. That is then supplemented by steel pylon lines that go across the Highlands, and battery storage plants that are reliant on minerals being mined in fairly dubious areas of the world. My question to you, Fabrice, is simple. When we are doing that, are we balancing the benefits with the cost to the environment? It seems to many people that we are not.

Professor Renaud: That is a tough question. As you said, you have to balance the benefits and disadvantages that it all brings. That is very difficult, because you have different stakeholder groups engaging in those discussions. This is a non-answer, but I think that you have to engage with all the stakeholders to try to find the optimal solution. What is the optimal number of wind farms that you want to put in place versus the damage or potential damage that they create to fragile ecosystems? You have to balance those decisions. That is as vague as I can be, I am afraid, but it is quite a difficult question to answer.

The Convener: My problem is that I do not see the budgets being done and the facts and figures being laid out. We have no centralised energy plan across Scotland. There is no strength, weaknesses, opportunities and threats analysis carried out for each and every wind farm. They just appear to go up with no budget.

I think that I see you nodding, Fabrice. I will take it as a nod and move on to Mark Ruskell, although I am happy if you want to come back in on that.

Okay, Mark—over to you.

Mark Ruskell: Would the level of adaptation investment differ substantially between a world at 2° of global warming and a world at 3° of global warming? Is there a point at which the level of adaptation investment infrastructure becomes markedly different, or are we just talking about deeper solutions continuing with the plans that are already in place, but going further?

I am mindful that we have invested in flood management schemes in Scotland that have been based on one-in-200-year events, which are now being downgraded to, in effect, one-in-50-year events. Where should we pitch adaptation in public policy? Is it that 3° world or a 2° world? We heard earlier that 1.5° is gone now. What is the best estimate of where we are going to land?

Dr Russell: Gabi Hegerl has her hand up.

Mark Ruskell: Gabi, do you want to come in first?

Professor Hegerl: It is difficult to predict where we are going to land. I think that, with the present commitments, it will be between 2° and 3°, but the adaptation needs then would be very different and would be dependent on some things that are very

difficult to predict, such as what the currents in the ocean are going to do, and how fast some of the ice sheets are going.

At 3º, you are at a very uncomfortable place with respect to the Greenland and West Antarctic ice sheets. For us, the West Antarctic is actually more important because its gravitational pull means that the sea level rise manifests more in the northern hemisphere.

We are reaching a point where it is difficult to predict what to adapt to. Maybe the only upside of sea level rise and ocean currents is that they do not move very quickly, so we can monitor changes as we go along. However, the further out we go, the more difficult it is to see where we are going to wind up. I am hoping that we are staying well below 3º and closer to 2º. Staying at 2º is still achievable, but, at this point, that would require quite a bit of political will, globally.

Dr Russell: I have just been trying to work out whether an analogy would work. I was thinking about treating a patient with a chronic health condition, which is like climate change for our earth system. At the moment, we still have time to invest in managing the chronic condition—in not getting to the point where we are just recovering from a series of acute symptoms of the chronic condition. Reaching that point would be the equivalent of a 3ºC world, where we have not managed the underlying issue very well, and we then stumble from catastrophe to catastrophe, tidying up afterwards and muddling on as best we can, rather than investing early and managing the problem. That is a mitigation and an adaptation issue, as you said earlier, of managing the extent of the hazards by mitigation and then building resilience to the outcomes of the problem through adaptation.

Dr Murtagh: The adaptation finance gap is incredibly important and incredibly vast. The United Nations “Adaptation Gap Report 2024” shows that, globally, by 2030, we will need to be spending about $359 billion annually. Currently, we spend only about $28 billion, which is a small fraction of public finance internationally. It is a similar picture here in the UK. The “Scottish National Adaptation Plan 2024-2029” sets out early estimates, showing that Scotland will need to spend about $1.8 billion per year by 2030 just to prepare properly.

On your point about what that means with regard to future warming scenarios, the Office for Budget Responsibility and the Bank of England have provided estimates of how different warming thresholds could affect our gross domestic product. For example, a warming level of 3º could reduce the UK’s GDP by 8 per cent by 2050, which is not that long away, so it is imperative that we start investing. Again, it is not just a nice-to-do thing; it is an economic benefit. For example, every £1 spent on flood defence and adaptation brings back 9 per cent in avoided damages and cost savings, so there is evidence of the financial benefits of adaptation as well as the non-monetary benefits that we have spoken about.

My recommendation, which is in agreement with ClimateXChange, is that Scotland needs a dedicated adaptation finance task force to build an investment plan and a long-term pipeline. Again, that is about thinking about the timelines and global warming thresholds and really mobilising partnerships with banks and insurers—bringing in the private sector—and aligning the funding streams across mitigation and adaptation.

Douglas Lumsden (North East Scotland) (Con): Climate change is obviously a global issue that needs a global response. How might the impacts of climate change globally affect life in Scotland? Will we still get our tea from India and our oranges from Spain, for example? How will it affect everyday life in Scotland? Andrew Russell, do you want to come in first? We are just trying to understand what climate change might mean in the future for people here.

Dr Russell: This is an incredibly important area. I worked for the then Committee on Climate Change on the progress reports to Parliament. The second climate change risk assessment picked out international systemic risks as one of the things that needed to be dealt with, but the second national adaptation programme in England completely ignored that. It has been addressed partially in the third national adaptation programme, but one of our biggest blind spots definitely relates to which overseas issues are going to migrate to the UK.

An example that we used to use quite a lot was semiconductor and chip manufacture in the far east. A storm there can wipe out a significant percentage of the global production of those chips. That happened a number of years ago. I cannot remember the specific case, but I can send the details afterwards in writing if you are interested in that case study. We are vulnerable to any situation that involves goods and products coming to the UK and Scotland through a global supply chain.

Douglas Lumsden: As part of the adaptation that you mentioned, should we be looking to do more in this country, whether on food security, chips—not the food kind but the electronic kind—or anything else? Should we be trying to do much more in this country so that we depend much less on others?

Dr Russell: If processes are resilient locally, that makes a lot of sense, depending on the relative costs of procuring those goods from elsewhere. There is a reason why we have global

supply chains, but their resilience is a separate question.

Douglas Lumsden: Gabi, I come to you, as I noticed that your hand was up.

Professor Hegerl: We also need to consider that there will be an increased risk of drought in many developing countries in the global south. A lot of livelihoods will be under threat. The word "migration" has been mentioned in another context; there is, of course, also a risk of people being on the move as their livelihoods no longer work for them. That could be destabilising and is another reason why we should look seriously at mitigation. There could be a difficulty with agriculture in large parts of the global south or in south-east Asia, with lethal heatwaves meaning that people cannot go outside and would have trouble harvesting, for example. We could have links between heat events in different grain-producing regions, which would, possibly, affect our global grain supply. However, the global nature of our food system helps a little, in acting as a buffer. Some nice studies have been done in Edinburgh on that topic.

We should therefore think carefully about how climate change affects others, particularly in the global south, where it is so much more visible. We know that there is very strong warming in the Arctic—we have the strongest trends there—but warming is felt first in the tropics because the region does not normally vary much. Every degree of warming is stronger over land and evaporates more water out of the land, making any droughts worse, so that will have a huge impact, particularly in the tropics. That will be felt worldwide through the effects on that population. We have to think about what that means for security and other things.

Douglas Lumsden: Does anybody else want to comment?

Dr Murtagh: I raise the importance of health because, as we have experienced in recent history, diseases do not respect borders. For example, a recent study indicates that dengue fever—a disease that is known mostly in the tropics—will be endemic in Birmingham by 2040. Some illnesses and diseases that are seen as more exotic will be coming to the UK. As our temperature warms, vector-borne illnesses that could be transmitted by mosquitoes will be viable further north. It is therefore incredibly important that we learn from the Covid-19 experience and implement the changes in our practice, and that we prepare for and are realistic about some of the health risks and consequences globally and what those mean in Scotland.

Douglas Lumsden: Diseases do not respect borders, but neither do emissions. The UK is responsible for 0.8 per cent of global emissions, I think, and Scotland accounts for maybe a 20th of that. Regardless, therefore, of what we do in terms of carbon budgets or reaching net zero, if the rest of the globe is not doing its bit, we will not achieve anything, will we?

Dr Russell: We can develop soft power to influence the rest of the world to move. If a country can show that there are benefits in making that transition rather than sticking with the literally prehistoric technology of burning fossil fuel, others will follow. You could make the case that, if no one else moves, sticking your head in the sand and carrying on as you are is fine, but positive examples are needed for others to follow.

Douglas Lumsden: Fabrice, do you want to come in? All the costly mitigations that we are looking at will probably have to be done anyway, regardless of where we are.

09:45

Professor Renaud: I actually have several points. The point about global supply chains is important. We can learn from the Covid-19 pandemic, when specific products, particularly on the medical side of things, suddenly became unavailable, which put countries in dire situations. That led to the idea of repatriating to the UK and Europe some of the products that were no longer being manufactured here.

That goes to the point that you were making: should we in Scotland do more to produce the essential products that we need? Yes and no. We will always be in a globalised world and rely on partners around the world; it is about consolidating supply chains to Scotland and seizing opportunities to develop new types of business in the country, or repatriating them.

A lot of countries will be affected by climate change. It will affect staple foods or other products that Scotland might import. Basically, you need to ensure that good supply chains are available that you can rely on. One example that has been referred to—it is a really good example of cascading consequences—is the massive floods that took out Thailand's electronic chips and had dire consequences for the industry.

Douglas Lumsden: When it comes to carbon budgets, is there a danger that we start offshoring more of our emissions instead? We seem to have a lot more electric buses in this country now. Most of them come from China, and we do not really know how they are produced or what the cost is to the environment. Is the danger with carbon budgets that, in trying to reduce our internal emissions as much as possible, we actually make things worse? Is that unfair? Does anyone want to come in?

The Convener: Gabi has her hand half up. I am afraid that that qualifies you to answer, Gabi.

Professor Hegerl: That gets me on the hook.

The most important emissions difference between an electric and a diesel bus is over its lifetime when it is driven, so you still save emissions. I agree that it is important to think about the offshoring of carbon emissions. Although our emissions are small compared with those of other countries, we have to think about what has caused the present warming, which is how much we have emitted since industrialisation. We have made quite a significant contribution to that. If people calculate climate change damage, for example, we are on the hook for more than if they just look at our current emissions. Therefore, we have a bit of an ethical responsibility, but moving quickly away from being so fossil fuel dependent also has a practical benefit. Does that make sense?

Douglas Lumsden: Yes, a little bit.

I will also go back to the point that Kevin Stewart made about the trust that people have in the whole process. We spoke about the potential benefits of moving to net zero, but do people understand the potential costs when it comes to insulating their home or changing their heating or vehicle? Are people aware, and do they accept, that that will have to come at a cost? Is there enough detail in the carbon budgets on the costs going forward?

Professor Hegerl: Who would be able to answer that question?

I was thinking about the case study of the Berwick Bank decision and how it would have been really nice if people had had more information. As an interested citizen and, through my science research area, as someone who is very keen on decarbonising, I found it very difficult to find out what the scientific evidence was on whether the situation was okay and defensible in relation to the bird population.

It would have been really helpful to make the evidence clear to the public and to be clear about what had been done to evaluate impacts and how the decision was made. In that case, which was a difficult one to decide, I found that difficult to understand. As a climate scientist, I feel happy because it is a huge investment in wind energy, but, as someone living on the coast, I am concerned about the extent to which consideration was given to where the birds migrate to, whether they fly over the site and whether any of the mitigating measures that have recently been proposed in journals were looked at. It would be good to inform the population and to be more clear about what has been done.

Dr Russell: Most people have bought a car before and, if you have been unfortunate, you will have bought a new boiler. There are no proposals to ban petrol cars tomorrow. The transition will happen as it needs to and there is no benefit in scrapping any existing infrastructure that works. Gas boilers and cars will be replaced as and when they become too inefficient. I think that people understand that element of the cost and know that there will be an efficient and logical way to do things.

I suspect that individuals might be more concerned about things such as the rationing of flights or massive increases in the price of carbon-intensive food. Those things have not happened in the past and would be sensible only if the sole goal was to reduce carbon emissions.

Douglas Lumsden: Do you think that we will have to look at some of those things? We do not have a climate change plan yet; we have only the budget.

Dr Russell: Did I open a can of worms?

Douglas Lumsden: We have a carbon budget, but we have no real idea of how to get there. Do you think that the Government will have to look at some of those things to meet that budget?

Dr Russell: Those would be sensible areas in which to reduce carbon emissions, but deciding how to do that is way beyond my pay grade. Those are significant elements of the global carbon budget, but they will be very difficult to shift, particularly in relation to diet.

The Convener: I have been listening to what has been said and am interested in the costs. Ellie Murtagh suggested there is a need for faster action on domestic consumption, housing and travel, and Gabi Hegerl said that we must act faster if we are to stay below a 2° increase. Andrew Russell said that we must act now to prevent chronic problems from developing later, and Fabrice Renaud suggested making everything more self-sufficient. We have heard lots of suggestions and ideas.

Kevin Stewart suggested that we must make the changes more appealing to individuals and that they must be able to understand them, which I totally agree with; however, for people to understand the appeal, they have to understand how much it will cost. You do not plan for a boiler repair or replacement; when it happens, you have to do it pretty quickly because you need hot water.

You, as scientists and experts, have come up with all those plans. You must have worked out how much it will cost per household to deliver what you want to deliver or, if not, you must at least have a good idea of what it will cost, otherwise you will not be able to enthuse people. Do I have that

totally wrong? Do you have an idea of what it will cost people in Scotland to get to net zero by 2045? The Government has an idea, but how much will it actually cost people?

I put that to you, Andrew Russell, because you did not look away quickly enough.

Dr Russell: I do not know because that is not my area of expertise.

The Convener: I understand the difficulty, but you cannot come to someone with suggestions without giving them an idea of the actual cost. You cannot tell them the cost of not doing something without also telling them the cost of doing it.

Ellie Murtagh, do you have any idea what it will cost?

Dr Murtagh: I do not know the costs at household level, but I indicated earlier what some of the costs might be at a national level. A report last year from the Scottish Fiscal Commission gave some estimate of the impact on Scotland's finances.

We can also look at recent data. For example, the Bellwin scheme compensates councils for severe weather damage, and in 2023-24, it spent £19.6 million on damage caused by extreme weather. That is more than double the total that has been spent since 2007, so it is already costing the public purse.

Your question suggests more onus on the public household but, from a personal perspective, I would push back on that. A lot of those things are system level and need Government intervention, and it goes back to justice for the people who are already more vulnerable and who will be affected the most because, as we know, climate change is a stress multiplier. How can we possibly expect them to foot even more of the bill when they are already struggling to pay their energy bills or for food? We need a resilient and just transition to bring people together.

As you have already alluded to, it is not just about reducing damage but about the economic benefits of adapting and having low-carbon jobs through a just transition. The challenge to adaptation finance is that there are high societal benefits—we have just spoken about improved health and wellbeing, accessible transport, better homes and communities, and so on—but low private returns. We need to fix that. The state should be derisking the market to incentivise some of those private sector actors, and we need to look at more public-private blended finance, and think about innovative finance instruments. Many countries have been doing that through using climate bonds and resilience bonds—I can see that you want me to stop there.

The Convener: I am just looking to Professor Hegerl and Professor Renaud to see whether they want to come in. I am hearing about the benefits, and I probably agree with them, but I am not hearing what the costs are, and that is what we have to get people to sign up to.

Professor Hegerl: All I know is the gross domestic product estimate and that it will be a percentage of gross domestic product. I have not seen a calculation of how much it will cost a household, but that would be good to know.

I support what was said previously about the cost of not doing it, because of having to pay the costs of increasing weather disasters, for example. I know that it is a hard case to make.

The Convener: I am struggling to understand how to get people to sign up. We cannot just say that it will cost us X if we do not do it when we do not have any idea how much it will cost if we do it.

Dr Russell: What worries me more than coming up with the cost estimates is how progressive the policies are. If you have capacity and opportunity, it is very efficient. If you have a house with a drive where you can plug in an EV that has a nice big battery, where you can store the excess electricity from your solar panels and where you can keep your heat pump working with its very low running costs, you are eventually going to make back your investment because it will add value to your property. Your property can be well insulated to get the grant for the heat pump. That situation is not universal, which is where the problem lies.

The Convener: I am going to move on to Sarah Boyack, but I will say that last week, we heard the argument that a lot of people, including me, will be long gone by the time we have recouped our investment. I am investing for a future that I will not be here to see, but there is nothing wrong with that.

Sarah Boyack: The houses will be here in the future, however.

The Convener: Possibly not if they do not achieve energy performance certificate band C.

Sarah Boyack: The other reason why they might not be here is flooding. One of the witnesses said that there are 280,000 homes at risk of flooding in Scotland, and that figure increases every decade. The communication needs to be that a mix of investment will benefit people and their property but that there is a cost of not investing. It is about ensuring that those homes are centre stage. If you own one of those 280,000 homes, your insurance bills could go up or you might not get insurance. I remember that there was a place in Wales that people had to leave because it was no longer safe. Is there more that

we could do on getting the balance right in how we communicate that to people?

The Convener: I notice nods of agreement. Do any of the witnesses wish to contribute before I go to Bob Doris for the next set of questions?

Dr Murtagh: The work of the Scottish Flood Forum and its property flood resilience bus, which is going into communities and showing some of the things that can be done for property flood resilience, is inspiring. We need to make sure that some of those assets are also accessible financially for those who are renters or tenants.

On the previous point about public perception, I alluded earlier to some of the findings in the "Britain Talks Climate" survey, and I reiterate that there will be a Scotland-specific event at the Scottish Parliament, to which all members of the Scottish Parliament have been invited. If you would like to find out more about public perception in Scotland, please do come along to that event.

The Convener: That sounds like an advertisement. On that note, I move to Bob Doris for his questions.

10:00

Bob Doris (Glasgow Maryhill and Springburn) (SNP): We know that one key plank of the Scottish Government's plans in relation to net zero is carbon sequestration. However, that in itself might be at risk from climate change and its impacts—I am thinking about tree planting, forestry and the restoration of peatlands, which have already been impacted by climate change.

Can any of the witnesses say a bit about what the risks are of losing that good work in sequestration and abatement because of the climate challenges, and whether we can do anything to mitigate those risks? Does anyone want to take up that particular question?

I apologise, Gabi Hegerl, but you have a terrible habit of half raising your hand. I am not sure whether you want to speak, but I will come to you.

Professor Hegerl: It is not an issue that is fully within my expertise, but carbon sequestration in particular and the consideration of the biospheres and ecosystems could be a win-win situation. Looking at the forests as biodiverse forests and not only as conifers could have multiple benefits. To wipe that out, you would need widespread, very severe windstorms or horrible fires. The higher we go with global warming, with heatwaves and such, the more risk there is of fire—I would expect that with higher levels of global warming. I think that sequestration would be a good investment at the moment, and doing it right could really benefit the biodiversity crisis.

Peatland is also very important for carbon sequestration and for Scottish nature-based solutions, so I think that it is a good investment.

Bob Doris: Andrew, do you want to come in before I follow up on that?

Dr Russell: I was on the edge of a conversation in a select committee hearing in Westminster recently about the survival rates of new saplings. I cannot remember the details, but I can send them on afterwards if that is of interest.

Bob Doris: That would be helpful. My next question will relate to that a wee bit, but I will keep my powder dry for now. Fabrice Renaud, do you want to come in?

Professor Renaud: I want to highlight that, as for humans and societies, the ecosystems are also affected by the consequences of climate change. It then becomes a matter of adapting what we want to put in the system and considering species that will be resilient to the consequences of future climate change—if we start now, obviously.

It is also about what Gabi Hegerl mentioned previously—that is, moving away from single-species plantations and putting in place more biodiverse ones, because that makes the plantations more resilient. More complex systems are also much more efficient at mitigating things such as floods than single-species plantations.

Bob Doris: That is helpful. Andrew Russell, your comment about the survival rates of new saplings was helpful, because my next question is around that. When the Scottish Government, or any Government, looks at abatement measures or sequestration measures, should modelling work on the abatement or sequestration that we capture say that, for every 100 saplings that are planted, there is an attrition rate of 5 per cent—given that there will be slippage because of the climate challenges that we face?

Dr Russell: I think that Ellie Murtagh raised the systemic issue of adoption, albeit in a different context. Taking an initial action is relatively easy, but it is then about ensuring that you get the longer-term benefits, whether that is from tree planting or sustainable drainage systems or whatever the context was—I cannot remember now. The starting is relatively easy, but then there is the boring maintaining bit, and the budget does not seem to be there for that.

Bob Doris: Ellie Murtagh, do you want to add to that?

Dr Murtagh: There is relevance here to the discussion on deer management, which is quite central to our ability to afforest successfully in Scotland. There are opportunities to do that well in relation to nature restoration. There are also economic opportunities, particularly around

agroforestry, where there are strips of trees with livestock grazing in between. However, it is often the case that the cost of such deer fencing is prohibitive. There needs to be long-term, ring-fenced funding for some of those interventions going forward.

Bob Doris: That is very helpful. Whenever I hear the word "deer", I look at the convener to see whether he has been triggered in any way. I see that that has not happened.

The Convener: No, I am not going to blame deer for everything again.

Bob Doris: I have mentioned peatland and forestry. Are there any other carbon-abatement measures that could be impacted by climate change that we should be aware of?

Professor Renaud: I have already mentioned coastal ecosystems. All the ecosystems that are linked to blue carbon are also extremely sensitive to the consequences of climate change. That is mainly from the sea and includes the increase in the temperature of our oceans and acidification.

Bob Doris: This is my final question. Gabi Hegerl might be best placed to answer this one, given her initial answer. Is there a balance to be had between some of those measures and maintaining biodiversity? Gabi, you spoke about reforesting not having to be just about conifers but that there can be a mix of trees and that there can be multiple uses for spaces. My papers say that there might be concerns in relation to whether there is a trade-off between biodiversity and some of the opportunities for carbon abatement. Are there such concerns? Do you have any comments on that?

Professor Hegerl: What I have read indicates that there is more of a benefit-benefit and a mutual influence rather than a tension. As I think that Fabrice Renaud said, forests are more climate resilient if they are more diverse and less uniform.

At the rate at which we are sitting right now, doing something that is good for biodiversity and for carbon storage is better than being guided only by carbon storage. However, it would be good to hear more voices on that.

Bob Doris: This is my final, final question, convener. More generally, are there any risks to our ambitions for biodiversity from our pursuit of meeting carbon budgets that any of the witnesses would like to put on the record, just so that we can be clear about that?

I do not see anyone wanting to answer that, but it was suggested that that is something that we would want to clarify. If that is not the case, that is good.

Dr Russell: That is not really my area, but if we are watering down biodiversity net gain rules simply to make stuff happen and to build things, that seems pretty myopic.

Bob Doris: Okay. Thank you. I see nodding heads in response to that comment.

The Convener: Mark Ruskell, you get the final, final question.

Mark Ruskell: I will be brief, convener. I am aware that there is quite a lot of uncertainty around peatlands and their impact on climate. Do they store carbon or release it? A bigger issue might be blue carbon in the seas and in wetlands. What is the state of the climate science on blue carbon? Are we turning a blind eye to a far greater source of carbon on which Governments could and perhaps should be intervening?

Who would like to offer a last comment on that? As I understand it, blue carbon is not part of the greenhouse gas inventory. Gabi Hegerl?

Professor Hegerl: That is a bit outside of my expertise. I do not know exactly where we are on blue carbon, but it is definitely useful to keep an eye not just on the usual mitigation measures through peatlands and afforestation but on other carbon storages and how climate change affects carbon storage elsewhere.

I would have to look that one up.

Mark Ruskell: Is that not a danger, though, if nobody is looking at it or it is not being adequately considered, because that could throw out our estimates of what is needed? Perhaps it could help us if only we understood it more? I do not know. I think that Fabrice Renaud mentioned blue carbon very briefly in an earlier answer. I will give him the final word.

Professor Renaud: I cannot answer in the context of carbon sequestration for Scotland, because I do not know whether that is considered here. Globally, blue carbon is considered for carbon sequestration; it is something that a lot of countries are working on. In tropical areas, the restoration and conservation of mangrove systems, for example, is gaining a lot of traction, because of the recognition that those systems can protect you against coastal hazards and are the best way to sequester carbon.

However, I know that coastal nature-based solutions are already proven to protect a lot of assets, as the Dynamic Coast project has proven. From that perspective, such solutions have a lot of merit and are worth paying attention to. If we can then add in elements of carbon sequestration, that would be a win-win situation in which we address both mitigation and adaptation at the same time.

Mark Ruskell: Should we be measuring, for example, the carbon impacts of dredging and trawling on the inshore? Is that the kind of approach that we should look at in Scotland? We do not have mangrove forests, but we have seabeds.

Professor Hegerl: That re-emphasizes the point that it is really important to look at both biodiversity and carbon. I think that that has a negative carbon contribution. I would be surprised if it was an enormous one, but that is also terrible for biodiversity. Keeping those two elements close together is really useful. It also means that you avoid losing your assets for carbon sequestration to climate change and to disasters.

The Convener: I suppose that I should have said the final, final, final, final, final question when Mark Ruskell got to the end of his questions.

Thank you for contributing succinctly on all the issues that were raised. It is a complex and difficult subject, and we are very grateful for the time that you gave up to attend this morning.

I will suspend the meeting until 10:20, to allow the cabinet secretary to arrive.

10:11

Meeting suspended.

10:20

On resuming—

The Convener: Welcome back. We turn to our third and final evidence session on the Scottish carbon budget regulations. I welcome to the meeting Gillian Martin, the Cabinet Secretary for Climate Action and Energy, and Scottish Government officials Philip Raines, who is deputy director for domestic climate change, and Julia Burgham Pearson, who is a lawyer.

The regulations have been laid under the affirmative procedure, which means that they cannot come into force unless Parliament approves them. Following this evidence session, the committee will be invited to consider a motion that recommends that the regulations be approved. I remind everyone that the officials can speak during this item but not in the debate that will follow it.

In case anything comes up that relates to agriculture, I remind everyone, as I did at the start of the earlier evidence session, that, in my entry in the register of interests, I have declared that I am a member of a family farming partnership in Moray, where we raise cattle for the production of beef that is sold around the world.

I invite the cabinet secretary to make a short opening statement.

The Cabinet Secretary for Climate Action and Energy (Gillian Martin): Thank you for the opportunity to present the Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025 to the committee. If members do not mind, in the interests of time, I will not use the full title from now on.

As you know, on 21 May, the Climate Change Committee published advice on carbon budgets for Scotland. After considering that advice, the Scottish Government laid the regulations in draft on 19 June to set the carbon budgets in legislation to provide new emissions reduction targets. The five-year carbon budgets limit the amount of greenhouse gases that Scotland will emit over the coming decades up to 2045. The carbon budget levels in the draft regulations have been set at the levels that were advised by our independent statutory adviser, the Climate Change Committee. Although they are pending parliamentary approval, the levels in the proposed five-year carbon budgets demonstrate that the Scottish Government is committed to ambitious but deliverable climate action.

In parallel with laying the regulations in Parliament, the Scottish Government published a statement, in accordance with the 2009 act, that included information on the types of policies that were under consideration for inclusion in the next climate change plan. The committee will be aware that that statement also outlined that we envisage that the delivery of the carbon budgets will involve some variation in the actions and policies that were put forward by the CCC. However, that issue is to do with how to implement the carbon budgets through the climate change plan. I stress that we agree with the CCC on the levels at which to set the carbon budgets up to 2045 to deliver net zero.

Indeed, the CCC made clear its role as an advisory body, rather than a policy maker. The CCC's balanced pathway is based on a modelled emissions reduction pathway that it describes as non-prescriptive but which, in its opinion, is a feasible and cost-effective route to net zero. It is entirely within the gift of any Government that the CCC advises to put forward a different path. That said, we are in broad agreement with all the CCC's priority recommendations for action, although we need to take a different approach on two of its proposals, which relate to agriculture and peatland.

The new draft climate change plan will set out the policies and proposals to reduce our emissions, in keeping with the carbon budgets that are approved by Parliament. In that plan, we will set out the costs and benefits of the policies, and our core principle of a just transition will be

incorporated throughout it. Discussion on the detail of the draft plan will take place in due course. The timescale for laying the draft version of the next climate change plan is dependent on Parliament approving the carbon budgets. I am grateful to the committee for considering the regulations so speedily. I also understand that, following the decision of the committee, Parliament aims to complete its consideration of the instrument in advance of the October recess.

In that scenario, I aim to lay the draft climate change plan before Parliament in around the end of October or the beginning of November, which would be in advance of the statutory timescale for publishing the next draft climate change plan. That timescale will also ensure that Parliament has the amount of time that is required by statute to consider the draft CCP in advance of its being finalised by ministers.

In parallel with Parliament's consideration of the draft climate change plan, we will invite wider views through a public consultation, given the need to bring people with us on the journey to net zero, and we will seek the views of the Climate Change Committee. Ministers will then consider Parliament's views and the other responses that have been received, with the aim of finalising the CCP in this parliamentary session. It is my firm hope that, in doing so, we can send a strong signal that Scotland and the Scottish Parliament are united on the need for climate action and delivery.

I hope that we all agree that the climate crisis is the defining challenge of our generation. Rarely in our lives do we encounter a choice in which the options that are posed will have such a lasting effect on generations to come. That is why I aim to publish the draft version of the next climate change plan as soon as possible after Parliament has approved the carbon budgets regulations.

I am content to take questions.

The Convener: Thank you, cabinet secretary. You and I have discussed this before, and I want to get it on the official record. In March 2024, the Climate Change Committee said that it felt that the targets that had been set were unachievable, which resulted in a certain amount of changing of legislation last year and the Climate Change Committee laying its advice to you on 21 May. As you said, that resulted in you laying your carbon budgets before the committee on 19 June.

My concern relates to the period from now until the end of the parliamentary session. If you lay your climate change plan at the beginning of November, that will be followed by 120 days of consultation. It will probably take at least another 30 days to summarise all the responses. Unless your civil servants work through the night, every night, and every weekend, that process will take a fair bit of time. My maths tells me that that means that, as a Parliament, we will not get to discuss the climate change plan in any detail, following consideration of the public responses, until March, when we will be just about to go into recess for the election. That is exactly where we were five years ago, when the unachievable targets were set. Are you confident that nothing will get in the way of you getting the climate change plan produced and agreed by Parliament by the end of the session?

Gillian Martin: Yes. As was set out, the timeline is within statute. When we received the advice, we had up to three months to lay the regulations. We took a month to do that, because the carbon budgets that were suggested are challenging. We had to make sure that the sectors concerned, and the other portfolios that have climate action at their heart, were able to discuss how we would be able to achieve them and accept the advice.

At the point at which the climate change plan was laid and finalised in the previous parliamentary session, I was in the position that you are in, convener. I felt then that we had enough time to consider the plan. I disagreed with Parliament's decision, to be honest, because I thought that the 70 per cent target was far too challenging; I felt that it was at the extreme end. However, Parliament's view was that we had to aim high. Maybe it is a good thing to aim high, as it means that you accelerate the action to get there.

In my opening statement, I laid out how I believe that the climate change plan can be delivered in time for the parliamentary recess. Obviously, it is up to the committee to decide how it scrutinises the draft plan, the amount of time that it spends on scrutiny and the number of evidence sessions that it has. However, I am certainly confident that the Government has the resources and the team to do that. Over the summer, my team has been working at pace on the draft climate change plan, which is why we are confident that, should the motion on the instrument be agreed to today, we can get going and have the draft plan in front of you by the end of October or the start of November.

10:30

The Convener: I am a great believer in scrutiny by parliamentary committees and in our being given the time to do that—it would be odd if a convener did not say that. Following the 120 days of public consultation, the Parliament must listen to the public and respond to what it has said. My concern is that, once those responses have been collated in a document, the committee will have little time to fully consider them prior to the climate change plan going in front of the Parliament.

I would be very happy if you were able to say to me, “Don’t worry, Edward—it’s all going to plan, it will all work, and there won’t be an unseemly rush at the end of the session before the Parliament breaks up.” That is what I am trying to get you to say. That would give me some confidence, which I do not have at the moment.

Gillian Martin: There are two components to this. First, there is what the Government will do. I pledge to get the draft plan to you in the time that I have outlined—I am confident that we have the capacity in the Government to do that. Secondly, there is what the committee decides to do by way of scrutiny.

You have outlined that we are required by statute to bring forward a draft climate change plan within two months of Parliament agreeing to the carbon budgets, and that is followed by a 120-day period of parliamentary scrutiny. We will then have a maximum of three months to publish a finalised climate change plan. We have worked out our timings. The committee now knows our timings and will be able to undertake its programme of scrutiny.

The Convener: As you said, the committee has shown a willingness to consider the regulations at pace and to get that done as quickly as possible so that there will be no delay in the delivery of the climate change plan. I reiterate that what concerns me is the public consultation. The public may have very strong views on the draft plan—I hope that they do; I hope that they respond in numbers to show that they buy into what is suggested—and it might need to be adapted before it comes before the Parliament.

I have grave concerns about the timescale, which I have now put on the record. I see that Mark Ruskell wants to come in on that issue.

Mark Ruskell: Cabinet secretary, you mentioned your role in the previous parliamentary session. We served together on the Environment, Climate Change and Land Reform Committee, so you will be aware of how things panned out at the end of that session. That committee and a range of other parliamentary committees came to a view on the climate change plan, and Parliament made more than 80 recommendations to the Government. Although the Government reflected on and made a decision on some of those recommendations, a vast number of them were left to the new Government to make a decision on.

Will things pan out in the same way with the upcoming climate change plan? Will it be the case that, although the Government will be able to reflect on some of the recommendations that this committee and other committees make ahead of the election, you will pass many of them on to the next Government, whoever that might be, so that it can make a decision on the final plan and the content of that?

Gillian Martin: All I can say at this point in time is that we have worked out a timeline that will enable us to produce a final climate change plan. One reflection that I have on the previous climate change plan is that, once a new Government was in place in the new parliamentary session, many parliamentarians who had been fully behind the climate change plan and the 75 per cent reduction by 2030 would not vote to support even the most modest of proposals or the smallest of actions.

There is a big lesson in that for us in relation to getting the Parliament to sing with one voice on the challenge of our lifetimes: addressing climate change and getting to net zero. It is one thing to agree on targets, but that must be followed by collaboration and discussion on the action that is required. We are politicians, but we also have a mission. When we set targets and a direction of travel as part of that mission, it is not enough for us to say, “This is what we have to achieve.” We must work together as a Parliament and talk constructively about the actions that we will take to achieve that.

Mark Ruskell: Just to be clear, this committee, and other committees, may make recommendations about the climate change plan, and the Government’s intention is to reflect on all the recommendations and finalise the plan ahead of the next election, so that there will be a cast-iron, agreed climate change plan. There will be nothing for the new Government to do in reopening that plan, and it will be tasked with delivering the actions that are in it.

Gillian Martin: Yes.

Mark Ruskell: Is that correct?

Gillian Martin: We will of course reflect on all the recommendations from the committee. There might be differences of opinion; we do not have to accept all the committee’s recommendations, but we should of course reflect on them. That does not just concern the committees; we should also consider the consultation responses that come back from representatives of the public, of sectors and of all the stakeholders involved. We have to take all that input into account.

I recently had a discussion with someone in the rural economy and agricultural sphere. We were talking about where the locus is for stakeholders. I said that it would be important for people responding to the draft plan who think that there is evidence to submit, or who think that their sector is able to suggest ways to go further, to make that known—my door would be absolutely open. If people in a particular sector think that we have been too conservative in our estimates of what can be done in that sector and bring suggestions

as to where we can boost their contribution, I would welcome that.

We are building in 120 days of parliamentary scrutiny and there is the consultation. We have already had a very useful letter from the committee on some of the responses that it has had, with links to the consultation responses. We are already looking at and following up on those. We have had engagement with stakeholders throughout the process, and we will continue to do so.

I hope that the way that I have operated since taking on my current role is through an open-door policy for parliamentarians—both those who are on the committee and those who do not sit on the committee but still have an interest in discussing proposals that they would like to see in the climate change plan. For me, this whole enterprise is collaboration focused, solutions focused, ideas focused and action focused.

The Convener: I did not say this at the beginning, so I will say it now. There are a huge number of questions to get through and, in the previous evidence session, committee members were extremely good at making their questions succinct. I am not saying that your answers have not been succinct, cabinet secretary, but I encourage everyone to keep to short questions and short answers.

Sarah Boyack: My question follows on from what we have said about the timescale. We already have feedback from our stakeholders through our call for views on the Scottish Government's indicative statement. One key issue that came forward was a lack of confidence among the wider community that the Scottish Government will deliver the policies that are required to meet the budgets.

What do you think is needed in or alongside the upcoming draft climate change plan to build confidence and to get the action that we need so as to meet the carbon budgets?

Gillian Martin: I repeat what I have just said to Mark Ruskell: there needs to be collaboration, and we need to reach out and continue our engagement with stakeholders on where they feel that they can go and what they feel can be achieved. I hope that there will be no surprises when we set out the climate change plan, and that a lot of discussions with stakeholders will already have happened. My officials have certainly been having those discussions over the past year—indeed, those discussions have never stopped.

All the time, I meet stakeholders from all the sectors that have a contribution to make to emissions reduction and have conversations about where things can go further. As you would expect, I also have conversations and meetings with those who are influential in terms of our ability to meet our net zero targets—that is, those from the UK Government. Obviously, there are a lot of areas in the reserved space that I have outlined to the secretary of state, and I have regular discussions with my counterparts in the UK Government about those. I also have interministerial group discussions with my counterparts across the four nations of the UK about the challenges that we all face and the ambition that we all have.

Engagement is key. I hope that the draft climate change plan is as informed as possible by stakeholders who have a drive and ambition to reduce their emissions. In the period of scrutiny, our ears will be open to any amendments to the climate change plan and to suggestions from stakeholders.

It would not be right or sensible for a Government to propose a climate change plan in a silo; it has to be done in collaboration with civic Scotland and other members of the Parliament. It will not only be the Government's climate change plan but the Parliament's climate change plan.

Sarah Boyack: I am also thinking about regulators. We got feedback from auditors and regulators on what would look like a good climate change plan. This committee wrote in March summarising the responses that it had had; key issues were the level of detail on costs and the need for transparency. It is partly about ambition of policy, and about the detail of what will be in the climate change plan.

You said that you are having a lot of engagement and discussions. There is something about having confidence in the climate change plan and what will sit alongside it, so that people can see that action is actually going to happen. What feedback do you have on that?

Gillian Martin: As I said, we are looking at all the responses—the committee helpfully passed them on to me a couple of months ago. We also have our climate change advisory group—I believe that you come along to that, Ms Boyack. We have ramped up engagement in that group's role.

When I took on the Climate Change (Emissions Reduction Targets) (Scotland) Act 2024, I said from the outset that I wanted to have collaboration with and buy-in from all the parties. My officials have reached out to members to provide them with as much information as possible throughout the process. I want to continue that and to have parliamentary engagement. The climate change advisory group's role is fundamental to that as it brings all the stakeholders together.

All I can say is that we will take the feedback, we will listen and we will work with stakeholders and parliamentarians before and after the draft is laid.

Sarah Boyack: Thanks, cabinet secretary. We cannot afford to get it wrong, can we?

Gillian Martin: Absolutely not.

Sarah Boyack: We have to bring it all together and get that stuff happening now.

The Convener: The Climate Change Committee made it clear that a huge amount needs to be done, some of which is devolved and some of which is reserved. How are you getting on with the UK Government to resolve the conflict that there might be between reserved and devolved matters?

Gillian Martin: A lot needs to be done. I will be very interested to see the UK Government's response to the challenges that have been put to it about reaching its carbon budgets, because it is going to have to make a plan to address its legal challenge in that regard.

Looking at some of the sectors involved, I have outlined in summary to Ed Miliband—my letter went out a week or two ago—the areas in which we need to see faster action at UK level to allow the devolved Governments to be able to effectively achieve their goals.

It is a symbiotic relationship. I have said many times that the UK's target of net zero by 2050 is not achievable without Scotland achieving its 2045 target, and vice versa. So—

The Convener: Sorry, cabinet secretary, but is that letter published, or is it a private letter?

Gillian Martin: It will be on the Government's website. We can make sure that you have a copy of it.

The Convener: That would be helpful for the committee.

10:45

Gillian Martin: With transport, for example, incentives are available to the UK Government to encourage take-up of EVs. I was very disappointed, not just because I am an EV driver, when the road tax incentives associated with having an electric vehicle were scrapped. That option is available to the UK Government. Obviously, there was the vehicle emissions trading scheme legislation, which is in the UK Government's gift as well.

Energy systems and markets is probably the biggest area in which I would like to see more action from the UK Government, because that relates to an awful lot of the things that we are going to put forward in our climate change plan, particularly the just transition aspect. The electricity price has to come down. In my view, the electricity price should not be pegged to the gas price. That particular proposal was removed from the review of electricity market arrangements—REMA—consultation, which I think was a mistake. That issue needs to be revisited, as it will make the difference in terms of industrial decarbonisation, and in terms of the domestic heating action that needs to be taken.

We do not want to be in a situation where the price of electricity prevents decarbonisation because that will increase fuel poverty or will mean that there are decisions that businesses cannot take because those affect their bottom line. For example, zonal pricing has now been discounted by the UK Government, but it needs to come forward with proposals. I am not saying anything that my counterparts in the UK Government have not heard directly from me. If not zonal pricing, it needs to consider what it will do, because the price of electricity needs to come down in order for quite a lot of the actions in the climate change plans—not just the Scottish one, but the climate change plans across the four nations—to be affordable.

The Convener: To save you going through the whole list, could you clarify whether the letter lists all the things that are reserved that you think will prevent you from reaching your net zero target by 2045?

Gillian Martin: Yes, but it is very solutions-focused rather than pointing any fingers—I hope that you will find that that is the case. The UK Government knows that it has to take action in a range of areas, because this is not a siloed piece of work; it is a four-nations and, indeed, a global problem that has to be addressed.

The Convener: I agree that there is no point in pointing out problems and not bringing solutions. It is always a question of whether the solutions are workable, and that will be for others to decide. Are the problems in the letter the only ones that you see? Is everything else tickety-boo and online, as far as reserved matters are concerned? Is there nothing else to worry about with regard to Scotland reaching net zero by 2045? Is that what you are saying?

Gillian Martin: No. It is going to be very challenging.

The Convener: I am asking whether you have highlighted all the problems that are reserved issues and that require the UK Government to act to allow us to reach our target by 2045. You have not identified any other problems, apart from the challenging targets that have been set.

Gillian Martin: No. I am not going to use the same language as you or agree to that statement. We must be absolutely clear-eyed and look soberly at the actions that are required in the devolved space. It will be challenging. It will

require a great deal of buy-in, a lot of transformation and a great deal of funding.

I am not going to use the phrase that you have put to me, because that sort of thing is one of the reasons why we have not been able to move further and faster. I mentioned this in my conversation with Mark Ruskell. Even small changes and policy proposals that were put forward in this Parliament early on have not had support from all parties and have not resulted in action.

We should not be saying anything like, "Tickety-boo—that is no problem." It will be challenging, but the potential positive outcomes are worth it in that we will have a more sustainable economy, a healthier environment and more resilient communities. We will have grasped the opportunities of net zero in relation to innovation and economic growth, and I hope that, with action on electricity, we will address fuel poverty in a way that we have not been able to. We will have a Scotland that leads the way on certain technologies associated with net zero that our counterparts, such as Denmark, saw coming well before us and are now world leaders in.

The Convener: We drifted away from where I was trying to get to. I was trying to get to the letter that you said you have written to Ed Miliband that highlighted all the reserved problems that you feel the UK Government has to move on to help Scotland meet net zero by 2045. That is my question, and it is a simple yes-or-no answer.

Gillian Martin: The UK Government has to respond to the Supreme Court judgment. By October this year, we will see what its response has been to the challenge that has been put to it by the court, which I hope will address some of the things in my letter.

The Convener: The next questions will come from Douglas Lumsden.

Douglas Lumsden: Good morning, cabinet secretary. I will stay on electricity generation. The Climate Change Committee assumes no power plants with gas and carbon capture and storage in Scotland. Do you agree with the Climate Change Committee's advice that there will be no emissions from electricity supply in Scotland from 2030 and that there will be no gas plants with CCS in Scotland?

Gillian Martin: You put to me that the Climate Change Committee has assumed—

Douglas Lumsden: It has said that, for example, a new gas electricity power station with carbon capture and storage next to it in Peterhead should not go ahead. Is that also the Government's view?

Gillian Martin: I am not going to comment on a future planning decision. I cannot talk about a particular planning decision.

Douglas Lumsden: But you will have to accept the findings of the Climate Change Committee in the climate change plan or come up with alternatives.

Gillian Martin: It is an advisory body. It provides advice. I do not have to accept the views of the Climate Change Committee.

Douglas Lumsden: Exactly. It has put forward how you would reach the budget, but if you do not accept some of its findings, you will have to come up with other things.

Gillian Martin: Yes.

Douglas Lumsden: Will you rule that out, or can you not rule it out now?

Gillian Martin: Are you still talking about a planning application?

Douglas Lumsden: Not the planning application, the project.

Gillian Martin: A planning application that could come forward.

Douglas Lumsden: You will come forward with your climate change plan at the end of October or beginning of November. Do you say that you cannot have a strategy for electricity generation in there because there is a live planning application?

Gillian Martin: I am not going to be pushed into talking about a particular project that would require a planning decision, but I will say that the advice that is given to us by the Climate Change Committee puts forward its opinion on what should happen in certain areas. We do not have to transpose that opinion entirely into our climate change plan. You are right that, in accepting the carbon budgets that it has set, we need to find a plan to use those carbon budgets.

I made a statement when the advice was received that we do not agree with the CCC's suggestion on livestock numbers. We think that we can go further on peatland restoration than it has projected. We think that we can decarbonise our electricity supply, and we are very far ahead on that already.

We obviously need carbon capture, usage and storage to be built out. We have had some positive news about Acorn, which has been given the support that it needs to come to fruition. It is not 100 per cent support, but we are in a much better place than we were with the previous Government. On that point, I come back to my earlier comments about the economic boost that innovating and proving the concept of technologies will give Scotland. Once we have done that and got to net

zero, we will be able to export that expertise to other countries.

Mr Lumsden, you are right that, when we disagree with the CCC's assumptions or opinions, and the carbon emissions that are associated with those opinions, we need to give alternatives. Those will be in the climate change plan, which you will see by the end of October or start of November.

Douglas Lumsden: However, you cannot tell us today whether you are in favour of gas plants with CCS in Scotland.

Gillian Martin: I have made my position quite clear by talking about the Peterhead station, which is the only project that is likely to go through the planning process. It would not do us any favours if I got into all that and skirted too close to breaking the ministerial code.

Douglas Lumsden: When we look at energy generation, which is key for electricity generation, will the energy strategy be released before or after the climate change plan? The two are directly linked.

Gillian Martin: A number of statements on energy will be coming to the Parliament in parallel with the climate change plan, but I cannot currently divulge what they will be about.

Douglas Lumsden: Will the energy strategy be introduced at the same time as the plan?

Gillian Martin: That is not what I said.

Douglas Lumsden: It is just that we are looking for some clarity. As a committee, we will be looking at the climate change plan, so it would be good if we had an energy strategy at the same time.

Gillian Martin: As I said, a number of energy statements will happen over the next few months. I will not commit myself to timescales, because I need to work with my officials on when they will happen. There will be clarity on a lot of the energy sectors and the Government's policies on them at the same time.

Douglas Lumsden: Okay. As was mentioned, the Climate Change Committee made it clear that electricity needs to be affordable. What role does the Scottish Government have in ensuring that low-carbon electricity is also low-cost electricity?

Gillian Martin: That area is reserved. That point is about the electricity markets that will drive the cost of wholesale electricity. However, tangentially but importantly, one area in which Scotland can play its part in reducing the electricity price is the build-out of ScotWind. We are working with the UK Government on the clean power 2030 action plan in order to develop the transmission infrastructure that will take the green energy that is being produced by ScotWind and a ramping-up of onshore wind. As a result of the efforts of the Scottish economy, particularly ScotWind, there will be a substantial contribution to the green electricity of the whole of the UK.

It should follow that, as the production of green electricity ramps up and the ability to get it on to the grid increases, we will see electricity prices go down. My point to the UK Government is that we need to see some rebalancing action now, because parts of Scotland are still fuel poor. There are policies being put in place as part of the climate change plan whose justness would be vastly improved and whose acceptance by communities and householders would be vastly increased if the price of electricity were to go down. There are industrial decarbonisation policies, but if the electricity price stays at the same level, it will be difficult for industry to decide to electrify its processes.

We need to see action now, rather than the UK Government just making assumptions that the build-out of all those developments that produce large amounts of green electricity is enough to make the price of electricity come down over time. There has to be some action to rebalance the market.

11:00

Douglas Lumsden: Will ScotWind's build-out make electricity prices go down?

I am looking at the round 6 contracts for difference—CFD—prices. The CFD price for Green Volt, a project that you know about, is £139 per megawatt hour, which is based on 2012 prices. Is it realistic that the build-out of ScotWind will drive down electricity bills for consumers across Scotland?

Gillian Martin: I think that I have set out the levers. You mentioned a lever that relates to the auction round, which is a decision for the UK Government to make. It has to make the auction rounds and the contracts for difference more favourable to Scottish projects. I have always said that. I am not quite sure whether that is in the letter that I will send to the committee, but I have certainly made that point in multiple letters to the UK energy minister.

Douglas Lumsden: How would you make the auction rounds and contracts for difference more favourable for Scottish projects? Would it be done by increasing the price?

Gillian Martin: There has to be a price associated with the auction rounds for Scottish projects to make them investable. That point gets put to me by developers all the time. They also

make that point to Michael Shanks, the UK energy minister.

Douglas Lumsden: Would that not mean more subsidies and higher bills?

Gillian Martin: No. If it is more likely for them to bid in auction rounds, that would mean the successful build-out of ScotWind, with all the licences reaching development.

I am not quite sure what that line of questioning adds to the carbon budget discussion.

Douglas Lumsden: We will agree that it is clear from what the Climate Change Committee has said that we need to get electricity prices down.

Gillian Martin: Yes, and I agree.

Douglas Lumsden: I am only trying to understand what role the Scottish Government has in driving down electricity prices.

Gillian Martin: The Scottish Government puts forward its opinions and ideas to the UK Government about how it can reform the market. Unfortunately, our proposals for a social tariff have not been accepted by either the previous Government or, so far, the current UK Government.

We also want to see a decoupling of the price of gas and electricity, because it is a false coupling. That would make all the difference.

I would like Scotland to have control over all those levers, Mr Lumsden. I would like my answer to you to be that Scotland can have its own electricity market and all the levers of energy policy at its disposal. However, we are a devolved Government and energy policy is largely reserved. Therefore, the only thing that I can say in answer to that direct question is that the Scottish Government must make its views known to the UK Government, which has control of the levers.

The Scottish Government's views on these issues are mostly in line with those of the industry.

Kevin Stewart: My questions are mainly about transport but, before I get on to that, in your answers to the last round of questions, you made the very important point that, to get cheaper electricity for customers across Scotland now, the wisest thing that the UK Government could do would be to decouple electricity prices from international gas prices. In its responses to you, has there been any glimmer of hope that the UK Government is considering that?

Gillian Martin: Sadly not, Mr Stewart. The review of electricity market arrangements—REMA—was proposed by the former Conservative Government, and it ruled out the decoupling proposal. When the Labour Government inherited REMA, it decided not to put the decoupling proposal back in. It decided to go from a position of saying, "We are where we are," rather than looking at some of the proposals that could have been brought back in, which I found very disappointing. My view—it was the view of countless predecessors in this portfolio—is that decoupling should have been looked at seriously. When you explain the situation to people, they do not understand why electricity and gas prices were coupled in the first place. In effect, what that means on the ground—I will not be telling Mr Stewart anything that he does not know—is that communities that do not have access to the gas grid and have electric heating are paying four times as much as they would if they had a gas boiler.

That also means that households will not opt for electric heating. Clean, green electric heating is off the table for most households. When I was putting in a new boiler a few years ago, I wanted to make my contribution and do without a gas boiler, so I phoned up to find out about the cost of electric boilers. There is no problem with the cost of the boilers—the cost of the installation and of the boilers is probably exactly the same as for gas boilers. However, when it came to the cost of running the electric boiler to heat my 1930s granite house, people were practically laughing at me on the phone. That is what we are dealing with.

If there was a rebalancing of the electricity price, we would start to see people having the option to move away from gas at the point at which their gas boiler was coming to the end of its life. Those communities that are in extreme fuel poverty, particularly in the Highlands and Islands, many of which do not have access to the gas grid, would be lifted out of fuel poverty. It does not make sense to people that they cannot utilise the green energy and electricity that we produce. We all talk about Scotland producing green energy in abundance, and yet people in the geographical areas that are producing that energy look out at the wind farm outside their window and cannot afford to put their electric heating on. There is a fundamental unjustness and unfairness around the issue.

That aside, with regard to climate change, through this false economy, we are preventing householders from making a choice that would allow them to participate in reducing their emissions and keeping their families warm.

Kevin Stewart: Thank you for that. I hope that, at some point, there will be a glimmer of hope around that change. I should probably declare an interest, because I live in a mainly granite flat with electric heating. When I tell folk what my bill is, their eyes water, as mine do when I get the email with my bill. I agree that the cost is definitely off-putting.

The Scottish Government has pledged to review its target to reduce car kilometres by 20 per cent by 2030. The Climate Change Committee's model says that, even with a degree of modal shift, the number of car kilometres will not fall between now and 2035. Is it still worth while having some kind of car reduction target?

Gillian Martin: I do not want to step on the toes of my colleague Fiona Hyslop, so I will outline to Parliament her thinking on that. It points to the importance of cross-portfolio working that I work so closely with Fiona Hyslop on this and on dealing with the reality of what it means to reduce car usage. Before I go into what Ms Hyslop has said, I note that, in rural areas in particular, a lot of people rely on their cars for their everyday lives—for getting their kids to school, caring for elderly parents and accessing their jobs—where there might not be a suitable bus route or any rail infrastructure. With regard to the justness of the transition, we need to take into account Scotland's geography and the demographics of the people we are talking about.

However, it is perfectly reasonable to say that in cities, where people may have access to better public transport and there are facilities and services within walking distance for those who are able to get there, we could reduce car use. As we have seen, some councils have made decisions on the types of cars that they allow into their city centres—Aberdeen City Council is one example.

On 6 March, the Cabinet Secretary for Transport set out that she is revising the 20 per cent target for car use, taking into account the UK Climate Change Committee advice on the carbon budgets and informed by other relevant evidence, to develop a new longer-term target, the timelines for which are aligned with the climate change plan, and which supports the net zero target.

I point to some of the things that Ms Hyslop has talked about, in particular around EV use. We recognise that, given Scotland's geography, many people will always need cars. I include myself in that, as someone who has to travel around a rural constituency, but I have an EV. Scotland has one of the most comprehensive charging networks in the UK and, through Ms Hyslop and her officials working with the private sector and the publicly owned charging network, there has been a vast increase in the amount of publicly available chargers in Scotland.

A total of £65 million has been invested to support the development of public EV charging, and we met our target for 6,000 public charge points early: two years ahead of schedule. There are still more charge points appearing; members may see them on their commute home. Dundee has particularly good infrastructure for fast charging, which is a real boost to EV drivers.

A lot of pilot studies have been done on the infrastructure around tenements and flats, which do not have access to their own chargers. In addition, we still have grants available for households that can put in their chargers—such grants were, sadly, scrapped in the rest of the UK. Again, that is another lever that is available to the UK Government; we have kept the subsidy scheme and the grants associated with that in place.

We are the only nation in the UK that has an interest-free loan scheme not just for new EVs but for used EVs. That is very attractive but, as a game changer for the take-up of EVs—I hope that Ms Hyslop agrees with me on this—I would like large employers in Scotland to think about offering salary sacrifice schemes to their employees. That would make EVs very attractive to people; they would almost be buying a car tax free, with a 40 per cent reduction on the car through a salary sacrifice scheme. I think that that would lead to a vast improvement in the take-up of EVs.

Kevin Stewart: On the subject of EV charging, I represent a city centre constituency where it is quite difficult for some householders living in flats and other places to charge their vehicles; they have to rely on public chargers elsewhere. I know that there are currently pilots in certain areas to improve the way in which charging can be accessed in highly built-up areas where folk have no driveways and there are multiple properties.

I know that you likely will not have an answer to that just now, but will the Government—the transport secretary, yourself and others—consider looking at setting out regulations and standards to ensure that we get that right across the country. Some local authorities are doing or allowing certain things while others are not, and that is quite frustrating for many folks who want to make the change to EVs but canna rely on the public charging points and need something quite near their door.

11:15

Gillian Martin: That is a sensible point. As you would expect, Ms Hyslop, Ms Robison and I meet the Convention of Scottish Local Authorities regularly to talk about net zero, because so many of the actions will have to take place at local authority level.

Standardisation of charging points is important, because it will make it easier for the driver and they will not have to have multiple apps. The number of apps that I have on my phone for different types of charging makes it quite confusing.

You make a good point and I will take it back to our discussions with COSLA.

The cross-pavement charging pilot is also important, because that has been a real sticking point for equity of access. You should not have to have your own home or driveway to be able to access charging. People like to park their cars outside their own homes, so it is also a barrier—they do not want to have to find a charger half a mile away and leave the car overnight somewhere that they cannot keep an eye on it. There are obviously risks to the vehicle. The pilot is important, and I will certainly take your points back.

Kevin Stewart: I want to move on to talk about hydrogen, which will probably not surprise you, cabinet secretary. The Climate Change Committee says that hydrogen and other low-carbon fuels will have little role in transportation, and that electrification will dominate, even when it comes to heavy goods vehicles. I disagree with that and we can see throughout the globe that others also disagree with it, because some countries are making massive investment in hydrogen, particularly in the use of hydrogen in heavy goods vehicles. Do you agree with the Climate Change Committee? I reckon that, if you do, you will be in deep trouble with one of your constituents, Dick Winchester. Do you think that we need to utilise hydrogen to its utmost, particularly for HGVs and heavy lorries such as the bin lorries in Aberdeen, for example? Do you think that hydrogen has a part to play in those big vehicles?

Gillian Martin: Dick Winchester will be delighted to be mentioned in a committee meeting, I imagine.

Kevin Stewart: I am sure he will.

The Convener: That is twice. We do not need to do it a third time.

Gillian Martin: Ms Hyslop is also working on HGV decarbonisation pathways. We feel that we can do an awful lot more in the decarbonisation of transport.

The CCC might have been a bit too cautious in its assessment of the use of hydrogen. Not only is hydrogen a growth sector in Scotland, but it has the potential to be a real economic boost to Scotland in terms of how we use it domestically and also how we work with other countries to help them to decarbonise.

Even if the build-out of the grid infrastructure as part of the clean power 2030 action plan was to reach the levels that the UK Government and the National Energy System Operator have stated, it will still not have the capacity to take all the green electricity if we have a complete build-out of ScotWind and all the other developments. The most obvious thing to do with that additional surplus electricity is to make hydrogen from it.

We are already starting to see interest in the Grangemouth site. We are also seeing successful hydrogen allocation round 2 applications from developments in Scotland. However, there is a big role for hydrogen in the decarbonisation of industry as well as transport, as you point out.

This is one of the areas in which we have to reach for the stars, to be honest, because the more that we can produce and use green hydrogen, the more likely it is that we will be able to decarbonise high energy usage in food production and whisky production for example. We are already seeing whisky distilleries shifting from natural gas to hydrogen in pilot projects, which is exciting.

As the UK Government negotiates with the European Union on the arrangements about the potential hydrogen backbone, we will have the ability to have more electrolyser manufacturing in Scotland, although there is already a substantial amount of that here. There are big gains for the agriculture sector, as well. Hydrogen can and will play a big part in decarbonisation.

Kevin Stewart: I have one final brief question. I have been involved in trying to develop hydrogen in Aberdeen for many a year, and I want to see greater investment in Scotland in hydrogen. One of the inhibitors to that investment has been the UK Government's failure to change hydrogen transport and storage regulations. There have been promises galore that that will happen. Is there anything in sight from the UK Government to suggest that those regulations will be changed to make investment more viable?

Gillian Martin: There has been movement in that space—largely, I think, due to prompting from voices in Scotland saying that that has to happen. There has also been influence coming from other countries that want to import hydrogen that is made not just in Scotland but in the wider UK. However, it is principally Scotland that needs the standards to be bottomed out as part of the plans to export hydrogen. I am very excited about its export, but I am particularly ambitious about its domestic use. Hydrogen is not a silver bullet—there are no silver bullets—in addressing climate change. It requires myriad solutions, and hydrogen is part of those solutions.

The Convener: There are some follow-up questions. I will flag this up before I have to start being a little bit more forceful: we are less than halfway through the questions, yet we are more than halfway through the time. Cabinet secretary and members of the committee, I ask that you bear in mind that short questions and answers are obviously best. There is a short question from Douglas Lumsden followed by a short question from the deputy convener.

Douglas Lumsden: Mine was covered by Kevin Stewart.

The Convener: Okay. We will have a short question from the deputy convener.

Michael Matheson: I want to stick with the theme of the electrification of heavy goods vehicles, because I was quite struck by the evidence that was provided by the CCC on that area. The CCC specifically stated that, by 2030, it expects 6 per cent of our HGVs to be battery electric. By 2045, the committee expects, if I am reading its publication correctly, 84 per cent of HGVs to be battery electric.

I am not going to get into whether it will be hydrogen or battery electric. I suspect that it will be more battery electric than hydrogen; that is just where I think the technology is.

I find the timescale for those figures to be completely unachievable, which I think is due to two factors. One is that, as it stands at the moment, we do not have a grid infrastructure to build out sufficiently on electric car charging facilities. There are constraints across the grid; we cannot get new charging points put in because there is no capacity, so I do not think that it will be delivered. That is one reason that will constrain us.

The second reason is that it will involve a huge amount of capital investment for companies to turn over their vehicles in that period of time. If we look at what happened with electric cars, for early adopters, they were very expensive—and they remain expensive, although the CCC is saying that price parity will be achieved between 2026 and 2028.

It is fine in theory, but, in practice, I do not think that it will be delivered, and if it is not delivered, what is the alternative?

Gillian Martin: I am not Cabinet Secretary for Transport, so I do not have the detail on the intricacies of whether electrification or hydrogen is more attractive for the changeover of vehicles. However, I know that Ms Hyslop has been working with the sector in readiness.

The heavy goods vehicle market readiness fund was launched in July, with £2 million of support to be provided to the HGV sector over the next year to reduce the complexities around the transition for fleets in Scotland in the short term and develop market readiness for accelerated future uptake of zero-emissions vehicles.

The infrastructure issues that you put to me are of course salient, and we have to look at the barriers that are in place and do what we can to address those. Notwithstanding that, however, I think that the carbon footprint associated with goods and services, and questions of how goods are delivered and how the supply chain operates, will become even more important to consumers. For large supermarkets, it will become important to have ambitions in that regard, and that is only going to ramp up over time.

You mentioned the grid infrastructure. Another issue with that, as I mentioned, is the cost of electricity. The market arrangements have to be reformed to make it attractive for firms to swap over, largely from diesel, to any type of electric fuelling.

There are a number of moving parts in all of this. Yes, it is going to be difficult, and you might disagree with the projections that the CCC sets out, but we have to work with the sector and support it as much as possible in order to be able to look at how we take down the barriers at both UK and Scottish level. That is what Ms Hyslop is trying to do.

The Convener: Mark Ruskell has some questions.

Mark Ruskell: Cabinet secretary, you mentioned the challenge of securing a majority in Parliament for some relatively simple measures to tackle climate change. One policy for which you had, and still have, a majority is the proposed regulations on upgrading properties at the point of sale, as part of the heat in buildings bill. That policy was lauded by the Climate Change Committee, which suggested that it would be a template for the rest of the UK. Scotland was leading on that, and you had a majority for it. Is it still possible to meet the low-carbon heat objectives without some form of mandatory requirement?

Gillian Martin: First, as a caveat, I note that it is Màiri McAllan who is putting forward the heat in buildings bill, so it is for her to answer on the detail of what is going to be in it. She is working on that now.

Is it possible? Yes—I think that it is. When I, or specifically my junior minister, had responsibility for the heat in buildings policy, I was keenly aware of the warnings that fuel poverty might increase as a result of some of the triggers that were mentioned in respect of the previous draft bill.

I know that Mr Ruskell will not agree with me on this, but I had to think about the impact that some of the proposals would have on householders. I highlight the point-of-sale issue as an example. When I was working part time, had two small children and was paying for childcare, my experience of buying a house was of scraping all my savings together and begging, borrowing or stealing—well, not stealing—for deposits and lawyers' fees. The thought that I would also have had to find money within a very short time to change the heating that was associated with a house that I was barely scrimping everything

together to buy would have been dismaying, and I think that that would meet with a lot of dismay from people in general. Buying a house is probably the most financially stretching point of people's entire life—and that worried me. I worried, too, about what it would mean for people getting mortgages.

11:30

Ms McAllan is now looking at the heat in buildings bill, and she will take forward what is going to be in it. I guess that it comes down to the same challenge as we always have in drafting legislation: is it better to have carrots rather than sticks? If sticks are used, what will be the unintended consequences? I was worried that the unintended consequences of the sticks, the triggers and the compulsions involved would be an increase in fuel poverty at a time when we have a cost of living crisis. Putting in sticks also worries me when there is a high electricity price that is still pegged to the price of gas, as we have mentioned.

There was also the issue of someone having to make this sort of outlay at a pivotal point in their life when they are financially stretched. That was my thinking; Ms McAllan may take a different view, but it is up to her to put that forward.

We have many schemes that allow households to make decisions on the type of heating that they put in and which support them with grants and loans; indeed, the offer is probably the most generous in the whole UK. However, I come back to my fundamental point that we need to see action on the cost of electricity, because that will be the game changer for households when it comes to making decisions about decarbonising their heating.

Mark Ruskell: The regulations in question would have kicked in after a year, so there was time to resolve the issues around the electricity market that you have talked about. Are you saying, in effect, that the decision whether people can or cannot afford to put low-carbon heating in place is one for the market and that the market will sort it out? The CCC's projection is that, from the 2030s onwards, the market will expand. Are you saying that there is no real role for regulation in that and that it will just naturally happen that every single house in Scotland will shift towards low-carbon heating?

Gillian Martin: We have the new-build heat standards, so we already have regulations in that space. With existing homes, however, I was worried that compulsions would mean that people could not afford to do the work. There is massive expense associated with it.

Mark Ruskell: At the point of sale.

Gillian Martin: You say that I would have had a year to persuade the UK Government to change its view on reform of the electricity market, but I have been trying for nearly three years to get it to do that. Indeed, my predecessor was encouraging it to change the electricity market for years. I really do not think that the UK Government would have said, "Oh, well, there are triggers in place in Scotland now, so we need to step up and change the electricity market in order to lessen some of the fuel poverty implications."

That reform needs to come now, and I have been continually pressing the UK Government to bring back some of the mechanisms that were discarded in the REMA process. For example, it has discounted zonal pricing and the decoupling of gas and electricity, which would be the major game changer for people and the lever that would make it attractive for households whose boiler has reached the end of its life to switch to electricity or get a heat pump.

We also have to remember that heat pumps will not work in quite a lot of the housing stock in Scotland. I live in such a house—and, believe me, I have had people in.

We need to do what we can to support through grants and loans people who want to make such a change. We already have a good programme of work; we might need to ramp it up, but that will be for future budget decisions.

The fundamental game changer when it comes to the decarbonisation of heat is lower electricity prices, and the market will be created—and boosted—by such an intervention at UK Government level. After all, it is not just Scotland but the whole UK that will have to decarbonise heat. We are talking about the UK's 2050 targets, too, and its response to the Supreme Court judgment, under which the UK Government has to bring forward what it is going to do.

It is perhaps not universally popular, but I am a big believer in blending a percentage of hydrogen into the gas grid as a medium-term measure. Gas boilers are the majority solution for household heat. We could put 10 or 20 per cent hydrogen into the grid. The concept has been proven by Scottish Gas Networks, which is testing 100 per cent hydrogen. It is also proving that it can do blending.

We come back to the issue of multiple solutions. If we have an onerous solution that is a one silver-bullet-type situation, we will not have buy-in from householders and we will not meet our net zero objectives. We need to make it easy and cost effective for people. I think that reform of electricity wholesale prices is the game changer that will happen.

I leave the detail of the heat in buildings bill to Ms McAllan to take to Parliament.

Mark Ruskell: Will the exact balance of actions that the Government can take during the next five-year carbon budget be forthcoming in the climate change plan?

Gillian Martin: Yes—of course.

Mark Ruskell: You have rejected regulation. There is now a heavy reliance on the UK Government making decisions about the wholesale price of electricity, and other stuff may or may not happen. Will all those policy options be spelled out transparently in the energy strategy and the climate change plan, so that we can see what the impact will be?

Gillian Martin: I have said before in relation to reserved and devolved powers that all the levers at UK level are very important in the context of our climate change plan. They always have been, but we have not seen action in the five years to bottom out some of the levers, particularly in electricity, ahead of this climate change plan. We have to keep on making the argument.

The UK Government is now coming to the point where it has to respond to a judgment at Supreme Court level by saying what it is going to do to meet its carbon budgets. It probably has a lot more to do to decarbonise electricity in England, but Scotland has already largely done that. It has that headroom, but that will not be enough. Decisions will have to be made on bringing down the price of electricity so that, for householders, we can eradicate fuel poverty. North Wales has a real problem with fuel poverty, too, so I have a lot of common cause with the Welsh Government. We have to look at everything in the context of reserved and devolved powers.

Mark Ruskell: Are you open to listening to what the air-source heat pump sector is saying about the cost of electricity and the effectiveness of its technology? I see a huge amount of misinformation and lobbying around the heat in buildings bill to, in effect, portray air-source heat pumps as being highly expensive, particularly in the context of the electricity bills that many households face, but that does not match the reality of the technology that is being installed in Scotland.

If the sector comes to you and says, "There are some assumptions in your climate change plan and in the heat in buildings bill that are not right. We think that we can go further with the technology that we have"—

Gillian Martin: I am completely open to that.

Mark Ruskell: We have the industry coming into Parliament tomorrow to talk to MSPs about the misinformation that is out there. I am concerned that that has perhaps influenced Government policy in a way that has led you to reject the advice not only of your officials, initially, but of the UK Climate Change Committee.

Gillian Martin: I am completely open to listening to how sectors can go further and faster. The vast majority of the people I know who have an air-source heat pump installed are happy with that. For some, it has been an absolute game changer. I have constituents who get in touch about things that have perhaps not been installed to the standard that they would have expected, but that is the same for any kind of work that is done in someone's house.

I do not want to pre-empt what Ms McAllan is going to bring forward in the heat in buildings bill. I do not want to put words in the mouth of someone who is working very hard with us to make sure that the bill dovetails into the climate change plan. As with everything, if there were innovations or improvements in how things can get done that would make it more attractive for households to take on the technology, that would be great news. The market is growing, but I disagree that there would not be unintended consequences of compulsion on some of this.

The Convener: This is the second warning that questions need to be succinct. I have the very last question and I will not exclude myself, so please keep it short.

Bob Doris, you are coming on to a very interesting subject.

Bob Doris: No pressure then, convener.

The Scottish Government is clearly not required to follow all the advice of the Climate Change Committee, which is relaxed about that as long as there is a balanced pathway to net zero. One area in which there is variation is the policy on livestock numbers, because there is no policy to reduce livestock numbers in agriculture in Scotland. Livestock numbers are falling anyway—there is a longer-term pattern in relation to that. To what extent does the Scottish Government still rely on livestock numbers falling as part of its move to net zero?

Gillian Martin: We fundamentally disagreed that we should have a policy of reducing the herd and livestock numbers more generally. I will set out not just my thinking but the Cabinet's thinking. I obviously do not make these decisions in isolation; I liaise with the sector and with my Cabinet colleagues, particularly in the rural economy space.

My issues with the policy of having a reduction in the herd are manifold. The implications for the rural economy of not having a meat production sector in Scotland are stark. I do not want to see

an end to livestock farming in Scotland; I want meat to be locally produced to high standards of welfare and to be locally sourced and produced with a lower carbon footprint. We are working with the agriculture sector to reduce the emissions that are associated with the life cycle of the beef herd. That has been worked on thoroughly, particularly in relation to reducing methane emissions.

I disagreed with the assumptions and assertions that were made about what land could be used for if not for sheep grazing. Anybody who farms in mountainous and hilly areas would say that it is not suitable for crop growing—that is just a fact. You cannot displace sheep farming with crop growing. You could not harvest crops, so the land would not be suitable.

We also have to recognise that people in Scotland still eat meat. There is a carbon footprint associated with everything that we eat, including the vegetables that we import in winter. People should not really be eating strawberries in December, because heaven knows where they have come from and how many food miles are associated with that—

Bob Doris: I apologise for cutting across you, cabinet secretary—I am just minded that the convener has told me to keep it tight time-wise. That is all really helpful. The Climate Change Committee is relaxed about all of that as long as Scotland makes its own balanced pathway to net zero. My underlying question was whether there is any modelling work to show that livestock numbers are naturally falling as a matter of course. Has that been taken into account in the Scottish Government's modelling work in relation to its net zero ambitions?

Gillian Martin: We do not want to make assumptions based on the trajectory of an industry having less production. We want to work with the industry to make sure that its production is as low in emissions as possible.

Bob Doris: That is really helpful, and it leads on to my next couple of questions. The Climate Change Committee said, "Okay, the Scottish Government doesn't want to see that trajectory in relation to livestock numbers, but there are other options out there that could be exercised to have a balanced pathway." The CCC did not recommend any individual approach; instead, it has suggested a kind of pick-and-mix approach. For example, car kilometre reductions were modelled at 6 per cent, but the CCC advised that that could go up to 8 per cent, and it also mentioned scrappage schemes for cars and heating. There is a variety of other options that have not been triggered yet.

How would the Scottish Government seek to make up some of that? If we do not take action in one area—for very good reasons that you have set out on the record—what actions can be taken in another area to balance things out?

11:45

Gillian Martin: Our thinking in the four weeks that we took to decide whether we followed the carbon budgets was very much in that space. If we were not going to take the advice on livestock numbers, where was the reduction going to come from?

We have looked at a couple of areas, such as the ramping up of ambition on decarbonisation of transport as well as on peatland restoration and the planting of trees. In that respect, we have been working with our rural economy colleagues on the associated whole farm plan, and we have been valuing—and, indeed, funding—some of the efforts to increase biodiversity and reduce emissions. That work was going on anyway, but we wanted to look at those areas in that particular light.

The issue is the time associated with peatland restoration, the fruition of carbon sequestration and stopping the carbon leaking out of depleted peatlands. Obviously, that sort of thing takes a lot longer—you cannot do it in five years. However, we have looked at where we have done quite a lot of restoration and at areas where we can ramp things up and give more certainty in terms of the policy direction on peatland rewetting. It will mean that people will not be saying, "We don't know whether this activity will be funded year on year"; there will be a trajectory of certainty in policy. I have also pointed out some of the areas in Ms Hyslop's portfolio where action on transport decarbonisation is being ramped up.

Bob Doris: That was helpful. My final question is about—

Gillian Martin: Phil Raines has just reminded me of a third sector that I had forgotten about: industrial decarbonisation.

Bob Doris: Thank you, Phil.

My final question is specifically about peatland. I am not looking for any details just now—it is a wider point. If less land is being given up for forestry or peatland initiatives because more land is still being given over to agriculture and herds of cattle, does that create an issue? Will there still be enough land to do all the sequestration and abatement work that the Government is seeking to do? Could there be a land issue there?

Gillian Martin: There is much degraded peatland that has not been dealt with so far, and a huge amount of carbon is being emitted by that peatland. We have about 2 million hectares of peatland in Scotland, and 70 per cent of it is degraded. If we were able to address that, or at

least some of it—the majority of it—that would have a positive impact on nature and would make a difference to the amount of carbon that we are taking out of the atmosphere, as well as to the longer-term natural carbon-sink infrastructure that we have.

Bob Doris: That was helpful on the issue of peatland. You are saying that there is still a lot out there for us to get working on instead of worrying about land supply.

Are there any issues with forestry?

Gillian Martin: You will hear differing views on that, which I suppose brings us back to the point that I made to Sarah Boyack about collaboration with sectors. We need the right planting in the right place with the willing partners that we have. I have seen, in my constituency, well-managed planting on farms; indeed, it is often better managed than some of the not-so-well-managed pine plantations that we see, with indigenous trees alongside the production on those farms.

What we need to do—we are already doing it with the agriculture bill and the whole farm plan that Ms Gougeon leads on—is to work out how we value the work that is already done in farms and land management and to communicate the benefits of the types of planting that have been done for the bottom line and for the health of a farm. Recently, someone in the sector put it to me that some very small farms do not have the headspace to look beyond their production, because they are one or two-person businesses. We need to be able to assist those farmers to make decisions about what to do on their farm that is not onerous for them. I thought that that was a very good point.

Bob Doris: I do not want to misinterpret what you are saying, cabinet secretary. We will discuss later the evidence that we have heard. I think that the Scottish Government is saying that some have said that there could be issues with land supply for forestry, but your belief is that, working closely with the agriculture sector, there are ways to mitigate that and to make sure that there is plenty of supply. You are not spelling out the details today, but is that the message that you are giving the committee?

Gillian Martin: The details will be in the climate change plan. I do not have the details with me—we have not published the draft plan yet; we are bottoming it out.

Scotland is already exceeding a lot of its targets for tree planting anyway: the latest figure is that Scotland produces about 70 per cent of the tree planting for the whole of the UK. We are already punching well above our weight in that respect, although we still need to do more. However, it needs to be the right planting in the right places, working with partners who see the benefit of that planting.

Bob Doris: Okay.

I can infer from your previous comments what the answer is likely to be to this final question. The indicative statement differed from the advice of the Climate Change Committee on peatland restoration. Can you elaborate on that? Should we expect to see far greater savings, or lesser ones, from peatland restoration, and what are those assumptions based on?

Gillian Martin: We think that we can go further. I will not be able to set you up with a lot of detail on that, because I need to discuss it—we are discussing it—ahead of the draft plan being laid. Mr Fairlie has responsibility for peatland restoration.

When I asked all the cabinet secretaries and ministers where they can go further, peatland restoration was one area in which there was Government agreement that we could do so. It is an area in which Scotland has an advantage. The geography of Scotland has an advantage. It is a double win: reducing the carbon leakage and producing carbon sinks.

The Climate Change Committee wants to see a lot of short and medium-term actions. The first carbon budget is really challenging because a lot of the action associated with peatland restoration will mean that carbon reductions come in the second, third and fourth carbon budgets.

The Convener: I am going to be the bad guy now. We have six questions and we are going to get through them. The deputy convener has the next batch. I will cut you short, cabinet secretary, if I think that you are overexpanding on your answers.

Gillian Martin: I am happy to be briefer, as long as people do not say, “Well, she never talked about this,” or, “She never talked about that.” I will try my best to be succinct.

The Convener: Trust me—we will say that anyway.

Michael Matheson: On the decarbonisation of industry and the fuel supply, the CCC has suggested that about two thirds of industry will be decarbonised through electrification and that about a fifth of decarbonisation will come from hydrogen and the use of CCS. Is that an accurate reflection of how industry and the fuel supply sector will be decarbonised, and has the CCC got the balance right in its advice?

Gillian Martin: That is the assumption that the CCC is making now, in the current conditions, although it may change with some of the market reforms that we would like to see. There might be

a bigger role for electrification, but everything ties back to the cost of electricity. If we do not see reform in the price of electricity, there might be a ramping up of some of the other technologies instead. The CCC gives advice to the UK Government on the electricity price and on what it needs to see to prompt action from the market. I hope that its projections are right, because there is a big role for electrification, as it is probably the simplest transformation of technology that can take place.

We know that we are going to have a grid infrastructure that has more capacity and that we are going to have excess electricity. I disagree with the projection of a 5 per cent increase in hydrogen, as I think that it will increase by more. I am more positive and ambitious about that, but I am also mindful that there has not been the action on the price of electricity that I would have expected to come out of REMA. It has been a missed opportunity. I am talking not only about the current Government's decision on it, but about all the things that were thrown out of consideration by the previous Government. The issue needs to be looked at again and addressed.

A lot will depend on price. Businesses have a bottom line and they make investment decisions based on that bottom line, thereby making themselves competitive. However, they also make decisions based on their public reputation. It goes back to the point that businesses are under a great deal of pressure from their customers to decarbonise. If they access Government funding, there are conditions around that.

Michael Matheson: Given that industry is our third-biggest emitter of carbon, what is the Scottish Government doing, policy-wise, to incentivise industry to decarbonise its processes and how it uses energy in different forms? I think that five different areas were suggested by the CCC. What are we doing to incentivise industry to ensure that it operates in a more sustainable fashion and that it decarbonises the energy that it uses?

Gillian Martin: We have funding streams associated with industrial decarbonisation. The Scottish industrial energy transformation fund is a consistent budget line. At every budget opportunity, I will make the pitch for that to continue, and, given that we have a climate change plan that will be reliant on industrial decarbonisation, I may even pitch to ensure that that funding increases. We have also pledged £80 million to support the Acorn project, which will be fundamental in industrial decarbonisation through capturing the associated carbon, as will the Scottish cluster.

We are all familiar with project willow, which is the incentive to come into the Grangemouth industrial cluster, and with the efforts that Scottish Enterprise makes to attract low-carbon and emerging technologies to be based in Grangemouth. We have £25 million of Scottish Government money associated with that project, to help it to get to final investment decision status so that it can then access the money that has been pledged by the UK Government as part of the Grangemouth deal that both Governments have made.

There has been a lot of incentivisation. Government money being associated with low-carbon technologies is an incentive for companies to diversify.

The convener is asking me to keep it short, so I will leave it there.

Michael Matheson: I will leave it there as well.

The Convener: That is very kind of you.

Douglas Lumsden: I will be brief, too. My questions are on engineered removals. How confident is the Government that it can deliver technologies such as direct air carbon capture and storage? Do we need a plan B if they do not work as we want them to?

12:00

Gillian Martin: The CCC has said that negative-emission technologies are going to play a vital role in offsetting residual emissions in certain areas, and I would also point to the climate change plan update in 2021, in which further research was pledged into the scale and timescales for NETs in Scotland. This is an area of innovation in which Scotland could have a real economic and reputational boost. Thinking about investment in the negative-emission technologies, I would suggest that, if they were produced in Scotland, the sector could become world-leading, and we could be exporting those technologies to other countries, too.

I have mentioned Denmark; I was told recently that Copenhagen had gone further by becoming a net zero city. Out of that policy direction came innovation and companies that are now the experts in the field and which are exporting their expertise to China and Japan. If we stand by those who are developing NETs in Scotland and factor them into our climate change plan, we might have a similar situation, and we could be exporting that technology and innovation to the rest of the world, as well as contributing to carbon capture.

Douglas Lumsden: Do we need a separate plan if it turns out that those technologies do not actually work—although we hope that they do? After all, they are still at an infant stage.

Gillian Martin: Do we need a separate plan? We always need a plan, and I will set out the

figures and projections that we have identified for NETs in the climate change plan.

Douglas Lumsden: Okay.

The Convener: Mark, I was not sure whether you wanted to ask a follow-up on this one.

Mark Ruskell: No, I think that we can just move on.

The Convener: That is perfect. Sarah Boyack has the next question.

Sarah Boyack: I want to ask about energy-from-waste emissions, which have gone up. I know that new plants are being built, and are getting planning permission, but I want to focus on the connection with the CCS infrastructure and with heat networks. In my region, we have the Millerhill project and the Shawfair development, with thousands of houses connected to a heat network that is powered by energy from waste. However, levels of waste are still going up. How can we get a joined-up approach that ensures that our energy-from-waste infrastructure works to reduce carbon emissions?

Gillian Martin: There are two challenges there. On the one hand, we still need to know how to deal with residual waste; our efforts have been focused on reducing that waste as much as possible. That is why planning permission has been given for the building out of new energy-from-waste plants—it is so that we can deal with that trajectory. There is always going to be a certain amount of residual waste. On the other hand, we have the circular economy legislation, Scotland's zero waste plan and all our other waste reduction policies.

I am interested in your point about linking into CCUS networks. That will be absolutely fundamental, and it brings me back to the importance of the decision on the Acorn project and the development of the Scottish cluster. After all, an awful lot of the energy-from-waste plants and infrastructure are going to be in that pipeline's pathway. As I have said, you have made a really good point, and we should be looking at decarbonising as many of the emissions associated with energy-from-waste plants as possible.

You also made an important point about heat networks and their links with energy-from-waste sites. Indeed, there is one in Aberdeen that is looking at expansion; it is across the River Dee in Torry and Altens. It is already delivering heat to council properties and schools, and it is looking to expand under the river and into the other side—that is, the more substantial part—of the city. I think that it is a hugely exciting project.

We are—if you will pardon the pun—going to be putting a lot of energy into developing heat networks. There are already some great heat networks across Scotland, but there will also be an opportunity for some of the existing networks that use fossil fuels to change the fuels associated with their running.

We want to reduce waste; we have the landfill ban coming in at the end of the year, and we have to deal with residual waste. Councils have been working very hard to reduce their own landfill waste, and have done very well, but it is in the commercial sector that we need to see a real ramping up of effort. The amount of residual waste associated with the private and commercial sectors is the biggest area for improvement. The problem is not local authority waste but commercial waste.

Sarah Boyack: My follow-up question is: what support are you giving to local authorities? In Midlothian, there is a council energy company. You talked about Aberdeen; there is Aberdeen Heat and Power. We must equip councils to make the most of this opportunity, even if waste comes from the private sector, so that we can get that joined-up approach, and income can come back through it.

We have talked about lowering electricity bills, but it is also about generating income, and doing so in a way that is fair and properly regulated. This is a plea for that to appear in the CCS plans, and for the future plan to make sure that we maximise the opportunity to lower emissions and take the community benefits that come from that.

Gillian Martin: There is really interesting work happening in some of our cities on that—in Glasgow, in particular. The Scottish Government has given £1 billion of funding to councils in relation to waste.

We also need to factor in the fact that additional money is coming from the extended producer responsibility packaging regulations from the UK. There will be funding associated with that, although it will decline over time, because it is based on the levels of waste. It will be exciting to see what local authorities can do in addition. They will have the funds associated with the EPR, but as a result of that additional funding, they will be able to be a lot more innovative in that space to reduce the waste in what they do in the circular economy.

Sarah Boyack: That is the kind of thing that we need to see in the plan. We need to think about how we are future-proofing that energy-from-waste infrastructure across the country.

The Convener: Douglas Lumsden has a question.

Douglas Lumsden: Thank you, convener. It is on costs. We heard from the people's panel that

there needs to be better information, communication and financial support from the Scottish Government to reach the targets. How will the Government make sure that that is all affordable for households in Scotland?

Gillian Martin: That is very much on my mind. I come back to what I was saying about the question of heating buildings: we have to make sure that it is affordable and that people feel the benefit from it.

I will come on to the nuts and bolts of how we make it affordable. Yearly budget decisions will be made, but we will set out our costings in the climate change plan, too. We will also point to the fact that it is, rightly, not going to be only a Government spend. There must be Government and private contributions to it.

I also point to the cost of not doing it. There is a cost associated with not doing it in terms of the impact that that will have on the resilience of communities. There is also another cost, which points to some of the innovation-related things that I have been talking about. If Scotland is a hothouse for innovative ideas to get us to net zero by 2045, our economy will be boosted as a result of that activity. I mentioned Copenhagen: people there had the idea that they wanted to decarbonise Copenhagen. Out of that came many industries and businesses that are now world leading. That is where I see Scotland in relation to floating offshore wind and carbon capture and storage. There will be a long-term economic benefit associated with the actions to reduce our emissions. I am absolutely confident that there is a massive economic return.

We need to make sure that the short-term costs are fair. The Government has to step in where it can. We must also recognise that the Government cannot foot the bill for the entire transformation and that there are business opportunities associated with driving down emissions in all sectors. Those need to be quantified as well, and I will be able to set them out in the climate change plan.

Today's meeting is about the carbon budgets rather than about the detail of the plan, which will be put to the Parliament in October.

Douglas Lumsden: The plan will have costs not just for the Government but for households.

Gillian Martin: It will have an estimate—

Douglas Lumsden: Will it also have something on how taxation may need to change?

Gillian Martin: No. I am not going to talk about taxation in a climate change plan. We will set out the costs that are associated with the climate change plan and put them in the context of the market creation that is involved and the costs and benefits that are associated with that market creation.

Douglas Lumsden: Will that information be in the plan?

Gillian Martin: Yes.

Mark Ruskell: I will ask about the Government's internal work on the net zero assessment. Will the Government support using that assessment whenever a Government bill is presented in order to provide information in the policy memorandum about the emissions impact of the legislation?

Gillian Martin: Do you mean the emissions impact of the legislation or of the budgeting?

Mark Ruskell: The emissions impact of the legislation.

Gillian Martin: Phil Raines has helpfully offered to come in on that point—

Mark Ruskell: I think that the independent review recommended doing that. There might be a possibility of amending the standing orders of the Parliament in order to require that with bills more generally, that is, for both Government and members' bills. I am interested in the Government's journey to adopt net zero assessments. It has been a long journey, and we are still on it, but perhaps a natural next step is to apply it to legislation.

Gillian Martin: I do not have a fixed view on that. It is for the Parliament to decide what it wants to do in that regard. There has been a lot of movement on the budgeting process and the carbon assessment that is associated with it. That is internal Government work to flesh out the impacts of what we are doing. It is for the Parliament to decide what it wants to do in that space.

Phil Raines would like to come in.

Philip Raines (Scottish Government): I can come in as long as it will not delay things too much, Mr Ruskell.

Mark Ruskell: Go ahead.

Philip Raines: We have been clear about how we want to move from the pilot to rolling out the net zero assessment. The focus has been very much on new policies. We have been mindful of the fact that there are a number of different impact assessments, which move around policies going forward. We have been keen to make sure that the net zero investment is not seen as an additional burden but as something that helps and fits in very neatly with the other impact assessments. It has taken some work to make sure that that happens.

Our commitment remains to carry that forward, as, I believe, was set out in a previous letter to the committee. The question where the assessment could go in the future is for the Parliament—it might well be for this committee to talk about. The power of that tool in helping to inform not just Government decisions but parliamentary scrutiny, once tested and bedded in, might be worth looking at in the future.

Mark Ruskell: Okay. I will leave my questions there.

The Convener: As I see no other members wanting to ask anything before I come in, I will ask my last two questions.

From this morning's evidence, it seems that a lot of what appears to be coming down is reliant on electrification and the price of electricity becoming reasonable. However, from what you have said, cabinet secretary, it is quite clear that that is not in your hands. It seems to be setting somebody up—aside from the Scottish Government—for the fall if we do not reach net zero within the timescales due to the price of electricity not coming down. By your own admission, cabinet secretary, you have always loved plans. What is your plan if you cannot get the price of electricity to come down? Will you choose another climate change plan? If so, what will that rely on?

Gillian Martin: The climate change plan will be put to the Parliament before the end of the session, but it will be for the next Government to decide what it will do about future climate change plans. Thank you for the assumption that it will be my flavour of Government, but the electorate will decide who is in government next. I will say that it is important that we contextualise the work that needs to be done at a whole-UK level for all the devolved nations to be able to reach net zero. It is also important to recognise that if the work to bring down the price of electricity is not done, the UK is not going to reach net zero by 2050 either. I do not think that another plan is an option.

The Convener: The second question is perhaps easier, cabinet secretary. When it gave evidence to this committee, the Climate Change Committee suggested that the cost to the Scottish Government of achieving its carbon budgets and the figures that were set within them was about £750 million a year. Do you recognise that figure?

12:15

Gillian Martin: We will set out our figures when we publish the climate change plan.

The Convener: I know that you will. I am asking you if you recognise that figure.

Gillian Martin: I will put forward the climate change plan with the costings that are associated with it.

The Convener: If the figure was £750 million per annum, it would mean that, by 2045, achieving the carbon budgets would cost the Scottish Government £18,750,000,000. Philip Raines, you are looking confused— I have done the maths. That is a huge amount of money, but no price has been put on what it will cost the people of Scotland beyond the cost to the Scottish Government—in other words, on what level of private investment will be required. Budgets are about setting income and expenditure. The income that you are trying to achieve in the budgets is a reduction in carbon, but we have not had the expenditure figures. Will we get any such figures before the committee considers the climate change plan, or will they only be laid out in the plan itself?

Gillian Martin: The figures that the Climate Change Committee put forward are whole-economy figures, not simply Government figures. I point to the words of Professor Graeme Roy of the Scottish Fiscal Commission, who said:

> "Doing nothing, not responding to the challenge of climate change, will be far more expensive and damaging to the public finances than investing in net zero ... it is simply not an option."

Those words will be ringing in my ears throughout the process. We have to do this. It is the economic future of Scotland. It is the resilience of Scotland. It will fuel our economy for decades to come. We need to look at it as an investment.

The Convener: I hear what you say, but saying that the cost of not doing it is so high that you have to do it is not answering the question. I am afraid that I will have to wait to see the climate change plan and its costings.

Gillian Martin: You will.

The Convener: Rest assured that I, along with many other people, will be looking for the exact costings.

That brings our evidence session to a halt. I will briefly suspend the meeting until 12:25 before we go into the final item, which is a vote on the motion.

12:17

Meeting suspended.

12:25

On resuming—

Subordinate Legislation

Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025 [Draft]

The Convener: Welcome back. Agenda item 2 is a debate on motion S6M-18060. I invite the cabinet secretary to move the motion.

Motion moved,

That the Net Zero, Energy and Transport Committee recommends that the Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025 be approved.—[*Gillian Martin*.]

The Convener: Does any member want to contribute?

Douglas Lumsden: I want us to get to net zero, but it needs to be done in an affordable way. As things stand, I do not know what the impact will be on our households of the regulations that are coming through. It seems as though we are writing a blank cheque with no idea of the costs to Government, families or businesses. I welcome the fact that there will be costs in the climate change plan, and I hope that, when I see those costs, I will be able to support the budgets. However, at this time, there are too many unknowns, and I do not feel that we should be asked to approve the regulations without knowing those costs.

There is a risk of huge inequalities in relation to things such as electric vehicles, which we have spoken about. If you are fortunate enough to have a driveway where you can charge your car, you can pay 7p per kilowatt hour, but if you do not have a driveway, you have to use a public charger and will probably pay seven times that—perhaps 55p per kilowatt hour, or up to 90p per kilowatt hour if you are at a service station. That is a real risk.

The Climate Change Committee says no to electricity generation from gas, but the cabinet secretary cannot tell us whether she agrees with that at present, so we do not know whether that will be part of the future.

On the cost of electricity, I agree that it is too expensive, and that is often blamed on the gas price. As I mentioned last week, if I look at my utilities bill, I see that electricity is four times more expensive than gas. I hear that it is pegged to gas prices, but when we have to pay more or when the wholesale price goes up, where does that money go? Does it go to the wind farms and increased costs? I am not clear on that.

We have heard things from the Westminster Government about the £300 that we are meant to be getting off our electricity bills, but there is no sign of that happening any time soon. The situation with bills is complex. It is not only the wholesale costs that make up our electricity bills; we are also paying for balancing costs, CFD subsidies, renewable obligation certificate subsidies, grid upgrades and the social tariffs.

I also have a concern about the impact on communities. Without a plan or an energy strategy, the impact on our communities is unknown. I would welcome the plan. I know that it is coming at the end of October or early November but, as it stands, it is difficult to approve the regulations without seeing more detail.

Mark Ruskell: I am reading the submission from the Institute for Public Policy Research in Scotland. It says that MSPs will have to decide to approve the carbon budgets

"effectively in ignorance of the policies they would then have to support in order to see the budgets delivered."

The lack of information is concerning, and it perhaps plays to those, such as Mr Lumsden, who want to weaken ambition for the carbon budget, rather than people such as me, who want to strengthen that ambition.

No climate change plan—not even a draft one—has been submitted. We have only an incredibly thin indicative statement. The Government has rejected the advice of the UK Climate Change Committee on livestock and on peatlands, and policies on heat and on traffic reduction have been dropped. There is no energy strategy as yet. When it comes to Peterhead power station, there is uncertainty about the existing power station, let alone the prospect of a second one.

There are a lot of unknowns here and, quite frankly, I do not know whether this carbon budget is ambitious enough, because it lacks the transparency that successive committees of this Parliament have called for in advance of setting targets, objectives and aspirations around climate change. Although I will not vote against the budget, I find it very difficult to vote for it, because, without that detail, I do not know what it is that we are voting on at this point. I will therefore abstain.

12:30

Sarah Boyack: Having listened to the evidence from experts this morning, we know that we need to act fast and decisively because carbon emissions are a massive issue around the globe. We will have major shifts in world climate; we are already seeing extreme weather, such as forest fires, which we have not talked about today but which could impact on peatland emissions; and we have 280,000 homes that are already at risk of

flooding. We need more joined-up thinking and action; resilience and adaptation need to go together.

Another thing that we have not really talked about is how we will get the economic benefits of this in our communities across Scotland. We are still waiting for the energy strategy. We need a more detailed climate change plan and the investment that will transform our constituents' lives and create the jobs, including local jobs, as well as the manufacturing and heat networks that could deliver lower bills, but we are not seeing the detail of that. We have talked about tree planting, for example. Where could we get more community benefits from tree planting?

There are lots of opportunities here. However, it is not about warm words; there must be a plan for action. We have climate and nature crises, and the Scottish Government needs to do more to bring people with us to make the transformation that we need, because it is sustainable development that will tackle what will be real challenges—the Gulf stream, for example, although we did not talk about that today. We might not be here in 30 years' time, but the next generation will be, and it will be more than a challenge—there will be massive problems. This is a time for action, detail, information and bringing people with us, and the Scottish Government needs to do way more than it is doing at the moment.

Kevin Stewart: I have listened to what others have had to say today. I think that it is time for action as well, but the Government has been put in a position whereby the original targets that were made were unattainable, because Parliament pushed them on to the Government. As we move forward, we all require much more detail on how we will reach net zero in a just transition but, quite frankly, we do not have the answers to every single aspect thereof at this moment in time.

I recognise that the cabinet secretary and her officials will do all that they possibly can to get everything absolutely right. However, let us take, for example, the future use of hydrogen. At this moment in time, we do not have answers to what the benefits of that will be. Let us look at the fact that almost all of us want to see the UK Government remove the linkage between international gas prices and electricity. We do not know whether that will happen. If it does, it is likely to be a benefit, with greater electrification quickly; if it does not, that process will not happen.

What annoys me, I must say—I suppose that I can say this now, because I am going—is the fact that there is always bickering over some of those things, but without logicality. The logical thing is for us to agree the subordinate legislation and allow the Government to get on with it, and for us as a Parliament to continue to scrutinise all of that as we go forward. I think that to vote against the legislation today is very unwise, and I will support the cabinet secretary and her motion.

Bob Doris: There has been a theme during the evidence sessions last week and this week. We have each had a giant disagreement about some of this, which is fine. There have been calls for precise details, such as costings for each household in granular detail. The plans will run for 15 or 20 years and will rely in part on business innovation and buy-in in order to make shifts. They will rely on a good, positive dialogue with Westminster about electricity pricing, as well as other things, and will rely on technological innovation. They will also rely on all of us, as householders and not just MSPs, to buy into it. I have not seen the climate change plan and the associated costings, but I think that it is reasonable to say that there will have to be a range. Costings cannot be precise for technologies that are still to be developed or for an electricity market that is still to be reformed. There has to be a fair wind and some realism in relation to it all.

That said, Mark Ruskell has made some reasonable points, in that scrutiny would have been enhanced if we had had the plan at the same time that we were locking in the targets. However, we are where we are. In some respects, we know from the last time that the Parliament and the Government failed to deliver on targets that targets in themselves are just numbers; the actions that we put in place to make them a reality are important. For the Parliament not to agree to the budgets and not to free up the Government and the Parliament to scrutinise the climate change plans that will surely follow would be a big misstep.

Finally, although I concur with the challenge around scrutiny that Mr Ruskell and the convener have pointed out, I think that we are already starting to scrutinise some of this stuff. We will be scrutinising the climate change plan when it is laid for public scrutiny in real time, convener. Scrutiny does not start and end once the process is finished; it will be on-going. We all have a responsibility as a committee—on a cross-party, apolitical basis—to put our shoulder to the wheel and scrutinise the matter in a robust fashion. Although there may be disagreements among committee members, I think that it would be correct to lock in targets and come together to significantly scrutinise the Scottish Government on how it will deliver on them.

The Convener: I am looking at the deputy convener, because I will say something and I wonder whether he wants to make it a full house by expressing his opinion.

Michael Matheson: There is no doubt that aspects of the process are far from ideal. If you were to design it, you would not design it in the way that it has been done. Some of Mark Ruskell's comments are perfectly valid and reasonable. Clearly, we always want to reflect on the process, how the issues are handled and how the process will be managed in order to see what we can learn for future parliamentary sessions. However, we cannot get away from the fact that we face a climate and nature emergency and we have a collective responsibility to take action. I could follow Douglas Lumsden and produce a list of what I would describe as flimsy excuses for not supporting the motion, but all that that would do is demonstrate a lack of leadership to deal with one of the biggest global crises that we face.

Douglas Lumsden: Will Michael Matheson take an intervention?

Michael Matheson: Let me finish my point first.

As parliamentarians, we have a collective responsibility to take responsibility for that and show the leadership that is necessary in order to address it, rather than looking for excuses to chase after voters who are drifting to Reform UK.

Douglas Lumsden: I would not say that not knowing the cost is a flimsy excuse. Surely we should have that information. Even Mark Ruskell, who is on the other side of the argument to me, has said that, if we had the information, we could go even further, but without it, we cannot.

Michael Matheson: When I talk about things such as "flimsy excuses", I refer to, for example, your suggestion that electricity is in some way pinned to the international gas price in the UK, when that is a fact; it is what drives our electricity costs. Your party was in government at Westminster for more than a decade and it could have taken action on that if it had chosen to do so. The reality is that it chose not to. Equally, during that time, the Conservatives supported the need to ensure that we achieved net zero by 2050.

In the UK and Scotland, it is not optional; it is a legislative requirement. We are legally obliged to achieve net zero by 2045 and 2050. As parliamentarians, if we choose to ignore that based on flimsy excuses, we are not doing our job properly. That is why I will vote for the motion, even though I accept that parts of the process are not as effective as they could be. I accept the responsibility that we have to tackle the nature and climate emergencies that we face, not only for this generation but for future generations.

The Convener: I will say a little bit and I will then bring in the cabinet secretary. The evidence that we have heard has been particularly interesting. At the moment, I do not know in my mind—and as a parliamentarian, as the deputy convener said—whether we need to weaken or strengthen the commitments that the cabinet secretary will be making, because we have not seen the climate change plan that will be produced.

There is an issue in my mind about developing our understanding of what is achievable, which is not only about the commitment of individuals or of Government but is about the cost of that and how we will achieve it. I take the point on the importance of electrification, but during the process of hearing about it, especially today, I have found it very difficult to stomach simply saying that the cost of doing nothing is too high. To my mind, that is lazy and slightly rude to the individuals who are trying to question it.

With the way that the vote will go today, carbon budgets will probably go through. I may be proved wrong—[*Interruption*.] I will finish on this point. They will probably go through, but I want to register my dissatisfaction with the whole process of how that has come about. The committee should have been discussing the matter much earlier. I have always made it clear—people who have spoken to me will support me on this—that I do not like and have never liked the fact that we are doing this in the last months of the parliamentary session. It is far too important a matter for us to get it wrong. When it comes to the vote, I will abstain, not because I want to frustrate the budgets, but because I want to register my dissatisfaction at how the process has gone.

Cabinet secretary, I give you the opportunity to sum up if you wish.

Gillian Martin: I am not going to go into all the substantive points. People have made their views clear. I do not think that it is lazy to suggest that there is a cost, a danger and a great deal of risk associated with doing nothing.

I align myself with the comments that the deputy convener made about the Parliament's responsibility. I feel that we fell down in our responsibility in the previous session by not doing what we could to support even the most minor policy directions that were put to the Parliament. It is not enough to support a target. There has to be concerted action. If we do not do it in this generation, the next generation will ask, rightly, why it was put in such a precarious position.

I have moved the motion in my name, but I will leave my comments until such time as I have a full plan in front of me and I am able to answer all the detailed questions that have been asked today.

The Convener: Thank you. The question is, that motion S6M-18060, in the name of Gillian Martin, be agreed to. Are we agreed?

Members: No.

The Convener: There will be a division.

For

Doris, Bob (Glasgow Maryhill and Springburn) (SNP)
Matheson, Michael (Falkirk West) (SNP)
Stewart, Kevin (Aberdeen Central) (SNP)

Abstentions

Lennon, Monica (Central Scotland) (Lab)
Lumsden, Douglas (North East Scotland) (Con)
Mountain, Edward (Highlands and Islands) (Con)
Ruskell, Mark (Mid Scotland and Fife) (Green)

The Convener: The result of the division is: For 3, Against 0, Abstentions 4.

Motion agreed to,

That the Net Zero, Energy and Transport Committee recommends that the Climate Change (Scotland) Act 2009 (Scottish Carbon Budgets) Amendment Regulations 2025 [draft] be approved.

The Convener: That concludes our business for today. Next week, there will be a discussion of the paper on carbon budgets—[*Interruption*.] We are not quite finished yet, Mr Stewart.

That discussion will follow from the report, which we will sign off early next week. There will also be consideration of the petition on air quality, and a supplementary legislative consent memorandum on the Planning and Infrastructure Bill will be added to the agenda.

On Friday next week, the committee will visit Port Glasgow and the Hunterston Port and Resource Centre.

Meeting closed at 12:45.

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