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Official Report

ECONOMY, ENERGY AND TOURISM COMMITTEE

Wednesday 28 March 2012

Session 4

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ECONOMY, ENERGY AND TOURISM COMMITTEE
11th Meeting 2012, Session 4

CONVENER

*Murdo Fraser (Mid Scotland and Fife) (Con)

DEPUTY CONVENER

*John Wilson (Central Scotland) (SNP)

COMMITTEE MEMBERS

*Chic Brodie (South Scotland) (SNP)
Rhoda Grant (Highlands and Islands) (Lab)
*Patrick Harvie (Glasgow) (Green)
*Angus MacDonald (Falkirk East) (SNP)
*Mike MacKenzie (Highlands and Islands) (SNP)
*Stuart McMillan (West Scotland) (SNP)
*John Park (Mid Scotland and Fife) (Lab)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Jim Brown (Scotland's Colleges Energy Skills Partnership)
Simon Forrest (Nova Innovation Ltd)
Linda Greig (Carnegie College)
Robin MacLaren (Institution of Engineering and Technology)
Martin McAdam (Aquamarine Power Ltd)
Gordon McGuinness (Skills Development Scotland)
Rob Moore (National Skills Academy for Power)
John Robertson (Burntisland Fabrications Ltd)
Andrew Scott (Pelamis Wave Power Ltd)
Professor Sean Smith (Edinburgh Napier University)

CLERK TO THE COMMITTEE

Stephen Imrie

LOCATION

Committee Room 6

Scottish Parliament

Economy, Energy and Tourism Committee

Wednesday 28 March 2012

[The Convener *opened the meeting at 10:07*]

Renewable Energy Targets Inquiry

The Convener (Murdo Fraser): Good morning, ladies and gentlemen. I apologise for the slightly delayed start to the meeting.

I welcome members, our witnesses and the members of the public who are in the gallery to the 11th meeting of the Economy, Energy and Tourism Committee in 2012. I remind members to turn off their mobile phones and electrical devices. We have apologies from Rhoda Grant MSP.

We continue our inquiry into the Scottish Government's renewable energy targets. Two panels of witnesses will join us.

The first panel will discuss skills. I welcome Jim Brown, who is director of Scotland's Colleges energy skills partnership; Gordon McGuiness, who is from Skills Development Scotland; Linda Greig, who is director of business and sponsorship at Carnegie College; Rob Moore, who is operations manager on low carbon at the National Skills Academy for Power; and Professor Sean Smith, who is director of the institute for sustainable construction and professor of construction innovation at Edinburgh Napier University.

Would anyone like to make brief introductory comments before we move to questions?

Jim Brown (Scotland's Colleges Energy Skills Partnership): I will say a little bit about the energy skills partnership. The partnership was established in September of last year and I was appointed in December. It is a collaboration involving 22 colleges, which have come together to support the energy sector. The partnership also has eight associate colleges that are interested in working with us and supporting our work. There is a good structure to take the work forward.

We work with the Government and Government agencies to take forward activities. Our priorities include oil and gas; carbon capture and storage; wind generation, transmission and distribution; microrenewables; and energy efficiency. We are looking at the complete mix.

Gordon McGuiness (Skills Development Scotland): I head up Skills Development Scotland's industries team. We are active members of the Scottish energy advisory board and have worked with it over the past year and a half. We published the energy skills investment plan, which was endorsed by the energy advisory board and the joint skills committee. We have established an industry-led energy skills sub-group to drive the plan and we co-ordinate resources between our modern apprenticeship programme and our activities with Scotland's Colleges energy skills partnership. That partnership links in with the energy technology partnership, which runs across our universities.

Linda Greig (Carnegie College): Carnegie College is at the forefront of the delivery of the modern apprenticeship for wind turbine technicians in Scotland and in the United Kingdom. We work with major suppliers, such as Scottish and Southern Energy, Siemens, REpower and the Weir Group, along with engineering companies. One of the companies that we work closely with, BiFab, is represented on the second panel.

Rob Moore (National Skills Academy for Power): The National Skills Academy for Power is part of the Energy and Utility Skills group, which is the sector skills council that is responsible for qualifications and standards in the power industry. We are part of the group that created the wind turbine qualifications and apprenticeship. We work with the power industry on a broad range of issues, one of which is renewables, and we collaborate with sector skills councils in other energy areas, such as the oil and gas sector and microgeneration.

Professor Sean Smith (Edinburgh Napier University): I am here on behalf of Edinburgh Napier University and the institute for sustainable construction, which is based at the university. My main role relates to land-based renewables—particularly microrenewables—the green deal and issues that will arise in the future.

Edinburgh Napier University also has the biofuel research centre and we do a lot of work in fuel cell technology. We are interlinked with the ETP, the Edinburgh centre for carbon innovation and many other low-carbon technology projects that are happening across Scotland.

The Convener: Thank you all very much. A number of members have questions that they want to explore with you. Given that there is a large panel, please do not feel that you all have to answer every question—otherwise, we might be here for quite a while. If you want to respond, catch my eye and I will bring you in.

John Park (Mid Scotland and Fife) (Lab): Good morning. I would declare a few interests—I know a few people round the table—but it might take up a bit of time if I named them all.

I have a general question that relates to an issue that we have encountered in our inquiry about aspirations and what we are trying to achieve. Our aspirations pose unique challenges for those who are trying to deliver skills in the sector. Does the available data enable you to map out the skills that exist among people who work in more traditional industries, where the skills needs will be in the future and what interventions need to come from Government to meet those needs?

There is a chicken-and-egg scenario, as employers debate whether now is the right time to invest and what will come out of that investment in the future. Can you comment on the challenges and what can be done to meet them? Is the industry on course to have the skills that are required to ensure that we meet the targets?

Gordon McGuiness: The process that we undertook to develop the energy skills investment plan involved work with the sub-groups of the energy advisory board on renewables, oil and gas, and thermal generation and carbon capture and storage. A fourth, on power networks, has been added. We drew on and assessed a lot of the existing labour market information and looked at the job figures and the projections for potential jobs.

On renewables, we worked with Scottish Renewables, which, along with Scottish Enterprise, produced an offshore wind route map that included a number of scenarios. We built up our figures and produced a model of the sector and, from that, potential job numbers.

We highlighted in that work the potential for an increased number of apprentices and opportunities for graduates. We also highlighted the requirement to transition people from existing engineering activities into the sector and therefore a requirement not for modern apprentices but for adaptations to people's existing skills. We will continue to do that work and have brought some additional funding to the table for it.

We can also build on the work that Scotland's College's energy skills partnership will deliver and will continue to refresh the figures that we have got from the studies—indeed, an exercise is under way to do that.

There was originally an expectation that more people would move from oil and gas into renewables, but that migration of skills has not happened because the oil and gas sector has picked up, driven by the price per barrel. Collectively, we now think that it is unlikely to happen, and that we need to think about how we can bring more labour and skills into the marketplace. We can do that by being innovative, and a number of pieces of work have been done, such as introducing to the sector personnel who leave the armed forces. We need to continue our dialogue with employers and keep the flow of information going as much as we can.

10:15

Jim Brown: I concur with what Gordon McGuinness and John Park have said. The lack of real knowledge and understanding of the demand that is coming from employers is a challenge for the college sector. We are trying to ensure that we have the necessary capability and capacity in place so that, when the industry communicates the need, we can respond quickly. That is the key challenge. We are working with colleges to develop continuing professional development programmes for staff to take that forward across the energy mix, but we are also producing a resource matrix to identify what capability we have with regard to capital equipment, capital facilities and expertise that we can use and share between Scotland's colleges.

A number of good things are happening, but we need to understand the demand. We are putting the foundations in place to ensure that we can do that when it comes.

Another key thing that we are working with is the renewables training network initiative. Rob Moore at the National Skills Academy for Power is involved in that. The initiative was set up by RenewableUK to take forward transition training and identify the challenges in that area, and we are working closely with it.

To sum up, we now have a good structure of organisations that are working together to understand the demand and prepare for when it comes.

Rob Moore: I want to talk about two things. One is the renewables training network, which Jim Brown mentioned. The plan for that RenewableUK-led project is to identify the short transition courses that will help people with experience to move into the renewables industry. Research that has been done in England has helped us to prioritise some of the transition areas. What is preventing people with skills from moving into the industry? What are the small bits of training that they need? We are starting to work with providers to create those courses and make them available, and to get industry to sign up and say, "This is what we want and will use." That gives confidence to the providers.

The initiative is being extended into Scotland. It will not be exactly the same; it will be a Scottish version that has the same objective—to introduce transition training—but the research is being done separately in Scotland to find out what the Scottish requirements are.

In addition, we have a workforce planning model, which was developed by Energy and Utility Skills in England. It asks large employers to enter data on their workforces and the skills sets that they have, and it helps them to predict the way in which they will recruit in future and where the skills gaps will be. We are part of the way through developing skills sets for renewables, which will enable renewables companies to look at the skills sets that they will have over the next five, 10 or 15 years and to look at recruitment strategies. In that way, they can start to predict when they will need to bring on apprentices, whether they need to go into the marketplace, and what the availability in the marketplace will be. That will give us some accurate data on the skills that we need.

Linda Greig: What concerns Carnegie College is that many of the employers that we deal with are looking for multi-skilled people who are employable at the point when they ask for them. To go through an apprenticeship takes four years, or five years in some cases. When we look at the targets and what has to be achieved by certain dates, that is worrying. There is an idea that there is a group of people out there who are waiting to be employed, but that is not the case. We are not seeing them coming from oil and gas.

We are starting a new transition course in December so that we can try to get adults geared up for the sector. However, it is worrying that there is a lack of realisation that it will take four or five years to take modern apprentices through to being employable.

Professor Smith: On the unknowns around the demand side of things, back in 1979, when Edinburgh Napier University—Napier University as it was then—started its energy postgraduate courses, it was the first in the country to do so. The key point was that we could not focus on just one discipline. We needed electrical, civil and chemical engineers and so on as part of that training.

We have tried to keep that going throughout the recent courses. They have diversified, but it is important that whatever training is provided covers in as much detail as possible the practical aspects of those different skills. It is not just one skill set, particularly at the professional level—it is a mix. Any future courses need that mix so that we do not put all our eggs in one basket and so that we have that Scots lad o' pairts, or lass o' pairts, with knowledge that fits what companies need.

John Park: The short transition aspect that was raised interests me, because it obviously depends on the balance that Linda Greig referred to between the people who are coming into the pipeline and the people who are already in the industry. Where does that balance sit now? Quite a lot of the committee members presumed that this was mainly about people who were already working in the industry and how we could intervene to help them to upskill.

The labour market was a lot better about 10 years ago. In areas such as Fife a lot of traditional industries, including manufacturing, declined, but opportunities in the financial services sector appeared so people could move from one job to another. It was a lot easier then—people were able to make decisions as individuals because of a vibrant labour market.

We are in a different situation now. Who has the responsibility to ensure that people have the skills to move on? Is it the individual, their current employer, their future employer, the Government, or a mixture of all of them? If it is a mixture of all of them, what can the Scottish Government do specifically to facilitate that and to make sure that they get those skills?

Rob Moore: You asked about where the balance sits now in terms of where people are coming from. With the employers that we work with the general rule of thumb is that between 15 to 20 per cent of people are standing starts, or new employees. The other 80 to 85 per cent come either from within the organisation—people who move to a new role—or from elsewhere in the workforce, with some skills. That is a broad outline—there are no absolute facts—but the majority of people come from related industries or from within the industry.

Gordon McGuinness: Skills training will be a mixture in terms of co-investment—we have brought some resource to the table in terms of a low-carbon skills fund that provides 50 per cent support for training, particularly for small and medium-sized businesses. That has been picked up well: we have supported probably around 1,200 employees through the programme, picking up on different sets of skills—some around microgeneration and solar activities. That fund is there for employers and we have kept it as flexible as we can.

In terms of interest, we have been working with the Nigg Skills Academy, the Global Energy Group and partners in the Highlands. The Nigg Skills Academy facility was opened last week and in the run-up to that it had something like 400 applications, so the demand to get into the sector and into those types of jobs is there. It will use the accelerated modern apprenticeship model that has been used at Rosyth and on the Clyde. Linda Greig referred to apprenticeships taking four or five years—we hope to accelerate that so that we can get people fully qualified in two to two-and-a-half years. It will be a much more intensive training programme.

Although a mixture of skills training is required, the important thing is for us to start a dialogue with more employers about what their requirements are and to start a planning process for the skills that we will need for the future.

Linda Greig: I agree that a partnership has to happen for any targets to be reached, because there are funding implications around the skills issue. If someone does a modern apprenticeship, that excludes them from being funded again for a further apprenticeship. There are funding issues that could impact on people who are transitioning from one discipline to another. The funding agencies, Government, employers, colleges and universities definitely must work in partnership or the approach will not work.

Jim Brown: There are a number of strands. We must attract youngsters from school. A number of people are being trained in engineering and energy-related disciplines in colleges and universities, and we must ensure that what we produce with the qualifications that we deliver is fit for purpose and is endorsed by industry. A piece of work is needed to develop that and to redesign some of the programmes to meet the industry's needs. We also need to ensure that the graduates are work ready. There has been a lot of criticism that they are not prepared for the world of work, and we are working with the energy technology partnership to investigate how we can progress that.

Appropriate support must be applied. That should be done through a partnership or combined funding, but it must be flexible so that we can adapt to employers' demands, which may come in quickly and need a rapid response. There are already examples of that happening, and we need to learn from and act on those.

Professor Smith: There is the potential at the postgraduate level for one-year, intensive training where we can bring in companies. A number of universities are doing that—they bring in companies to talk about, teach and provide tutorials on specific, key topics. However, we cannot wait for Joe Public to decide whether they want to do that. We need to look at some of the public sector models that were used previously, such as those that were used in teaching 15 years ago or in nursing eight or 10 years ago, where the Government ring-fenced funding and it was not left to the universities to decide where that ring-fenced funding would go, so to speak. If money is ring fenced for the sector, that money is for the sector.

Although I have not provided written evidence, I suggest we need to invest in the eight key areas, in which we are funding 25 positions at present. Those key areas are wave, tidal, offshore wind, onshore wind, microrenewables and buildings—the green deal was mentioned—community heating through biomass and biofuels, battery and fuel cells, and transport infrastructure. We could have 200 positions across the country. To embed each person will cost roughly £6,000, which is £1.2 million in total. That injection is small compared with the multi-millions that the companies and the Government are investing. If we look overseas, we can see that that is what Brazil is doing. Brazil, which needs to gather pace quickly, has a science without borders programme. The numbers involved are huge—100,000 postgraduate studentships will be funded. I am not talking about PhDs, but about embedding students. Postgraduate students are upskilling in areas where people who are already in the industry want to come in and retrain. That applies particularly to engineering skills. Those people are embedded with a company part time over one or two years, making sure that they have a work placement with the company where possible.

John Park: Engineering companies have raised with me the amount of specific funding that is available for each apprenticeship place, and that issue also applies to renewable energy companies. The issue of flexibility has been raised. What are your views on how the funding compares with funding in other sectors where apprentices are being trained? Perhaps Rob Moore could say how the situation compares with that in England, Wales and Northern Ireland.

Rob Moore: The position in Scotland is a lot better than that in England. The way things are going in England does not support the apprenticeship process so you are definitely ahead of the game. I am sure that others will comment on the amount of funding, but our perception—which comes from a UK perspective—is that employers are being supported more in Scotland and Wales than in England. Whether you are doing enough is another question. I will let Linda Greig talk about the amounts.

10:30

Linda Greig: The funding for employers for engineering and renewables is £9,000 for a 16 to 19-year-old, which reduces to £4,500 for an adult.

Apprenticeships involve a three or four-year programme. The first year with us is full time and is covered by the college's grant-in-aid funding. Thereafter, during the first year with their employers, the apprentices are still full-time students at the college, so the employers have to pay salaries for employees who are not there. Many employers—particularly SMEs—find that that is a drain and is not easy to cover.

Multinational companies take a straight look at the funding—what they would get in Scotland and

what they would get in England. I hate to say it but, in some cases, they choose to take their MAs from England, yet we still train them. They take them on under their own contracts because they can get increased funding—that is the reality.

Jim Brown: That is a key message that I am picking up from industry. I spoke to one of the big original equipment manufacturers last week and was told that it is unhappy with the funding that is directly attributable to the apprenticeship in Scotland. Other funding can be applied in Scotland through the colleges, but that does not always happen and, for those manufacturers, the level of funding in England is more attractive. The way in which it works here is very complicated. In Scotland, we have to apply college funding and apprenticeship funding to make the funding comparable, and the college cuts will potentially have a negative effect on that—that is my concern moving forward.

We would like reassurance that engineering training in colleges will be protected. There is nervousness in departments. Although there has not yet been a signal from any of the principals that there will be cuts, there is concern among the departments that engineering training may be cut back because it is more expensive to deliver. That would have an impact on apprenticeships, and if the English funding is more attractive, companies will train their apprentices in England rather than here. We must be careful about that.

The Convener: I will let Rob Moore back in, as that seems to contradict what he said a moment ago.

Rob Moore: No. The level of direct apprenticeship funding is higher in England, but I look at where the advantages sit and the Scottish funding, which funds all parts of a qualification, is very attractive because of the fact that it funds units. In England, if anything is added to an apprenticeship, it is not funded—the funding is for only the basic apprenticeship package. It depends on which apprenticeships people take, but Scotland encourages the inclusion of more qualifications and in England it is less attractive to do the things that add value. Employers look at which approach is most appropriate.

Gordon McGuiness: In the overall funding package, most apprenticeships have the national certificate element funded by the Scottish Further and Higher Education Funding Council and colleges. When our contribution of £9,000 for young people is added to that, the funding is comparable to the funding down south. All our apprentices are employed—that is one of the strengths of the Scottish system—whereas they have programme-led apprenticeships down south. Our model stacks up strongly.

We have tried different mechanisms, especially to support SMEs. We have used some of the group training associations to create targeted pathways, which takes a bit of the pain out of the first 26 weeks of the national certificate year, during which an employer pays the young person to study in a training centre or a college. There are different models that we are keen to explore with employers. For example, the Nigg Skills Academy will deliver the training on site in partnership with North Highland College. There are different ways in which to deliver that training.

The Scottish model has held up well. Our top contribution across engineering and construction is £9,000. We have not just sustained but grown the number of apprenticeships to 25,000 this year and we do not foresee a tail-off in demand. I am wary of employers chasing the numbers. They may get funding from England and train up here, but that will involve a lot more in travel and subsistence costs on top. They must look at the situation in the round.

John Park: How many of the 25,000 apprenticeship posts would attract the £9,000 support this year?

Gordon McGuinness: I would need to come back to you with a firm figure.

Chic Brodie (South Scotland) (SNP): Having listened to what you have said, I think that you all seem to be chasing the same ball—

Gordon McGuinness: I—

Chic Brodie: However, I could be wrong, so I need clarification, Gordon.

Gordon McGuinness: Sorry.

Chic Brodie: Where is the differentiation in terms of who establishes the demand? For example, SDS says in its submission that it is performing an audit of skills, resources, capacity and capability across Scotland's colleges to establish demand. We have to ask why that has not been an on-going process. How do we establish on-going demand? Who does that? Who has primacy in establishing what skills we need?

I spoke to the chief executive of one of our large engineering associations, who told me that he cannot get metal inert gas welders, tungsten inert gas welders, computer numerically controlled machine operators, project managers and so on.

Given the overall demand and what we are trying to achieve, why has the exercise that SDS has now embarked upon not been on-going? Who has primacy? What is the relationship between the organisations that are represented here today by Rob Moore, Gordon McGuiness and Jim Brown?

Gordon McGuinness: I will pick that up.

Chic Brodie: You sighed first.

Gordon McGuinness: The Government asked us to create a differentiated level of service for its key sectors and to play into the work of the energy advisory board. Traditionally, it was the role of sector skills councils, which are UK funded, to provide the labour market information that informed the Scottish skills system. We have worked collaboratively to address the issue. When we went into the subsectors, we found that the granularity of the information was not detailed enough. That was the case not only in energy, but in food and drink—

Chic Brodie: Are you saying that the UK sector skills bodies were doing an analysis of what we need up here, and there was a lack of granularity? Should we not be doing that here ourselves?

Gordon McGuinness: The UK Commission for Employment and Skills is a national entity that is run by the UK Government. It funds the sector skills councils. The work of the Scottish Government team plays into the work of the commission. The national bodies link in with employers to produce that picture.

We have started to work on the energy skill investment plans and investment plans across the key sectors. We have gone into greater detail in what is virtually a manpower planning system. Rob Moore referred to the work that E-Skills has done on its workforce planning system, which we supported financially in order to get a further reach into the Scottish system and Scottish employers. In oil and gas, we worked with OPITO and Robert Gordon University to conduct a much more detailed analysis of future skill needs in the sector.

We came into being three years ago and were asked to work with the energy advisory board in more detail. We have applied ourselves to that task.

Chic Brodie: Is that an on-going exercise?

Gordon McGuinness: It will be on-going. We will continue to refresh our information. We have some work under way to refresh the numbers and the projections.

SDS is just a small team. We work with our partners in the Scottish funding council to get into the colleges. I hope that I am not speaking out of turn, but the chair of Reid Kerr College in Paisley identified an issue that is relevant. The colleges and universities are all designed to be autonomous bodies that can set their own agenda, in relation to their local labour markets, but there is probably a lack of co-ordination around that across the country. We have set about rectifying that and have received good levels of co-operation. Christina Potter of Dundee College led the development of the college energy partnership, and Jim Brown has come in as a formal project manager to co-ordinate that.

Our role has been to engage at a top level in working with industry to help set a strategy and then to work with our partners in the local communities. For example, we work with North Highland College up in Thurso on developing its engineering facility. That will bring together a network from the college sector, which can then link into the energy technology partnership.

Growth in the sector and the labour market required us to do a good amount of analysis. As I said, we worked with Scottish Renewables on its industry projections to try to get the best fit for where the sector is going, the timelines that we are working with and the range of skills that is required. The task has not been easy—it has been a bit of a moveable feast at times—but we have worked hard at it and we are starting to build an infrastructure that is capable of responding.

Chic Brodie: We are talking about a specific sector, but clearly there are engineering activities other than those for the oil and gas sector and renewables. Presumably, that has been fed in as well.

Gordon McGuiness: Yes.

Jim Brown: To simplify Chic Brodie's question, I start with the energy skills action group that was established by the Scottish energy advisory board. The member organisations work together and take forward activities jointly. We meet regularly and take the lead on various strands, depending on what has to be done.

From my perspective, I have working groups for each of the energy themes. Sector skills councils and sector skills bodies are represented on those groups to give us some intelligence, but local trade bodies are represented too, to ensure that we understand the demand here in Scotland and more widely in the UK, given that many of the companies are UK based.

On the question of who has primacy in deciding, that has to be the employers—they must make the decision to employ people, but we must prepare and ensure that we have in place the foundations and the building blocks to deliver what industry needs.

Rob Moore: I have two points to make on this, both of which are about collaboration. The green economy is an interesting concept and very difficult to define. Five or six years ago, each sector could quite clearly define where the boundaries were and what the skills issues were. When we start to talk about green-collar jobs and the green economy, those boundaries no longer exist.

For the past four or five years, there has been lots of collaboration between different skills agencies. We work more closely with the other sector skills councils than we have ever done, with numerous joint projects being put forward. Employers are not bothered about what we call things; they just want a solution to be provided quickly and easily. It is our job to ensure that we work collaboratively. One of the projects that we are working on with Skills Development Scotland is the energy skills database, which is a collection of all the training provision around energy. We are working on that with SummitSkills and OPITO to ensure that we cover all the energy aspects.

We no longer see ourselves as the energy sector dealing just with electricity and gas. We see a collaboration of sector skills councils working together. We collaborate closely with nations. We know that resources are scarce and that we cannot go around doing the same pieces of work. Everything that we do in Scotland comes through the energy skills partnership and Skills Development Scotland. We ensure that where we add value, it is shared and that we are not duplicating any effort that is already going on.

It has probably taken too long to get to such collaboration. The process started about five years ago, and it is now reaching the point at which, for every project and initiative that goes forward, the first question that we ask is who else needs to be involved to ensure that we are adding best value.

Chic Brodie: Yes. I am just interested in who will make the decision at the end of the day and which direction we are going in.

I have two questions on skills. The Alliance of Sector Skills Councils Scotland referred in its submission to

"the perceived unattractiveness of many jobs in the industry."

Why are the jobs perceived as unattractive, and what do we need to do to uprate that image?

Linda Greig: That is definitely the feedback that our college gets. Trying to get throughput from schools is tremendously difficult. The whole science, technology, engineering and mathematics agenda has to be a priority for us. In addition, we are not seeing enough women coming into engineering. Engineering used to be seen as a dirty trade and it still is. I have heard people talk about it as such, so we have a real job to influence parents; at this point, parents have a lot of influence over what young people decide to do.

There is not enough awareness of the range of engineering jobs within the renewables sector. We are talking about everyone from a tradesperson to an engineering technician—from level 5 through to level 8 or 9—moving up to engineers and above, such as those at postgraduate level. There are tremendous job opportunities in the sector, but they are not promoted well enough, and they are not being seen by schools, although we are trying hard to work with them. I agree that there is a problem, in that the sector is not seen as attractive.

10:45

Professor Smith: That is a fair point. Construction and its general background skills, as well as engineering, which we have utilised for many years to support part of the sector, have suffered from that perception for quite some time. The Scottish Government's recent announcement about funding for women in science, engineering and technology, focusing on the STEM areas and the Scottish resource centre for women in science, is very welcome, although the group had to wait for nine months to find out whether it would still be around to provide support and to attract that 50 per cent of the work population. We do not need two or three years' worth of funding; we need a focused approach that lasts for a period of time if we want to continue to attract women into the engineering and construction sector.

We are doing a review of the off-site construction sector for the Scottish Government, and I have some rather alarming figures. Some years ago, Edinburgh Napier University business school did a study that looked at the skills that will be required in 2016 and 2024, taking into consideration the birth rate in Scotland. Construction engineering will see an 8 per cent downturn in the supply of labour in the 18 to 22 age group in 2016, and that will drop by 16 per cent in 2024. Apart from the demand side that was mentioned earlier, the other issue is the supply side. How do we attract people when we are competing with so many other sectors?

I will give you an example from my youth. When I was at primary school in Dundee in the 1970s, a chap came to speak to us about the offshore oil and gas sector; that was probably one of the reasons that I came into engineering. That talk stimulated the whole class. It is good to see the university people going out and doing that; we also go out to speak to people and try to show the industry's attractiveness. However, it helps to have people from the industry do that, too. The sector is hard pressed at the moment, but doing that makes a difference.

Social media and talking to parents might be other ways of attracting that community back to looking at the sector.

In housing, which includes civil engineering and other contracting issues, the figures show that we are down to building about 9,000 to 10,000

dwelling units this year. In Scotland, we need to build 35,000 units per year from now until 2035. The UK as a whole needs to build 268,000 new homes per year; 1.9 million households are on waiting lists. The downturn in the general housing construction sector means that there is a gap that needs to be filled in the next 18 to 24 months because, when the sector comes back, it will be so difficult in terms of salary or skills to bring people into the green renewables sector. There is a gap; there is an opportunity and if we do not fill it now, we might find it very difficult to recover and we might have to go overseas.

Chic Brodie: That leads me to my final question, which is indirectly associated with skills and mobility. We can bring in people from overseas but in conversations that I have had with the chief executive and the board of SDS, we have talked about mobility, particularly of young people, and the infrastructure to support it. It seems that there is a heavy emphasis on the east coast of Scotland, yet we have a large number of unemployed youngsters in the west and in Glasgow. How can colleges address the issue of mobility in terms of consistency of training, particularly of youngsters and females, and ensure that the demand is met by the supply on site?

Linda Greig: I believe that colleges can meet the demand but, only recently, Dr Peter Hughes has questioned the types of courses that are delivered, which he said were, in some cases, Mickey Mouse. He is absolutely right.

For us to deliver the quality of programmes that we are talking about, which allow young people to enter an industrial environment, to see employers coming in and to interact with MAs from other companies, it is necessary to have the venue—if I can put it that way—the resource, the kit, the equipment and the staff. Such programmes are exceptionally expensive for anyone to run. There are only a few centres that can deliver them.

Other centres can deliver more theory-based programmes or programmes that are heavily loaded towards theory. If a college has a facility such as we have at Rosyth, which is right in the middle of an industrial area, it will have all the factors that I have spoken about. Our rates for turning out MAs and getting them into work are exceptionally high, and I believe that that is because of the environment that they are in. That has a great deal to do with it. It is not possible to simulate such an environment. It is extremely important that people are exposed to that, as it gives them a completely different view of what is out there for them.

Chic Brodie: I understand that—I know what great work you do—but my concern is about how we get someone from Springburn or wherever across to Rosyth. How do we manage demand and supply?

The Convener: I would like to follow up on the point that Linda Greig made, which I thought was brave. Can you explain—without giving a specific example—what a Mickey Mouse course is?

Linda Greig: Those were Dr Hughes's words.

The Convener: I notice that you agreed with him, though.

Linda Greig: Mickey Mouse courses are ones that employers believe will give them the people they need who can move straight into a job, but which do not do that, because skills are missing from the programme. I cannot stress enough that employers say to us that they need programmes that are theory based, but which are heavily weighted on the skills side, so that by the time the young people have finished them, they are able to move into a working environment and to perform well. If I can paraphrase what Dr Hughes said, I think that he was suggesting that, on the surface, such courses appear to be giving young people the necessary knowledge, but they are not giving them the necessary skills. That is the problem.

Jim Brown: Following on from Linda Greig's point, the colleges have identified that some of the qualifications are not fit for purpose for what industry needs in the future. They are asking for a review of the full suite of Scottish Qualifications Authority qualifications that support the energy sector and for some of the practical elements that have been mentioned to be brought into the higher level courses. We have spoken to the SQA and, in principle, it is happy to take that forward. We are in the process of developing a business case to support that activity.

We need to look at the whole pipeline—skills for work for schools, pre-apprenticeships, the national certificate programmes, as well as higher national certificates and diplomas—and articulation with universities. The work that we are doing with ETP will involve looking at that area. We need to ensure that the qualifications are meeting the strategic needs. We have spoken to the industry bodies, and they are keen to have a core engineering base for the majority of the qualifications, along with one or two options for the different sectors that bring the practical skills element back into the mix. The colleges are aware of and supportive of that, and we are taking it forward with the SQA.

Gordon McGuinness: To return to Mr Brodie's question, mobility is an issue. Transport costs are a factor. Some of the more expensive models, such as the OPITO model, involve young people staying away in specific accommodation. Such models are more expensive to deliver. Across the labour market, in general, there is probably not as

much mobility in Scotland as there is in some other areas.

Peter Hughes is on our energy skills group, which Jim Brown mentioned. It meets again on Friday, so perhaps we can ask him to define what he meant.

The Convener: You can let us know.

Professor Smith: Just because there is a specific training facility or training in a specific aspect on the east coast of Scotland, we should not feel that that is always where people have to go. We are not talking about brand new skills; we are talking about upskilling or adapting current skills. If we look at the broad spread of all the skills that we will need in the future—whether we are talking about the skills of electricians, plumbers, scaffolders or those that relate to any aspect of civils work—the colleges still provide courses in all those areas across Scotland.

I agree on the residential element cost being funded for intense, key training at specific places. I apologise if I am stepping outside my university boundaries, but some colleges have invested hugely. We can see the funds that they have invested, and we need to ensure that all of Scotland can utilise those resources as well as possible. In that case, will the SFC support that and travel and accommodation for intense periods? That happens in other countries, and perhaps it can happen here.

The Convener: We have heard interesting comments from all the witnesses on courses and support for students from other parts of the country. The committee can pursue those issues with the funding council, as it is serious about the development of the industry.

I know that other witnesses want to say something, but I am keen to bring in other members, as there are other lines of questioning that will, I am sure, tease out more of the issues.

Mike MacKenzie (Highlands and Islands) (SNP): I am interested in comments that Linda Greig made, as they fit with my question. I got the strong impression from some of the written evidence that some youngsters are reluctant to consider working in renewable energy as a career choice. To what extent has the anti-wind lobby or the talking down of the industry's potential in some quarters discouraged youngsters from considering a career in renewable energy as one with real potential?

My second point is perhaps related to that question. To what extent is there a class problem? To what extent is there a perception that white collar is good and blue or green collar is bad? Have you done any profiling work to find out what proportion of people need to operate on the ground in the industry, wearing boiler suits and with spanners in their hands?

Rob Moore: A report entitled "Working for a Green Britain: Employment and Skills in the UK Wind & Marine Industries", which was commissioned by RenewableUK and us, was published last year. It looked at the UK's current position on wind and marine jobs specifically and where it is going over the next 20 years. A key point that the report brought out was the range of jobs that will be involved. There will be manufacturing, construction and support roles. In many discussions that I have and many conferences at which I present, the issue is getting people to understand that all jobs in the wind industry do not involve standing on top of a turbine. In fact, around 10 per cent of the jobs will be based on turbines; the other 90 per cent will be to do with control systems, infrastructure, transport, construction or manufacturing.

We have a problem with perception. If somebody says that they want to work in the wind industry, they automatically think about being a wind turbine technician. Ex-forces people with certain skills come to us and say, "I want to work in the wind industry, but I don't like heights. Does that mean I can't work in the industry?" It is perceived that all the jobs are 100m in the air at sea, and that is a problem. That is not the case at all. We need to break down a perception. There is a range of jobs in the industry that involve standard skills, as Sean Smith has already said. They are standard jobs, but they are still within the renewables industry. If a person goes for a job on the wind side with Siemens, that does not mean that they will be on a turbine. We are working to break down that perception.

Mike MacKenzie: Is that creating a bit of a problem and a particular shortage? With the greatest respect to Professor Smith, are there too many professors and not enough plumbers? [*Laughter*.]

The Convener: Professor Smith?

11:00

Professor Smith: That is a good point. I can only speak for myself as a professor.

There is a misconception that people who go to university and do a degree always stay in that field. I think that the submission from Aquamarine Power says that it has 48 staff with a postgraduate qualification. Some of the skills that are involved are not entirely new but, on the design side and on specification, some of the aptitude is new; the logistics and installation engineering disciplines may be new, too.

There are not too many professors or too many people at university. However, I would like—maybe because I have my engineering hat on—a greater focus to the engineering construction disciplines from the Scottish funding council. We get funding from the Student Awards Agency for Scotland for postgraduate places. We run courses in renewable energy and in energy and the sustainable environment, which interlinks with the design specification aspects. We have four SAAS places. If we are serious about the matter, we need a lot more than that. That is not to knock the SFC, which is putting a lot of money into innovation and research. However, on the engineering and teaching side, if the sector is key, we need such disciplines and professions.

Equally, we need to attract people into the skills. As I said, the off-site sector is fascinating. For assembly lines in the off-site construction sector, companies do not take on someone from the construction industry—they want someone from the food processing industry or the car manufacturing industry to run the production process. In Scotland, 17 very able and growing companies are involved in that sector. That relates to the transferability of skills, which others have mentioned.

Jim Brown: I return to the point about where the jobs will be in volume. Jobs will not be in high-level design in volume. There are jobs in that at this stage, but there will be a lot of jobs in construction, assembly, operation and maintenance. I totally agree that we need to prime ourselves for that. We need a college structure and a university structure to take that forward.

The college cuts might be a challenge in taking forward that approach and in supporting the youth of today and those who are looking to change career and undertake transition programmes. That is a bit of a potential issue. It is not insurmountable and everybody is working hard to ensure that we can provide such support, but we need to be mindful of the college cuts that are coming through and ensure that we have appropriate funding that is targeted towards the industry.

Mike MacKenzie: Convener, you will be glad to hear that I have just one more question, which is linked to that.

Some areas already have definite skills shortages—I represent the Highlands and Islands region and I am thinking about skills shortages there in microrenewables technologies, for example in relation to heat pumps and solar panels. I wonder about the extent of uncertainty: the revision of solar photovoltaic tariffs went to court and we do not know what will happen in the longer term; the UK Government has prevaricated over introducing the domestic renewable heat incentive; there is the bigger issue in terms of project transmit, in that the initial suggestion is that islands will still be disadvantaged under the transmission charging regime; there is the changeover from renewables obligation certificates to feed-in tariffs and so on. That considerable uncertainty influences people's contemplation of their future careers and makes it difficult for employers to know what their needs will be over time. Does that create a problem for you in planning your training regimes? To what extent are skills shortages already a problem?

The Convener: Sean Smith is keen to answer.

Professor Smith: I return to the point about the sector's image problem. Discussions about wind farms, offshore wind and whatever else in the newspapers and social media all have an impact.

I will look at the impact of the uncertainty resulting from the change to feed-in tariffs on the micro side. Some SMEs that are involved in microrenewables have spent £1,500 to £2,500 per person on training, sometimes overseas, in microrenewables skills—for example, in ground-source heat pumps or in installing biomass systems. That training is done by the manufacturers of the systems, because manufacturers want to ensure that the work is done properly, and people are then accredited by the manufacturers. The SMEs made that investment, the FIT scheme got under way and started to grow, then their legs were cut off, almost, by the sudden change. Sadly, those companies had to let people go, then along came the green deal, which is a phenomenal exercise, although it is a green loan. In Scotland, the number of FITs that were registered for PV installations is 8,751—which is 65 per cent of the total—and there are 2.3 million dwellings in Scotland. In England, 90 per cent of the FIT installations are for PV.

With the green deal, it is not certain whether accreditation of previous training on skills for microrenewables—whether for commercial or domestic buildings—will be recognised. How do we acknowledge that prior learning? An SME that invested £6,000 two years ago for three staff to be trained in installing the equipment, and which has installed it and has been operating it is now looking at the green deal and seeing a big hole. Will the previous accreditation be recognised? The SME sector could be in a da capo situation: they might be going back to the beginning. The lack of clarity is impacting on the sector, so we are losing people. It may be to the benefit of other sectors that electricians and others move. However, at the moment, the disparity and the lack of advice, and the lack of clarity from Government on policies such as the feed-in tariff do not help.

Linda Greig: There are hugely mixed messages, from the press in particular, which is

not helpful when it comes to young people trying to select careers. We are thinking now about 12 or 13-year-olds who are choosing which qualifications they want to do and which routes to take in school. I have spoken to many parents who do not believe that renewable energy is a realistic choice. It is difficult to get the message over because at certain points we are almost shooting ourselves in the foot. There are contradictory messages coming from right, left and centre, which impacts on young people who are making decisions, on their parents, on colleges and on the professionals who help young people to choose their career paths. It is difficult to get over the message that renewable energy is a viable sector.

Gordon McGuinness: The gentlemen who will follow us on the next panel are probably better placed to answer on employers' views.

There are two points to make on the attractiveness of the sector. First, there is an increasing focus on the promotion of the STEM subjects; a STEM central web resource has been launched. We have been working with the Scottish Council for Development and Industry on promoting young engineers and we have run a junior saltire award prize in secondary and primary schools to raise awareness. There will be more of the same and there will be more sustained effort. That will not necessarily be in relation to young people joining the renewables sector, but in getting them interested in the science and technology side of things and growing them into the renewables area to let them make career choices later, when the sector is more mature and we can tell a better story.

We will also do some work with Scottish Renewables. One of the key issues from the investment action plan is around the sector's attractiveness. We have done similar work on financial services with the Financial Services Advisory Board, so there are lessons that we can learn from that. We can also use our web platform, "My World of Work". All our secondary schools now must push the message about career options and sector attractiveness through the school system as well.

Jim Brown: Uncertainty is a major concern that has a number of knock-on effects. The mixed messages in the media are unhelpful and cause uncertainty, but incentives and consents on planning also cause uncertainty, which has an impact on financial investors and developments. Through that, contractors are hindered and jobs are hampered. There are a lot of issues.

We must ensure that we promote the industry of the future. It is an industry now, but it will expand and we need to promote that to youngsters. We have identified that as a priority and are working together on it and engaging with Education Scotland. As Linda Greig said, engagement with today's youth is key to our preparing for the future. Although it is easy to focus on the negatives, we are going down the right road and there are a lot of positives

Rob Moore: Yesterday, I was at a college in Wales, which last year ran a successful solar PV course for three cohorts. Since the announcement of the change in feed-in tariffs, everyone who was booked on the course for this year has cancelled, so the course is not being run. The decision is definitely having an impact on the choices that people make.

Stuart McMillan (West Scotland) (SNP): Before I move on to my questions, I point out to all the panel—in particular Linda Greig, because she touched on the issue—that over the next few months the Equal Opportunities Committee, of which I am deputy convener, will undertake work on women in the workplace. I make you aware of that, in case you want to participate in it.

We have heard quite a lot. I want to go back to the subject of the former industrialised areas. My colleague Chic Brodie asked a question about that and Professor Smith has touched on the issue that I will raise.

I represent West Scotland. The focus of the renewables sector is the east coast of Scotland. On the west coast there is, for want of a better phrase, a large number of deindustrialised areas. I suggest that there is a tremendous amount of potential, because people already have a high level of skills but need additional training to upskill them for the renewables sector. Such training would not take the full four-year period of an apprenticeship. How can you get into the area? In some parts of West Scotland, people think that the renewables sector is purely an east-coast sector, so there is nothing in it for them and there are no opportunities for them. How do you get the message across in such areas that people can get employment in the sector?

Linda Greig: It comes back to how we paint the picture of what renewables is all about and what skills are needed. As Sean Smith said, it does not matter whether people's skills are in logistics, project management, the legal side or accountancy, because those skills are all part and parcel of the wider sector. We want to influence people to understand that they can move into the sector, because we are looking for skilled people. They have to get that message.

I understand that it is very difficult to get people to move to do the training in the first place. Unless the training is based in the west, people will not willingly move to be trained in what they see as being the other side of the country; there is an east-west divide in that respect. How we get

people trained, where they are trained, what we train them in and the picture that we paint are all important. There is not a simple answer.

Jim Brown: The big focus is on offshore wind, but there is a lot more to the energy sector than offshore wind. There are many opportunities, no matter where you are. The green deal will offer opportunities for advisers and opportunities in installation, microrenewables technologies and insulation. We must look wider than offshore wind—to focus only on it is unhelpful and we must communicate the bigger picture and a bigger message. A key role of the energy skills action group is to develop broader communication—

Stuart McMillan: Can I interrupt? I wholeheartedly agree. The key point is that it is not about only one part of the sector. Communication is important. What strategies are in place? Are any strategies being worked on to get the message out more widely that there is not an east-west split?

11:15

Gordon McGuinness: Jim Brown is whispering to me to say that that is a focus of the employment skills action group's work. We are playing into a labour market. It is a market and people will travel to where the job vacancies are. Inverclyde will continue to have a heavy flow of welders and steel workers going to the shipyards every day to work. Those welding skills will be applied in other areas; for example, Ferguson Shipbuilders Ltd in Port Glasgow will be customising ships for the offshore industry.

It is about understanding how that labour market works, including the role that employment agencies will play by having people on their books and moving them towards other employment. There is still a lot of mobility, particularly around renewables, but also around oil and gas. People travel. When the market reaches a certain degree of maturity you will see more patterns of where people work. The issue is about wider employment. A range of upskilling around the traditional trades—plumbers, general construction workers and electricians—is required for the introduction of the new technologies.

Stuart McMillan: I would be keen to talk to you about that at another time. I would like to focus on areas in the west.

Professor Smith: We are looking at the previous oil and gas centre. Initially, the general focus of renewables was going to be in the north-east. Aberdeen, Dundee, Peterhead and other places have benefited well, but there were a number of skills across the country in the supply chain. I agree that perhaps the image of renewables is that it is in the east of Scotland. I think that it is important that, whatever happens, we map things out. The colleges already have a series of maps, as do Scottish Enterprise and others. We need to bring those maps together—whether in the newspapers or elsewhere—to tell people where the training is and where some of the key jobs will be. Unless we deliver that and people know where to go, they will continue to perceive renewables as being on the east coast.

We can look at other construction sectors such as onshore wind construction, which is happening across the country, not just on the east coast. Work including ground work, civil engineering work, and cabling is happening across the country. There are 264 current planning applications from farmers for small wind turbines and another 1,500 will be submitted shortly—those are from across the country. I am pleased that you agree that renewables is not just offshore, although offshore is rightfully generating a lot of publicity for the exciting future structures and legacy that will come from it. However, we need to make sure that when people see renewables, they see the huge swathe and the fantastic matrix and mix of energies that we have in Scotland, and that people do not just visualise it as being on the east coast.

Stuart McMillan: The joint written submission from the engineering bodies who are coming in later today states that there is increasing competition

"for materials, skills and finance at a time when many other nations are competing for those same resources."

It goes on to state that

"it is of critical importance that we are open about the many potential risks"

to the sector. How are those risks being identified, assessed and managed?

Gordon McGuinness: Can you clarify the risks that are referred to? Are they specifically around skills, or are they wider?

Stuart McMillan: The risks are around materials, skills and finance.

Before anybody answers, I will add something else regarding a shortage of resources. In 2007, Ferguson Shipbuilders did not tender for an order for a vessel because there was a worldwide shortage of propulsion systems, as demand was too high. If Ferguson had put in a successful bid, it would have had a hull sitting for 18 months before it could get the propulsion system. That is an example from 2007; things have changed now. However, there are other challenges and risks for the renewables sector.

Gordon McGuinness: On the main risks that we have identified, skills and experience are needed. It is about depth of knowledge and experience. I am thinking back to statements from the oil and gas sector. People are generally happy

with the flow of talent through our universities and colleges, but they see pinch points in getting experienced engineers. I have spoken to an operator that was quite candid and said that it can create a skills shortage in Scotland by exploiting an opportunity in Houston or elsewhere in the world. The oil and gas sector has a genuinely global workforce, which is the problem. As the renewables sector builds momentum, depth of experience will be an issue. With the best of intentions, that is a time issue for the universities and colleges; people must spend time in the sector to acquire experience and knowledge. That is where the biggest risk is.

Rob Moore: Risk is one of the big reasons why employers do not invest in large training initiatives. An employer will not invest if there is uncertainty about the longevity of a contract or about winning a contract. We can help employers to manage the risk.

I will give a short example of how that is happening with one of our employers. A large utility company that looks after transmission and distribution in the UK is putting out a tender for a significant amount of work, and there are four contractors in the fray that could get it. Whichever contractor wins the work will have to take on significant new labour and train it up, but none will pay for the training until it gets the contract. Through the talent bank initiative that is being run by Energy and Utility Skills Ltd, the five groups—the large asset owner and the four contractors—are working together to pay up front for the training of the people who will be required, on the understanding that whichever contractor wins the contract will pick up the substantial bill. Therefore, whoever wins the contract will have the labour available to do the work. Without that initiative, they would all have waited until the contract was signed on the dotted line to start that work.

That is one initiative; anything that we can do along those lines that would remove risk—particularly for those in the supply chain and SMEs that cannot swallow up the cost of training—will increase uptake of skills and training. People could be trained for specific projects.

Professor Smith: I want to say something briefly about the materials side, rather than the skills side, because it is mentioned in the submissions from the Royal Society of Edinburgh and the engineering councils. The companies that will give evidence afterwards may wish also to touch on the matter.

Raw materials are a key aspect. In some renewable technology areas—photovoltaics, for example—we are dependent on non-renewable natural materials, although we do not have the same dependence on them in other areas. Bearings that are required in some work are made of special metals, and we need to ask about where they are sourced from, their price, the supply chain and how to invest in the future; as members know, China controls many of the natural raw resources that we need for some batteries and fuel cells, for example. There are risks in how companies source those materials and their costs, which impact on the provision that they can make for training costs. There is a giant mix and things are very tough for some companies.

One metal fabrication company in Scotland sources all its metal components from south Wales, I think, as opposed to sourcing it in Motherwell, because the components are not manufactured at the Tata Steel plant in Motherwell. That is an example of where transport costs and other things impact on the viability of the system.

Stuart McMillan: I have a final question.

The Convener: You should be brief.

Stuart McMillan: In the previous parliamentary session, the committee undertook a piece of work on energy as a whole; it did not focus on renewables. That work touched on the Danes coming over to Scotland to learn about how we train people in colleges. They were very impressed by what we did. I am keen to hear the panel's comments on that.

Jim Brown: I was at Carnegie College at the time, heading up the Whitlock energy collaboration centre. The Centre for Vocational Education Lolland Falster—CELF—in Denmark, which had been approached by a number of manufacturers in Denmark, took an apprenticeship programme that was being piloted at the Whitlock over to Denmark for implementation there. I think that that kicked off last year, although Linda Greig is probably better placed to comment. Rob Moore is involved in what is happening in Wales.

The apprenticeship programme that was piloted at Carnegie was rolled out to Denmark but also to Tyne Metropolitan College, Lincoln College, the Swale skills centre in the south-east, Llandrillo College in Wales and Belfast Metropolitan College. It has gone across the nation and is a great example of Scotland leading the way. There are many areas in which we can share that and hopefully benefit the Scottish economy.

Stuart McMillan: Could we get more information in writing about the programme?

Jim Brown: Yes—we will put together a paper on that.

The Convener: I thank our panel of witnesses—

John Wilson: I am sorry, convener—

The Convener: Do you have a question, Mr Wilson? I apologise.

John Wilson: I have a final question to the panel. Will we have the skills base in Scotland to meet the renewable energy and heat targets in 2020? A simple yes or no would suffice.

The Convener: It is probably unfair to ask you to answer yes or no.

John Park: Phone a friend.

Jim Brown: I think that we can do it. That is not a yes or a no.

Gordon McGuinness: It is certainly our intention to put the infrastructure and funding in place to meet needs. We have set out ambitious plans to meet the targets.

Linda Greig: No, we will not meet the targets, because we are not taking into account that people are leaving and the fact that we have a workforce that is skewed over the age of 35. We will see a lot of people at technician level leaving very soon.

Rob Moore: We have the potential to reach the targets, but it will take a lot of work. If we do not do things differently, we will not meet them.

Professor Smith: I doubt that we will meet the targets. My main concern is about other sectors pulling away some of the resources. The likes of the green deal will pull away a huge amount of resource—it is a slow car crash waiting to happen.

The Convener: That was pretty definitive. On that optimistic note—

Professor Smith: I am talking about the green deal, and not the offshore sector.

The Convener: Thank you all very much for coming along. It has been quite a long session and we are grateful to you for helping out.

11:27

Meeting suspended.

11:38

On resuming—

The Convener: I apologise to the second panel for overrunning slightly on the first panel. I am sure that you will make up for it.

I welcome the second set of witnesses: John Robertson, managing director of Burntisland Fabrications Ltd; Simon Forrest, director of Nova Innovation Ltd; Martin McAdam, chief executive officer of Aquamarine Power Ltd; Robin MacLaren, from the Institution of Engineering and Technology; and Andrew Scott, senior project development manager at Pelamis Wave Power Ltd. Would any of you like to say something by way of introduction, or are we happy to go straight into questions.

Robin MacLaren (Institution of Engineering and Technology): I have just a couple of points to make. As institutions, we see the final delivery of the overall generation policy as posing quite heavy technical challenges. We want to work with the Scottish Government and its advisers to bring in our technical expertise, which we hope will help. There are various issues, such as understanding and managing the risks to achieving the generation policy. In particular, there is the issue of intermittency management. That needs to be fully understood in terms of power systems and delivery and supply reliability, because it is a complex area. Like the previous witnesses, we have concerns about the availability of skills for the delivery of the policy, given that we are operating in a world market. It is not just about Scotland; there is a world market for skills.

The Convener: Thank you. As Mr Scott, from Pelamis, is here, I should mention the announcement this morning that Dr Richard Yemm has been awarded the Saltire medal for his outstanding contribution to the marine renewables sector. I am sure that committee members will want to pass on our congratulations to Dr Yemm and Pelamis for that significant achievement.

Andrew Scott (Pelamis Wave Power Ltd): Thanks. I will certainly pass that on.

The Convener: We will run this session until about 10 to 1—I ask members to bear that in mind. This is quite a big panel, so the witnesses should not feel that they all have to answer every question—if they did, we could be here for some time. If you want to answer a question, please catch my eye and I will try to bring you in.

Angus MacDonald (Falkirk East) (SNP): Good morning, gentlemen. Let us jump from Scotland to Denmark, which has reaped the benefits of being the leader in wind technology. I am curious to hear what we can learn from Denmark in relation to the future of wave and tidal technology and what we can do to ensure that Scotland leads that sector in the future.

Martin McAdam (Aquamarine Power Ltd): We produced a report that outlined how Denmark had won the race in relation to wind power. It is an interesting piece of work that outlines a number of factors. Both the UK and Denmark invested roughly the same amount in research and development for the wind power industry, and we had several companies in Scotland that were on the brink of being successful—everybody talks about Howden. However, there was a strong domestic market in Denmark, which was driven by a number of factors. Early-stage projects also

received capital support to allow them to get built, and Denmark introduced its production incentive well in advance of the UK. Denmark had a strong domestic market with the right incentives at the right time and there was steady progress in the installation of wind turbines in Denmark from the 1980s on. The UK introduced the non-fossil fuel obligation, which did not work, and the ROC regime was then implemented, which drove the development of the wind industry in the UK. There were a number of factors, but a transition was required between the early-stage research and development and commercialisation, which Denmark did well and we clearly did not.

Simon Forrest (Nova Innovation Ltd): We are a tidal technology company and we have studied Denmark extensively, using its example to drive our own business model. If you compare the wind industry in the United States and the UK with the wind industry in Denmark in the 1980s, you will see that the US and UK scaled very rapidly from small prototype wind turbines up to large, megawatt-scale devices. That was driven by the search for economies of scale—which do exist—and aggressive investment. Unfortunately, in the US and UK, in scaling up so rapidly to the megawatt-scale devices, we encountered failures—predominantly gearbox and blade failures. Because the investment in the technology was so large, and because economies of scale work for losses in the same way as they do for profits, those failures led to a loss of confidence in the industry in the UK and the US and we lost the lead that we had.

11:45

In comparison, Denmark started off at a small scale with 15kW, 30kW and 50kW and then scaled up gradually. The Danes took a route through community energy and community investment. They encountered the same problems as we did in the UK and the US—the gearbox and blade failures—but, because of the scale that they had invested in, they were able to recover and ride out the problems. If a blade goes in a 100kW machine, you can repair it and it does not kill the project, never mind the business. There was therefore no loss of confidence in the industry in Denmark. With the market that Martin McAdam spoke of and the community ethos, the Danes took a longer-term approach and gradually scaled up and, over time, captured the market. They did so by being ambitious but also by taking a more measured pace in scaling up.

Andrew Scott: I echo that. Crucially, Denmark got the market incentive correct to give the manufacturers the context and the long-term security to invest in their technologies and in manufacturing facilities. Denmark also drove a need through the commercialisation process for finance to come into the sector. It captured finance for things such as the test centre at Risø, which allowed turbines to be certified and so on.

Just as Denmark is a good example of the market working, America is a good example of the market failing for manufacturing. Large turbine manufacturers had a real struggle in the past there because of the federal production tax credit system. That is the market mechanism in America, and it appears and disappears very rapidly. The fact that the market has been so broken and insecure has been a real barrier to the wind sector there investing in manufacturing facilities. That is as good an example of getting it wrong as Denmark is of getting it right. Denmark put in the right, long-term secure mechanisms that allowed investors to invest in the technology and entrench the industry and the supply chain in the domestic marketplace.

Angus MacDonald: Mr Forrest mentioned the issue of finance at the beginning of his reply. I am curious as to how much access to finance is hindering the development of tidal and wave technology in particular.

Simon Forrest: Finance is a challenge for everyone, no matter what sector they are in. However, particularly for the tidal sector, there is very much a focus on getting the multimegawatt steel in the water. That is what funding targets and so on are aimed at. We do not think that that is in itself a bad thing, but the focus on it makes it quite hard to raise funding and get finance to follow a different path, which is what we are doing. We believe that there is a complementary way.

A wiser portfolio decision to take forward would be to, like the Danes, take the path of getting to the megawatt scale through scaling up gradually and looking at community benefits and capturing not only the skills but the social and economic value of wave and tide. If we go headlong purely into seeking megawatt in the water, there will be a danger that we will fall into the same pit that we fell into in the 1980s and early 1990s in the UK and the US and come a cropper in the same way. However, if we take a longer-term, more gradual view, alongside the large megawatt-scale targets, that will give us a much better chance of succeeding and capturing value, which we have blatantly failed to do with onshore wind. Given that we have the best resource of wind in Europe, onshore wind is a big opportunity that has been missed, and we do not want to do the same with wave and tide.

Martin McAdam: The challenge of finance is enormous, but there are two aspects to that. The first is the finance that is required to perfect the technology—in other words, the technology development finance. The second is the finance

that is required to roll out the first commercial arrays of wave and tidal technologies.

Getting finance for technology development is a huge challenge. It is unfortunate that we have not been able to secure significant long-term investment in technology development. People regard it as capital intensive, which it is. They regard the marine energy industry as one that has early-stage risk, which it does. Without doubt, raising finance is a struggle.

We have seen the emergence of acquisitions by larger companies: Rolls-Royce acquired Tidal Generation, Siemens acquired Marine Current Turbines and Alstom acquired a 40 per cent stake in AWS Ocean Energy. ABB owns a smaller stake in Aquamarine Power. Such larger organisations need to be involved, because they have international reach and large research and development capabilities, which is extremely important.

However, we need to be able to unlock the skills that already exist. The previous panel talked about the skills that exist in the oil and gas sector. The oil and gas sector clearly knows about working in seawater. It might not work in exactly the same environments that we do, but it has technology, know-how, expertise and appropriate equipment. We need to be able to unlock that capacity and to generate an interest from the oil and gas industry in marine energy, because we would benefit enormously from that.

Andrew Scott: There are two distinct finance challenges, as Martin McAdam said. Without a shadow of a doubt, raising finance for the pre-commercial research and development phase is a struggle—we know that as well as anyone.

However, we should give credit where credit is due. The TSB, the DTI, DECC and the Scottish Government have made funds available, and there have been initiatives such as the European Marine Energy Centre, which have given support to companies such as PWP and, in our case, an ability to raise venture capital. That has got us to a position in which we have managed to secure supply contracts and get the utility sector involved in the early technology development.

The challenges that are associated with the commercial roll-out are of a significantly different scale, given the scale of the balance sheet risks that there will be on both sides of projects—the utility side and the technology and manufacturing side. That is largely why we need to see the involvement of the OEMs and the larger engineering companies, as they have the financial balance sheets to take on supply contracts that are worth tens of millions of pounds and to provide the necessary warranties and guarantees. How projects and technology providers such as ourselves can deliver against those will be a major challenge for the sector. There is a large amount of industry concern about and focus on the amounts of funding and risk capital that will need to be available to move the sector forward into that phase and to de-risk some of the large decisions that will need to be taken in the next three or four years to properly start the industry's commercialisation.

The Convener: For the benefit of the official reporters who are trying to write everything down, I ask witnesses to avoid using acronyms, as it makes it difficult for them to follow what is being said.

Robin MacLaren: I was just about to launch into a series of acronyms.

When it comes to getting funding for the deployment of the technology and getting contracts from it, there is an issue of risk. In 1994, we had the pooling and settlement system. In 2000, we had NETA, which became BETTA—

The Convener: You are doing it again.

Robin MacLaren: I am sorry. NETA stands for the new electricity trading arrangements. It was, in other words, a market reform, and there was another market reform in 2005, with BETTA—the British electricity trading and transmission arrangements. From the Scottish perspective, that opened up the UK market for us. We are now on to what is called the EMR—electricity market reform. Such uncertainty, with ROCs revisions on the horizon, gives big investors worries about whether long-term contracts will stick. We need to resolve those issues and get some stability, at least in the contracts, as we roll out new technology.

On the financing, larger organisations are interested in stability. However, from a Scottish perspective, the larger organisations have a world reach and, if we have leading-edge technology that can be sold round the world, they are willing to come in and buy the product and finance its development and roll-out. That has been my experience with a couple of companies with which I have operated. To get the finance, we had to go to the banks or we had to integrate. The benefit was the world-market reach that we could achieve by partnering with, in one case, Alstom. The results show that such an approach is successful.

As the technologies develop, there is an opportunity to get world reach, but it will involve some of the big players, as there are only three or four in the world market.

Angus MacDonald: I will pick up on a couple of points. The commercial roll-out of tidal power is perhaps a wee bit down the line. Mr MacLaren mentioned ROCs. If there is a transfer of ROCs

from, for example, biomass to tidal, I presume that that would help to move the commercial roll-out forward.

Robin MacLaren: Almost every technology that we have got receives a degree of subsidy through ROCs, taxation on carbon or help from Government. How the figures are balanced is a political decision. Technically, the engineering can be dealt with as long as the commercial market is there to encourage the development and roll-out of the technologies. The ROC balance is important.

The Convener: Would Mr Robertson like to say anything about finance, in particular for offshore wind, which is where I think your interest primarily lies?

John Robertson (Burntisland Fabrications Ltd): We are an oil and gas company. We recognised the opportunity offered by alternative energy back in 2006. We have been involved in the Beatrice project and demonstration projects for Germany, so there are also international opportunities.

The issue for us is that offshore wind will not really hit the UK until 2015. Although BiFab has a good track record, proven competence and designs that we are offering on a worldwide basis for the delivery of structures and solutions from the UK, it does not happen until 2015, so our company has had to revert to oil and gas opportunities for the next two to three years to fill the gap. We have always known that that would be the case, but the danger for a company such as ours if we cannot get investment from banks or infrastructure investment from the Government is that, while we are busy in the oil and gas sector in the next two or three years, other companies in the UK will be making further commitments and getting ready for the delivery of offshore wind. We have to be careful that we do not miss out on the opportunity.

We are encouraged by companies such as SSE, which has invested in BiFab and is making commitments by introducing key oil and gas companies to form a team to deliver offshore wind in Scotland, but that will not start until 2015. Therein lies the issue. Will we be in a situation in which companies such as BiFab, which is currently the leader in the UK for delivering jackets—we can deliver only 60, but the demand is for something like 800 structures a year for 10 to 12 years—miss out? That is a frightening prospect. We may become a major importer if we do not get the right investment in place as soon as possible. Quite honestly, at this point in time the banks are not playing. The Government needs to find a way to help with finance or put a guarantee behind investment to give the banks a little bit more comfort. We need to invest and we need to inject cash. A major opportunity is coming for Scotland.

12:00

The Convener: As part of our inquiry, we will have an evidence session with investors, including some of the banks, and we can put some of those points to them.

Andrew Scott: The Scottish Government's pioneering initiative of banding the renewables obligation as it did around marine renewables—specifically wave power—is probably the biggest initiative that has happened and the largest driving force for the activity that we see in the sector in Scotland in developing both the technologies and the projects. However, the electricity market reform that is under way casts a shadow over the security of the sector beyond 2017, when the renewables obligation is due to expire. Some of the uncertainty about investment in the sector is due to a lack of clarity about what is happening with the contract for difference from 2014 onwards. The sooner that the sector can get clarification that that will come in and will keep our sector viable and a good place to invest in technologies and projects, the better. That is a major priority at the moment.

The Convener: I will bring in Patrick Harvie, who has more questions on the topic.

Patrick Harvie (Glasgow) (Green): My questions are on related issues. Good morning, everyone. Last week, the Government announced its plans to create a renewable energy investment fund with the fossil fuel levy money. Marine renewables are not the only area that will be prioritised, but the Government has not provided a huge amount of detail yet. What do you see as the priorities, and to what extent is the Government already talking to the industry about what it can achieve? The Government cannot take the place of commercial investors, but it can do something to supplement or support areas with long-term prospects. In particular, what is the role of demonstration sites within that? Mr Robertson mentioned his company's involvement in that work, both here and overseas. Is that an on-going process? At what point do demonstration sites lead to something that does not need to be demonstrated any more but just needs to be done? Is a sequence of demonstration sites required? Could you say something about the value of those sites to the long-term development of the industry?

John Robertson: There is no doubt that demonstration sites are required. The main purpose of demonstration sites is to test out new technology. New companies coming to the UK such as Samsung, Gamesa and others have good products that need to be tried and tested before the market can gain the confidence to purchase large quantities of turbines. However, we must be

careful that we are not still demonstrating in 10 years' time.

We have a tremendous opportunity to create an industry. There is good technology and expertise out there and companies that can deliver. The most important thing that the Government can do is accelerate the planning consents so that we can start to create the industry. We will bring the costs down through volume, scale, training and everything else that we can put in place, but we will invest in our companies only when we know that there is a healthy order book, the potential for many other orders—overseas as well—and continuity of employment and benefits from our investment. Given the scale of the investments that we need to make, we must be confident that we are making them with a long-term view.

We can help the industry, but the first thing that needs to fall into place is contracts. The quicker that we can start doing projects for Scottish Water or UK round 3 projects, the better for everybody. We can then develop the industry into what it should be and create employment opportunities.

Simon Forrest: We very much welcome the renewable energy investment fund, which was announced last week. We were particularly pleased to hear about the emphasis on communities and about some of the technologies that will be looked at. That is a key way forward in helping to leverage investment into community-scale developments and the technologies for them. One reason why Denmark succeeded is that it had such funds and mechanisms to help to provide leverage for community projects. It had a broad base of companies that competed, developed skills, put down roots and made the industry sticky. Having more projects will allow us to do what was done in Denmark and to keep the industry's value here. We very much welcome the announcement.

Robin MacLaren: I will make a general comment. I have spent 34 years on technical, managerial and financial aspects of energy and energy supply—I was with Scottish Power for many years. In new technology, demonstration is essential to give the utility confidence in the technical reliability and in the finances—the technical reliability flows through to the financials. I would strongly support any move by the Government to demonstrate technologies, which would also give companies the opportunity to iron out problems that inevitably occur with new technology. Anything that Scotland can do to support that would be useful in achieving our renewables targets.

Andrew Scott: I will add to what I said about the cash requirement. The intensity of the sector's capital requirement at quite an early stage is almost unprecedented. In early commercial projects, the technical risks will still be high. We need to be able to engage rapidly with financial institutes to start providing debt for such projects. At an early stage, investors in projects will have a large capital exposure, primarily off utility balance sheets.

The sector was probably quite disappointed by the green investment bank's strategy. The information about that does not acknowledge the cash requirement and makes little reference to supporting the marine sector through the very challenging early stage. In that light, last week's announcement that the fossil fuel levy money would be used for and focused on marine renewables and their challenges, among other things, is certainly appreciated and is a good start.

In many ways, the marine sector can make such money go a lot further than it would go in trying to challenge or de-risk some of the much bigger financial propositions—in relation to offshore wind, for example. Although we are talking about high risks, we have reasonably small capacities and a small number of projects. We can use such funds efficiently and they would be well appreciated.

Patrick Harvie: I will raise a slightly different aspect with Mr MacLaren. The joint submission from the various institutions raises the issue of whether carbon emissions will be sufficiently reduced to meet targets with a higher proportion of renewables when fossil fuel plants will be kept in reserve as back-up. The argument is that

"costs—financial and carbon—should be factored into a total ... analysis."

Few people would disagree with that.

Some witnesses have suggested that a higher input of renewables increases carbon emissions, because of the spinning reserve of fossil fuel plants. They seem to rely on one study by not an institute but a retired engineer, which does not appear to have been peer reviewed. Do you go along with that argument or are you saying that having renewables—including wind—on the grid reduces emissions?

Robin MacLaren: The jury is still out on the levels. It is not a zero carbon gain in the sense that we put in renewables and that is the end of it. One of the concerns is intermittency. The issue is that filling in that intermittency means almost by definition that less efficient plant will be used and that there will possibly be higher carbon emissions because the low-emission stuff will be used elsewhere.

My experience is very much in the transmission network area. The assumption that because we have an interconnection of 2,000MW we can pull in that much is not necessarily valid. There are many days when we cannot bring more than

100MW up from England because of boundaries further south in the interconnector, so that is a Great Britain-system issue.

I think that Udo did work in Ireland that suggested that the carbon levels might be a bit higher. Some work in the States also suggests that. However, nobody has endorsed that work. As Mr Harvie said, it needs to be understood a bit more. We have said that we need to look at the current information—the institutions are happy to help—because there are one or two things that we should understand a bit more to ensure that we deliver the carbon reductions that we are trying to achieve through the generation policy.

Patrick Harvie: If other specific work has been done on the issue that you want to make us aware of, perhaps you can send a note at the end of the meeting to point us in that direction.

I would like you to respond to something that Duncan Burt from the National Grid said yesterday just after the opening of the Scottish Renewables conference. He said that he is in no doubt that we can deliver a viable energy system that meets the climate change targets. He endorses some of what you said about additional transmission capacity, smart grids and storage—that is all necessary—but he is in no doubt that the target can be achieved and he said that he is comfortable with intermittency. Running a grid with a higher degree of intermittency poses different challenges, but running a grid of any kind poses challenges and intermittency is just a different kind of difficult.

Robin MacLaren: I will go back to my experience. I was responsible for the Scottish grid for a number of years as managing director and I was also on the engineering side, as I think you know. I always saw intermittency as an engineering challenge as opposed to something that we could not deal with—I think that it can be dealt with. There are issues of storage and of import on the grid, but there are ways through that.

The underlying question is what the cost will be at the end of the day and from where that will be funded. It is usually the electricity customer who has to pay. It is a political decision rather than an engineering one as to whether we go for a least-cost system, which some might advocate technically and which historically is perhaps where one might have been, or whether we deal with the societal cost of carbon with taxation, the renewables obligation and so on. All those financial levers are in there to steer the market towards the right balance of generation and the right carbon emissions. Engineering-wise, I am sure that we can keep the grid together. There will be risks, but they just need to be managed.

The Convener: I have a follow-up question from reading your submission. Has there been too much emphasis on power generation in the debate and not enough emphasis on reducing demand?

Robin MacLaren: I think that the institutions jointly would say that, first, one looks for energy conservation—the message there is just do not use it; secondly, one looks for energy efficiency through building insulation and the like; and thirdly, one looks for zero carbon emission technologies, which include renewables and, in some parts of the world, nuclear power. We pick from all those options and, finally, we are back to using what we had to use in the past. Your question was about whether we do not consider energy conservation—it is the first angle that we come from.

12:15

John Wilson: The question that I will focus on goes back to transmission. I thank Aquamarine Power for its submission, which raises the issue of transmission charging, particularly in identifying that two thirds of our offshore energy could come from wind, marine, tidal and other developments that could be sited off the Scottish islands—particularly Orkney, Shetland and the Western Isles.

The submissions from Aquamarine Power and Scottish Renewables highlight the charging systems that the Office of the Gas and Electricity Markets has proposed in its latest consultation. I note that some of the costs of the renewable energy that could be produced on our most potentially lucrative marine energy sites would be almost 10 times those of energy that is produced on the mainland. Will the panel comment on Ofgem's proposals? What can the UK Government do to mitigate those proposed measures?

Martin McAdam: We described what needs to be done in our submission. Although Ofgem has changed the transmission charging system for the north of Scotland, it regards the islands as different. Historically, power stations were built where the load or demand was, and those locations were associated with the transportation of fuel but, as everyone is aware, renewable energy is where it is, and the resource is clearly in the northern isles and the Western Isles. The UK Government can influence and change Ofgem's proposals if it so wishes.

Some members of the previous panel talked about opportunities on the east coast of Scotland. There are also tremendous opportunities on the west coast. That is not just about going offshore, in many cases, but about the opportunities for

onshore renewables on the west coast and in the Western Isles.

Transmission charging is a concern, and I do not necessarily buy into some of the arguments that are being made about it. We have to think about the low-carbon economy as one in which we go to the best resource, which clearly represents an opportunity for Scotland.

Andrew Scott: If we are to make marine renewables work, we must have interconnectivity with the market. That means connectivity with the UK electricity market and, in the future, wider connectivity with our European partners. At the moment, as Martin McAdam said, there is poor connectivity to the peripheral regions that have the renewable resources of wave and tide.

Our logic and philosophy of investment and building infrastructure are antiquated and not fit for purpose. Exactly when we need to reduce the barriers and allow industries such as ours to attract investors and activity, we seem to be leaving those critical challenges in front of us. Without a shadow of a doubt, the charging methodology and the investment methodologies for the systems of transmission to where the resource exists remain an outstanding problem for us in the marine sector.

Robin MacLaren: The issue has certainly been discussed a lot during the past four or five years and was discussed when the British electricity trading and transmission arrangements were set up. I am fairly familiar with the national grid, and the models have a tilt that causes prices to be high in the north of Scotland and lower in the south-east of England. Obviously, the difficulty is that there are winners and losers in any debate. One hundred per cent of the costs of running the national grid have to be distributed across load and generators. I think that 27 per cent of those costs go on generators and get the tilt that we are talking about.

We can start to drive down to what the options are. There are many different transmission arrangements for people who move abroad, such as postage stamps. Someone who uses the post in Orkney pays the same as they would if they used it in London. Other arrangements involve least-cost marginal pricing and require highly technical models. Those arrangements are part and parcel of the debate.

The easy way is to go where people are going now with project transmit. People just have to keep pushing at that one. There are ways to get the numbers that are wanted but, whichever way things are changed, there will be winners and losers throughout the UK.

Simon Forrest: I reiterate what has been said. Grid connection and getting the islands connected up are imperative to ensure that the marine industry is successful. The charging that goes with that will also be essential. We know that those hurdles exist, and that needs to be addressed now if it is not to become a failure point or a pinchpoint in the future.

Martin McAdam: We are not asking for the playing field to be exactly level. We recognise that some additional costs are associated with connections from peripheral regions. What has been proposed for the north of Scotland is perfectly acceptable; it should simply be extended to the islands.

Andrew Scott: Locational charging or a locational element in charging is logical. However, Highlands and Islands Enterprise has done work on that recently for a response to project transmit, which showed that, if the marginal transmission cost of getting onshore wind energy from the islands into the UK system had been socialised, the cost would be less than the incremental increase of, say, two ROCs for offshore wind. That is an illustration of the complete failure of the current system. We cannot connect onshore wind facilities that have been consented.

There needs to be an understanding that the interconnectors that are being designed, engineered and financed are certainly not being future proofed with the marine energy sector in mind. We are building capacity according to demand, but we know that the future demand from the marine sector will be substantially more. We are therefore locking ourselves into future challenges.

John Wilson: It is not just a matter of future demand; it is a matter of the future supply from marine technologies that could help to generate energy and supply the UK.

I am interested in Mr MacLaren's postage stamp analogy, given that the Royal Mail has just announced that stamp prices will go up. I will use that analogy to refer to a universal service. The issue is trying to adapt the universal service in respect of transmission charges. I welcome the industry's acceptance that there may be higher transmission charges for offshore transmission from Orkney, Shetland or the Western Isles, but it is a matter of considering the fairness of those charges and whether they may act as a disincentive for people and industry to go offshore, where there is the greatest potential for future energy production.

As Mr Scott indicated, this is about not just demand but production. If charges are put in the way of developers and companies that want to go into areas from which we could gain the greatest benefits, surely we should look at those charges. I welcome Ofgem's decision to reduce mainland

Highlands charges, but should we ask it to think again about the offshore charges?

Martin McAdam: Yes.

The Convener: So, short answers, please.

Andrew Scott: Yes, I think so. At the heart of the issue is the fact that the lowest levelised cost of renewables will be heavily driven by yield capacity factors, which relate directly to the intensity of the resource. Scotland's most intense resources of wind, wave and tidal energy are at its peripheries, which are the cheapest places in which to produce such energy. Provided that the marginal cost of transmitting that energy to the load centres is lower than the cost of producing energy in the load centres—I think that we agree that, with renewables, we cannot do that; there is certainly no such option with marine energy—it seems completely logical that the charging that is associated with that process should not be a challenge to investment.

The Convener: Mike MacKenzie has a question on the same issue.

Mike MacKenzie: The charging regime particularly disappoints me, given that marine generation—by which I mean wave and tidal generation—offers an opportunity to balance the grid or to provide base-load, on the basis that the source of marine energy is less intermittent. You can set your watch by the tide a year in advance.

Are we missing a trick here? We have heard that there are challenges in balancing the grid, which are primarily to do with the intermittency of wind energy. Is there not a huge opportunity to get in more quickly with wave and tidal energy to circumvent that problem?

Simon Forrest: If we are looking at the grid for the UK as a whole, tidal energy certainly represents a big opportunity. The tidal cycle works on a 24-hour basis. We can plan to that—as you said, you can set your watch by it. It would be beneficial to be able to bring that on and to plan to it.

To go back to the point about the islands—the Western Isles, Orkney, Shetland and so on—the intensity of the resource in those places is such that being able to support energy generation from it will have a big benefit for the grid. There are definitely benefits to be had in that regard.

Mike MacKenzie: So even the slightly better transmission charging regime that Ofgem has proposed would still be prejudicial to our ability to get such generation on stream sooner rather than later.

Andrew Scott: It will be a challenge from the point of view of delay, because transmission is built in response to demand rather than speculatively or by future proofing it ahead of demand.

To go back to your first question, a couple of years ago the British Wind Energy Association did a piece of work with Redpoint Energy—I do not have it to hand—that looked at the saving to consumers of having a mixture of renewable resources. The ocean is a like a giant battery, so wave energy is regularly out of phase with wind energy, which is instantaneous. Tidal energy works on a completely different cycle—the lunar cycle. The BWEA's report gave an economic view of different levels of penetration of wave, tidal and wind energy into the UK and what the overall saving to the UK consumer would be in terms of reduced balancing cost. It was a substantial figure, although I do not have it to hand—

Mike MacKenzie: I am sure that it would be useful for you to forward that report to the committee and for us to look at it.

Robin MacLaren: I have a brief comment on costs. There are costs involved with connecting the islands, which someone has to pay. Ofgem has proposed one way of paying them. There are a number of different ways of doing it. I know from past experience that renewables obligation certificates for energy that is produced offshore would be another way of doing it. There are lots of ways of paying for it, but the bottom line is that connecting the islands is quite expensive and the money has to come from somewhere. Coming up with a fair way of doing that is the issue that people are struggling with.

Mike MacKenzie: I have a follow-up question on the challenges of grid connection. Do you agree that any emerging industry will always face such challenges, but that if we roll forward 10, 20, 30, 40 or 50 years into the future, the challenges in question will have been sorted?

12:30

Robin MacLaren: There have been four market changes in the past five to 10 years. The plans for 2020 include 700MW of tidal and wave power. Relative to even the Scottish demand of 5GW to 6GW, that is a small amount and will probably be manageable. The charging issue will develop over time. There has been a lot of movement over the past five years and costs have come down a bit. I am not in a position—and neither is the institution—to say whether charging has prevented people from investing, and the bottom line is whether it is preventing people from deploying the technology.

Stuart McMillan: My question is primarily for Mr Scott, but Mr MacLaren may be able to answer it as well. Mr Scott said that, in Britain, when grid infrastructure is planned, future proofing is not built

in—it is based purely on demand. Is the situation the same in France or anywhere else in Europe or America? Is infrastructure planned on a purely demand-led basis without future proofing?

Andrew Scott: I am not in a position to comment, as I do not know other grid networks well enough. I know that some other European countries hedge towards the postage-stamp approach, but I am sure that there is a locational element of charging in some countries. Perhaps Robin MacLaren can better answer your question.

Robin MacLaren: Grid design looks five or 10 years ahead. The National Grid plan includes various scenarios, of which one has been picked and the grid has been built to handle that. Because of the time that it can take to put a new line in place or to lay a cable across the sea bed, it is necessary to look ahead. The design process is such that it looks to the future within construction timescales. The next thing is to convince the regulator that the work should be funded, which can take a bit of time. There is a lot of going backwards and forwards between the design people and the regulator, which ensures that customers are not paying more than they have to.

Stuart McMillan: Would it be accurate to say that there could be a continual lag in the whole process from the National Grid element?

Robin MacLaren: I would not like to be seen as in any way criticising what the National Grid guys do. They used to work for me. I spent a lot of time looking at the future potential; in fact, the renewable energy transmission proposal that two or three of us put together in 2000 has resulted in the strengthening of the grid system. Nobody had talked about infrastructure although we were talking about renewables and we needed to know what to do with the infrastructure.

Sorry—can you please repeat your specific question?

Stuart McMillan: My first question was about whether the process is similar elsewhere in the world.

Robin MacLaren: It is kind of similar. I spent a bit of time in the States and I have recently worked in the middle east. A lot of it is about looking ahead to what we are going to need in five or 10 years' time because the construction times for that will need to be considered. Is there an escape route that can be used if something develops in a different way? Could we deal with that? As somebody said earlier, the present system was established for coal plant but we are now dealing with renewables and are having to twist round to ensure that the system can cope with the renewables input within the timescale in which the generation materialises. There were also short-term issues with the connection of wind-generated power because we have a very large generation pattern in the north that had to be dealt with. That is where the connect-and-manage policies came in.

The Convener: We have spent quite a lot of time talking about grid issues and members want to pursue other issues as well, but I know that Mr Forrest and Mr Scott are keen to respond on the grid.

Simon Forrest: On infrastructure planning and charging, I again come back to the point that we need consistency more than anything. The time horizon for planning for plant is five years, but for grid infrastructure it can be 10, 20, 30 or 50 years. We need a consistent policy to be able to plan for that. That is as important as anything else.

Andrew Scott: I will quickly sign off on the grid issue. At the moment there is a lag, but the grid has been built for what is on the operators' horizon, which is large onshore wind. That leaves little opportunity for marine, which is coming along later and, in most instances, is unable to provide the liabilities that are associated with upgrading the network for current projects.

Given the Danish context with which we started this discussion, we must ensure that we have a market and that we pull through the technologies and have financial confidence in them and in the market mechanisms, as well as a sufficient route to the market. Large OEMs that are global players will be able to move the industry to where access to the grid can be much quicker. That lack of a sufficient route is a significant risk in the medium to longer term.

Stuart McMillan: Because there is a wide spectrum of potential energy generation sources, would it be legitimate for the National Grid to have a longer-term outlook rather than a five or 10-year one? Perhaps it could have a 15 or 20-year outlook for potential developments that could play an important part in our future energy generation.

Simon Forrest: It is essential for the industry to look that far ahead. Robin MacLaren might correct me on this, but I think that the National Grid can plan only for what it knows is booked or what it knows is coming on to the grid. We need to go a step further and start facilitating the clearing of the ground. There must be a fundamental review of that issue and how the National Grid has to operate at the moment.

Robin MacLaren: To be fair, the National Grid looks at that aspect, but the issue is whether it can carry that through to construction and address all the planning issues. Planning and time delay are the major issues in developments.

Andrew Scott: There is an increased appetite for risk. A good example is the two lines that are

being built out to west of Loch Broom for the interconnector, with the recognition that it is likely that there will be a follow-on capacity requirement on the Western Isles. There is increasing appetite for speculative developments and future proofing. However, we must always understand that it is a balanced risk in terms of exposing the UK consumer to stranded asset liabilities.

The Convener: We have had a good kick of the ball on the grid issues, so I want to move on because a couple members want to ask about other issues.

John Park: We heard from the previous panel about the attractiveness of employment in renewables more generally. Obviously, that is a big challenge, particularly for those who operate in tidal and wave, and we talked about the uncertainty around that. I want to ask a bit about how you view the nature of employment in the sector. How will you make it attractive? Do you see it as being an attractive route for people to take? There are a lot of challenges. I particularly liked what Mr Forrest said earlier about taking a longer-term view in the sector and ensuring that investments are about getting the right skills and people and the right quality of employment. You might want to say a bit more about what that might look like.

Simon Forrest: As a tidal power company, we do not struggle to attract people because the sector is seen as a quite sexy part of industry, if you like. From that point of view, the situation is quite good.

We mentioned that Scotland has the best onshore wind resource, but we have not really kept the skills here or captured the skills that we have. We are at the start of the wave and tidal energy sector and we can capture that—Scotland is a world leader at the moment. We can do that by levering in finance. Scottish Enterprise and so on have a lot of good programmes for people to go on, and we encourage such initiatives.

The Convener: I will bring in John Robertson, who has sat quietly for a while. Are you sexy, or are you just dirty?

John Robertson: I find recruiting for the renewables sector easier than recruiting for the oil and gas sector. Renewables are in the papers every day and the kids are well aware of the opportunities that could come in the renewables sector. Once they realise that the opportunities are real, it will be quite easy to encourage kids to move into renewables. In their view, oil and gas are depleting—that is the case, of course. Renewables offer a tremendous opportunity. We can easily encourage the kids of today to move into the industry.

The renewables industry is long term, whereas—dare I say it?—the oil and gas sector is cyclical. I have been in the business for 35 years and I know that it has peaks and troughs and is continually downmanning. One thing that renewables can bring to Scotland is continuity of employment and investment for a long period. We have never had such an opportunity in the manufacturing industry. That is key.

John Park: What will the situation look like? Your company has what is essentially an oil and gas set-up—you have core management and agency staff. What will the set-up look like in the longer term? How will things shift for you?

John Robertson: We have a base-load of 250 people who are permanently employed, topped up by 150 agency staff. We employ 400 people across three sites in Scotland. When renewables trigger in—when we get to 2014 and 2015 and things really start to happen—we will comfortably employ well over 1,200 people across the three sites. A large percentage of them will be permanent employees who can see a future.

In the Methil area of Fife, we have a third generation of people who have never had jobs. By working closely with Fife Council and colleges in the area, we can turn things around. This is a major opportunity for Scotland and we must maximise it. If we do not, we should all be shot. The ball is at our feet and is there to be maximised.

Martin McAdam: Aquamarine Power has no difficulty in recruiting staff. A lot of people self-select. We have a lot of highly educated people—48 per cent of our staff have a PhD or a master's degree. The work is about innovation—and a lot of it.

We would certainly like to get additional skills from the oil and gas industry, where there is a lot of expertise. It is difficult for us to compete with oil and gas on salaries and so on, but that is a different challenge.

The Convener: So you are in the sexy camp.

Martin McAdam: I think that John Robertson is a very sexy man. [*Laughter*.]

Simon Forrest: I will return to the point about the Danes. In the 1980s, if they had not supported smaller developers and community projects and built up skills, they would not have had a wind industry. We are at a similar point now. We must look at making the bottom of the triangle as wide as we can, so that we have a broad base of skills. We will then win the home market.

John Park: I have more of a comment than a question. I understand that the Danish Government intervened to encourage people to upskill and retrain to go into sectors that were

trying to grow. It is obvious that such intervention would help. Do you have any experience of that? Is encouraging people into a sector a challenge? We discussed with the previous panel who has the responsibility—does that lie with the individual or with the companies that are trying to train people? Is Government intervention needed or do we—as I suspect—need a mixture of everything?

Simon Forrest: We are talking about a mixture of everything. The previous panel made a point about attracting people. We are based in Leith. I come from what is called one of the depleted industrial zones—I grew up in Larkhall. There is a lot of talent there, which needs to be attracted and brought through. Three weeks ago, the catapult programme in Glasgow was announced. That is a big thing and a really good step for the industry. We should look at things like that to gear ourselves up for the skills that we will require.

12:45

The Convener: We have five minutes to go.

Chic Brodie: I say to John Robertson that the last thing we would want to do is to shoot what appears to be a large part of the energy pioneer sector, which is part of the pioneering core of Scotland.

Having discussed the skills infrastructure and the network, can we talk about the physical infrastructure that will be required to support the industry? Clearly, we do not want offshore wind to be competing with marine energy, but there are other competitive sectors, such as oil and gas. There is big growth in other sectors, too, such as the food and drink sector and tourism.

Last week, I was at a breakfast at which the chief executive of a major utilities company indicated that he felt that our ports—both sea and air—were not fit to support the growth of the industry. Having heard about the international opportunities, one has to express some concern. Notwithstanding the £70 million that has been invested in the renewables infrastructure plan, can you comment on the positioning of our ports and, indeed, our roads, in supporting the drive that you have all talked about as we go forward?

John Robertson: Did you say ports?

Chic Brodie: Yes.

Robin MacLaren: A big concern for some of our members is that there is an opportunity for Scotland to support offshore, but there is competition from down south and people will pick the best options. I cannot remember which ports were involved, but there was quite a bit of concern that we must jump in now.

Chic Brodie: The chief executive of Scottish Power indicated that he felt that our ports—sea and air—were not sufficient to support the supply chain, offshore activities and marine activities. Would you care to comment?

John Robertson: Considering that we have serviced the oil and gas industry very successfully for 35 to 40 years, I do not think that our ports are as weak as has been indicated. I think that we have good facilities. I like some of the things that are starting to happen with the building up of clusters and hubs, for example in the Firth of Forth. Another cluster is in the Nigg area in the north of Scotland. That is a good thing to do.

Once we have attracted more companies into those areas, built up a lot of strength and power and can service and supply the units that are required across the spectrum of the industry, we will go from strength to strength. It just takes time.

We must be careful that we do not do what we did in the early days of oil and gas. We must not spread ourselves too thin and try, all of a sudden, to have 12 semi-ports servicing the industry. First, we should get five key ports that support the industry exceptionally well; once those five ports are up and running, we should branch out and introduce the other industries. We must be careful how we do it; growth must be controlled.

Robin MacLaren: Concern has been expressed about logistics and materials. There are not many heavy lifting vessels and cable-laying vessels in the world. The whole supply chain that feeds into a port must be examined to ensure that the capacity is there to deal with offshore development.

Andrew Scott: Given the legacy of oil and gas in Scotland, if there are better ports and harbours elsewhere, they cannot be a lot better. Our ports may not be perfect, but we must understand that investment in such infrastructure needs to be de-risked by indications of significant private sector commitment to projects. To date, such commitments have not really been made.

From our perspective, as John Robertson said, the legacy infrastructure from oil and gas and the legacy skills are such that this is a golden opportunity. We should not need to make the level of investment that Denmark perhaps had to make to capture the supply opportunities.

Martin McAdam: The £3 billion from the chancellor to encourage additional development in the oil and gas sector will have an impact on the availability of vessels. We are very sensitive to that. When there is lots of activity, vessels become very expensive; when there is less activity, vessels are cheaper.

Flights to Orkney, where the Marine Energy Centre is, are inordinately expensive. There is no

competition there. We have written to the local MSP on that matter. It is shocking.

Simon Forrest: On the subject of competition with oil and gas and the transfer of skills from oil and gas, our experience is that it may not have been as much as we had initially hoped it would be. We have found that it goes back to a cost point. If we compare the calorific value of oil with that of wave and tidal or offshore wind, it does not stack up—there is a different cost point. Even trying to attract services that predominantly serve the oil and gas industry may be too expensive for wave and tidal. We therefore need to build up things that are focused on delivering for wave and tidal or offshore wind, rather than specifically for oil and gas.

Chic Brodie: One of the key players in offshore wind and marine renewables is the Crown Estate. How willing is the Crown Estate to co-operate with you on planning and leasing?

Andrew Scott: From a development perspective, there is a requirement to have a process by which we can get security over sites to be able to invest in developing them. However, that leasing process needs to be part of joined-up spatial planning, which goes down to a local level and has input and understanding from local level interests, economies, existing users and so on. It needs to be part of an integrated planning process.

Martin McAdam: The Crown Estate has done a good job. We have secured a couple of sites in the various leasing rounds. However, I want to be sure that as we begin to build out those sites within a timeframe, additional leasing rounds will be available to us.

The Crown Estate clearly has a phenomenal economic interest in the offshore and marine space. I would like it to invest more to encourage the space to develop.

Simon Forrest: I reiterate what has been said.

If we return to the comparison with Denmark, with wave and tidal in effect we have one landowner, or seabed owner, who can enable an entire industry for the country. How that works will be key to this. With onshore wind, we are dealing with different authorities, and with thousands of landowners, some of whom may be more proactive than others.

The Convener: I have a final question for Martin McAdam, which arises from something interesting in his submission on the supply chain and infrastructure. You mention the Scottish Enterprise £70 million national renewables infrastructure fund and you say:

"For marine energy, it is essential we are not 'crowded out' by offshore wind."

What you mean by that?

Martin McAdam: First, there is a mistake in our submission, although not in relation to your question. The average annual electricity bill is not £5,812, but £581.

The focus is on offshore wind, and rightly so. However, the challenges, particularly when it comes to financing, are of such a scale that they require a different type of investor and investment. In the offshore wind context, £70 million would hardly put up a met mast. In the same way, the £3 billion that we hope will be available from the green investment bank would not finance a single offshore wind project. It is horses for courses. A certain level of finance could radically change the wave and tidal sector; that same level of finance would probably do very little for the offshore wind sector.

The Convener: That clarity is helpful.

I thank the panel members for coming along. It has been quite a long session, but we are only slightly over time.

Meeting closed at 12:55.

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