OFFICIAL REPORT
AITHISG OIFIGEIL

Economy and Fair Work Committee

Wednesday 15 December 2021

Session 6

The Scottish Parliament
Pàrlamaid na h-Alba

Wednesday 15 December 2021

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ECONOMY AND FAIR WORK COMMITTEE
15th Meeting 2021, Session 6

CONVENER

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

DEPUTY CONVENER

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

COMMITTEE MEMBERS

*Alexander Burnett (Aberdeenshire West) (Con)
*Maggie Chapman (North East Scotland) (Green)
*Jamie Halcro Johnston (Highlands and Islands) (Con)
*Fiona Hyslop (Linlithgow) (SNP)
*Gordon MacDonald (Edinburgh Pentlands) (SNP)
*Colin Smyth (South Scotland) (Lab)
*Michelle Thomson (Falkirk East) (SNP)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Professor Iain Bomphray (National Manufacturing Institute Scotland)
Professor Keith Ridgway (National Manufacturing Institute Scotland)
Nick Shields (Scottish Enterprise)

CLERK TO THE COMMITTEE

Anne Peat

LOCATION

The James Clerk Maxwell Room (CR4)

Scottish Parliament

Economy and Fair Work Committee

Wednesday 15 December 2021

[The Convener opened the meeting at 09:30]

Decision on Taking Business in Private

The Convener (Claire Baker): Good morning, and welcome to the 15th meeting in 2021 of the Economy and Fair Work Committee. Following advice that was issued by Parliament last week, the committee meeting is being held virtually.

The first item of business is a decision to take items 3 and 4 in private. Are committee members content to do that?

Members *indicated agreement*.

Scotland's Supply Chain

09:30

The Convener: The substantive part of the meeting is an evidence session on Scotland's supply chain. We are looking at the short-term and medium-term challenges for Scotland's supply chain and how those and the shifts in the supply chain are impacting on Scotland's economy. We are also interested in long-term solutions. We want to consider how to build future resilience and whether there are opportunities to develop domestic supply chains in Scotland.

I am pleased to welcome our witnesses. Professor Iain Bomphray is the director of the lightweight manufacturing centre, Professor Keith Ridgway is the executive chair of the National Manufacturing Institute Scotland, and Nick Shields is the head of business support services at Scottish Enterprise. As always, I ask members and witnesses to keep questions and answers as concise as possible. It is helpful if members indicate which of the witnesses they would like to respond to their questions. That will make it easier for broadcasting to keep us on track.

I will start the questions. Professor Bomphray, the committee is looking at some of the solutions to the supply chain challenges that we face. Over the course of the inquiry—we are in the last stages now—we have identified the pressures due to Covid, different trading arrangements resulting from Brexit, labour supply and skills markets. Those are the pressure points that we have identified. Yours is an organisation that looks to respond to some of those challenges, which have existed for a few years. The landscape for supply chains has also changed dramatically since the Covid pandemic started. As an organisation, have you changed? How are you responding? Do you agree that we have identified the correct pressures? What impact have those pressures had on what you are trying to achieve? Have they made your work more challenging? Perhaps you could talk a wee bit about where the organisation is at.

Professor Iain Bomphray (National Manufacturing Institute Scotland): Yes, of course. Good morning. Thanks for having me today.

Without question, the organisation that I run has changed. We have had to reassess where we can really have an impact within the supply chain. It is particularly important for us, because the types of organisations that we look to attract do not really exist within the Scottish ecosystem in the way that they do down on the south coast. I have spent 30 years working in England and France, where the

supply chains are much more readily developed for my particular industry—composite materials and manufacturing with lightweight structures. The skills that you need to engineer, design and manufacture with these materials do not exist in any great depth in Scotland, so my challenge has been to understand how we can seed new companies locally and how we can encourage companies to come to Scotland—whether we can provide the skills and the unique selling points that would attract them away from the traditional, more established supply chain base in England.

We have had to look at environments and adjacent areas such as textiles and the chemical industry. There are 525 textile companies in Scotland, so textiles are at the heart of composite materials, because they are layered materials—we build up fabrics. That is an area where we could encourage textile companies to move into the more structural materials business and help them in that way. That is one example of how we have really adapted to understand the environment that we are in and how best to have some impact on that. I am sure that the committee is well aware of the great work that was undertaken in relation to rediscovering manufacturing capability in Scotland so that we could deliver our own PPE.

The last thing that I will say about that is that we have come up with a concept to take some of the capital costs away for people who want to move into composite materials. We have a concept for what we are calling a reconfigurable pilot line, which is a cell-based system. Instead of companies coming to us, we would take that technology to them and establish it in their organisation to help them along that journey. That would hopefully take some of the capital costs away from buying plant and equipment.

The Convener: I will ask Professor Ridgway a similar question. Your organisation has been established to address issues in Scotland's supply chain, but the circumstances that we are living through have changed dramatically due to Covid, post-Brexit trade and inflation, which, as we have heard this morning, is putting pressure on lots of different sectors. How have your organisation's aims changed? I know that the aims are about growing domestic supply chains, but is the current situation making that easier or more difficult?

Professor Keith Ridgway (National Manufacturing Institute Scotland): It is very much more difficult. The National Manufacturing Institute Scotland started and developed from the advanced forming research centre, which was very much in the aerospace industry. As ministers have been informed, it is for Scotland, not just for the central belt, and it is not just for the aerospace industry.

We find ourselves involved in a much wider range of industries, such as chemical processing and food and drink, and there are massive problems in those areas. The food and drink sector's supply chain resilience and labour problems are huge, and they can be addressed only by automation. That is something that they have to do, and we are starting to see a much bigger push towards automation in those—what we might call lower-skilled—industries. At the moment, we have the manufacturing skills academy, which was brought about as part of the NMIS. We are working with the further education sector—which has been underinvested in and has been the poor relation of the education sector for many years—to add digital skills.

Digital skills are becoming an increasing problem. We cannot hold staff in the NMIS, and companies cannot hold staff. We are losing people for double the salary. Companies are waking up to digital skills. For a while, pre-Covid, people thought that the digital projects that big companies were pushing, such as Siemens industry 4.0, were very expensive, but they have now found out that they are not that expensive, so there is a big push for digital skills.

Last week, we heard about the same problems at a forum in the north of England—it is not a Scottish problem; it is a UK problem. People said that productivity, getting to net zero and energy costs were issues, but the main problem was skills, skills and more skills. We have to respond to that. The national transition training fund has been a big help, and we need to carry on doing more of that work and giving people those digital skills.

The Convener: Would Nick Shields like to respond? That would give you the opportunity to set out how Scottish Enterprise is responding to the additional pressures in the supply chain over the past 18 months.

Nick Shields (Scottish Enterprise): Part of my responsibility is to look after the manufacturing advisory service in Scotland, and we have engaged with supply chains and manufacturing companies for many years. The pandemic was a huge game changer, as we have seen from the well-known personal protective equipment issues and having to completely realign supply chains along those lines to meet the essential needs of healthcare providers. A huge amount of our short-term resources and those of the Scottish Government were realigned to that.

Added to that, over the past few years—in advance of the pandemic and Brexit—we have been engaging on supply chains. To be honest, companies that have well-established interconnected global supply chains need a compelling reason to do something different and make changes. The issue of PPE and the

pandemic certainly brought about the kind of discordant event that gives people a chance to look at things. We know from the conversations that we are having with enterprises that the challenges that they are having with supply chain disruption have forced them to look at their extended supply chains and consider resilience.

We are very active in engaging across those relationships. We deal with probably around 1,200 manufacturing businesses at any one time, including in the Highlands and Islands, and that is part of the proactive conversation that we will have with those businesses—asking them what their resilience challenges are and helping them to resolve them in relation to the proposition of a Scottish supply chain solution and how we can work with them to facilitate that.

The Convener: Last week, we heard evidence from the construction and house-building sectors that supply chain pressures are causing a degree of sluggishness in those sectors because they cannot get jobs completed or started. Do you see that among the businesses that you deal with? Are downward pressures being created on their ability to grow?

Nick Shields: Yes. We are in an unusual situation. A business colleague told me yesterday that they cannot enjoy how busy they are. Business activity has gone up, and the number of orders is much higher. We see from the purchasing managers' index—PMI—that everything is almost at an all-time high. However, we have those supply chain shortages and disruptions.

There are also compounding factors. For example, I know from other businesses that I talk to that their suppliers cannot get the labour to supply them with the components. We therefore see the skills issues that Professor Ridgway talked about playing out. I cannot think of any manufacturing business in Scotland that is not suffering from those issues at the moment. Our economic trends survey—which is on-going—shows that 48 per cent of businesses say that labour shortages are their main challenge and that 30 per cent of businesses say that their second main challenge is supply chain disruption. Those factors are compounding to give businesses those issues. They are busy, but it is a challenge for them to fulfil orders at the moment.

Alexander Burnett (Aberdeenshire West) (Con): Over the past few meetings of the committee, we have heard a lot about the general problems in the supply chain and about the solutions. However, I want to get into some detail about the agriculture sector, in particular. A lot was released this week and last week about the problems in the supply chain and the knock-on effect on food prices, inflation and the like.

I will first ask Professor Ridgway about automation in agriculture, which subject I am delighted that he introduced. Will you expand on exactly what work you are doing, what support is needed and when you see some of those things coming to fruition and having an impact on problems in the supply chain?

My second question is for Nick Shields and is also about agriculture. Material inputs, such as the key input of fertiliser, are experiencing issues. What is Scottish Enterprise doing specifically to address that?

I refer members to my entry in the register of members' interests regarding agriculture.

Professor Ridgway: We have really just been awakened to the problems in the food and drink industry, in particular, which knock on into the agriculture industry. We have done some work on automation in the whisky industry, which is obviously big, and we are now getting more involved in the seafood industry, which appears to have massive labour problems. We are getting companies together to find common issues and where we can get people to supply to that industry. We are also helping to develop the equipment.

To be absolutely honest, they are very difficult problems. If we take fish and the North Sea, for example, people in Norway and Iceland have more automated systems, but, as I understand it, they have a more standard fish size. The North Sea gives us fish of different sizes, which is a difficult thing to handle.

09:45

With regard to the skill that goes into it, we might not see it as a high level of skill, but there is a lot of tacit knowledge in the seafood industry. I do not think that we can overestimate the level of the automation problem in the agriculture and seafood industries, but the only way that we can address it is by getting the companies together and trying to find their common problems. For example, robotics does not work fast enough. We have found before in the food industry that robotics is fine for pick-and-place systems, but fixed automation has to go at very high speed in the agriculture and seafood industries. We are working on it and looking for solutions, and we are trying to find companies that can help us to supply into that industry, which, again, is quite difficult. We have a lack of automation expertise across the UK. The only solution, in the longer term, is to develop the companies and skills to tackle automation by bringing that expertise in and growing it.

Alexander Burnett: Thank you. Can Nick Shields comment on the other issue of material inputs, particularly fertiliser?

Nick Shields: To be honest, my knowledge of the fertiliser supply chain is pretty limited, so I do not have much to say on that. Most of our work with the agriculture industry tends to be with producers who are involved with a bit of primary production but then do some value-add work, so, as Keith Ridgway said, it is very much focused on automation.

My experience of dealing with the agriculture sector is that the producers are amazing at new technology and the equipment and technology that are used in the field, such as satellite technology, are highly automated, but our activity is probably more on the food production side. We see fantastic examples of automation and new technologies being adopted, but we also see businesses that really could do with adopting new technology. The sector is also particularly hit by the labour shortage issue at the moment.

I will have to come back to you on the fertiliser supply chain activity.

Alexander Burnett: Just to be clear, does Scottish Enterprise cover the agriculture sector? If not, whose remit does it fall under?

Nick Shields: Agriculture is not within our remit. We work at the business and enterprise level, and agriculture is really a Scottish Government activity, in my experience.

Alexander Burnett: Thank you.

Maggie Chapman (North East Scotland) (Green): Good morning, witnesses. Thank you for being with us.

I have a couple of questions. Nick Shields was just talking about innovation and the need to change our technologies, and you have all touched on resilience issues around diversification and adaptation, such as being adaptable and flexible, as well as skills. Will you say a bit more about the level of innovation activities across your areas, particularly on developing processes and technologies that will help us to address supply chain issues? What is there at the moment? What do you think that we need? How do we incentivise innovations? I am particularly interested in innovations that lead directly to supply chain resilience and supporting industries that we can sustain through volatile circumstances and times. That question goes first to Nick Shields, then to Keith Ridgway then Iain Bomphray.

Nick Shields: With regard to activities over the past five years, the investment across the infrastructure, which Professor Bomphray and Professor Ridgway are part of, has been a huge step forward in terms of support, especially in the place agenda.

The 12 advanced manufacturing challenge fund centres that have been set up throughout Scotland give small and medium-sized enterprises in areas such as Fort William and Annan—areas that are away from central-belt metropolitan regions—free to use and open access to new technologies, such as digital, robotics and automation. That gives them an opportunity to try before they buy, play with those technologies and understand what they can do for their businesses.

There are fantastic examples of businesses throughout Scotland that have adopted automation and there are examples of businesses that have not. It is our job to take the pain away and to introduce those technologies to them in an easy and user-friendly manner. The advent of the Michelin Scotland Innovation Parc—MSIP—in Dundee, the robotarium at Heriot-Watt University, the NMIS at Inchinnan, the medicines manufacturing innovation centre—MMIC—and Professor Bomphray's lightweight manufacturing centre illustrates that.

In the past five years, there has been incredible growth in the facilities that businesses can access readily to easily understand what new technology can do for them. That, coupled with the horsepower that the economic development agencies provide for promoting innovation and getting businesses to examine their processes and products, is part of a support network that is unique to Scotland. I see what goes on in England as well. There is a great opportunity for Scottish supply chains to use that support to help them to become more innovative and more resilient in the long term.

Maggie Chapman: Thank you. I ask Keith Ridgway the same questions about innovation, resilience and what we need to support the technologies that we are talking about.

Professor Ridgway: The easiest thing in the UK is to blame the Germans. Industry 4.0 was badged by German professors and German industry as a way forward in automation and digital technology. The major players in that game are probably German companies such as Siemens. The impression was given that it was very expensive. That started to come in around 2016, when we put the bid in for the digital factory.

That is what we are working on. We are trying to unpick what the nine pillars of industry 4.0 are, what it means to companies and where an SME can join that journey. That does not have to be by spending £2 million, which is probably the impression that was always given. A lot of low-cost technologies can be used. For example, we can look at quite old machine designs—old Bridgeport

machines—that give better readings of vibration and temperature and better control of a process.

There does not have to be a big spend to get a solution. Increasingly, our work is finding low-cost solutions to problems. That is necessary. The problem in the supply chain is that we tend to buy on price. Eventually, we get down to the point at which we go to a low-labour economy and, unless we can take that effect out of the system, we will always have that problem.

PPE is an example of that. Eventually, we got to the point at which we were buying PPE from China because it was very low cost. The only other option was to automate and make it at a lower cost in Scotland. However, we came to the same old problem: who is going to do the automation, do we have the experience and companies to do it and do people understand what they have to do? The solution is not necessarily to throw money at the issue. Innovation is about finding low-cost ways of doing something.

Maggie Chapman: That is helpful.

Professor Bomphray: I reiterate what Keith Ridgway and Nick Shields have said. Some of the things that we are doing are complementary to what is being done in the UK but we definitely have a greater focus on low-cost solutions. Our sister catapult in Bristol, the National Composites Centre, predominantly grew out of aerospace and has suffered because of the downturn in that market. We have deliberately tried to position ourselves away from that at the low-cost, low-entry point of access for SMEs, which predominantly make up the Scottish environment. We are positioning ourselves there to be more resilient and offer a better experience for businesses.

The very fact that the National Manufacturing Institute Scotland exists is a positive thing. It has encouraged people such as me and my colleagues to relocate to the region. Many people see Scotland as a desirable place to come to and work in, and the fact that we have seeded something that they recognise is appropriate to their skill sets is a very good step.

Maggie Chapman: Thank you for that answer. While you were speaking, I was wondering about connections. You said that the National Manufacturing Institute Scotland is really valuable. What are the interactions and relationships with not just further education but higher education? I am aware that quite a lot of university resource is going into innovation. Universities are bringing in partners from around the UK and, actually, around the world to focus on that. Are there structures or facilities that we could think about to ensure that we bring people together in an effective way?

Professor Bomphray: There are structures. We are involved in skills development all the way through the national occupational standards, from foundation apprenticeships through to HNDs and PhDs, and our outreach goes even further. Today, we are hosting four schools in the lightweight manufacturing centre for a go-kart challenge. That involves bringing young people in to show them what a modern engineering environment looks like. We try to encourage them and show them that engineering is not just about spanners and oil but that it is digital and high tech, that it is about robotics, and that it offers rewarding and fulfilling careers.

Gordon MacDonald (Edinburgh Pentlands) (SNP): I have a specific question and a couple of general questions. Part of the focus of our inquiry is the construction sector. Last week, we heard from witnesses that the number of sawmills in Scotland has reduced substantially since the 1970s, yet 70 per cent of the softwoods that are harvested in the UK come from Scotland. We also have a situation in which most of the timber that is used in construction is imported.

What opportunities are there to increase the use of wood products in Scotland? What steps do we need to take to exploit them, given the difficulties of importing from the European Union and the fact that timber prices have increased substantially in recent months?

Professor Bomphray: Wood as a composite material is something that we could handle quite easily. We know how to design and engineer for it. We would be very happy to support companies that are looking to move into automation, which can involve making more prefabricated things off site. That seems to be a driver for a lot of the construction industry. A lot is being done on metrology and making sure that things are right first time. It is about bringing a portfolio of technologies to bear on the construction industry, some of which might come from other sectors.

I have some experience of dealing with civil engineering and architectural firms, and the lightweight nature of composites and their fire retardancy are now even more important, given recent events. If we facilitate some leaps in innovation, we can reduce the weight of the buildings that we put up and use more organic and more net zero materials. We are very comfortable with those materials.

10:00

Professor Ridgway: This is about architects specifying the need for wood and bringing it into the design. The new National Manufacturing Institute Scotland is sited in Inchinnan. The entrance is all wood and the building is purple. The architects brought the idea of the moors of

Scotland into their use of timber. That might be a small thing but it is a very good thing.

When you go larger, there is a significant difference between how houses are built in England and how they are built in Scotland, where much more wood is used. The Construction Scotland Innovation Centre has been working on that, and we work with those sorts of people.

There is a big push on modular build, and timber plays quite well into that. Down in England with the Advanced Manufacturing Research Centre where I worked previously, Laing O'Rourke was looking at a 24-hour modular house build. In programmes such as that, timber is mentioned early on in the discussion with the architects. That is the way to increase our use of timber. We probably need to get closer to architects and educate them a little bit more on the manufacturing capabilities of timber.

Nick Shields: To follow on from that, I am involved in some activities in the supply chain development programme for the Scottish Government, one of which is the use of timber in construction. Some 23 per cent of houses in England have a timber frame construction, whereas the figure is 80 per cent in Scotland. We know that the Scottish Government has a funding commitment of £3.5 billion to build 50,000 new affordable homes over the next five years. A workstream is exploring that in conjunction with the Construction Scotland Innovation Centre, which Professor Ridgeway mentioned, and my Scottish Government colleagues, to look at how we can better exploit our natural resources and use more of our timber.

Gordon MacDonald: In general terms, is there enough support in place to identify and encourage UK companies to use local supply chains? How much collaboration is there between industry, academics and public agencies to establish local supply chains?

Nick Shields: The making Scotland's future programme, which has turned into a manufacturing recovery programme over the past year, is a great example of collaborative working across the public sector, Government and academia.

I am the senior responsible officer for a specific supply chain programme, which drills into, understands and reacts to the disruption that we have seen. PPE is the main example of that, but many businesses have faced disruption, and it is our job to deal with that.

I always recall the comment that Professor Ridgway made to me a few years ago about our being in the game of process innovation in which we need to make something 10 per cent of the price that it used to be. That is exactly why we are setting up these centres across—[*Inaudible*.]—to help businesses to drive profound transformation into their process to really drive down the costs that Professor Ridgway has mentioned.

As we know, things have gravitated towards the far east over the years. We now have technology centres in Scotland. The private sector, because of the disruption that it is facing, has the appetite to look at the issues and say, "We can do this".

Professor Ridgway pointed out that the Germans have managed to do that. They retain a huge amount of the supply chain in their country. Many of their businesses are vertically integrated, so they buy in raw material and process it all on site. We need to learn from that. As Professor Ridgway said, the cost of the technology that they use has reduced dramatically in the past 10 years. There is a compelling commercial case for automation, and there is an economic case in relation to the disruption to supply chains. There is a perfect storm, but we can do something good for supply chains in Scotland.

Professor Ridgway: One of the problems is the foundation economy and where we buy things from. While we continue in the public sector to buy on the basis of cost, we are still forcing the supply chain to go with the lowest-cost component. Therefore, at some point, we go to the far east. We have got to make a conscious effort to really encourage companies and say—this must go into procurement specifications—that things must be bought in Scotland and that a Scottish supply chain must be used. Scottish companies know that, even if they invest in automation, there is still a danger that they will be undercut by a low-cost economy.

Gordon MacDonald: I am sure that one of my colleagues will pick up the procurement issue.

Iain Bomphray, do you have a view on the amount of collaboration and support that exists to exploit local supply chains?

Professor Bomphray: Not specifically. We could work on the cost of access to the centres, to make sure that it is affordable, that there is sufficient funding and that that funding is accessible, which means that accessing it places a low administrative burden on companies. We need to encourage companies to invest in these technologies. We are setting up the organisations to help them on that journey, but it needs to be affordable to them.

The Convener: As procurement has been mentioned, I will bring in Colin Smyth at this point—earlier than expected—as I know that he wants to explore that issue.

Colin Smyth (South Scotland) (Lab): Thank you convener—I know that you were just making sure that I was paying attention.

Is there a way in which we can stimulate manufacturing in Scotland by having clear targets for the substantial procurement that the public sector—everything from local authorities to the national health service—is involved in? Is that one way to build that stronger manufacturing base?

Professor Bomphray: The point that Keith Ridgway made is powerful. We need to be able to give companies sight of long-term contracts in order for them to have the confidence to invest in the transformational piece that they need to go through. They need to have assured, long-term contracts if they are going to make the necessary investments. If a business operates with a 5 per cent margin, the costs of some of the technologies are quite prohibitive, even though they are getting cheaper. We need to incentivise them on that journey in order to make them more productive and efficient in their manufacturing. However, that comes at a cost.

Professor Ridgway: Clearly, we should use procurement in that way. We should buy Scottish and use Scottish supply chains. I assume that that requires a policy decision.

We must be careful, though: it is not a licence to print money. However, if we manage our supply chains in that way and give people those longer-term contracts, they will be able to invest in automation and other long-term things. We spend a lot overseas, and we could spend that in Scotland. Clearly, we need to address that. However, we cannot just throw money at very expensive things; we need to encourage companies to go for automation, which requires long-term supply contracts.

Colin Smyth: Nick Shields, based on your work, if we had clear targets for local procurement contracts, would the sector be geared up to adapt to that?

Nick Shields: Yes, but that requires an up-front capital expense.

We are all involved in organisations that procure things, so we know that, with best value, you reach a minimum acceptable quality and then it comes down to price. In many cases involving commodity purchasing, the decision goes in favour of the far east, but we have examples of where goods can be sourced cheaper in Scotland. For example, after orders were placed with a PPE manufacturer in Scotland, it was able to quickly invest in its manufacturing side and ended up managing to produce PPE at a lower price than was being paid for those items from the far east. Obviously, that happened in extraordinary circumstances.

A blended approach would be useful. We should certainly look at resilience and at areas of concern in which there should be capability in Scotland. Before a procurement decision is made, there should be consideration of the wider economic benefits for the supply chain. There is no doubt that that would come at an incremental cost, but it is certainly worth exploring the matter.

Colin Smyth: The witnesses have touched on a few issues, and I have mentioned procurement targets, but would you like the Scottish Government to pursue any other policy initiatives that have not been mentioned in order to tackle our supply chain challenges?

Professor Bomphray: Funding needs to be streamlined. We spend quite a bit of time trying to match a company and its desires with the appropriate funding bodies. Having a single point of contact in relation to funding streams would, to be frank, help everybody. A portfolio of different funding tends to appear, with some funding being quite transient and other funding being more persistent. Each funding application has a different administrative requirement in relation to how much effort is needed. Some funding is competitive, so there is no guarantee that people will get it. Streamlining funding would certainly help my organisation.

Professor Ridgway: We should be doing two things, one of which is quite controversial. We focus quite a lot on low-cost commodities, such as PPE and food, but there are some big high-value items in the procurement arena. For example, we want to be producing in Scotland 70 per cent or more of our offshore wind turbines and offshore wind turbine floaters. Have we got the capability to do that? We will probably need to bring in inward investment, so how do we encourage that investment? The wind turbine is a commodity, but the floater is where the value is. I do not think that we have a good inward investment proposition in Scotland. We do not do enough to encourage companies to come to Scotland and set up factories.

There is a problem relating to the high-level skills that welders, machinists and so on need. The FE sector is too broad, so we probably need to take out the manufacturing and engineering part of the sector and build its image. As we have done with the National Manufacturing Institute, we need to make it a national thing, so that people are proud to become an apprentice and take that route. Generalising apprenticeships gives them the wrong image. That is important.

With regard to other things that are on the horizon, Scotland has a policy ambition to be an energy exporter. I do not think that we can ignore nuclear. There is a big opportunity to build nuclear facilities and deploy that energy in Scotland,

because it is a clean energy. It will be very hard to meet our net zero targets without nuclear. I understand the current policy, but we should look at that issue.

Colin Smyth: That is very interesting. You touched on skills and perceptions, but what are the other reasons why we have missed the boat on manufacturing? Denmark is far ahead of us on offshore turbines, for example. What did we fail to do? What lessons do we need to learn from that?

10:15

Professor Ridgway: We lost large-scale manufacturing in the UK quite a number of years ago, and we have failed to invest in that capability. If we take the tunnel-boring machines for high speed 2, for example, we do not have the capability in the UK to machine a 10m diameter tunnel boring machine, so High Speed Two Ltd went to Austria for that. If we take wind turbines and what happens in the north of England and in Scotland, a lot of big things go to Norway to be machined, because we do not have large-scale manufacturing capability. We have it in shipbuilding and in fabrication, for example at Babcock and BAE Systems, but we do not have a good, high-quality machine shop in Scotland or in the UK. Those are challenges when it comes to big, high-value products.

We only have one very large forge in the UK: Sheffield Forgemasters—although it now has a second forge. That was a huge weakness in the resilience of the supply chain. We are talking about big investments, and the return on those investments has probably not been good enough to attract private sector investment. In the case of Forgemasters, the Government and the Ministry of Defence needed to step in and solve the situation.

We have to make a decision: if we are going to encourage companies either to come and set up and manufacture in Scotland or to develop that area, it is not a cheap option. There are long-term loans and investment required.

The Convener: Iain Bomphray wanted to respond on this line of questioning. I will let you come in, Iain, but I will throw something else in relating to procurement. Other panel members have talked about far-east imports, and we have heard suggestions that we should be doing whole-life carbon costing and that those costs should be included in the costs for importing goods, given that Scotland has ambitious net zero targets. Could you pick up on that, too, please, Iain?

Professor Bomphray: Yes—sure. I wanted to follow on from what Keith Ridgway was saying about energy. The cost of energy is often a barrier to companies coming here. In other countries, energy is often subsidised for heavy industries, and that makes things more attractive for companies there. We might think, in particular, about the carbon fibre manufacturer that is a big part of my industry. We have SGL up in Muir of Ord, which is doing very well, but we want to see more of those companies coming. The processes involved are very energy intensive.

The Convener: Do you have any views on whether carbon costing should be included?

Professor Bomphray: Yes. It is very much at the forefront of what we are doing. We are investing in life-cycle analysis technology, so we have been able to analyse the cost of energy and the environmental impact of processes that are going on. We now have dedicated staff to look at that, and we are investing in software for that. We should be able to offer companies that service.

You rightly point out that we should be benchmarking our processes against those of competitors, because we might find out that we are more competitive in certain aspects. We need to talk about that.

The Convener: Thank you. I will move on now.

I had planned to bring in Colin Beattie, but I understand that Fiona Hyslop was going to ask about carbon miles. I am happy to bring her in at this point, followed by Colin Beattie. Apologies for moving you twice, Colin, but I will pass over to Fiona Hyslop now to keep the flow going, if that is okay.

Fiona Hyslop (Linlithgow) (SNP): Good morning, everyone. It is good to see you all. I am particularly interested in how we can marry the sustainability and resilience of domestic supply chains with the net zero goal. Much of what is imported comes from the far east, particularly in the construction sector, as we heard last week.

Getting back to the basics about construction helping with our recovery, we know that cement presents a global challenge. We discussed last week whether there is an opportunity to investigate the replacement of cement with next-generation materials and innovation. At the Net Zero, Energy and Transport Committee just yesterday, we heard about the potential in Scotland for carbon capture and storage to address some of the cement issues. If we do not address cement, we will not be able to address some of the net zero challenges, globally or domestically.

I am not sure whether cement is your area, but perhaps you can comment on how we marry the need to address supply-chain interruptions in key sectors by looking at how we do things domestically with the desire to become global innovators in moving towards net zero and the

world that we need. How realistic would that be if we put our minds to it?

I will come to Nick Shields first, and then to the others. If cement in particular is not your thing, you can comment on the general concept in relation to the carbon miles issue. Is there a policy intervention—through procurement, for example—that could help the domestic economic innovation agenda?

Nick Shields: Cement is not my area of expertise—I would defer to my colleagues in the Construction Scotland Innovation Centre. On the issue of carbon miles, I absolutely take your point—it is a difficult issue. We know that, in a global supply chain, the further away a commodity comes from, the more carbon miles it attracts. There is an interesting challenge around how we account for that in the procurement process.

We are running a programme with Scottish Government colleagues called the CivTech challenge, which is about helping businesses to analyse—as Professor Bomphray talked about—the carbon impact of what they do and identify the areas of their business where they could really make a difference. Helping businesses to understand their carbon impact through their supply chain would be a good starting point. The solutions are not currently there, but we definitely need to explore that. I defer to my academic colleagues on the cement question.

Fiona Hyslop: I will come to Keith Ridgway. I know that the work of the NMIS has been driven a lot by the low carbon and digital agenda, initially in the aerospace sector. Can that thinking be applied to resilience elsewhere, in particular in the construction sector?

Professor Ridgway: We cannot subcontract our carbon footprint, can we? If we were to say that we have net zero but we buy everything from the far east and do not take in those carbon miles, we would be cheating the system, would we not? We would be cheating ourselves because we not have been able to measure it.

Iain Bomphray is right: we need a good and efficient way of calculating carbon miles. That can be challenging, given the differences in figures, so we need to look at that. We should definitely put carbon miles in procurement specifications; it should be a consideration.

Cement is not my area either, but I note that if we look at other things, we see that the private sector is very good at stepping up, and that innovation is good at filling the gaps. However, the private sector has to see that there is a market. If there is a market, there is a business need and some company will undoubtedly step forward with a solution.

We need to create an environment from a business point of view. We can say that we are now measuring carbon miles and are going to make it more difficult to use cement. Somebody will see a business opportunity—for example, a long-term contract—so, they can invest in innovation. That is how we could tackle the problem.

Fiona Hyslop: Iain Bomphray introduced the idea of thinking about how we marry procurement with other things. Obviously we would be undercut if we were the only country in the world that took such an approach, but could we lead by example and help to drive innovation while also helping to build resilience in the supply chain? We are interested in construction in particular, but that could apply to other areas.

Professor Bomphray: We definitely could do that: it is a great topic. It might surprise you to hear that, as somebody who runs a lightweight manufacturing centre, I know a little bit about cement and concrete—it is an interesting material.

On your question, the academic side can really help with that. There is, for example, research on using cement for carbon capture through curing concrete with CO_2 and locking it into structures. That is where we can help with the translational research. Our centre sits between academia and industry; we try to facilitate collaboration between those two different personalities to get them to work together.

We can also help with things such as recycling of wind turbine blades, which is going to be a massive issue. We have just won a programme to help to scale up recycling of wind turbine blades. What is done with that recyclate? The glass fibre from the wind turbines is shredded so that it becomes short fibres that can be embedded in concrete and cement to improve their structural performance. That also gets rid of the environmental impact of having to dispose of wind turbine blades.

Such novel technologies need centres such as ours to help companies to de-risk other technologies and to understand their properties so that engineers can specify them. They can say, “I’ve got this recycled material, which performs in this way, so I can use it for that part.” We can help them on that journey with underpinning data and can thereby tie quite disparate industries together. The wind turbine industry and the cement industry are not traditional bedfellows, but there might be synergies for both industries that would offer a net positive gain.

Fiona Hyslop: Obviously, you are trying to get the private sector to see the market opportunity in that.

Professor Bomphray: Yes, absolutely.

Fiona Hyslop: Nick Shields wants to come back in before I hand back to the convener. Colin Beattie has been very patient.

Nick Shields: An example comes to mind. We invested in a university spin-out company from Heriot-Watt University that makes a recycled brick using material from construction that would traditionally go to landfill and which uses only 10 per cent of the energy that is required to produce traditional brick. It is an early stage spin-out company. The product is called the K-briq, and the company is Kenoteq Ltd. Therefore, we have in Scotland a good example from a university spin-out company of fantastic innovation that we in Scottish Enterprise help to support and which makes a significant contribution to decarbonisation of the construction sector. It is Scotland-originated technology.

Fiona Hyslop: Thank you, Nick.

The Convener: I will bring in Colin Beattie. Thank you for your patience.

Colin Beattie (Midlothian North and Musselburgh) (SNP): Thank you, convener. We have had a fair bit of discussion about opportunities connected to trying to grow our domestic supply chain. One of the solutions that are being put forward is automation, to varying degrees, but automation will not work for every sector and every aspect of the supply chain. I am reminded of evidence that the committee received. A company that was importing mini pizzas from Italy looked at the local supply chain to see whether their manufacture could be replicated here, but the price was four times higher here than the cost of importing items from Italy. A heck of a lot of automation would be needed to cover a fourfold increase in costs. Exactly how competitive is Scotland as a location in being able to meet supply chain needs? Is it simply the case that the economies of scale are such that we, as a small nation, will, for the most part, not be able to build our own supply chains? Perhaps I can bring Keith Ridgway in on that.

Professor Ridgway: We want high-value manufacturing, do we not? That is what it boils down to. The example of pizzas that you mentioned can be automated quite easily. The process is probably automated in Italy. Italy has, to be honest, run rings round us in automation on quite mundane stuff. Manufacturing of cutlery and such things was automated very early on by the Italians. I still think that that is the answer. You are right that we do not have to do everything, but we definitely need to go for the higher-value stuff.

Colin Beattie: For years, I have been hearing that the UK is moving to higher-value goods—away from mass production to high-value niche areas, but that does not seem to have worked so well.

10:30

Professor Ridgway: No, I do not think that it has worked well. I go back to the example of wind turbines. We were slow to move into the area and—I am not sure how to explain it, really—we have just lost capability. Germany, Italy and France invested in that, but we did not. This is a UK national problem, not just a Scottish problem. Instead of large-scale machine shops, we have one forge. There are quite a lot of areas in which we are limited. For example, we do not have machine-tool building. It is embarrassing that all the machines in our factories and, for example, the advanced manufacturing research centre at the University of Sheffield, come from Japan or Germany, which are not low-cost economies. We have not supported our industries; whenever there were downturns, we just let them die.

Colin Beattie: So, it is not just a question of how expensive it is to do something—it is just that we do not do those things any more.

Professor Ridgway: That is correct. We just cannot get the large-scale things here. For example, we cannot buy tunnel-boring machines for the high speed 2 railway in the UK; we cannot even make the trains for HS2 here. Hitachi gets the big order, then says that it will put a factory in the north-east of England to build them. However, the factory is not building the trains, but is just assembling them; the components have been made in Japan. We have let those industries die, so we have to rekindle them.

Colin Beattie: Is the problem that the domestic market is not big enough to support those industries?

Professor Ridgway: I do not think so; the market is big enough. You could look at a variety of things such as, say, a complete restructuring of the rail system, from the lines through to the vehicles themselves and power generation. There are also export markets to be had, if we are good at it. However, if, as is the case, we lose the capability to make large expensive items, bringing that expertise back will take investment.

Colin Beattie: We are talking hypothetically about how to grow the domestic supply chain and substitute the products that are already in it with our own. However, you are saying that, for a long time now, there has been no will to do that. Do you see any change in attitude or any indication that there is such willingness?

Professor Ridgway: Yes. We have to separate low-value things from high-value things. With the seafood industry, which was mentioned earlier, the

labour shortage is such that automation will have to be brought in. Of course, that leads to the challenge of ensuring that we have the skills to bring in that automation. If we go to the other extreme and decide to look at high-value things such as floating wind turbines, the level of investment that will be required is huge. What should we do? Do we just let the work go to Norway or Denmark, or do we fight back? If we decide to fight back, we have the option of bringing in inward investors such as Aker Solutions to build factories in Scotland and encouraging them to develop a Scottish supply chain. However, that will need investment, and those companies will want to see long-term demand in Scotland. On the other hand, we could try to develop things locally, which, to be frank, is very difficult.

Colin Beattie: Is demand in Scotland sufficient to support a whole industry?

Professor Ridgway: No, Scotland cannot do this on its own. This is a UK problem—indeed, energy is a UK problem. Scotland has not dropped the ball on its own. The UK has not supported its manufacturing industry with, for example, machine tools and large-scale manufacturing; instead, we have encouraged people to go outside and buy from the Germans and the French.

We played very fair on European procurement rules—actually, I think that not everybody played as fair as we did. That was always a challenge. We have let our industries die.

We do not have a large-scale machine shop in Scotland. Can we support one from private investment, or do we need Government encouragement? A good example is nuclear reactors. The reactor components would have to be forged in the UK at Sheffield Forgemasters because, if they are not, they will all be forged in Korea or Japan, and all the primary machining and so on would be done there. We need such primary industries—we should be encouraging and investing in them.

Colin Beattie: I will bring in Iain Bomphray. Do we have the will and the capacity to build domestic supply chains in order that we can substitute what we use currently with our own goods? Is it going to happen?

Professor Bomphray: I would say that we definitely have the will—I see that among my staff. Some of the things that we are trying to do are transformational. I do not think that we can compete head on on commodities, however; we have to do things differently. For example, with the composite material supply chain, we are focusing on creating carbon fibre from biomass, which is easily achievable in Scotland. For us, the biomass is wood pulp and paper pulp. We are looking at local resources, applying our academic prowess to some of the grand challenges and looking at how we can disrupt.

We see disruption in a number of industries. There is an opportunity to identify the areas where we can capitalise so that we do not have another wind turbine miss, if I can call it that. My background is in the automotive industry. There is huge disruption in that industry right now with the drive to electrification and autonomy. How can we address that? Can we come up with a coherent set of technologies and an ecosystem so that companies see the technical and financial support in Scotland and recognise that it is the place to come to do their innovation? From that, we will seed things that we have not even imagined. We just need that ecosystem.

Colin Beattie: Does that ecosystem not exist now?

Professor Bomphray: We are definitely building the ecosystem. I see that in what the NMIS is trying to do. In our staff portfolio, we have a young engineer who joined us from NASA, because she appreciated some of the things that we are trying to do. In Britain, we do ourselves a disservice, in that we have the right culture for innovation but need the right environment in which to exploit it.

Colin Beattie: As I said to Keith Ridgway, for as long as I can remember, I have been hearing that the UK should take niche markets and tie-in products and all the rest of it, because we cannot compete on mass manufacturing. I am not aware that there has been tremendous success in that. We seem to be talking about it again in connection with supply chains. So far, everything seems to have been talk.

Professor Bomphray: I take your point. Part of our strategy is that we are trying to get sticky investment that creates jobs and so on. I can send the committee details on how, tangibly, we are trying to do that. It will not happen overnight.

Colin Beattie: I am sure that the committee would be interested in any information that you can share with us.

Professor Bomphray: I would be happy to do that.

Colin Beattie: Can Nick Shields comment on some of what we have been talking about?

Nick Shields: The manufacturing businesses that I deal with that have their own intellectual property generally export everything that they make. I would like to see more of them, but they are very export oriented. If you build a manufacturing business in Scotland, the Scottish market will never be big enough to satisfy it. However, we want export-oriented businesses.

Most of Scotland's exports are of manufactured goods. It is a fantastic way of drawing wealth into the economy that involves, as Professor Ridgway would say, highly skilled and high-value jobs. We might be able to lever in demand in order to build capacity, but we want businesses to export and not just to satisfy Scottish demand. An example of a success story in the past few years is the space sector. It seems to have come from nowhere.

A couple of weeks ago, you had a gentleman from the hydrogen company, Logan Energy, at committee. That business involves high skills and production of goods and production of services, in terms of selling data. That is a typical model for future success. It is highly skilled and involves high-knowledge content. It is export oriented and it uses Scotland's fantastic academic base in software, digital design and engineering.

Through our national priorities, opportunities are emerging in decarbonisation of heat and in zero-emissions vehicles. There are opportunities to crystallise the capability that we are building in Scotland using the centres in which professors Bomphray and Ridgway work, and by driving knowledge-oriented businesses that should satisfy demand not just in Scotland but for export beyond Scotland.

Colin Beattie: Nick Shields emphasised the need for economies of scale a great deal more than the other two witnesses did. In other words, we have to build manufacturing business that not only meets Scottish supply chain needs but must, at least in part, be part of a chain outwith Scotland.

Nick Shields: It would be a struggle to build a manufacturing business to satisfy only Scottish demand. A business must always look outwards and globally, especially if it has intellectual property. Many businesses that I see can satisfy demand in Scotland but will also go beyond that. That is what we want.

Niche products were touched on earlier—I think that Colin Beattie mentioned them, too. The Germans and the Italians are good at products that are very niche propositions but are a global offering. The question is how we take the Scottish opportunity and use it for leverage.

PPE is an amazing example. The businesses that I know of that are producing PPE are now all exporting. We pump primed them—to use that old-fashioned term—using demand in Scotland, and now, they are exporting.

Michelle Thomson (Falkirk East) (SNP): Good morning to the panel. I will change the focus a little andf talk about finance. This morning, we had more bad news about the consumer prices index. Inflation has risen by 5.1 per cent in the past 12 months, which is much higher than was forecast. Andy Verity of the BBC has said that

"pressure ... is coming from ... rising commodity prices. The prices manufacturers paid for raw materials were up by 14.3%"

during that time.

I have a couple of questions that I want to explore with you, with your knowledge of manufacturing in general. How are businesses—in particular SMEs—coping, given the level of debt that they are already carrying, whether that is from bounce back loans or coronavirus business interruption loan scheme loans? Do you anticipate cash flow problems for the sector, given the rise in commodity prices and the supply chain issues that we have already discussed?

I should have said that those questions are for all the witnesses, starting with Nick Shields.

Nick Shields: We can see that the UK PMI data are very high for input costs and raw materials. My colleagues across various trade associations whom I have discussed that with have said that SMEs in particular are suffering at the higher end of that. The PMI is an aggregate index, and there are different price points, depending on the volumes that are being bought. The larger enterprises are usually able to negotiate better prices. I think that there will be issues.

10:45

Earlier on, I said that someone from the business sector said to me that they could not enjoy how busy the business was because of the supply chain disruption issues that businesses were suffering from. That is absolutely the case, and I think that SMEs will, unfortunately, bear the brunt of that.

We hope that businesses can trade out of this situation. They are busy and the order books are full, but we know many businesses that can build up to 90 per cent completion but lack the final critical components. Many yards and factories in Scotland might be quite full of part-built products at the moment, because they are waiting for the final components to come through. That is a concern, and we must look out for that issue. We have to hope that the financial support systems around those businesses will recognise that situation and help them to trade through this challenging time. I guess that all businesses are in this situation, as it is an industry-wide issue. It is something to look out for.

I am not seeing too much evidence of distress. There are always businesses that are in distress, and I know that there are a few construction businesses in that state. Unfortunately, some businesses took fixed-price contracts two or three years ago and have had to absorb the price rises. That is a tragic issue for them, as they are stuck with that. We have to hope that businesses in the

whole commercial infrastructure will take cognisance of the unique circumstances that we are in just now, which involve quite rampant inflation in input costs.

Michelle Thomson: Could Keith Ridgway and Iain Bomphray answer the question, too?

Professor Ridgway: We are seeing issues around steel supply, which are affecting SMEs quite badly, because they buy low quantities of specialised steels and have little buying power, which means that they are bottom of the list of companies to be served. That is a problem. I do not know whether we can encourage more production of specialist steels in Scotland or England, but the whole industry is suffering from higher costs.

A general rule that we have is one third materials, one third labour and one third overhead and profit. Companies are saying that their problem is still labour, not materials. Companies realise that their prices have to increase because the price of steel has increased, but they will still say that their primary problem is labour and skills.

Professor Bomphray: We are suffering from the same issue. We have seen the price of aluminium go up 40 per cent, which is affecting the components and tooling that we manufacture from. We have had to react to that in ways that I do not think would be untypical for industry. We are looking at the supply chain to see whether alternative materials are available, and we are thinking about whether we can re-engineer our products for those cheaper materials.

The other thing that we are doing to have a positive impact in that regard is investing heavily in recycling and reuse technologies. For example, we recently heard that China will soon be dealing with 750,000 tonnes of end-of-life wind turbine blades a year. That is a huge quantity of material that is currently going into landfill. Although the scale is not the same in the UK, we are reusing only about 6 per cent of the glass fibre from our wind turbine blades. We are looking into technology that could recover more of that and impart it with higher-value properties. Effectively, the fact that we are recycling those materials will give us an indigenous supply chain and let us have more control over the quantities and costs of the material.

None of that is going to happen overnight, but we can see the larger problem on the horizon, and we are trying to do something about it now.

Michelle Thomson: On that point, there have been a few mentions of innovation in supply chain materials that will help us to meet our net zero targets. I suspect that that kind of innovation is of great interest to the committee.

Staying on the issue of finances, we all appreciate how important innovation is. Do you anticipate access to finance for such innovation presenting any problems? Are you seeing that? Is it difficult to access the capital?

Professor Bomphray: It is. For a young company, we have been relatively successful, in that we are part of a £2 million investment in wind turbine blade recycling, but that was an Innovate UK smart grant. The challenge with the smart grants at the moment is that only around 2 per cent of applicants are being funded. A huge amount of effort goes into making an application, getting the consortium partners and so on. Companies are now seeing that approach as high risk and are tending to avoid those types of large grants, because they are not awarded at a rate that allows them to commit the necessary resources.

We would welcome anything that can be done to facilitate access to finance. As I said earlier, perhaps the funding process could be streamlined and made easier. Having a single point of access to funding would be hugely beneficial to SMEs all the way through to primes.

Michelle Thomson: That is very helpful. If there is any further information that you can provide to narrow down the topic in terms of the type of bids, it would be useful to have that. As someone who has made a UK finance bid, I appreciate what you have said.

Does Keith Ridgway or Iain Bomphray have any final points to make on investment and innovation finance before we move on? I am conscious of the time.

Professor Ridgway: I do not have anything to add about finance, but I think that the point about innovation with regard to materials is very valid. Steel will be a long-term problem. How we bring innovation or alternative materials to the steel industry is a really good area, including for Scotland.

Michelle Thomson: Does Iain Bomphray have any final comments before we move on?

Professor Bomphray: No, I think that Keith Ridgway has summed it up.

Jamie Halcro Johnston (Highlands and Islands) (Con): Good morning. My first question is directed at Nick Shields. We have covered the opportunities that exist to strengthen Scottish supply chains. What are public bodies doing to encourage inward investors to use Scottish supply chains for components and the like?

Nick Shields: From our perspective, a huge part of attracting inward investment is the infrastructure that we already have here. As you know, we have very active inward investment

colleagues in Scottish Development International. Building on what Professor Ridgway and Professor Bomphray said, in the past five years we have built a very attractive proposition across Scotland by developing technology centres, innovation centres, manufacturing institutes and places such as the Michelin Scotland Innovation Parc. We have built a very industry-focused and industry-facing support mechanism to assist businesses with materials selection technologies, processing, digital and automation. Over the past five to 10 years, an enormous effort has been made to build that attractive proposition. We can see that at Glasgow airport, with the advanced manufacturing innovation district Scotland.

That, coupled with our very active and highly successful inward investment team, has helped to ensure that, as you will all know, Scotland is second only to London in the UK in attracting inward investment. There has been a strong focus on the technology proposition and on net zero, through work on zero emissions vehicles and decarbonising heat. There has been a very collaborative cross-Government approach to that, which will, we hope, bear fruit for us, as Keith Ridgway and Iain Bomphray said.

I am so enthused to hear that people from NASA are now choosing to come and live in Scotland. If we are attracting that sort of talent at the seed end of the new technology, that can only be a great thing.

Jamie Halcro Johnston: Are there areas in which there are still gaps or in which more can still be done?

Nick Shields: We can always do more. We need to learn from what has happened in the past in areas such as renewables, but there is a huge opportunity to look at the north-east with regard to a just transition. We have not touched on the fantastic capability that those businesses have and how we can leverage that to the net zero future. The engineering skills, problem solvers and component manufacturers that revolve around the oil and gas market are fantastic. It is about how we can best utilise the amazing capability that they offer Scotland in order to drive the transition forward. We need to continue to explore how we can best use the fantastic skills and resources that we have in Scotland while looking towards the future industries. That is a journey that we will continue to be on.

Jamie Halcro Johnston: I represent the Highlands and Islands. We have touched on examples of manufacturing and business being done in some of the more remote parts of Scotland, but there are, obviously, still barriers. Starting with Professor Ridgway, will you outline some of the barriers to remote areas, particularly the Highlands and Islands—the islands specifically—being part of the supply chain? What opportunities are still there?

Professor Ridgway: Some very good things came out when one of the space companies went to Shetland and needed a part to be made. The company had gone to Europe for the part, but a local company stepped up and made the part within a matter of days. There are opportunities in the islands in that regard.

To go back to inward investment, I had a lot of experience of that when we attracted McLaren, Rolls-Royce and Boeing to invest in Sheffield. Inward investment is a very competitive market, and companies look for five things. Are skills that are appropriate for what they want readily available in the area? Is there space to build? Are buildings already there that they can move into fairly quickly? The availability of research and development support is also a factor. Is there financial support, so that the companies will have a soft landing? I do not think that we have that well organised at the moment.

When we dealt with Boeing in Glasgow, we did very well in bringing together a one Scotland team, which included the Scottish Government, Scottish Enterprise, the National Manufacturing Institute Scotland and Skills Development Scotland. I thought that that was very impressive, and it worked. However, when have dealt with other people, financial incentives have been missing. For a lot of those things, we are competing not only within Scotland and the UK but globally. We have been dealing with a company in relation to a satellite build, but it is going to Luxembourg because of tax incentives.

There are things that we can do to encourage people. Scotland is a very attractive place to live in, but it has transport difficulties that we need to address. We have to overcome those barriers by providing other things, such as access to research and better finance. It is difficult to find factory space to put a start-up or incubator company in, so spec buildings are very valuable. It comes down to putting that whole package together.

In Sheffield, we had a matrix of the help that would be given to companies over the years in the form of apprenticeships, research and development, and rent or rate rebates. In the bottom right-hand corner of the matrix, there was our value to the company, which was really impressive. Building that model is important.

Jamie Halcro Johnston: Does Professor Bomphray want to add to that?

Professor Bomphray: I will defer to Keith Ridgway, because he has summarised my views on that.

The Convener: I thank all the witnesses for sharing their experience and expertise. If they would like to do so, they should feel free to provide any supplementary evidence following this session.

Could we get some further evidence from Scottish Enterprise? We are interested in how many businesses the Scottish manufacturing advisory service supports annually and how its impact is monitored. We can send you a note to outline the further information that we are looking for, because it might be easier to provide that in writing rather than at committee this morning.

We will now move into private session.

11:00

Meeting continued in private until 11:54.

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