



OFFICIAL REPORT
AITHISG OIFIGEIL

Economy and Fair Work Committee

Wednesday 11 January 2023

Session 6



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ECONOMY AND FAIR WORK COMMITTEE

1st Meeting 2023, Session 6

CONVENER

*Claire Baker (Mid Scotland and Fife) (Lab)

DEPUTY CONVENER

*Colin Beattie (Midlothian North and Musselburgh) (SNP)

COMMITTEE MEMBERS

*Maggie Chapman (North East Scotland) (Green)

*Jamie Halcro Johnston (Highlands and Islands) (Con)

*Fiona Hyslop (Linlithgow) (SNP)

*Gordon MacDonald (Edinburgh Pentlands) (SNP)

*Graham Simpson (Central Scotland) (Con)

*Colin Smyth (South Scotland) (Lab)

*Michelle Thomson (Falkirk East) (SNP)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Jonny Clark (ITPEnergised)

Professor Logan (Chief Entrepreneurial Adviser to the Scottish Government)

Claire Mack (Scottish Renewables)

Jon O'Sullivan (EDF Renewables)

James Reid (FES Energy)

CLERK TO THE COMMITTEE

Anne Peat

LOCATION

The James Clerk Maxwell Room (CR4)

Scottish Parliament

Economy and Fair Work Committee

Wednesday 11 January 2023

[The Convener opened the meeting at 09:32]

Decision on Taking Business in Private

The Convener (Claire Baker): Good morning, and welcome to the first meeting in 2023 of the Economy and Fair Work Committee. Our first item of business is a decision on whether to take items 4 and 5 in private. Are members happy to do so?

Members *indicated agreement.*

Business Investment Outlook

09:32

The Convener: Our next item of business is an evidence session on the outlook for business investment, focusing on businesses working in the renewables sector. The purpose of the session is to provide members with an overview of the outlook for the renewables sector in Scotland and to look towards the challenges of 2023. It is the third in a series of meetings that we are having in order to look at the current economic pressures facing businesses.

I welcome Jonny Clark, who is managing director of ITP Energised; Claire Mack, who is chief executive of Scottish Renewables; Jon O'Sullivan, who is director of onshore wind and solar at EDF Renewables; and James Reid, who is operations director at FES Energy.

If witnesses and questioners could keep their answers and questions as short and as concise as possible, that will help us to get through as much as we can.

There will be a range of questions from members, and I will first focus on the recent budget announcement in Scotland.

There are significant pressures on the Scottish budget and many sectors are feeling constraints. However, renewables is recognised as a sector that requires investment and growth. We have the cabinet secretary here next week, so we are interested in your reaction to the budget and whether you think that it has made enough commitments. The recent Climate Change Committee report said that Scotland was starting to fall behind in some areas and that we need significant investment and pace. Has the budget delivered enough to do that?

I invite Mr Clark to come in first. I will then go to Claire Mack.

Jonny Clark (ITP Energised): Good morning. I thank the committee for the opportunity to give evidence.

In high-level terms, there is always more that we would like to see being done. However, we recognise that there are many pressures on the budget.

The biggest challenge for us is around attracting and developing our talent. We need to see investment into a pipeline of skills development for the long term. We are talking about investment in a sector where the infrastructure takes months and years to develop and is then operational for decades, so we therefore definitely need to take a long-term view.

In summary, it is good to see the progress that is being made. Obviously, the consultation on the renewed energy strategy is out, and it was good to see some of the content of that. The direction of travel is good, but more could always be done.

The Convener: Claire Mack, do you share that view? There was the announcement about the hydrogen action plan and the funding for that, and funding through non-domestic rates targeted on the sector. The issue of skills is often raised with the committee. Is that recognised enough as the key component by the Government? We are talking about renewables investment. Is there more focus on the sector and not enough on the pipeline of people and skills?

Claire Mack (Scottish Renewables): As everybody knows, we are in quite unprecedented times. We have an incredible project pipeline in renewables that is greater than we have ever seen before across a wider range of technologies. Of course that comes with skills demands.

In general, one of the key pressures currently is the wider business environment and getting projects in the pipeline moving. Therefore, we were really pleased to see in the budget a remaining focus on low-carbon projects and support for the renewables sector. With the pipeline that we have, that is genuinely the greatest industrial opportunity that we have in Scotland, and it is really important to recognise that. Certain amounts of organic growth will go along with that, but other elements will need to be managed. We will need to rely on some public sector resources, such as skills development. Some relatively unseen elements might not necessarily come to mind first of all.

We were pleased to see a settlement for local authorities—an extra £550 million—because of our reliance on them to enable our projects to go through the planning system. The planning system is hugely important to us. Research that we did around 2020 showed that we had lost around 20 per cent of our personnel in planning departments in the decade. They are key enablers of projects. The ability to get funding is really important—that is a business environment point—but planning is also a key enabler of projects. We are therefore keen to see planning protected as part of an economic strategy for Scotland, as we see such things coming together as parts of the jigsaw that will create the projects and the pipeline that will then drive economic benefit, which will, we hope, improve our overall budget situation.

However, we need to be quite clear about the pressures on local authorities and where their choices lie. Planning might not be their priority, but I am keen to highlight to the committee that it is a key enabler of the economic growth that we are all looking for.

The Convener: What about the impact of inflation in relation to local authorities? Although there is an increase in the funding, the real-terms situation is different. How does the impact of inflation and rising costs affect your sector?

Claire Mack: You are absolutely correct. Projects in the renewables sector go through different phases. I have talked a bit about planning. Projects sit on people's desks—they are desk-based projects at that point—and they then become finance projects and construction projects.

We face exactly the same pressures that everybody else in the construction sector faces. I am sure that the committee will have heard from them about commodity price increases. The Office for National Statistics has reported increases in steel prices of 70 to 100 per cent. Steel is a critical component of our projects. Solar photovoltaic panels were a real success story in cost reduction because of serial manufacture and various other elements, including ease of installation. In effect, the price increase of around 10 to 15 per cent for those has erased the cost reduction, so we have gone back to the start on them.

We are in a perfect storm. It is not just about commodity price increases; supply chain constraints are really starting to impact and bite on renewables projects.

On the way in which our projects come together and are financed in general, people will work between delivering and generating electricity for the merchant market, which means that they hedge at a specific price in advance—nobody could have expected the huge increases that we have seen there—and hedge in another way through the contracts for difference market, which offers a fixed price for the product. Many were not able to insulate themselves against the increase in costs. They bid into the auction at a specific price, based on what they felt would be the on-going stability that we have seen in the United Kingdom for the past decade. We are in a very difficult place in terms of that perfect storm.

The other area where, because of high demand, we are starting to see real change is the supply chain—not only are prices going up, but availability is very difficult. Therefore, as well as the increased costs for commodities and labour, we are starting to see unusual things such as up-front payments to secure a supply chain.

The Convener: Thank you, Claire; you have touched on a number of areas that other members will look at in more detail.

James Reid, do you wish to add anything? The initial question was around whether enough came out of Scottish the budget to support the sector

and increase the pace of change that we need to see.

James Reid (FES Energy): Thank you for the question. Similar to Jonny Clark and Claire Mack, I think that the budget is positive in terms of the investment and funding that have been suggested. Historically, one of the key issues for us in relation to onshore projects has been the timeframes for which the funding has been available. A lot of the time, that funding has been open for maybe a year. That has now changed, which is important. Keeping those funding calls open is key to helping those projects go.

I still see an issue with private clients. I think that the funding is very good for the public sector but, when it comes to industry, for example, it is about how we encourage and attract the investment for those guys to get involved. We are still seeing nervousness in some parts of the market about investing in projects. A lot of that is down to current cross-market constraints. There are positives, but there is still a bit to go in terms of how we encourage investment.

The Convener: Thank you. Jon O'Sullivan, would you like to add anything to what has already been said?

Jon O'Sullivan (EDF Renewables): Good morning. I probably do not need to introduce EDF but, on behalf of EDF Renewables, I will say that we are one of the leading UK and Ireland renewable developers and, globally, we want to be one of the world's leading energy companies. We are happy to be here today and to support the Scottish Government's ambitions to hit net zero by 2045.

I will not add anything in response to the budget question, because I think that my colleagues have covered that, but I will say that there are knock-on effects, and there are other areas where that partnership approach with the Scottish Government could help in relation to the budget. For example, the grid is one of our challenges. Obviously, as Claire Mack said, working with and investing in the grid will help to unlock the projects, so budget is needed there. Even if that does not come directly from the Scottish Government, there is a role for enabling that. I think that the route to market and contracts for difference have already been mentioned, and we could work with the UK Government at Westminster on setting more ambitious budgets there to help unlock the pipeline of projects that we have in Scotland.

The Convener: Other members will come on to issues of skills and jobs but, as a Mid Scotland and Fife MSP, I know EDF Renewables well as a company. What are the challenges in placing contracts in Scotland? Obviously, we want to see more contracts based in Scotland and more

communities getting the benefit of renewables, at the same time as making the shift from fossil fuels over to renewables, which is important for our climate change targets. We want to see the benefit of jobs and skills as well. Other members will go into more detail, so a brief answer would be helpful, but what do you need in order to invest more into Scotland and local communities?

09:45

Jon O'Sullivan: The brief answer is that we are very aligned in that we would like to have that investment in the supply chain in Scotland. We are working very closely with our supply chain and urging our key contractors and suppliers to invest in Scotland and create those jobs in Scotland wherever possible. I will maybe come on to an example later.

The Convener: Please give us the example now. I will then invite Fiona Hyslop to come in.

Jon O'Sullivan: Okay. There is the Neart na Gaoithe offshore wind farm project, which I am sure that the committee knows well. More than 50 jobs will come about in the local area as a direct result of that wind farm and the operations and maintenance phase. A large recruitment campaign for that is planned for this year. It is maybe too early for me to comment on exactly how easy that recruitment will be, but we are certainly already seeing a great deal of interest in those jobs, and we are hopeful that it will go well this year. There is a genuine and tangible commitment to those 50 jobs in Eyemouth around the NNG project.

The Convener: That is welcome. We want to see more jobs, particularly in the area that I represent, and particularly in the Levenmouth area, which had a high employment rate but lost a lot of jobs through deindustrialisation. Renewables offer potential for that area, which we want to see fully realised.

Fiona Hyslop (Linlithgow) (SNP): Good morning, and thank you for joining us. I will cover the outlook for investment for businesses, looking at current constraints, but also at what you see as opportunities.

I will stay with Jon O'Sullivan from EDF for now. There are issues around the UK autumn statement, the latest support for businesses in energy, and yesterday's announcement on business support for energy in particular. I do not know the implications of energy use for you as energy companies yourselves. It would be helpful to get a sense of that—or do you more see the knock-on cost impact in the supply chain? What are the current constraints around business investment for you as a company?

Jon O'Sullivan: That is a great question. We have touched upon the cost increases that we are seeing. As a business, it is fair to say that we have great ambitions for Scotland, and a great pipeline. I think that we have 500MW in operation at the moment, another 500MW or so in construction, and at least another 500MW to 1 gigawatt in our pipeline. We would like to contribute a substantial amount to Scotland and the net zero targets.

The reality is that it is a tough time with all the cost increases on inflation and all our raw materials. As Fiona Hyslop rightly said, our suppliers are struggling. It is no secret that the annual results of wind turbine manufacturers are not very positive. We then need to work together with the supply chain, the developers, the owners, and the Scottish Government in more of a partnership approach to try and release those projects and offset those costs.

Fiona Hyslop: I will put this question to Jonny Clark. Are there any direct impacts of the increasing energy costs and so on for you as a company, or are they more from the supply chain?

Jonny Clark: Interestingly, the impact for us is that there is more work for us to do for our clients in supporting the likes of Jon O'Sullivan and developers and other utilities.

Also, around 30 per cent of our revenue comes from corporates and industrials—and, not surprisingly, we are seeing a lot of approaches from corporates and industrials that are struggling with the increasing costs of energy and looking at how they can hedge that. To go back to the point that James Reid made earlier, they are then looking at how they can finance those, because that is a significant capital cost to them as a business. Ultimately, that will support them from an operational point of view in giving them security on their energy costs, which is what a lot of them are trying to do.

The short answer is that we are then seeing an awful lot more work opportunities as a result of those pressures, particularly on energy costs. It is a double-edged sword—because the next challenge for us is how we resource that.

Fiona Hyslop: That is interesting. We are also looking at different sectors, such as hospitality, where there is a different impact.

I will put this question to Claire, before I move on to opportunities. Based on your membership, what is the current status of constraints in relation to investment?

Claire Mack: In the investment environment, the outlook is quite poor. That is largely because of macroeconomic issues, but there are some things closer to home. The key message is that we need to make the environment in Scotland as

good as possible, because although Jonny Clark spoke about—and Jon O'Sullivan and James Reid will speak to members about the same thing—the fact that projects are under way, and said that there is plenty of money, the issue is about getting that together and in the right place, and we face huge competition from other countries. Yesterday, I spoke to one of our members about creating operational bases, and we discussed the fact that, in Poland, they face no business rates at all—zero—which is a huge difficulty for us. We understand that there are certain necessities of public finance, but because we stack up against countries that are close to us, we have to be mindful of international competition for projects and finance; that is key.

The other thing is linked to your first question about what we need. We need structured support programmes. I talked about organic growth, but there are also managed elements of that, and two of the elements that I will highlight relate to heat. In its review of the Scottish Government's programme of work, the CCC identified that our programme of work on heat decarbonisation is far behind where it needs to be. We could bring together a very focused set of structured projects in that area to create a portfolio that is attractive to investors, which would create certainty about there being a longer-term programme. A rural heat fund would be very helpful. There are areas where we know that we have to act fast. In doing so, we can hopefully not only address business growth but also reduce cost to consumers, because a key part of the macroeconomic picture is inflation that is caused by additional costs on households.

The other area that we have touched on in the past is support for the small to medium-sized enterprise supply chain, particularly in the renewables sector. The SME supply chain is a huge component of the Scottish economy. We have business support agencies—South of Scotland Enterprise, Scottish Enterprise and Highlands and Islands Enterprise—but we feel that there is an opportunity for a programme that is much more focused on the SME market. I run an SME, and in order to meet what my members want I am having to grow it very quickly. That creates a lot of pressure for small businesses that do not necessarily have the internal resources that they need to look at their finance systems, grow their management capability and think about what is needed for a rapidly expanding business. That is a very important thing that we could do to help support our SMEs to grow quickly to meet the pipeline and the opportunities that we have.

The other area is ports and harbours, which are absolutely critical. Those areas could effectively operate as sort of silicon valleys, so we await—with ever more bated breath—announcements on green ports and free ports, because they will be

important drivers, not only of the port infrastructure, but also in attracting innovative entrepreneurial SMEs. We have a fabulous backbone of those in the energy industry in Scotland, and it would mean being able to capitalise on that and then translate it into the people and skills development that we are looking for.

Fiscal incentives are also important—Jonny Clark touched on this topic. There are certain impediments to people improving their building structures and to adding things such as solar on to projects, because doing so enhances their business rates liability. We are keen to see that pulled away so that we can push forward on decarbonising industry. Scotland has taken the lead in so many areas, and decarbonisation of industry is another key area in which we would love to see movement quickly.

We would also like to see detailed fast tracking of projects, and a lot of that sits within the planning system. I am delighted to see the level of detail and care that went into the national planning framework 4, which is due to be considered in Parliament this week. We were very pleased to see a number of the key messages that industry put forward in that document. Those messages were heard and put down on paper, which will genuinely help us to build in more areas sensitively, and it will also allow us to build at a quicker rate. The resourcing of planning is key to the rate of building.

Fiona Hyslop: I will stay with you, Claire. What opportunities do you see in the draft energy strategy and just transition plan, which was published yesterday? You talked about issues for SMEs. Perhaps the committee needs to consider those, given our focus on the just transition. It will be really helpful if you give us your initial reaction to the strategy.

Claire Mack: We were really pleased to see the energy strategy, which was published yesterday alongside the just transition plan. Those things go together. People in Scotland are at the heart of the energy transition, for obvious reasons. We have driven the energy economy of the UK for the past 50 years, and there is no reason why that should not get bigger and better. That message comes through in the energy strategy.

It is great to see holding ambition and increased ambition in relation to offshore and onshore wind, which are the two key employers here in Scotland. That is very helpful. We are also delighted to see a conversation about a target for tidal energy, which is a key early-stage opportunity. We have seen two projects come to commercial viability through the contracts for difference mechanism. That is a brilliant opportunity, not just because we have a massive coastline that we can take advantage of,

but also because we have companies producing mobile and modular technologies that can easily be exported in the tidal space.

Working on a target for tidal and wave projects is really important. Those projects are at an early stage, but the opportunity is there for the taking, particularly in relation to the supply chain. That industry in particular has continually demonstrated a commitment to local supply chains, which is something that we should capitalise on.

Fiona Hyslop: Thank you. James, do you want to comment? Have you had a chance to reflect on the draft energy strategy and just transition plan that was published yesterday? I want to give you an opportunity to talk about investment outlook opportunities and anything that you want to pick up on in relation to current investment constraints for your business.

James Reid: I have not had a chance to read the draft strategy, although I read the statement on it last night.

As a business, we see the renewables and energy industry market in construction as our highest area of growth, certainly for the next couple of years. Jon O'Sullivan and Jonny Clark have both touched on some of the significant barriers that might stifle some of that investment. Unfortunately, the big barrier is the grid. It is the biggest problem that we face right now. Most projects that we encounter—onshore, solar and battery—are being heavily constrained by constraints on the grid. For example, we have three projects that are worth about £10 million that have gone on hold over the past three months. One is a heavy industry user, one is a hospital and one is—[Inaudible.] Essentially, they have been put on hold because the grid is saturated due to flow constraints.

I would love to invest and bring more people into the business—I am currently looking to do that—but I need to be mindful that there is a risk that projects might fall off or not happen because of external constraints. That key barrier needs to be addressed somehow, perhaps by people who are cleverer than me.

On the skills front, Jonny Clark made the good point, and I agree, that one of the key barriers to upskilling is access to the apprenticeship levy. We have employed six graduate apprentices this year. I went through the process of trying to get two of my project managers on to electrical engineering degrees to try to upskill them in renewables, too, but I found it incredibly difficult to find universities that are able to offer apprenticeship levy-supported university courses. When I looked down south in England, that did not seem to be as much of an issue, but students have to live in England, so that was not an option for us. If that assistance

can be improved, it will help with upskilling in the industry.

10:00

Fiona Hyslop: I know that my colleagues want to cover more skills and training issues. If it is okay with you, convener, I will ask Jonny Clark to comment on the energy strategy. Jonny, is there anything that you want to say about the investment outlook and what comes through on that in the strategy?

Jonny Clark: My overarching comment is that there is great content and great aspiration but the devil will be in the detail on attracting the inward investment to make it all happen. That will include the organisations that we represent and others at all scales. Among the clients that we work for, it is overwhelmingly the case that the capital does not come from Scotland. In fact, much of the investment comes not from the UK at all, but from overseas. It is critical to keep Scotland an attractive place to invest as well as an attractive place for people to be based in to deliver the pipeline—which is potentially huge, notwithstanding all the barriers that we see daily. The fundamental thing is to turn the strategy into a detailed action plan.

Fiona Hyslop: Finally, I ask Jon O’Sullivan to reflect on the opportunities for investment, perhaps informed by the energy strategy, if he has had a chance to look at it.

Jon O’Sullivan: I have. We have been invited to comment formally, so I will not pre-empt that. However, my personal reflection on the energy strategy and just transition plan is that it is very positive and we will be very supportive of it. The one bit that has not been focused on is the clear targets that are being set in the strategy. We think that they will be really valuable for us as an industry. We can align around the key targets in relation to megawatts per renewables technology for onshore and offshore wind, which will help to give the market confidence to make those investments and allow us to manage the risks. We welcome the direction that the strategy goes in.

The Convener: You have partly pre-empted Graham Simpson’s question. Jamie Halcro Johnston wants to ask a supplementary question, but I will bring Graham Simpson in first as he has a question on targets.

Graham Simpson (Central Scotland) (Con): I think that most members of the committee are very keen on solar, which James Reid commented on. Your sound is not that great, James, and I did not pick up everything that you said. However, you seem to be saying that not enough is being done to introduce some of the projects, and that you are aware of several projects that are at risk of not

proceeding. Is there enough in the energy strategy that was announced yesterday—for people who have read it—in relation to solar energy? I also have an interest in hydrogen, but let us stick to solar for now.

James Reid: I apologise for the sound. Can you hear me now?

Graham Simpson: Yes—please carry on.

James Reid: We are a contractor. That is our business, so we are naturally at the coalface and we see it when projects do not go ahead due to inflationary pressures or market issues and things like that. Right now, the common denominator in the issues for most projects is the grid. That is one of the real barriers.

We are only a small part of the wider renewables industry, and Jon O’Sullivan and Jonny Clark will be able to comment on their experiences, too. However, in recent times, since the energy price increases, we have seen a massive influx in inquiries from people who want to invest in solar and offset their electricity usage, as well as improve their carbon emissions.

The problem is that, in some instances, they cannot do that because the grid will not allow it. The grid is constrained or would be cost prohibitive. Do not get me wrong: in some areas, Scottish Power, SSE and other companies have upgrade plans that might be four, five, six, seven or eight years away, but we are talking about the here and now. Last night, I looked at how far away the 2030 energy target is, and it is 83 months away. How many projects can we build by then?

Graham Simpson: The problem for you is the grid. Claire, you have read the strategy that was announced yesterday. What is your thinking on what it does or does not say about solar?

Claire Mack: Solar is an important component of the story. It is one of the most accessible and scalable renewable technologies as it can work both at the domestic level and all the way up.

We need to have a conversation about community benefit for solar, which is new. As things stand, community benefit contributes a huge amount to the Scottish economy. About £1 million a month comes in through it, although how that is distributed is variable. There is a good conversation to be had about that. If we were to look at the system all over again, we might view certain characteristics differently given our current issues with domestic and business energy costs. We might be more directive about where we put some of that money. Energy efficiency measures would also be an important part of that conversation and one to think about.

Industry will have its chance to comment. Like Jon O’Sullivan, I do not want to pre-empt what it

will say, because I have not had a chance to speak to anyone in the industry about the strategy. However, solar is a relatively underused technology in Scotland for many reasons.

First, there are grid issues. Solar is an interesting technology. If you speak to National Grid, you will hear that solar is one of the technologies that it has found more challenging to integrate in the system because we have fewer historical records on how it generates. We have good records for wind, but there were not so many good records for large-scale solar. That is a key issue that has been managed in the south of England. However, we are now in a different place. We have worked out how to build volume in generation, and the issue is integration. Scotland has some key technologies that will help us on that, such as pumped storage hydro, which is really important.

The issue in relation to rolling out more solar is permitted development rights, particularly for businesses. They would allow businesses to offset some of their energy costs. It is not necessarily a grid issue, because they would be using the solar power on site. Again, a lot of regulatory detail needs to be worked through in order to remove costs and make it effective and efficient for businesses to install solar.

Solar is an important part of pushing the decarbonisation of industry agenda. I refer back to the point that I made earlier about business rates. There are some enabling factors that will genuinely help us to link solar to other objectives, such as the decarbonisation of industry and potentially hydrogen, if we choose to go down that route.

Solar is an underused technology. There are some barriers that it is within the Scottish Government's gift to address in order to help to enable its roll-out. The Scottish Government has been active in funding energy efficiency at the domestic level, but there are certain upgrades that businesses would need to make to roof space. If you are going to mount solar on roof space, other investments sometimes need to go alongside it that bump the capital investment issue.

The Scottish Government could not only extend some of the programmes that we have in order to support that, but extend that support to households and commit to continuing that funding to help households to make better use of electricity and offset their living costs. That could involve helping them to move to electric heating so that they can make best use of the solar that they have or enabling them to make capital investment in smaller-scale batteries to enable flexibility from a product such as solar power.

I would have to go back and check the figures, but the figure that sits in my head is that you can basically kit out a house with solar for around £4,800. If we compare that with what the UK Government is contributing to households to try to manage and mitigate energy costs, which would be the better long-term solution? We need to have a clear conversation about that.

Graham Simpson: I do not know whether any of the other witnesses want to say anything. They should not feel that they have to. I see that Jon O'Sullivan wants to comment.

The Convener: I remind witnesses and members that we have a number of questions to get through so it would be helpful if they could keep questions and answers as concise as possible.

Jon O'Sullivan: I confirm that, as part of EDF and EDF Renewables, we have direct plans to invest in solar in Scotland this year. We have a number of projects in our pipeline, which are mainly rooftop solar on a commercial/industrial scale for some of the big companies that we are working with. I probably cannot share exact details now given that contract negotiations are on-going, but we hope to invest in solar in Scotland this year.

Jonny Clark: I agree with what everybody has said about the grid constraint, but it is not just about the actual physical infrastructure. It is also about capacity in the DNOs and transmission operators in terms of their people and resources. It is therefore about infrastructure and people. The other thing to flag is that, in order to deal with that, some of our clients are starting to look at setting up their own IDNOs to try to circumvent or address that issue.

Graham Simpson: What is an IDNO?

Jonny Clark: It is an independent distribution network operator, which basically means that they will operate their own grid.

Colin Beattie (Midlothian North and Musselburgh) (SNP): I do not think that anybody is unaware that Scotland and the United Kingdom are seeing fairly substantial labour shortages across the board. The transition to net zero will increase the demand for certain skills and occupations. How significant will that constraint on skilled labour be on the renewable energy sector?

On the back of that, how confident are you that the skills and education system will deliver the pipeline of people and skills that you need?

I ask Claire Mack to kick off on that.

Claire Mack: Although I said that the investment outlook is quite poor, the skills picture is relatively good. There is certainly interest in and

ambition for renewables here in Scotland. In our recent survey of student numbers, we saw a 70 per cent increase on three years ago, so 22,000 students are currently studying in Scotland in the renewables sector and associated spaces such as engineering. We will experience skills shortages, but we are starting to gear up. Again, it is about focusing effort on that area.

I am also keen to highlight what industry is contributing. We are not talking only about the public sector and colleges and universities in the education sector. We are working to uncover the strong framework of vocational training that we have in renewables. Returns from members in the past few months suggest that there are at least 20 resource facilities around Scotland in the private sector and industry. Our members are working to set up or are delivering apprenticeships and in-house training facilities—they are investing in learning, hiring apprentices and upskilling existing staff to demonstrate the industry's commitment to upskilling people to plug the skills gaps that we face.

The messages that are coming from industry are all about upgrading, enhancing and expanding facilities. One of our service group members has said that 500 of its employees received training or upskilling in 2021, and 20 apprentices were employed that year. I will leave that point there. The picture is good, although that does not mean that we have covered everything.

There are other challenges, such as skills shortages. One issue is finding enough people and having the ability to bring in people from elsewhere. There are skills gaps. That requires training and upskilling, but we also need to think about skills cannibalisation. As we develop renewable energy projects here, renewable energy projects are being developed across the world, including by a number of international companies. Employees who reside in Scotland have an open door of opportunity to work across the globe on other projects. It is about making Scotland one of the best places to live and work to ensure that our companies can keep people here to work on projects.

10:15

Colin Beattie: What indication have you seen of people transitioning out of the oil and gas industry into renewables? Has there been any significant movement?

Claire Mack: Absolutely. The heart of that is the SME base that I talked about. We are starting to see a lot of crossover there. Offshore Energies UK, the trade association that primarily focuses on the oil and gas sector in the north-east, talks about 75 per cent of various SME members transitioning

into the offshore wind space, so they are very active in that skills transition area.

We did some research in 2019 that showed that around 80 per cent of oil and gas workers are aware of and alive to the impacts of climate change on their career choice and future job opportunities, and three quarters of those are keen to reskill and would take the opportunity to do so if offered. There is a strong will there, and we are seeing movement in the SME sector, but it will never be "Job done." The scale of the pipeline in Scotland should not be underestimated, and we need focused effort on SMEs and individual skills training to meet the challenge.

Colin Beattie: Would John O'Sullivan like to comment?

Jon O'Sullivan: I was smiling, because I have an oil and gas background—I will not mention the company. I have a personal interest in helping the just transition from oil and gas into renewables, and I have great examples in my team who have done that recently. They would probably say that the oil and gas sector is a key focus, but we see transferable skills from other industries as well. The automotive and various other manufacturing industries have good relevant transferable skills that we will need for transitioning into the renewables sector if we are to hit the 77,000 jobs by 2050 that is suggested in the energy strategy that was published yesterday.

Oil and gas is a huge focus and a fruitful place, but we need to cast our net wider. We need to work backwards from that 77,000 in partnership with industry and Government to make sure that skills flow through and we hit that 77,000.

Jonny Clark: This issue is close to my heart, because it is far and away our biggest challenge. We are a technical adviser in the low-carbon energy space. We have around 100 people and are headquartered here in Edinburgh. Most of our staff are employed in Scotland, and a big challenge for us is accessing the talent pool—we cannot get enough people.

To give you some statistics on that, we are growing at a little over 20 per cent per annum, and our projection for next year is to do the same. We are trying to fill 10 roles at the moment and are looking to bring in another 10 graduates per annum on top of that, and it is really challenging.

I will give another statistic to add a bit more colour to that. It is also taking longer to find people. We are all fishing in a relatively shallow pool; our clients, contractors and other consultancies are all looking for people with the same skill sets. As Claire Mack mentioned, it is a global market, and for us in the past year filling a role has gone from taking seven weeks to 17

weeks, but the demand is still there. I hope that that gives you some context.

One important part of addressing that challenge is developing strong relationships with further and higher education institutions and identifying talent at an early stage so that we can bring people in and train them up. People can go anywhere. We even have people based overseas in places such as Argentina, the US and mainland Europe as a result of trying to access a more diverse talent pool that is not only locally based.

Those are the challenges that we face and that we are all facing. Because of our aspirations, I do not see that slowing down. Various reports written from a research and development perspective have recognised that there is insufficient capacity in the market to meet our ambitions and those of other nations. There are not enough people, resources or equipment. That is definitely a challenge for the industry and for global aspirations for decarbonisation.

Colin Beattie: James, what is your experience?

James Reid: We have employed 41 apprentice electricians and pipe fitters. We had a target of 52 apprentices, but the colleges did not have spaces for that number. Without setting the cat among the pigeons, we are not sure whether that was just a hangover from coming out of Covid lockdown in March 2021. Our next intake will be in April or May this year. We will very closely watch what trade placements are available in the colleges. I touched on the apprenticeship levy in an earlier answer. That would help businesses and SMEs with upskilling our staff.

Claire Mack touched on how companies are investing in training, which we have recently done. We spent £25,000 on upgrading our training facility and creating a dedicated workspace for renewables such as solar PV, battery storage and electric vehicle charging, so that we can train our apprentices and upskill our existing electricians to meet future demand. From the perspective of private industry, there is a real appetite and hunger for change.

To pick up on skills shortages, I will set out the biggest problem that I have seen—I am not sure whether this comes from wider economic impacts. We pay our electricians in line with Scottish Joint Industry Board rates, which are the industry standard. In the past six months, I have noticed companies paying 30 to 40 per cent above that, because of demand. I understand that, but the problem is what companies do with that additional cost. Do they absorb it, or pass it on to clients? Passing the cost on to clients can seem counterintuitive, because it might put a project at risk by making it uneconomical.

It will be interesting to see whether the labour market settles down in the next six months to a year. There is also the potential for a recession in the wider economy. I think that the renewables industry will buck that, but it will be interesting to see how it reacts.

Maggie Chapman (North East Scotland) (Green): I thank the panel for being here. I will pick up on points that have been made about skills and supply chains.

Claire Mack spoke about the interest and ambition here. We have heard that we may have the right skills but not necessarily in the right place. Thinking about Scotland as a whole, we can identify what we need. However, I am thinking of SMEs not only in the central belt or in existing energy hubs but across Scotland, especially in rural areas, where we want sustainable and viable economies. I am interested in the barriers that you, or the people with whom you work, have identified around ensuring that we have the right conditions and people in those places to enable SMEs to function.

Claire Mack: In terms of barriers to getting the right people in the right place, one significant barrier to which we need to be alive is lack of data. That is one of the problems that we have as a sector.

As a trade association, Scottish Renewables has created our own model to enable us to model jobs in the here and now. Our model, on which we worked with the Fraser of Allander Institute, tells us that we currently have 27,000 people in the workforce. The reason why we have had to do that is that the data that comes through from the ONS at central level does not give us what we need. It does not allow us to know what the situation is here and now, or to track what is going on in energy transition. That is a key point for the committee to alight on.

On the point about geography, I come back to vocational training. I am a huge advocate for vocational training, having been to some of the most productive economies in the world—for example, Switzerland, whose model is very much led by vocational training. Skills Development Scotland has done a lot of work over the past few years on vocational training. I urge the committee to look at that, because it can allow us to have a wider geographic reach, and to get more specific technical skills embedded in the economy. It also allows for public-private partnership and fast tracking people through the system.

When we spoke to our members about that, they agreed that they were struggling to recruit staff with the required skills levels. They also felt that they were having to provide their own

supplementary training to get exactly what they needed to deliver projects.

That is part of a partnership approach, of course, but we need to be aware that it is not enough simply to open up more college and university places and academic routes; the vocational route needs some focus as well. I come back to my comments about support for SMEs. Their capacity to provide training is more limited, so if we can use what we have to help support a targeted programme of work with SMEs around skills and upskilling, that would do us a lot of good service.

In the rural space, it again comes down to where companies are located. The Global Energy Group in Nigg, which I referred to earlier, has put 500 of its employees through its in-house training centre, and James Reid talked about FES Energy's in-house training centre. In addition, companies such as R J McLeod are providing civil engineering training and skills uplifts, covering a lot of different skill sets.

We have good data from the survey on what we need in the near term, but we also need to keep a focus on the longer term. I highlight two constraints in that regard. One is lack of data that enables us to look at and track what is happening properly, so that we can divert resources to exactly what we need, where and when we need them. Secondly, we need to support some of those SMEs in their endeavours to help with the skills challenge that we have.

Maggie Chapman: I come to James Reid with a similar question. Have we got the targeted support and approaches right to ensure that we are supporting skills in the right places? I am thinking in particular of places in which we might not expect that kind of economic development but which might really benefit from it.

James Reid: It is all intrinsically linked to the pipeline. Unfortunately, the majority of work is in the central belt and north-east—that is typically where a lot of our work is. However, we have a business that works out of Oban on the west coast. We are actively looking at how we target renewable projects on the west coast; with that will come skills development, and we can get people trained up and whatever else. The question then is how we unlock the pipeline to allow us to invest in those projects and get the right people. It is intrinsically linked in that respect, and the answer may not necessarily be clear.

10:30

I will make a point about ease. Claire Mack touched on a very good point in relation to strategies and trying to get a clear path. It needs to be made simple. For example, in the past six

months, I put three or four of my team on to heat-pump training to try to get them MCS certified, and I found that incredibly challenging. The Energy Skills Partnership did some work on that. There were six to seven courses that people could do, and they then had to do something else and then something else. We are trying to reach a target of so many thousand heat pumps being installed within a certain timeframe, but there is a lot of red tape to try and cut through. It is about trying to streamline those pathways and make them as clear and concise as possible, not only for employers but for colleges and accreditation bodies.

Maggie Chapman: We could probably talk about skills all day, so I will move on to my next question, which is about supply chains. I know that Gordon MacDonald will probably pick up on the issue, as well, but I will put this question to Jonny Clark.

How confident are you not only that we have the resources in terms of materials or the connections for obtaining them for Scottish use but that there is long-term security? You said earlier that demand for your work is high right now, but how confident are you that there is sustainability in those supply chains to secure demand into the future?

Jonny Clark: The short answer is that I am not that confident, sitting where we are right now. However, if we do something about it now—which we need to—we could ensure that it happens.

Reflecting on the previous comments, I note that the workforce is more flexible than it has ever been. Particularly after Covid, people have become way more flexible and adaptable about where they live and where and how they work. We in Scotland need to capitalise on what Claire Mack mentioned earlier. We are world leading in our ability to deliver renewables projects and provide advice on and equipment for low-carbon technologies.

I will give the committee a couple of examples. We are working in places such as Taiwan, the US, west Africa, sub-Saharan Africa and the Caribbean. We are exporting our know-how from Scotland to deliver projects in those places. We need to attract talent to Scotland because we are seen to be a world-leading location for providing that kind of know-how and capability.

That goes back to the point that a lot of people stay where they study and that a lot of people go and study where they think that there is a centre of excellence. We must ensure that Scotland is, and stays, a centre of excellence. That is the starting point from the point of view of the sustainability of the supply chain, and we must do that right now, because other parts of the world are catching up, if not overtaking.

Maggie Chapman: I will put a similar question to Jon O’Sullivan on Scotland’s supply chain and the range of renewables that we are speaking about.

What are the important things for us to focus on to ensure that we have the right material and infrastructure in the right place for 10, 20 and 30-year sustainability?

Jon O’Sullivan: I will provide some concrete positive examples of where we have invested in the Scottish supply chain recently: Forth Ports, Muir Construction and Inland and Coastal Marina Systems. Those are examples of where it is happening and where there is a positive outlook. However, we share the views that were expressed in the comments about this being a significant challenge for us. We want to do more with the supply chain in Scotland, but it is a competitive global marketplace. We are working with our supply chain to encourage investment in Scotland, and I believe that positive things are happening.

I know that a significant component of the onshore wind sector deal that is being discussed and worked on relates to the supply chain and how we can do more on that in Scotland. EDF Renewables is looking forward to contributing to that and, again, getting more concrete targets for what we can do across Scotland to help us to unlock our project. Obviously, if we do not do that, there will be increased costs of delays and of other companies having to come in from—[*Inaudible*.]—and so on. My key message is probably that the more proactive that we can be the better. Being proactive with regard to the supply chain now will unlock the skills, supply chain and longer-term pipeline that we all want.

Maggie Chapman: Claire Mack, I will come back to you on the issue of global supply chains. This question might seem to be a bit out of left field, but given political and other uncertainty in various parts of the world, what back-up plans or mitigations are you and your members thinking about with regard to human rights issues that are involved in supply chains, materials extractions and environmental rights surrounding materials extractions and those kinds of things that your members engage in?

Claire Mack: That is a really pertinent question because one of the things that we need to be aware of is that our demand for rare-earth metals and other commodities will have an impact somewhere else. Our members are mindful of that. As an industry, my membership as a whole is committed to the living wage, compliance with modern slavery laws and all the fair work practices that go alongside that. As an industry, we pride ourselves on that.

On the wider strategy for how to ensure that we have an ethical supply chain, a great deal of that now comes through different areas. A lot of that comes through ESG—environmental, social and governance—measures that are being demanded by the finance sector, as well. As part of those commitments, people have to have good knowledge of where their commodities come from and how their people are treated.

On the specifics, in Scotland, I am not aware of any programmes that go beyond the living wage and commitments on modern slavery laws. However, as an industry, we are aware of that, as well as the need to think ahead about the circularity of our product. Particularly in Scotland, in the onshore wind sector, we are very much focused on a repowering programme. Again, that came through yesterday in the energy strategy. We can make use of taller turbines, which will create a body of other products that will need to be removed and either recycled or reused. Again, the industry has been quite active on that to date. For example, in the case of one of my members, Renewable Parts, its entire business model is predicated on trying to create second life and to enhance life for older products. The commitment is definitely there.

As you said, it is very much a global issue and one that we would look to engage on through larger trade association partners—perhaps those based in Europe—but we are also thinking about contributions from the industry to platforms such as the United Nations climate change conference of the parties, or COP. We will always be a key part of that agenda.

Colin Smyth (South Scotland) (Lab): Good morning. I will follow up on a point that Claire Mack mentioned about how we measure economic success in renewables. There is no doubt that there has been good progress in the role of energy production in cutting emissions in Scotland, particularly through onshore wind energy. However, it is probably fair to say that that has not yet translated into the maximum number of job opportunities. In 2010, the Government’s “A Low Carbon Economic Strategy for Scotland” promised 130,000 renewables jobs by 2020. I remember being told that we would be the Saudi Arabia of renewables.

Claire, you mentioned the recent report by the Fraser of Allander Institute, “The Economic Impact of Scotland’s Renewable Energy Sector—2022 Update”, which estimated that the number of renewables jobs was 27,000, which is about a fifth of the target.

The first thing that struck me was that that was an estimate, because we do not seem to gather data on renewables jobs. The second thing that struck me was that, yesterday, when the cabinet

secretary outlined the draft energy strategy and just transition plan, he used the term “low-carbon jobs”, which I think that Jon O’Sullivan mentioned, and the potential to reach 77,000 jobs. Obviously, that includes jobs in the nuclear industry. Then, during the discussion, he used the phrase “green jobs”. Three different terms for renewables jobs were used in the course of one discussion.

There is clearly a gap in the data, so what exactly should we measure when it comes to the economic benefits of the expansion of renewables? How do I and other politicians know that we are maximising the opportunities? You will all be able to tell me that companies are awarding contracts to Scottish firms and have created X jobs, but you will probably not tell me when the contracts go to overseas firms. How do I know that we are getting the maximum number of jobs and, if we are not, whether there is a barrier?

It is only fair to start with Claire Mack because she mentioned the topic and Scottish Renewables commissioned the work from the Fraser of Allander Institute in the first place.

Claire Mack: One of the key points to make on the difference between the first jobs figure that you quoted and where we are today relates to the pipeline. That is what everything comes back to. You need projects to create jobs. We have a lot of opportunity in new technologies, such as floating offshore wind and the tidal sector, in which there is a ground-up alignment with existing oil and gas skills, so you do not start from zero but from a good base.

On the measurement issue, we have basically used a model that was devised by the oil and gas sector to help to understand more about the energy market in Scotland. The issue that you raise about the difference between a low-carbon job, a green job and a greening job is one that Skills Development Scotland is considering through the climate emergency skills action plan. There is good analysis of that in the plan, and SDS would be better able to help you than I am on the measurement of that.

We are constrained by the fact that we do not have a distinct industry code for renewables. I go back to what I said about the changing shape of projects. At some point in the process, we are heavily reliant on lawyers and planners for contracts and constraints and then we are heavily reliant on the construction sector, so the jobs picture changes shape over the course of a renewable energy project.

Longevity comes in operations and maintenance, where about 50 per cent of the jobs are. That is the bit that we need to understand because that is where you will have jobs for the next 10 to 40 years. The pipeline of construction

will give you a boost. As we all know, when you construct something such as the Queensferry crossing, you see a boost in the economic figures that go alongside it. We are no different when we are in that phase, but the on-going piece is operations and maintenance. That is rooted in Scotland because that is where the projects are. It includes vessels that help us to get out to wind farms and drone operators who help us to survey them—all that kind of stuff—as well as new jobs that are part of the sector.

Maximising opportunities is about understanding where we are now and being able to meet future demand. One way to maximise opportunity is to get better data now to help us to forecast better so that we understand what we need and are able to use as many as possible of the people that we currently have in the country to meet that need.

Following the path of the oil and gas sector is also really important for maximisation of opportunities. That workforce has been heavily mobile, and the sector has heavily exported not just the product but people. We are really keen to see that in Scotland and, as a trade association, we have looked for targeted and focused support from Government to help to build export capability. We have amazingly wide reach—we are in about 72 countries—but, as with most other sectors in Scotland, it is a narrow exporting base, and we need to broaden it to be able to maximise the opportunities.

Colin Smyth: Those are important points, but I am still struggling with why we are not measuring any of those things at the moment. Why do you have to do the work? When we politicians set targets, why do you have to measure what progress is being made on them?

Claire Mack: Through the current system, we have good data on oil and gas projects. Part of the energy transition is that it is hard for firms to do the returns in a way that would be meaningful but gets down to granular-level data.

For example, R J McLeod works across a number of different civils projects. Some of them are roads and rail and then there is work on renewables projects. The way that you do the return impacts the data that you get. One of the problems is that capacity and resource mean that companies struggle to give the granular level of detail that we need because they are sometimes working on renewables projects and sometimes they are not. For example, those who work for EDF Renewables—which continually works on renewables—are quite easy to identify. There is a devil in the detail issue.

10:45

Another critical issue is that the Office for National Statistics had to pivot quite quickly to manoeuvre itself to work on Covid data, and things that we had spoken to the ONS about—such as how we get a better handle on what is going on in the wider economy and in the renewables sector—were put to one side to allow it to do that. Now that we are coming back into an economy that looks a bit more normal, the ONS needs to look at those things in quick order to get us to a point at which we can get better data. That is certainly the message that has come from my colleagues at the Fraser of Allander Institute. The issue lies with getting the microdata, as they call it, from companies and being able to translate it, through to the way that the ONS reports, to get something more meaningful. To be fair, capacity at the ONS was constrained because of the key work that it was doing on reporting on Covid impacts.

Colin Smyth: I turn to Jon O’Sullivan from EDF Renewables and ask him the same question. Jon, you said that there were gaps in the energy strategy in respect of some of the targets around production. For me, the biggest gap related to jobs. What is the target for jobs?

You might think that I want that target so that I can assess whether you are delivering jobs in Scotland and not handing contracts overseas, but a target would flag up where there was a problem with the capacity in the supply chain or whatever the reasons were for jobs not coming to Scotland. I presume that you would support having proper data so that we can not only hold your feet to the fire to ensure that you are creating the 50 jobs in Eyemouth that you mentioned, which I have a keen interest in, but ensure that that is the maximum number of jobs. If there is a barrier to that, we need to break it down.

Jon O’Sullivan: I could not agree more. We want to have our feet held to the fire. We have a good reputation for delivering on our promises, and we need to work together with Claire Mack and as an industry not only to set clear targets for 2030 and 2050; we need to break things down to see whether we are on the right trajectory in 2025 and 2030 so that we will hit the targets and there are no unwelcome surprises at the end, and we do not realise that we should have been more proactive in doing more now.

I would welcome work to consolidate and standardise the targets on megawatts and jobs, and on the right terminology and how we measure. Maybe another key performance indicator to measure success is gross value added. That has been quite a well-used and well-known term in measuring the positive impact on the economy.

There is, I hope, a good discussion to be had as part of the consultation on the energy strategy and just transition. Let us clarify the KPIs and measure our success in achieving net zero.

Colin Smyth: James Reid has a keen interest in ensuring that we maximise supply chain jobs in Scotland. How do I know that companies such as FES Energy are getting those opportunities and that they are not, in effect, being offshored? Is that a challenge that you face, or is so much work going around that it is actually fine?

James Reid: That is a good question. I think—

The Convener: I am sorry to interrupt. We are running a bit short of time, so I ask the witnesses to be brief. That will be the last question from Colin Smyth; I will move on to questions from Jamie Halcro Johnston. Two remaining members may wish to ask questions, and I want to give them time to take that opportunity.

Please go ahead, James.

James Reid: I think that there are probably two facets—[*Inaudible.*]

The Convener: We are having a problem with James Reid’s connection, so I will move on to Jamie Halcro Johnston while we see whether we can get him reconnected.

Jamie Halcro Johnston (Highlands and Islands) (Con): Thank you, convener. I will make my two questions very short, and I will put them both to Claire Mack.

We have already talked about constraints on the network. That issue has been highlighted. As a member from the northern isles, I know well the issues around grid upgrades and the like. I want to look beyond that.

Work is being done by organisations such as ReFLEX Orkney, which is coming to the cross-party group on islands today to talk about how we can use energy better locally. There is a real concern. I was looking at some figures from the Renewable Energy Foundation—you may have better ones—that say that, in 2020 alone, 3,460 gigawatt hours at a cost of £243 million were lost to constraint payments. That is energy that could be better used in communities. How can the sector do more? How can we as a country use that better and avoid having to spend that money not producing energy? We could be putting that into local homes and businesses.

Claire Mack: We put the same question to the National Grid. We asked whether it believed that constraint payments are still the most efficient way to run the network, and it said that it believed that they are, for the moment. The network infrastructure build programme is phenomenal. Let us also not forget its contribution to jobs. Those

jobs are certain because it is a regulated investment base that the National Grid works from.

A lot of the constraint issue is to do with management of the grid and not having enough capacity on it, but some of it is down to the very nature of renewables. There is intermittency and, for things such as solar, the generation happens when demand is lower. The key way to overcome that is to grid build. That is a long-term plan. It would be hard to see an investment in grid infrastructure at the moment that would be wrong; there are a lot of "No regrets" in there. Continuing to build the grid is really important in a country that has such an abundance of energy.

The other key area that we need to look at quickly and specifically is storage. Again, Scotland has some key geographic characteristics that mean that it is the place to develop new, innovative storage, as well as to rely on some tried and trusted sources, such as pumped-storage hydroelectricity. We have some phenomenal companies. You mentioned Orkney, which has been working on hydrogen into transport as a key area.

We also need to look at different types of storage, including shorter duration stuff such as batteries, and how they integrate into more localised energy systems. Jonny Clark might want to add a little on that. Pumped-storage hydro is longer duration. There is also interseasonal storage and the role of hydrogen in our economy. That is a key area in which we are able to start to build out some new infrastructure and innovative product, with new skills and technologies that will be of use everywhere else in the world. The integration point is the key question now. The constraint burden can be reduced by creating new technologies and innovative approaches to integration that will help to alleviate the problem.

Jonny Clark: I have a couple of brief points on that.

We should definitely be looking at storage technologies so that we can optimise capacity and use the full capacity that is there. That would address the first issue to some extent. We are doing quite a lot of optimisation work on those assets, looking at what could be co-located as another generating technology that is negatively correlated with the existing one and/or storage technology. We are starting to see more of that, although there is a financial and economic overlay to that.

On innovation, we are the technical adviser on the low-carbon infrastructure transition programme, funded by the Scottish Government. We are seeing all sorts of interesting innovative technologies coming through that. There are other,

similar things happening that are really important to addressing the point that you have raised.

Jamie Halcro Johnston: When I speak to people, there is a real concern that we are spending money not to produce energy at a time when we need energy and people's bills are so high.

I will leave it there, convener.

The Convener: Does Michelle Thomson have a question?

Michelle Thomson (Falkirk East) (SNP): Yes, convener. In the interests of time, I will be quick.

I thank the witnesses very much for everything that they have said so far.

I want to go back to the focus of the session, which is the outlook for business investment. I want to ask about your perceptions for women in your sector: women-led SMEs, women in renewables generally, and women in the just transition. Given the very fulsome comments about data, can you make it clear whether your comments are merely perceptions, based on anecdotal evidence, and where you do not have the data collectors in place? On the back of that, where would you need to see data collectors in place?

Could Claire Mack lead off on that? In the interests of time, I will just go around the panel.

Claire Mack: I can go quickly on that. There are a lot of different issues in there. When industry has come to the Government to look for a sector-deal approach, gender has been one of the key areas. The black, Asian and minority ethnic workforce is really important in there, too. One of the ways in which to secure more commitment is through the onshore wind sector deal in Scotland and the offshore wind sector deal with the UK Government, which sits predominantly in Scotland because of where the projects are. There are targets in the energy strategy, and there is always a quid pro quo. How we do things is a really important part of that.

The other point to make is about the breadth of different jobs within the renewables sector. We have seen that come through the energy sector in the past. I have spoken to my colleagues in oil and gas and they, too, have concerns about diversity in their workforces, because the very nature of the work tends at times not to be family friendly. Offshore work can be very difficult in that respect.

The world is changing in the sense that there is flexible working and more family-friendly working environments are opening up. In renewables, the breadth of jobs can really support our diversity aspirations.

If I look at where our members are saying there are skills gaps and shortages, I see that there are such gaps and shortages in environmental specialists within planning and consenting, for example. Again, that is open to much more flexible types of working and more diverse intakes. The jobs of welders, fabricators and turbine technicians are open to people from all walks of life. That is part of the diversity agenda, and it is something that the industry takes as part of its values.

That is linked to the question that Maggie Chapman put to us earlier. We want to do the right thing. We are a positive industry, and we want to be seen to be doing the right thing. How we present ourselves to the world is crucially important.

Michelle Thomson: What about the question about data, the current status, and how you know whether that is true?

Claire Mack: Linked to the offshore wind sector deal, we have data direct from industry that is broken down in that way. I guess that we need to do a little bit more of that. That comes back to that ONS issue. If something is an important criterion in what we want to see as part of the just transition, it is something that we should be speaking to the ONS about in relation to microdata gathering, what it is that we want to know about, and what is important to us.

Michelle Thomson: I sense that Jonny Clark wants to come in on that, given that he was nodding.

Jonny Clark: Yes. On data, I can talk only from the perspective of our business. Our workforce is split 50:50 male and female. One of the things that we are keen to do is to encourage more women coming out of science, technology, engineering and maths courses into the industry. There is a lot of interest. We are proactively talking to people involved in further education and higher education courses to try to get in there and talk to the students to raise the profile of the opportunities across the board in the renewables industry. That is really important.

To go back to the talent pool challenge, we need as diverse a talent pool as we can possibly access.

Michelle Thomson: Do Jon O'Sullivan and James Reid have anything to add? I appreciate that it is a vast topic.

Jon O'Sullivan: We have a policy called "Everyone's welcome", which focuses on diversity, inclusion and gender. On measuring success, we are seeing more women in leadership positions across the board. As a company, we would support an industry-wide initiative to track the KPIs.

James Reid: I am 100 per cent behind what Jonny Clark and Jon O'Sullivan are saying. I do not think, from my perspective—*[Inaudible.]* The reality is trying to get interest very early on. That starts with STEM. That—*[Inaudible.]*—high school and college leavers to increase that pool.

The Convener: Thank you, James. Your line was breaking up a little bit, but I think that we got the gist.

I thank all the witnesses for their contributions to our evidence session, which will be really helpful to our work in the new year.

11:00

Meeting suspended.

11:08

On resuming—

Chief Entrepreneurial Adviser to the Scottish Government

The Convener: Our next item of business is an evidence session with Mark Logan, the chief entrepreneurial adviser to the Scottish Government. Welcome to the meeting.

I have an introductory question. You have been in post for six months. Although you have a longer working relationship with other areas of the Scottish Government, you have been in this particular role for six months. I understand that the post is initially for two years. Do you have a shared understanding with the Scottish Government of what is to be achieved in those two years? Is there a way of measuring the impact that the role will have? If you could say something about that first, that would be helpful.

Professor Logan (Chief Entrepreneurial Adviser to the Scottish Government): There is a shared understanding, in the sense that there is a remit for the role.

In order to stimulate a dramatic increase in entrepreneurial activity, we need to think about what we need to do over a five to 10-year period. Ahead of that time, in the next one to two years, we will look at the leading indicators that will show the progress that we are making. We will probably explore some of those during this meeting. Are we overcoming the barriers that stop us being as entrepreneurial as we could be and need to be? What progress have we made in key areas such as education, infrastructure and funding? Are we building networks for and confidence about entrepreneurship in the country? Are we beginning to see the number of start-ups and other signs of entrepreneurial activity increasing? We will see some leading indicators during the time that I am formally in post.

It is much more important that we lay the foundations to create a dramatic improvement in entrepreneurial activity. I am focusing my efforts not so much on achieving a very short-term stimulus to the numbers, but on building, with others, the infrastructure that will give us a dramatic improvement over the longer term.

The Convener: You have expressed frustration at the level of bureaucracy that exists in Scotland when it comes to making change and have expressed concerns about the Scottish Government's mindset in relation to focusing on the economy. Your appointment was made by the Cabinet Secretary for Finance and the Economy, but is there cross-departmental work taking place?

Professor Logan: There is, and there absolutely needs to be. I am not expressing frustration; it is more the case that I think that the country as a whole needs a sense of urgency in this area. There are two important reasons why increasing the rate of entrepreneurialism in this country matters. One is that every job in this room, outside this room and across the country exists because somebody at some point started something. It should be obvious to all of us—this is not a party-political issue; it should be a universal understanding—that, if we are to have a thriving population of individuals who have fulfilling lives, we need to be starting things more often than we have been doing.

What concentrates that need is the fact that we now live in what I call the exponential age, which is to say that our problems and general environment are changing exponentially and our problems are increasing in severity exponentially. Climate change is an obvious example of that, but there are many other exponentials. Society needs to evolve its activities and the work that people do to match that rate of change, and that happens through entrepreneurialism.

Entrepreneurialism can of course be found in industry and business, but it also needs to be found in Government, so when I express frustration at how quickly we get things done, it is not a party-political point. Historically, Governments have moved more slowly than they will need to move in the future.

There is a concept of speed of iteration: how quickly do you iterate and learn and how quickly does that cycle operate? If you look at an internet economy start-up such as Skyscanner, where I spent some time at its most high-growth stage, our speed of iteration was weekly, at most. We released software to the site multiple times a day. However, the speed of iteration—the decision-making frequency—of Governments is not weekly; if we are being charitable, it is probably quarterly. I do not mean that in a pejorative sense, but that is the nature of the machine.

Governments should move more slowly than businesses, because it is necessary to add some inertia to account for, and to dampen, extremism and so on, but as a nation, a Government machine and a civil service, we need to increase our speed of iteration so that we can make more decisions more quickly and make more speed over the ground to match the exponential age that we live in.

That is perhaps a wider point than today's focus, but that is my point when I express frustration. For example, when we work on things such as the Scottish technology ecosystem review implementation, we see that Governments are usually faster within departments than they are

across departmental boundaries. We must learn how to be faster at running multidepartmental projects, because entrepreneurialism does not respect the departmental boundaries that we put up. We need to be able to work across teams. Those points could be levelled at any Government on earth, but we are in Scotland and have our own problems to solve, so we should focus on our speed of iteration.

I see part of my role—not the major part—as being to provide a constructive provocation on that point to colleagues around this table and in Government. The greater part of my role is in policy development and helping to steer that through to execution, such as with the Scottish technology ecosystem review and some other projects that I am sure that we will talk about in this evidence session.

11:15

The Convener: That is helpful. The post is remunerated—for eight days a month, I think—so I would like us to have a good understanding of what the role involves. That is why I asked about measurable progress. You have talked a bit about influence and your role in providing advice to Government about the way in which Government operates, as well as working within the sector to deliver projects. Do you want to say anything further about what the job entails? I will invite Graham Simpson to come in once you have answered that.

Professor Logan: To be concrete and specific, the first piece of policy that I was heavily involved in was writing the ecosystem review for technology. I spend a lot of my time on the implementation of that because it is an on-going programme. I am working with Ana Stewart to co-author the upcoming Stewart review on underrepresentation in gender and among minority ethnic founders in business. That is a major piece of work that will be delivered next month and, again, it is very strong on policy. It is written in the same manner and concrete style as “Scottish Technology Ecosystem Review”.

The Stewart review is trying to address the fact that we still have an appalling imbalance in participation in entrepreneurship that, as a modern society, we should be ashamed of. That does not make us a just society, and it takes a lot of our best potential entrepreneurs out of a much-needed talent pool. As part of the job, I am focusing on how we create more talent that is focused on entrepreneurship. That is one aspect, the ecosystem review was another, and there are more to come, as we will talk about.

On policy development, there is the STER report and the gender review. Beyond those, I am

working on a further paper to set an overall strategy for entrepreneurship that puts those other parts in context and that will lead to further policy development, which I will be happy to talk about. The second part of my job is to steward the implementation of that across different groups, then to evangelise on the topic within Scotland and to work to connect groups and build a network of the willing to drive policy forward.

I am glad that you brought up remuneration. It took me six months to write, socialise and discuss the ecosystem review, and I did that for free. I have spent about 400 hours working on the Stewart review this year, and I have not charged the Government a penny for that. I am doing it because I think that it is important. I do not charge for anything like the hours that I work, but nor do I work for free—I am sure that everyone can understand that. I have tried to strike a balance by ensuring that the work that I do is seen to be valued and to give people value for what they pay for, but I do not charge the country for the vast majority of what I do, because it is just something that I want to do on behalf of and for the country. Despite the headlines, I try to take that approach to what I do.

Graham Simpson: You will be pleased to hear that I am going to come back to remuneration. At the start, you described broadly what an entrepreneur is: it is somebody who has an idea, starts up a business and makes a success of it. What businesses have you started?

Professor Logan: I was employee 5 and vice-president of engineering at Atlantech, which was a small start-up that we took through to a \$180 million sale to Cisco back in 2000. Two years after that sale, I co-founded a company called Sumerian with David Sibbald and another founder. I stayed at that company for seven years; it was eventually sold but I had left before that. I joined Skyscanner when it had about 90 people and its growth was stalling. I took on the general management of the business and worked with Gareth Williams, the founder, and we took the company to about 1,200 employees and a £1.5 billion exit to a company called Ctrip in China.

Beyond that, I have worked with about 60 start-ups in the past few years, mainly in Scotland but also around the world, in advisory or investment roles or in non-exec roles. I am therefore pretty involved in the start-up world. I have spent about 30 years in the tech sector. That is my experience in a nutshell.

Graham Simpson: That is useful to know.

You mentioned the Scottish technology ecosystem review, which you wrote. I read that, when you were invited to do that by Kate Forbes, you were sitting in a lay-by on the A9. How were

you offered your current role? Where were you? I hope that you were not sitting in a lay-by. How was it offered? Was there an interview process?

Professor Logan: I was not in a lay-by—Kate Forbes was in a lay-by calling me. You will have to ask her what she was doing in a lay-by, but I am sure that it was just safe driving practice.

As I understood the role as it emerged, it was seen through “Scottish Technology Ecosystem Review”—which I will call “STER” for short, because it is a bit of a mouthful—to be very valuable to have an industry expert, if I can use that term, to take an independent view of what is needed in a given area of entrepreneurship and to help steward that through to execution. That established the concept of it being valuable to have someone in that kind of position. That was not my decision; that was a Government decision.

I was then asked whether I was interested in considering that role, and I said that I was. My understanding was that there was a process, which I was not party to, to look at a shortlist of other people who were also being considered for that role. I am not sure what process was followed to explore that. After that, I was asked whether I would take on the role. Therefore, I did not sit in a formal interview, but I think that my interview had been over the 18 months before that, when I had shown myself to be a credible candidate for the role. From my perspective, that is how the role came about.

Graham Simpson: So, essentially, you were asked, “We’ve got this role—are you interested?”, and then you were offered the job. There was not a formal interview.

Professor Logan: There was not a formal interview for me. I was aware that a number of candidates were being considered. I do not know who those candidates were. I am sure—and I believe—that discussions took place with them. Discussions took place with me over a period of time because I was working closely with Government, but there was not an interview in the classic sense of my coming in and being interviewed by a panel of three people or anything like that.

Graham Simpson: I will come on to remuneration. Figures have been published; you can tell me whether they are right or wrong.

You are paid £2,000 a day—is that correct?

Professor Logan: That is the official rate. I will comment on that in a second.

Graham Simpson: You are paid £2,000 a day for two days a week, roughly.

Professor Logan: On average, if you were to run it that way.

Graham Simpson: That equates to £200,000 a year, which is more than the First Minister earns. That is quite a colossal amount. It is a huge amount. It makes you wonder. I do not know whether you are a civil servant or on what basis you are employed, but it is a lot of money. *[Interruption.]* I could do without chuntering from my left, because it is a lot of money, and we are entitled to know what we are getting for our money.

So, what does £200,000 a year get us from you?

Professor Logan: First of all, as I said earlier, I do not charge the Government for the majority of the work that I do, so you are actually getting an awful lot more than eight days of work a month. As I also said earlier, I have spent about 400 hours on the Stewart review—which I think will be a transformational programme for this country—and I have not charged anybody for that. I am not sure how much free work you do for the Government, but I do a lot for the Government.

My second point is that £2,000 a day is typically what a junior consultant at Ernst & Young or Accenture will charge. I have 30 years of experience of supporting the tech sector here in Scotland, so I have a lot of expertise. I have worked with hundreds of companies and employed well over 1,000 people in that task and I know a lot about it. You are therefore getting a lot of expertise for that money.

What else are you getting for the money? The STER has profoundly transformed the policy direction of the tech sector in Scotland, and you are getting my stewarding of that through a complex implementation. For example, we have set up the Techscaler network, which is probably a world first in terms of its combination of incubation, founder education, town-square dynamics, and its provision of a platform on which to build and create a great environment for our start-ups to compete in.

We have set up the ecosystem fund to stimulate the network of entrepreneurs and their confidence in their peer learning abilities. We have set up a number of initiatives in education to dramatically improve our performance in computing science education. We have set up the Scottish Teachers Advancing Computing Science network, which is taking teachers and putting them in the front line of decision making so that they can influence policy, curate best practice and share it with teachers around the country.

We are about to launch the teacher upskilling programme, which will ensure that our teachers are properly skilled and qualified in computing science so that they can make the subject interesting and engaging for students. We have

another world first in how that is done through a network of teachers training teachers, so it is quite novel. A whole new set of resources for teachers is going into teaching so that they can teach first-year and second-year students in a better way so that they get more interested.

We are at an advanced stage in defining the entrepreneurial campus that will take our universities from creating tech graduates to creating entrepreneurial tech graduates. That will be transformational and, of course, it has been a lot of work.

We are in the advanced stages of setting up a scale-up fund in Scotland so that we have the ability to supply large-scale capital to scaling companies. It takes an awful lot of time to do that.

There are other things in the ecosystem review, but those are just some of the things that I am spending my time on. The next thing is the Stewart review that I mentioned earlier. If we implement its recommendations, it will have a profound effect on participation rates for women and people from ethnic minorities in entrepreneurship.

Beyond that, I am working to extend those ideas and to use them as a platform to build additional improvement into how we think about entrepreneurship in this country. I am happy to go into detail on that shortly.

There is therefore quite a lot going on and I am working with lots of other people to do it, but I do not feel that it is not directional or valuable to the country. We can argue about what number is the right number, but I think that you are getting value for money in what I am doing. As I have said, the headline rates are not actually what the country is paying for my time, because it is my choice and my decision to do the major reports that I write for free.

Graham Simpson: The reason I am asking these questions is that it gives you a chance to say all that, which is really useful. I have one more question, if that is okay, convener.

The Convener: It is okay if it is brief.

Graham Simpson: You are obviously involved in some other companies, one of which is TravelNest, which has had money from the Government. Is there a potential conflict of interests there?

Professor Logan: There is a potential conflict of interests there, which I why I have done two things. First, I have been very careful not to involve myself in those decisions. Secondly, I have resigned the non-executive position to ensure that there is no conflict.

Graham Simpson: Thank you.

Colin Beattie: Let me ask you a very obvious question. What do you consider are the barriers to entrepreneurial activity in Scotland?

11:30

Professor Logan: It is an interesting question. There are a number of proximate causes of that, but I think that we need to look a bit deeper. One of the deeper issues is the question of our culture of entrepreneurship in Scotland. We were once one of the most entrepreneurial nations on earth. I grew up in Clydebank, which was the silicon valley of its age. I think that what happened was that we did not update our model fast enough. We thought that we could stay in the world of building ships in the same way and having our industry work in the way it did. When that was taken away from the country, it caused an enormous confidence shock.

Then, in the 1980s, we thought that we could import a tech sector. We got Motorola, Sun Microsystems, IBM and the rest to turn up and kickstart our tech sector instead of growing our own, and we thought that that would be fine. Then, when all of that went away, it was another shock to the country.

Somewhere down the line, as a nation, we lost our confidence in entrepreneurship to some extent, and we started to build a narrative of dependency in which we were just not entrepreneurial. That affected how we thought about it at the policy level, and it affected the focus that we gave it and so on. Some element of that thinking put us a little bit behind where we could and should have been.

However, I would say that culture itself is a consequence of other things, not the root cause. Culture can be changed easily on the basis of success. If we start—and we are doing this now—to act in a directed fashion with a clear strategy, people will start to see exemplars, the confidence will return and culture will adapt around that. I do not think that we are stuck in any way or that we have any cause to lament or be depressed about our opportunities.

How we move forward from this point directly addresses Colin Beattie's question about barriers. We have to normalise entrepreneurship as a career path in this country, and it is not fully normalised. It is not the obvious thing that people think of doing. Normalisation is partly about education. We need to be teaching our primary school children, secondary school children and university and college students about entrepreneurship. Tech students at university should be learning how to be tech entrepreneurs, not just technicians.

We need to equip founders of start-ups today with better techniques. This is not just about

children and formal education, but about people in practice. If I was to stop a founder on the street in Scotland and ask them about modern growth techniques, they would not always know the answer, but their silicon valley counterpart would. We have to bridge that gap.

As I say, there is an educational element to this and we are making considerable progress there. You will see from the national strategy for economic transformation that there is a big focus on education in this area. The STER review has also brought considerable focus to this area, but we need to do more. The entrepreneurial campus initiative is running, for example. Things are happening.

Although the Techscaler network is an environment containing a network of places to incubate companies, it is first and foremost an education environment in which founders can learn international best practice. Education is important.

The second part is infrastructure, which is the physical and social infrastructure that goes with entrepreneurship. The physical environment is places to have companies where people can go to learn, and the social infrastructure is about building a network of founders and start-up people who can learn and take confidence from each other. We have policies in train to help to build and stimulate that, but more needs to be done.

Funding is a mixed picture. We have pretty good syndicate capital for earlyish-stage seed funding, but we are a bit short in the very early-stage seed funding, and we struggle with the scale-up funding. We need to overcome those barriers.

The biggest of all those barriers relates to attracting people into entrepreneurship. Earlier, I mentioned the Stewart review. The population is split roughly 50:50 between male and female, but only one in five founders is a woman. That means that we are taking a lot of talent out of the system and denying almost half of our population the opportunities that the other half has. If we can make progress in that area, we will be able to significantly increase the talent pool.

Therefore, the barriers that policy needs to address relate to helping to increase the normalisation of entrepreneurship, education, infrastructure and the funding that goes with that. Crucially, we cannot do those things as we have sometimes done them historically, through a set of isolated and unco-ordinated initiatives.

The STER was important because it said that we need to take a systems view: we need to view the entrepreneurial ecosystem as a system. That review was focused on technology companies, but they are only a subset of the system. The value of that approach is that, if we can agree on how the

system works, what its inputs and outputs are and what stimuli improve it, we can co-ordinate across different agencies and different parts of the Government to mutually reinforce the various initiatives.

I will give one example of that. Earlier, I mentioned the Techscaler network, which is seven sites across Scotland that provide incubation for start-ups, world-class education and a town square environment in which people can meet up and learn from one another. More than that, it provides a platform on which we can build. For example, with the three development agencies in Scotland, we have talked about how we can integrate grant funding innovatively into that environment, so that a company that is curated for entry into the tech scaler network is curated for grant funding at the same time, and so that we use the skills and knowledge of people in the development agencies alongside those of the people in the tech scaler network. That is a great collaboration that shows what is possible. It is a small example, but we could use the same model to build a vision for Scotland.

The next stage of evolution is to make tech scalars not just tech scalars but scalars by adding other companies of different flavours into them. That is extremely important. I will give a couple of quick examples of why that direction is so important. I think that we have all heard of Moderna, given what we have all been through—you might have had its product in your arm. I could ask whether Moderna is a life sciences company or a tech company. It uses massive artificial intelligence engines to analyse biological data, and massive automated labs are used to turn data back into biology, so it is both. In Scotland, we tend to hold our life sciences, which is a very strong sector, mainly in academia; we do not really expose that sector to the same expectations relating to starting companies as we do, for example, the tech sector.

Another example is Pixar. Is Pixar a creative company or a tech company? You know what I am going to say: it is both. It uses massive AI engines and massive computing power to make movies.

In Scotland, we have an interesting creative sector in that it is pretty strong but is made up of thousands of individual freelancers and small and isolated networks of freelancers. We have some of the greatest schools on earth for the creative industries and so on, but we do not teach those young folks to be entrepreneurial. We do not set that expectation. What if we did and put them alongside people in the tech scaler environment and other incubators? What if we built policy around supporting them together?

Creation happens in the gaps between disciplines. The more we build around the same

model, the more we get exponential effects. The biggest barrier relates to coalescing around the same view and working to mutually reinforce various interventions.

Colin Beattie: I will follow up on two very basic things that you mentioned in your interesting answer. You spoke about there being an endemic lack of confidence in the culture in Scotland. Are there any indications that the situation is improving? Further to that, is it possible to teach entrepreneurship? Could you create a class in school that would teach pupils about entrepreneurship?

Professor Logan: Yes, you absolutely can teach entrepreneurship. There are different definitions of entrepreneurship, but I will set one out for the purposes of our discussion. There are three aspects to entrepreneurship: luck—I am here, with my track record, with a bit of luck behind me—mindset and technique. The greatest of those aspects is technique, and you can teach entrepreneurial technique.

Why, for example, does silicon valley come out on top worldwide in every generation of tech? It is called silicon valley because the companies based there were producing semiconductors, although they no longer do that. At every epoch of tech, silicon valley comes out on top. Why is that? The situation is this: a whole bunch of companies start doing something and, even though most of them will fail, the environment is sufficiently large that some will succeed, and they then distil best practice and technique. That becomes a playbook for that generation. Indeed, because people move around companies, that becomes a shared playbook. Eventually, that reaches other parts of the world, including Scotland.

The playbooks are teachable. When you start to understand them, you start to change your mindset. I could ask someone today if they wanted to start a company, but if they did not know how to grow a company, how to hire, how to create virality in a product or how to do any of those things, they would say that they were unsure about how they would go about doing that. If that knowledge is normalised, people's mindset changes and the culture changes along with that.

The effects of that are exponential. The more exemplars that you have, the more that attracts other people, and the more expertise and successful companies you have, the more successful people there are, which leads to more small start-ups. There is a set of compounding virtuous cycles that start to establish themselves, and that creates more confidence.

The convener asked me at the start of the session what measures we are looking at. If we follow through the policies that we are discussing

today, I think that we will see an exponential increase in the number of companies that we have. I will give an example that is close to my heart. When I was involved in Skyscanner, people would ask me what my measure of success for the company was. I would say that it would be Skyscanner spawning 100 other companies. That is the biggest measure of success for Scotland. People go through the journey that we, in Skyscanner, all went through—it was not easy; it was hellish—take that experience and join other start-ups, which creates more companies like Skyscanner and a bunch more employees. Those employees then leave and start other companies. The effect of that is exponential.

I will mention another effect. At Skyscanner, when the company grew to about 500 people, we could not hire a senior vice-president of engineering in Scotland because there were no people at that scale. We were also unable to bring one from London or from silicon valley because, if they had brought their family here and things had not worked out, they would have had to relocate back again, whereas anyone working in London could just walk down the road and get a job at Google or something like that. Once you reach a critical mass of start-ups, though, you can attract talent to stay, because, if things do not work out at one company, they can take a job next door.

The same thing happens with investment. Right now, an investor in London can use the tube to see 10 companies in a day or they can come to Scotland to see one company on a two-day trip. Therefore, they tend to stay in their geographic area. However, once a critical mass of companies is reached, an investor could set up a presence and spend more time here.

From a confidence perspective, our task is to do enough to get sufficient numbers of companies starting up to create those flywheel effects. I think that confidence will follow.

I believe that you can teach entrepreneurship and that you can overcome the confidence gap.

Colin Beattie: I have one last question. You touched—you did not dwell too long—on Government policy. Are there deficiencies in Government policy? Are there things that need to be done?

Professor Logan: There are always deficiencies in Government policy, and that applies to every Government on earth.

I am not a politician, and I am not affiliated to any party. I have been appointed by the Government of the day and I am proud to try to contribute as a citizen. I hope that what I am describing is politically neutral. It should be—I really hope that it is—obvious to everyone that we need to be doing these things.

With regard to policy, given the context that I have just described, I am very pleased that we are focusing on entrepreneurship and that there is someone in this job. There are other people who could do it just as well as I can—I am not claiming that I am a unique individual on this planet—but I am pleased that there is someone in the position of chief entrepreneurial adviser.

11:45

I am also pleased that there is a focus on the ecosystem review and its implementation, that the Stewart review has been taken forward, and that the national strategy on economic transformation document, “Delivering Economic Prosperity”, has a chapter on entrepreneurship, which might not have been the case a few years ago. That is all very encouraging, but none of the documents that I have just described are complete. They are simply directional indicators of where we need to go, so we need to keep adding to them.

Deficiencies exist in the sense that we need to do more. For example, the current policy commitment is to do the Techscaler network, followed by the start-up scaler work. I am working on extending that further into the community to address what I call scale deep companies, but that is not a policy commitment. In that respect, there is a deficiency.

I prefer to put it this way: there is a direction of travel that we need to go in, and we need to stay the course. The challenge for you, as committee members, is that the course is longer than the span of a session of Parliament, and it may see different Governments of different flavours come and go. If we keep on ripping up the plan to start again and reassess things, we will not get anywhere, so I urge us to find consensus on the issue as much as we can.

I will give an example. Finland is a country of about the same size as Scotland, with around 5.3 million people. If those people are distributed across its geography, it is the most sparsely populated country in Europe. Estonia is a country of 1.3 million people. From the most recent figures that I looked at, Finland has about 3,381 tech start-ups and scale-ups, and that does not include other start-ups. Every year, it produces a unicorn company—if you are not familiar with the term “unicorn company”, it is slang for a company with a \$1 billion valuation that is still private. Estonia has three such companies already. Why is that? It is because those countries have embraced and adopted the policies that we are discussing today, for which I and others are advocating, and they have run with them for an extended period of time. The rewards for their economies are massive. Worldwide, 10 per cent of all exits, as they are called—that is when companies sell or go out to

initial public offering—come from Finland. That could be us, in Scotland, but we have to stay the course.

The Convener: If Maggie Chapman does not mind, I will bring in Gordon MacDonald first, as I think that he has a supplementary question.

Gordon MacDonald (Edinburgh Pentlands) (SNP): I have a couple of quick questions in the same area.

The Convener: That is fine.

Gordon MacDonald: Mark, you talked earlier about the lack of exemplars. In recent decades, we have lost large companies that were headquartered in Scotland, such as Scottish & Newcastle, Diageo, Bank of Scotland and so on. We have also talked about a lack of confidence. Has that been part of the impact of losing those large global headquarters?

Secondly, a lot of companies, including Skyscanner, have sold out instead of continuing to grow to be global companies. In respect of Skyscanner, was the reason for that a lack of financial support or a lack of senior staff, which you talked about earlier? Is there a barrier at a certain point that means that a Scottish company has no other option but to sell out in order to continue to grow?

Thirdly, university research depends a lot on public funds. Is there a need for intellectual property rights to be reviewed so that companies and entrepreneurs can harness that research and help to grow the economy?

Professor Logan: I will take the first question first, about when companies leave or sell and how we should think about that. We need to get comfortable with the fact that any one company will take a certain path, and very often a company will move its headquarters, sell up and so on. However, if we had enough companies growing to scale, we would not worry about that. Companies will take an individual path, and there is a natural life cycle for them. Our problem is that we do not have enough companies to get to a statistical critical mass where that does not matter so much.

We have to think of this as a funnel. We need 100 or more start-ups for every Skyscanner; that is the ratio. We need to think about how to create and stimulate more very early stage companies. Some of them will become start-ups, others will disappear. Some of those start-ups will become scale-ups and some will become unicorns. The funnel narrows all the way. Our tasks are to widen the mouth of the funnel by normalising entrepreneurship and then to stop the funnel leaking. Not every company should become a scale-up, but a company that is formed and

founded in Scotland should have the same ability to become a scale-up as it would in London.

Because of some of the frictions that we have talked about, we lose a few companies on the way. The ecosystem review asked which interventions would widen the initial funnel. If we do that, we will not have to worry about those cases.

It is important to understand that taking a company from day 1 to being the size of Skyscanner is an extremely difficult task for a founder. It is really tough and has a huge impact on the people who do it. What causes some people to go into business in the first place and keeps many of those founders going is knowing that they can exit at some point. If we were to make selling a company seem like failure, that would be a big mistake. That is not a failure—those founders think that they have succeeded.

The numbers vary, but Skyscanner has created up to 1,500 well-paid jobs and has worked with hundreds of other companies in Scotland. It is feeding new start-ups across Scotland with its talent. It has generated great tax revenues and continues to do so. It is not a failure because it has been sold. The founders feel successful because they sold the company. Selling Skyscanner for £1.5 billion, give or take, has created a huge amount of belief that we can do that kind of thing in Scotland. We should not view those things as failures. Failure is having a sparse environment where you get only one Skyscanner every so often. We must increase the numbers. When you do that, the rest takes care of itself.

After a certain point, it got harder for Skyscanner to grow in Scotland, because we could not attract talent after the company reached a certain scale. We might have gone on for longer independently if we had been able to attract people with great experience in initial public offerings in the tech sector. We had to open an office in London to attract that talent, which meant that not all our hiring was happening in Scotland. That goes back to my point about not having to do that if you have a critical mass of companies and can bring talent to Scotland, because the environment is fertile enough for them to stay, which also ties in with my point about scale.

Your other question was about universities, and relates to research and how well we do spin-outs. Scotland's university sector is complacent. Back when we were one of the greatest entrepreneurial nations on earth, complacency was our undoing, and our university sector is complacent now. We conflate research with innovation. Research is not the same as innovation—innovation is research that gets turned into products and services that can be scaled to have an impact. That is a

different thing and requires an additional set of skills.

The Muscatelli report, which was commissioned to look at spin-outs and that sort of stuff, was published at a time when there were 1,200 spin-outs in Scotland, with an annual turnover of £768 million. That is not success—it comes out at an average monthly revenue of £48,000. We are a bit complacent about our performance. Rather than trading statistics, I like to look at inputs and ask about that. For example, do we expose all our undergraduates to entrepreneurialism? No. Do we have incubators so that our students can launch their own start-ups? No. How many technical entrepreneurship courses are there in our universities? Very few, when Stanford has 165 for technical students alone. Do we regularly seek out best spin-out practice worldwide and implement it locally? No. Do we carefully train our academics who are spinning out to be able to run businesses? No.

I could go on. You mentioned equity stakes. Some universities take a 50 per cent equity stake in our spin-outs. That is the best way to kill a spin-out, because it has already lost half of its equity. I go back to my earlier point about exiting. That is just dumb.

When you look at the situation from an input perspective, you see that we are not yet world class. However, we have great research institutions. The question is how we capitalise on that asset in Scotland before it stops being an asset. There is a need to shake that up, and the entrepreneurial campus that I referred to when I was talking to Graham Simpson is one of the ways to enliven it. I do not want to suggest that all universities are the same. Some are far ahead and leading while others are far behind. However, we must take that asset and leverage it in a way that we are not doing.

Maggie Chapman: Thank you for your comments so far and for joining us. I hear what you say about support in response to Colin Beattie's question. We should all support entrepreneurialism and it should be politically neutral. However, some of the consequences of how we do that are clearly not politically neutral.

I am interested in some of what you said in response to Colin Beattie and Gordon MacDonald about scale, geography and the distinction between entrepreneurialism and innovation and, as part of that, the expectations on growth. I do not disagree that having a start-up grow and selling it off is a measure of success but not all entrepreneurs necessarily want to do that. In some cases, the company evolves in a way that it can carry on being innovative at a certain size and not continue to grow. I am interested in how we ensure that we get a spread of types of company.

Do we think of growth just in financial terms or in innovation terms as well?

Given what you say about the need for that ecosystem and to have the expertise—the skills, knowledge and know-how—in a place, how do we ensure that people can be entrepreneurs all over Scotland, not just in the central belt where lots of people gather anyway?

Professor Logan: That is an extremely important point. It is easy for us in such discussions to focus on what I would call scale-ups, because there are obvious advantages to having them—we have touched on some of those—and we would like to have them in Scotland. However, we also need to think about what I would call scale-deeps.

Think of scale as a spectrum. Scale-ups bring tax revenues and employment. They create exciting stories that attract people into entrepreneurship. That is all good. There are other benefits, too. Scale-deeps tend to be companies that will not scale. They have, perhaps, two or 10 employees. They are typically far more distributed around the country. Importantly, their product or service tends to directly benefit the community where they are located in a way that scale-ups' services or products do not.

Bringing more focus to scale-deeps is extraordinarily important from a societal perspective. I am sure that we have all noticed that Scotland has a lot of post-industrial apocalyptic-type towns. A big part of addressing that is bringing focus to entrepreneurship in those areas. That includes social entrepreneurship. I do not distinguish social entrepreneurship from other entrepreneurship. It is about innovating to solve problems and address opportunities. If we could really stimulate scale-deep businesses, we would reduce our social security bill and make quality of life a lot better for our people.

There is a symbiotic relationship between that and everything that we have just talked about. I mentioned that scale-ups attract people into entrepreneurship, and that is good. However, if you want to have more Googles and Facebooks—or even another Skyscanner, which is not that big a company—you have to accept that you cannot grow giant redwoods in the desert. You have to tend the forest floor. If lots of people in this country are confident about starting a business, do not fear failure and are properly supported, you will see people who will scale up and found companies emerging from their ranks, in addition to the direct benefits of scale-deeps.

12:00

Over many decades, our industrial policy has kind of flip-flopped in that regard. There have been

times when scale-ups and tech have been in vogue, and other times when that has not been the case and there has been more focus on community entrepreneurship. We have to embrace the fact that those things are symbiotic, and we must develop policy that focuses on both elements. I believe that we can do that.

I go back to the point that I made earlier about connecting domains. You can think of a horizontal domain, which involves connecting different types of entrepreneurship, and a vertical domain, which concerns scale. All of the activity in those domains can exploit the same platforms and entrepreneurial infrastructure, if you co-ordinate things properly. The challenges that early stage entrepreneurs have are the same regardless of whether they scale-up, so why not use the same infrastructure?

The question is, how do we take the emerging infrastructure that we are building and extend it to properly support the scale-deep concept in relation to rural entrepreneurship, social entrepreneurship and so on? In the upcoming Stewart review, which I am anxious not to pre-empt, because it will be published soon, there are ideas that will significantly extend some of the ideas that we have talked about today to do just that.

I will give you a great example. One of the many ways in which it is difficult for women to participate in entrepreneurship is that our society is pretty sexist. A consequence of that is that we expect women, generally, to be the primary carer and home manager, which carries an enormous cognitive burden. That means that—on average; this does not apply to everyone—it is much harder for primary carers to, for example, access the city-centre incubation spaces that other people can. They tend to live within a certain radius. They drop the kids at nursery, go to the doctor's surgery and the shopping mall and they do not have time to travel into the centre. To address that, we could make part of the scaler network mobile, through pop-ups that we can take to the places where primary carers are. That idea has been tried successfully in certain parts of the country, and it is just one example of the things that we can do.

In summary, we have an opportunity to think about the infrastructure that we are building and enabling to evolve over the next three, five and 10 years as a platform that represents a general solution, and to focus on scale-ups and scale-deeps, because doing that does not require twice the effort but will deliver 10 times the benefit.

Your question contains many other important points about limits to growth, what we mean by growth and what we are going to do to decouple growth from environmental and other damage. Those are all interesting questions, but we do not have time to address them today. We have big

questions in front of us, but scaling up a social enterprise successfully is a great example of how we can deliver growth and, at the same time, solve those kind of problems. We tend to think of social enterprises as charities. Because of that, when the money runs out, they run out. What if we gave them the same support and incentives that other founders have? How big could they get? How many societal problems could be solved without having to put more money in? Those are the opportunities that are available to us.

Michelle Thomson: Good morning. Over the course of this discussion, you have teased us a few times about the Ana Stewart review and, like you, I do not want to steal her thunder, because I know that something is coming out soon. Thinking about your role, I am heartened to hear how closely you are working with her, because, while looking at the key areas in preparation for today's session, I picked up on the fact that there does not seem to be anything specific about actively encouraging female entrepreneurs, which, in my opinion—probably unsurprisingly—is a huge gap. Can you confirm that you see that squarely as part of your role?

Secondly, can you give us a flavour of the themes that you hope to see in relation to female entrepreneurs? What does an ideal Scotland for female entrepreneurs look like?

Professor Logan: Sure. I will be careful about how I do that, because, as you said, no one wants to pre-empt the report.

On your first question, it is extraordinarily important that we address the appalling gender imbalance that exists in entrepreneurship. It just seems obvious that we see that as a priority and a category 1 issue. Why should we do that? I think that we all want a just society in Scotland. We do not want more barriers in front of one gender than in front of another, which is the case today. Do we feel okay about that? I do not. In effect, it removes a whole bunch of talent that we desperately need in a tiny country such as Scotland.

We must de-anchor ourselves from the idea that normal is okay—it is not okay. In my earlier career, I was in sessions in which a director would proudly boast that they would increase the number of female directors in the company by 10 per cent over five years. However, 10 per cent of 10 per cent is only 1 per cent of the whole. We have to ask ourselves whether we want incrementalism or whether we want to do something more dramatic. I believe that dramatic change is possible.

Let us talk a little bit about the Stewart review. A lot of good initiatives have come along that are aimed at addressing this problem—they do good. However, the structural problem is the same. Five years ago and beyond, the gender gap in

entrepreneurship was more or less the same. The gender gap in tech is related. A lot of high-growth companies are in tech and, if women are to all intents and purposes excluded from, or find more barriers in, the tech sector, that has a compounding effect on the problem in entrepreneurship that we are discussing.

When we try to find solutions, we often look at proximate causes. We say things such as, “Women don't get as much investment as men, so we should have a women-only fund” or, “Women don't feel comfortable in incubator environments; we should have a female-only incubator”. The problem is that those and other examples are not the actual causes of underparticipation, so the solutions are temporary and get undermined by the deeper causes. If we want to properly address the issue as a nation—there is a huge opportunity to lead on it and get the benefits of leading—we must look at the full tree of cause and effect. When we examine that tree, we find that part of it is that our society is sexist. It has embedded gender stereotypes and an embedded authority gap. We have to start asking ourselves how to address those root causes and, while we are doing that, what mitigations we can put in place in the meantime. It has to be a portfolio response.

That is the nature of the report. I suspect that it will, to some extent, polarise people. Some people will find it too controversial and provocative, and others will say that it does not go far enough. It tries to set a direction and to present a different narrative on the issue from the one that we have had in Scotland before.

Ana Stewart and I are keen that we move away from the idea that we have to find a way to fix women so that they are more entrepreneurial—if only they were more confident and all that.

Michelle Thomson: [*Inaudible.*]

Professor Logan: Yes. The last time that I was physically in the Parliament, when I was doing a session similar to this one, I spoke to someone at the end who said that her company was sending its women managers on a course so that they could be more aggressive, more this and more that—more like men. Why was the company not sending the men on a course to be more like women?

We must stop trying to fix women in order to address their entrepreneurial underparticipation; we have to fix society and mitigate the consequences of its current unfixed state, and those mitigations must be more profound than they have been in the past. We can do that—I am not naive about it—but there is no point in having another review that says, “Let's set up a confidence course for women”, and then just moving on. There is no longer time for box ticking.

I made comments at the start of the evidence session about the crisis that we are in. This country, this species and this planet will experience exponential change that will be bewildering. If we cannot put our best minds at scale on to those problems for this country and for humanity more widely, we will be in big trouble. Those post-industrial apocalyptic wastelands that I mentioned will look tame in comparison with what is coming. That requires us to have all our best people involved in this, and a big part of that is ensuring that women who want to follow entrepreneurial career paths have the same access to those paths as men do.

Michelle Thomson: I very much look forward to reading the review. I have one more question, which takes us back to where we started. The first thing that you mentioned was culture. Thus far, you have not reflected much on attitudes to risk and our cultural perception of failure. Will you give us your reflections on that? I know that you said at the beginning that culture can be changed easily, but it seems to me that our appetite for and attitude to risk is deeply ingrained, as is how we perceive failure, which, of course, in business terms, is simply learning. I would like some finishing reflections on that.

Professor Logan: Certainly. I do not know how valid this statistic is, but it is probably in the right ballpark—on average, successful founders have five failures before their sixth company, so you can see that, if we do not tolerate failure, we will not tolerate success. A fear of failure comes through in the data on how entrepreneurial Scotland is—it is a cultural thing.

How do we address that? I apologise, because this is anecdotal, but I guess that you could say that it is anecdotal at scale. When I say what I am about to say, I do not mean to disregard older founders—I am older than I was once, but I still want to be part of the debate. A generation of founders are coming through who have grown up in a different age. They do not remember all the shipyards in Clydebank and everywhere else closing down. They do not believe that they should grow up with a policy of managed decline, as was the case when I grew up. They live in an internet age in which every customer on earth is adjacent to them in a way that was not the case when we were struggling to maintain our steel industry and those kind of things. Every competitor is adjacent to them, too, so they have to be good founders, but every customer is available.

The internet has widely propagated exemplar founder stories and narratives about companies that have succeeded or failed. Younger founders are much more comfortable with the idea that they might not succeed first time, because that is what they see in their peer group. Where do they see

their peer group? It is not in Scotland; it is international. The founders that they admire did not succeed first time, or they made big mistakes and recovered from them. They do not have the same fear of failure.

The more successful Scottish companies that we have and the more we hear those founders talk about failure, the more that failure becomes okay. For example, there is an organisation in Scotland—I will not say its name because it is a rude word—F, star, C, K up nights—that runs events in which people stand up and say, “Here is how I screwed up, and this is what I learned from it.” People talk about those stories, which makes others less and less scared of failure. That is happening, and we are making progress. I see good young founders failing and then getting back in the saddle and trying again.

I always believe that networks trump hierarchies. Whatever we in the Government think we can do, or whatever people in my position say to encourage people, people actually get reference points from their network—the people who are like them and who are experiencing what they are experiencing. If they see the network experience failure at greater scale and recover from it, they will be better equipped to deal with that, and that is starting to happen.

We need to switch the narrative in Scotland from why we cannot do stuff to how we can do stuff. That is important, because what we say affects people. For example, rather than talk about barriers, I want to talk about things that we can do, and we are starting to do them, which is creating that network effect. That creates a common voice, a common belief, a common direction and more exemplars, and those will feed the engine. We are on the right road.

12:15

Jamie Halcro Johnston: I have a number of questions, some of which have already been covered by my colleagues, as is always the way. However, I have other questions on the economy and on regional stuff. I want to follow up on your answers to earlier questions from my colleague Graham Simpson. You wear a number of hats: you were involved in the review, but you are now the chief entrepreneurial adviser. What is the nature of your role with the Scottish Government? Are you a contractor who is paid either directly or through a company; a civil servant or a special adviser who is subject to a code of conduct; or are you employed directly? What is the nature of your relationship?

Professor Logan: I am employed through a contract. I have a company that is my consulting vehicle. I am paid via that vehicle, by contract.

Jamie Halcro Johnston: On the questions that were asked earlier, you spoke about the process of your appointment and about having 30 years—decades—of experience in business. Would you have employed someone without having a formal interview process?

Professor Logan: Sometimes, yes. If I had in front of me a person who was ideally qualified, they would be interviewing me. That is common in the world of scale-ups and start-ups, where the important thing is acquiring talent.

I cannot—and will not—speak to how the process works; that is for others to do. I can tell you what my involvement in it was, though. I could view my interview process as being about my experience, the STER and my work on the intense follow-up of that review. There were discussions about the role. I am aware that there were other candidates, so the process certainly was not all about me. I do not know the nature of those other discussions; I can only tell the committee about what I saw. Some people will take the view that my appointment was a good decision; others that it was a bad one or that the process was wrong. However, I would have to direct you elsewhere for an answer on that.

Jamie Halcro Johnston: I suppose that we will find out at the end of the period. You are saying that you are confident that the Government knew you well enough from its experience and the like.

I want to ask about two areas. In an interview in August 2022, you said that

“there’s still not enough focus on the economy”

from the Scottish Government. That was only a few months ago. Has anything changed, or is that still your concern?

Professor Logan: I would like to see increased focus on the issue. You might expect me to say that, and I am conscious that in my position I do not have the responsibilities of Government. I do not have to address other issues such as fair pay, which is difficult in the current climate, and I do not have exposure to a whole bunch of other aspects.

From my perspective, I would always like more. If you were to find me saying, “Do you know what, Jamie? I think that we have enough focus on this”, you should be concerned. To be more specific, a really exciting direction in entrepreneurship is under way. Frankly, I am grateful to the folks who I work with in Government that they are giving it time and attention. I am grateful to the cabinet secretary Ms Forbes that she commissioned the STER. I think that everyone in the tech sector is grateful that that happened and that she has supported so closely what we are doing.

I was not saying that there is a catastrophic lack of focus: good things are happening. However, I

want initiatives to be implemented as quickly as possible. I realise that that goes into a wider difficult process. You will always hear me saying that, because we can always go faster in this area. If we do so, we create more tax revenues, better wellbeing and more jobs for people, all of which help with problems in the nearer term, which is why I consider it important. I am always restless, but I think that I should be restless about the issue.

Jamie Halcro Johnston: We have talked about matters such as the work that is done by the Scottish National Investment Bank. However, how important in encouraging entrepreneurs is the business support that is provided by regional enterprise bodies such as Highlands and Islands Enterprise and South of Scotland Enterprise? Support can be given in many areas, but how important are those bodies? What do you see as being their role in the future?

Professor Logan: In summary, they are a great asset. Our agencies do a lot of work that they cannot brag about on social media—they would be criticised for it—but that is very much appreciated by the companies that they work with. Again, I am sure that they could move faster and so on, but they are doing a lot of good work. I have recently been working closely with Scottish Enterprise—the biggest of the agencies—and I have been very happy with the level of collaboration that I have seen, which Adrian Gillespie and his team are leading, on how we can embrace and amplify the work that we are doing in STER, for example. Our agencies have an important part to play; there is a lot of expertise in them, which sometimes goes unnoticed but is appreciated on the ground.

I do not have any great criticisms of what I am seeing; I am delighted that good engagement exists. We can always do more together, but I like the fact that, as a whole, our agencies and our other bodies are starting to coalesce around the same system model, to which I referred earlier, so that we can start to reinforce one another’s implementations. I am pretty happy that we are starting to go in the right direction.

Jamie Halcro Johnston: You have talked about confidence. Scotland has a great entrepreneurial past; I am from the northern isles, and I think that we still consider ourselves as entrepreneurs, with companies such as Kylee Partners in Kirkwall. On the point that you have made to Maggie Chapman, it is vital, as you said, that we do not just focus on the central belt, the north-east or areas that perhaps have traditional bases.

What do you see as the barriers to your delivering an entrepreneurship agenda across the whole of Scotland and, in particular, in remote areas?

Professor Logan: It is important to remember that, in a rural population, proportionally more people are entrepreneurial—partly from necessity in that environment. It shows us that entrepreneurialism is innate; the reason why we are all still here as a species is that our ancestors had entrepreneurial solutions to survival problems. We have that latent potential.

It is important that we do not see rural entrepreneurship as a problem to be fixed and, instead, we see it as an opportunity to be leveraged. It is easy to fall into a model that says that we have an alpha city in Edinburgh—relatively speaking—and that the rest of the country is a problem to be fixed. We have to see rural entrepreneurship as a network that we can strengthen, which will require us to natively design policies to work for our entrepreneurs—I have talked about things such as incubation, founder education, building a network of like-minded individuals, the right type of funding and so on. I believe that doing so will also work for city dwellers, whereas doing it the other way around often does not work for the rural entrepreneur.

I do not want to overindex on that point. However, I will provide an example, which we have all heard of, of how we can design and bring to rural communities a resource that has previously been considered to be static and based in city centres: we can add a mobile component to the scalar network so that it can take expertise, digital marketing and business skills, and appropriate microgrants to rural areas and bring people physically together in a network. I am working quite a lot with Jackie Brierton and GrowBiz to understand her thinking about that issue.

The interesting thing is that, if we do that, the same solution will work for primary carers, for example, who cannot always be in the same places. It is another example of how the same solutions can work for multiple entrepreneurial categories if we think about them systematically.

Jamie Halcro Johnston: I suppose that infrastructure—be it broadband, transport or homes—can often be a big barrier. We have issues in city centres, too, around housing, but infrastructure issues can often be a major barrier to somebody choosing to build their business on an island, for example.

Professor Logan: The requirement for very high-speed broadband across the country has been well reviewed and discussed, probably by the committee and in other areas. It is, of course, extremely important.

We also need to think about the fact that rural entrepreneurship and entrepreneurship in disadvantaged city areas often have the same

problems, including lack of access to basic infrastructure such as good internet connectivity and incubation facilities. There is a lot of lost talent in those areas, so we must ensure that we solve that in a layered way.

The provision of internet connectivity is not really a capital spend issue. It seems that we can always find capital spend, but who is going to pay the internet bills every month? That is not capital spend. If the answer is that no Government department or anyone else wants to do that, the capital spend will amount to nothing.

We can solve the problems and we have to start solving them. We owe it to our citizens to find ways through the logistical challenges. I return to the point that, if we solve them for rural entrepreneurship, we will probably also solve them for inner city entrepreneurship and people who are in more fortunate positions.

The Convener: Graham Simpson has a short supplementary question.

Graham Simpson: It will be very short. Thank you for what you have said today, Professor Logan. You have come across really well. Are you going to produce progress reports for the Government and this committee?

Professor Logan: Yes. I am currently producing reports not against my work, but rather through the work that I am doing. For example, we have just published the STER two-year progress review. That came out in November or early December. I am very actively involved in that programme. Likewise, I expect that we will do the same with the Stewart review, which I am close to.

If, in addition, members would like a report on all my activity across individual things, I am very happy to consider producing such a report regularly.

The Convener: Thank you. That is helpful. The clerks and I will discuss how we develop the future relationship. Thank you very much for the evidence that you have given this morning and for being so generous with your time. We now move into private session.

12:27

Meeting continued in private until 12:51.

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