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Official Report

INFRASTRUCTURE AND CAPITAL INVESTMENT COMMITTEE

Wednesday 2 October 2013

Session 4

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INFRASTRUCTURE AND CAPITAL INVESTMENT COMMITTEE
18th Meeting 2013, Session 4

CONVENER

*Maureen Watt (Aberdeen South and North Kincardine) (SNP)

DEPUTY CONVENER

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

COMMITTEE MEMBERS

*Jim Eadie (Edinburgh Southern) (SNP)
*Mary Fee (West Scotland) (Lab)
*Mark Griffin (Central Scotland) (Lab)
*Alex Johnstone (North East Scotland) (Con)
*Gordon MacDonald (Edinburgh Pentlands) (SNP)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Professor David Bell (University of Stirling)
Professor Michael Fourman (Royal Society of Edinburgh)
Professor Geoffrey Gooch (University of Dundee)
Professor Ian Thomson (University of Strathclyde)

CLERK TO THE COMMITTEE

Steve Farrell

LOCATION

Committee Room 5

Scottish Parliament

Infrastructure and Capital Investment Committee

Wednesday 2 October 2013

[The Convener *opened the meeting at 10:00*]

Draft Budget Scrutiny 2014-15

The Convener (Maureen Watt): Good morning, everyone, and welcome to the Infrastructure and Capital Investment Committee's 18th meeting in 2013. I remind everybody to switch off their mobile devices, as they affect the broadcasting system. Some committee members are using tablets to access the committee papers, which are now provided in a digital format.

Agenda item 1 is scrutiny of the Scottish Government's draft budget for 2014-15. We will hear evidence from expert witnesses as part of our scrutiny process. This year, the committee is adopting a different approach. Rather than focusing on aspects of the draft budget, the committee will conduct a wider evaluation of the Scottish Government's performance in delivering its priorities, as set out in the 2011 spending review, for the areas that fall within the committee's remit.

I welcome Professor David Bell, from the department of economics at the University of Stirling; Professor Michael Fourman, chair of the digital Scotland working group of the Royal Society of Edinburgh; Professor Geoffrey Gooch, chair of water and environmental policy at the University of Dundee; and Professor Ian Thomson, from the department of accounting and finance at the University of Strathclyde.

We have quite a number of questions, so we will get started.

Adam Ingram (Carrick, Cumnock and Doon Valley) (SNP): I will start with a general overview. What is your general view of the national performance framework as a means of assessing the Scottish Government's progress and performance? Does the set of purpose targets and national indicators make sense?

Professor Ian Thomson (University of Strathclyde): The answer depends on the perspective from which the performance framework is looked at. From the perspective of sustainability, which is my specialist area, it is extremely poor. The framework is assembled in a way that misses out a lot of important aspects of the priorities and targets.

I have tried on numerous occasions to do mapping to link the objectives through straightforward ways in which frameworks would be constructed, but there are big gaps. There is nothing on air emissions and air pollution, on water or on industrial and hazardous waste. There are some measures—but not necessarily the best, standardised ones—of income inequality. It is difficult to do international benchmarking with the information.

However, there are strong bits on health and perhaps on education. The framework is patchy. The distribution of indicators over the priorities shows that many priorities are not covered well.

The data is massively out of date, which affects its use for comparison. For example, the carbon footprint data is from 2010. On eight of the measures that the committee selected, there is no data that would allow us to evaluate progress since 2011.

Adam Ingram: That is not very promising.

Professor Geoffrey Gooch (University of Dundee): I agree with Ian Thomson's perspective. My special competence is in water and environmental issues. In the same way as Professor Thomson said that indicators are lacking, I have been unable to find anything specifically on water in the performance framework. It mentions other issues that relate to water and can be seen as part of the water field, but nothing is specifically on water. That is a lack.

The Convener: In that case, the information is probably available elsewhere. Is it available from Scottish Water's annual report?

Professor Gooch: Some of it is available, but not all the information that it would be useful to have access to.

Professor David Bell (University of Stirling): There is a trade-off between including huge amounts of detail and having broad indicators for which we might have international comparability, which might be measured accurately and which might be up to date. There is a point beyond which there are diminishing returns from going down that road. It seems to me that the exercise itself is useful, but one should not set too much store by it as such. There is a long history of refinement; it is certainly innovative—there is no question about that—but there is a way to go.

Adam Ingram: On the one hand, the witnesses are arguing that a lot of work could be done on the indicators and targets to make them more relevant to the areas that they are particularly interested in. On the other hand, as Professor Bell says, we could get caught up in the detail and perhaps not see the wood for the trees. How do other Governments do it and how is it done

internationally? How do we compare? Are we making progress in terms of best practice elsewhere, and what must we do to move in that direction?

Professor Bell: My understanding is that we are advanced compared with many other parts of the world. As I recollect, we picked the idea up from Virginia. However, international comparisons do not give overarching sets of indicators such as those associated with the national performance framework. What you get are things such as detailed studies by the Organisation for Economic Co-operation and Development on education, investment performance and that sort of thing. They are not necessarily brought together, but those are the exercises on which I would place most reliance in terms of international comparability, and a huge effort goes into that.

Professor Michael Fourman (Royal Society of Edinburgh): I will focus my remarks on the bit that I am knowledgeable about, which is broadband. There are two parts to it—infrastructure and participation. The statistics on participation are innovative, looking at the difference between participation by those in the most advantaged 20 per cent and those in the least advantaged 20 per cent, and that is good. When we come to the infrastructure, the measures that are given basically come from the Office of Communications and I would say that they are useless in measuring progress against the digital divide. They look at average speeds and fail to disaggregate, so you cannot see whether an increase in averages comes because those who have fast speeds already are getting much faster speeds or whether we are addressing the needs of those who have slower speeds. Unfortunately, I think that it is the former rather than the latter that is happening, but the data could not tell you the difference.

Professor Thomson: On international comparisons, it is correct to say that there are not many countries that have made an attempt to establish a robust framework but, where that has been done, the type of framework that is quite commonly used is outcome based. As has been mentioned, it is used in Virginia, and Oregon and Seattle also make extensive use of outcome-based approaches. One of the problems is that the NPF is largely intermediate output based rather than outcome based, and there is a major difference between the implementation of the framework in Scotland and the implementation of such frameworks in Virginia, Seattle and Oregon—and also Alberta in Canada, where things have probably been taken a bit further and where I think best practice can be found. It is, as I have said, relatively innovative.

What is lacking is structure. In effect, what you have is a flat set of interconnected indicators; as you will see, one indicator will affect five others, and that is bad practice. One change trickles through everything else. Population growth, for example, can affect a lot of these key indicators, particularly when you have denominators. The issue, therefore, is the extent of connectivity and lack of structure; there are some models that have up to 200 indicators—I am not suggesting that we have the same here—but they are structured into a hierarchy and flow down logically. You might have to deal with only eight headline indicators, while the others are drilled down into a kind of structure. The problem is interconnectivity and the fact that changing one changes others. You might have 50 indicators, but you are not measuring 50 things; in fact, you are measuring a lot less than that. You could actually achieve a lot more or, at least, as much with 20 indicators as you can with the number that you have just now.

Adam Ingram: So you would advocate that sort of exercise.

Professor Thomson: Yes. If it is done properly, a structured hierarchy works really effectively; you do not get bogged down and different people have the appropriate level of detail to deal with whatever issues they are considering.

Professor Bell: I am disappointed by the level of engagement with the national performance framework in the public discourse. People just do not talk about it. Of course, that is partly down to the fact that the media, which very much deal with up-to-the-minute data, are not terribly interested in what happened three years ago.

Another issue is comparability. Because other countries are not doing it, you cannot make any comparisons. There is also the problem of measurement. Where there is fairly accurate measurement, you get quite a lot of engagement, and I cite as an example the OECD's programme for international student assessment, in which 15-year-olds around the world are set the same tests. Scotland's educational establishment finds the exercise quite uncomfortable, but I think that it is quite good because it provides direct comparability. The national performance framework has a long way to go in that respect, including getting other countries to engage with it.

Adam Ingram: Should we persist with this exercise, or should we not put so much emphasis on it or reduce our commitment to it?

Professor Bell: I do not think that the resource cost is all that high. It has been an interesting exercise thus far, it is innovative and I would certainly let it run for a little while to find out whether further improvements can be made. However, I am particularly worried about public

engagement and there must come a point when it goes past its sell-by date.

Professor Thomson: If we consider the statistics that have already been gathered and the decision-making processes that have been used, particularly for certain major infrastructure projects, we will see that all the information that we need is already available; it has just not been put in the public domain. In one exercise, I looked up existing statistics that had been previously reported and are available from the Information Services Division and found that there are much better proxies and ways in which you can do things at very little extra cost. Most of the evaluation work is available and most of the statistics have already been captured, but we are simply making no effective use of them.

10:15

Adam Ingram: Perhaps some work on that can be prioritised. I will focus now on budget considerations. Do the budget statement and the Scotland performs website contain sufficient data and analysis to help assess the performance of the Scottish Government over the past three years? Do we have the basics in that regard in order to do the assessment?

Professor Thomson: I would say no. I can flesh that out later.

Professor Bell: It is a tough question. Again, there is a balance to be struck between detailed information and the strategy that the Government seeks to follow. The strategy seems to me to be largely about sustainable growth. The budget could have a lot more detail, just as the national performance framework could. Would that help us to better understand performance on sustainable growth? Understanding the processes by which growth takes place is an extremely complex matter and, as we have heard, many of the indicators might be related to one another, so just looking at masses of numbers might not in itself be terribly helpful. However, the Government sets out fairly clearly in the preface to the budget where it intends to go.

Of course, all that is conditional on the allocation that the Scottish Government gets from the UK Government, and the Scottish Government is going to have a bit more freedom in that over the next few years. For example, I note that, although the nominal spend on capital in this year's budget is pretty flat for the next three years, it will be boosted by things such as the use of the borrowing power, amounting to £296 million. I would have liked to see some sort of argument as to why it was felt to be a good thing to go immediately right up to 10 per cent of the capital allocation, which is the annual limit. Clearly, that has helped the Scottish Government to raise its level of capital spending over the next three years quite significantly. However, what is the case for using the borrowing powers immediately to that extent? It might be appropriate to do that, but it seems to me to be worthy of discussion, especially as it is a new power.

Professor Thomson: When I was looking at the budget, I had open six different documents—one was on my computer, two were printed off and I had a couple on my iPad—and I was flipping back and forth between them to try to link all the different things together. It struck me, though, that that is unnecessary. If the budget is genuinely a shift towards outcome-based budgeting, why is the budget presented in the context of ministerial portfolios? There should be a summary that shows, for example, how much will be spent on the smarter and wealthier priorities, and which breaks it down into programmes and objectives. The likely impact of the spend on the performance targets could be given. Again, that does not strike me as something that would be particularly difficult to do. For example, if money is being spent on promoting renewable energy projects, surely somewhere along the line the Government should say that it expects that to increase production towards the target from its current figure of about 39 per cent to more than 40 per cent, and cross-link that to other initiatives. The question is what the money will buy, which is particularly important for capital investment and infrastructure.

Lots of budget scrutiny is on recurring normal expenditure that is more likely to be the same each year. For example, the cost of running a hospital is likely to be the same as it was the previous year, whereas, if the Government spends money on rail infrastructure it hopes that, when that rail infrastructure is restructured, it will not have to do it again. There are also clearly identifiable projects that will have clearly identifiable policy objectives. That, in particular, is lost in the current budget scrutiny.

One of the problems with infrastructure and capital spend is that this form of budget scrutiny acts against investment. That applies not just in government but across all organisations. The big problem with infrastructure is that you spend a lot of money now and get the benefit sometime in the future and in other people's budgets. That tends to act as a constraint on capital investment. From the sustainability perspective, we need some radical infrastructural changes, but there is a bias against that in this type of year-on-year scrutiny that looks at past performance rather than what the investment is likely to achieve. That makes it difficult. It is a particular problem for the type of expenditure that the committee is examining, whereas it may not be such a big problem for spending in health and education where there is

more likely to be recurrent spending that stays the same. The budget that the committee is scrutinising could be halved and that could be a good thing because it could mean that all the projects are finished. A drop in expenditure on infrastructure projects does not necessarily signify a change in priority; it just means that something has been done.

Gordon MacDonald (Edinburgh Pentlands) (SNP): My questions relate to economic growth.

The Scottish Government has said that it wants to match the growth rate of small, independent European Union countries by 2017. The capital expenditure budget that the Scottish Government has put together suggests that just over 50 per cent should be spent on digital, water, housing and transport infrastructure. Given that the budget has been cut, in real terms, since 2010-11 by about 26 per cent, how does that mix of capital expenditure areas compare internationally with other, more successful economies? Are the areas that have been selected for investment going to help us to achieve our target for economic growth?

Professor Thomson: Typically, Government expenditure on such areas has a positive multiplier effect. When the money is spent on housing, transport and even things such as poverty alleviation, there typically is a positive multiplier effect in that, over the longer term, things such as gross domestic product are increased. It is difficult to talk about specific programmes because of the lack of details, but generally such infrastructure projects tend to incur that effect.

There are lots of natural experiments, sadly, going on in the world just now, with expenditure on infrastructure projects. However, if you are looking for longer-term growth, a lot of the programmes in the infrastructure portfolio, as well as having direct consequences for specific project objectives, are likely to facilitate growth in the longer term.

It is difficult to draw international comparisons, but some of the countries that are surviving better now have not opted for austerity measures but chosen infrastructure-type expenditure because it has that longer-term multiplier effect. However, I am only an amateur economist.

Professor Fourman: I offer a comment from the digital perspective. Digital investment occurs many times throughout the budget document because it is important for progress in all areas of the economy. However, in the UK it has not been viewed as an infrastructure investment. That has happened in only a few places in the world—typically, the smaller, ex-eastern bloc countries.

What has happened in the UK is that we have invested in enabling the ex-monopoly provider to reach more customers. That certainly has a beneficial effect on the economy because it brings more people together, but it does not provide an infrastructure that is open to everyone in the way that bridges, roads and rail are. In my view, unless that digital infrastructure is opened up, we will not realise the full economic benefits. As I said, that approach is only happening in certain small countries that we used to think were not worth competing with—but I think that we will find that things are different soon.

Professor Bell: The key issue is whether the extra investment enhances the ability of the economy to supply. In principle, more digital infrastructure, better water resources and better transport links certainly contribute to that.

It is often pretty difficult to figure out the contribution that each of those projects makes to economic growth. You might put a high-speed network into a town and everyone uses the network to download lots of films. In that case, the contribution to economic growth would be on the margin. In other cases, a high-speed network might make the difference between a couple of computer nerds being in a back room or putting together another major new company. It is becoming more and more difficult to spot the areas where you will suddenly get those explosions of growth. Who would have thought, 20 years ago, that Google would now be the largest company in the world?

Clearly, there are big opportunities and a lot of those opportunities do not now need that much capital infrastructure if there is the digital infrastructure—people just need a room, a link and perhaps a couple of computers. The Massachusetts Institute of Technology is now offering incubator companies access to its facilities just through a room and a link. MIT does not need to give those companies a capital grant as such.

Another important point is that we are talking about public sector investments but they are in support of the private sector, which will be making the major investments in the economy. If you are, as a country, seen to be investing in infrastructure and not changing the rules regularly, you will engender the private sector's trust and confidence, which is very important for economic growth.

Gordon MacDonald: Do we have the correct level of public expenditure and the correct mix of capital expenditure to develop that trust?

10:30

Professor Bell: On the capital side, the point has already been made that the way in which public expenditure is controlled in the UK is not terribly helpful.

First, there is a huge budget—the annually managed expenditure, in which the Government

will just pay whatever is necessary; then there are the departmental expenditure limits, of which the capital budget forms a small part. Some of the departmental expenditure on current spending is ring fenced, in particular in areas such as health. Welfare spending as part of annually managed expenditure is also, in effect, ring fenced, in that the Government just pays whatever is necessary. If you need to balance a budget, therefore, you end up in a position in which the only things that you can squeeze tend to be a few small programmes on the current side and the capital budget.

That process of cutting capital budgets, which started in 2010, has been seen to be a pretty bad decision. It is especially bad at a time when, as the construction sector in particular is in such a state of difficulty because of the private sector collapse of confidence in building, the price that you are paying for public sector capital investment is actually much less than we would previously have expected. There is quite a strong argument, which the Government could have made more strongly in this year's budget, for going ahead with public sector investments.

Gordon MacDonald: What you are saying is that now is the best time to be investing in capital projects because prices and profit margins are lower. Is there a time in the economic cycle when we should change investment patterns?

Professor Bell: It is certainly not the case that public sector investment is crowding out private sector investment at the moment. At the top of the cycle, you should maybe cut back on public sector investment and get a budget close to or even above surplus because you have cut that spending. However, I agree with the point that you are making.

Professor Thomson: A little historical point is that housing used to be part of the national health service, because it was seen as having the biggest impact on health. Therefore, if you want to ring fence housing, you should put it back under the NHS and protect it because of the health benefit.

Professor Gooch: I would like to say a few words about the effects of investment in infrastructure from the perspective of the water sector.

You asked for an international comparison or for some examples, and we have mentioned the fact that some eastern European countries have been developing quite well, at least until recently. From that perspective, we have to see the state of that infrastructure and when it was built in the first instance. A former eastern bloc country that has a low standard of infrastructure in the water sector and needs to build new infrastructure will obviously generate a lot of income during the initial period to get infrastructure for waste water treatment and so on up to a reasonable standard. Countries that built their infrastructure 100 or 150 years ago are reaching the time when it needs to be renewed, and there is a window of opportunity not to recreate the infrastructure of 150 years ago but to take a chance and to see what can be done differently today.

Such investment in new kinds of infrastructure also provides a country with the possibility of getting into the export market for water and environmental technology, which is growing rapidly around the world. My point is that, if you are in a position where it is time to change or renew, you should not renew in the same way as before but you should look for opportunities with new kinds of technology that can be exported.

The Convener: We shall come back to that later.

Mary Fee (West Scotland) (Lab): I want to ask a few questions about how targets are shown, particularly for productivity and cohesion, and about how our participation is measured against the rest of the UK. Productivity targets are shown as maintaining, while cohesion targets are shown as worsening. Is there a trade-off between the two, and is the way in which they are shown the best way to illustrate a comparison?

Professor Thomson: It is difficult to understand the rationale behind some of the indicators and to see what is actually happening, particularly given the way in which the benchmarks are set.

I have to question why we use the fifth place in the lower quartile or the third decile and things like that. If we look at things from a more objective statistical point of view, we have to ask why they are significant. If targets are aspirational, that is fine—there is no reason not to have aspirational targets. However, they are relative targets, and I sometimes have difficulty with them. A target where someone can get better because someone else is getting worse is a stupid form of target. As long as someone is getting worse, the gap gets smaller, but the first person is not necessarily getting better.

We need to consider the way in which targets and indicators are set and consider whether they are absolute or relative. If they are relative, progress is measured against something, but that thing can change, in which case it makes it difficult to say that the gap is an issue. In such cases, we need to look at the raw data and say, "What is our productivity?" To my mind, that makes much more sense. We can simply put a line across the graph and say, "That's where we'd like to be."

On participation, again, I tried to look at the data, but why would we look at someone's

cohesion within the UK, within Scotland and within the regions? Why do we look at it in terms of the bottom five, the bottom three, the bottom 10 per cent or the top 10 per cent? What measure is there of the gap? There are better ways of working. It is important to measure inequality and productivity, but we should not measure them against an elastic band that can be squidged and changed. If one team wins because the other is getting worse, that does not necessarily indicate progress.

One of the best things for carbon reduction is a recession, but that is a stupid argument to make because we are measuring the wrong thing. My view is that a lot of the relative targets are problematic.

Mary Fee: So we might just be treading water but we look better because someone else is getting worse.

Professor Thomson: It is possible. There are quite a lot of statistics on this. Even when we compare ourselves against the fifth in the OECD list, the fifth can be changing and falling away from the fourth. It is a bit like the premier league right now; it is easy to be third in the league because everyone is flat and there is little difference between them. We are mixing an ordinal ranking with a relative performance measure, which creates three or four possible reasons for an improvement in the indicator, none of which actually says that we are getting more productive.

Professor Fourman: I accept that point in general, but there are some particular instances where I would not accept it. In particular, I do not accept it in relation to measuring broadband infrastructure. I was ecstatic in 2001 when I got 200 kilobits per second; now, there are people in Scotland who are still suffering 200 kilobits per second and they are hugely disadvantaged compared with others. Where productivity can go up and down, the point that has been made is fine, but when we look at things where there is and will be steady progress, as in the case of technology, it is not acceptable to say, "200 kilobits per second was okay for me in 2001, so it's okay for you now."

I talked about a relative performance issue earlier. If we say, "What's the digital participation among the most disadvantaged 20 per cent and the least disadvantaged 20 per cent?" and we identify that that kind of disadvantage goes along with other kinds of disadvantage, that is hugely helpful in policy setting. Similarly, means are not helpful: we need to know about the distribution if we want to understand the effect that things will have on social cohesion and equality. There are instances where these things are useful.

Professor Thomson: I would not disagree with that. What I am saying is that the rationale for taking the top 20 per cent rather than the top 10 per cent—

Professor Fourman: The only reason for taking the top 20, the lowest 20, the lowest 10 or whatever, is to make year-on-year comparisons to assess whether the gap is widening or narrowing. If we want to measure a gap, we must get a statistic that captures it and keep it uniform so that we can see how it is changing.

Professor Bell: The presumption behind measuring things such as cohesion and productivity targets is probably that the Government can do something about it. However, Governments have a fairly qualified ability to influence such things to a great extent.

When I started my career, there were problem bits in the west of Scotland compared with other parts of Scotland. A lot of money has gone into trying to improve various aspects of that environment, but there is still a gap between the west and other areas. Some of the efforts have been admirable, but Government policy concentrated over a long period of time has not really brought the level of incomes or—to be more precise—employment participation in Glasgow anywhere near what it is in Aberdeen. That is largely a function of the way in which the economy has changed. The situation was probably different 100 years ago.

There are therefore big forces out there. It is sometimes important for Governments to realise that they cannot on a day-to-day basis change things that they might want to say in a document that they aspire to change. I recommend to the committee the work of the London School of Economics growth commission, which is looking at long-term decision making in maximising the UK economy's sustainable rate of growth. For infrastructure, for example, it is about recognising that how our political system works is inimical to having consistent, long-term, productivity-enhancing investment in the economy.

I have no problem with the kind of targets that we are discussing, but we should try to understand the big forces that influence them. For example, there is what I call the disappearing middle, which is the way in which technical change and, to an extent, globalisation have torn a chunk out of the middle of the occupational distribution. We therefore now have very poor jobs that are often personalised jobs for which a machine cannot be used to do the task; and we have jobs that require high-end skills. We have lost the middle kind of job that involves, for example, the skilled fitter who used to be very common in large-scale manufacturing, because we have lost the manufacturing sector. A big negative effect of that is that there is no longer an obvious path from the bottom all the way to the top.

I guess what I am saying is that, whatever targets the Government might set, it is important to think about them in the broader context of large forces in the world. We have seen the development of Asia, for example, and the effect that that has had on what the Scottish economy produces.

Mary Fee: We could have not only long-term strategic targets but a second tier of targets underneath that for aspects such as cohesion. Would that be a better way to go?

10:45

Professor Bell: I think so. If I were asked, I would say—and I think that the LSE people would say the same—that the first target should be skills; the second, skills; and the third, possibly skills. After that, there should be a consistent and coherent infrastructure plan that is not blown about by political winds.

Professor Gooch: As has been mentioned, there needs to be more of a focus on goals and outcomes when what we are often looking at in these documents is outputs and activities. Without a very clear—perhaps even limited—number of goals, it is quite difficult to get the stringency required to achieve them.

Activities and outputs can by themselves lead in all kinds of directions, but there must be a focus on the actual outcomes and goals. Indeed, my first impression when I looked at the documents after being asked to give evidence on this issue was that there is just a long list in which outcomes, outputs and activities are all mixed up. I had difficulty seeing which of them the focus is on.

An outcome to improve health is admirable; to achieve it, you might need to improve water supply, air quality and a number of other areas, but they are all intended to lead that outcome. The documents that I have seen do not make such distinctions sufficiently clear.

Professor Thomson: If you work through Scotland performs from the objectives through mapping to the indicators and then work back the way again, you will come up with two different answers.

Mary Fee: Are we overcomplicating the way we measure things? If we went back to basics and took a simpler approach, would it be easier to measure what is going on?

Professor Gooch: When you start to define outcomes, you begin to say, "Well, that's really important and so is this" but then someone else will say, "But this is really important and so is that." Suddenly you end up with a wide range of outcomes without the clarity that is necessary with the limited resources that any country has in its economy. Perhaps the outcomes should be refined to a smaller number and then put into some hierarchical system that will allow us to say, "To get those outcomes, we need these kinds of outputs—and to get those outputs, we need these kinds of activities."

Mark Griffin (Central Scotland) (Lab): Does splitting the infrastructure and capital investment budget between digital, water, transport and housing reflect the various targets and indicators in the framework, or is that approach subject to the "political winds" that Professor Bell mentioned?

Professor Thomson: When I looked at this from a sustainability perspective—indeed, that is why I am here—and analysed how the framework contributed to the sustainability outcomes of greener and healthier, I found that about 71 per cent of spend was positively related to potential sustainability outcomes. I did not know where another chunk—about a quarter of the spend—was going. Finally, there was a little bit—perhaps about 7 per cent—that was slightly acting against moves towards sustainability, although it largely fitted and was coherent with the priority of the regeneration and sustainability strategy. I slightly disagree with that approach, but on the question whether it was subject to political winds, I have to say that I do not think so. There is a strong and consistent pattern, particularly with regard to sustainability, that a look at the various strategies and budgets suggests goes back even to 2000 and has grown in importance as things have gone on.

My take is that that is how most of the expenditure to achieve a sustainability outcome or strategy is being targeted. Whether, if you sat back and looked at it, you would say that the sustainability strategy is 100 per cent right is another question, but that is the political decision that has been taken. It is largely to do with roads and how one judges them. Instead of things being considered on an outcome basis, I would say that there is very much a focus on that agenda.

I also suggest that not enough money is being spent on sustainability. Although money is being spent in the right areas, none of this is a game-changer that will bring about structural change. That might have something to do with political experiences with regard to the scale of the budget. However, from a sustainability perspective, I would say that, with regard to where the money is going and what the likely consequences might be, it looks good.

Professor Fourman: Digital has not been seen as an infrastructure investment; indeed, the issue simply vanishes compared with the others. That is, at least in part, a consequence of what is happening at the UK level; the funding put on the

table by Westminster might well have stopped Scotland doing anything more imaginative.

Nevertheless, it is a huge lost opportunity. In the Highlands and Islands Enterprise procurement, about 1,200km of fibre is going in, which will bring fibre to the islands. That will make a difference—in fact, it is like building a motorway system—but most of the expenditure has been targeted at the political issue of bringing higher speeds to a proportion of the population, typically those who already have higher speeds. Something is being done at the fringes but at least 10 per cent—perhaps 20 per cent in Scotland—will not get those benefits. There has been no political will to view it as a proper infrastructure project that affects not only service to the home but the availability of commercial wholesale services and the stimulation of competition in the creation of new and innovative services. There has been a huge failure but I would by no means put most of the blame for it all on Scotland; in fact, I would put most of it on Westminster.

Professor Bell: I agree that, over the years, the Scottish Government has been reasonably consistent about these things. Of course, we do not know which of digital versus water versus transport and so on is the best for enhancing growth, but I think that the decision-making process for where to invest has mostly been reasonably sound. I find it quite difficult to be too negative, given that this year's budget includes the A9 enhancement and I took four hours to get from Dornoch to Perth on Monday.

Alex Johnstone (North East Scotland) (Con): I just hope that we live to see it.

Professor Bell: As has been said, some things are, in a sense, outwith the Scottish Government's control. Although investment in energy infrastructure seems to me to be important to long-term growth, we have not seen much consistency in that area. That inconsistency has largely come from the UK level.

Professor Gooch: The budget is quite clear with regard to the water sector. For example, the confirmation of capital borrowing for Scottish Water points in the direction of the possibility of continuing investment in water infrastructure.

The Convener: Before we move on to particular sections of the budget that come under the committee's remit, Professor Thomson mentioned that outputs but not necessarily outcomes are measured. What has to be done to move from outputs to outcomes? I get the impression that it is not really very much; it is more about the language and the way that the budget is set out.

Professor Thomson also mentioned that statistics often lag a few years behind the budget. Is that because the data take a long time to be gathered together and collated, or is the time lag unnecessary?

Professor Thomson: There is a substantive difference between outcomes and outputs. Outcomes are in some ways the desired states and outputs are the things that you need to do to get there. One is what you want and the other is a driver of it. It is important to measure outputs, because they give you the direction of travel. One sets an account of the state that you want something to be in; the other states the steps that you are taking to achieve it. I could pull up a lecture that takes about an hour and a half, but the difference between the two is reasonably well established.

What was the other question?

The Convener: It was about statistics.

Professor Thomson: I am confused about the statistics. I find it hard to accept that the most recent carbon footprint for Scotland that is on the Government's website is for 2010—that surprises me. I know people—I suspect that David Bell does as well—who work on the input/output tables, and I think that they are slightly further ahead than that. Once you have even an estimate of the input/output tables, you can just put the figures in a spreadsheet and press a button. Most of the conversions between input and output and the carbon footprint could be done fairly quickly. If you gave a post-doctoral researcher a week, I think that they would be able to come up with a pretty robust picture of the carbon footprint. I do not understand why it takes so long. It is a frustration.

I used to work in the health service, where the statistics were almost real time—trust me: we churned them out in the hospital in July after the end of the financial year in April—yet these statistics are not there. I do not understand that and find it very hard to see why there is such a delay. I suspect that it has a lot to do with underinvestment in statisticians—nobody really likes statisticians, which is a shame. There should be more of them—the geeks are on the rise in America.

There is an important evidence base and I do not know whether there are lots of data sitting there, bubbling under, which need to be approved by someone before they go into the public domain. I suspect that there is some kind of test to ensure the validity of the figures. A lot of the basic modelling is sitting there waiting for a button to be pressed. It really is a problem. In one performance indicator, there is only two years of data, but the work has been done. Some of the statistics go back only to 2007 and stop in 2011. The one thing that matches if you put all the indicators together is the holes in the data—that is the most telling and significant analysis of the statistics. That is

strange, given that we know that things are going on all the time.

The Convener: Some of the outcomes can be instantaneous but with early intervention, for example, it might be 10, 12 or 20 years—a generation—before you see whether it is working. You think that it is the right thing to do, but you will not know until further down the line.

Professor Thomson: There is a reasonably good research base to model that forward. There is lots of research on early intervention from education, epidemiology and public health statistics. The data from all those different things are used to justify the programme and the investment.

It therefore does not strike me as particularly difficult to say, "If we do this, we expect all these things to happen, but not for 20 years." With regard to the intervention cycle and the question of when we will see the results, making a year-on-year comparison misses the point, which is that, although we are spending money now, the benefits and impacts will come in the future.

11:00

We need some sort of modelling—particularly in this area—so that we can say, "We are spending this money, but here's a timeline of when we think the benefits will arise." In that way, we would not be unfairly punishing major infrastructure investment.

That is why preventative healthcare typically experiences underinvestment in comparison with the real thing. If you cut someone open and replace their hip, or if you deal with a cataract—which I am very grateful for—that is done; it is like stop and search. However, if you want to improve people's health, you are looking at what will happen in 20 years' time. An appreciation of the time lag would be sensible, along with some sort of modelling with regard to when the benefits will come. That is not rocket science: it is a reasonably well-established approach, and one would expect it to happen.

The Convener: Do you want to come in on that, David?

Professor Bell: Yes. Even if we can measure the outcomes, there is the question of how we translate those into a general indicator. We talk a lot about sustainable economic growth, but the body of literature on wellbeing is growing, so the question becomes, "How much does this stuff contribute to wellbeing?" That is a difficult question, but there is now a great deal of focus on it internationally. In that context, we want to keep unemployment very low and ensure that people have good relationships—and that they do not become middle aged, which is difficult.

Professor Thomson: Or do not act middle aged.

Professor Bell: In relation to digital, we are nearing a time when we will be able to ask people what they think about the relative value of different outcomes in real time. That is not good news for politicians, but such exercises have already taken place in relation to health and which health interventions people value. People tend to value acute interventions, and do not necessarily see the benefit of public health interventions that yield their benefits long after the point at which they were instigated.

The Convener: Before I bring in Alex Johnstone on water, I have a question about the Scottish Government's Council of Economic Advisers, national economic forum and economy board. How does the operation of those various bodies help with resource allocation between various budget headings and within the infrastructure and capital investment budget?

Professor Bell: The Council of Economic Advisers seems to have a very broad-brush role in setting the overall strategy, so it will not necessarily help very much with the detailed consideration of questions such as, "If I have £100 million to spend, how exactly will I spend it?" The council sets a framework to which Scottish ministers can refer if they are asked difficult questions at their relatively regular meetings.

One of the bodies to which you referred is involved with the private sector, and it seems to me that it is important to continue to talk to the private sector all the time on such matters to build up the confidence I referred to earlier that this is a Government that is consistent, that knows where it is going and that is making strategic investment decisions.

Professor Fourman: When we talk about the private sector, it often seems that we are looking at medium to large enterprises and that we are missing out the small enterprises that are prevalent across a great deal of Scotland and which account for a large proportion of the economy. Engaging better with that section of the economy is something that Government finds very hard because, like everyone else, it is very busy and does not have time to engage. Nevertheless, I think that huge untapped gains are possible there.

Professor Gooch: Professor Fourman is completely right. From a European perspective, between 80 and 90 per cent of the population are employed in very small enterprises, many of which have between one and 10 employees. That is why the European Union has taken such an interest in, and is providing support for, co-operation between

small and medium-sized enterprises and research institutes. I think that Scotland could do a great deal more in that area. I base that opinion on the fact that I evaluate proposals for the European Commission that involve SMEs and the environment. The number of such proposals that come from Scotland is not large—that could definitely be improved.

Alex Johnstone: I will move on to water.

It is not so many years ago that we used to joke that Scottish Water had become the de facto planning agency for Scotland, because its ability to provide water services was the single limiting factor on development. In relation to Scottish Water's more recent activities, is the £2.5 billion that it has been allocated for the 2010 to 2015 period adequate? Is it being delivered to greatest effect, particularly as far as its ability to constrain or underpin GDP growth and productivity are concerned?

Professor Gooch: There are a number of issues. The core activities of Scottish Water are providing drinking water and taking care of waste water. However, in recent years, it seems to have developed beyond that. I am talking about providing and selling technology abroad through its daughter companies.

I think that the amount of investment that is being provided—we might be talking more about the limit on the amount that Scottish Water is allowed to borrow—is probably sufficient to enable Scottish Water to fulfil its activities in the traditional way. I made that point earlier. However, when it comes to Scottish Water's ability to minimise the use of energy, for example, or to provide other services, I would need to carry out a more detailed analysis of the use of those funds. The figure is adequate for conventional use, but the demands that are made on Scottish Water and its ambitions may affect that.

Alex Johnstone: In that context, do you believe that there is still potential for Scottish Water to act as a drag on investment, particularly in the private sector?

Professor Gooch: I do, yes. If Scottish Water can continue to develop innovative technologies or innovative ways of managing its core activities, a spin-off can be provided.

Alex Johnstone: Does the solution to any potential problems, rather than being to do with the adequacy of its funding level, lie in how Scottish Water uses existing resources?

Professor Gooch: Yes, I think so. The replacement of conventional infrastructure is one issue, but if we are looking at the development of more sustainable or energy-friendly infrastructure, the funding might not be completely sufficient.

Alex Johnstone: I would be interested to hear a range of views on the effectiveness of the output monitoring group as a monitoring body. Are the OMG reports sufficient to gauge performance and the linkage to the NPF measures?

Professor Gooch: I am not convinced that those reports are sufficient. In one way, it is possible to judge effectiveness, but we return to the issue that we have mentioned before, regarding participation and consumer activities within the Scottish Water sphere of activity. I know that there is a consumer forum and that there is a response from that. I also know that there are different regulatory instances in place for that.

Concerning the conventional activities, the answer is yes. My question is about the other, non-core activities of Scottish Water—it is about monitoring and making a judgment on what those activities are leading to.

Alex Johnstone: Is a single overall measure of delivery useful? Might it—as we heard earlier—be disguising things that we ought to know more about?

Professor Gooch: In the case of Scottish Water, it is sufficient.

Alex Johnstone: The 2010 to 2015 investment cycle is now more than halfway through, and the new investment period will start to be considered next year. What process would you like to be followed in that consideration?

Professor Gooch: Are we still talking about Scottish Water?

Alex Johnstone: Yes.

Professor Gooch: The fact that its capital borrowing is being reintroduced or is in the 2015 to 2021 period is a positive thing. It is necessary to consider how the borrowing is being used, especially if it is being used for more conventional infrastructure investments or for areas that can perhaps produce more employment opportunities.

Alex Johnstone: Can milestones and targets within the planning process be made to better fit GDP, productivity and other targets?

Professor Gooch: We perhaps need to consider the role of Scottish Water and the Scottish water industry as a whole, using the concept of the hydro nation. As we all know, the hydro nation means looking to improve productivity and employment through a combination of activities on a national basis and on an international basis. It is important to consider the role of Scottish Water within that movement. As I said a few minutes ago, it is necessary to encourage and develop co-operation between SMEs and the research institutes in order to achieve that. My experience of the hydro nation

is that it is moving in that direction, but it needs to be encouraged to move faster.

Alex Johnstone: The budget includes £5 million for research into water development. How do you see that developing? What success measures or milestones are envisaged? How will they be reported?

Professor Gooch: The various milestones can be different. In this case, we are mostly talking about applied research, rather than basic research. We are considering how it can be used to develop opportunities for income and especially for co-operation.

There are two issues at stake. First, there is the technological aspect of the water industry. Improvements in simple technologies are necessary around the world, not complicated technologies that can break down after six months. The second issue around how the investment inf research might be useful involves examining Scotland's rather specific governance system as far as water is concerned. I would say that it is a matter not of exporting that system—I do not think that it is possible to export a governance system—but of using the experiences from it to encourage or assist other countries to move in a similar direction. I obviously do not mean simply placing that governance system somewhere else.

To summarise, the research funding could be useful in the two aspects of technology and governance.

Alex Johnstone: That is interesting.

Professor Thomson: It is difficult to evaluate what Scottish Water does on its own, as it is part of a wider regulatory system. It is restricted in some of the things that it does. It appears to be blocking certain types of planning because it has a responsibility to charge, so you need to focus on Scottish Water, but there are other institutions surrounding it that affect its ability to react. Perhaps one reason why it has to borrow money is because it is not allowed to charge more or less, as that is a function of the pricing mechanism. In looking at water, it is important to look at the wider governance network of systems rather than concentrate on a single institution, because a change at one level—for example, a decision to cut the price of water to consumers—will have an impact on how well Scottish Water can do other things. When you look at water, the package is important, rather than a single institution.

11:15

Professor Gooch: It is interesting that Scottish Water has Scottish Water Horizons and Scottish Water International, which are part of the system, although they are independent, and they are actually taking on the tasks that I described. One is looking at technical innovations and the other is looking at international co-operation. Scotland has a lot of potential to develop both those aspects of water—the technological and governance aspects.

The Convener: If there are no further comments on water, we will move on to digital, which we have covered a bit already.

Is it right to have an indicator simply on improving digital infrastructure? Should there perhaps be two separate indicators—one that deals with the delivery of public services and another that deals with the uptake of digital in the wider economy and in rural areas in particular?

Professor Fourman: Certainly, an indicator on simply improving digital infrastructure is too vague. Further, just to talk about public services and the uptake of retail services, which is what I understand you to mean, is insufficient if we really want to monitor how fit for purpose the infrastructure is, where, broadly, the purpose is to enable society to benefit from the infrastructure. If a small business in Edinburgh wants to connect to another small business in Edinburgh, it can do so through a number of providers at a reasonably cheap price and at high speeds. If somebody wants to connect between Summerhall and Leith, they can find people who will do that at a cheap price. If they are as far out as Macmerry and want to connect back to Edinburgh, they will pay at least double, and maybe more, for the same kind of connection because, even though the infrastructure is similar, there is no choice of provider outside the city.

Therefore, I suggest having a measure on the availability of wholesale connections between different parts of the country. That is just not measured at the moment in any systematic way that is published. That would lead to planning to ensure that there were such connections, an understanding of the forces that might change the pricing of connections in different parts of the country, and an ability to intervene if it was felt to be necessary on those kinds of pricing issues. Such interventions are just not happening at present at Scottish level, and they are only just beginning to be looked at effectively by Ofcom—well, it is beginning to look at them, and let us hope that it is effective. So those measures do not work.

Similarly, the two infrastructure measures that were mentioned in the papers that were sent to us were to have next-generation broadband for all by 2020 and significant change by 2015. If I remember correctly, page 7 of the budget states that the contracts that are currently in place will deliver 95 per cent next-generation access by 2017. I do not believe that that is true, because the

targets are phrased in a way that is open to interpretation. If I told you that you had access to next-generation broadband, you would expect to be able to procure a service from your home that delivered next-generation speeds, which you would expect to be what is called super fast and to be better than current-generation speeds. In fact, however, a significant proportion of the people who have access to next-generation broadband will not have next-generation speeds because they are still at the end of too long a piece of copper.

That brings us back to the question whether we should invest in a new infrastructure or rejig the old one. A lot of what is going on at the moment is called copper realignment—CuRE—which is reconnecting the copper lines so that we can reuse them to deliver services to people's houses. However, those services will depend on the length of copper that people have and, in many parts of Scotland, it will be too long. We need to be much more careful about the targets that we set, which must be set with an understanding of the technology. They are about not just retail use, but wholesale uses, which fall by the wayside in general discourse about the issue.

We are making progress on the public services. We were in danger—I am not sure whether we are out of the woods yet—of separating the procurement for the Scottish wide area network from the procurement of the infrastructure, but the investment in public service infrastructure stimulates investment in infrastructure that can be used for both kinds of service. That connection is made only weakly at the moment and there is a danger of paying twice for the same infrastructure, as happens in many parts of the world. It will cost us a lot to put it in for public services and it will cost us a lot to put it in to deliver to people, but the pieces of fibre are the same. It will be important to link those together.

On the public services, a key issue that is not taken on board sufficiently is the fact that we will not have 100 per cent access to digital infrastructure not just for reasons of a lack of infrastructure—which will cover 10 per cent of the country by 2020—but also because of a lack of skills, motivation and ability. There is a gap, and the benefits that are supposedly to be realised by channel shifting to digital will not be 100 per cent available to Government in the way that they are available to businesses. At a recent event in Glasgow, I spoke to a woman from Capgemini who talked about what businesses could do and all the benefits that they could get. I asked her how that applied to the public sector, and she said that the public sector could not do that because it has a universal service obligation and not everyone is online. Therefore, the forecasts for the savings that will be made by the shift to digital are probably overoptimistic because to realise all those savings we would have to do away with the other ways of doing things and that would not be possible in public services. We will still need other ways of reaching many disadvantaged people in Scotland.

In talking about access targets, it is easy to say, "We'll give next-generation broadband access" without realising that that does not mean what we think it means because there are some weasel words in there. We must be very careful about these targets and what achieving them will mean. I suspect that it will not mean as much as we would like it to mean.

The Convener: There is an awful lot in there. I will try to disentangle it a bit. Let us look at access, population and getting connectivity. I understand that 30 per cent of households do not have broadband. That might be because of remoteness. The two contracts—for the Highlands and Islands and the rest of Scotland—have a target to provide 95 per cent access. Aberdeenshire Council has put in extra money to make sure that the figure reaches 99 per cent in its area. That will involve the use of different methods and different infrastructure because, as you say, a lot of people are at the end of the copper and are not getting very good connectivity. It is open to other councils to top up the BT contracts in that way. However, how do we tackle, for example, the problem of people in Glasgow who can get connected but who do not? Should the Scottish Government tackle that through investment? Should it be done by a combination of Ofcom, BT and other players in the field?

Professor Fourman: I will deal with the Glasgow issue first, then come back to the issue of councils topping up the BDUK money.

On the Glasgow issue, I do not think that it can be left to the commercial sector, which has spent large amounts of money. For example, BT has just spent £700 million on putting football in its offering to get more people to sign up for its broadband. That is a case of a provider taking the low-hanging fruit and believing that doing certain things will make the broadband offering sufficiently attractive to people so that they will buy it for the price that the provider is offering to individual households. For people who do not do that, the relevance of the internet to them must first be demonstrated. It would be possible for most of them to be connected because there will be the basic physical capacity to do so, but they must believe that the internet is relevant to them. They then need the skills to use the internet safely and effectively. Both of those require effort.

There was a wonderful thing called UK online, but it was funded only through the skills budget and therefore reached only England. However, it is a model of how things should be done. It took a

relatively small budget of £3 million a year and set up an organisation to provide training materials, which are debugged by getting feedback from the people who use them. Those materials have been delivered to 1 million people who would not otherwise be online. In England, there is a network of 5,000 loosely affiliated centres. Affiliating people in Scotland who are trying to do that kind of thing to the Tinder Foundation—that is what it is now called, in order to get rid of the UK link, because it wants to be international and not just for the UK or England—and using its training materials would be a wonderful way of getting this out to many people in Scotland who currently are not online. There is also a job to be done to ensure that digital training is included in the early years framework and the opportunities for all interventions, along with issues such as literacy, because digital is just as important nowadays. Although I am sure that some of it is happening, I think that it would be worth headlining digital training in both those interventions. That was about getting people online who are not online.

There is also the issue of getting the signal into people's homes. Until everyone is connected at home, we will have a digital divide. Good work is going on in that respect with the Glasgow Housing Association, which is looking at new models for delivering online provision to multi-occupancy blocks. Pushing that and other models that do not involve individual subscriptions for every household is really effective. Such models are beginning to be developed.

I come back to councils topping up the BDUK money. Across the UK as a whole, about £250 million more is going into the public subsidy of the roll-out, but there is about £200 million less than was forecast for BT putting money in. That is an interesting shift of money and it is being used to do the top-up. However, that does not affect the fact that, although the headline figure is over 95 per cent coverage for the rest of Scotland, it does not mean that the 95 per cent will get high broadband speeds. What it means is that they will be connected to a box that will connect to some people who will get high speeds, but if people are too far away, they will not get the high speeds. That has not been quantified. BT is still working out the sums, and nothing has been published—that is another issue. My guess, which now has to be an informed guess, is that we might get as high as 80 per cent in the rest of Scotland, but I doubt whether we will get much beyond 60 per cent in the Highlands and Islands. Those are guesses, however. They are based on some playing with maps and so on, but we will see how it rolls out. I would love to be proved wrong.

11:30

The Convener: Surely BT would not be meeting its contract obligations if the rates were that low.

Professor Fourman: No one I know is willing to discuss exactly what BT's contract obligations are, because they have been put under non-disclosure agreements that prevent them from doing that.

The Convener: Are you saying that there is enough money, given the increase from the Barnett consequentials—and if BDUK and the Department for Culture, Media and Sport get their act together—to do all that work, but that it is perhaps not being used in the most effective way?

Professor Fourman: A couple of years ago, Alex Neil was asked whether people in the final 10 per cent will still be left out or whether they will be served by the initiative. He said, "We're going to start with the final 10 per cent." Unfortunately, that has not happened. He was questioned about it at a meeting here in Edinburgh, but that has not happened. We have taken the model from BDUK and we are doing gap funding. That enables what would be the natural progression for a private sector investor, which is doing the most profitable bits first, and pushing the profitability bar out a bit further. One effect of that is to make the final 10 to 20 per cent—whatever is left—more difficult to reach, because it is more fragmented and it is all difficult, rather than having the ability to amortise some of the costs against others. At the moment, we cannot even identify where the final 10 to 20 per cent lies, because the details of BT's footprint under the two contracts have not yet been made public.

The recently published report from the House of Commons Public Accounts Committee describes that committee's understanding of how things have gone wrong. That has happened in Scotland just as it has in all other parts of the UK except Northern Ireland. We have done one thing better in Scotland, which is to get a lot of extra fibre in under the contract, and I do not think that anywhere else in the UK, with the possible exception of Cornwall, has had so much of that clear infrastructure benefit.

The Convener: That Public Accounts Committee report was widely criticised last week, not just by BT but by others, as far as I recall.

Professor Fourman: All the criticisms that I have seen of the report I have managed to trace back to BT.

The Convener: If no one else wishes to come in on digital, we will move on to climate change.

Jim Eadie (Edinburgh Southern) (SNP): Good morning, gentlemen. I do not think that Professor Gooch can see me from where he is sitting, but that is probably an advantage for Professor

Gooch. We have had a very interesting evidence session on the national performance framework.

I was interested in what Professor Thomson was saying earlier about the importance of interconnectivity, the lack of structure in the process and the gaps within it. I wish to explore that. We would all agree with the distinction that Professor Thomson made between outcomes and outputs. If we are agreed that the outcome is that Scotland should reduce its carbon footprint, which the Government chooses to call a national indicator, and that we should be measuring whether the level of carbon dioxide equivalent has increased or decreased, what are the outputs that we should be focusing on and measuring that would allow us to understand whether we are achieving what we want to achieve as a society? Is the expenditure profile the correct one? If we are not measuring what we need to measure, we cannot possibly know whether expenditure is being allocated appropriately and effectively. Is that a fair summation?

Professor Thomson: Yes. The outcome would not be Scotland reducing its carbon emissions generally; it would be its carbon emissions being within the globe's carrying capacity so that we are not adding to climate chaos. We need to look at the drivers of carbon emissions.

Jim Eadie: Before we get into the granular detail of that, is the Government's target of an 80 per cent reduction in emissions by 2050 the correct approach?

Professor Thomson: The Sustainable Development Commission, which was involved before it was so rudely abolished, identified that the target that was set at the time was one of the most ambitious, and certainly was on time. The target is not actually an 80 per cent cut, because the figure was based on a 1990 growth figure that had economic growth assumptions in it. Therefore, it is quite a bit more than 80 per cent, although I cannot remember the figure off the top of my head. The figure was placed at 80 per cent based on a growing economy being one of the major drivers of carbon right now, until economic growth and carbon are decoupled. The target is fair and very ambitious. Compared with the targets that have been set internationally, it is very robust, and things are getting close to what needs to be done to achieve it.

Jim Eadie: So are we, broadly speaking, getting the outcome right?

Professor Thomson: Yes.

Jim Eadie: What about the outputs? What should we focus on? Should we focus on measuring the level of waste, transport use and the role that housing can play in energy efficiency?

Professor Thomson: You need to look at the things that drive carbon emissions. If you started from scratch, you would say, "What things do we do that drive carbon emissions?" You would then transfer those things into energy efficiency targets for homes, for example, and you would convert them into a programme of activity involving retrofitting of windows, draught proofing and insulation. In some cases, houses might need to be knocked down and rebuilt because they are not fit for purpose. You would then look at other cases, including agriculture.

In fact, assessment of the draft budget gives a nice handle on some of the carbon emissions. Agriculture is by far the biggest carbon-intensive producer in the Government's expenditure; it has four times the carbon intensity of other budgets. You need to look at what drives carbon and whether that is agricultural. Roads, production, consumption and waste must be considered. Water is also a major factor. There is a strong correlation between water and energy; they are linked in production. There are also generation and consumption of electricity; they are two separate things. Scotland, in particular, has the potential to export electricity. Energy consumption is fine, but we also use carbon when we generate energy.

Once we have mapped the drivers of carbon emissions—

Jim Eadie: Are we doing that? That is what I am trying to establish.

Professor Thomson: No. I am sorry.

Jim Eadie: What you have outlined is really helpful, but if we are not getting it right, it is important to record that in the committee's evidence.

Professor Thomson: Yes. Things have been changed. Previously, the traffic congestion measure, for example, was vehicle miles on the road. Transport Scotland used that indicator; vehicle road miles drive carbon.

Jim Eadie: Just to be clear, we have agreed that the outcome is correct, but we are not properly and effectively measuring the factors that impact on our ability to achieve that target, and that is the weakness in the approach.

Professor Thomson: Yes.

The carbon assessment of the budget is innovative. It deals only with the inputs to the budget—how much you are going to buy and how much you pay—and it does not look at the carbon consequences. One of the reasons why the figure in the carbon assessment is about 0.39 per pound spent, compared with 0.2 in "Scotland's Future: Join the Debate: Finance and Sustainable Growth"

is that most of the carbon that is being spent in the carbon assessment is what is called good carbon.

People look at carbon emissions and think that they are all the same, but the carbon emissions from making a McDonald's Big Mac are totally different from those from building part of a railway. One has the consequence of reducing the life-cycle carbon, and what is missing in the appraisal is the life-cycle carbon consequences of activities. For example, if you build a road, it uses carbon now and will increase carbon use over its life, but that might not necessarily be a bad thing; if the road is there to link to renewable businesses that are using carbon in sustainable forms, that might be a good use of the road. If you want to run a bus, you need a road. A road does not always have to be tied in with cars, but you must accept that when you build a road it will increase carbon over its life cycle.

Insulating houses reduces carbon over the life cycle, so it will have a net effect. At the time when that is being done, there will be increased carbon emissions, but there is good carbon and bad carbon; we see the same thing when we look at expenditure and investment in infrastructure. Sometimes you have to spend more carbon and there will be a legitimate reason for your carbon emissions going up if you are doing it in a way that will reduce emissions in the longer term.

A lot of the thinking on carbon emissions is quite crude. There is an assumption that all carbon is bad. All carbon has global warming consequences, but that does not necessarily make it bad, because we also have to look at what we are getting for that carbon, and that logic is missing, particularly in the draft budget assessment; it misses out the carbon consequences of the budget rather than the carbon that is used to buy the stuff that is going to be done.

Jim Eadie: Do other panel members want to comment?

Professor Gooch: The point that is being made is that the carbon assessment is the result of a large number of different areas in society working together. As I said about Scottish Water and the water industry, the energy that is used to move water around can be, and is being, minimised through Scottish Water's investments. That is also part of the bigger picture.

I do not know whether we need to go into detail about carbon sinks and such issues. I am sure that Professor Thomson is more of an expert than I am on that. There is production of carbon, but there is also binding of carbon in different ways.

The Convener: We shall leave that to the Rural Affairs, Climate Change and Environment Committee.

Jim Eadie: I have a couple of quick questions on which I would welcome the panel's views. On measuring performance, Professor Thomson talked about the lag between collection and publication of data, and we hear your plea for more statisticians.

Professor Thomson: Or more accountants.

Professor Gooch: Or more data.

Jim Eadie: We can probably draw the line at accountants, although that might be a controversial statement.

Over what timescales should we assess performance? What are your views on the climate change delivery board and how the oversight process generally is assisting us in hitting our target?

Professor Thomson: In making decisions it is important to look at the future, and not at the past. Part of the budget process should be to ask how well we have done in trying to meet our targets, what we have done before and whether we should spend more or less, but budgets should concentrate on the future, so there should be an attempt to model forward and to ask what is likely to happen as a consequence of the budget. That is slightly different from hard data, but we cannot predict what will happen. It is hard to believe that what we want to happen does not happen. If we are spending money on a Jobcentre Plus, we hope that its impact will be to reduce unemployment, which will have an impact on GDP growth, and on cohesion and solidarity within that, which should lead to better health. We are talking about the logical consequences of an action.

11:45

I like data, but data should allow us to make informed decisions. What you should be looking at is what will happen. If you are going to do any oversight or make any judgment, those are the data that you need. You need to start to predict. That is particularly the case for capital investment infrastructure.

Let us consider a company such as BP. It has annual budgets and quarterly budgets, but it also has five years, 10 years, 20 years, 30 years and 50 years look-ahead budgets. BP is budgeting 50 years ahead; it is not doing so incredibly accurately, but if you are running a country and you are looking at infrastructure, you need to be looking at a 50-years-ahead window or else you are just fighting fires.

The data should be more up to date. I am convinced that the data are there; I just do not know why they are not published. However, you also need to be looking at future orientation

because that helps you to make decisions. That applies to any decision on budgeting.

Professor Bell: That sounds all very good in theory, but economic forecasting is pretty difficult. The Finance Committee is conducting a consultation on producing forecasts for the Scottish economy in relation to helping to set the Scottish rate of income tax. That is not to say that it is not worth the candle, but it has to have a lot of warning signs around it. For example, the last three years of the Office for Budget Responsibility do not stand out as an example of tremendously good performance.

There is a lot to be said for looking to the future. The OBR produces a fiscal sustainability report, which kind of takes out the economic cycle. It is produced each July and looks forward, particularly at the implications of demographic change, which will a have huge impact on the Scottish and UK economies over the next couple of decades. Yes—let us look forward, but let us not do it through rose-tinted spectacles.

Professor Gooch: The idea of projecting developments is fine, but there is only one thing that is certain about the future, which is that it is uncertain. That means that projecting just one possible development is not enough. There need to be a number of possible scenarios and policy paths to meet or to avoid those different developments. You need to be thinking in those terms, otherwise—as was said—you are just firefighting as a year goes by. The problem with socioeconomic issues is that 15 years may be the maximum that we can guess at. After that, we really do not have an idea.

Mary Fee: We have talked a lot this morning about targets, outputs and measures and how we assess them, and what should and should not be included in that. One thing that we have not touched on is behaviour change, which would have a huge impact on targets for our carbon footprint, emissions and road use. What is the panel's view on whether the Government, when setting those targets and assessing them, is taking a strategic view of behaviour change?

Professor Bell: The issue of behaviour change does not come easy to economists because they assume that all people act rationally with perfect foresight.

Professor Thomson: I knew that you would say that.

Professor Bell: There has been a bit of a sea change since the onset of the recession, although it had started before then. There is now quite a link-up between economics and psychology to consider ways in which behaviours can be influenced. Some are susceptible to Government intervention, but it all has to be thought through very carefully.

When David Cameron came to power he set up what is called the "nudge unit" in the Cabinet Office. Its job is to look into the ways in which behaviours can be influenced. There is a range of behaviours that it would be nice to influence, but there is also a nanny-state argument around that.

One change that has been phenomenally successful is auto-enrolment in pensions. The argument is that if you automatically enrol somebody in a pension they will tend to stick with it rather than go to the bother of dropping out. Auto-enrolment came out last year and I think the drop-out rate so far has been approximately 7 per cent, which is lower than had been expected. Everyone agrees that people should save more for their future, so that is a good outcome.

It is possible to address key behaviours. I attended a lecture about a month ago in which an American discussed how far people who are prescribed medicines actually adhere to the rate at which they should take the drugs. We spend billions of pounds on drugs, only to find that 50 per cent or so of people who are prescribed drugs for long periods give them up a couple of years after they were prescribed. That is the kind of situation in which a study of behaviours could have a massive impact. That is not to say that it would be easy. There are areas in which successful interventions may be engineered, but in others they cannot. It is, however, definitely something that the Government ought to think about.

Professor Gooch: If we had the answer to the question of how to change behaviour, we would be very successful. There are three different ways to change behaviour. The first is the stick: you hit people, fine them and force them to do things. The second is the carrot: you encourage people to do things by giving them some money. The third one is what I usually call the love affair: people do a thing because they feel that it is the right thing to do, and they change their behaviour because they believe that it is right to do so. I think that research will show that the love affair is the most effective in the long term, because it involves changes in values.

Behaviour is the tip of the iceberg of social psychology; there are beliefs, values, norms and so on, which are very difficult to change. The combinations of stick, carrot and love affair that you use depend on the issue at hand, so cases differ very much and are very context dependent.

Professor Thomson: As an accountant, I assume that everybody other than accountants or economists is irrational. There is lots of research into changing damaging behaviours in relation to things such as resource use, waste reduction and

even driving. It is normally premised on strong community-based, context-specific education programmes. Those tend to be quite dull and nobody wants to put money into them. Many organisations that have reduced their sustainability footprint have not done that through major investment. It has been achieved through the combined synergistic effect of little changes. The trouble is that selling that is difficult, because it is low key and low tech. Typically, it is people intensive, and people cost money. As has been mentioned, we are also losing the middle. Education needs to be about the values that are being acted on—it is about what people's default is.

The Scottish Government funded a nice piece of work for a PhD. I do not remember the student's name, but she was based up in Aberdeen. She looked at energy diaries and engaged with people on an everyday basis, and she came up with interesting results about what made people change their behaviour. There is a growing body of research on that. Economists are starting to get involved in behavioural accounting and a lot of environmental and engineering people are starting to look at behaviour change, because it is all in there.

What is important about behaviour change is that people must be able to choose the right behaviour. That is one of the problems. We need a combination that enables people to make a behaviour choice. Michael Fourman mentioned use of the internet; the committee's use of the internet to access its papers is a classic dematerialisation. However, widespread access to wi-fi is required to allow people to do that.

People might want to do things and we can change their behaviour, but one of the biggest ways of damaging all those education processes is by saying, "That's great—you're educated, but you won't be able to change your behaviour for five years." People might want to source things, but they might not be there.

We need a combination of enabling behaviour change, which Governments and public bodies are in a perfect position to do—they can break the cycle and put stuff in place to enable people to make the choice—and of educating people to make the choice, because otherwise, there is no point in having the choice available. In all the research that I have seen, the key to behaviour change is community-based and context-specific education. Once the two aspects—the big enabling technologies and the choice—are in place together, we can change things dramatically.

Professor Fourman: Behaviour change is an issue in getting people online. Money is not the only carrot. Giving people money to go online is probably less effective than making it fun for them to go online. People need to develop the skills that they can transfer to other productive uses.

Professor Bell said that we could put broadband into a village and everyone would just download lots of movies. That might be the case, but if children are shown at school how to find information and if community groups are shown how to do things that they want to do, they will use broadband in other ways, too. We do not have to be so negative as to say that broadband would be used just to download pornography, so we should not provide it. It is important to think about how to make people aware of the other opportunities for enjoying the internet in productive ways.

Mary Fee: Am I right in thinking from the panel's answers that the view is that behaviour change has not been given a strategic enough place in measures and targets and that, to take behaviour change into account, we need to slot in lots of factors, but we are not at the point when that is ready to be done?

Professor Thomson: From a sustainability perspective, the whole thing is fragmented. Some things are done really well. Agencies such as the Carbon Trust—they keep changing their names—do really good surveys and work, particularly when they take a blanket approach to communities and get involved. People are transforming certain things and there are good practices, but they normally relate to a single thing.

Such initiatives are funded for only short periods. An organisation's management might think that they know and understand something, but their staff are changing all the time, just as our students change all the time. A continued effort is needed. A lot of projects involve funding someone for 18 months. The people such projects touch for 18 months do really well, but then that stops.

12:00

Mary Fee: So they need to be long term.

Professor Thomson: Indeed.

Mary Fee: Is there enough buy-in from organisations and the public to make that change?

Professor Thomson: Having worked with all sorts of organisations on action research and case studies for more than 20 years now, I think that you will rarely find someone who says that they do not want to do things. They might not know how to do them and often do not realise that they are doing them wrong. However, once everything is in place, they want to do them.

Energy efficiency in homes, for example, is a straightforward sell; indeed, it is almost a disgrace that our houses have such low levels of insulation. Everyone gains by it, but you still walk into public

buildings where it is just not happening. When I assessed the Standard Life building for a sustainability award, I walked in and found all these incandescent light bulbs lit and all these fan heaters going with the doors open. I thought, "What's all that about? That's just crazy." These kinds of low-level things matter. When you do case studies with organisations, you do not look at their strategy documents; instead, you see whether their buildings have broken windows or whatever because, if they are getting those things wrong, they must be getting other things wrong as well. The fact is that the issue is just not sexy.

I apologise for going on, but I want to leave the committee with a lovely quotation from the chief executive of General Motors, who said, "If you invest in technology without training, all you do is make shit quicker." That is true.

Professor Gooch: In direct response to your question whether enough is being done to change behaviour, I do not think that there is a sufficiently clear strategy in that respect. We need not only the combination of different instruments that I mentioned to encourage such change but, as has been noted, accessibility. To give a very personal example, I recently moved here from Sweden, where I lived for many years. In Sweden, sorting things out for recycling was no problem; I put my things into different packages and walked down to the nearest recycling unit. In Dundee, where I now live, I have to drive if I want to recycle; as I do not have a car, I cannot recycle. Having been trained for many years in Scandinavia, I now want to recycle, but I have no access to it and end up throwing the rubbish I would recycle away with everything else.

It is a combination of things, but we simply lack a strategy for behaviour change. As I have said, people who live in Scandinavia are trained to recycle. However, my neighbour sorts all his stuff out for recycling and then takes it in the car to Tesco—and there are thousands of people who live where I live.

Mary Fee: So things need to be joined up.

Professor Gooch: Yes, and there needs to be a clear strategy. Again, the question should be: what is the outcome? What do we want to make people change in their behaviour and what do we need to do to get them to make that change? We have to work backwards all the time.

The Convener: As members have no more questions, I ask the witnesses whether they wish to make any comments.

Professor Fourman: I crave your indulgence, convener, to make a mild correction to my comment that I could trace all the rebuttals of the Public Accounts Committee's report on the rural broadband programme back to BT. That is not quite true, because some of them came from BDUK itself. If you want to look at the issue through Scottish eyes, I point out that conclusion 6 of the PAC's report says that progress on reaching the last 10 per cent of the population is being inhibited because information about BT's footprint is not getting out. That is certainly happening in Scotland. I have spoken to officials in the Scottish Government who have said that they cannot get that information at the moment and it is preventing the Scottish rural broadband programme from making significant progress. Not only BT but BDUK rebutted the report, but what is clear is that it was being rebutted by those involved in this work.

The Convener: I am sure that we will bring that up with the minister and his officials when they come to discuss the budget.

Professor Thomson: I realise that we are here to ask searching questions and be critical, but there is a danger that, in trying to make things better, we simply focus on the negative. A lot of innovative practices have been implemented, and it is a case of building on previous successes and advances instead of simply dismissing what is going on. Using the trajectory of change and the move towards outcomes, objectives and a widespread performance framework to, among other things, inform budget scrutiny and introducing innovative approaches such as the carbon assessment of the budget are very positive steps. As someone who is constantly trying to get best practice, I think that any criticisms we make should be intended to give us a nudge forward rather than to say that everything is really bad.

The Convener: On that positive note, I thank our witnesses for their evidence in what has been a very long but very informative evidence session.

I suspend the meeting briefly to allow the witnesses to leave the room.

12:06

Meeting suspended.

12:07

On resuming—

Water Bill

The Convener: Agenda item 2 is consideration of a legislative consent memorandum on the Water Bill, which is UK Parliament legislation. Because the bill covers devolved areas, the Scottish Parliament's consent is required before it can progress at Westminster. Paper ICI/S4/13/18/2 includes the LCM and sets out details of the LCM procedure, and members will note that the Scottish Government's position on the matter is that the Scottish Parliament should consent to the UK Parliament legislating in this area.

Alex Johnstone: I once again find myself in full agreement with the Scottish Government.

The Convener: Oh, goodness me.

Is the committee content with the LCM and the Scottish Government's view that the Scottish Parliament should consent to the UK Parliament legislating in this area?

Members *indicated agreement.*

The Convener: Thank you.

Meeting closed at 12:08.

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