

Scottish Affairs Committee

Oral evidence: [Renewable energy in Scotland, HC 51](#)

Monday 28 June 2021, Kirkwall

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Members present: Pete Wishart (Chair); Mhairi Black; Andrew Bowie; Wendy Chamberlain; Sally-Ann Hart.

Questions 80 - 139

Witnesses

[I](#): Neil Kermode, Managing Director, European Marine Energy Centre Ltd (EMEC); and Christopher Milne, Chief Financial Officer, Orbital Marine Power.

[II](#): Dr Gareth Davies, Managing Director, Aquatera; and Steven Bruce, Project Officer (ReFLEX), Orkney Islands Council.

Examination of witnesses

Witnesses: Neil Kermode and Christopher Milne.

Q80 **Chair:** Welcome to the Scottish Affairs Committee, and not just the Scottish Affairs Committee but the Scottish Affairs Committee in beautiful Orkney. This is the second time we have been here, and we are coming to you today from the St Magnus Centre in Kirkwall. We are here today as part of our inquiry into renewables in Scotland, looking at the marine renewable resource that is here. We are very grateful for the hospitality we have received and the very friendly and warm welcome. We have two special guests to start the session off today and I am going to let them introduce themselves. We will start with you, Mr Kermode.

Neil Kermode: Good afternoon everybody. I am the managing director of EMEC, the European Marine Energy Centre, based in Stromness. I was glad to host you up on the Fall of Warness test site today. Thank you very much indeed for coming.

Chair: Thank you. Mr Milne?

Christopher Milne: Thank you. I am the CFO of Orbital Marine Power, one of the leading tidal developers in Scotland. You have seen our turbine today. It was recently deployed on the EMEC site.

Q81 **Chair:** Yes, we have just come right off the boat after examining it and having a look at this wonderful facility. We are grateful to you for allowing us that opportunity.

I will start. The Scottish Affairs Committee was here five years ago, and I think you gave us evidence at that session, Mr Kermode. Since we were here last, do you think we have made that development, that progress, in realising the ambition and resources of this island? What more do we need to do to ensure that we have everything required and in place to deliver the vast potential that Orkney has when it comes to renewables? We will start with you, Mr Kermode.

Neil Kermode: Have we achieved our potential? No, not yet. We have made some progress towards it. We have seen the deployment of several machines since you were here last, most notably the Orbital O2 machine; that is the last one that has gone in. We have also seen the Spanish Magallanes tidal turbine go in. Together they represent 3.5 MW of capacity but we believe there are probably a couple of thousand megawatts of capacity around these islands, so we have barely scratched the surface.

What we have been doing is a lot of work on the fundamental demonstration aspect, so research and development and then deployment and demonstration. We have been doing quite a lot of that work by seeing these machines go in the water. A lot of lessons have been learnt, but, no, we have not reached our full potential.



What more could we do? More of the same, to a large extent, in that we need to get machines in the water. We have a series of mission statements as a company but the short one is, "Get metal wet." It is to get out there, learn stuff, come back, have another go and get out there again. That is what we need to do, and we have some specific suggestions about what that could look like.

Q82 Chair: We will come on to that. Is that the message—get metal wet—that we need to deploy in order to ensure that this wonderful resource here is harvested properly?

Christopher Milne: Indeed it is. We can point to many analogous industries, which I sure we will touch on through the rest of this session, and which show strong evidence that the real economic and socioeconomic benefits that can be derived are here for us to grab. That potential remains untapped at this point.

Q83 Chair: Looking at the strategies deployed by the UK and Scottish Governments, is there anything in particular that you recognise will be facilitative and helpful—things that you might look at and think, "We could do more with all that"?

Christopher Milne: Of course. The one key thing that is required to be a catalyst for this industry is vision and early-stage market support. Within the next auction round—auction round 4 for the contracts for difference—the industry is seeking 100 MW to be ringfenced at a price of £250 per MWh. In line with that, the industry is looking for the UK Government to show global leadership, in this, the year of COP26, and set out a vision for 1 GW of marine capacity to be built out into the circuit during the 2030s. This is the type of initiative that will drive home the UK's potential and make us realise the investment to date in this space.

We all know that early-stage entrenchment of supply chains means that these positions, these companies that take these positions in the supply chain, are very hard to displace. The barriers to entry become far greater then. We have the opportunity to take that now.

Q84 Chair: While we are here—we have seen a little bit of it today—we want to explain to people who are watching these proceedings this afternoon what Orkney has specifically and in particular that makes this such a special place when it comes to marine renewables.

Neil Kermode: Orkney is geographically perfectly placed. We are at the intersection of the North Sea and the North Atlantic. That means that the tides are out of phase, so we have very strong tides that run through these islands and around the islands. Those strong tides give us the opportunity to harvest energy from them by putting in what amounts to—is similar to—underwater wind turbines, taking energy out of the flow of the water as it goes past.

Orkney is also fortunate that we are the most northerly point on the national grid, so the energy we harvest flows into the national grid and



does real work. But we are slightly cursed by the fact that the national grid is inadequate for getting the enormous amount of energy that we believe we can harvest out of the tides away from the islands. It has been useful as a demonstration point, but if we are now going to move into the more industrial rollout, we will need better infrastructure behind us.

We are also well placed in that we have things like Scapa Flow, a large body of water that allows us to assemble the shipping flotilla that is needed to go and do this sort of work. We are also lucky that we have a good supply chain that has readily adopted things. We have a very nimble mindset that allows people to get on to these initiatives and opportunities when they come up. We have willing people. We know we have the resource; we are now seeing that we have the energy need, and we are now definitely seeing that we have the planetary imperative. All these things are coming together.

Q85 Chair: You have both mentioned the supply chain. This is my last question to you both. The offshore wind sector deal of 2018-19 committed the industry to a target of 60% lifetime UK content by 2030. Are we starting to meet that? Are there difficulties in the supply chain? Could you explain where we are in all of this? Are these potentials being delivered and are these targets being met?

Christopher Milne: I am delighted to say we managed to complete Orbital's O2, the world's most powerful tidal turbine, on budget and despite the headwind of a global pandemic, and we completed it with around a 80% UK supply chain. Now, that could be increased. The facilities, the infrastructure and the skills already exist here in the UK. Albeit some of them have maybe been underinvested in in recent years, the infrastructure, the skill base, is all here.

We generated what we calculated—and this was done with the Offshore Renewable Energy Catapult—was up to 90 full-time equivalent years with the single O2 build. It was also the first vessel launched from Dundee—the Dundee docks—for 40 years. That was done without significant investment in infrastructure to allow that to happen. The capabilities and the potential are absolutely here. They are in Orkney, in the coastal regions around all parts of Scotland, and around the UK.

Our supply chain spanned not just the local community but the whole UK, from a composite blade manufacturer down on the south coast, to fabrication work from Wales to the north of England, to Scotland. The steel itself was procured from Motherwell. The supply-chain evidence is there. We can do this. We can build this.

The important thing is that we entrench these supply chains, that we send the signal that allows them to invest in these facilities. Some of these facilities have been underinvested in in recent years, and that can be reversed. It can be a resurgence for a lot of facilities that are already



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there, and a new business line that has significant export, as well as domestic, potential.

Q86 Chair: Mr Kermode, I know we missed out when it came to wind turbines, but are we in play to ensure the supply chain is going to be fulfilled this time?

Neil Kermode: I think Chris is absolutely right. We have the opportunity to do this. What we need to do now is to choose to do it. We need to make a commitment. The nation needs to make a commitment to want to do this.

The UK did fail to make the most of wind. The comparison with Denmark is particularly telling. Denmark and the UK had very similar-scale wind programmes back in the 1980s. Denmark committed and stayed with it and sought to find ways to encourage a supply chain and encourage the machines to be deployed. The UK, on the other hand, focused very much on a least-cost-to-deployment process, trying to make it as efficient as possible from day one.

The result of that is that the Danes have a very healthy wind industry and we do not. In terms of scale, the Danish wind industry in 2016 had exports of €7.3 billion; the UK had €0.3 billion. In terms of the scale, the UK arms industry in 2016 was €7.2 billion, so the wind industry in Denmark was as valuable to them as the entire armaments industry was to the UK, and Denmark has one tenth of our population. The point is that if we commit to this early enough, we can make this work. If we blow it, we have only ourselves to blame.

Q87 Mhairi Black: If I could turn to the funding that is available to you, and in particular the contracts for difference funding, could you tell me the reason why that is helping your organisations, and also whether any conditions are applied to that funding?

Christopher Milne: Unfortunately, right now, the CfD process—and certainly the structure of auction round 3—is not helping our industry. In fact, because of its structure it offers no opportunity for the industry at all.

What the marine energy industry is calling for here—we have seen some movement towards this, although the marine sector was strangely silent in terms of the Energy White Paper—is that within auction round 4, there is 100 MWh of ringfenced capacity, as there has been in previous rounds. I think it was in 2016-17 that this support was removed. We are asking for 100 MWh to be ringfenced at £250 per MWh, plus the vision for a gigawatt to be installed through the 2030s. That is the type of vision that will catalyse investment in the sector.

We believe we could be competitive in the CfD at those prices, and that we could deliver blueprints that will help us deliver much lower costs in very quick timescales. We have done some research ourselves on the cost to the consumer through the CfD and we estimate that it will be a



fraction less than 10% in this opening round—for instance, potentially as low at 7% or 5%—of the cost of facilitating offshore wind. However, the important point, a point I made earlier, is that the return on that investment, because of the heavily UK-based supply chain, will be in multiples.

Neil Kermode: The CfD has been effective at driving down cost. It has worked well for mature technologies. I am concerned, if we just focus purely on the CfD, that we run the same risk that I mentioned earlier in relation to Denmark.

Chris is absolutely right. We need the flag to be planted on the hill—a clear policy signal that the UK wants to do marine energy—and the AR4 ringfenced area would be exactly that flag on the hill. In AR5 and AR6 and beyond, there will be other things to go for, but without that flag on the hill, nobody knows where they are going, so I think that is important. That is one thing.

The second part is that to get to that—we have seen machines like Orbital's O2 that are able to get there, and we know there are other developers around who have machines that are not as advanced as Chris's company's machine—we believe there is also a need for support for innovation in that interim step. It is not just about having the flag on the hill; you need a road to get to it, so we are calling for something called the I PPA, an innovation power purchase agreement, or something similar, which provides the sort of support that we saw people have through the renewables obligation. We have seen those prices work because we have seen kits turn up and we have seen people do stuff. We are seeing people succeed and develop their technologies, but it absolutely requires that support to be in place. Without it, we will lose industries.

A couple of companies—Sustainable Marine Energy and Nova—have stated that their next plans are likely to be in Canada rather than the UK because of the lack of signal in the UK at the moment. The key words are “at the moment”.

Q88 Mhairi Black: What impact does that have on the long-term certainty of projects?

Neil Kermode: If you are a big investor, you have a choice about where you put your money. If you don't see that the Government believe that this is something they are going to do, you are going to put your money into something that is showing more signs. We had the offshore wind sector deal, a clear commitment that we are going to do this thing—brilliant—and we are seeing people scale up. People will not scale up for marine if they are not sure it is going to happen. Without that sign, I am very concerned that this industry will simply slip through our fingers. We have already seen companies leave the UK. We will see everybody else go in due course. It would be a travesty because we know that the resource is here.



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Q89 Mhairi Black: One of the things that we heard last night was that there is a problem with some of the conditions attached to some of the funding at times—sorry if I am wrong—and that a lot of the time, the funding has to be spent within three years. Does that have a long-term effect, because that is a short amount of time to spend a lot of money?

Neil Kermode: Yes, there are a number of conditions in there that are pretty unhelpful—things like the CfD that requires you to have a number of conditions in place, planning permission and so on. It is extremely difficult and there are a lot of tripwires. I keep asking myself: if you were trying to make this happen, would you make it as hard as you could or as easy as you could? I think there is a fundamental question we need to ask, which is not, “How can we drive down the cost to the barest minimum?” but, “How can we make this happen?” because if you drive cost to the barest minimum, the barest minimum will happen. We need to be quite generous.

I think in my evidence I referred to the support as “quite parsimonious” and I absolutely stand by that. It is pretty meagre. If you want this to work, you need to fund it sufficiently so that activity happens. We are only talking about a few machines in the R&D space. If we suddenly ended up putting in thousands of machines, first I would be amazed, and secondly it would indicate we were overpaying it, but I really don’t think we are. We need to make sure we have sufficient support to go and do the complicated things that these guys have been doing, do it safely and sufficiently and with all the innovation benefits that derive.

Q90 Mhairi Black: Do you think that these tripwires could easily be removed—

Neil Kermode: Yes.

Mhairi Black: —or do you think there is still a necessity for them?

Neil Kermode: We always ask: is something in line with the laws of physics and chemistry? Trying to change those laws is really hard. Trying to get gravity work in a different direction? Don’t bother. But the rest of it is the laws of man; they are things that we have written, strictures and structures that we have put in place. People have written those regulations. If you don’t want them, you can change them. I think there are opportunities to think in an imaginative way, to make the most of the opportunity that we can see exists at our feet at the moment and I think we are duty bound to do so.

Q91 Mhairi Black: Finally, we have seen the staged approach to developing the small and large-scale sea trials. Do you think that such a structured approach is helpful? Do you think that should be looked at?

Christopher Milne: I am not an engineer. It goes back to learning by doing. I think Orbital Marine has had 16 different scale models. You have a concept, you test it at small scale; you see what things could be improved, what things go wrong, and you improve it and make it slightly bigger. That is driving it towards a commercial product. I completely



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agree with the point that Neil was making earlier. Everything is here. Tripwires can be circumnavigated; tripwires can be resolved when you get to them.

We have all the resource, natural and human; we have all the facilities and all the required infrastructure. What we don't have just now is the market. Create that initial market, and we will be able to resolve all these other minor complexities. That will mean that we, as the UK, will drive the costs down. That will unlock those resource regions elsewhere in the world, make it attractive to political policy elsewhere in the world and create that export market for us.

Q92 **Mhairi Black:** What would you say is the most urgent blockage to us accessing that market?

Neil Kermode: It is the reform required under the contracts for difference.

Q93 **Wendy Chamberlain:** Thank you to both witnesses for your time today. Following on from a couple of Mhairi's points, I understand from our visit this morning that Orbital was partly crowdfunded. Could you tell us a bit more about that?

Christopher Milne: Yes, of course. There were two reasons why we chose to go down the crowdfunding route. There is undoubtedly an appetite in the investor community to fund tidal projects. Most of my job is going around selling the vision, speaking to funders of projects and funders of companies about what we are trying to do and how we are doing it, and unanimously they like it. What they don't like, however, is the fact that before this we were only building one, or maybe two. They are not interested in that. They want to be building 10; they want to be building 100; they want to be building 1,000. So they are waiting in the wings to invest.

Q94 **Wendy Chamberlain:** Waiting for that proof of concept?

Christopher Milne: We have the proof of concept. What is missing is the market. We have derisked our technology. Our SR200 device generated over 3 GW to the Orkney grid, breaking a number of records, and the O2 will deliver even more. It is going to be a 15-year project. The technology is there, ready for commercial deployment. What is not there is the market to support it. These investors were willing. We went through due diligence with some investors who were willing to take that early-stage exposure on a single project, but the costs were high because of the risk of that being money in one pot, and the risk of nothing ever coming out the back of it was also deemed to be high by those investors.

The first reason we used crowdfunding was because we were able to diversify some of our risk by bringing more people in, so one person was not delivering a multimillion-pound cheque. We were able to spread that risk across numerous smaller investors. The important second point is that these investors were supporters, and this is why we chose to use



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crowdfunding. We are aware of, and very welcoming of, the debate and the renewed interest in tidal energy and marine energy within Westminster. The Scottish Government have been continuously supportive over the last decade-plus, but we knew that one of the things that we as a company and as a sector could do was raise the awareness even further, make the political influence and the political pressure much greater so that the Government knew that the general public wants this to happen.

If you asked somebody on the street why we cannot harness the tide when we have been able to harness the sun and the wind, they would probably be quite confused because you would not have thought it was all that difficult, and do you know what? It is not. We have done it, but we cannot deploy the technology yet. The crowd was a way for us to get the message out and get public support behind the sector, and I think we have been very successful in doing that. We raised £7 million in 10 weeks—an average of over £100,000 a day. We now have over 5,000 investors from the general public across debt, project finance on the O2, and actual investors in the company itself, so there is a lot of support.

Q95 Wendy Chamberlain: Yes, absolutely, that public appetite you have been able to harness. Thank you.

We have talked about tripwires and challenges. In our previous two sessions, we have discussed transmission charges. In what way have transmission charges affected the development of renewable energy? You mentioned that Orkney is on the national grid, but I understand from our conversations last night that that was about putting power to Orkney and the challenge now is how to get the power that Orkney can generate out into the grid.

Neil Kermode: That is correct. Orkney was put on to the grid—some of the islands we went to today only went on the grid in the mid-80s—but the cables that were put in were designed to supply power to a community of 20,000 people. They were not designed for the community here to supply a country of 60 million people with electricity. The cables were fit for purpose at the time they were put in, but at that time the principal model for generating electricity was to dig coal up, burn it near the pithead, and send the electricity somewhere. It was a system of centralised power generation and distributing the power, so the charges that were set for the movement of electricity were, effectively, the further it goes the more you pay. Now, of course, we are in a different position where we know that our energy is largely going to come from the periphery of the nation.

Q96 Wendy Chamberlain: From a variety of places as well.

Neil Kermode: You are absolutely right. We think that the transmission charging process is now out of date and needs to be refreshed. In particular, we think that a lot of the costs that will be needed, and that are strategic costs, should be socialised. For example, the infrastructure



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put in to bury cables and so on in central London is a socialised cost, whereas the cost for us to bury a cable across the Pentland Firth would come down as a developer cost.

We don't think that is appropriate anymore if we are trying to reshape our entire electricity network. Trying to bolt something extra on the edge, that's one thing. If you are trying to reshape something, it is a different set of rules. We don't think the transmission charging processes work for the new world. They probably work for the incumbent generators, but they don't work for the new world.

Q97 **Wendy Chamberlain:** Absolutely. Is that a view you share, Mr Milne?

Christopher Milne: Absolutely. At the end of the day, we are targeting net zero. Some of the best renewable resource sits in the north of Scotland, be that marine or offshore wind, so why do we make that more expensive to develop? Surely we need to develop the most energetic resource if we are to hit our targets. Why would you put an impediment in place and handicap that development for short-term economic benefit? As Neil says, it doesn't fit our aims or the targets we as a nation are setting ourselves.

Q98 **Wendy Chamberlain:** Absolutely. The Chair, Andrew Bowie, and I spoke to *The Orkney News* outside before the session today. They talked about the levels of fuel poverty in Orkney. In what ways do you think we have an opportunity for a just transition by transforming transmission charges? Also, I would be interested to know if either of you heard Ofgem's evidence to our previous session and what your thoughts were about that. Perhaps Mr Milne first.

Christopher Milne: I thought there were a couple of contradictions, to be honest. There was talk of having to reform the way they look at things in a more strategic way and yet at the same time there was talk about how there is just no problem here, the system is fit for purpose. I don't agree with that. I believe that if we are to look at particularly offshore resource, be that wind or marine, we need to reshape Ofgem's strategy to meet the needs of net zero.

I am not saying we should adopt this, but one point to make is that in Europe, renewable energy projects don't have to bear any of these costs. Therefore, we are already at a bit of a disadvantage because our power has to bear these costs and power that we import through interconnectors does not. If that is the way it is, that is the way it is, but why would you then subsequently further handicap your most energetic renewable resources by giving them a disproportionate proportion of those costs? It genuinely does not make logical sense and it does need to be reviewed urgently.

Q99 **Wendy Chamberlain:** Potentially creating dependency, the UK being dependent on others when that is far from the case.



Neil Kermode: It is interesting that a lot of the costs associated with some of the interconnectors that have been placed from the UK to mainland Europe, the way the costs are dealt there, is very different to the way the interconnector works for Orkney and the UK. We do think there is a need for a fundamental refresh on that and recognise that there has been a need for this for some time.

In the Electricity Act 1989, there was an indication that the Secretary of State could issue guidance on matters of social and environmental importance. The guidance was eventually issued in 2010, so it took nearly 20 years to get it out, but it says a number of things, including about incentivising industry participants to have a decarbonised system and that the Government expect to include the decentralisation, where appropriate, of essential strategic investments ahead of firm commitments by generators. These are particular things that I am not seeing being taken into account in Ofgem's judgments.

Interestingly, this document was in the process of being overhauled when the coalition Government fell. It was being replaced by something called a strategy and policy statement. That apparently is being drafted in Whitehall at the moment, but we have certainly not seen a draft of it yet. It would be very useful to understand whether the rules—these are basically Ofgem's rules on how Ofgem will deal with things other than the cost to consumers and the security of supply—are going to be sufficient for the 21st century. As Chris mentioned, they need to have net zero and, I would argue, the industrial strategy, woven right through them. If we have a regulator that is not actively playing with the team, one has to ask which way it is playing.

Wendy Chamberlain: Absolutely. That is certainly something for us to consider. Thank you.

Q100 **Sally-Ann Hart:** I want to have a look at the targets for renewable energy. It is very clear that both the UK and the Scottish Governments have set not just targets for net zero but also quite ambitious targets for renewable energy. The Energy White Paper specifically states the need to shift from fossil fuels to clean energy and—as is very clear from going out in the boat today with you, Mr Kermode, to see Orbital O2—that our oceans around the UK have an almost infinite ability to provide energy if we have the right technology in there, which we can provide jobs in and make money from.

My point is that realising the potential of ocean energy is not just dependent on innovation, research and development and great ideas; it is dependent on policy, regulation, and investment. You have touched on the regulation of Ofgem, but how can those ambitious targets for renewable energy be set by the UK and Scottish Governments and how can they be achieved? You have touched on regulation. Are the policy incentives enough to help UK and Scotland to meet those targets?

Neil Kermode: Right. There are quite a few questions in there.



Sally-Ann Hart: Sorry.

Neil Kermode: Let's have a go. How can the targets be set? The targets can be set by means of vision. As Chris pointed out, there are some very clear, short-term targets that could be set. Nebulous targets out there in the future are one thing but some very small-scale targets, very close to, would be very useful. Ringfencing 100 MWh in AR4 and each of the subsequent AR rounds, would be very useful. It would show a determination to make it work. It is an approachable number and one that can be achieved, so targets that are sufficiently granular that show that you are making progress toward them.

Have we got the right policies in place? Not really, not at the moment. There are a number of things that we really want to see adjusted and tweaked. It would take too long to go into all of them now, but I would be happy to supply some views on those later.

We seem to have got all the pieces of policy; what we do not necessarily seem to have done is join them all up, but we still keep coming back to this point that I want to make about Ofgem. Ofgem kept saying in evidence that it was all about doing things for the lowest possible cost. That came through in Mr McMahon's evidence several times: lowest cost, lowest cost.

The point is this: if we go for the lowest cost, we will fail to achieve the maximum market. We will end up with something cheap that barely works, as opposed to something that is excellent, works really well and is therefore an exportable product, and is something that people will want to buy and want in their market. We need to make sure that we recognise that, as early movers, we need to do this in a way that is fulsome, thorough, competent, and all the rest of it. If we just simply drive to the lowest cost, we will end up with something that is cheap and probably nasty.

The lowest cost mantra needs to be challenged to make sure that we recognise that there are values other than simply the price you pay for the electricity. There are opportunity costs to not doing something—opportunity costs of buying an industry back in from overseas because we let it go from here. We need to recognise those costs as costs that have to be factored into the decisions being taken now about how hard we should push marine energy. If we make sure we align all our policy objectives around driving an industry to happen as opposed to driving the cost to the bare minimum as soon as possible, we will end up with a very different outcome.

Q101 **Sally-Ann Hart:** Briefly, before I turn to you, Mr Milne—and still talking about Ofgem and looking at lower costs and the security of energy supply—would you agree that when we look into the future the security of the energy supply is going to depend on the diversity of that energy supply as well?



Neil Kermode: Without doubt. Ofgem is going to face a change in regulation because it is the Office of Gas and Electricity Markets. Gas is going to become decreasingly important because electricity is becoming increasingly important as we electrify transport and so many other things. The electricity piece is going to come in, and Ofgem will face change anyway because the gas piece is going to become less important. Also, one would expect Ofgem will probably end up being the regulator for heat as well. Ofgem will face change. I would like us to help Ofgem get with the programme as quickly as possible. I speak as an ex-regulator. I am not in any sense having a go, and I am not anti-regulation, but these people need to make sure that they are brought onside and are driving to the objectives that the nation now has, which are net zero and our industrial renaissance.

Q102 **Sally-Ann Hart:** Thank you. Is there anything you would like to add, Mr Milne?

Christopher Milne: Yes. I don't think there is any question about how important the electricity sector is to global ambitions around the climate crisis. I say that for three reasons. First, it is currently a high emitter of carbon. Secondly, there are visible technologies and emerging technologies that can help that. Thirdly, those things are the linchpins for reductions in other sectors—whether that is producing forms of electrification across vehicles and transportation in other sectors, it is low-cost renewable energy that can help unlock all of this.

I don't think there is a problem with focusing on low cost as long as we are driving it and it is over the right timelines. Right now, the low cost has been too short-sighted. Build a 10 GW, 15 GW transmission line up to the north of Scotland, and I am pretty sure that will get filled with projects in fairly quick time, but when you don't build it and people on project after project have to try to justify that cost, you paralyse yourself, and that is kind of where we find ourselves. I am simplifying this, clearly, but that is kind of the position that we find ourselves in here. We need to take a step back and recognise that we have the ability to facilitate this sector.

At the end of the day, talking about marine and tidal in general, these are big, fabricated structures—potentially big, some small—these are fabricated structures offshore. They are generating energy, which just happens to be electrons rather than hydrocarbons. At the end of the day, the right tidal resource site is like the reservoir that never depletes. It is right there for us, and we are just not making it happen.

Q103 **Sally-Ann Hart:** So it is absolutely possible to reach the renewable energy targets that have been set with the right modernisation of regulation and policy ideals. What additional incentives are needed to develop those emerging technologies in Orkney? What else do we need?

Christopher Milne: I am speaking here as someone fortunate enough to have a technology that we are ready to deploy commercially but there



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will be other technologies. We recognise as much as anybody else that the climate crisis is real. We need to deploy all solutions. We are not the silver bullet. As a sector, tidal is not a silver bullet. We need to deploy all potential solutions, so the continuation of R&D funding.

The clear thing for us once again is 100 MWh to be ringfenced at £250 per MW strike price. This is like a gauntlet. We need to deliver, otherwise we do not access it. We need to deliver it and make money for investors, otherwise we will not get another chance. This is the way. Let the market do what the market does. Set the parameters and allow technologies to compete for investors' capital and deliver cost reductions, which delivers to the consumers, to the global population, low-carbon, predictable energy. We can do that, but it needs to be across the board, so a mix of R&D funding for early stage. We have not necessarily lacked that in recent years, but who wants to provide R&D funding for something that is never going to go anywhere? With R&D funding, you need to find match funding. Who is going to provide match funding when you don't know how you are going to ever generate a return in future? The market needs to be there.

Sally-Ann Hart: Mr Kermode, can you come in on that?

Neil Kermode: Very quickly, I think a carbon price would be helpful. We understand the value of carbon, or more accurately that we need to associate a cost with continuing to fly-tip in the atmosphere. That has to come in somehow. From Orkney's point of view, we think recognition of what we are doing, a mandate to do more, and the flexibility over some regulation, would make a huge difference.

Q104 **Andrew Bowie:** Thank you, Mr Milne, and Mr Kermode, for coming this afternoon. I am going to ask about jobs but, before I do, I am going to go back to a comment that you made about the supply chain and the fact that it was an 80% UK-based supply chain. Was it a conscious choice of yours to go down that road, or was that something that was forced upon you? Did you have other options that were cheaper and yet you decided to—

Christopher Milne: There are always other options, but no, we are very proud to be that company that originates in Orkney, with Scottish engineers, Scottish-based engineering, and we are a UK company. We very much wanted to make sure that we were flying the flag on all counts.

There are always options, but the reality was that we had the facilities, we had the skills, and we had the infrastructure. We could have chosen to do it elsewhere and then suffer import costs and transportation costs, but why would we? The skills and the facilities were here and we were proud to use them.

What we are doing right now are exercises and working on a project to see how ready our supply chain is to scale up to build five machines, then



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10 machines, 50 machines. We are working with the UK supply chain to make sure that it is ready and know what it is going to do and how it is going to invest in its own facilities should we see the visibility of this market.

Q105 Andrew Bowie: Of course, all of that is dependent on having the skillset there and a number of people trained and able to deliver for the demand that you predict you are going to have in the next few years. Representing Aberdeenshire, I have seen the number of jobs that have been lost, the number of people who have moved away as a result of the oil downturn in 2014, and the lack of equally skilled jobs to replace the ones that disappeared as a result of the downturn. Is enough being done to train those people in the new technologies? Are we attracting people from, for example, the oil and gas sector? Are we attracting enough people from the oil and gas sector into this renewable sector? What more can be done to train the next generation in the skills that they will need so that we can have a burgeoning, lively, successful, and profitable renewable sector in this country?

Christopher Milne: I would like to think that we are just in a hiatus at the moment, but the reality is that we are dealing with offshore fabricated structures. Fabrication yards exist. The people to work in those fabrication yards are still here. We are dealing with umbilicals and all sorts of other offshore engineering, which is very familiar to both shipbuilding and the oil and gas sector.

I think that it would take minimal retraining for huge numbers of those affected oil and gas sector employees to be able to retrain and be very positive, productive members of the growth of this emerging industry. At the end of the day, the only difference is that it is electrons rather than hydrocarbons that are going down those umbilicals and cables. The skillset is there. I believe minimal retraining would be required. I cannot speak for wind, but there is a huge amount of analogy for marine and tidal in particular, and yes, that skillset could easily transfer.

Neil Kermode: The estimates that we have seen show that about 4,000 jobs could be in the marine energy industry within this decade. We reckon that would rise to about 22,000 by 2040. We think there is meaningful and useful employment. We have not seen a skill shortage. We have seen that people are keen to find ways to get involved in marine energy. From EMEC's point of view, we have increased our staff by 17 people even during the pandemic. We have taken people on. Our main challenge is around electrical engineers. The continued push towards STEM subjects is critically important.

Q106 Andrew Bowie: Mr Kermode. You have already spoken about how EMEC is the NASA of renewable energy, which is an incredible description.

Neil Kermode: It was not my quote. It was one of my colleagues who came from Chile to join us.



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Q107 **Andrew Bowie:** That just shows that you can attract people to the sector. On STEM, what are you doing with universities and schools? Back when I was at school, in the dark ages, the oil and gas industry used to come in and encourage kids to join BP, Shell or Total, and have a great career in hydrocarbons. Are you doing the same sort of thing? Is there a cross-industry or cross-sector move to get into the schools and encourage people to get into STEM subjects and get into this growing sector?

Neil Kermode: I wish there were. Orbital: how many people have you got, Chris?

Christopher Milne: At the moment, 32.

Neil Kermode: So 32 people; we are not BP. We do not have the firepower to do that. We know we need to. A certain amount of information is shared with universities, but not enough. We know that there is a lot more that could be done in that space. There is a huge amount that will be done.

If we are talking about putting in the thousands and thousands of machines, they will all require people. By definition, a lot of these things will happen in coastal areas and the best place to service them is the coast near the area where the tide is. These are going to be very localised activities so even if the machines are built elsewhere, possibly, and brought in and deployed, that is one model but, frankly, we could build them here. We could show them we can build them here and we could do this if we want to, but we have to show that we want to.

Q108 **Andrew Bowie:** What we don't want to do, like with wind, is have the expertise overseas and then be importing all the technology to be put in place.

Neil Kermode: With offshore wind we have ended up with pretty much small-scale jobs. The real high value work, the vessel suppliers, the really complicated IP stuff. That is all sitting overseas. We have paid a high price for walking away from wind back in the 1980s, absolutely.

Q109 **Andrew Bowie:** Have the green jobs funds from the UK or Scottish Governments been of help to either Orbital or EMEC?

Neil Kermode: Pass—I am not quite sure. I would have to speak to my finance director because I cannot remember exactly where we have been getting help. We have been grateful for the help we have received. We see support through people like Highlands and Islands Enterprise and Scottish Enterprise. They route things through.

Christopher Milne: We have reviewed it for both the funding intensity and the quantum. Coming back to the point, the reality was that jobs are mouths to feed. Jobs are permanent fixtures in your business, and we want more. We want to grow our business and employ as many people as we can. When we are working project to project, bringing on a full-time



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member of staff is quite challenging because you do not know if they are going to be as busy and the requirement is still going to be there in two years or two and a half years if the CfD is in place.

I said 80% content. We have looked at and assessed the potential for doing more manufacturing in the UK—not less, more. We would consider potentially setting up or cofounding and being JVs. We have had our own manufacturing facilities for certain components in parts of our turbine. That type of project would have been eligible to bring in staff and apply through the green jobs fund, but because we are having to do everything more short term and because we don't have the visibility that the market creates, we were simply precluded from applying for it. We may have been eligible as a company, but we could not find a project that would fit because we don't have that visibility.

Chair: Thank you both. That was fascinating and interesting, as always, and thank you for your time in coming along this afternoon.

Examination of witnesses

Witnesses: Dr Gareth Davies and Steven Bruce.

Q110 **Chair:** Thank you both very much for your time this afternoon. For our record and for anybody who is watching our proceedings, please say who you are and who you represent.

Dr Davies: My name is Gareth Davies. I am Managing Director of Aquatera, a local company, and I am also on the board of OREF, the Orkney Renewable Energy Forum.

Steven Bruce: I am Steven Bruce. I am the Project Officer for the ReFLEX project for Orkney Islands Council. I am also a part of the energy team who manage the energy and emissions output of Orkney Islands Council's properties.

Q111 **Chair:** Excellent. Thank you for that. We want to look at interconnectivity, access to the grid and some more of the issues around transmission charges in this part of the session. I am pretty certain that you two have quite a lot to tell us about these various issues and subjects. We now see that Ofgem has conditionally approved a need case for a new cable to connect Orkney to the Scottish mainland. What was that process like? Was it easy to access it and progress? What difficulties did you encounter?

Dr Davies: It was anything but easy. It has been a two-decade odyssey that is not over yet. Orkney recognised that to realise the ambition that you heard about from the two previous speakers we needed a new grid connection as early as 2002. We have been in a constant dialogue with Ofgem and Scottish and Southern Energy since then about how we can best deliver that.



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That has involved a considerable amount of money invested, a considerable amount of time and, because it has still not happened yet, a lot of challenges have been faced, not only for the sectors in the marine energy industry but also for onshore wind within the communities and for home-based generators. We have 1,000 households on the islands that are generators. All of these groups, these cohorts, have been disadvantaged by that.

The other challenge is that the needs case process is quite remote from communities and from the generators themselves. The responsibility for submitting the case lies with the network operator, so the degree of collaboration and co-operation in preparing that case is at the behest of the operator. That has not gone particularly well this time.

The case that was put forward had some quite big holes in it with the generation needs on the islands. There is one good piece of news on the deadline that was set. The expectation for Ofgem was that we had to have 135 megawatts by Christmas of this year, and that has been put back a year. We are very grateful for that and that is probably the crumb of comfort we get out of the process at the moment.

Q112 Chair: Mr Bruce, I imagine that Orkney Islands Council has been pretty much involved in this whole development and there is quite a number of bits of resource to be put into this. Who is going to be paying for this new cable and substation if it is delivered?

Steven Bruce: I am not entirely sure of the exact people who are going to pay, but the wind turbine project itself—the community wind turbines—is funded by Orkney Islands Council. That is about 86.4 MW and is part of the 135 MW confirmed required by Ofgem, but SSEN's own assessment was that that 86.4 MW would be enough on its own to justify it and the additional capacity would be attractive to marine renewables developers.

Q113 Chair: Mr Davies referred to some of the microprojects that we have seen in abundance on the islands and the contribution they make. Mr Bruce, could you give us a flavour of the difference it would make to this emerging economy and dynamic activity in the islands if we managed to secure this grid connection?

Steven Bruce: Certainly. The hope is that if that grid connection was made and we could develop all these technologies at a large scale within the islands, we would be able to create a large number of jobs. Recently the council received a report that we commissioned on the benefit to Orkney and then to Scotland as a whole. We would hope to see around £807 million worth of economic benefit to Orkney.

Chair: How much? Say that again.

Steven Bruce: £807 million worth of economic benefit to Orkney and then over £1.5 billion for Scotland.



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Q114 **Chair:** Are these figures that you recognise, Mr Davies? Could you give us a little bit of a flavour of the difference this could make to the islands?

Dr Davies: Absolutely. It kind of goes back to the evidence you heard in the previous session. At the moment we have a system of evaluation of costs that is purely based on customer costs down the wire, but what we do not take account of is the other benefits that come from that: the employment benefits, revenue benefits, supply chain benefits. All of this technology, a wire, a substation, creates business opportunities as well. The amounts of money involved in upgrading the infrastructure are significant.

Q115 **Chair:** Could you give us an idea of what they would be?

Dr Davies: The cost of the transmission cable connection across the Firth is around £200 million—up to a certain level, let's say 150 MW or so. You could put in a slightly bigger cable for a relatively smaller sum. If you put in an extra, say, 50 MW that might come at a 10%, 20% extra cost. Then you can start to put on the tidal generation and the wave generation. That integrated way of thinking about system development is one of the things we have been crying out for.

The other piece is that within the islands we have a situation where our distribution grid, the smaller scale wires that connect our communities, are not able to cope with the reverse generation that we spoke about. If people are setting up their houses to generate energy and feed it back into the grid, that is filling the distribution wires. We also need to think about linking the distribution network and the transmission network in one process, but at the moment they are split into separate processes.

Q116 **Chair:** I presume that this is not something that is unique to Orkney as an island community, and it is something that is experienced by a range of islands across Scotland. I think we are assuming that you all have the same type of resource even though in certain parts of Orkney it may be a little bit more abundant. Is it the case that most of the island communities are finding this difficulty with the connection?

Dr Davies: In our own case, Orkney already has a small grid connection to the mainland. Shetland does not have a grid connection but hopes to get one through a similar process, but they have been waiting 10 years now for their grid connection. The Western Isles, like Orkney, have a small grid connection but are very keen to get an expanded grid connection. This infrastructure allows the communities to participate and provide the resources that Neil and Chris have spoken about.

As energy customers we pay every month for a proportion of that investment: £150 of a normal bill goes into the investment in socialised infrastructure. Every bill that Orcadians pay is paying for infrastructure that is put somewhere. You would expect that maybe on a cycle of fairness eventually that infrastructure would come to us, but we have been feeding in for 50 years and we have never been able to get the opportunity for that infrastructure to be provided here.



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Q117 **Chair:** I hope that if we come back in five years' time you will have your connection, but what happens next? Are there any timescales planned for making sure this is delivered? Mr Bruce, can you help us with that one?

Steven Bruce: I am not entirely sure on the final timescale for delivery of the cable. That will be in the planning process.

Q118 **Chair:** Are the planning arrangements a matter for Orkney Council?

Steven Bruce: Planning for the community wind turbines has been forwarded to the Scottish Government for a decision. It was felt that was the best way because of the conflict of interest. We would certainly be pushing to have that all ready by the deadline, but beyond that it is out of our hands. We can push, but the work is bound by regulation.

Q119 **Chair:** Will it be here if we come back in the next few years?

Dr Davies: I am absolutely sure that the Orcadians will have found a way of dealing with whatever situation is thrown at us, which is what we have done to date. It links back to the CfD argument as well, because at the moment the onshore wind regime has also suffered.

We have talked quite a lot about wave and tidal but onshore wind has also been constrained by the previous CfD philosophy. That needs to be in place, so to pay for the grid people need to win CfDs to have the option of accessing the market. That theme of market access is really key. The system at the moment does not suit the kind of generators we have here.

Q120 **Wendy Chamberlain:** Thanks to you both for your time today. I suspect I know the answer to this, because I asked the previous panel a similar question. Do you believe that transmission charges have affected the development of renewable energy in Orkney? I suspect the answer is yes and negatively, but if we say no—

Dr Davies: There are a number of issues with transmission charges. Everybody understands that somebody somewhere needs to pay for transmission and that is perfectly fair and understandable. A number of decades ago the UK set up a locational scheme that has bands that go up the country. As you go further away from the south-east it becomes more expensive to access the grid.

That means that, for example, in Orkney the estimates—I will come back to that point—are that we might have to pay £100 per KWh to access the grid, whereas if you are in Caithness it would be around £25 per KW and as you get further south it drops. If you are in Cornwall you will get paid £10 per KW to access the grid. That is one of the things that we have to deal with.

The other problem is that the predictability of that cost is just not known. It has been a matter of debate and the ranges have gone from £150 down to £50 in Orkney. We have a less than 50% and more than 50% variability. To go to the investment proposition, if you are going to



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investors and saying, "Your access to market could vary from here to here," it is an incredibly difficult economic proposition to make. Those are the two biggest hurdles.

Q121 Wendy Chamberlain: It is a barrier with costs but then the lack of certainty of costs presents an additional barrier. I understand that, as Ofgem has said, people closer to electricity being generated pay less for that electricity. We have heard today what Orkney is doing in renewables. Is that the case; is Ofgem correct, Mr Bruce?

Steven Bruce: We do suffer because of that in Orkney. We have higher energy prices just because of the system we are burdened with. It seems bizarre that we are a net exporter of electricity and yet we have among the highest levels of fuel poverty and higher electricity prices because of that. It is frustrating.

Q122 Wendy Chamberlain: Has that been one of the barriers or how has that shaped the community wind turbine conversation? In some ways you can see it is right there being generated but you are paying more. Has that made it more difficult?

Steven Bruce: I don't know if it has made it more difficult. As a council, we want to invest in renewables just for the good of the planet and the country. We would like to see an economic benefit: that money from the generation coming back into the council and that could be reinvested in better infrastructure to provide better services for Orcadians. That is our grand plan, but I think it certainly makes it a lot harder to justify with the increased costs for that export.

Q123 Wendy Chamberlain: Dr Davies, you clearly think there is a number of challenges, but what do you think Ofgem needs to look at? What would improve the situation? What might a blank piece of paper for transmission charges look like?

Dr Davies: It is basically a new system. There is not much of the current system that meets this new world order, so that involves radical change, and often people are resistant to radical change. We are facing a climate emergency, so it is probably not surprising that our regulatory system and the charging regime need to change, particularly because where energy comes from now is very different from where it came from in the past, and it is going to change again in the future.

Going back to the point Neil made, the way in which we value energy needs to be different. It is not just how much we pay in our bills. It is about the jobs, the investment and the wealth that comes to the country. It is about the carbon content and the secondary costs that come from continuing to burn oil and gas as opposed to renewables. It is about the export opportunities. This country needs to think fairly carefully about how it presents itself to the world. If we want to be part of that export community selling clean technology over the next three or four decades, we have to be leading that. It is really important that we make the right



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moves there and at the moment we are getting held back by the regulatory and charging regimes we have.

Q124 **Wendy Chamberlain:** It is preventing you from creating the market, as Mr Milne suggested.

Dr Davies: Absolutely. It is all linked up and we need all of those building blocks to be in place. We end up papering over the cracks in one area to allow things to progress but that means that we are not functioning at full potential at the moment.

Q125 **Andrew Bowie:** Thank you very much, Mr Davies and Mr Bruce. The net zero targets are described by many of us in Westminster and in Holyrood as being ambitious and world leading, and in many respects they are. Do you agree? When various pieces of legislation are passed or announced or made in either Parliament, nine times out of 10 it falls on the local authority to deliver the changes required so that we meet our targets nationally. Are we ambitious enough and are you getting the support that you need as a local authority to deliver what you need to do so that the UK meets its net zero targets?

Steven Bruce: We are lucky in Orkney that the targets should be relatively achievable. There are some factors that are going to be quite difficult to overcome. There is quite a reliance on oil heating with no connection to the main gas grid, which is a bit of an issue. Electrification of heating is going to be the main target for a lot of our work, certainly in our commercial properties. We have been doing so for a few years.

We are now moving towards heat pumps and electrifying those alongside making the buildings as efficient as possible. We have had the support of the non-domestic RHI for that in many cases, but unfortunately that has ended now for non-domestic. That makes the business case for the additional capital cost that little bit harder to make.

We are really keen on decarbonising across the board. We have only a limited budget for these works and that only goes so far when you have multiple schools and office buildings to maintain, retrofit, take out the oil heating and electrify the heating in there, as well as improve the fabric of the building with insulation upgrades. On new builds, there is an additional capital cost. We tend to go for ground source. We do live in a maritime environment, and we have found that air source can be a little bit more susceptible to corrosion, whereas with ground source you have got the bottles under the ground and protected and then your plant that is generating the heat is inside and protected. That is a more efficient technology that comes at a higher price.

Dr Davies: Targets are really important because they drive ambition. I don't think you can be too ambitious about climate change because the imperative is so great. To me, the fact that we didn't quite get there is still a success because it was an ambitious target. You are better to set ambition and just come under it rather than play safe.



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Something that might be useful on targets is working at the regional level. Orkney has used its experience over the last 20 or 30 years to help other countries in their developments, and we advocate the approach of regional development targets in other places. The reason for that is that different parts of the country have very different contributions to make.

If you think of Orkney, Shetland and the Western Isles, where we have the tremendous resources that you have seen today in abundance, the role that we are going to play in decarbonising the UK is going to be huge and it is going to be very different from that of, say, central Perthshire or central Glasgow or whatever.

That does not mean we are better or worse. It just means that the contribution that we have to make needs to be totally different from other places, and the national targets do not reflect that regional focus. That allows different realities to start to build up in people's minds. Developing regional targets that reflect the contributions that different places can make to that overall target could be really helpful.

Q126 **Andrew Bowie:** If you had one ask of the UK Government that we could take away from here, would that be it?

Dr Davies: It is one thing that could make a difference to the targets. It links to the market and all of the other things that people have talked about. If you start to say Orkney is going to have x amount of tide, x amount of wind to contribute to the UK system, everything else has to fall into place to support that.

Q127 **Andrew Bowie:** Mr Bruce, if you had one ask of the UK Government on this issue, not on anything else, what would it be?

Steven Bruce: I would probably agree with Gareth—something that is a bit more appropriate to local conditions, not just a blanket, "You have to reach this target."

Q128 **Andrew Bowie:** Is that the impression you have right now—that the UK Government have a blanket target of net zero 2050 and it is a race to see who gets there first?

Steven Bruce: There is certainly an impression of that. That is my view. Others may have different views.

Q129 **Sally-Ann Hart:** I want to ask a bit about local communities and their behaviour and the requirement for behaviour change in relation to climate change and renewable energy. Obviously, we are going to have to make changes and we have to take people with us. If people start thinking that everything is going to cost more and so on there might be a reluctance from the general population to come along on the journey for hitting net zero. Orkney is quite advanced in its production of renewable energy. Has there been opposition to this in Orkney, Mr Bruce? Have the population been going along with that, or have they opposed it? Can you tell me something about that?



Steven Bruce: It has largely been very well received. There is a minority who are against it. It is not really the technology or the need to decarbonise; it is more along the lines of there are too many wind turbines and they are spoiling the landscape and the views. I think in principle the vast majority are in favour. On the potential increased costs, we have tried to show through the ReFLEX project, which Gareth is a part of, that that does not necessarily have to be the case.

There are ways of decarbonising in a cost-effective manner, and if we have the support we can help people come along on the journey to decarbonise, to electrify their heating, transport and all those things that we use. I think that generally it has been accepted that we will get there but there is a difference of opinion on how with the main minority.

Q130 **Sally-Ann Hart:** You indicated to Wendy Chamberlain that the cost of energy is not cheaper on Orkney with the renewable energy. How has changing the systems been funded? Have you buffered the cost for local people if it is them who have had to pay more? How has the funding been given? Where has it come from?

Steven Bruce: Perhaps Gareth could give you the detail on that because he is all over that topic.

Dr Davies: The price that we pay for our energy is a UK-based price. We have no freedom to intervene in that process and that is one of the problems with the current system. It was set up to protect the centralised generators and—to use a technical term—peer-to-peer trading. That has been experimented with, but we have not been able to adopt that.

The high prices that come with fuel poverty are basically driven by the fact that in previous times the system imposed a 2p surcharge on people in the north of Scotland and the islands, because of the difficulty in getting energy to them. When that became politically uncomfortable, a measure was put in place to cross-subsidise to take that out of the system.

As well as that, people's houses tend to be in exposed locations. They wick heat away and the amount of energy that you need to heat these homes is high. We don't have the option of gas as a heating alternative. You can go to gas and get a cheaper heating solution in most other parts of the country, but we don't have that here. We are trapped in this electricity and oil bubble for our heating costs, which is the main part of that. That has been a key driver.

Q131 **Sally-Ann Hart:** Would you say that there has been a just distribution of the financial burden?

Dr Davies: Not at all. I was just looking at some of the numbers in the White Paper again, and the challenge that we have with energy policy is that it is all about average households. We run our country on the basis of average numbers, and of course up here we are not average. There



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are some things we are fantastic with but there are other things where we really get penalised.

A typical household bill on average in the UK might be £1,200. It is probably £300 or £400 more than that up here. We use energy for mobility, for the ferries and aircraft. The amount that people in Orkney pay for transport is much higher than in other parts of the UK because of the cost it takes to get off the islands. We always say that Orcadians understand energy much more because they pay more for it than any other part of the country.

Q132 Sally-Ann Hart: Looking at the whole aspect of localism and passing power back to local communities, that is what we really need to do, don't we?

Dr Davies: Yes, we would all raise a cheer at that.

Q133 Mhairi Black: I would like to ask you a bit about something Andrew asked the previous panel about. When it comes to new workers coming in, are the bulk of the people being retrained from a specific sector, or is it people who are brand new to the job market, or is there a healthy mix of the two?

Dr Davies: There is quite a mixture. What is interesting about Orkney as a jobs market is that we have had virtually total employment for 20 years. If there is a new job created it is either going to pull somebody from an existing job or you are going to pull somebody new in.

If you look at our population, it was just below 20,000 in 1999 and it has gone up to 22,250 now. We have increased by 10% over that period. That bucks the trend that some of the other islands have experienced. A lot of that is new workers coming in to support the renewable sector. You could go down the list of who works in the sector and say, "They came in for that job. They came in for that job." Therefore, it is a very tangible issue.

Going back to the point that you raised about training. One of the other features of renewables is that it has been pioneered here. We are not necessarily looking for new people to come into the sector and be trained up by people to do a job. What we need is experts who are innovative and ground-breaking in their field to come together to create something that has not existed before. We are still at that early stage of development. Attracting talent is our biggest thing.

What has happened—maybe Steven can talk to this—is that there has been then an influx of opportunities for younger people to come and get involved in the sector.

Steven Bruce: My own experience was at the wrong time. I went away and did my first undergraduate degree in mechanical engineering and then I came back and did my masters. The ICIT campus in Stromness just happened to be there, and there was a bit of a downturn in



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renewables at that point. Since then, certainly, more of my peers have become part of the industry. They are not necessarily spending all their time on it, but they have certainly gained experience and have been trained in renewable technologies or work in the sector.

From the council's point of view, in the long term we would like to see a pipeline of school leavers joining the sector, either through apprenticeship or further education and higher education. There is the risk at the moment that people will go away, start their career somewhere else, and then they will not come back. What we need in the long term is those people to come back and be the experts that Gareth is looking for.

Q134 Mhairi Black: Would it be fair to say that there is almost like a chicken and egg situation. You want to attract people with experience and innovation but how can you attract them if you are not getting concrete projects off the ground? Is that essentially what the main problem is?

Dr Davies: This links back to Chris's point about the market. If you have the market it can pull other things there. Because we have not had the market and we have had to adapt, what we have done is make innovation a substitute market. That gives you a certain level of capacity, but you are employing 10 people rather than 100. That is where we have done well: we have invented capacity and we have innovated to support that innovation marketplace. What we want to do now is scale it up. Part of it is because we want the jobs, but it is also because we have the energy there and we know the country needs it.

Q135 Mhairi Black: Lastly, do you think that enough people are being trained in the renewable sector, certainly to meet what our targets are?

Dr Davies: If there is a need for training—this may sound a bit circuitous, but it is absolutely true—it is needed in the organisations that are controlling energy. As Chris said, we have all the skills and the capacity we need; we just need the space for that capacity to be made productive use of, and that involves organisational change and development.

Q136 Chair: Obviously, what you have here is fantastic. We enjoyed our time here looking at what is available and the opportunities that there are for people on the island. We know this is leading and cutting edge internationally. Who are the competitors internationally who are looking at this? What do we have to do to ensure that we remain predominant and do not give way to somebody who might be coming in here to try to take over?

Dr Davies: We are lucky in our business. Part of this adaptability is that we have internationalised in the last 10 years. We are working in 20 different countries at the moment. There is a long list of places that are interested in Orcadian expertise and Scottish and UK expertise. Something that we have come to realise is that it is not a competition in the sense of winners and losers, because the need is so great that what



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we have to do to make our contribution is just scale up. That will be more than enough success for everything that we could want.

The problem at the moment is that we are not necessarily seeing that joined-up strategy to allow us to make that contribution. The US—obviously with Joe Biden coming on board—is making a huge investment in renewable energy. Their investment levels in marine energy alone are going to be billions of pounds a year. At the other end of the world, in south-east Asia, countries like Indonesia, the Philippines, Japan, Taiwan have a paucity of energy themselves, so they are looking to their resources and are very fleet of foot. The UK can make a huge contribution in these places, but we have to make sure that we keep our position at the table.

It is better for us to think about how we can maintain our capacity to make a contribution rather than being seen as somehow winning that game, because that puts us in conflict with other people whereas what we need to do is work with them.

Q137 Chair: The countries that we have heard probably most about are Chile, China and Canada. Are those the other nations that are in this game? What is your view about collaboration versus competition and what we need to do in order to keep this position that we have internationally?

Steven Bruce: We are in quite a lucky position in Scotland. We have all this resource and expertise. We need to make sure that we maintain that and that it is exportable, from a local level to a national level and then an international level as well. Later on, I suppose, there will be competitors, but we do have that advantage of the early adoption, which we need to scale up to make it something valuable, something exportable so that we do not then fall into the situation that was mentioned previously with the wind industry with Denmark.

As to the countries with the large resource, they will be looking to develop ahead of us. They might look to maybe take some of the expertise we have if they can afford it. We need to make sure that we have it and it is exportable, but essentially it is retained within the UK to benefit us.

Q138 Mhairi Black: Forgive me if this sounds a daft question but, in layman terms, if Orkney was able to realise its full potential in resources what could that power do, in terms of the actual energy it is producing? Just to give a context to it.

Dr Davies: We did this calculation when our Prime Minister came to visit last summer. Basically, if you look at the productivity of the wind, the waves, the tide, the area around Orkney, Shetland and the Western Isles can deliver 50% of the UK's total energy needs. Not just electricity; this is replacing oil and gas and other forms of energy. Half of our total energy demand can come from this part of the world.

Q139 Mhairi Black: If it is as obvious as that, why are we not there yet? Is it



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politics?

Dr Davies: It has taken us a little while to realise what is on our doorstep but if you are into the middle of average households here and small changes there, sometimes that big picture gets missed and, as we saw last night, the recognition of a climate emergency forces you to think differently. They say the status quo is not an option. When you are close to that resource it allows you to have that vision more easily.

Certainly, all of you coming here today and yesterday is a big help. That helps spread the message and helps show more people what the potential is and how we can meet that need that is desperately required at the moment.

Chair: On that very positive note, thank you both very much and all the other guests today. Once again, this has been a fantastic and fascinating trip for us. This goes to the previous panel too: anything else useful that can help us with this inquiry please pass it on. Looking around at colleagues here, I am certain we will be keen to include what we found here as part of our report and the conclusions and recommendations but, for today, thanks for your time and attendance.