

Scottish Affairs Committee

Oral evidence: [Science and Scotland, HC 151](#)

Monday 20 November 2023

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Members present: Pete Wishart (Chair); Alan Brown; Wendy Chamberlain; David Duguid; Sally-Ann Hart; Douglas Ross.

Questions 67-170

Witnesses

[I](#): Professor Deb Roberts, Deputy Chief Executive and Director of Science, James Hutton Institute; Professor Alasdair Nisbet, Deputy Director, Moredun Research Institute; and Professor Nicholas J P Owens, Executive Director, Scottish Association of Marine Sciences.

[II](#): Professor Kim Graham, Provost at the University of Edinburgh; Professor Chris Pearce, Vice Principal for Research and Knowledge Exchange, University of Glasgow; Professor Lisanne Gibson, Vice-Principal (Research), University of Dundee; and Professor Tom Brown, Vice-Principal (Research, Collections and Innovation), University of St Andrews.

Examination of witnesses

Witnesses: Professor Deb Roberts, Professor Alasdair Nisbet and Professor Nicholas J P Owens.

Chair: Welcome to the Scottish Affairs Committee and our—I believe—second evidence session on science and Scotland. We are here to talk about the research institutes and universities. On our first panel we have a fine selection of professors from the independent research organisations across Scotland. Would you introduce yourselves, say where you are from and add anything by way of a short introductory statement? We will start with you, Professor Roberts.

Professor Roberts: Hello. My name is Deb Roberts, and I am from the James Hutton Institute, which is a research institute of about 550 people and 100 students based in Dundee and Aberdeen. I very much welcome—

Chair: Perthshire, you mean.

Professor Roberts: Perthshire—I'm sorry. It is great to be invited here to tell you a little about the work that we do, some of the issues that we face and some of the opportunities that we think we might bring.

Professor Nisbet: I am Alasdair Nisbet. I am the deputy director of the Moredun Research Institute, which is just outside Penicuik, south of Edinburgh. We have just over 100 scientific staff on the site. I have been there for about 20 years. I am very much looking forward to the discussion today.

Professor Owens: Hello everybody. I am Nicholas Owens. I am the executive director of the Scottish Association for Marine Science, otherwise known as SAMS, based in Oban. I am a marine scientist myself. We have 160 staff in Oban and, currently, 300-plus students. We are a partner of the University of the Highlands and Islands, but not legally part of it—we are a separate legal entity.

Q67 **Chair:** Thank you. You all represent independent research organisations, and it is great to have you all here collectively, possibly for the first time—who knows?

I will start with you, Professor Roberts. Would you explain to the Committee a bit about how your relationships with other academic institutions, with the university sector particularly, work? How is it decided who does what, and what singles the IROs out for specialisation? I know from my experience of regular visits to the Hutton that there is a strong relationship with the University of Dundee. Could you talk a little bit about that as an example? We are keen to discover just how these relationships work and what type of interface you have with each other.

Professor Roberts: All of us are from independent research organisations, but I think you will find that we are all a little bit different, and that is the thing about independent research organisations. I will let my colleagues speak for themselves, but I guess we all do long-term,



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sector-focused research, and that is what makes us a little bit different from the university sector.

We are looking at specific issues—in our case, food security, environmental security and water security. We have been doing that for many years, and we are a resource for underpinning national capacity. We curate special germplasm, look after datasets and have the national soils archive. It is that long-term sector focus that makes us different from the university sector. We do no teaching either—we are entirely research focused—but we work collaboratively and fit within the broader, very special Scottish research ecosystem. We have a very special role in that wider ecosystem, and we have very strong links with lots of universities. With Dundee, their plant sciences department is actually located on our campus, so there is very close working with that department. In fact, the offices are right next door to each other; you would not know who an institute member of staff was or who a university member of staff was. It is that—

Q68 Chair: Is that typical? Obviously the other gentlemen can speak for themselves, but is that what you would expect to see?

Professor Roberts: I do not think that is very typical—that degree of co-location—but certainly I suspect that we all have very strong links with the universities. We have about 100 PhD students who are accredited by universities across Scotland, the UK and internationally, so we do not have links with just one university; we have many links with universities. Because of our location, our strongest links, in our case, are with Dundee, St Andrews and Aberdeen, but we also have links with Edinburgh and actually all the Scottish universities.

Q69 Chair: Professor Owens, given that you are actually part of the University of the Highlands and Islands—you are pretty much located within it—how typical is that for IROs? How useful is that in terms of a relationship?

Professor Owens: Again, it is atypical, actually. We are linked with the University of the Highlands and Islands particularly through the undergraduate programme that we offer. Compared with our sister-type institutes in England, say, they would not be teaching undergraduates, whereas we offer a marine science degree as part of the University of the Highlands and Islands. That is pretty unusual for an independent research institute.

A bit like my colleagues here, we have PhD students, and they can be registered anywhere. Most of our PhD students are with UHI, but a lot of them can be with any university. That is dependent on the research collaborations that our staff members have with the wider academic community, so there is no restriction on who we can operate with.

Q70 Chair: Professor, please answer the question, because you have probably had time to think about it, but at the same time maybe you could help us a little. Do Government understand your distinctiveness as independent research organisations? For us, we are just finding out a lot about this, how it works and what your relationships are. Do we get it? Do we



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understand practically just how all this works for yourselves?

Professor Nisbet: I think, in common with my colleagues, that obviously we have very close relationships with universities. We are geographically located in the Midlothian science zone at Easter Bush, which has the highest concentration of livestock science in Europe, so that really fosters those sorts of relationships between us and universities. The vets go to the University of Edinburgh—to the Roslin Institute. We also have close links to the University of Glasgow.

As for whether Government get that we are different, I think that they do. What makes us distinct from universities is our stakeholders. The Moredun, for example, is owned by the Moredun Foundation, which has 11,000 members who are farmers and vets, mostly. They are very clear about what they want us to do, and the Scottish Government are very clear with us about what they want us to do in terms of science. I think they very much understand the nature of independent research organisations and the difference between them and universities.

Professor Owens: If I may add something, Chair, we are slightly different. I would venture to suggest that I do not think Government—neither the Scottish Government nor the UK Government—actually get us in that sense. One of the things that I have been spending quite a lot of my time doing since becoming the director there about eight years ago is trying to promote what a national asset we are as an independent organisation. We have been in place since the late 1880s. Certainly when I have hosted Ministers and Members of Parliament from both Governments, without exception they leave saying, “I had no idea of A—what you do—and B—what value you bring.” Currently, all our funding must be competitively fought for. In that sense, we are frankly very much like a university department.

We have already heard that one of the distinctive aspects of a research institute is the ability to do long-term studies. That is not what university departments are set up to do; it is absolutely what independent institutes are meant to do. The ability to obtain the funding for those long-term studies that you cannot do anywhere else is the biggest challenge that all of us face.

Q71 **Chair:** I am wondering what Scotland in particular brings to the table when it comes to independent research organisations. Obviously I am familiar with the work of Hutton, given that it is in my constituency, and the work you do on potatoes and barley in particular. Is there anything distinctive we do that you could point to as being Scottish about our research that you would like to tell the Committee about today?

Professor Owens: *indicated assent.*

Chair: I can see Professor Owens is getting excited about that.

Professor Owens: Yes, it is a bit of a hobby-horse of mine. I think there is something genuine to be said about the fact that the Scottish enlightenment occurred and—I genuinely believe—that we still benefit



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from it in Scotland in a way that we do not see elsewhere. I have been a director of institutes in England as well, and there is a distinct difference in the culture of the Scottish institutes.

Q72 Chair: Any reference to the enlightenment cannot pass without comment. Professor Roberts, I know that there is going to be some sort of mark from the Hutton Institute for at least 200 years of the enlightenment. What makes Scottish research distinctive? What will we find in Scotland that we might not find in the rest of the UK or like-sized European neighbours?

Professor Roberts: For the James Hutton Institute, there is a clear answer, because we are looking at natural resources and Scotland has a very unique set of natural resources, which means that we can do research on those natural resources and try to maximise their benefits—renewable energy, soil, landscape, farming infrastructure. What we are looking at is different from the rest of the UK, which is why we need it. Although it has international relevance, it is useful to have a Scottish institute looking at them.

On the James Hutton link and the obvious segue there, at the research institute level we have the benefits of doing interdisciplinary work that looks across issues with a more holistic, systems-type approach. My colleagues may put me right, but within universities there are sometimes institutional structures that make interdisciplinary working difficult. Because of our size, we can have teams, with our social scientists working closely with our natural scientists and coming up with not just technical solutions, but social solutions that show how those technical solutions will be adopted by farmers, for example. Again, there are Scottish dimensions to those behavioural issues as well, which are important.

Chair: Anything brief to add to that?

Professor Nisbet: I completely agree with everything that has been said. From a livestock point of view, clearly Scotland is very different and so the research that we do is necessarily different and often focused on the livestock sector in Scotland, to deliver solutions and tools for that sector. The research that we perform is therefore very strategic in its local application. The research is often into global issues, but it is about local application. That makes Scottish IROs very distinctive. We work on the endemic disease of livestock, which is unusual. There is a focus on endemic disease.

Q73 Chair: Lastly from me, I think this came up in the evidence, but what about support for a UK Government mapping consultation to understand the Scottish research landscape better? I see Professor Roberts nodding, so I will take comfort from that. Is that something the Hutton Institute would find helpful? Why should the Committee look at that?

Professor Roberts: I think that would be an excellent idea. Sometimes, the institutes go under the radar somewhat, just because of our size. Making it clear how we fit between, say, the public sector research

establishments and the UKRI-funded institutes, and showing the distinctions between them, would be very useful.

I have just realised that I should have said something earlier about relationships: the other thing that the independent research organisations do in Scotland is to work closely with one another. The Moredun and the Hutton jointly deliver—with others as well—the Scottish strategic research programme. That is another unique set of relationships within Scotland that goes ahead to deliver a programme of research, which is much more than the sum of the projects within that programme. It is not just a set of individual projects; it is more of an added-value, holistic thing. That is a key relationship, and that mapping exercise could show those links as well.

Q74 **Chair:** I am presuming that it is taken as said that you agree with the idea of the mapping consultation.

Professor Nisbet: To be honest, I think that the mapping consultation is essential to understanding the landscape and some of the unique facilities that these IROs have, and where that fits into the UK picture as a whole. If we are serious about a levelling-up agenda, then that sort of exercise is absolutely essential.

Q75 **Douglas Ross:** I apologise to the witnesses and to the Committee: you mentioned levelling up and, on that, I have to be in the Chamber very shortly, because my constituency got £18.2 million today, so I will go along and welcome that for Moray.

Can I start with you, Professor Nisbet? This is on Moredun. You have excellent people working there, including a former colleague of mine, John Scott, who has extensive knowledge in Scottish politics, but also in farming. I think that is the type of person that really shows that you have very positive outcomes and that you focus on both the political and scientific side of things for farmers and crofters. I was interested when you said it is unusual for the focus to be on endemic diseases. Why is that unusual, and why do you do it?

Professor Nisbet: Endemic diseases are extremely important to production in Scotland and throughout the world, because they are the diseases that farmers and their livestock live with—day in, day out—and are often the ones that are very hard to really address.

I am not saying that it is easy to address other types of disease. For example, in other research institutes in the UK, there is a lot of focus on exotic disease—disease that is coming into the country to form epidemics in the country. That is very important as well, but for us to actually get to the levels of efficiency, welfare and health within our livestock to meet things like net zero targets, biodiversity targets and food security targets, focusing on endemic disease is very important.

Q76 **Douglas Ross:** You are talking about BVD, Johne's disease and suchlike.

Professor Nisbet: Absolutely.



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Q77 **Douglas Ross:** This is not meant to be a criticism, but how successful has that been, given that we still have a significant problem with them?

Professor Nisbet: I think things like the BVD campaign have been extremely successful. That campaign has been a real success. Scotland has really focused on the eradication of BVD; we are going into one of the final stages of the BVD campaign, and that has driven disease levels down hugely.

Douglas Ross: Unless we have closed herds, there will still be BVD coming into Scotland, so that is where I mean more in success.

Professor Nisbet: Clearly, you have to maintain surveillance and you have to rely on your neighbours and others to instate their own eradication campaigns to allow that to be successful at a local scale.

Q78 **Douglas Ross:** Professor Owens, can I move to you? I was looking at the Scottish Association of Marine Science, and I saw that you also have an offshoot: SAMS Enterprise.

Professor Owens: That is correct, yes.

Q79 **Douglas Ross:** And you are involved in that as well?

Professor Owens: I am the chief executive of that as well.

Q80 **Douglas Ross:** That is excellent, because I notice that, in particular, SAMS Enterprise specialises in providing scientific monitoring services to the renewable energy industry.

Professor Owens: That is correct, yes.

Q81 **Douglas Ross:** The Committee discussed in its private session—and that will become public—a response that we received from the Scottish Government about a misleading claim regarding Scotland's renewable energy potential. For example, Michael Matheson, the current Cabinet Secretary for Health in Scotland—formerly the Cabinet Secretary for transport and net zero—said, in August 2021, that Scotland had 60% of the UK's offshore wind capacity and 25% of Europe's wind resource. I think that the latter figure has been confirmed to be completely accurate, but that the former figure is actually closer to 8% than 60%. How difficult is it, when Government Ministers use statistics like that that are proven to be inaccurate? What role do you play in highlighting or correcting some of these figures, if they are used repeatedly and erroneously?

Professor Owens: To carry out all the work that we do in both SAMS and SAMS Enterprise—which are essentially and competitively one—we would, in the first place, have to be able to prove that we were capable of answering the correct questions. Our institute is not involved in wind generation or power generation itself; our role is in the environmental consequences of that and the impact that such wind structures might have on the environment. We do not have any expertise on the physical side of how much power generation might be possible.

Q82 **Douglas Ross:** I think, for example, that those figures have been shown



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to be completely wrong, saying that Scotland had 60% of the UK's wind capacity—that was tweeted in August 2021—but it was actually closer to 8%. The 25% of Europe's wind resource—even the Scottish Government have now had to accept that that was completely wrong. Given the generality of those figures being used, how difficult does it make it for you and others within the sector when wrong statistics are used repeatedly, and how important is it for the truth to come to the fore with these deliberations?

Professor Owens: It is absolutely vital that such things have to be absolutely accurate, and that is our primary mission. As far as we can physically do this, we seek absolutely accurate results, irrespective of what they might be. A good example of that would be that if we were commissioned to do a piece of work for either a commercial organisation or a Government body, for instance, and the results that we produced were disliked, that would make no difference, as we would publish them all the same. We can do the best that we can and, as long as we are accurate, we will absolutely publish them, irrespective of who our paymasters are. Accuracy is absolutely essential.

Douglas Ross: Thank you and apologies again: I have to leave early, but I will look at the transcript of this meeting. I am sure the evidence will be fascinating going forward.

Q83 **Wendy Chamberlain:** Thanks to our witnesses for being here today. I have a broad question first: for each of you, where does your funding primarily come from in broad terms, and how adequate do you feel it is? I am sure I can anticipate the answer to that. How stable is it? That is clearly very important for the ongoing viability of your institutes. Let us start with you, Professor Nisbet.

Professor Nisbet: At the Moredun, just less than 50% of our scientific research funding comes from the Scottish Government, and the remainder is what we refer to as external funding. Twenty per cent of our external funding comes from the European Union, 25% from UKRI, and about 15% from commercial sponsors and private research contracts. The rest comes from competitive research contracts. We have a model at the Moredun where we have two companies from the Moredun Foundation who feed gift aid back into the research institute, which is very welcome. In terms of stability, Scottish Government funding has been at a flat level for at least a decade, which means that, in real terms, that is going down.

Q84 **Wendy Chamberlain:** Has the announcement of £35 million-worth of cuts had an impact on you as well for the FE/HE sector?

Professor Nisbet: We had cuts last year in the scientific budget. We do not know what is coming yet this year, so that leads to some instability. We may come to this later, but, through UKRI funding, Hutton and Moredun do not receive 100% full economic costings, so they have to be found from elsewhere. Often, they are found from the gift aid donations from our profits from our other companies. That has a level of instability in it as well, because there is a level of uncertainty as to what those profit levels might be.

Q85 Wendy Chamberlain: You mentioned EU funding. Will the return of Horizon be of benefit to you?

Professor Nisbet: It will be a huge benefit to us. Actually, I think both Hutton and Moredun have done extremely well during the period since Brexit in terms of maintaining our relationships with our European partners and maintaining our funding levels. But they certainly have gone down and, funding-wise, the return to Horizon Europe is fantastic news. We look forward to the opportunities.

Q86 Wendy Chamberlain: In terms of your spin-offs, it sounds like that is one of the places where you actually have an opportunity to have control of your own destiny in some regards, and Horizon should present that same option.

Professor Nisbet: To some extent. One of the spin-offs is a contract research organisation, so we are very much in the hands of what commercial companies want to put through that.

Q87 Wendy Chamberlain: Given the mention of James Hutton, can I come to you next, Professor Roberts?

Professor Roberts: Roughly 60% of our funding comes from the Scottish Government and 25% comes from competitively won grants—that is UKRI, the EU and charities, none of which pay full economic costings; it is certainly an issue with UKRI, but also with all of them. About 10%—we are slightly less than Moredun—comes from our commercial arm and 5% from various other situations, like rental income or philanthropic sources.

For us, a major issue is the lack of full economic costing for our competitively won grants. We do not get research excellence grant income, which the universities get and which provides their core, underpinning funding. The dual support model that UKRI runs does not really work for us, so we are forced to make up that shortfall by lots of other means, including our commercial arm.

On EU funding, we are absolutely delighted to be back in Horizon Europe. The institute was the fourth most successful in our particular areas of expertise, so it is really important for us, not just for money but because science is international. That really helps us to spread the Scottish influence and to understand and put our research in a wider context. Scientifically, it is really important.

Q88 Wendy Chamberlain: Is it challenging to have greater than 50% or 60% coming from one income source, so that if there is flatlining, you have to make up the difference?

Professor Roberts: Yes. There is a pressure to diversify as much as we can. We only became eligible for UKRI in 2019—prior to that, we were not even eligible to compete for that source of funding. It has become of equal importance to us as EU funding, and it is very important for the type of science that is funded through UKRI. I am probably not explaining this very well, but it is not always just about how much money there is; it is about the mix.



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Q89 **Wendy Chamberlain:** I know that Alan Brown has questions on UKRI. To have a bit of clarity, you became eligible in 2019. Is that the case for other research institutes in the UK? Did they become eligible only at that point?

Professor Roberts: No. We each had to apply independently to become eligible. At that point, we were allowed to bid; prior to that, we were not allowed to do so.

Q90 **Wendy Chamberlain:** I think you, Professor Owens, mentioned the Scottish enlightenment and the uniqueness of the institutes here. Is that one of the challenges of UKRI funding?

Professor Owens: Yes. Our split is not too dissimilar from that of my colleagues here: about 70% is competitively won funding. Unlike my colleagues, we get no money from the Scottish Government at all. If we do get any, it is competitively bid for. Unlike my colleagues, because of our relationship with UHI—although, as I mentioned, it is a complex one and we are not legally a part of it—we benefit from the REG funding. We get about £1 million a year. About 10% of our money comes from the REG funding, which is a great help, and 15% or thereabouts is our commercial income.

Q91 **Wendy Chamberlain:** There is actually quite a different funding landscape for all of you here representing the different institutes.

Professor Owens: Yes, very much so.

Q92 **Wendy Chamberlain:** Is there anything that would help? More money would be great, but if there was one place where more funding would have the most direct impact on your work, where would that be, Professor Owens?

Professor Owens: I think it would be the ability to do serious, valuable, long-term study. I will give you an example of the absence of that. Around Scotland, there is really only one serious station to measure sea level rises—that is just one example. For toxic algal blooms and things like that, the ability to get knowledge of how all those things work relies absolutely on long-term studies. It is the absence of that.

Before I leave, I have to get in this statistic, which I think the Committee will be interested in: 60% of the UK's EEZ is Scottish, because of the impact of the EEZ that is part of Scotland's marine waters. The ability to know what is going on in that huge area is fundamental for readiness and preparedness for climate change. There are arguments to say that there will be larger impacts on Scotland than other parts of the UK. For things like that, the ability to focus on long-term studies is important.

Q93 **Wendy Chamberlain:** That work is definitely becoming more critical. In North East Fife, we have had real impacts post Storm Babet from sea surges. Visibly, the impact is on the coastline, but from speaking to the fishermen who fish out there, I know that they have lost creels. Stock has literally gone because of what has happened under the water, which is less visible, so it is very important. Professor Nisbet, what one funding



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stream would benefit the Moredun?

Professor Nisbet: I agree very much that long-term funding is essential. From Moredun's perspective, funding capital expenditure and infrastructure is key to our success. It keeps us at the forefront of having the facilities to perform the unique work that we do.

At Moredun, we have a high-security unit where we can perform experiments with pathogens, viruses and bacteria that require very high levels of containment. That is unique in Scotland, and there are only five of them in the UK. We really saw the value of that during the pandemic, for example, when the unit was under a huge amount of pressure. It was extremely hard-worked, with academic colleagues wanting to come to use it and ourselves using it.

However, a facility like that takes a lot of expenditure—a lot of money to maintain it but also to improve it. We have been fortunate this year to receive some funding from the Department for Business, Energy and Industrial Strategy to upgrade that facility, but the quantity of money required is much more than that. For me, therefore, it is about capital expenditure and infrastructure.

Q94 **Wendy Chamberlain:** Professor Roberts, I will come to you with my last question. I understand that the James Hutton Institute has benefitted from the Tay cities deal, but part of the challenge is that you get funding for capital projects but not necessarily the accompanying revenue. Is that a challenge for you?

Professor Roberts: Yes, absolutely. I was going to say that that was one of my three asks.

Wendy Chamberlain: Give me your other two, then.

Professor Roberts: That funding has been absolutely, amazingly important for the James Hutton Institute, because we do not get capital funding from other sources. It has been absolutely wonderful, but it is capital only, so if there were some way of getting some revenue funding alongside that, we would be able to hit the ground running a bit faster. It would make sure that the impact of that funding would occur even faster. That would be one of my asks.

Going back to full economic costing, if we could get 100% full economic costing from UKRI grants, it would make a massive difference. It would mean that we could carry on applying. At the moment, it is limiting our opportunity to get that sort of funding, because we are losing money when we gain it.

I also wanted to back up the long-term funding point. The best way to get an agile research ecosystem is to fund long term. You could see that in the covid situation: we were ready to respond. BioSS, which is also employed by the Hutton Institute, was able to respond and support the covid response. This is a long time ago, but when Chernobyl happened, you had long-term resources there that could actually see what the implications of



that fallout were and how to manage it from a food system perspective. And when the Ukraine war happened, we were there; we have the understanding of the infrastructure and the food system, so we could respond and support the Scottish Government in that context. It is about having capacity. Long-term funding is just a really good way of going.

Wendy Chamberlain: That comes back to my initial question, which was about adequacy, but stability is clearly critical as well.

- Q95 **Alan Brown:** I will pick up some of the funding issues that Wendy touched upon, but before I come to that, we have already had some discussion about the UK Government and Scottish Government's understanding of the role of IROs. Does UKRI have a good understanding of the Scottish research landscape and the role that each of you has in it? I will start with you, Professor Roberts.

Professor Roberts: I think I mentioned earlier that UKRI funding is very important because it funds fundamental research, which is really important to the institute. It also has cross-council calls, and they tend to be on themes that are very aligned with our interests. A recent one has been the land use for net zero call that UKRI put out, which focuses on soil health, agricultural systems and land use change. These issues are very well aligned with the needs of research in Scotland. So, in some sense, yes—in terms of the funding areas and the nature of funding that is provided—

- Q96 **Alan Brown:** Does that come as a coincidence or an opportunity rather than from their full understanding of the Scottish research landscape?

Professor Roberts: It is a good question. What I would say is that quite a lot of our colleagues are on UKRI panels and we help shape the bids, so there is a degree of collaboration. Land use for net zero was very focused on the devolved Administrations and it was explicit about recognising that. UKRI is very good at visiting the institute; we have a good relationship with it. It is not that there is a bad relationship—it just goes back to the funding issue. I think sometimes it does not understand the extent to which institutes like ourselves cannot get capital from other sources. Things like the Tay cities regional deal are therefore really important to us.

UKRI has some schemes that exclude independent research organisations from bidding. The UK research partnership investment fund is only open to universities; it is not open to IROs. So it might be that it does not quite understand the extent to which we are not eligible for certain types of funding and, as a result, you could argue that there is a misunderstanding of the landscape there.

- Q97 **Alan Brown:** You said that UKRI is very good at engaging in terms of visits. If it is very good at visiting, meeting you and having dialogue, how come there is still that disconnect of it not understanding your funding requirements and the obstacles that are put in your way?

Professor Roberts: It is a very complicated landscape. UKRI has its own institutes with which it has a different funding relationship. It is just that

some of us—us two; Hutton and Moredun—do not have parent research councils, which is where it becomes a bit complicated. It is probably about just how diverse the landscape is. That is where that mapping exercise would be really useful to clarify exactly where everyone stands, who is eligible for what and so forth.

Q98 **Alan Brown:** Professor Nisbet, do you want to add anything?

Professor Nisbet: I think that was a very clear explanation. UKRI is very good at engaging with us to understand what an IRO is. We have had visits from the animal health and welfare funders forum, which has very high-level people from the scientific strategy side of things in UKRI, to discuss what their scientific strategy is. Is it for funding in terms of funding areas and cross-council calls? However, those are not the same people who are setting budgets and saying, “Okay, there is this funding shortfall. What do we do about it?” Perhaps there is a disconnect there: the people who are speaking to us about scientific strategy are not necessarily the right people to be speaking to about the financial and fiscal strategy.

Professor Owens: We have an interesting little twist: I mentioned that we go back to the 1880s, but for a period of time from perhaps the ‘60s through to the ‘80s or so, we were formerly fully funded, effectively, by what is now the Natural Environment Research Council—one of the UKRI councils. So for a period of time, we were a research council institute, and we have now reverted back, so our relationship with a host research council is generally pretty good.

What has now happened, however, is that we have evolved, so if there is any lack of clarity, the research councils and others do not really realise how we might have evolved and what the complicated landscape now looks like. I would certainly say that that is not a function of devolution in any way; it is just as though a child, if you like, has gone off and evolved in a different way. Generally, we have a pretty good relationship and understanding, but I think understanding could always be improved.

Q99 **Alan Brown:** I have picked up from some of the background notes that there was a UK Government-commissioned independent review of UKRI funding last year, and they noticed that the 80%:20% policy disadvantaged IROs. In 2021, Sir John Kingman, the outgoing UKRI chair, also noted the difficulty in bridging the gap for IROs. It seems to be a known issue. You have each highlighted 80:20 as an issue for stability going forward. Is there any understanding of why there seems to have been no movement by UKRI to open up 100% funding?

Professor Nisbet: I don’t know why that should be, to be honest.

Professor Owens: This is an issue that has been going on for years. It isn’t a recent thing at all, and it applies equally to us as well. We would be bankrupt if we were purely funded by UKRI grants; we could not survive at all on them. It is not a new feature, and why it still exists, I don’t know. I remember a very erudite piece given by a former Minister, David Willetts, who has written extensively on 80:20 funding and how it is stifling research. To be honest, it is as relevant for the universities as it is for us.

Alan Brown: If it is stifling research, UKRI is presumably not getting its desired outcomes in some areas.

Professor Owens: Indeed.

Q100 **Alan Brown:** To quickly finish off, can I ask each of you in turn whether you can quantify just what that 80:20 means in the long run by potentially limiting capacity to make bids, because you can't get the funder to open up—you cannot get access that 20% to make it a viable bid—and also say what that means for long-term financial stability?

Professor Roberts: I am not going to be able to quantify it, but I can give a narrative to it. It would mean that we wouldn't go for certain types of projects, which in the longer run might undermine our translational pipeline. That is where we do different types of research all the way along the research pipeline, from very fundamental, right through to industry-related and policy-related. UKRI plays a very important role within that pipeline. If we were to stop doing that, I think it would threaten our whole approach to doing research.

It would perhaps mean that you were not getting the best people doing particular grants. If you are not getting everybody competing, you are not necessarily getting the best people doing research projects. The main thing is that it would also send a signal. UKRI is a very well-respected funding source, and if we stop doing that, it might threaten the way we are recognised more broadly within the research infrastructure.

Q101 **Alan Brown:** Potential reputational and access issues?

Professor Roberts: Yes.

Q102 **Alan Brown:** Professor Nisbet, anything to add?

Professor Nisbet: I would echo that. UKRI grants are an extremely good way for particularly early-career researchers to come into institutes like ours, and for us to have the external funding to do work that we perhaps would not have done. We have very good scientists who are able to write competitive grants to bring new blood into the institute and allow early-career researchers to establish their careers in the IROs. That is really the lifeblood of our type of institution. We would be very reluctant to start to ask people not to write those grants on the basis of a financial decision, but it does affect the balance of funding that we are able to ask people to go for.

UKRI is 80:20, and some of the other funding councils are even worse than that, so we have actively asked people not to submit particular grants to particular funders in a certain year, because we could not afford to make up the full economic cost.

Professor Owens: We are in a very similar situation. The most tragic thing to do, particularly to an early-career scientist, is to say, "We can't afford for you to do that". The UKRI—and similar types of funding—is the gold standard for the research. If you really want to create new assets and new knowledge, that is where it is done. It creates behaviours and the



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type of organisation that you create in order to enable the institute to go for the UKRI money, because that is where you can get the blue skies research done. So you do all sorts of things that you might not prefer to do, in order to support the gold standard, blue skies research—without which, we would have nothing, really.

Q103 Chair: I am having a quick look at the board of UKRI. I note that it is chaired by the distinguished Professor Ian Boyd, who is a professor at the University of St Andrews. Obviously, there is Scottish representation on—

Professor Owens: Oh yes indeed.

Chair: I am presuming that this is easily accessed, and that you have ongoing conversations about your issues. Could you give a flavour of how these go? If this is an ongoing—I wouldn't say "dispute", but if this is a concern you have about 80:20, is it easy to make those representations to the board?

Professor Owens: There is certainly no hindrance to our making our views known, but as I mentioned, this has been going on for decades, actually. Why we have been unable to get through, I don't know. It is not unique to the current set of institutions.

Q104 Chair: Usually at this Committee we go through the membership of august bodies such as UKRI and find that there is no Scottish membership, but there is in this one, which is great—it is good that that has been acknowledged and accepted.

Professor Owens: Indeed, and I am pleased to say that Ian Boyd is a good colleague and friend of mine, and a marine scientist, so I have had plenty of opportunity to communicate with him.

Q105 Sally-Ann Hart: Sorry I was late joining this afternoon. I want to look a bit at private investment. We know that private investment is vital, because it seeds innovation and new discoveries that transform our economy. It builds new industries, increases productivity and enhances our competitiveness in the global economy. How much collaboration does your organisation undertake with the private sector, either financially or through shared resources?

Professor Roberts: I would say an increasing amount, and that is partly related to some of the things I have spoken about previously. Two really two good examples in particular are the innovation hubs that we recently started: the International Barley Hub and the Advanced Plant Growth Centre—we are hoping to start the potato innovation hub. Both innovation hubs have been supported through the Tay Cities region deal. They are very much about working with the private sector and trying to ensure that we are doing work that is needed and that has high levels of impact, and they have managed to get together people from across the whole sector. The barley innovation centre, for example, has people from the whole barley industry—people who do not usually talk to each other, because they are competing, and people at different stages in the barley chain and the whiskey chain, all together around the table at the same time, discussing the issues that are important to the sector.



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That is helping to stimulate a great deal more activity in relation to private links. A really good example is that we have won £3.1 million of funding—this is UKRI funding, which is great—for 30 new PhD students, each of whom has an industrial sponsor who is putting money into the PhD programme. That will have a seismic impact on the capacity and understanding in that field, so it is really positive and will help to consolidate our links with the private sector.

Private sector funding is very exciting and can have a really big impact, and it has been very good for our scientists to be more exposed to the private sector—it has changed the way we have worked a bit. But it is very risky and very short term, and it can suddenly stop, so it has downsides as well as upsides. The best thing is to have a mix of public and private sector funding, as our innovation hubs are trying to achieve. That mix is important.

Q106 **Sally-Ann Hart:** De-risking from the public sector?

Professor Roberts: It is both de-risking each other a bit, actually.

Q107 **Sally-Ann Hart:** Professor Nisbet?

Professor Nisbet: I mentioned earlier that about 15% of our funding comes directly from commercial partners. One of the unique things about IROs is that what we do is not really often about describing a problem; it is about finding solutions to a problem. That brings us very close to the private sector, because they want the solutions that we are producing, so that they can make them into commercial products. Very often, our pipeline for a number of projects is to get them to a certain point, and then we license them to partners.

As well as direct funding from commercial partners, there are other mechanisms to leverage funding. Industrial partnership awards through UKRI are a very important tool—this is a mechanism through which a commercial partner can put 10% cash into a project, which de-risks it for them. Often, those are quite early-stage projects. As we move along the pipeline we think about Innovate UK funding and partnerships with commercial partners. That is an area that we have not been able to exploit very well in the livestock sector—only 0.1% of our overall external funding comes from Innovate UK, which is very low.

I agree entirely that external funding is fantastic and is often exciting—real cutting-edge stuff. One potential downside of commercial funding is that independent research organisations have a reputation as being honest brokers. We do not represent drug companies. We do not recommend certain products—we do not recommend any product. We maybe give advice, but we may be at risk of losing that honest broker status if we are seen to be sponsored by a large pharmaceutical company, for example. That could be a reputational risk.

Professor Owens: That last point is interesting. One thing that we have to be very careful of is being seen to be in the pay of a particular sector. That is something that we pay particular attention to. The way we think of



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our research in SAMS is very much on a continuum, from blue skies at one end to really hard problem-solving research at the other. The commercial sponsors tend to accumulate towards the applied end of our continuum. There have been some very helpful schemes over the years. For instance, the innovation centres that were funded by the Scottish Government have been extremely helpful. We have built up a number of relationships with commercial companies there. They sponsor students. They often fully fund research, or 50% of it.

Certainly in the marine science community that we work in, we are developing quite a community of really helpful relationships with the commercial world, but we have to then, as we have just mentioned, be careful to be seen not to be in the pay of these organisations.

Q108 Sally-Ann Hart: You do a lot of marine science. We have ocean-based and nature-based solutions to climate change. The potential is huge, isn't it?

Professor Owens: Yes, it is. It is a fascinating time in marine science at the moment. There is a lot of attention paid to nature-based solutions. It is difficult to open a newspaper these days without seeing something about seaweed, for instance—but do not believe many of the facts that you read. If I may offer advice to such worthies, the whole notion of carbon trading with some of these seaweed things is on very shaky scientific ground. But you are right: there is a whole raft of organisations that are really building up here. One of our roles—part of our mission, really—is to do valuable research. We generate the knowledge in the first place through the blue skies work, but then deploy it in valuable ways.

Q109 Sally-Ann Hart: Just picking up on that, the Government has a role to play in incentivising the private sector investment. Turning to you first, Professor Owens, how can the Government do it? You mentioned carbon credits. We need to encourage the private sector to invest in nature and climate change innovation, and all that sort of thing. We obviously need a facilitating regulatory environment to encourage that. Would you say that was the case? Do we need other things as well?

Professor Owens: Gosh, that is a very big question. I am not sure about the regulation. A very specific example, something that we have been working on for quite some time, is developing the right sorts of codes. They are not necessarily regulatory bodies as such, but they are recognised and established with a good basis in science—a code of practice that is then peer reviewed. It is the same sort of process that one might go through when publishing a paper in an academic journal. You do your research, you write this thing up and it is peer reviewed robustly. Rather than the outcome being an academic paper, you would have a code of conduct or a code of application in carbon sequestration of seaweed, for example. I do not think anybody would really favour the notion of creating establishments and regulation in that sense, but certainly something that has been rigorously and scientifically reviewed is what is really needed.

Q110 Sally-Ann Hart: I chair the all-party parliamentary group for the ocean,



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and we are doing a current inquiry on the future of ocean-based technologies, which is quite interesting.

Professor Owens: How interesting. I would definitely be interested; I have in fact toyed with the idea of creating a parallel committee in the Scottish Parliament.

Sally-Ann Hart: Oh, really? Well, there you go—brilliant.

Chair: Make sure that Sally-Ann is invited along for advice.

Professor Owens: We will exchange emails, if I may.

Sally-Ann Hart: Yes, of course.

Professor Owens: Thank you.

Q111 **Sally-Ann Hart:** Professor Nisbet, how would Government incentivisation for the private sector happen for your organisation?

Professor Nisbet: I would actually give a very good example of how that has happened in the past. There was a scheme called the Genomia scheme, which was partly funded by public sector research and establishment funding, but it was also co-funded by the European Regional Development Fund, which was a funding scheme specifically for IROs. It allowed the translation of scientific ideas into commercial products and really bridged the valley of death between the two. It was a scheme that worked very well, and there was funding at various different levels. As I say, I think it ran for at least a decade. It has now been wound up, but that funding scheme was an extremely good way to engage scientists and industry together and say, "We can have individual projects up to £250,000 to bring your idea to commercial fruition and bring in the commercial partners at the same time." That was a very good way of doing it.

Q112 **Sally-Ann Hart:** Professor Roberts?

Professor Roberts: I do not have much to add, except that the Genomia scheme was good. Innovate UK was mentioned, which is a very good scheme for getting private sector investment involved. The last thing I was going to mention was another plug for, if we want high-integrity carbon markets, needing the science that underpins it. It is again for the long-term value of science.

Sally-Ann Hart: You cannot do it without a science base.

Professor Roberts: No.

Q113 **David Duguid:** Apologies also from me for not being here at the start of the session. Just to give you a bit of background, I was in Ministry of Defence questions, and I was asking a very similar question to what I am about to ask. With defence obviously being reserved to this Parliament, the question was specifically about the skills that we need to feed into that industry. I find myself asking this question quite a lot lately, whether it is the energy sector or space—it came up in one of our other inquiries,



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into space. It goes back a little bit to Alan Brown's questions about UKRI. UKRI is a UK-wide initiative—or body, or however you want to describe it—but there does seem to be this interesting breakdown when it crosses the border. I am not having a political pop, although it might be tempting to think that I am. Because of education, skills and universities being devolved—not just in Scotland, but also in Wales and Northern Ireland—how much of that possibly creates a gap not just from the point of view of the devolved Administration, but also from the UK Government who say, "Okay, fine. That's devolved. We don't have to fill that space." Are you aware of such a gap? Ultimately, is there anything we can do or we can recommend to the UK Government to help to resolve that? Anyone?

Professor Owens: I will make a start, if I may. Personally, I cannot say that I have experienced any of that gap, certainly not in my time in Scotland—I have been in my current role for eight years. I can honestly say that I have not experienced anything of that nature.

Professor Nisbet: Is your question about a skills gap because of the differences in—

Q114 **David Duguid:** It is more about a policy approach, not so much a gap in the skills—although I am happy to talk about that as well. It is more about the fact that, when we have something that is supposed to be covered UK wide, but there is a devolved aspect to it, sometimes we will see a gap forming between the Scottish Government and the UK Government—not for political reasons, but just because there is maybe a misunderstanding of who is doing what, and so a gap appears. I was just wondering if that is something you have come across in scientific research in Scotland.

Professor Nisbet: It is not something I have really experienced. What we do for the Scottish Government in terms of our scientific research is very strategic in nature, and we feed into the policy questions that policy colleagues in the Scottish Government have. That may make the type of research that we do slightly different from what we would do, for example, through UK Research and Innovation funding, but I am not sure that that is because of any devolved question; it is just about different stakeholders.

Professor Roberts: I was just going to make the point that there will be independent research organisations in other parts of the UK that are in the same position as we are. In that sense, it isn't a devolved issue. It is more of an incredibly complicated legacy historical issue that has not been corrected.

Q115 **David Duguid:** A question was touched upon about getting educated people in Scotland into research. Is there anything that we should be looking at to promote that process, or helping and encouraging people to get into more scientific research-type roles? The answer is going to be yes.

Professor Owens: Generally speaking, we have no difficulty in recruiting scientists, with the exception that sometimes our remote location is a



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hindrance. In terms of our reputation and the ability to carry out the science and so on, we have not experienced that as an issue. It is our remote location where we fall down; if we have a recruitment issue, that's where it's at, frankly.

Professor Roberts: I know that it was raised in the previous session, but there is an issue about the cost of visas for staff and students. That is an issue in terms of recruitment that we have faced at the James Hutton Institute, for sure. That is a disincentive, which is making it harder to recruit in certain areas of science. In some areas, we can recruit within the UK quite easily; in others, we do need to go internationally and that is a barrier.

Q116 **David Duguid:** A similar answer from yourself, Professor Nisbet?

Professor Nisbet: Yes. Obviously the post-Brexit issues with recruiting have been very clear to us. A lot of staff who I am trying to recruit from Europe have also been fairly clear about that. In terms of our homegrown talent, it is still very strong. STEM is really important for students in Scotland, so homegrown talent is not so much of an issue. However, to form good, cohesive teams, we all rely on international collaborations, and being able to attract the best international scientists in the post-Brexit period has been difficult.

Q117 **David Duguid:** Does Horizon help with that at all?

Professor Nisbet: I hope it will.

Q118 **Chair:** Finally from me, one thing that we have not touched on is other international collaborations. We have heard a little bit about Horizon, and Mr Duguid just brought it up again, but are there other international bodies that you work with? Obviously, I am more familiar with the James Hutton Institute's work and some of the international workers and workforce there come from all over the world. Could you give us a sense of some of your other international working collaborations? I know more about Hutton, so I will come to you with that one, Professor Nesbit.

Professor Nisbet: Certainly within the livestock sector, a lot of what we do is about endemic disease. The endemic diseases in the livestock sector—in sheep and cattle—in temperate areas of the world are very similar, so recently we have had great success in leveraging funding from Meat & Livestock Australia, which is a red meat levy board in Australia. We used Scottish Government research and funding to leverage that funding from Meat & Livestock Australia.

We work with colleagues from Australia and New Zealand, but we also find that, with a lot of the technologies that we use—a lot of our outputs are vaccines, diagnostics and animal disease control programmes—the practicalities of how you deliver those are common to a number of different diseases. We therefore have very strong links to sub-Saharan Africa and the control of infectious diseases in cattle, for example, there. We have quite an international footprint.



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Professor Owens: Yes, indeed. Although we do a lot of work that is relevant for our local area and for Scotland generally, we have a massive international footprint all over the world. In terms of staff and students, I think at last count we had something like 24 different nationalities, which in a little place like Oban makes quite a difference. Internationally, there is also a great deal of interest, for instance, in the Arctic, and we have quite an influence in being able to help the Scottish Government and the UK Government in interactions with the Arctic. We like to add that to the asset that we feel we are.

Q119 **Chair:** Professor Roberts, do you have anything to add?

Professor Roberts: International students, international staff and international projects are, I guess, where we like to think we really are making an impact. In our evidence we talked about the fact that 50% of blackcurrants in the whole world come from the James Hutton Institute. We are doing projects that are making a difference. We do work in relation to climate change, which in certain parts of the world is going to be absolutely devastating, so we have to come up with crops that are more resilient to the sort of conditions that we are going to face in the future.

Chair: Excellent. Thank you all ever so much. I knew this would be a fascinating, riveting and informative session, and it has proven to be so.

Examination of witnesses

Witnesses: Professor Kim Graham, Professor Chris Pearce, Professor Lianne Gibson and Professor Tom Brown.

Q120 **Chair:** Thank you ever so much for helping us out in this session. Obviously the universities provide probably the majority and bulk of the research right across Scotland and the rest of the United Kingdom, and we are interested to hear from you about some of the issues, difficulties, challenges and opportunities that we have. First of all, we will let you all introduce yourselves and say where you are from; if you have anything that you are bursting to tell this Committee, please feel free to do so. We will start with you, Professor Brown.

Professor Brown: Good afternoon, everyone. My name is Tom Brown. I am vice principal for research, collections and innovation at the University of St Andrews. By background, I am a physicist, and I have been doing science in Scotland for the last 25 years.

Professor Gibson: I am Lianne Gibson. I am the vice principal for research at the University of Dundee, and I am two and a half months into my new role—indeed, two and a half months into being new to Scotland, so I have the contrast of coming from England to Scotland and have some reflections on the differences that I have observed in the landscape. I am a social scientist by background.



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Professor Pearce: Hello, my name is Chris Pearce and I am the vice principal for research and knowledge exchange at the University of Glasgow, where I am also a professor in our James Watt school of engineering.

Professor Graham: Hello. My name is Kim Graham. I am the provost at the University of Edinburgh, which is a role I have held now for 18 months. Prior to that, I was the pro-vice chancellor for research, innovation and enterprise at Cardiff University. Just to highlight, I am also a board member for the Medical Research Council for UKRI, but I am here in my capacity as provost of the University of Edinburgh.

Q121 **Chair:** Thank you all very much for those very concise introductions. I know you were paying great attention to the previous session, when we were hearing evidence from the independent research organisations. I am wondering how you view the collaboration between the two sectors and whether you feel it works seamlessly. Could you tell us a bit about your experience of the real opportunities and challenges in research, particularly in the university sector? We will start with you, Professor Brown.

Professor Brown: It was very interesting to listen to the independent research organisations. I would say that we work in a pretty seamless way across Scotland. One of the great benefits of Scotland is the size and scale by which we can work collaboratively easily across institutions. For example, we have staff employed jointly with the James Hutton Institute and PhD students shared with it. We are working with the institute by using some of its infrastructure, particularly in high-performance computing, to support our own research at St Andrews. We have managed to do that in a way that is very low bureaucracy; it really is a meeting of friends, united around common academic topics of interest.

Q122 **Chair:** Is that your experience, Professor Gibson, in the short time you have been with us?

Professor Gibson: Yes, indeed. I haven't made it to the James Hutton Institute yet, but it is certainly on my list. We work very closely with the James Hutton Institute: we have academics co-located, we have shared PhD studentships, and we have shared facilities. As my colleague at the institute commented, you would be hard pressed to go to the James Hutton Institute and see the distinction between University of Dundee employees and James Hutton Institute employees. It is a very close working relationship, which has been the case for many years.

Q123 **Chair:** Professor Pearce, feel free to answer the first question, but I am also interested in hearing your view on whether the UK Government's research strategy and policy demonstrate a good understanding of the Scottish research landscape.

Professor Pearce: I agree with my colleagues on the first question: I think Scotland is a highly collaborative environment. We collaborate across institutions and institutes fairly seamlessly.



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On the second, more substantial, question, I would say yes. The strong research, impact and innovation agendas that are prevalent in the UK Government strategies, balanced quite well against support for curiosity and discovery-driven research, play to Scotland's strengths. Probably the most significant UK Government policy that I can point to is the science and technology framework, which was published following the formation of the Department for Science, Innovation and Technology. It serves as quite a useful mechanism to demonstrate that understanding. The framework highlights five critical technologies: quantum, semiconductors, AI, engineering biology and future telecoms. Those are all areas that are extremely important to Scotland, and are areas where Scottish universities have genuine excellence.

I can give you a couple of examples. On quantum technologies, Scotland—particularly Glasgow—has one of the highest concentrations of quantum-related research in the UK. The University of Glasgow leads one of the four national quantum technology hubs. We are involved in all four, and we lead one of them: the quantum imaging hub.

The second of those critical technology areas is semiconductors, which again is an area where Scotland has enormous academic strength. It has a strong industry base and world-class facilities and infrastructure. I think that science and technology framework reflects quite strongly the strengths in Scotland.

Q124 Chair: I want to come back to what we do particularly in Scotland. We have never had a university provost before our Committee, I believe, so I want to get Professor Graham's observations about collaboration, how people work together and partnerships. In your time in post, is there anything you have observed that we need to work on a little more, in terms of some of the collaborative work?

Professor Graham: My colleagues have commented on the strength of the partnerships across different parts of the innovation and research ecosystem within Scotland, and I think that works well. We heard from the Moredun Research Institute about the collaborations with the Roslyn Institute and our vet school at the University of Edinburgh. I share those views. I also feel that that diversity of organisations can create a really rich environment.

Following Chris's point, I agree that there is currently relatively good alignment between the UK Government and the Scottish Government strategies. Chris has talked about the UK science and technology framework and its focus on five underpinning technologies. Of course, in the Scottish Government's new national innovation strategy, we see similar areas aligning with that.

Augmenting what Chris said, what we have also seen in Scotland is really good partnership between the Scottish and UK Governments in investment in key areas of research and innovation, such as through our city deals. For example, in Edinburgh our £300 million data-driven innovation programme is aligned to both the goals of the UK science and technology



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framework and the Scottish Government's national innovation strategy, and it is really helping to drive inward investment from industry, as well as support for new technology start-ups and companies. That shows what Governments can achieve when they co-operate, work together and find shared areas of interest, and can invest and support their delivery accordingly.

Q125 Chair: Thank you. It is always good to hear of good collaborative working, particularly between the Governments. That is music to our ears in the Scottish Affairs Committee. Professor Pearce mentioned some of the particular excellence that we have in Scotland. I think it was quantum technologies, science and technology and of course the sciences. There is a number of things that we could list—I hope that you guys might help me out with some of the list here. What is it that we do that is particularly distinct in Scotland? We were recently in the United States, where research from Scottish Universities is acknowledged as being world class. What makes it that, and is it a reputation that is well deserved?

Professor Brown: It is important to realise that every single institution at this table is competing on a world scale with the research that we are undertaking. None of us is interested in doing research that is parochial—concerned only with Scotland or the UK. We want to do the best that we can within that world context, and that is the context within which we are all competing—competing for staff, for resources, and so on.

What Scotland does is it singles out or has areas that are particularly strong. For example, an area that connects the two groups that you have talked to today is marine science, where you see great strengths with ourselves. The sea mammal research unit is probably one of the world's leading units on understanding sea mammals. That of course then has wider knock-on effects for thinking about offshore power, but also, for example, through garnering industrial funding, we fund a significant fraction of that work through funding that comes via the navies of the world to understand the impacts of sonar on marine creatures.

There are enormous areas where Scotland can pin that "world leading" reputation. As well as the science that you are talking about today, it is important to recognise the breadth of the Scottish sector and the fact that we also deliver world-leading research across the social sciences and the arts and humanities.

Q126 Chair: Thank you. Professor Gibson, the life sciences that I referenced, are of course a feature of the offering from Dundee University's research. Why have we developed that type of space for ourselves within that particular discipline, and what do we need to do more of to try to make sure that it remains world class?

Professor Gibson: Another dimension of joined-up policy between England and Scotland is the focus on the regional. Both the levelling-up agenda in England and the various funding mechanisms to fund that are segueing with the Scottish Government's focus on regional strength. When you look at biosciences in Dundee, you see what has happened as a result

of more than 20 years of investment, and strategic investment in a particular area of scientific strength. That then results in the kind of incredible skill concentration that we have in that area—in Dundee.

Then, critically, as well as the importance of that absolutely world-class research, there is the importance of that for the region of Dundee and Tayside. In Scotland, you have Scotland as a region, but then regions within Scotland. You have the importance of that coming together of world-class science that is commercialisable and the effect of that on regions that need that kind of economic investment. That is what you have, certainly in Dundee and Tayside.

Chair: You have earned the attention of my colleague, Mr Duguid.

Q127 **David Duguid:** Thanks to the panel for coming in today. It strikes me that there is an empty seat at the end of the table, and we have nobody from Aberdeen. I do not know whether they were invited or not. I am a graduate of Robert Gordon University, so that is why I am maybe feeling a little bit parochial.

Professor Gibson, what you were saying about that combination of global versus local just made me realise that in Aberdeen, of course we historically had the oil and gas industry, and a burgeoning food and drink sector for centuries before that, and it really strikes home the effect that localisation could potentially have. Am I reading you correctly that that is the connection? You take the local knowledge that can be commercialised locally—such as in Aberdeen for the energy sector—and you make it more global. You basically make it exportable to the rest of the world, or the rest of the world, looking in, can see that Aberdeen is the place to go for energy sector research, or Dundee for biosciences. Other universities are available, but is that what you're saying?

Professor Gibson: That is absolutely what we would wish to happen. That is fundamental to Government strategy, which focuses on region, for Dundee. We say that we build them and then they leave, because Dundee at the moment doesn't have the infrastructure.

This will probably be covered in later questions, but what we do have is the hardest thing to have, which is the expertise; what we don't have, because it is a small city, is the infrastructure. For example, 80% of Exscientia, which was a £2 million spinout in 2021, is now in Cambridge because it couldn't stay in the Tay region.¹

We can come on to how Government might help with the commercialisation of university research. It is important not only because we need to take our world-class research to the public and make it usable, but because of the links between our universities and the regions within which they sit as civic anchor institutions.

¹ Correction and additional information [SS0031](#)

Q128 **David Duguid:** Does the UK Government's levelling-up agenda create a hindrance when it looks specifically region by region, and you lose the assumption that different universities from different parts of the country actually collaborate on some things, so assigned levelling-up support, for example, in one region then has to be split somehow?

Professor Gibson: Research and innovation funding is an ecology. You asked the question before, so I was looking at the spread of our research funding. It is very various, which is a good thing, so we are not all focused on one pot of funding. We are various. That diversity of funding—international commercial, UK commercial, UKRI, EU, charity and Scottish REG funding—allows the different scales and types of research from full blue-sky research to very applied research, or that cradle-to-grave approach to research, which enables innovation.

We need to retain that ecology in not only types of research funding but scale, so we need regional-focused funding but also funding that allows Scottish universities to work together and benefit from that characteristic. We do work together—certainly more than I saw at English universities.

Q129 **Chair:** I know that Professor Brown wants to come in, but I didn't get to Professors Pearce and Graham on the general question about why we do so well in Scotland, and how we can provide proper support and resources to stay world class. I will come to both of you first before moving on to get Professor Brown in.

Professor Pearce: I reiterate the points that have already been made. I think that Scottish universities are doing it all. We have a very strong civic role; we see ourselves as civic anchor institutions. We do broad-based, fundamental, discovery-driven research. To repeat Professor Brown's point, it is broad-based—science and technology on one hand, and arts and humanities on the other. We are one of the most collaborative research nations in the world, so we are working internationally as well as having that local footprint. On top of that, we are translating that fundamental research into practice.

Q130 **Chair:** Professor Graham, do you have anything to add that?

Professor Graham: I agree with all those points. To give an example of the international point, we are delivering a very significant regional agenda, but Edinburgh also collaborates with over 250 institutions worldwide. We are part of eight very broad university alliances, which allow us to think about how we can collaborate and work with talent across the globe, and also enhance what we do regionally to support other organisations within the region and within Scotland.

The other thing that might be useful to say is that we have talked a lot about the impact of what we believe Scottish universities are delivering. That is fully evidenced through our submissions to the REF 2021 impact, where a recent analysis showed that almost 50% of the impact case studies were rated as four star and outstanding. They went from local to global, and analyses confirmed that for every £1 spent in Scottish universities, we deliver £8 back. Those are really clear statistics that help

us to understand how Scottish universities are vital to the economy of Scotland, as well as how we work globally to help support and enable that.

Q131 Chair: We will come on to the REF directly, but I think Professor Brown wanted to come in.

Professor Brown: I just wanted to come back and tie up a couple of things that were said there. To come back to your point, often it is not externals coming in to collaborate with an individual university; sometimes it is the power of a group of universities in Scotland.

A great example is the quantum technologies that Chris talked about earlier, where we now have pan-Scottish organisations that tie up the major players in Scottish universities, united around common research aims and collaborating with one another. They are competing academically, sure—that is what we do; we are universities—but uniting together to really deliver the best for Scotland. The other important thing about the ecosystem is that we provide it all the way from basic training right through to the sorts of international-scale companies that can really use the technologies being developed by and in universities and apply them out in the wider world as well.

Q132 Wendy Chamberlain: Thank you all for being here today. My questions will come on to talk about the research excellence framework. It has been really striking to hear—particularly from Professor Gibson, having come up from England—that evidence of really strong collaboration between the universities in Scotland. We have already heard evidence in our last session, in relation to the REF, that it is potentially a siloed approach that reflects very well how research was done decades ago but does not reflect very well how research is done today, especially in Scotland. That potentially puts it at a disadvantage.

My question is about those interdisciplinary elements. How effective is the REF as a tool for evaluating research undertaken by universities in Scotland? Professor Graham, I will come to you first.

Professor Graham: I have a positive view of the REF. I think it is really important in the context of us evidencing, in both Scotland and the UK, the quality and impact of our research and having an assessment approach to that.

The REF is a mechanism—you can decide if you think it is the right one or not—to evidence our contributions both locally and globally. It also allows us to identify areas of excellence and evidence of how we collaborate across the UK and within Scotland. I mentioned already the evidence of Scotland's impact in the fact that almost half of our impact cases, which is half of 746, were four star and considered outstanding.

I think there are challenges around REF, not least the burden of assessment both in institutions to submit to the assessment and in terms of the assessment required to evidence those outcomes. The REF is on a journey—it is always on a journey—and developing its approach in a way that allows us to measure the way in which research and innovation are

changing across both our organisations and other contributors to research and innovation. Two ways that it has done that are to think about how you measure and assess interdisciplinary research, which it improved last time, and thinking about not just what we do in terms of research, but how we deliver it.

Q133 Wendy Chamberlain: Thank you. It is good to hear that different approach. Professor Pearce, what are your thoughts?

Professor Pearce: I would also be positive about the REF. I think it has developed into a pretty effective framework for assessing both the quality and impact of academic research in the UK. It is an important part of our research and innovation system. Ultimately, that has underpinned confidence in how fairly significant amounts of public funding are then disbursed to universities.

The REF is not perfect: there is an administrative overhead. It is largely a disciplinary-focused assessment exercise, so I accept that the assessment of interdisciplinarity is a challenge for the REF to address, but I do not think it is flawed completely because of that. It is a work in progress.

Q134 Wendy Chamberlain: So it is not putting institutes potentially at a disadvantage. I suppose that is why it is obviously reassessed, and the new REF does that. It should take into account how research is moving forward.

Professor Pearce: I certainly do not think that the REF framework puts Scotland at a disadvantage relative to the rest of the UK.

Q135 Wendy Chamberlain: That is really good to hear. Professor Gibson?

Professor Gibson: I agree. The REF is generally agreed to be a world-class research assessment exercise. As my colleagues have said, it provides confidence in the expenditure on research.

The challenge specific to Scotland is the finance that follows the REF. We were talking before about the UKRI funding 80% of research, and the general underpinning philosophy of the reason for doing that was that the 20% was made up by equality-related funding, which came from REF, but in Scotland we do not get that percentage of funding. That puts Scottish institutions at a very significant disadvantage.

The other point—I am sure it has already been made for you, but I will make it again anyway—is in relation to the research culture changes that are proposed for the new REF, which, broadly, anybody would support. What's not to like? I think it is safe to say—I can speak only from a University of Dundee perspective—that we are worried about the speed of the change, but we are looking at an audit deadline of late 2027 and we do not know what is going to be measured yet.

The other very distinct concern in the sector, and certainly at the University of Dundee, is the significant amounts of extra funding that are going to English universities for pump-priming different kinds of elements around research culture, which are not available to Scottish institutions.

We are concerned that this will be another thing that will put us at a disadvantage in terms of REF.

Q136 Wendy Chamberlain: Those are UK Government decisions.

Professor Gibson: No, that is Research England.

Wendy Chamberlain: So it would be up to the Scottish Funding Council to be looking to do something similar.

Professor Gibson: The Scottish Funding Council could do something similar, but it has a much lower baseline with which to do it from.

Wendy Chamberlain: Professor Pearce, do you want to come in?

Professor Pearce: No, I was just going to clarify that point myself.

Q137 Wendy Chamberlain: My next question is around the proposals for REF '28, because we have had written evidence that suggests there are some concerns in the sector. As you pointed out, Professor Gibson, speed is one. It strikes me, given that I have heard the robustness of REF being cited here as a strength, that potentially the assessment for '28 is less focused. Professor Brown, we have not heard from you yet. Do you share those views? What are the university's thoughts?

Professor Brown: This clearly is a big topic currently, and it is a big topic that is under debate across the whole of the sector. A variety of opinions are sat there; I think Professor Gibson has covered the research culture aspect pretty well and where Scotland sees a relative disadvantage compared with what is happening south of the border.

There is another area where there has been some concern raised. If you look at the overall plan as put out in the consultation document, research output has now become worth less than 50% of the overall total of REF. That has caused some uncertainty within the sector. Speaking from an institutional perspective, I think we would be happy to see that move to the 50% level, which is what we will be saying when we go into respond to the particular consultation.

What we are seeing offers some fundamental changes to how the REF is working. There are other complexities around what is called decoupling of outputs from individuals, which removes the minimum number of outputs, papers and books required from a researcher. That has raised some concerns around, for example, EDI aspects of how you manage staff and how you think about that management. It is difficult for us to answer fully at this stage, because the jury is still out on this at the moment and the sector itself is discussing the appropriate point to come to on this. I think we will see some change on that over the course of the next few weeks and months as we go forward.

Q138 Wendy Chamberlain: I don't want to put words into your mouth, but it sounds like the speed aspect means that the justification or reasoning behind some of the changes potentially have not been properly engaged with the sector.



Professor Brown: My guess is that we see this every REF in the cycle when we see reports published. In certain aspects, in culture, it has been moving a bit quicker than it has in the past. That is under discussion at the moment, and we will see where that lands over the course of the next few months.

I want to come back to your first question about interdisciplinarity. REF itself recognises this issue of interdisciplinarity and there is significant discussion within the REF set-up about how interdisciplinarity will be covered, and how it should be covered. Do I see it as a stifling block to interdisciplinarity? No, but I think that high-quality research is high-quality research and can be recognised through the assessment procedure. Maybe we could do a bit better.

Q139 **Wendy Chamberlain:** I suppose that because the Scottish Funding Council is then distributing the block grant, you would think that a Scottish body would recognise the particular strengths of the sector you have all talked about.

Professor Pearce, I think you wanted to come in.

Professor Pearce: I was just going to reinforce the point. I think it is the fact that we are fast approaching 2024 for an assessment that is going to go between 2021 and 2027, and we do not yet fully understand the rules of the game. It is all just being worked out as we go.

Q140 **Wendy Chamberlain:** Following on from the first session, funding is clearly critical to the work you do. Some certainty and stability in that funding is vital, too.

My final question—I think you have answered it—was about the Scottish Funding Council using the results of the REF. What I am hearing is that the panel would not be convinced that a different model for determining that funding would be appropriate. I want to ask a factual question. I have it written here that the Scottish Funding Council “includes consideration of the UKRI research funding won by an institution...to reflect the role that our funding has in supporting institutions to leverage research project funding.” Does UKRI do that in reverse? Would it look at what the REF funding given to a university or institution would be?

Professor Brown: It varies scheme by scheme, but normally we would apply for a sum of money from UKRI and 20% of that money is effectively taken off, which covers that QR element that you are talking about there, which is expected to be covered through REG in Scotland.

Q141 **Alan Brown:** Good afternoon. In the first session, we heard some frustrations from IROs about the 80:20 funding model. From the perspective of the universities sector, do you think any changes should be made within UKRI in terms of process to ensure that it better understands research requirements in Scotland and Scottish funding priorities?

Professor Brown: By and large, as was said earlier, the dialogue with UKRI is pretty good at an institutional level. I think there are areas where



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it could improve. For example, EPSRC—one of the larger councils that makes up UKRI—has staff based in Scotland to talk to Scottish universities. Frankly, it would be good to see that model across UKRI, with an office in Scotland so that it could understand that.

But that is a relatively minor concern; I think that at the macro level it is pretty good. Earlier, you talked about Ian Boyd being chair of UKRI. He is a St Andrew's member of staff. The interim executive chair from the EPSRC is a Glasgow University researcher. The executive chair of AHRC is currently another St Andrew's University researcher. I stress that all three of those individuals are acting for the good of those institutions; they are not acting for the good of Scottish universities in that role. That being said, there is clearly knowledge of what is happening in the Scottish sector, through that and other routes.

Q142 **Chair:** That is a really helpful contribution. You are saying that they represent their own individual institutions and do not—

Professor Brown: No; they represent the council that they are managing at that stage, and we would expect nothing other than that representation. They are not there to represent St Andrew's or Scotland; they are there to represent UK interests in those roles.

Q143 **Chair:** The UK's? There is not an expectation that they would take up a case or an issue that they had—

Professor Brown: Absolutely not.

Q144 **Alan Brown:** Professor Brown, you are saying that dialogue is good, and you gave an example of a council that has some staff based in Scotland. But are any changes in UKRI processes required to better reflect funding priorities in Scotland or are you content that no changes are required?

Professor Brown: The issue that we have is that research and innovation are both relatively complex spaces between reserved and devolved matters.

For example, Scotland has its own innovation strategy, which was mentioned earlier, so we, as institutions, are all aligning alongside the Scottish Government's innovation strategy. It would be interesting to see a little bit more alignment or understanding sometimes from some of the UKRI institutions around how things happen in the devolved nations, which may be slightly different from what is happening south of the border. Again, that can be relatively easily fixed.

Q145 **Alan Brown:** If it can be easily fixed and there is good dialogue, what is the barrier to getting it fixed?

Professor Brown: Processes and time. I think we have begun to have those dialogues through, for example, Universities Scotland convening meetings between all the members of this group and the wider community of vice principals for research with the UKRI executive chairs. That happened in November last year, I think. There is no shortage of mechanisms to see that change begin to happen.



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Q146 Alan Brown: Professor Gibson, do you want to add anything? You have experience from both sides of the border. Are there any changes in UKRI processes that, in your current role, you think would be beneficial from a Scottish perspective in that landscape?

Professor Gibson: From a regional perspective, more funding that facilitates regional working would be beneficial. It would obviously benefit English regions as well, but I think more of that kind of funding would be particularly beneficial to Scotland, given the smaller number of institutions, and given the worrying decline that Scotland has at the moment in the income it gets from UKRI. Is that because we are getting less QR funding? Is the competitiveness of Scotland in the UKRI funding landscape declining because of the lack of QR funding? I don't know. Certainly, funding that will enable us to be more than the sum of our parts would be very welcome.

The other thing I want to say about UKRI, which is of great concern for Scotland but also for England, is about the decline in PhD funding. It is a particular concern for Scotland because of the pipeline of talent. We are looking at a 41% decline in UKRI-funded British PhD students from 2018-19 to 2022-23. That is a really significant drop-off, and that is our skills pipeline, so in terms of UKRI, that is a really important point.

Q147 Alan Brown: What is the background for that almost halving of funding for PhD students? What is the rationale behind that decision?

Professor Gibson: I don't know. Perhaps some of my colleagues know.

Q148 Alan Brown: Professor Pearce, is there anything you want to add?

Professor Pearce: If I could go back to the broader question on UKRI, Scotland, with 8% of the UK population, attracts 13% of UKRI funding, so on competitive UKRI funding, we do very well. That is a credit to the universities in Scotland. Professor Gibson is correct—we have seen a gradual decline in that over the last 10 years, and we need to keep an eye on it and try to understand it—but we cannot look at UKRI in isolation: we have to look at the whole funding ecosystem if we are to try to understand those trends.

UKRI is still a relatively new and also a very large, complex organisation. It is made up of several different research councils, which fund different types of research and have different modes of operation. It is often quite difficult to look at UKRI as a whole; sometimes, we have to look at the constituent parts. There are problems, obviously, but I think they are the same problems that you will find with funding agencies across the world.

There have been some positive changes. As Professor Brown said, we are seeing more regional engagement. We have pretty good access to the research councils, which I also think is good. We are seeing an increase in what can only be described as place-based funding. That doesn't just support Scotland; it supports all parts of the UK. But that place-based funding is definitely a shift that we are seeing, and I think that is also a credit to UKRI. UKRI now has place as one of its strategic objectives.



Professor Graham: To add to that, I think that UKRI recognises the importance of better understanding the Scottish research and innovation ecosystem and how to work with Scotland to support that. One of the challenges is to ensure that the types of funding approaches put in place do not inadvertently reduce opportunities for Scotland; for example, recognising our high level of small SMEs as opposed to our major industrial sectors.

In terms of things we could do, I think the point has been made about co-shaping funding approaches with UKRI in a way informed by our understanding of what works for Scotland, and with other devolved nations, which share some of the same problems around a high level of SMEs. UKRI invests in a quite substantial number of institutes and major infrastructure. It is very difficult for it to change funding to those quickly, but there does need to be consideration of a shift, and how you might do that in a way that benefits Scotland, because having those large-scale investments can act as a catalyst for the private sector and inwardly also support careers and skills.

We have touched on some of the challenging funding landscapes. For example, Research England invests in a number of schemes—on research culture, policy and facilities, for example—for which we do not have similar funding streams. That means that we are on the back foot: there is not really a level playing field for our universities and our partnership with other organisations in terms of delivering our research and innovation. To give one example that illustrates that, there has been a 78% increase in England's higher education innovation funding, while in Scotland we have seen a 10% decrease. That means that, as universities and other organisations, we have less money to invest in delivery of innovation and commercialisation in a way that helps us to drive our outcomes from our basic science to help with commercial benefit, economic growth and creation of jobs.

There are some schemes that have been stopped by UKRI, such as the Strength in Places fund. That was a real success for Scotland. Scotland had three Strength in Places bids which were £82 million of investment alongside collaboration with clinical and private sector partners. That was a quarter of the Strength in Places funding. That type of scheme is a really significant opportunity for Scotland to invest in clusters of excellence, which helps to drive our research and innovation.

Professor Pearce: I want to make a point about the innovation funding Professor Graham just mentioned. We have seen that increase dramatically in England compared with Scotland, but it has not been at the expense of other parts of the funding model. That is a really important point. What we must not see in Scotland is an increase in the innovation funding at the expense of the research funding. We need to see a real-terms increase in the innovation funding.

Q149 **Alan Brown:** If we look at innovation funding that comes from Innovate UK—we heard in a previous evidence session that Scotland gets 5.9% of Innovate UK funding, but provides 11.4% of UK researchers. Does



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Scotland receive a fair proportion of Innovate UK funding? I will start with you, Professor Pearce.

Professor Pearce: We certainly do not get our fair share. It is a business-led funding mechanism: it is funding for businesses. Some of that funding can flow to universities. In Scotland, the universities make up a bigger proportion of the Innovate UK funding than in England. As far as the universities are concerned, we are very engaged with Innovate UK funding, but the proportion for Scotland as a whole is less than in the rest of the UK.

Q150 **Alan Brown:** Should there be changes in how Innovate UK determines funding for Scottish Universities?

Professor Pearce: No, it is competitively won. What we need to do is just encourage—and work more closely with—our industry to be more competitive in getting access to Innovate UK funding.

Q151 **Alan Brown:** So in your mind, it is effectively a challenge for the universities, rather than any changes to Innovate UK?

Professor Pearce: I don't see any obvious changes to Innovate UK from a Scotland perspective, but my colleagues might want to comment.

Q152 **Alan Brown:** Okay. Professor Brown?

Professor Brown: There is quite a lot of work being done on this, certainly by Universities Scotland, that may be able to provide more information. One of the issues here is the different size and shape of the industrial base in Scotland, compared to the size and shape of the industrial base south of the border. I think that Scotland typically has more SMEs, and those SMEs find it more difficult to apply for, and receive, Innovate funding. That is probably what is driving that share there.

As Professor Pearce has said, the universities do pretty well for Innovate in Scotland. What we need to do is generate more of those funding opportunities that are appropriate to the business size and shape of Scotland, to drive the total Innovate share up.

Q153 **Alan Brown:** Are there suggested changes for Innovate UK that could be considered, that would actually assist the SMEs being able to access that funding?

Professor Brown: Innovate probably need to look—and I'm sure they are—at how they fund businesses of different size and scale, and how they can then interface with, for example, Scottish Enterprise, and Highlands and Islands Enterprise, to make that join up. I think that all of us around this table would find the innovation landscape, and how those bits join together, probably the most complex funding landscape that there is. Innovate have a key role, but so do other partners in that space.

Alan Brown: Professor Graham, you had your hand up.

Professor Graham: I was going to make exactly the same point as my colleague, which came back to my point about working with UKRI and



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other funding organisations, and the need for them to understand the particular innovation ecosystem of Scotland, and how you set up opportunities around funding that align to, and would work with, Scotland.

Chair: David, is it on that issue?

David Duguid: Precisely on that point.

Chair: David and Sally want to come in. Very briefly if you don't mind.

Q154 **David Duguid:** Very briefly. Professor Graham, it is good to see you again. I think we met at the opening of the UK robotarium. The UK robotarium just happens to be Edinburgh; so that is a feather in the cap.

My precise question was going to be for everyone, but I think you gave an answer to it. My question was going to turn Alan Brown's question on its head. He was asking if UKRI has an adequate understanding of the Scottish research environment, or as I think you described it, the "Scottish research ecosystem".

You have just given us one example. I was wondering if the rest of the panel could give us a specific example of where UKRI have failed to understand something about the Scottish research ecosystem. All the examples you have given us so far are failings in the system, but failings for everyone—not specifically for Scotland necessarily. Is there a particular lack of understanding of the Scottish ecosystem that you could put your finger on? Maybe I could ask you, Professor Graham, to expand on the example you just gave a moment ago, while everyone else thinks of one?

Professor Graham: The point around our high number of small SMEs, and the challenges that presents for them for putting match funding and investment into driving innovation, becomes problematic in engaging with schemes that UKRI might set up, that require that significant amount of match funding. There are a number of examples of that.

It comes back to my point about how if you want to drive excellence and opportunity within a particular geographical region or country, you need to understand exactly what the component pieces are within that country. Then how you might invest and enable that in a way that aligns to—in the case of SMEs, for example—their opportunity to engage and benefit from funding schemes. To me, the challenge is that we are four countries within a country, but we are all different. Even within parts of a country, we are different in what opportunities we might have to deliver research and innovation.

Chair: Sally-Ann has got a supplementary to this too, which the panel could maybe help with if it is on this particular—

David Duguid: I am not going to ask a question, but if, in answering Sally-Ann's question, anybody has any other examples, I will be grateful.

Chair: I was just giving them time to think of an example in response to Sally-Ann's question!



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Q155 Sally-Ann Hart: Thank you, Chair. I am just going to follow up on the RI funding mechanism. This predominantly benefits bigger businesses rather than SMEs, which are missing out on the opportunities. Do the SMEs form clusters—SME clusters—in particular sectors?

Chair: If you have an opportunity to answer Mr Duguid's question too, that will be helpful.

Professor Pearce: I think there are clusters forming around, for example, semiconductors, photonics and quantum technologies. In fact, we could probably characterise that as one super-cluster, and I think it's a super-cluster that could probably rival anything else in the UK, so I certainly think that is a good example of where that exists, and it often is made up of quite a lot of SMEs.

Professor Brown: There are other significant clusters as well. For example, in defence, aerospace and security, there is a very significant cluster, and that bridges from very small SMEs right through to major multinationals. There are ones in life sciences as well. So those clusters do exist.

To come back to your question, Mr Duguid, one area where I know individual researchers have found issues is about regionality. Occasionally, it's impossible to subdivide Scotland into regions; looked at from down south, Scotland looks like one region. When you are trying to divide it up into smaller regions—well, as all of us around this table are aware, Scotland is more than one place, and we need to be able to express place in a way that fits the research problems that we are talking about.

Professor Graham: I think a really good example of how SMEs have come together to work effectively to create a kind of consortium to engage effectively with UKRI funding is in the creative industries. There, you typically end up with quite small, technical technology companies and they struggle, individually, to engage with funding but, as a collective, end up with greater strength, including the opportunity to then work with bigger players in that sector. There are examples of that certainly through the University of Edinburgh, where we are very strong on creative and digital industry work. Actually, when I was pro-vice-chancellor for research, innovation and enterprise, creative industries work was funded through a Strength in Places bid in Cardiff, which again was done through a very significant consortium. That is a good example of how SMEs can work together to place themselves in a competitive position for funding.

Q156 Alan Brown: Somebody, in an answer, said that innovation funding is quite a complex picture. I think it was you, Professor Graham, talking about the need to understand the component pieces. I am going to quote from the Scotland Office annual report and accounts from April 2022 to March 2023: "The Scotland Office is working with other UK Government departments to maximise the impact of innovation spending in Scotland." The Scotland Office is doing that work behind the scenes with other UK Departments. Can any of you detail any interactions that your institutions have had with the Scotland Office, in terms of the Scotland Office asking,



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perhaps, what the needs were or how you would access the funding, so that it could then do the liaising that it says it is doing with other UK Departments? Can anybody illustrate the direct contact you have had on that?

Professor Pearce: I am happy to do that. We have certainly had contact with the Scotland Office on the area of semiconductors and quantum technologies, because these are big UK Government strategies that have been published this year. There is significant funding associated with them, and we have been engaging with the Scotland Office about demonstrating where the strengths of Scotland can play into the broader UK strategy. As we go from delivering a strategy to actually implementing that strategy, I think it is really important that Scotland's strengths and the opportunities for Scotland are heard; and those are the interactions we have been having around that.

Q157 **Alan Brown:** You are talking about strategies. Has that formed a path or a way forward that will actually access additional funding?

Professor Pearce: At this stage, it is about making sure that Scotland's strengths are visible to the UK Government, because we are still at the stage where the funding needs to flow from those strategies.

Q158 **Alan Brown:** Has anybody else got any other examples of the Scotland Office getting in contact with you to get information about how innovation spending can be maximised in Scotland?

Professor Graham: I can follow on from the discussions with Chris. We also had conversations with the Scotland Office in order to understand opportunities for engagement with the UK Government. Of course, the recent award of the Exascale supercomputer to the University of Edinburgh—it will be the first in the UK, and therefore, obviously, the first in Scotland—is a good example of working effectively with the UK Government to think about how we can have investment in internationally leading, world-class facilities, which will help drive the UK Government's focus on data and artificial intelligence, as well as the focus on the national innovation strategy around those areas. We see good examples of where we work in collaboration and engage strongly on opportunities where Scotland is well placed to deliver a unique need for Scotland and the UK.

Q159 **Alan Brown:** That is very positive. Did you have to do any competitive bidding for that, or did it just come about through a direct collaboration?

Professor Graham: It comes through ongoing engagement and discussion around the needs of the UK and Scotland in this particular sector.

Q160 **Alan Brown:** So there was no competitive bidding. It was effectively a negotiation and collaboration.

Professor Graham: I wasn't fully involved in the discussions around the award, so I can't comment on that.

Alan Brown: It would be good to get confirmation of whether it was

competitive bidding or collaboration. You could maybe write to the Committee following the session.

- Q161 **Sally-Ann Hart:** Good afternoon to our panellists. The city region and growth deals programmes could deliver more than £8 billion of investment across Scotland. How have the city region deals affected private investment in your universities?

Professor Brown: I will kick off, but I am sure everybody has a tale to tell. We are part of the Tay cities region deal, alongside colleagues at Dundee. St Andrews had roughly £28 million, I think—I can't remember the exact number off the top of my head. We have invested it all in developing an innovation campus—an innovation space—for the university. That is our Eden campus, which is five miles outside St Andrews. It is a site where we are showing how net zero can be achieved through the use of smart technologies coming out of universities. It is very much joining together with industry to bring industry in and provide the kinds of space and facilities it needs to be able to develop that technology. For example, last month we opened the Colin Vincent Centre for Battery Technology, which is one of the UK's leading facilities for delivering batteries at an industrial-scale prototype level, based on the kinds of technologies that are being developed in universities across Scotland and the wider UK, and to give industry the space it needs to experiment.

Another area that is working well is the D'Arcy Thompson simulator, which provides industry with the opportunity to develop digital twins of areas they are interested in, and to look at how they can fuse data together to answer significant problems. We have a partnership with Scottish Power, which is coming in to look at that sort of space, and we are helping the wider community.

One key thing for us—sorry, this is a long answer—is that investing in that campus with city region money is also enabling the community around the campus to benefit. This is St Andrews; it is small-scale. We are seeing primary school rolls dramatically increased in the area, and we are seeing house building begin to occur in that area. That has been unlocked through this kind of funding, which is also flowing industrial funding into the university and the space.

- Q162 **Sally-Ann Hart:** Just to pick up on that before we move on, that is the university, but for businesses, how are innovative nature-based or climate change solutions being funded? Is it not through that £28 million?

Professor Brown: That £28 million has provided us with the facilities and the infrastructure to enable industry to come in and work on the problems they are interested in. We can then bring industry into that space. The idea with that space is that industry pays rent to come into that facility and work with us, and it then brings in research funding to work alongside academics.

- Q163 **Sally-Ann Hart:** So that gives the space. In terms of the businesses—you have heard of the Big Society Capital fund?

Professor Brown indicated assent.

Sally-Ann Hart: I have asked the Chancellor if we could have a similar mechanism for nature-based climate change innovation. That is the sort of thing that would do quite well for our innovative industries. We need to get the private sector to lead our nature-based and climate change solutions.

Professor Brown: I do not know the full details of that fund, but it certainly sounds like it would be very interesting to look at that model and how we could support industry in that way. It is not just industry coming new into this; it is every industry that is needing to make the change, and how that change can be made. For example, on that site, we have invested in a megawatt of solar power and battery to enable actual, true net zero to be achieved on the site, and to use that as a pathfinder model for the university and the region for how you do net zero.

Sally-Ann Hart: Thank you. That was a very full answer.

Professor Gibson: We have also received money via the Tay cities deal, as Professor Brown said. We are investing it in a biomedical innovation hub. We are using the £20 million as leverage for a £40 million investment in that area, drawing money from charity, philanthropy and commercial investment.

To answer the issue that I mentioned before—that we build them and then they leave—we are trying to provide a facility that allows our very successful spin-out operation to stay in Dundee and to create economic knock-on effects. We have had independent economic assessment of that project, which predicts that some 280 new biomedical jobs will be created by 2033, rising to 800 new jobs and over £190 million benefit to the local economy by 2053.

The difficult ingredient is the skills. We are using this investment and leveraging it to build the infrastructure that we do not have at the moment. The Government can continue to incentivise that kind of development through cradle-to-grave innovation investment, which will aid that commercialisation, but also through supporting and coinvesting with the private sector in life sciences real estate. It is that real estate issue in cities like Dundee—the development at Guardbridge outside St Andrews is also a real estate issue—and the knock-on that that has on communities that can really benefit from that investment.

Professor Pearce: The Glasgow city deal was probably one of the first, in fact. One example of the investment that we had from that city deal was £16 million that enabled us to establish the university's Imaging Centre of Excellence, which has state-of-the-art imaging technology, as well as a clinical innovation zone around it. That created purpose-built space for industry partners to co-locate.

That initial investment, as well as the partnerships that it generated, subsequently unlocked further investment. As Professor Graham



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mentioned earlier, as a result of that we secured UKRI Strength in Places fund money to build the precision medicine Living Lab project, which has enabled us to build on the excellent research that goes on in the University of Glasgow and to address the adoption of healthcare innovation into clinical practice. Also, as a result of that, we are now building a new health innovation hub.

All of this is happening within the Glasgow Riverside Innovation District, and that ultimately will lead to improving health outcomes, as well as driving economic development for Glasgow—particularly for that area of Glasgow, Govan, which is one of the most deprived areas—and tackling issues of deprivation.

Q164 **Sally-Ann Hart:** Fantastic. Professor Graham?

Professor Graham: Our city deal, which I touched on earlier, was worth £1.3 billion overall across a range of areas. We had £300 million for our data-driven innovation programme. That is designed to support 10 key sectors, such as fintech, agritech, robotics—including the National Robotarium, which we mentioned earlier—and health. The robotics institute is in collaboration with Heriot-Watt. It is about using and enhancing data and digital tech in a way that accelerates innovation for organisations in the region.

That has been really quite impactful. We have already had significant multi-million industry-focused investment, such as £20 million into our new centre for healthcare and ageing research, as well as investment into artificial intelligence ethics. Key to our city deal is supporting start-ups and new companies. We do a considerable amount of support and investment in that, which has led to over £300 million investment in a large number of technology companies. There is also job creation, which we estimate is currently at 2,000.

We are only five years into our city deal, so I feel that there is an opportunity to really accelerate the work that we have put in place. As others have commented, that investment is in capital, and it is match funded through ourselves and other organisations to really accelerate and drive it. There is an interesting question for us, given the sizeable investments we have already had into city deals in Scotland, how we build on those and ensure they continue to drive forward innovation outcomes and economic growth.

Q165 **Sally-Ann Hart:** It is interesting that all the universities seem to have chosen a different area, so you are not in competition with each other. That is very sensible, although competition does breed—anyway. Apart from the city deals, is there any other way that the UK Government incentivise private investment into the universities?

Professor Pearce: I am happy to pick up on the levelling-up innovation accelerator that we had in the Glasgow region, the investment zone that has been announced recently, as well as place-based impact acceleration that we have seen coming out of UKRI. These have been really important in engaging with local industry.



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Q166 Sally-Ann Hart: I saw on the screen that our Levelling Up Minister is making a statement on levelling up this afternoon, and I notice that a £1 billion fund has just been announced, so go for that.

Lastly, we know that partnership working, for example between schools and further education colleges and local businesses, is really important for employer-led skills education. What are your universities doing to connect with industry for the commercialisation of research and skillsets? Could the UK Government do more to support that? Do you want to forge closer relationships with industry for commercialisation of research and skills?

Professor Brown: You might have an image of St Andrews as quite an old-fashioned university.

Sally-Ann Hart: We have been there.

Professor Brown: I know.

Sally-Ann Hart: It is fantastic.

Professor Brown: We have changed considerably in the last five or six years in how we do this. We all recognise the importance of industrial funding of research and innovation activity, and we recognise the importance of growing that. Other universities will be further down the line on that than we are, frankly, but it is very interesting to see how that happens. It is really important that we recognise that industry funding is not just about a transaction; it is about building the relationship between the research, the researchers and the partners involved. The key is to build those partnerships. From those partnerships, we will see the kind of funding that we require.

What is really important, though, is that we ensure that we maintain our own research that is creative and discovery-led, and about the problems and issues that the researchers want to bring to the table and work on, without necessarily always taking everything in an applied direction that suits a particular industry at a particular moment in time. It is partly the job of the universities sat at this table to do that, while recognising that they live in this wider ecosystem and must contribute, working with industry, to the greater good of Scotland and the UK.

Professor Gibson: Dundee has an outstanding track record of industrial collaboration, and I completely agree with what Tom has just said, but if you look at something such as the Drug Discovery Unit, which works hand in glove with industry, it has been able to take disease that commercial pharmaceutical firms have not invested large amounts of money in and develop that original science hand in glove with those firms, such as AstraZeneca, Boehringer and so on. That is the largest drug discovery unit in the world. It is genuinely interdisciplinary. That is genuinely the cradle-to-grave creation of new drugs.

Part one of the investment in the new innovation hub that we are building in Dundee is the Centre for Targeted Protein Degradation, which is the only centre for targeted protein degradation in Europe. The centre uses an

innovative approach to drug creation to develop drugs for diseases that were previously thought to be undruggable—so, really innovative. In that case, we have industry coming and working in the centre for protein degradation: Boehringer, Almirall and so on are sending research teams to come and work with us in Dundee.

How do you support the development of that kind of ecosystem of universities working very closely with industrial partners, recognising and incentivising that HEI-industrial collaboration as a really important form of inward investment? In many cases, it is foreign direct investment; especially in our case in Dundee, it is as likely to be foreign commercial investment as it is UK industry. Further, recognising what you have identified, in Scotland there is a place-based specificity to the areas that we are specialised in. We need to recognise, support and facilitate that to then grow that industrial-academic collaboration.

Professor Pearce: I agree that private investment in research is absolutely a critical part of what we do. It is not everything, but it is extremely important. It can help us in leveraging other funding, and it can make us more attractive to UKRI funding if we have industrial partners. They directly fund research themselves, and they fund PhD students. We are partners with industry on Innovate UK-type funding.

More importantly, and going back to Professor Brown's point, it is not simply a transaction. They are not just paying us to do something. Deep, long-term relationships with industry are driving new fundamental research questions. Discovery and creativity-driven research can often also come about through that long-term, deep understanding of industrial problems. So we are not just solving industry's problems; we are also driving new research questions. It is a key part of what we do, and certainly, at the University of Glasgow, we are investing significantly so that we are one of the most entrepreneurial universities in the UK, and we are investing in how we engage with our industry partners.

Q167 **Sally-Ann Hart:** So are you saying that that relationship between university and industry is up to the university and the industry, and the Government really do not have much to do with that? You are doing it, you are building the reputation up, you are doing the research, and you are attracting the industry to come and use you, because you have proved that you can deliver, and you're good.

Professor Pearce: The big organisations that have significant R&D funding can invest in long-term relationships with universities. But, going back to the point we made earlier, it is SMEs that often are looking at a much more short-term strategy. They need support from Government to incentivise them to de-risk that long-term working with universities. I am sure they want to do that, but often our business models do not match, so they need that Government support.

Q168 **Sally-Ann Hart:** Professor Graham, finally—sorry.

Professor Graham: No, it is really not an issue. The University of Edinburgh recognised quite a while ago the importance of collaborating

with industry and supporting the generation of new companies through our subsidiary, Edinburgh Innovations. Since establishing that, we have seen a threefold increase in our industry and translational income. We currently have 100 student start-up companies a year, and the university has moved to fourth in the HEFCE rankings around commercialisation and entrepreneurship. Because we are proving ourselves quite successful in that approach, that also generates funding that we can invest in our own venture capital funds to support companies working with other venture capital organisations. The university and universities in Scotland, as you have heard, are playing a really fundamental role in driving commercialisation, translation and working in partnership. That partnership and collaboration with the private sector is really important to us.

In terms of Governments generally, for the Scottish Government, investment into the recommendations and the new national innovation strategy would be really important. It is also quite important to signal the recommendations from the Stewart and Logan report, which was around women entrepreneurs. It noted that only one in five women are entrepreneurs, and those one in five get 2% of the investment. If we really want to diversify our opportunities for innovation in Scotland, thinking about how we invest in half the population to consider and engage in entrepreneurship would probably be a good strategy. There are significant and really exciting recommendations in that report that could be considered.

With regard to Governments generally, it is about ensuring that there is proof of concept pump-prime funding for staff in our organisations who want to become entrepreneurs, set up their own companies or test their ideas in markets as well as for other businesses also looking to either work with us or think about how they develop new ideas. We came on to the point earlier about Innovate UK, how we drive up that 5.9% into Scotland and how we support businesses to engage with Innovate UK and the innovation pillar through Horizon Europe, which is a significant opportunity for us.

Creating a tax-incentive environment where we invest in research and development across a range of sectors, including going beyond those that traditionally invest in research and development—we talked about creative industries earlier—would be really advantageous in creating that sense of an environment that is supportive of taking research into outcomes and supporting those taking the risk of doing that, whether it is an individual or an organisation.

Q169 **Sally-Ann Hart:** Just to pick up on your 100 student start-ups—

Professor Graham: We are very proud of that.

Q170 **Sally-Ann Hart:** It is really good. We are very good as a country at investing in start-ups. I think the Chancellor mentioned last week that we are leading the world in venture capital start-ups. We are not very good at growing our businesses. Do you have any stats on those students’



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start-ups? Are they managing to grow their businesses, increase productivity and employ more people?

Professor Graham: We do quite well with the stickiness of the companies once they have started up. It is when they start to scale up that they struggle with investment and the attraction of moving out of Scotland. We are good at spinning out companies and we are relatively good at them continuing to do well for a period of time; it is the scale-up phase that we struggle with. When I talk to individuals looking to expand their companies, that is where they struggle with the opportunities in Scotland and where it becomes more attractive to look for a sizeable investment outside Scotland. There is a need to really think about how we keep our talent and entrepreneurship in Scotland in order to really boost that economic growth and, in turn, create the wealth that continues to invest in an ongoing, accelerating innovation ecosystem.

Sally-Ann Hart: Thank you. No further questions.

Chair: Right on half 5, too—well done, Sally-Ann, as always. Thank you all for attending this afternoon. I think you said that you would maybe get back to us on a couple of things; I am sure that our Clerks will remind you of that. We knew that this would be another fascinating session, but if there is anything you feel that you could usefully contribute to this ongoing inquiry, please get back in touch with the Committee. We are always open to receiving further representations.