HOUSE OF COMMONS

Welsh Affairs Committee

Oral evidence: Nuclear energy in Wales, HC 240

Wednesday 14 December 2022

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Watch the meeting

Members present: Stephen Crabb (Chair); Virginia Crosbie; Wayne David; Ruth Jones; Rob Roberts; Beth Winter.

Questions 96 - 151

Witnesses

I: Professor Bill Lee, Director, Nuclear Futures Institute, Bangor University; Jasbir Sidhu, President, Nuclear Institute; Daniel Maney, Negotiations Officer, Prospect; Beccy Pleasant, Head of Nuclear Skills, Nuclear Skills Strategy Group.

Written evidence from witnesses:

– Nuclear Futures Institute

- Nuclear Institute

- Nuclear Skills Strategy Group

Examination of witnesses

Witnesses: Professor Bill Lee, Daniel Maney, Beccy Pleasant and Jasbir Sidhu.

Q96 **Chair:** Good morning and welcome to this session of the Welsh Affairs Committee. We are continuing our inquiry into nuclear energy in Wales. We are delighted to be joined by four eminent guests this morning who are from the nuclear industry. We are joined in the committee room by Professor Bill Lee, who is director of the Nuclear Futures Institute at Bangor University in North Wales, and Jasbir Sidhu, who is president of the Nuclear Institute. Virtually, we are joined by Beccy Pleasant, who is head of nuclear skills at the Nuclear Skills Strategy Group, and by Daniel Maney, negotiations officer from the Prospect trade union. We are grateful to all four of you for making time to help us with our inquiry today.

Can I start by asking a very general question, first to Professor Lee? Now that the Government have made a very clear statement in support of the Sizewell C nuclear power station, how confident are you that Wylfa power station will be the next in line and that the Government are on a track that will see the development of that power station on Anglesey?

Professor Lee: "Not very" is my cagey answer. It is the obvious next site for a large, gigawatt-scale nuclear power plant in the UK and it should be the next one, but there has been a bit of prevarication, over many years. We had the false start with Hitachi, so it got put back a bit, fell behind Sizewell C. The Government need to make a decision and push forward on Wylfa, but it is not for me to make that decision, unfortunately.

Q97 **Chair:** Mr Maney, can I ask you the same question? From the perspective of the trade unions, do you feel that this is an exciting moment for the nuclear industry in the UK and specifically with regard to the Wylfa site in north Wales? What are your perspectives at the moment?

Daniel Maney: It is exciting. I am glad that Sizewell C has been approved. Again, the cagey answer is that we have been here before, so I do not want to let my expectations run away with me. We are clearly in favour of investment of this type in Wylfa or Trawsfynydd, mainly because these are potentially thousands of high-quality jobs. It is not just those jobs in the local area but also the supply chain. UK manufacturing is in a bit of a dark place at the moment. Projects such as this will not only benefit areas that may desperately need the economic investment there, but also ripple out across the entire country and industry, if there is a commitment there to see this through to the end, potentially for decades and decades to come.

Q98 **Chair:** That is helpful. Mr Sidhu, from your perspective, does it feel like we are in new territory now with respect to UK Government policy towards nuclear? Professor Lee has hinted there that we have been round the mountain before with respect to Wylfa power station and Hitachi. Do you get the sense that we are in a new phase of policy development

following the energy security strategy and the new financing model?

Jasbir Sidhu: The answer has to be "most certainly". It is a bit of a gamechanger out there. It is abundantly clear that, if we are going to hit 24 gigawatts by 2050, we need to start sticking the nuclear shovel in the ground now, otherwise it is not going to happen. When you talk about whether Wylfa is the next obvious site that should get Government go ahead, yes, as soon as possible please. Another gigawatt project needs to be part of the mix to deliver our 24 gigawatts challenge.

Q99 **Chair:** Do the noises that you perceive coming from Government fill you with confidence that there is a pathway towards Wylfa being given the green light? Does it still feel like a very shaky, rocky road?

Jasbir Sidhu: I would not say that the news is red hot. I would say it is warm. Once GBN gets the go ahead and we start thinking about a fleet of nuclear power stations and facilities being built, we will start thinking that we move from lukewarm to warm to red hot territory in terms of development.

Q100 **Chair:** Did you expect to see GBN announced and launched by now?

Jasbir Sidhu: I most certainly had hoped to. It would be very nice to get that news pre-Christmas. That may be wishful thinking, but definitely in the new year. We really need the GBN news.

Q101 **Chair:** What is your understanding of why there is a delay to this?

Jasbir Sidhu: I am not party to what goes on inside Parliament but there must be some issues there that need to be ironed out among the various Ministries, including Treasury.

Q102 **Chair:** Does that not suggest to you that there is a lack of alignment within Government about this? Does that make you nervous that there is not that really strong commitment that Boris Johnson talked about when he left office, about the need for the UK Government to go big and large with respect to nuclear policy?

Jasbir Sidhu: Let us step back a bit. My background is nuclear. I am a nuclear engineer. I studied nuclear engineering after Chernobyl blew its lid off in April 1986. That inspired me to study nuclear engineering and we are, I hope, going to be talking about skills today as well. From being in the industry ever since, I have noticed and experienced that things move slowly in the nuclear industry. It is a fact that things move slowly in the nuclear industry.

I have a lot of patience in seeing new projects being realised. Through my career, since I joined the nuclear industry after graduating from the University of Manchester in 1990, I have not seen any new civil nuclear build programmes in the UK. Facilities have been built, at Sellafield and so on and so forth, but, in terms of civil nuclear power generation, that has not been forthcoming. I have patience. I see some good signals out there, more than green shoots of a renaissance of a renaissance of a

renaissance, let us be clear. I think that we will get there, and I hope 2023 will be the year that we start to push on with a fleet-wide approach to developing nuclear projects in the UK.

Q103 **Chair:** We are going to go on to talk about skills and supply chain development in a bit more detail later on this morning. Ms Pleasant, can I ask for your initial perspective on where we are at with nuclear policy development here in the UK and what projects might be forthcoming in the years ahead? What is your perspective?

Beccy Pleasant: It feels very optimistic. I have been in the sector for 15 years or so now. It is probably the most optimistic of the times that we have been involved in. From that perspective, it feels good. I have been involved on the outskirts of the GBN model. That will be an excellent addition to this and get things going. In terms of siting, we know that Wylfa is a great site. We know that it has strong public support. We know that it can step up and scale up, because we have seen it do that before. I guess that it is providing that certainty that is required, both for providers to develop capacity and for the supply chain organisations to step up to the mark. Certainty is required at this point.

Professor Lee: Jasbir said that nuclear is slow, which historically it has been, but we have a new world now. We have net zero commitments by 2050. We have Mr Putin's war and the impact that that has had on the UK's energy security. There needs to be a little more acceleration in the nuclear programme if we are to cover our bases in those sectors.

Q104 **Chair:** We had news this week about apparently a breakthrough with nuclear fusion technology. Mr Sidhu, you talked about the long-term nature of policy development in this space. Is there not a danger that, if the UK Government commit to a fleet of large nuclear reactors, there will be other technological breakthroughs that we end up missing the boat with?

Jasbir Sidhu: We say that we are in a transitionary phase. We need to come off coal generation and other fossil fuel generation. In the meantime, while fusion technologies are catching up, we still need to keep the lights on, decarbonise the electricity system. Fission, in terms of baseload generation, is the only viable baseload generator out there. Yes, we have wind, solar and need a good energy mix in the country. That goes without saying but, if we want to decarbonise our electricity system in the timescales we are talking about, we need to continue with fission projects.

Will fusion realise itself in the next 25 or 30 years? Possibly. Will it be commercially viable? Hopefully. Will it be connected to the grid? Probably not. Let us see what happens.

Q105 **Rob Roberts:** Good morning, everybody. I would like to move on and talk a little about small modular reactors. Ms Pleasant, in May of this year the Nuclear Decommissioning Authority and Cwmni Egino, which was set

up by the Welsh Government, said that they were going to work together on proposals for siting an SMR at Trawsfynydd. I am interested to know, from your point of view, what you think needs to happen for Trawsfynydd, or indeed Wylfa also, to be the site for the UK's first small modular reactor.

Beccy Pleasant: I will come at this from a skills perspective. All my answers will be coming from a skills perspective. From that perspective, the most important thing is—I will come back to the word—certainty. Having the project identified and some degree of certainty for it will enable the organisations around Trawsfynydd, around Wylfa, to prepare themselves for it.

The most difficult thing with any project of the size and scale of nuclear is that early investment in skills and getting the certainty for the project, so that organisations can invest in those skills at the right time and place. It is often the case, particularly on the large scale, that the contract gets awarded so late that the supply chain organisations are not able to prepare themselves for the capability that they are going to need to deliver it. It is about how we de-risk that.

Q106 **Rob Roberts:** From your point of view, in terms of skills, are there different skills required for a small modular than a large-scale?

Beccy Pleasant: There are, in the sense that the manufacturing component of it is greater. There will be an awful lot of common skills and a lot of engineering and design skills are common across both types of reactor, but the SMR capability will be very much based in the manufacturing side of things. Those are the areas that we have not needed so many of in the construction of the large-scale reactors.

Daniel Maney: This is going to the point about rippling out benefits. If they are going to male small modular reactors in Trawsfynydd, or anywhere else for that matter, it is not just the site that is going to create really high-skilled, high-paid jobs. If Rolls-Royce makes them, it is going to be there. It is going to be across different parts of the country and, potentially, a technology that we could export as a country and sell to the world. If it works that well and is basically using technology we already have and making it even better for civilian use, everybody wins out of that investment. I hope that the timeframe of bringing that on will be quicker as well, because the technology is based on technology that is already there.

Q107 **Rob Roberts:** Mr Sidhu, Rolls-Royce identified Trawsfynydd as one of four potential sites to host its SMRs already. What do you think needs to happen there to make that happen?

Jasbir Sidhu: There needs to be a decision. It is back to what Beccy has said. We need a decision that Traws is chosen as a site to put one of the first-of-a-kind SMR programmes there. If that gets the go ahead, that unlocks quite a lot going forward. If you remember, when Traws was operational, if I am not mistaken, I think there were about 700 jobs

operating Traws at that time. We are talking significant operational jobs, but then you have a lot more significant jobs when it comes to the construction phase and all the allied industries that you need to support it. It is all about getting the news out that it is the site that is chosen to develop the first of a kind in the UK.

Professor Lee: The Government need to make a decision, but also, like they have for Sizewell C, support the SMR programme financially. Support for companies such as Rolls-Royce in this space, a British company, would create jobs in Britain with a British supply chain. To me, it is the obvious thing to do.

When you look at the Rolls-Royce SMR, the reactor is not novel. It is a standard PWR. The manufacturing capability and the modularisation are novel. One of the sites that Rolls-Royce is looking at is Deeside for its modular construction factory. If we get that in the UK, the opportunities for export are enormous. Being first of a kind in the UK is the sensible way forward.

Q108 **Rob Roberts:** From those four sites that Rolls-Royce identified, with Trawsfynydd being one of them, for the first one, how do you think Trawsfynydd lines up against the others? How do you think it stacks up? Is it probably the most favourable site?

Professor Lee: It is a different site. It is an inland site. It is in a national park. It is lake-cooled, rather than sea-cooled, but it has the grid connections. It has a supportive local population. Cwmni Egino has been set up to support the developments on the site. It is very keen on supporting SMR construction there.

The old reactors that were on Trawsfynydd were not very dissimilar to the SMRs. They were effectively what one might call small reactors. Rolls-Royce's small reactor is actually a medium-sized reactor in terms of gigawatts produced. It is a very favourable site, for sure.

Q109 **Virginia Crosbie:** Welcome, everybody. It is fantastic to have you here on the Committee. My question relates to, again, commitment from UK Government, but also in terms of skills and supply chains. Like you, Jasbir, I am very optimistic about the sector.

We have seen significant commitment from the UK Government, starting with, when we were first elected, the 10-point plan for the industrial revolution, right the way through to the British energy security strategy that specifically mentioned Wylfa. We had the future nuclear enabling fund that was actually launched at Wylfa earlier this year. In terms of Great British Nuclear, we should hear over the next few weeks in terms of the strategy. That fleet mentality is really important for bringing skills and supply chain into the sector. I am delighted that Simon Bowen, a Welshman, is heading that up.

In terms of context, we can fit two AP1000s at Wylfa, which would be 8,000 construction jobs and around 800 or 900 operators. We can also fit

in small modular reactors and we have those, I hope, at Trawsfynydd as well. This is going to be significant, not only for Anglesey but also for north Wales and the whole of Wales, in terms of the skills and jobs that this will create. Jasbir, in terms of Great British Nuclear, we know that it is going to be technology-agnostic. We know that it is going to come up with a fleet mentality and a plan. Do you believe that the skills should be part of its remit?

Jasbir Sidhu: Definitely, yes. GBN has a role to help with the skills development across the full nuclear fuel cycle and development of the technologies. Being technology-agnostic is the right thing for GBN, so we do not get caught up in which is the right technology. We need all those projects that you have mentioned there. We need to change our culture of building in the UK to think more on fleet terms, rather than first-of-a-kind terms.

If you look at our nuclear programme to date, yes, they might be all advanced gas-cooled reactors and Magnox reactors, but they are quite dissimilar in terms of design. We have never built something that is very similar, let alone identical, in the UK. We have always fiddled around with the design because of the nature of the history of the industry and where it came from, with lots of clever people doing lots of clever things, with a regulatory regime that is striving for an approach that is as low as reasonably practical in terms of risk.

The culture, in terms of the way we take projects forward, needs to evolve. We need to take a fleet programme forward. That includes stopping fiddling around with the design that has met certain criteria, regulatory requirements, and to cut, copy and paste. I know that it is not as simple as that, but that is what we need to start thinking about in going forward.

Q110 **Virginia Crosbie:** Daniel, what is your view on GBN's role in skills?

Daniel Maney: Skills is vital. I do not just work with the power industry. I work with a lot of other industries, and that lack of planning for skills can get people into quite a lot of trouble. You get talking about single point of failure or people who retire all at the same time and we are left with no cover whatsoever.

If we are going to build it as an industry, you not only need to have those skills in place to train those people up now, with all the jobs benefits we have already talked about, but, hopefully, a continuous production line of people along there, so we have a future in it and do not get these single points of failure. The whole industry can build up and it is a virtuous cycle at that point. They will train the next generation and so forth.

Beccy Pleasant: It is an interesting question. The most important thing is that there is co-operation and collaboration on skills across the nuclear sector as a whole. Clearly, there has to be a really close alignment with GBN. The most important thing that would come out of GBN is that

certainty of programme and the locations, technology, timings and that kind of thing.

There are already organisations out there, such as my own, the NSSG, that look at skills at a sector level. It does not really matter whether you replicate that within GBN or make sure that the two organisations are very closely aligned, which is how we have been working to date.

We must not forget, though, that the new build skills, while huge and significant, will only be part of the skills infrastructure required for decommissioning and defence as well. There will always need to be something that has one eye to those other capabilities and the opportunity to mobilise skills between civil and defence or decommissioning and new build. That kind of thing is probably a really important requirement of any structure that is put in place to look at things going forward. New build will come and will go again at some stage, whereas the operations, decommissioning activity and defence activity alongside will be continuous.

Q111 **Virginia Crosbie:** Bill, how can we ensure that these excellent jobs go to local people?

Professor Lee: Training and education is devolved, so there is a role for the Welsh Government here as well as Great British Nuclear. The programme that was put in place for Hitachi and Horizon included apprenticeships and apprentice training in north Wales. About 30 students were put on scheme and then, sadly, that project fell apart. Those local people, students, then took jobs with Airbus or at Hinkley Point, so effectively we lost them from the region, which has scarred the community up there a bit towards skills and training in the nuclear area. They need that clarity from Government. They need to know that things are going to happen.

There is also a significant lag between starting to train someone and graduating. It is about a three-year time period for an undergraduate and a similar time period for apprenticeships. The schemes need to be put in place now and then, when you start building in a few years' time, you have those people coming through with the right skillsets to support the community.

How do we make them happen in Wales? The Welsh Government could put programmes in place with the further education colleges up there, with the University of Bangor in north Wales. We are starting a new general engineering undergraduate degree next year. This is a shameless plug, because we need local students to come. It is a Welsh-speaking university in north Wales. There will be jobs. There needs to be support for the local education sector. We try to do things in the Nuclear Futures Institute at Bangor to get out there and tell people what is going on in this sector in Welsh; that is not me personally, but some of my colleagues.

Q112 **Virginia Crosbie:** These jobs are important for the Welsh language and culture too.

Jasbir, in terms of what the industry needs to hear more from the UK Government, we should have news on Great British Nuclear over the next few weeks. Hopefully, it will mention Wylfa. I think that everyone would be very shocked and surprised if it did not mention Wylfa. Hopefully, we should have news regarding green taxonomy as well. What more can the UK Government possibly do to try to give confidence into the sector?

Jasbir Sidhu: They could announce where the siting of the first of a kind is going to be, give the green lights, like you have just said. The UK needs to adopt a green taxonomy, which you have already mentioned. Then, from a skills point of view, serious consideration must be given to revisiting the curriculum in schools, because we need to enthuse children to come into not only a STEM environment but a nuclear STEM environment. That is the way I would say it. Then those enthused children can start thinking about going to the training colleges, to take up jobs in the nuclear industry and thereon to universities and beyond.

If you focus on Wales, you have a population of 3.1 million. The working population is about 1.45 million, so let us round that up to 1.5 million. Even if you take 1% of that, you are looking at about 15,000 jobs that could be directly targeted to the nuclear industry, such that Wales becomes a major energy hub, a producer and distributor of energy, not just for Wales but for the rest of the UK and further afield. Those jobs can be all local jobs. Why not? You have a talented pool of people there. They just need certainty and projects to take forward. Remember, for a nuclear power station, from start to finish, you are looking at a 100-year lifecycle. Which other industry can you say has a lifecycle of 100 years? You will have jobs and certainty in your jobs as well.

Virginia Crosbie: It is a really exciting time for Wales in the nuclear sector. It is great to hear, Jasbir.

Daniel Maney: The more certainty we have, the better. I know that we have made that point quite a few times. It is just to give them hope. I know that Great British Nuclear is, hopefully, going to announce these plans, but it is not just around the announcing of the power stations themselves. It is all the infrastructure that is going to go with it. I know that having a hydrogen hub has been mentioned as something that could be done. It is not just saying that we are going to support this nuclear industry as it is. We are going to support everything that goes with it and invest in the local population. Those are the most important things from a jobs and trade union point of view.

Beccy Pleasant: I would reiterate that point about lead time. To maximise the jobs for local people, you need time to train and develop. Three years is probably an underestimate because you need them to be experienced in working on sites as well. We need a programme up and running right now to make sure that we are not left in the situation where

you have to import skills in to deliver this because the local capabilities are not available.

The skills and education piece is really important. We have done some work on embedding nuclear into the curriculum, through actually teaching the curriculum with the context of nuclear in. That is an England product at the moment. It would be great to get engaged with the Welsh Government on the skills side to get that rolled out in schools in Wales as well.

Q113 **Virginia Crosbie:** Bill, are you excited for our young people here in Wales about their future in nuclear?

Professor Lee: It is a real opportunity. I am working with some of the young people already at Bangor. They are all into the prospect of new reactors in the region. We were set up five years ago in Bangor University to develop a research and training capability to support the developments at Trawsfynydd and Wylfa. Here we are, five years later, and still nothing has happened. We are optimistic that things will happen going forward.

Q114 **Virginia Crosbie:** You have a long Christmas list, do you?

Professor Lee: Yes.

Q115 **Beth Winter:** You have covered this in a roundabout way in many respects, but I want more detail in terms of the impact. Professor Lee, what impact do you think that any new nuclear developments could have on the regional economy if proposals go ahead? I do not know whether you could possibly draw any comparisons with anything that has happened elsewhere, globally. Some of the evidence that we have had had indicated about the complicated nature and the time lags. There are many examples globally where reactors are still in the production phase. There are issues about private investment being secured. I would be interested in terms of where this has worked or where it has not worked elsewhere as well.

Professor Lee: What is needed for the impact is clarity from Government on where the reactors will be built and then a decision on what reactors. Then the investment will come. Private investors are looking to see whether the UK is going to go ahead with this programme.

Q116 **Beth Winter:** Where has that happened elsewhere globally that it has been a success?

Professor Lee: That is a difficult question for an academic.

Q117 **Beth Winter:** Would you do comparative research, or not?

Professor Lee: Maybe Jasbir will be more able to answer that. If you look at Hinkley Point C, there has been success in moving forward with that project.

Q118 **Beth Winter:** It is 2025 now. Is that right? It is delayed again.

Professor Lee: Yes, but there is often delay in nuclear programmes and has been. That does not mean to say that it is not the right thing to do.

Jasbir Sidhu: If you look historically at France, sitting on our doorstep, it has a very successful programme of delivering nuclear power stations, with a benefit for the regional communities, which are quite heavily invested in delivering those nuclear programmes. You have about 58 reactors in France, providing power that we use as well.

Let us look at China. Today, China is building nuclear power stations, dare I say, as if they have gone out of fashion. The speed at which it has put up new nuclear assets, because it has to decarbonise its electricity system, is quite impressive. There is a different culture, different work mentality, but it can be done where there is will and a Government driving that force forward.

Q119 **Beth Winter:** Thinking about the regional economy now, we all want investment in regional economies in Wales. If they go ahead, what sort of timeframe are we looking at to bring benefits to the regional economy?

Jasbir Sidhu: For Traws, the ideal time to start a project would be 2027. That has been bandied around. Rolls-Royce SMR has done its own forecasts and is forecasting around 40,000 regional jobs by 2050, based on their fleet. Our target is delivering around about £52 billion, in terms of their economic forecasts. That is available on its own website in terms of the assessment that it has done. We are talking significant numbers here and significant benefit to the regional economies.

Professor Lee: I just thought of an example that is a very good one. I was involved with a programme in Abu Dhabi, where they built three nuclear reactors on the coast there that are now underway. They are Korean reactors. They have significant financial backing from the Government of the UAE there. They were built on budget and on time, so it is possible.

Q120 **Beth Winter:** Mr Maney, as a trade unionist, you are concerned about jobs, local supply chains and the regional economy. That is your primary concern.

Daniel Maney: One of my reps joked the other day. He said, "When this gets the go ahead, I am going to go and buy a burger van and set it up outside". It is a bit of a flippant way to do it, but it points to the thing. It is not just the immediate supply chain and the fact that building that will create those jobs. It is all the rippling effect in the local community that will be really beneficial.

With the private finance that you talked about a minute ago, there is not just one way to finance a nuclear power station. There are regulated asset base models, public-private partnership models. There are different ways to skin that cat that we could look into. All of them will lead to great economic benefits, particularly to that area of north Wales, but also to the whole UK.

Q121 **Beth Winter:** As a trade unionist, what do you feel needs to be done to ensure employment opportunities and supply chains remain local? Is there a plan in place yet, or not? Somebody alluded to the Welsh Government needing to put in place training and development.

Daniel Maney: Because it is a devolved issue, it has to have the Welsh Government onside to do that. They need the certainty as much as the local people need the certainty. If there could be collaboration between Westminster and Cardiff about this programme, if it goes forward, a training programme for the next 20 or 30 years could be put in place. That would hopefully provide the certainty that local people need and keep those jobs locally. Also, as well, if there is that sort of timeframe, they would not have to go somewhere else, as was indicated earlier on, if a project gets cancelled, and move away. They could stay there and keep that knowledge and economic activity in the area.

Beccy Pleasant: There is a lot of learning from HPC that we can now draw on. Admittedly, it is a first-of-a-kind build in nuclear for a generation, so there are bound to be some hiccups along the way. We have definitely learnt from that this time around. That project is delivering £18 billion into the UK, £4.1 billion into the local region, in terms of supply chain contracts and that kind of thing. That is the sort of size and scale of the opportunities.

34% of the work force will be local across the duration of that project. Although you might want 100% of it, we would not be able to deliver 100% of that locally. 34% would be a great initial target to explore from. Setting that into the contracts and development consent order process is important to ensure that the local people get the opportunities from there. It is about thinking through which roles can be done locally and which ones are better done outside, with time to plan and then feed that back into the educational processes to make sure that they are available when you need them.

Beth Winter: That figure seems quite low to me. I know that my colleague is going to ask more questions on skills, so I will leave it there.

Q122 **Chair:** Mr Sidhu, you said in response to an earlier question about how we do delivery of nuclear projects in the UK that we need to change the whole way that we approach it. We need to move to a fleet-based model. You said that we have never undertaken that kind of approach in the UK when it comes to the reactors that we have built here. You said a few moments ago as well that China is building new fleets of power stations. That is probably the only country on earth where there is a fleet approach being taken. Do you think that it is a mistake for the UK Government to rule out significant Chinese involvement in building new nuclear power stations in the UK?

Jasbir Sidhu: That is a political decision.

Chair: No, it is a practical question.

Jasbir Sidhu: In terms of involvement from Chinese technology in the UK, there are other aspects that we need to take due cognisance of. That is security. There are challenges there that we have to respect and take forward.

Q123 **Wayne David:** Could I ask a fairly general but fundamentally important question? There is a political consensus emerging in this country that, given the crisis in the energy sector, there needs to be a far bigger emphasis on having a diversified structure of power generation in this country, and nuclear must be an essential part of it. There is agreement on that. Why do you think that the Government are delaying a decision on establishing at least one nuclear power station in north Wales? What do you think the implications of a continuing delay are? How long might that delay be?

Professor Lee: You are probably asking the wrong people. You would need to ask Government why there has been the delay and obfuscation. Nuclear has always been a difficult subject to sell to the public. Now there is a different scenario in the world. Jasbir mentioned the France programme to build a fleet in the 1970s and 1980s, on the back of the oil crisis. We are in a similar situation now. They managed it in France 40 years ago. Government need to push forward.

Q124 **Wayne David:** Government have said that they want to have a level of power generation by 2050, which is significant. In order to do that, decisions have to be taken pretty quickly.

Professor Lee: They needed to be taken five or 10 years ago.

Jasbir Sidhu: COP 26, a year ago, was excellent for Great Britain, in terms of how we presented ourselves and led that debate to take forward climate change. That was great. Lots of announcements were made.

To answer your question, one thing that has not helped, obviously, is a lack of stability in where we have come from over the last six months or so in terms of Government. Let us not mince our words: it has been slightly unstable. That has not helped in terms of decision-making, especially with those sorts of projects that one could argue may not necessarily be the flavour of the month from a public opinion point of view.

Public perception of nuclear is on the increase. That was the latest survey that we published in our *Nuclear Future* magazine from a Nuclear Institute point of view. That is good and we need to capitalise on that. We must not forget that, from a nuclear industry perspective, we need to have strong communication and marketing programmes, not only to get the public on board but also to enthuse the next generation to want to come into this industry to take these jobs that we keep on talking about. If we do not get the communication and marketing piece sorted with the industry, we will lose those that may potentially want to go into nuclear

to other industries that we have already mentioned, such as the renewables and so on and so forth, from an energy sector point of view.

Q125 **Wayne David:** Getting down to basics, what you said a few moments ago is that the political instability we have seen in this country may well be the reason why there has been, to quote Professor Lee, dither and delay.

Jasbir Sidhu: There has definitely been political uncertainty over the last year. Prior to that, going back historically on a nuclear timeline, which we talked about, the decisions should have been made years ago. The nuclear renaissance started off in the UK under the Blair Government in 2004. Correct me if I am wrong. There was a great fanfare and announcement. What did we achieve in that time from then to now? It is Hinkley Point C. That is excellent, but it is not a fleet. It is a first of a kind, which still is not on the bars yet.

Q126 **Wayne David:** Moving on to the implications of the situation we are in now, where we hope to have a decision before too long, a lot depends on that decision being taken. We have touched upon skills already. Is it true to say that, the longer the decision takes to be made, the shorter timescale there will be to develop the necessary skills locally to make the project effective?

Beccy Pleasant: That is definitely the case. There is always going to be an amount of time it takes to build the power station, so there is a ramp-up time within that period, so you can always respond once that signal is definitely given. If we knew now that there was going to be a power station in Wylfa or Trawsfynydd, we would be starting to develop now. You would start now because it will take a number of years.

We must not forget as well that there are different types of capabilities required for building a power station, from the burger van and the concrete pourers, which might be relatively quick to make, to the nuclear engineers, who are going to take decades to be in place. The phasing of the development that you need to put in place will need to react to the timescales that are set. There are definitely skills right now we would be starting to be ready for the power stations on Anglesey. It is back to certainty. Apologies; I sound like a broken record, but, as soon as we get that, we would start to work. It would give the colleges, universities and supply chain the opportunity to respond.

Q127 **Wayne David:** What I am getting at is this: if there is a delay in the announcement but the objectives of achieving certain energy generation targets by 2050 are to be met, would there be an inclination to say, "Yes, we would love to have a lot of people recruited locally and we would love to bring those skills on, but we do not have time to do that. Let us bring people into Wales who have the skills"? Is that a real danger?

Beccy Pleasant: It definitely is. The longer the lead time, the greater the proportion of local skills you would be able to deploy in the project, without a doubt.

Q128 **Wayne David:** Mr Maney, would you agree with that?

Daniel Maney: Your original question was about what the damage is if it gets delayed. I would look at the damage we are having now from the delays that have happened previously. If these power stations had been built in the early 2000s and were coming online now, it is fair enough to say that we probably would not be in the energy crisis and have the energy mix we have now.

I am dealing with redundancies as part of my day job, where businesses are mentioning energy costs to me on a fairly regular basis as one of the reasons. A lot of that could have been ameliorated if we had had a different energy mix and had not been so buffeted by the rise in gas. Look at the cost of the dither and delay that has gone before as a fairly good guide to what potentially could happen if we do the same thing again and again.

Q129 **Wayne David:** You have all mentioned that there is a need for a careful mix of energy generation in the future. That means that, if we are talking about the development of new skills, nuclear is in effective competition for skilled workers with other sectors of the renewable economy. Is that a potential problem here in Wales, because the Welsh Government are firmly committed to a zero-carbon target and want to have the kind of mix that you are talking about? Does that create problems in terms of skill development?

Professor Lee: It is probably worth mentioning that there are different types of jobs when you build a reactor. There are the jobs during the construction phase, so design engineers, people who build things, mechanical engineers. Then there is the operation phase, which is a smaller workforce, more highly skilled, nuclear engineers. During the construction phase, which may take three, four or five years, you have time to train up some of those people for the operation phase.

The competition will arise with other industries with construction people. If we have HS2 and big projects potentially going ahead at Sizewell C, they will require a lot of construction engineers and builders. That is likely to be where there is an issue in trying to get enough people involved in the programme to move things forward simultaneously.

Jasbir Sidhu: There is competition and there will be competition. I will give you an example. I lecture at Imperial College on risk and safety in the nuclear industry. You have a cohort of mechanical engineers, about 60 of them in a room. If you ask the question, "How many of you are looking to join the nuclear industry and take up a job there?", at the beginning of the year six put their hand up. Imperial is a nuclear pedigree university, so I was quite surprised by that.

That was on the back of COP 26. The six that put their hands up made the link between nuclear and saving the planet on the back of COP 26 and the great work that the YGN did at COP 26 as well. That is not good

enough. I asked the others, "What jobs would you be looking to go into?" Quite a few of them that were devoted to the energy sector said renewables. You could argue, back to the communications piece, that there is a job to be done in the nuclear industry to outwardly market the benefits of nuclear. I do not think that we do that; we do not really sell it to children and parents to take that forward.

Wayne David: That is probably right. That is the impression I get.

Jasbir Sidhu: We are very good at talking to each other in the industry, but not so good at talking to others outside of our industry to encourage and enthuse them to come and join the family.

Beccy Pleasant: It is really important to think about the choreography of these projects as well. We have already said that the construction workforce are not a permanent part of the requirement for a build programme. I know that work has already started in HPC and Sizewell C on this. It does not take much to look at where you might mobilise the skills once they are no longer needed for the construction of the power station, to other infrastructure projects in the region. The individuals can start to choose. Do they follow the project and mobilise themselves, or do they stay in the region and move between sectors?

Those are all things that you can prepare for with good planning. If you look at the overall project plan for all the major infrastructure projects that are happening, there will be opportunities to re-utilise those capabilities between them if we get that kind of programme set in stone.

Daniel Maney: I would reiterate that these are going to be highly skilled people, so I am sure that they could retrain in something that would be equally productive, if not more so.

Q130 **Ruth Jones:** Mr Sidhu, to check, for my understanding, you mentioned 40,000 jobs in the construction phase. Is that correct?

Jasbir Sidhu: Yes. Rolls-Royce SMR's forecast is 40,000 regional jobs by 2050 for its SMR programme.

Q131 **Ruth Jones:** That is a lot of jobs, if you are looking in one particular area in north Wales.

Jasbir Sidhu: Sorry, that is for its fleet of SMRs, not just for north Wales.

Q132 **Ruth Jones:** That explains a lot. Mr Maney, we know construction workers. I know that construction workers in Newport West are working on Hinkley C. They travel daily and they will move on to Sizewell, to go on there. Do you see construction workers relocating to sites or travelling? Three, four or five years is a long time. How do you see your construction workers operating?

Daniel Maney: It would not be universal because everybody's situation is slightly different. I know that quite a large number are thinking that

the Sizewell announcement is great, because Hinkley will finish and they will move on to the next one. I would expect a similar sort of number. It will not be all of them. Even the ones that are there, as we said in the last one, are highly skilled people. They are highly trained, with experience, so the option is there to move on or to retrain and do another job, hopefully of equal value, in that area. It is a win-win, even for those that do not move on to the next project.

Q133 **Ruth Jones:** Are you saying that they would relocate to north Wales?

Daniel Maney: A lot would. It will not be all of them, but there is the opportunity there for those who want to move to effectively, as we were saying about a fleet of reactors, daisy-chain along and go from project to project, keeping their high-skilled job in the UK, and hopefully in north Wales, for many years.

Q134 **Ruth Jones:** Ms Pleasant, we have talked a lot about skills and jobs and things. What is being done as far as you can see, or within your particular area, to encourage young people to have that career? We have talked a lot about STEM and things like that. Mr Sidhu has already mentioned in terms of undergraduates. What about younger people, school-aged children?

Beccy Pleasant: The nuclear industry has always been very good at outreach and STEM activities, but we have tended to work with the schools and colleges that are local to a particular power station. That is always going to be really important to make sure that the local people are engaged. The size and scale of the challenge to meet 24 gigawatts in the UK as a whole means that we need to get this message out there much more widely. We are looking at scaling what we are doing with careers and outreach.

I might have mentioned earlier a programme that we are putting into schools. It is called Developing Experts. It effectively tailors the curriculum for schoolteachers to use and gives examples of the nuclear sector and how the skills they are learning in school can be applied to careers in the nuclear sector, green energy and wider as well. That starts from four and goes until 18. You can start to teach the curriculum with a view of a career in mind. That is a scalable product.

We only started this particular project in September. We have already hit 193,000 students in delivering that in a way that you could never do by individual face-to-face STEM outreach. It is about thinking through how we can scale. Products like that are the way to go and get that to schools that would never normally have had the opportunity to think about nuclear.

We are also doing other things. We are doing a mentoring workshop specifically for girls in Birmingham. We targeted Birmingham because it does not have nuclear on its doorstep. It has high ethnicity. It has high economic deprivation. Let us go to those areas where it is not automatic

that people would think about nuclear and get it on their agenda. Those sorts of programmes are replicable across the UK and in Wales. There are really good products and interventions there. We just need to scale them up.

Ruth Jones: That is really interesting, that you are targeting the girls in Birmingham. Thank you for that. That is really useful.

Professor Lee: I wanted to talk a little about the jobs during construction. For a big reactor, there might be 6,000 jobs onsite. They are quite peripatetic. When the next big reactor comes up, they could move. The operational jobs are local, fixed, long-term jobs. There might be 800 of those for a big reactor.

When you build a fleet of SMRs, on one site—let us assume Wylfa—you might build five or six SMRs. You are building them in sequence, so you build the first one and start to generate electricity. The people who built that move on to build the second one on the same site. Those jobs could become more long term.

Q135 **Ruth Jones:** That is helpful. In terms of where you come from, in academia, if you like, Professor Adrian Bull told the BEIS Committee that people are wary of investing in terms of academic training for undergraduates and graduates because they have been bitten in the past, if you like. Would you agree with that assessment?

Professor Lee: Yes. Universities look to see what is coming. They look into the future. They have a crystal ball and they can see that low carbon energy is important. They can see renewables and the way the world is going. Some of us have bet our futures on nuclear. We have done that in Bangor. We are still optimistic that nuclear is going to be a big component. Other universities have invested in nuclear. There are two nuclear fission centres for doctoral training for supporting PhDs across the UK. I would be slightly less negative than Adrian. We are looking into the future and seeing the possibilities.

Jasbir Sidhu: In the Prime Minister's 10-point plan, the assessment was done that a large nuclear reactor would provide about 10,000 construction jobs during that phase. That is the first point. The other is 900 operational jobs for a single unit. If that is 900, they should be all local and continue to be local for the next 60 years, the life of the plant. They should be local jobs. There should be no reason to need to import people. Remember that you have the outage programme to go through and then you have an influx of people maintaining the plant, so you will have a few more thousand coming in. Why should they not be local?

I will go back to schools. I will come on to the supply chain in a minute. My personal story is quite an interesting one. I studied maths, physics and music at school. Chernobyl blew its lid off. I went to my careers teacher and said, "I want to study nuclear engineering". In the curriculum, we were never taught anything about nuclear or its virtues,

let alone splitting atoms and what you do with them. The point was that she was a chemist, so STEM background, and she was so anti-nuclear it was quite shocking really, as a 17-year-old, standing there in front of her, being given a dressing down on why I should not join the industry, it is a dirty industry, I will never get employed and the reason I want to join the industry is because I have a hole in my head and that is why I wear a turban.

It was as shocking as that. She was quite incensed by the whole idea of going off into the nuclear industry on the back of Chernobyl blowing its lid. She called my parents in and I think they were quite pleased that I was going to become an engineer, rather than busking round the streets of London with a violin under my chin.

The point is that there is a massive job to be done, not just to evolve the curriculum to start including nuclear technology and how it is taught, but also the teaching staff need to be brought on message. It is important to be taught that and not bring your own baggage, because we all do. It happens. That needs to change as well as part of that story, to get that buy-in.

The supply chain has been bitten by previous announcements.

Ruth Jones: I know that there will be other questions coming in on supply chain, so we will have to leave that bit, but I am sure you will get your chance in a minute. Do not worry.

Q136 **Rob Roberts:** As Mr Sidhu seemed to be on a roll, we will continue and start with Mr Sidhu. Tom Greatrex, chief executive of the Nuclear Industry Association, told us that, in his opinion, there was not enough capacity to build two nuclear stations at the same time currently. Do you think that there is capacity in UK supply chains to deliver more than one project at once?

Jasbir Sidhu: If we put two nuclear shovels on two different sites at the same time, probably not. We would have to import those skills. It all depends on the timing. If you are talking about 1 January 2023, probably no. If you are talking about in two years' time but with a commitment now, we have time to plan, all the discussion we have already had, as Beccy has been talking about. If you put two nuclear shovels in the ground then, in two or three years' time, then yes.

Q137 **Rob Roberts:** Can we distinguish between supply chains in terms of materials and in terms of skills? Are both in the same situation? Do we have enough materials to do two but not enough skills, or not enough of both?

Jasbir Sidhu: If we talk about materials, there are long lead items that would need to be procured. If you want to build two projects together, you would need to procure those items sooner rather than later for those projects. In terms of skills, skills need time to be developed. Beccy probably has more of a handle on the figures there, from an NSSG point

of view. There probably are not the skills right now to deliver two projects concurrently, starting imminently.

Q138 **Rob Roberts:** Ms Pleasant, what do you have to add to Mr Sidhu's thoughts on skills?

Beccy Pleasant: He has nailed it there. With time, we could do it. If it was happening in January, it would be a challenge. As you know, the labour market at the moment is quite tight. We have very low unemployment so identifying the opportunities to find different pockets of people to go after for new build is challenging. If we have the time, the commitment and the future plan sorted, you would be able to start to invest in those capabilities now.

I always come back to the point that there are enough graduates coming out of engineering for nuclear. It is just that we will have to take a greater proportion of those than we have done traditionally. It is about where you direct those young people to. Jas has already mentioned things like attraction campaigns and marketing campaigns around the sector. Those are going to be important. Again, they are early lead time items. We need to be doing them now so that they start to take effect when we need them.

My personal view is that having two would be a nice challenge to have, because it does enable you to scale things up. The problem we have had is that it has all been a bit piecemeal and different regions have had to scale up suddenly. If you were doing a fleet of power stations, you could think differently about specialist centres of excellence that train in certain areas and multiple of those across the UK. You would think about the scalability of it if you knew that you had that problem to deal with.

Q139 **Rob Roberts:** Mr Maney, you have a background in project management as well as your current role. Do you have anything to add to what we have heard so far from your experience?

Daniel Maney: I would only add one thing. We are talking about encouraging people to come into the industry, particularly from a young age, and training them up. If you have a commitment and certainty from central Government that they are going to proceed with this programme for the next 30 or 40 years, job certainty for that amount of time is a rare thing these days. The job market is extremely transient. That could be a real plus and a real selling point for people, particularly for a generation that has just gone through a pandemic off the back of the financial crisis. That is something that could really appeal.

Q140 **Rob Roberts:** I would ask Professor Lee the same question. I asked Ms Pearson earlier on whether there were different needs in terms of skills for SMRs. Are there different needs in the supply chain in materials for SMRs compared to large-scale?

Professor Lee: One of the potential blocks is the pressure vessel, which is a steel forging. There are only a few companies in the world that can make those.

I know discussions are being held with Sheffield Forgemasters and investments are being looked at, but, again, you need clarity before you will invest serious money going forward in big forges to produce pressure vessels suitable for a small modular reactor fleet that you do not know is going to appear.

Yes, decisions need to be made. We can then work towards solving the problems that will arise in terms of skills and supply chain needs. We are good at these things. We get innovation into our manufacturing and our skills sector, but we just need clarity so we can plan going forward and get the right systems in place to enable the problems to be solved.

Q141 **Rob Roberts:** Other countries want nuclear as well. We are not the only place that is looking to do this. Away from the UK-based supply chains, that is going to put a strain on global supply chains, presumably. What actions could we take to protect the UK from that?

Professor Lee: Some clarity in what we are going to do would help, because then we can get our orders in quick. There are global companies that are investing in the technology. Canada is very forward-looking with SMRs, as are China and the USA.

There will be blocks and competition globally for scarce capability in key areas such as pressure vessels. Either we develop our own capability, which we could then export, and generate those skills and abilities at home, or we have to go overseas and look to buy in. I always think the best option is to build home capability.

Q142 **Rob Roberts:** Generally, first-mover advantage is probably the biggest thing we could do.

Professor Lee: Yes, absolutely.

Q143 **Rob Roberts:** Mr Sidhu, do you agree? Are there any other things we could possibly do?

Jasbir Sidhu: I definitely agree with that. If you look at the UK civil nuclear industry, there are 61,000 people working in it. That is the latest assessment from NIA, the Nuclear Industry Association.

That is with an ageing workforce. We have quite a few people coming up to retirement. We need to replace those people and then develop the next crop of 20,000 or 30,000-plus. You may need a workforce of around 100,000, perhaps. That is quite a lot of people who would need to be developed to continue the industry over the next century or so. That is the first thing.

Post pandemic, has there been a global drain of skills moving outwardly? The UK nuclear industry is seen as quite an attractive place to work,

especially from Europe, because there is optimism that projects may be coming to fruition soon, such that there will be lots of jobs to come into the UK industry.

I do not have any figures to back this up, it must be said, but I am not sensing that there is a desire from our trained UK workforce to want to go to work in other geographies, unless they are being remunerated or rewarded or have some personal desires to do so. I do not have the figures on that. It would be interesting to see whether that is borne out in terms of us making ourselves attractive.

Q144 **Rob Roberts:** What do you think about that, Ms Pleasant? Would people rather work here? Are we not necessarily going to get that drain of people going abroad?

Beccy Pleasant: If we have programmes of work here, I am certain they would rather stay and work here. Going back to the point about sovereign capability, if anything, the last three years have shown us that having our own capability is going to be more secure than relying on others.

In terms of the supply chain's ability to compete in that global marketplace, we need that plan so we can start to upscale our homegrown capability to provide the components for new build locally, in the UK. We may not be able to do it all on day one, but it is really important to recognise that we want to increase the percentage of UK materials and manufacturing capability to meet that.

When we look at workforce mobility, we are finding that people are perhaps less mobile than they were historically. They would rather stay local and work local. Work-life balance and that kind of thing is important. There is not a particular desire to work abroad or to export your skills.

Q145 **Rob Roberts:** On that basis, how much of a danger is it, to follow up on Professor Lee's point, not to have that first-mover advantage? How big a deal is that going to be from a skills point of view?

Beccy Pleasant: It is really important that we send a really strong signal that there is the certainty of a programme for the UK. We are doing all this work on engaging with schools and engaging people into the nuclear sector. If there is no certainty of work for them, perhaps you are increasing the risk of them going abroad. First-mover advantage is really important here.

Q146 **Rob Roberts:** Finally, Mr Maney, do you have any further thoughts on that?

Daniel Maney: If that certainty were provided, we could become a world leader in developing technologies like SMRs. Manufacturing would get a boost; the UK would get a boost; Wales would get a boost. After the last year, energy dependence is clearly something we really need to guarantee, if we can.

Everybody wins out of this, if it is supported. Not only do we get a balance of payments benefit, but we also get energy independence so we do not have to get into situations like the one we are in at the moment.

Q147 **Chair:** Thank you very much for the contributions from the panel. It has been a very useful and interesting discussion. If I have a frustration, it is this. I say this as somebody who is a supporter of nuclear power and who wants to see investment in nuclear power generation in the UK. I find that there is an optimism bias around the discussion when we get experts from the industry in front of us.

At least two of the witnesses this morning have referred to the examples from France about investment in nuclear, without saying to us that half of the French reactors are offline because of maintenance problems. They are struggling to find workers to get on site to get the nuclear power stations back up and running. They are having to pay premium rates to import welders, boilermakers and fitters from the US and other countries to go in and do that.

Is it not the case that we do not just have a challenge around skills but that the people are just not there? The number of qualified welders in the UK has dropped by around a quarter in the last five years. Half of the welding workforce is expected to retire by 2027. Who exactly is going to build these power stations? Ms Pleasant, I will ask you to comment from the skills perspective.

Beccy Pleasant: You are right that it is a challenge. It is a challenge because we have not been investing in them and supporting them historically. Every year that goes by, you are adding to that problem. The lack of a consistent strategy for nuclear has definitely caused that situation.

It is a challenge. We know that it is now a challenge with skills. We are looking at tripling the inflow required to hit a 24 gigawatt type of model. Yes, it is a challenge.

Q148 **Chair:** Given the current shortages and given everything you have all said about decisions needing to be taken now, what are you all waiting for from Government before investment goes in to get new courses and fund places for coded welders and for apprenticeships to get people trained up so that they are ready within five or 10 years? Why is that investment not happening now?

Beccy Pleasant: It is because the tech, the location and the timing have not been confirmed yet. All three of those criteria are needed for anyone to make that investment. Why would you invest in Wales without that certainty of a Welsh project? You may as well invest in Sizewell or Hinkley at the moment because those are the only things that are certain. You need at least a degree of commitment to those projects in order to take them forward.

Q149 **Chair:** Mr Maney, am I being overly gloomy about the shortages we are

seeing and what I see as the inability of the country to do big projects in parallel in the years ahead?

Daniel Maney: Clearly, there are challenges, and my members speak to me about those challenges. In terms of demographics, as a union we do have quite a lot of people who are in that bracket, who are about to retire. I do understand. There has to be a commitment to want to fix that problem and, effectively, to back it up with cash.

Another example I look at there is heritage. We were facing a similar problem with crafts like stonemasons and things like that. We got all the organisations together and decided to produce a pipeline to do that because otherwise, once you have lost those skills, they are lost forever. You needed someone to have an apprenticeship and to be taught on the job.

As Beccy just said, those people just need a push and certainty. We need to say, "This is going to happen here on this date" so the groundwork can be put in place. There are people who would be willing to do those jobs and willing to be trained up to do them. I am not going to sugar-coat it and say it is absolutely not a problem with training, but there are bodies there that would be willing to do it.

Q150 **Chair:** We have 9 million working-age people who are economically inactive in the UK at the moment. You would hope there would be some pools of available people, if we had the right policy levers to support people into employment.

We are running out of time. Professor Lee and Mr Sidhu, is there anything you would like to add before we end the session?

Professor Lee: I would just comment on the lack of technically trained people. That is a bigger societal problem than just nuclear. It is associated with the changes in the polytechnics wanting to become universities, a lack of investment in apprenticeships and skills training and all young people wanting to go to university rather than get practical skills they could use in an engineering setting. The nuclear industry cannot take all the blame for that.

Chair: No, you are absolutely right. There is an economy-wide issue there.

Professor Lee: This is a really exciting time for the nuclear sector. There are opportunities around fission, new fission reactors, small modular reactors, co-generation to generate hydrogen and low-grade heat for local heating projects. There are all sorts of opportunities out there going forward.

We have only just this morning heard about the new developments in fusion. The UK fusion programme is fabulous, with UKAEA and the private sector investment in that. Looking forward further, there is an opportunity for space reactors. I know there are British companies

involved in developing space reactors. Dare I say it, there are also the reactors for the nuclear submarine fleet.

These are really exciting opportunities going forward, and it should be easy to encourage young people to get excited about these opportunities. We are going nowhere in interplanetary space without nuclear power, and I am not sure people know that. We really need to enthuse people about this sector.

Q151 **Chair:** That is a bold vision indeed. Mr Sidhu, is there anything you would like to add?

Jasbir Sidhu: Just returning to your gloomy picture on skills, I would look back at history. If we go back in time, NSSG did make an assessment back when the first renaissance kicked off. They predicted this perfect storm of the Olympics project, HS2 coming along and maybe two EPR projects in the UK. They said, "We do not have enough skills". The supply chain did invest heavily, as you were saying, but they got their fingers burnt. Lots of money was invested by the supply chain, and the projects were not realised.

It goes back to that point. If there are projects and there is a fleet programme on the table, the industry can get together and start developing the skills, from welders, as you mentioned, all the way to very skilled professional people. The infrastructure is there. We definitely need to ramp it up.

There are good organisations out there, like the Nuclear Institute, the NSSG and NSAN, that are happy to take people on a professional development journey. Those organisations sit alongside YGN, which is there to help develop youngsters and take them on that career path in the nuclear industry.

Chair: Thank you very much. It has been a very helpful discussion. Thank you, all, for giving us your time and expertise this morning. Thank you to my colleagues. Thank you, Professor Lee, Mr Sidhu, Mr Maney and Ms Pleasant. I will bring the meeting to an end.