The Scottish Parliament
Pàrlamaid na h-Alba

Official Report

INFRASTRUCTURE AND CAPITAL INVESTMENT COMMITTEE

Wednesday 25 November 2015

Session 4

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INFRASTRUCTURE AND CAPITAL INVESTMENT COMMITTEE
24th Meeting 2015, Session 4

CONVENER

*Jim Eadie (Edinburgh Southern) (SNP)

DEPUTY CONVENER

*Adam Ingram (Carrick, Cumnock and Doon Valley) (SNP)

COMMITTEE MEMBERS

*Clare Adamson (Central Scotland) (SNP)
*Alex Johnstone (North East Scotland) (Con)
*Mike MacKenzie (Highlands and Islands) (SNP)
Siobhan McMahon (Central Scotland) (Lab)
David Stewart (Highlands and Islands) (Lab)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Professor Jan Bebbington (University of St Andrews)
Teresa Bray (Existing Homes Alliance Scotland)
Dr Sam Gardner (WWF Scotland)
John Lauder (Sustrans)
Sara Thiam (Low-carbon Infrastructure Task Force)

CLERK TO THE COMMITTEE

Steve Farrell

LOCATION

The Adam Smith Room (CR5)

Scottish Parliament

Infrastructure and Capital Investment Committee

Wednesday 25 November 2015

[The Convener opened the meeting at 10:00]

Draft Budget 2016-17

The Convener (Jim Eadie): Good morning. I welcome everyone to the 24th meeting in 2015 of the Infrastructure and Capital Investment Committee. I remind everyone to switch off mobile phones, as they affect the broadcasting system. As meeting papers are provided in digital format, tablets may be used during the meeting. Apologies for absence have been received from David Stewart and Siobhan McMahon.

Our only agenda item today is the taking of oral evidence in advance of the publication of the Scottish Government's draft budget for 2016-17. The committee has agreed to use this year's budget scrutiny as an opportunity to focus on identifying what further action is necessary within its remit to help to meet the climate change targets. Although we do not expect the draft budget to be published until 16 December, this evidence session will provide an opportunity for witnesses to comment on the outcomes of the current year's spending and suggest what more might need to be done, both in this financial year and beyond, to meet the targets. The session will also help to inform the questions for the committee's second and final evidence session, on 6 January, with the Cabinet Secretary for Infrastructure, Investment and Cities.

I welcome Professor Jan Bebbington, professor of accounting and sustainable development at the University of St Andrews; Teresa Bray, chief executive of Changeworks, who is representing the Existing Homes Alliance Scotland; Dr Sam Gardner, head of policy at WWF Scotland; John Lauder, a regular attender of the committee who is the national director of Sustrans; and—last but not least—Sara Thiam, director of the Institute of Civil Engineers Scotland, who is representing the low-carbon infrastructure task force. I invite our witnesses to make some short introductory remarks.

Professor Jan Bebbington (University of St Andrews): I will focus on a carbon accounting methodology that highlights the need to take a whole-system approach in deciding whether something is low carbon. I will not comment on the infrastructure itself—other witnesses on the panel are better qualified than I am to do that. I will draw on a Scottish Further and Higher Education Funding Council study of the University of St Andrews, where we are putting together a bioheat plant. Partly to proof that investment and understand what we are doing, we have invested in some research alongside that. I will also draw extensively on expertise from the University of Edinburgh's carbon accounting unit.

My first key observation—I will be happy to talk more about this—is that, if we are going to opt for low-carbon infrastructure, we will need to take a whole-system approach. Rather than a bit-by-bit approach, we have to consider how the whole system morphs and changes together. My second key observation is that, although there is a great deal of uncertainty in that planning process, methodologies are starting to emerge that can help to inform the process and remove the uncertainty.

Teresa Bray (Existing Homes Alliance Scotland): I welcome the opportunity to speak to you on behalf of the Existing Homes Alliance Scotland. We are pleased that the Infrastructure and Capital Investment Committee recognises the importance of the energy efficiency of existing homes.

Energy efficiency is key to tackling climate change, but it also has much wider social and economic benefits. The Scottish Government has made a commitment to energy efficiency by making it a national infrastructure priority, and it is important that that is followed through with financial commitments and the ambition to make a real difference in terms of both the reduction of carbon emissions and tackling fuel poverty—the targets for both of which have been missed in recent years.

The Government needs to commit to a national infrastructure priority that has the objective that all homes will reach energy performance certificate level C or higher by 2025. That would be ambitious, but 61 per cent of Scotland's homes—1.4 million homes—need to be improved. The alliance estimates that £140 million a year for the next 10 years would be required, but it is important that the Scottish Government reaches its own evaluation of the funding that would be required. We recognise that, given the funding constraints, £140 million will not be available in the coming year; therefore, it should be seen as a transitional year leading to years of greater funding.

Not all of the funding would come from Scottish Government grants. Homeowners should be required to make a contribution when they could afford to do so. There would be challenges in spending such large amounts of money in the short term, and delivery plans would need to be developed, as would the supply chain. There is, however, an established delivery programme for

the area-based schemes that are already funded by the Scottish Government and the warmer homes Scotland scheme, and we want to ensure that the momentum is continued in order to tackle the issue of poor-quality homes.

For the coming year, we wish the current budget to be maintained, but we recognise that, because the funding from the energy company obligation will fall, extra resources will need to be committed to maintain the level of activity. The Scottish Government is making difficult decisions with regard to the comprehensive spending review. Spending on energy efficiency has so many benefits for climate change, fuel poverty, householder finance, jobs and health that financial support for it must be provided.

Dr Sam Gardner (WWF Scotland): I thank the committee for the opportunity to speak to it.

Every year since the passage of the Climate Change (Scotland) Act 2009, WWF has submitted evidence to the Parliament during its scrutiny of the finance budget. Each year we have asked whether the budget is aligned with the requirements of the 2009 act, and each year our assessment has failed to reassure us that the budget fulfils the expectations that were set by that legislation.

If this year is to be any different, the draft budget will need to do a number of things as a minimum. First, it will need to set out in a clear and transparent way the proposed expenditure alongside the policies in the RPP—the report on proposals and policies—in order to give confidence to all stakeholders that the budget fulfils the commitment of the Cabinet to embed climate change in the autumn budget process. That has never happened in the past, which has always meant that committees such as the Infrastructure and Capital Investment Committee have been frustrated in their efforts to establish the extent to which the budget is aligned with the 2009 act.

Secondly, funding for energy efficiency should reflect the commitment to designate it as a national infrastructure priority. In particular, the draft budget should provide the clear goal of ensuring that all homes reach an energy performance certificate rating of C by 2025. As we approach the 2016 deadline, 1 million homes remain trapped in fuel poverty—that is 39 per cent of Scotland's households. Since 1990, emissions from the housing sector have fallen by less than 13 per cent, and emissions fluctuate widely from year to year. A sufficiently funded national retrofit programme for Scotland's homes could generate nearly 10,000 jobs, save households up to £500 a year, save the national health service between £48 million and £80 million per year, and reduce dependence on and the cost of fuel imports.

Thirdly, the draft budget should clearly signal a significant shift in the focus of the capital budget towards low-carbon infrastructure. The infrastructure decisions that we make in the next few years will determine how we live in 2050. The future will be decided in the next decade, and the budget must be consistent with supporting low-carbon technologies and behaviours.

John Lauder (Sustrans): I thank the committee for inviting Sustrans to come along. I will discuss active travel, which covers walking and cycling. Those are key elements in reducing carbon emissions, particularly in the urban context. In particular, I will look at allowing Scots to choose to not use cars for every trip that they make. The vast majority of car trips remain very short and very repetitive. That has not changed in a number of years, and it is not helping transport to reduce its carbon emissions.

From that point of view, I am pleased to appear before the committee, because there are good, positive signs of growth in certain areas in Scotland and, where leadership is being shown by local authorities and by Transport Scotland, there are some positive signs that more people are beginning to opt to cycle and a good number of people are continuing to walk for everyday short trips. That is very positive, and I will cover that in my evidence.

However, I will conclude that the increased funding for active travel is at a very vulnerable stage. It needs to be kept at the same level and grown over the next few years if we are to realise the Scottish Government's very good ambitions of growing the number of people who walk and of growing significantly the number of people who cycle for short trips.

Sara Thiam (Low-carbon Infrastructure Task Force): Thank you for inviting us to share the work of the low-carbon infrastructure task force. The task force brings together key figures from the infrastructure life cycle across the public, private and academic sectors with expertise in construction and finance.

The outputs from the Scotland's way ahead project, which is led by the task force, include the case for low-carbon infrastructure, a long list of 10 low-carbon project examples that could help to drive the required step change in coming years, and a shortlist of two to three projects.

The research that has been undertaken on behalf of the task force highlights the benefits for Scotland of investing in low-carbon infrastructure. In addition to meeting climate change targets, low-carbon infrastructure has the potential to deliver considerable economic and social benefits. Failure to invest in low-carbon infrastructure will lock us into high emissions and vulnerability to the

multiple impacts of climate change, and it will leave a legacy of buildings, roads, transport infrastructure, energy generation and more that will be expensive to adapt in the future.

We believe that the shortlist of low-carbon projects that will emerge from our work is worthy of consideration and inclusion in Scotland's future infrastructure investment plans. We also believe that the Scottish Government has a unique role to play in directing infrastructure priorities and as an investor.

The case for low-carbon infrastructure that has been commissioned by the task force shows that around half of the current infrastructure investment in Scotland could be described as low carbon. However, international comparators suggest that a significant increase will be required to enable delivery of the ambitious targets that we have.

The Scottish Government's next spending review provides an opportunity to shift capital spending towards low-carbon projects, and the 2016-17 Scottish budget is a good starting point for that transition. The Scottish Government's commitment to making the improvement of energy efficiency in buildings a national infrastructure priority has significant potential to deliver social justice and economic benefits.

In summary, we believe that progress has been made on reducing carbon emissions that provides a good foundation on which to build, but a step change in pace and scale is required.

The Convener: I thank Miss Thiam and the other witnesses for their introductory remarks. I will kick off by asking about the ambitious climate change targets. The Scottish Government has acknowledged that meeting the targets set by the Parliament has been challenging. Do you have any insight into what difference changing the baseline has made to meeting that target? Dr Gardner, do you want to kick off?

Dr Gardner: I can have a stab at answering that.

It is certainly true that every year the greenhouse gas inventory is revised as a result of improved understanding of where our emissions come from and, as a consequence, our understanding of our emissions and what they were in 1990 is different from what it was when the Climate Change (Scotland) Act 2009 was passed. That makes the emissions reduction that is required to hit those annual targets harder than we envisaged when we first set the targets in the act.

That is not to say that we could not have hit the target last year if we had seen greater policy effort. We missed it only by a small fraction. If we had seen effort in other sectors—particularly transport, as at the moment there is only one policy in the RPP that is targeted at reducing emissions from the transport sector—we could have hit the targets.

To say that we have missed the targets simply as a result of the greenhouse gas inventory revisions is incorrect. Those revisions have certainly had a negative impact on meeting the targets but greater policy effort would have had an impact in counteracting that.

The Convener: Sticking with that issue for the moment, the Minister for Environment, Climate Change and Land Reform, Aileen McLeod, has stated:

"It will take time to produce a credible package of proposals and policies to make up the shortfall from previous annual targets, which totals 17.5 million tonnes of CO_2 equivalent".—[*Official Report, Rural Affairs, Climate Change and Environment Committee*, 11 November 2015; c 16.]

Do you agree with that statement or do you see it as being in opposition to what you have just said?

Dr Gardner: I agree that making up the shortfall will take time; how much time it needs to take is, I think, the area of discussion. We have missed four annual targets and, as I understand it, the section 36 report that is required by the 2009 act to say what steps the Scottish Government will take in order to compensate for those emissions has not been produced. In the first instance, that was captured by the first RPP. The next RPP—the third one—is not likely to be out until the very end of next year and, given how long it will take, may indeed run into 2017. We are waiting for that in order to compensate for emissions reductions that were excessive in 2013.

There is a need for greater urgency in how we address our overshoot on emissions, and the fact that 17.5 million tonnes of excess emissions have been generated means that it will be an increasingly hard challenge to get that under control unless we see concerted policy efforts, which the minister has committed to, saying that the Government will introduce new policies. Our best hope would certainly be that we see those efforts in the immediate future, and this budget is an opportunity to reflect greater emphasis on certain areas such as energy efficiency and transport.

The Convener: Perhaps the other witnesses could say what concerted policy effort is required to make further progress. Where do you wish the Government to place that effort?

10:15

Teresa Bray: There are certainly opportunities in relation to energy efficiency. We do not require huge technological changes to make that happen; we have existing programmes that could be

ramped up relatively easily. The issue is difficult because it covers so many homes, but the measures have already proven to give carbon reductions. Linked to the physical measures, there is a need to support behaviour change so that people take advantage of the improved efficiency.

There is certainly opportunity in the housing sector. Taking those opportunities will make a much greater difference to people's lives, as well as meeting the climate change targets.

John Lauder: In the transport sector, good policies are already available, but they are not being put together into a package with enough emphasis and drive. We still have an ambitious programme of road construction. With transport, I do not get the sense that there is a real drive to reduce emissions, particularly from vehicles. Although the policies are there, we are not pushing them as hard as we should be.

Dr Gardner: The heat sector needs far greater attention. The committee will be familiar with the fact that more than 50 per cent of our energy demand is for heat and about 50 per cent of our emissions come from it, yet currently less than 4 per cent of that heat demand is being met by renewable sources and only 1 per cent is being met through community or district heating networks.

If we are to decarbonise heat, as the Climate Change (Scotland) Act 2009 requires us to do, and make significant progress by 2030, heat will need ever greater concerted action. District heating is an opportunity for the Scottish Government to align its capital budget with investment that will help to create jobs, tackle fuel poverty and drive down emissions. We hope that in future budgets, including the forthcoming one, there is a signal of greater support for district heating in particular.

There is a need to continue the district heating loan fund, which has been very competitive and well used. The Scottish Government also needs to explore how it can underwrite or mitigate the risks that are associated with the oversizing of district heating pipework to allow for networks to be expanded. It is the type of infrastructure where there is a long return but a high up-front cost. Where such developments have taken place across Scandinavia and elsewhere in northern Europe, they have always in the first instance been facilitated by the state in some way, with a return over time.

Sara Thiam: To add to that, three of the 10 projects on the long list of low-carbon infrastructure projects are around district heating and a fourth is on energy efficiency retrofit. Earlier this week, the 10 projects went through a peer review process. The regulatory, contractual and ownership issues that are coming into play and could be addressed, as well as some of the barriers that could be removed, are becoming increasingly apparent.

Mike MacKenzie (Highlands and Islands) (SNP): My question is principally for Dr Gardner. I recall—as I am sure you will—that WWF Scotland did an analysis a few months ago that suggested that it would be possible to have all power generation from renewable sources by 2030. You were looking for MSPs to endorse and sign that analysis, which I was keen to do. I had my quill pen sharpened, my bottle of ink and my blotting paper, and my pen was hovering over the paper, but then I thought, "No, I can't sign this." I wanted to sign it, but I could not, because the Scottish Government has almost no powers over energy.

I realised that, if only the United Kingdom Government would do the right thing, we could easily do what you suggest. It occurs to me from what you have said this morning that it is a problem that a significant amount of the power that is required to go down the lower-carbon route resides not in this place but in Westminster.

You mentioned the district heating loan fund, but the projects on the ground require complementary funding, so they require energy company obligation funding, green deal funding and funding from the district heating loan fund. You will know that it is sometimes incredibly difficult to get projects to stack up without all the complementary funding from each Government playing its part. To what extent do the UK Government's actions impede us in taking forward the aims that you have all outlined?

Dr Gardner: Changes that are made at UK Government level clearly have an impact on energy policy; we saw changes over the summer that have had an impact on the deployment of onshore wind and solar facilities. It would be completely wrong to dismiss those changes as having no consequences for Scotland's ability to pursue the low-carbon agenda. However, that is not to say that the changes should prevent us from continuing to strive to fulfil that ambition, and I see concerted efforts in various parts of the Scottish Government's agenda to do that.

It would be wrong to point to the changes that are being made at Westminster and say that, as a consequence, we cannot do all that we could have done to hit the targets. In certain areas, the Scottish Government should continue to make strides to secure the low-carbon agenda. Regulation is one such area.

The Scottish Government has convened a sub-group to work on regulation for district heating, to facilitate the growth of an industry that is struggling to make headway because it is not confident that

there will be a market to deploy to and because the consumer does not have the protection that would be required. The Scottish Government could take steps to support investment in district heating.

In the power sector, the Scottish Government has used very well the powers that it has to support low-carbon technologies and it should continue to do that. There is a certain inevitability to the 2030 scenario that WWF commissioned from Garrad Hassan, which suggested that we would have an entirely renewable power sector by then. We are looking for political parties to align themselves with that scenario so that we reap the benefits of aligning our policies strategically with the direction of travel in Scotland. Benefits will be enjoyed from doing that.

We have the opportunity to better align the capital budget to deliver on energy efficiency. Teresa Bray talked about—and the committee will be familiar with—the broad support that there is across civic Scotland for greater efforts on energy efficiency. More than 50 organisations, which ranged from Barnardo's Scotland to Shelter Scotland and Age Scotland, signed the commitment to ask the Scottish Government to support all homes achieving an EPC rating of C by 2025 and having the funding that is required to get there.

The consequences of UK Government policy changes can be significant, but they do not come at the expense of the Scottish Government being able to do all that it can to fulfil its potential.

Teresa Bray: A number of measures are certainly more difficult in areas that are not devolved, but the Scottish Government has been good at ensuring that we can access a greater proportion of things such as the energy company obligation. Solid wall insulation has very much been supported by the Scottish Government under the area-based schemes. Under the most recent obligation, which started in April, 27 per cent of the solid wall insulation measures have been installed in Scotland, in comparison with the rest of the UK. There are similar figures for the renewable heat incentive—a greater proportion of the measures that have been installed are in Scotland. That is partly because we have more rural properties, but it is also because of the support that the Scottish Government provides by way of information and advice, whether it is through the resource efficient Scotland programme or through home energy Scotland. How much money we can access from something such as that, which is not under the Scottish Government's direct control, makes a difference.

The Convener: The submission from the existing homes alliance Scotland states that

"2016/17 is a transitional year and the budget should be sufficient to allow for current programmes to continue, compensate for cuts in UK programmes, and piloting new programmes on behaviour change and loans."

You say that there is sufficient budget to

"compensate for cuts in UK programmes".

Do you have a figure?

Teresa Bray: One difficulty with ECO is that there are never any figures associated with it. We get from the energy companies only what the number of measures is. We know that, for solid wall insulation, 80 per cent of the two-year allocation has already been committed, so far less ECO funding will be coming through.

Initially, we saw rates of around £90 per tonne for the energy company obligation, but the figure has come down to much closer to £30 per tonne in some areas and even down as low as £15 per tonne. The rate has come down and availability is becoming much more difficult. A number of smaller installers and installers that operate outwith the central belt simply cannot access the energy company obligation at all, and that is having an impact on programmes.

The Convener: What is the shortfall that you are asking the Scottish Government to make up?

Teresa Bray: When the programme was initially announced, it was going to be worth £200 million. I think that the Scottish Government has produced funding of £103 million this year, so the figure is coming down. If we look at the £200 million, we are talking about an additional £97 million. The ECO level that is being levered into Scotland is probably around half the maximum of £90 million—around £50 million—and I expect that to fall even further in the coming year.

The Convener: What would the total figure be?

Teresa Bray: The total figure to maintain the level of overall spending that was set is approximately £200 million.

The Convener: Right, but what about the shortfall that the Scottish Government has to make up?

Teresa Bray: The shortfall as a result of ECO is around £70 million.

The Convener: That is helpful.

From what we have heard so far, and if I have understood our witnesses correctly, I think that they believe that spending needs to be realigned from current priorities to investments that will have the biggest impact on reducing our climate change emissions. I will ask Mr Lauder about active travel. In its submission, Sustrans said that it believes that the Government should commit 10 per cent of the transport budget to active travel. That is a

significant increase on what the Government currently allocates, notwithstanding the fact that there is a record level of investment in active travel.

Do Sustrans and other cycling organisations have a responsibility to say where that investment should come from? Can transport projects to which the Government is committed be postponed or have their level of investment reduced in order to release the funding that you would like to see?

John Lauder: The call for 10 per cent of the transport budget is a long-standing one that came from the Association of Directors of Public Health. The model in Scotland has been set by the City of Edinburgh Council, which has gradually increased its budget year on year so that 8 per cent of its transport budget is spent on cycling. As a result, 12 per cent of trips to work in its area are now by bicycle, which is four times the national average.

We are talking about a gradual process within Transport Scotland, and I do not necessarily see that projects need to be postponed. Leadership from Transport Scotland is needed to achieve the figure. The obvious budget to address is the trunk road budget. Spend on that could be switched to active travel, which is a new element that Transport Scotland needs to do more about. Currently, 2 per cent of Transport Scotland's budget goes on active travel, as has been said, and around three staff in Transport Scotland look after walking and cycling. In a sense, that 2 per cent spend achieves quite a reasonable return on the investment when we consider the health and other benefits that come from more people opting to walk and cycle.

By putting together a gradual budget and gradual growth, we will begin to change how we see transport. We have seen walking and cycling as nice things to do on a summer's day, whereas other small northern European countries see them as a legitimate part of the transport orthodoxy. That is where walking and cycling need to move to.

With that level of leadership, local authorities will react and follow; indeed, they are already doing that. Local authorities already outbid the funds that Transport Scotland gives Sustrans to manage. The proposal is not necessarily about cancelling entire schemes; it is about realigning budgets.

The Convener: How would the money be found in the trunk road budget? That is where you have identified that savings could be made.

Alex Johnstone (North East Scotland) (Con): Is John Lauder talking about capital or revenue funding?

The Convener: Will you say a bit more about where you would find the money in the trunk road budget? You said that existing projects would not need to be postponed or cancelled, so how could funding from the trunk road budget be released to bring about the reallocation of funds to active travel?

10:30

John Lauder: I do not have the access to the Transport Scotland budget or the people who set it that would enable me to have that conversation but, like anyone else, I would look at where savings and reallocations could be made to gradually increase the money.

My answer to Mr Johnstone's question is that I would look at the capital infrastructure spend.

Clare Adamson (Central Scotland) (SNP): Good morning. To turn things a wee bit on their head, I ask the panel members whether they consider that any planned infrastructure expenditure is likely to increase rather than reduce carbon emissions.

Dr Gardner: I will have a stab at answering that. The carbon assessment of the strategic transport projects review, which the Scottish Government publishes annually, shows that the collective impact of the projects will be an increase in emissions. That applies to projects across the board from the Borders railway—that is looking to the past—to the A9 dualling, the Aberdeen western peripheral route and the improvements to the rail network between Edinburgh and Glasgow. Taken in the round, all those things will result in a collective increase in greenhouse gas emissions.

Clare Adamson: Does anyone else have a comment?

John Lauder: I do not know that I could add to that.

Clare Adamson: I have been round the Haudagain roundabout in Aberdeen many times and I have been stuck in traffic there. Is the peripheral route expected to reduce some of the other problems, or has that been balanced out in the calculations that the Government has done?

John Lauder: All the evidence throughout the world is that, where more roads are built, there will be more emissions and more transport. We in Scotland have not necessarily tackled much the fact that, as we have mentioned many times at the committee, the vast bulk of car trips are short journeys. The average distance is 3km, and that applies across Scotland—even in the most remote and rural areas, the bulk of the trips that are made are short and repeated.

The issue is not so much the movement of goods and services on the trunk road network as how we can give people better options so that they

do not have to use their cars, notwithstanding that a third of Scots have no access to a car. How can we give people better information and much better facilities for cycling and walking, which will reduce emissions?

Do we have an analysis of the trips that are log jamming the Haudagain roundabout in the morning? Do we know how many of those people are making short journeys? I am not criticising them. It is their right to make those journeys, but do we have an analysis of the extent to which the roundabout is being log jammed by people making short trips that could be made by cycle or public transport? Are people making journeys by car because that is the best option that they have?

Dr Gardner: We should consider the role that the report on proposals and policies indicates that the transport sector has to play. The figures in that report show that an increase of almost 300 per cent in the annual emissions reductions from the transport sector will be required between 2014 and 2017, so something has to change. There has to be a signal through either infrastructure—which will bring a return later—or policy and investment to support greater active travel. A 300 per cent increase in emissions reductions from the transport sector is required by the action plan that the Government has set, but there is just one policy for the transport sector in the RPP.

Clare Adamson: We have heard comments on the use of renewable energy and the challenges in that sector. The Scottish Government announced in July that the local energy challenge fund would support 23 projects across Scotland, which would share £500,000 between them. The fund is for demonstrator projects that are designed to encourage the use and local ownership of renewable energy facilities. Do you have any comments on how that might inform decision making?

Teresa Bray: The local energy challenge fund is looking to solve problems, whether they are to do with the intermittency of renewables or the need for grid connections—particularly in remote areas, where there is extra capacity. A lot of innovative approaches are being adopted to demand reduction and energy storage, producing a systems approach.

Scotland is taking the lead because we do not have the controls over other levers. In the future, the challenge projects will be important. Only a small number of them will go through to completion because there are issues about the scale of funding and timescales. Because we are adopting new technologies and approaches, some projects will fail. However, being prepared to take the risk to invest in projects that might fail is important, because otherwise we will not make a step change in delivery.

The approach is about producing innovation, which often leads to innovation on the community scale, because we cannot control things on the national scale. That might be the solution for energy systems in the long term; whether we are talking about energy security or local ownership of energy, that would make a big difference.

The projects are in their infancy and none of them has gone through to completion. However, they add a valuable tool to the toolkit in starting to ensure that renewables can provide the 100 per cent delivery in the future that we have talked about, as that is not possible on its own.

Clare Adamson: If no one else wants to come in, that is fine.

The Convener: Mike MacKenzie has a supplementary question.

Mike MacKenzie: Last weekend, I was in Orkney, where there are now quite a number of electric cars, as there are on the island of Mull. I have read that over 30 per cent of cars in Norway are now electric. What opportunity to decarbonise transport is there through the use of electric vehicles? We should bear it in mind that the uptake of even the most successful new technologies does not tend to be linear; it tends to be a hyperbolic curve. It seems to me that we could be on the cusp of larger-scale electrification of vehicles. I live in and represent a very rural area, so I can assure you that it is just not credible for me to walk to work; and no matter how fit I get, I am never going to be able to cycle to work. Are electric vehicles an opportunity? Do you welcome what the Scottish Government is trying to do to promote their use?

John Lauder: I would be much happier with the Scottish Government emphasising electric vehicles for last-mile delivery of goods and services, particularly given the growth in carbon emissions from light goods vehicles. That curve goes up at a dramatic angle, which I am sure is the result of internet shopping and that type of thing, which is fine. I would be keen to see how we can get commercial vehicles electrified, so that we can move from diesel-powered engines for light goods vehicles to electric ones.

I take your point about the rural context for electric cars, but the Scottish transport statistics are very clear that the vast majority of car trips, even in rural local authority areas, are short ones. My concern about electric cars in our towns in rural areas is that we will simply move the fuel source and the roads will remain congested, and we will not be giving people the option to get out and walk or cycle, which improves their health. In a rural town or urban context, I am much more cautious about electric cars, but I am enthusiastic

about electric goods vehicles, which I would like to see the Government do much more on.

Dr Gardner: We very much support the Scottish Government's action plan for electric vehicles. All the work that we have done and any other work that I have read about that tries to paint a picture of what the world will look like in 2050 has a large role for electric vehicles in it.

One of the key findings of a piece of work that we commissioned from Element Energy was that the number of electric vehicles that we need in order to fulfil our climate change requirements will depend on the extent to which we have complemented those with wider sustainable transport measures. We would need 350,000 electric vehicles by 2030 in Scotland if we stabilised traffic levels at 2010 levels—I hope that I have got that right. Basically, if we stabilise our traffic growth, we will need considerably fewer electric vehicles; otherwise, 1.5 million electric vehicles will be needed to achieve the same emissions reduction. If the Scottish Government sees a role for itself in supporting the deployment of new technology and wants to ensure that that investment delivers the best return, it must be matched by complementary measures in the wider transport system to reduce demand.

Norway, which you mentioned, is a great example of a country with very rapid uptake in electric vehicles, partly because of the tax incentives that the Norwegians have been able to introduce, which are not available to the Scottish Government, and partly because of the exemptions from congestion charging that are afforded to such vehicles. Major Norwegian cities make it very attractive to drive your electric vehicle in. Of course, that will rub up against congestion issues, but the Norwegians also happen to have better infrastructure for active travel—cycling, walking and so on. Electric vehicles can be part of an urban transport system, but we need a holistic approach if we are going to support them in the right way.

One very sensible area of investment at the moment can be seen around Edinburgh, with the introduction of City of Edinburgh Council electric vans and fleet cars, and I believe that Dundee is doing some interesting work on using electric vehicles as taxis. There are areas where one can target impact and do an awful lot to mitigate the emissions that are associated with those types of vehicle use and those transport journeys.

The Convener: Adam Ingram is next. [*Interruption*.] My apologies—it is Alex Johnstone.

Alex Johnstone: Have we got that far already?

I want to look at the quality of information that we are being given and our ability to evaluate expenditure on infrastructure effectively. First of all, do you believe that we are being given the right information to evaluate the effectiveness of policies?

Dr Gardner: I will take a first stab at that.

I think that sometimes we get the right information but at the wrong time. For instance, when the budget is published, we typically get level 4 figures, which are useful if you are interested in understanding the extent to which the budget matches the requirements of the report on proposals and policies. However, they typically come out anything up to four weeks after the publication of the draft budget and quite often after the committees have taken evidence and finished their scrutiny. That is a real issue but, although it has been repeatedly raised by us and other witnesses and picked up by various committees such as this one and the Economy, Energy and Tourism Committee, we are still seeing a delay between the publication of the budget and the publication of the figures that relate specifically to the RPP.

A bigger challenge with the climate change action plan—the RPP—lies in understanding the effectiveness of its policies. It attributes emission savings to different policy lines but, as far as I am aware, we do not have a very rich and accurate monitoring system that lets us know whether the RPP's assumptions are being borne out. Organisations such as WWF Scotland will continue to advocate support for what the RPP says, but as far as many of these policy areas are concerned, we are now at a stage of delivery where we need a more reflective understanding of what is being effective, what is hitting barriers and where the challenges are in order to understand just how effective the RPP assumptions are.

Professor Bebbington: I want to comment on carbon accounting in particular. In the very early days, the carbon accounts that were created for, say, the strategic transport assessment were quite simple, but at the time they were state of the art. The key issue with some of the information is partly timing, as Dr Gardner has said, and partly innovation and the need to pick up and apply new methodologies and techniques for working out what is happening as a result of various decisions. I guess that one of the messages that I want to give you today is that there are tools and techniques that at the moment are innovative and are being tried by only a few people but which, as they become more refined, will provide an opportunity to do some quite sophisticated accounting and, in particular, to start matching up the different activities and see what the carbon account, taken as a whole, looks like.

With that in mind, I should say that, when our institution tried to understand whether a bio heat plant was the best thing for a low-carbon piece of

infrastructure, we found it much more complicated than we had ever imagined. That has not stopped our work, because we still believe that it is the right thing for us as an institution to do, but it has led us to be much more nuanced about how we influence the broader system and make it the right decision for the whole carbon system for Scotland and beyond.

This brings me back to Mr MacKenzie's point about electric vehicles. If you have the infrastructure to put something sound such as electric cars in place, the evaluation will change as indeed the electric cars in that example changed and as our ability to account for them changes. Those two things need to move alongside each other.

10:45

Alex Johnstone: Are the carbon accounting methods that are being used by the Scottish Government to evaluate its policies as up to date and cutting edge as they could be or as they need to be in order to assess policy effectively?

Professor Bebbington: No, they are not yet, but I guess that that is another reason to give evidence. They are probably as up to date as they can be, given the understanding of how to do carbon accounting that there was four or five years ago, but there is an opportunity for the Scottish Parliament and Scottish Government to leap forward and get to the cutting edge of it, which is emerging slowly but surely.

Another problem with the carbon accounts within the Scottish system is that there are many different ones, each of which does different things. It is quite important to have more clarity about what the carbon accounts do. I will illustrate that with a clear example from the Climate Change (Scotland) Act 2009. There is a requirement to reduce production carbon—the carbon that is emitted in this country—while, at the same time, the act requires a consumption carbon figure to be produced each year. Although the production carbon figure is drawing back, the consumption carbon figure is increasing, and the control that Scotland might have over those two modes, if you like, is different. Having the conversation about how the different accounts look when and they reflect on each other is by far the most important thing, because that is where the learning comes from.

Alex Johnstone: What are the limitations of the current carbon accounting methods that are being used by the Scottish Government? As well as limitations, are there any areas in which inaccuracies are creeping in that we should be aware of?

Professor Bebbington: There are three areas where there might be limitations that could be addressed. The first of those, which has been spoken about already, is the extent to which the infrastructure plans and the RPP are not fully integrated. If those policy aspects could be better fitted together, the carbon accounts that are associated with them could also be better fitted together. Our contribution as accountants is in putting information behind better-quality decisions and joined-up consideration of transport, heating and all the other elements.

The second limitation is that, particularly in previous sessions, the carbon account of the budget has been produced but does not seem to have informed any decisions. The accounting decision nexus is often missing, and I would say that that is a limitation. That is not the case for all forms of carbon accounting, though, as the production accounts and what we might need to do under section 36 of the 2009 act are joined up to decisions, even if the timing might be delayed.

The third limitation is in the understanding of what the carbon accounting might be telling us. We all share that limitation—

Alex Johnstone: We can all interpret the figures.

Professor Bebbington: Exactly. That is where a partnership approach is necessary between the folk who are very good in that field and the people who are making the decisions on the ground. It is like most new forms of accounting—we have some idea of how they operate, but we cannot truly know until we test them in real decision-making contexts. Accounting information is a sort of technology, and the innovation relies on people experimenting with it.

The three limitations are the underlying joined-upness, the joined-upness of the carbon account and the decisions and the joined-upness of ideas about how to do this well and the practice of doing it.

Alex Johnstone: Notwithstanding what I said a moment ago about interpretation, are there any elements of the accounting process that are now producing—or are in danger of producing in future—errors or inaccuracies in the figures that we interpret?

Professor Bebbington: Some of the carbon accounting is pretty tight and clear. Those are the national level accounts to which the 2009 act ties us and that the RPP looks at. The areas where there is a range of estimates—you will see, from the paperwork that I have presented, that there are huge ranges of estimates—are more the "what if?" questions. For example, "If we did this, what might be the broader effect and what might be the dimensions of that broader effect?" The error bars

are enormous. It is not so much the singular figure that is important; probably the most valuable thing is knowing that it is highly uncertain.

Again, the levels of accuracy, usefulness and reliability of different forms of carbon accounting are different, too. Some of them are extremely tight and robust. Others—particularly the "what if?" questions—are much looser. In that regard, knowing how big your ranges are is probably more important than knowing the actual numbers at each end.

Alex Johnstone: So these types of figures or interpretations would be more useful to us on a one, two, three or five-year scale than on a 2050 scale.

Professor Bebbington: For example, yes. However—this is where the issue relates to what others have said about infrastructure—even my university's glimpse of how negative our positive choice to go for biomass might be, in terms of the broader system, alerts us to the need to say something about land-use policy and forestry policy as a way of supporting a micro-level good choice to be a bigger good choice, too. It is not purely a three-to-five-year scale; quite long-term views can be informed by that, as well.

Teresa Bray: On the micro level, it is important that we evaluate Scottish Government programmes as they are under way. For example, the energy efficiency programme will repeat the installation measures in 1.6 million homes and there must be lessons that we can learn during that process about ways in which we can do things smarter through, for example, off-site construction. We are probably not doing enough to evaluate the effectiveness of our programmes to ensure that we are getting the benefits of the measures, are minimising the rebound effect and are ensuring that people are using their heating systems efficiently. Some 32 local authorities are delivering area-based schemes. How much are we doing to co-ordinate shared learning from that so that we can get the best from it?

Scotland also has different housing from the rest of the UK. A lot of the overall approaches to energy efficiency are based on the UK level, rather than taking into account the amount of traditional build that we have in Scotland, the number of tenements and the much more exposed locations. There is a need for research and development to ensure that we have the best approaches to improving our housing and can feed our practical experience into theoretical models to ensure that we make the best use of the large amounts of funding that are required to improve energy efficiency.

Clare Adamson: We mentioned Norway earlier. Professor Bebbington, given that we have already changed the methodology for carbon accounting in Scotland, are any other countries ahead of us in this area? How do we compare ourselves internationally if there are different levels of accounting across Europe and the world?

Professor Bebbington: I do not have a full view of all the carbon accounting that is going on, but the views that I have into individual countries suggest that they are tending to do carbon accounting in association with the things that they do either well or badly. The other place that I follow with a bit of depth of knowledge is New Zealand. Its carbon accounting for animal and agriculture-produced CO_2 is sophisticated, for obvious reasons—it has lots of ruminants and 50 per cent of its carbon impact is agriculture based.

In the areas in which Scotland is best in the world, it is because of the early innovation with the 2009 act, because of the RPP and because the joined-upness and size of the country means that a great potential lies in the integrating of accounts—that is not fully realised, but that is where the excellence is.

There is nowhere that is doing the whole thing better than here, but there are parts of the world that are dealing with their problematic carbon better—the nitrogen, carbon, land and water flux, for example, is modelled superbly in New Zealand, on an agriculture model basis, but that is because that is that country's problem, which is quite different from ours.

Adam Ingram (Carrick, Cumnock and Doon Valley) (SNP): Can the witnesses define the intrinsic social, environmental and economic benefits of low-carbon infrastructure? Are those benefits taken account of in the current budgetary system? Should they be?

The Convener: Who wants to go first?

Dr Gardner: I will have a first stab. There is partial recognition of the broader benefits in the capital investment infrastructure decisions that the Scottish Government makes. The benefits of low-carbon infrastructure are acknowledged, but that is not necessarily borne out in the decision making. We see language that reflects the value of low-carbon infrastructure, but as Sara Thiam alluded to, only 50 per cent of our capital investment is aligned with low-carbon infrastructure.

The Green Alliance task force looked at the public sector's roles in catalysing investment in low-carbon infrastructure and at its benefits. It identified particular attributes of the public sector's contribution to that type of infrastructure through, for instance, supporting enabling infrastructures. One example would be district heating networks to connect isolated district heating communities so that we get greater benefits of scale. The public sector also needs to support emerging

infrastructure, such as energy storage—there is a need to support that market and reduce the risk.

Teresa Bray provided an example of how the Scottish Government's energy challenge fund is supporting innovative low-carbon activities, which is another role. In addition, there is evidence that public sector investment can lever in significant private sector investment to the energy efficiency sector. Another role is addressing market failures, which is what the issue is all about. The climate change problem is the biggest market failure. The public sector needs to correct that, either through investment or regulation.

Those are the particular roles that the public sector has to play in instigating or supporting greater deployment of low-carbon infrastructure. Others might want to speak to the wider benefits that that will bring.

John Lauder: I am happy to have a stab at the transport benefits of emphasising greater low carbon. We talked about electric vehicles. We have a major bus manufacturer in Scotland and switching to more electric buses would have a benefit for that manufacturer straight away. In addition, if we see fewer short trips being made by car in an urban context, as we see in northern European cities, air quality will improve. At the moment we have an issue with air quality in our towns and cities, which has health implications and means that local authorities face fines from Europe.

All the evidence from towns and cities in northern Europe that have emphasised greater movement by low-carbon methods such as walking or cycling, or buses or trams in public transport, shows that people enjoy living in those cities more, spend more time shopping in them and spend more time on recreation in them. Those towns and cities are more prosperous—there are lots of good examples of that. I would see those as associated benefits of emphasising a greater level of low-carbon transport.

Adam Ingram: We heard mention of the strategic transport projects review, which is conducted on an on-going basis. When we think of which projects we should be prioritising, should low-carbon infrastructure projects score higher or lower? In my constituency there is a project to bypass Maybole, for which people have been campaigning for about 50 years on the grounds of road safety, congestion and economics. That is not a low-carbon infrastructure project, but I would score it very highly. Why should a low-carbon infrastructure project be scored higher than that one?

11:00

John Lauder: Why should a low-carbon—Ah, I see; you are asking why something else should be funded rather than the bypass.

Adam Ingram: Yes. Well—I would rather that that did not happen.

John Lauder: I understand. On the scoring, my understanding is that time savings are a big driver for assessment in the Scottish transport appraisal guidance. I do not think that it takes everything in the round.

Everything has to be seen in the context of where a transport project is and the effect that it has. There is not one rule that will fix it all. I do not want to deny you your bypass—there might be lots of benefits. As you say, there will be health and other benefits to Maybole, as well as time-saving benefits in terms of goods vehicles getting through. However, low-carbon capital infrastructure investment does not score very highly at the moment, so it does not really feature in the strategic transport projects review.

Professor Bebbington: I would like to make an observation that supports Ms Bray's point about behaviour change in households. It relates to research that we are trying to track at the institution where I work. We are trying to reduce our energy bills in-house, which will have an economic benefit. Given that we are working on a variable but fairly fixed income, we will be able to spend more money on our core purpose as opposed to on electricity. There is an economic benefit for us as an institution as we invest in low-carbon infrastructure. It takes a lot of investment but it will pay back.

We are identifying further spillover effects through a series of other research projects, one of which is how the people who work for us view their energy-saving behaviours at home and at work. That follows very much an "I will if you will" ethos; if we, as an institution, are seen to be trying to reduce our carbon footprint, staff feel much more motivated to be part of the behaviour change that is required of people working for us—behaviour change that will support our efforts. If behaviour change is being ignored at work, many of our staff are not motivated to change their behaviour in their home life. The fact that we are trying as an organisation to innovate in low-carbon infrastructure is really enthusing staff. They see themselves as part of bigger efforts to address the issues at work and at home.

We are also using ourselves as a case study for a lot of our teaching with our students. This is where different forms of carbon become quite important. We have a large international cohort of students and the footprint that is caused by their coming and going from us for their education is

quite large—we have a sense of what that is. Even though it is their footprint, our behaviour induces it. Indeed, the wish for a world-class education system will induce transport carbon. However, at the same time we think that there is something to be said for bringing students, particularly from countries that may be not so advanced in thinking about climate change, to a country that is innovating in a series of ways. For us, a big spillover effect of our own innovation, but also the innovation in Scotland, is the ability to teach and communicate and send that back with the students.

For example, our Russian students are always amazed by recycling—they have never seen it before. We may occasionally beat ourselves up for being not very good at most things, but we are really good at lots of things. Likewise, there is the whole idea of starting to build low-carbon infrastructure. There are charging points for electric vehicles outside various parts of the university. The spillover effects of being an exemplar and seeking to articulate what we are doing as a nation or as an organisation are important in knowledge terms.

Teresa Bray: The energy efficiency programme is very different from any other capital programme. You are looking at carrying out works to the 60 per cent of the housing stock in Scotland that is below the required standard. That is affecting millions of people. It is not an issue that affects them when they occasionally drive down the A9 or whatever. Every day of their lives they will benefit from the improvement in the energy efficiency of their homes.

That leads to a number of things. The programme is Scotland-wide, so we are looking at jobs across Scotland. We are looking at long-term jobs, too. There are not enough people with the skills to do those jobs, so there will have to be a big training up of people to do those jobs and ensure that they remain in Scotland. If we have a long-term programme, people will see that as something to invest in for the future.

There are also health benefits. A number of people are underheating their homes, which results in respiratory issues, particularly among the elderly population and young children. Improving that situation has direct benefits for the health service. People also make savings on what they spend on energy, which allows them to invest in other things in the local economy.

The programme is labour intensive in comparison with high-tech approaches, which means that the money stays in Scotland. It is very different because it is widespread. It does not involve spending very much on any individual home; at the scale that we propose, the individual amounts are not large.

Adam Ingram: Are those other effects taken into account when budgetary decisions are made?

Teresa Bray: I do not have detailed knowledge of how such matters are taken into account, but I think that they are unlikely to be considered, because such a programme is so different from any of the other big infrastructure programmes. Evaluating the benefits of building a new Forth road bridge is much easier than evaluating the benefits of doing huge works across all our housing stock.

Adam Ingram: That begs the question whether all those factors should be taken into account when we make capital investment decisions.

Dr Gardner: They should be—absolutely.

Adam Ingram: How do we gather the information and put it into the system?

Dr Gardner: Explicit recognition is needed of the longer-term benefits and costs that are associated with decision making about our infrastructure, and a greater effort needs to be made to account for the preventative spend consequences of infrastructure decisions that we make. A big thrust of the low-carbon infrastructure task force's work is to highlight that we will be living in 2050 with the decisions that we make now. If we make the wrong decisions now and lock ourselves into high-carbon infrastructure that contradicts the Climate Change (Scotland) Act 2009, we will have to spend considerably more money on retrofitting to fix the situation. The longer-term perspective needs to be brought to bear on infrastructure decisions.

I do not know whether I am right in observing that the policy decisions in the RPP are often considered in the context of the 2009 act, but the capital budget does not make the same explicit acknowledgement, and the infrastructure budget is not as closely aligned with delivering on the 2009 act—it does not have the same read-across or make the same effort to match with that act. We could do things, such as ensuring that our transport projects have a carbon price, which would go a long way towards recognising the long-term costs of road-building programmes and what is associated with them and which would elevate active travel investments. Such investments would also be brought to the top if we accounted for the improvement in air quality that we would experience in our urban environments.

The issue is where the boundaries are drawn around the consequences of infrastructure decisions. I fear that we draw them too narrowly, so we prioritise short-term investments in big bits of kit over distributed investments across Scotland that would have long-term benefits. Analysis has shown that energy efficiency offers a return on investment of 2:1, so it is very competitive when

stacked against traditional infrastructure investments.

Adam Ingram: Does the low-carbon infrastructure task force have any views on the issue?

Sara Thiam: Sam Gardner has eloquently expressed the views. The committee is putting its finger on the nub of the problem. The Scottish Government is trying to mainstream climate change considerations, but it is also trying to balance them with economic considerations—you referred to your bypass.

Economic considerations do not necessarily sit naturally with a low-carbon pathway when we consider investment in new roads infrastructure, for example. As Jan Bebbington said, we should have a better read-across between the infrastructure investment plan and the RPP. The impact on social infrastructure spend should be thought about. We have all touched on spending that will happen down the line because a low-carbon infrastructure decision has not been taken. If we got better at capturing and counting that and building it into our infrastructure decision making, that would be extremely valuable. Does Jan Bebbington have thoughts on how that might be achieved?

Professor Bebbington: There are social accounting techniques. It occurs to me that, particularly around energy efficiency, you could put a social account alongside that. For example, what is the human benefit of increasing warmth and wellbeing? Should you wish to do so, you could model that and make a guess not only on the reduced health costs that are borne economically, but on the health costs that maybe do not present on the economic system and are borne by people. It may be interesting to set up a case study on a programme that realises the multitude of benefits that come from low carbon, including on low carbon being pro-social.

Adam Ingram: Will you be pitching for that? [*Laughter*.]

Professor Bebbington: Oh no—I am pitching for Teresa Bray, because she is the expert.

Mike MacKenzie: My first question is probably directed largely to Teresa Bray. The Scottish Government has made a commitment to making energy efficiency an infrastructure priority. The panel probably knows that the First Minister has announced a significant part of our manifesto, which is a commitment to build 50,000 affordable homes over the next session of Parliament. Given that those new homes will have to comply with part 6 of the energy efficiency part of the buildings standards, they really will be more energy efficient compared with older housing from a previous era. To what extent can we reduce the carbon output through the new housing?

We have made significant progress along the lines that you suggest of increasing, over the past few years, the number of energy performance certificates at C or above. Will you confirm that that is the case?

We are reaching a problem area with the existing housing stock. We have picked much of the low-hanging fruit—more than 60 per cent of accessible lofts and cavities have been insulated. Given that perhaps 800,000 or more of our homes—or about 30 per cent—are in the hard-to-treat category, how much more yield in carbon and energy efficiency terms can we realistically get from the older housing stock?

On the same theme, the committee is dealing with the Private Housing (Tenancies) (Scotland) Bill. Responsible landlords who spend a lot of money insulating their properties do not get a penny more in rent for doing so, nor do social housing landlords get higher rents for well-insulated properties, despite the tenants making significant savings on fuel bills. Houses that are well insulated do not necessarily command higher prices, despite the energy performance certificates. To what extent are market forces—in not being aligned and sensitive to energy efficiency—unhelpful? How can they be made to help?

I appreciate that I am touching on a lot of areas. I will move on to other territory with my next question, but will Teresa Bray—and any other panellists—address those points?

Teresa Bray: I do not dispute the need for new housing. New housing is not replacing existing housing, except in exceptional cases, but we need it because of population growth and changes in household size. There is a desperate need for new housing for everybody to live in, but the vast majority of the stock that will be here in 2050 has been built—more than 80 per cent of that stock exists.

11:15

You referred to low-hanging fruit, but probably only the lowest of the low-hanging fruit has been addressed. The figures are probably slightly better than you say for lofts and cavities, but we need to consider how to overcome the issues with lofts. A lot of the issues with hard-to-treat lofts are not actually that difficult and are to do with access. Many tenement lofts still have not been insulated, but that is not because of technological difficulties; the issue is engaging with multiple householders. We should make use of the Tenements (Scotland) Act 2004 to get that done. There are lots of practical things that can be done, but we need

organising of the market as much as anything to make those things happen.

We have done very little on our pre-1919 stock, but that does not mean that things cannot be done on that stock. The vast majority of tenements and older houses are good housing and there are things that can be done. Historic Environment Scotland is looking at new approaches. There are issues with ventilation in such houses and there are things that prevent double glazing from being put in historic properties, but there are ways of overcoming those issues.

Things can be done that are not all that difficult to do, although they are not quite as easy as insulation of standard lofts or cavities. Those things would not involve a step change in the level of expenditure that is required. Some properties are in such poor condition that we should not consider insulating them and they should not continue to be lived in. That is a very small proportion of houses, but there are some. In particular, some houses have been extended numerous times and have never had proper work done to them. There are things that need to be done.

On your question about valuing energy efficiency, one of the reasons why energy efficiency is not valued and so does not add to the price is that there is so little housing. That is the real difficulty. With rental properties, people just need a house or a flat to rent, and so they cannot put a value on energy efficiency. There are also issues about house prices, which are very much driven by location. If someone could choose between two houses with all the same factors, energy efficiency might come into it but, because of the way that the market currently operates, there are too many conflicting demands and there is not enough supply to allow people to make such choices.

Some of the housing in the private rented sector is in the worst condition. There are real issues about the return that private sector landlords are making from letting substandard housing. We need minimum standards to ensure that, at the point of rent or sale, those properties are brought up to what should be considered as an acceptable level of housing for people to live in. Unless we introduce minimum standards, that is not going to happen. It is not just about energy efficiency. There are issues about disrepair in a lot of our private rented stock. It is the worst stock in Scotland and there is a need to improve it. Given the returns to private landlords and the low interest rates, there is little justification for them to say that they would have to charge higher rents to support that improvement. They can afford to do it and there is a need to ensure that that happens.

Mike MacKenzie: I want to tease out another issue that is allied to what we have been discussing. Recently, an energy expert advised a constituent of mine who has an older traditional home just to knock it down and build a new one, on the basis that the home was in the hard-to-treat category. When I talked about hard-to-treat homes, I was not talking just about loft spaces, accessible or otherwise; I was talking about the whole home. I am sure that you will agree that it is important to insulate the complete envelope of the building and not just the loft space. What concerns me, and I think what that energy expert was getting at, is that, given the achievable U-values, as measured in watts per square metre per degree kelvin, it just was not good value to treat that home. It just did not make sense, in economic terms or in energy terms, to increase its insulation when compared with building the equivalent new home. Is there merit in that argument?

Teresa Bray: It is always difficult to say that somebody's home is no longer fit for purpose. The UK has some of the oldest stock in the world. In a remote rural area, you are often talking about a small but and ben that has had an extension added for a kitchen and a loft conversion and lots things that are just making do. Some housing is just not fit for the 21st century. It might also not meet accessibility standards as people get older. Can those houses be adapted so that people can continue to live in them? Should we spend £30,000 doing up a house that might well be in the wrong location and which does not meet accessibility standards?

Not all homes will be able to benefit, but we are talking about a very small minority. Only 2 per cent of homes in Scotland have a G rating, which is the lowest energy efficiency rating. Sometimes it is possible to do things to such homes, but in a few cases it might be better to build a new, high-quality energy-efficient home that provides accessibility to other services and other people, instead of being 2 miles outside the local hamlet. Occasionally, we need to question whether we should be rebuilding all homes. We have accepted that some housing stock—for example, some of the pre-war housing and some of the tower blocks—is no longer acceptable, and at times we might have to do that with other housing.

Mike MacKenzie: Thank you. That was very useful, because—

The Convener: Can we hear from some of the other witnesses on that?

Mike MacKenzie: Certainly, convener.

John Lauder: In the housing context, I would like to mention transport connections, particularly to a new estate or a new group of houses. If we build new houses in a location that means that we

lock in the need to use the car for every trip and do not provide people with at least some option for getting to a transport hub, or if we do not ensure that the estate is designed in such a way that a bus route could go through it, we might undo the energy efficiency of the housing stock. People might feel that the only option is to take the car, no matter how short the journey is. We need to give a bit of thought to that.

It strikes me that the Scandinavian experience seems to be that transport links are the first thing to be considered and that housing is designed around them. That means that new build in those countries is as accessible and well linked as it can be to the local area.

Mike MacKenzie: That is a very interesting point. I am very grateful to you for mentioning that, because we are undertaking a root-and-branch review of the planning system at the moment. Do you think that, potentially, there is quite a high yield—or a lot to be gained—in this area? In planning the next 50 years of built environment and infrastructure, perhaps we should go back to and learn lessons from our forefathers, who primarily walked to work because their housing was close to their place of work. If we took account of that and of the need to be close to a transport hub, do you think that we could make some real gains without much expenditure at all?

John Lauder: Yes, I do. The "Designing Streets" planning policy that we have in Scotland is an exemplary policy. If we delivered all new build to that design, we would have linear builds on a grid pattern that would allow people to access transport. I totally appreciate that, in the modern world, people do not necessarily live near where they work. We have built commuting—and sometimes long-distance commuting—into our housing developments. An opportunity has been missed. When we create new public transport links, such as reopened rail lines and new roads, we do not do enough to ensure that we build links from the new housing stock to those transport links to allow people to use public transport for the onward journey.

That takes us on to another point: how joined up is public transport? Is it possible to enable people to have a more seamless journey by walking or cycling to a transport hub? I am a frequent visitor to Switzerland, where it is very easy, even in quite small towns, to make a very well-joined-up journey. People can walk and get a bus or walk and get a train, and they know that the whole thing will be joined up. I do not think that we have designed that into our housing planning, but perhaps "Designing Streets" will help with that.

In addition, perhaps the planning system could do more to encourage more building on brownfield sites in urban settings instead of allowing developers to build outside the town, with the result that the town continually grows, we compromise the green belt and the distances become greater. It might be possible for us to make the distances much shorter.

Dr Gardner: I want to return to energy efficiency. The real value of the designation of energy efficiency as a national infrastructure priority, which is a particularly welcome commitment, is in how it changes the nature of the approach to energy efficiency and moves us away from an annual cycle of uncertainty around what the budget might be and the absence of any clear goal to the provision by the Scottish Government of a very clear outcome.

We would urge the Scottish Government to set that goal as being a minimum of C by 2025. By establishing that goal-orientated approach, we would put the energy efficiency programme on the same standing as other infrastructure projects. We would never envisage pursuing a bridge development without knowing where it was going to end. We should take the same approach to our energy efficiency structure. We need to know what that goal is, which will in turn provide a clear market signal that will help to ensure that we get that training and upskilling, because a market is being created as a consequence of that level of ambition.

I reinforce the value of that designation but add that it needs to be complemented by a clear outcome so that everyone knows what we are working towards.

Sara Thiam: I will add to John Lauder's comments. A low-carbon transport hubs project is included in our longlist of 10 projects, as well as the re-engineering of city centres. On housing, the location of public transport is vital but, equally, water supply and energy supply need to be put into the mix when we look at planning policy.

Mike MacKenzie: Thank you. I will move on, because that ties in quite neatly with my next question. What infrastructure areas do you feel should be priority areas for the Government not only with regard to spending but with regard to other Government policies? We have touched on planning. Are there other spending areas and complementary policy areas where we can achieve greater effect?

Sara Thiam: The 10 longlist projects divide roughly into three categories. One is transport; the second is energy, looking at district heating and so on; and the third is energy efficiency, looking at energy from waste water, growing local energy economies and so on.

From taking evidence and looking at the peer reviews of the 10 projects, we have begun to realise that, in narrowing them down to a list of

three from 10, our shortlist is probably not going to end up how we thought it would. In a way, the projects are straw men, but looking at them in the round has enabled us to understand the systems approach. It is exactly what Jan Bebbington is saying about the systems approach: we cannot take a decision on one of those projects without that impacting on one of the others. The shortlist that we end up with could look very different from how we envisaged it. We may have a transport project and energy projects on energy storage and efficiency.

Dr Gardner: To take the discussion back to where the emissions are coming from, I said earlier that 50 per cent of our emissions are from the heat sector. It is an area that is crying out for leadership and investment—there is an absence of private sector investment and a lack of confidence about the future development of that sector.

Obviously, there are uncertainties that come from Westminster and we may hear this afternoon about the future of things such as the renewable heat incentive. However, I think that there is a clear case to be made for the Scottish Government to combine its planning and regulatory powers with targeted investment of its capital infrastructure in order to bring together isolated district heating pockets.

Edinburgh is an example of an area where there are a number bits of district heating infrastructure that, if they were combined, would offer the potential for other heat loads to connect to them. I suspect that that will not happen in the absence of support from the public sector to provide the necessary pipework.

My other point will sound a little repetitive, I suspect, but I want to highlight that the emissions from the transport sector are pretty much the same now as they were in 1990, despite the fact that we have had growth in car kilometres. They are the same as they were largely because of efficiencies that have been driven by European Union directives.

11:30

If we are to drive down those emissions, we need to start planning our infrastructure to ensure that it supports low-carbon behaviours. I refer back to the RPP's expectation of a 300 per cent increase in emissions savings in the forthcoming years. Of course, that will be secured not by infrastructure decisions but by policy decisions, but it is, in the longer term, an indication of the level of change that will have to take place in our transport infrastructure.

One of the infrastructure projects that the low-carbon infrastructure task force identified—and I point out that it was not us who identified those projects; we commissioned Jacobs to canvass opinion among different stakeholders—was the upgrading and improvement of our existing rail network. For example, the Perth to Inverness line is, as everyone who has to travel on it knows, subject to any number of problems. For a start, because the line is, at various points, single track, you can get held up by other trains. Clearly, looking at opportunities to increase the capacity of our rail network is also about finding ways of making the alternative to cars more attractive, and that is an area where the Scottish Government's infrastructure budget could be well targeted.

John Lauder: At the risk of repeating an earlier point—and forgive me if I do—I think that transport works in isolation: for example, we do not look at health implications. By that, I mean not just air pollution, which is definitely having an effect—a figure of £2 billion has been cited as the cost to the economy of failing to tackle it—but congestion. As I understand it, the chief medical officer has said that we are now looking at 10 per cent of the national health service budget being spent on treating symptoms of obesity, a big driver of which is inactivity, or people's inability to walk, cycle or whatever every day to and from the places that they need to get to and their using their cars instead. There are major implications for transport in helping to hit health targets and reducing the burden on that budget. Those two things could be combined much more closely, and I do not think that that is necessarily happening at the moment.

I wanted to make this point earlier, convener, but I note that the World Health Organization has produced the very helpful health economic assessment tool, or HEAT. I am not sure that that is being used in the appraisal of transport projects, particularly small local ones, but we use it in our evidence to the sustainable and active travel team, whose funds we manage. There is talk of benefit to cost ratios of £13 for every pound spent, which is a pretty good return on investment. That tool could be used more widely and could bring health and transport together, which would result in a complementary benefit from greater investment in active travel modes such as walking and cycling.

Mike MacKenzie: I have a final question, convener.

The Convener: Could you be brief, please?

Mike MacKenzie: I will.

Has the Scottish Government already undertaken any investment programmes that have been effective and which we can perhaps magnify, expand and roll out across Scotland?

John Lauder: For five years now, we have been running the community links project, which is a match-funded partnership involving local

authorities, Transport Scotland and other stakeholders. The funds that we manage grow every year—we act as the budget holder, if you like—and every year we are oversubscribed with ideas. I mentioned benefit to cost ratios, and I think that they show the success of the project.

The project itself has been pivotal in helping Edinburgh, for example, get to where it is now; in addition, evidence from other towns and cities is growing to show that the programme is beginning to have an effect. It is still early days—the project has been running for only five years—and the data set is not substantial enough for us to make a big assessment of it, but I think that it is going well and has been seen as a success throughout the UK.

Dr Gardner: I should also flag up the competitive process for district heating loans, as a consequence of which we have seen investments in district heating across Scotland. However, those projects need to be brought together and, where possible, enlarged to ensure that they are not too isolated and that networks develop. Nevertheless, it would great if that fund could continue.

Finally, although we would say that the funding for the energy efficiency programme has not been adequate, it is beginning to show its benefits, and we are beginning to see the number of properties that need loft or cavity-wall insulation come down year on year. That said, although we are beginning to see the programme's impact, it is not yet at a scale that reaps the transformative benefits that it could offer. However, there is a lot that can be learned from it. A lot of benefits have been enjoyed as a consequence of existing energy efficiency programmes.

Adam Ingram: What is the converse of that? What infrastructure investment should be avoided in the future if we are concerned about achieving our climate change targets?

Dr Gardner: We should avoid infrastructure that supports high-carbon behaviours. For example, a road-building programme that envisages all the roads being low carbon because electric vehicles will be driven on them is not a coherent vision of the 2050 future that we are heading towards. We cannot replicate the existing level of car use with electric cars, so a road-building programme that is dependent on the mass deployment of EVs on the same scale as that of today's internal combustion engine does not square with the 2050 vision.

We have to see a greater realignment of our trunk road investment with those bits of infrastructure that, as we have said throughout this evidence session, offer wider benefits—not just low-carbon benefits but wider health benefits. In that regard, John Lauder talked about the obesity challenge that Scotland and the UK face. We need to step back from the perspective that we often bring to our infrastructure decisions and try to see them more in the round. If we did that, we would begin to be a lot more critical of some of the decisions that we have made in the past 10 years or so and would see the benefits of the alternatives.

Professor Bebbington: Maybe I could just reinforce that point. I do not think that there is a list of things that we would never seek to do, because infrastructure has multiple aspects, including social and economic ones. I think that Dr Gardner's point is that we need to look very carefully at design and not take normal design for granted. Perhaps we are partly hesitant to say what we would stop doing because it would be invidious to make such a choice. If I may sum up where we are at, I would say that anything that we have to do has to be done much better.

Adam Ingram: In that vein, it has been suggested that an independent Scottish infrastructure commission should be set up in order to more effectively direct infrastructure investments—both public and private—towards a low-carbon Scotland. Do you agree that we should have such an initiative? Could you explain how it might work?

Dr Gardner: That suggestion was in our written evidence, so perhaps I should have a go at explaining it. I believe that it is a sensible suggestion. Behind a lot of what we have talked about today is a point around governance, decision making, integration and being able to see the whole when making decisions. The low-carbon infrastructure task force came about partly because we were not observing the existence of a pipeline of low-carbon infrastructure projects. The task force was a response to what we regarded as the need to identify such projects.

There is a need for that infrastructure development and plan to be taken forward in a way that ensures that we are confident that it is consistent with the Climate Change (Scotland) Act 2009. That requires some scrutiny, but it is open to debate whether that should be done by an independent commission or through a separate governance process that the Scottish Government establishes. However, I think that it would be advantageous to bring into the room expert opinion that understands the infrastructure challenges that we are facing as we make the transition to a low-carbon economy and can see where the need is most pressing and where the Scottish Government has a role to play to catalyse change.

Sara Thiam: Our president, Sir John Armitt, who is in town later on today, is a commissioner on the National Infrastructure Commission, so it will not surprise the committee to learn that the

Institution of Civil Engineers, at any rate, thinks that infrastructure commissions are a good idea. That is largely because the life cycle of infrastructure, as this committee understands only too well, runs beyond parliamentary terms and requires cross-party support if it is to be designed, planned and delivered effectively. Equally, a commission would look very carefully at the why and at whether to maintain existing infrastructure rather than build new infrastructure, and make decisions about when not to build new infrastructure.

The extent to which or how the Scottish Government will relate to the National Infrastructure Commission and exactly what that commission means remains to be seen. Is it a UK-wide infrastructure commission, or should there be a separate Scottish infrastructure commission? The types of issues that the National Infrastructure Commission is looking at in the first year perhaps do not seem at first sight to be particularly relevant to Scotland—it is looking at the northern powerhouse and cross-Pennine transport, for example—but issues to do with energy and energy storage are certainly of keen interest to us in Scotland, particularly as we have a great deal of expertise in that area. Indeed, much of the energy storage in the UK is in Scotland. Cross-border rail is of particular interest to us, as are high-speed rail and other such transport issues.

The Convener: What would be the benefits of having the commission? How much would it cost to establish a commission in Scotland?

Sara Thiam: I would certainly be happy to come back to the committee on how much that might cost. I am not clear what costs are associated with the National Infrastructure Commission, but I do not think that they are of any great order of magnitude, as it largely comprises external experts who give their time. The Institution of Civil Engineers will support the commission in some of its national needs assessment work.

A body at arm's-length from Government that can give a clear sense of direction, try to get cross-party support for particular issues—especially when those issues are perhaps politically difficult—and advise the Government, can make a very valuable contribution. That approach has worked particularly well in countries such as Australia and Canada, which have had infrastructure commissions.

Alex Johnstone: How will we avoid the well-known situation in which we set up a commission that establishes a list of priorities, but the Government simply picks from that list based on its own political priorities?

Sara Thiam: It is interesting that the initial work on the National Infrastructure Commission was done by Sir John Armitt on behalf of the Labour Party. In fact, that has been adopted more or less wholesale by the existing Government in Scotland. However, you have certainly identified a risk and I am not quite sure how we can overcome it. That is politics, I guess.

Adam Ingram: Scotland has sought to be a leading country in the climate change arena. We have certainly been acknowledged by the United Nations as "a shining example", for instance, although we have a way to go to fulfil our ambition, of course. Can you suggest innovative ways that can put us at the forefront in that field?

John Lauder: I cannot offer members an innovative way from my sector. What we have seen in other small northern European countries is the way to go and it is not terribly innovative, although we might find it innovative to follow the Swedish model.

Perhaps one innovation would be the Swedish model of aiming to have no fatalities on the roads, which is called vision zero in Sweden. That has meant a radical redesign of roads, streets, residential and shopping areas, of how speed limits are set and enforced, and of how roads are built and maintained. That would be innovative, I think, so it might be a model to follow. The rest of it is just good practice from other countries that are not so different to us.

11:45

Dr Gardner: I echo that, but it is really not innovation that is required; it is leadership. We have world-leading climate legislation but other countries around northern Europe have world-leading climate policies. In many cases, they are the norm and we could do an awful lot to learn from them, whether it be from district heating in Copenhagen or whatever. That is not to say that such policies can be transferred and applied wholesale but there is learning that can be enjoyed. Similarly, on transport, plenty European cities can demonstrate thriving, productive and enjoyable places to be that have high levels of active travel. They have attractive cities that are good to be in.

I therefore caution against a search for innovation. There will be examples, particularly in the power sector, where there is a need for new technologies but, more often than not, it is about the need to apply what we know is necessary. Demand management measures in the transport sector have been highlighted by the Committee on Climate Change and by this Infrastructure and Capital Investment Committee, and they were in the very first draft of the RPP, but they have never come to the fore. It is perverse to think that we can achieve the climate change targets and a low-

carbon economy, and enjoy the benefits of a cleaner urban environment without matching our investment in public transport with demand management measures to encourage people to get onto that public transport.

Teresa Bray: One of the difficulties is that we are not looking at a huge project that we can put our stickers on to show that it will be a low-carbon solution to all our needs. A lot of the things that we want to do will not be visible to anybody in the long term. If you improve energy efficiency, nobody sees it. The form of heating that we have, whether it be district heating or individual boilers, is not seen.

We should be looking to be proud of having a culture that embraces low-carbon approaches. We value an increase in house prices, but that is not necessarily good for society. Having a culture that values the role that we are playing in society, that values the fact that individuals can enjoy the cities in which they live because of their low-carbon approach and active travel, that they can live in houses that they enjoy living in, and that they can enjoy their public spaces, will make the place much better to live in. It might not be easy to assess, but it will make the people who live there happier. That is what we should be looking to value, not having a large infrastructure project that we can put a sticker on.

Professor Bebbington: One of the great joys of being called as a witness to this kind of committee is that I find out a huge amount about what is going on from my co-witnesses. I envy the committee its position, in many ways.

To go back to Dr Gardner's point, one of the innovations that is available to Scotland, especially given the passage of time since the passing of the act, is that we can learn from ourselves. There is no silver bullet of innovation out there, but there must be multiple innovations around active travel, infrastructure and all sorts of things. That knowledge and learning is probably dispersed across our whole community so we need some way of drawing it together to find out what has really worked well in the past seven years, and what we might learn from it and take forward. That might be a convening role that the Parliament and the Government could exercise.

The Convener: Who wants the final word?

Sara Thiam: The setting of ambitious targets shows great leadership and the Scottish Government must be congratulated on that because it sets the bar.

The Convener: As there are no further questions and no more points, it remains only for me to thank the witnesses for their evidence and their patience: we have been going for almost two hours. Thank you for your time.

That concludes today's committee business.

Meeting closed at 11:49.

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