

Energy, Security and Net Zero Committee

Oral evidence: [Workforce planning to deliver clean, secure energy, HC 393](#)

Wednesday 5 March 2025

Ordered by the House of Commons to be published on 5 March 2025.

[Watch the meeting](#)

Members present: Bill Esterson (Chair); Ms Polly Billington; Torcuil Crichton; Wera Hobhouse; Anneliese Midgley; Luke Murphy; Mike Reader; Claire Young.

Questions 1 - 76

Witnesses

I: Dr Christian Calvillo, Research Fellow, Centre for Energy Policy, University of Strathclyde; Dr Richard Hanna, Research Associate, Centre for Environmental Policy, Imperial College London; and Professor James Robson, Director of the Centre for Skills, Knowledge and Organisational Performance (SKOPE), and Associate Professor of Tertiary Education Systems, University of Oxford.

Written evidence from witnesses:

- [University of Strathclyde](#)
- [Imperial College London](#)
- [University of Oxford](#)



Examination of witnesses

Witnesses: Dr Christian Calvillo, Dr Richard Hanna and Professor James Robson.

Chair: Welcome to today's session of the Energy Security and Net Zero Select Committee, where we have our first oral evidence session on a new inquiry, "Workforce planning to deliver clean, secure energy". Our first public session is to explore the key themes of the written evidence we have received, in a cross-cutting manner, from the point of view of three eminent academics who have provided comprehensive submissions. You are all very welcome. Thank you very much for your contributions so far; we look forward to hearing from you in detail. If you could introduce yourselves, we will then start the questions.

Dr Calvillo: Thank you very much for the invitation. I am Christian Calvillo, senior research fellow from the Centre for Energy Policy, University of Strathclyde.

Dr Hanna: Hi. I am Dr Richard Hanna, a research associate at Imperial College London.

Professor Robson: I am James Robson, director of the Oxford University Centre for Skills, Knowledge and Organisational Performance at the department of education at Oxford.

Q1 **Chair:** Thank you all very much and welcome. In its assessment published in December last year, the Office for Clean Energy Jobs showed a shortage of skills in engineering, welding and mechanical trades, electrical trades, and planning and managerial roles, among other occupations, with these facing both acute near-term shortages and long-term challenges. To what extent is that right? What lessons can the three of you draw on from previous workforce challenges faced by the UK? I ask that you all answer that in turn as an opener.

Dr Calvillo: That is an excellent question, and we probably need to agree on this unprecedented challenge. We have done work on this area at the Centre for Energy Policy. Much of my work has been focused on jobs and skills, along with other economic and policy challenges across the net zero space. We have seen this as part of our research and there is an unprecedented scale here. There is a phrase that I like to use: net zero is everything, everywhere, all at once. That is unprecedented compared to other previous transitions.

Having said that, there are some lessons that we can learn from previous experience. There was the good example of the natural gas transition from town gas, which happened fairly quickly. The stats I found are that about 14 million consumers switched over a decade. That was quite rapid, and involved a massive level of co-ordination across different levels of government and different sectors over a sustained period of time. That helped to drive the transition.



HOUSE OF COMMONS

At the same time, there are things that we probably want to avoid. Offshoring is one key example here. We have seen that some communities—for example, Motherwell and Hamilton in the Scotland steel industry in the 1990s—still have not recovered after the shutdown of the steel industry there. There are things that we need to be careful about as well that we can learn from the past.

Dr Hanna: I was going to make a similar point on the transition to coal gas from town gas. That is very much the obvious example here. That was not an easy transition—for example, in one gas board area homes needed to be visited five times. It was also a stressful process for the tradespeople involved, working to tight deadlines and under public scrutiny as well.

The UK is not alone in this. Other European countries such as France, Germany and the Netherlands are facing a similar lack of the skills required for the net zero transition. In Germany, for example, there is a lack of skilled workers in construction, electrics and engineering. We are not alone in this.

Professor Robson: Thanks so much for having me here. I want to address this from the perspective of education and training, which is where I come from. The centre that I direct has been looking at exactly these sorts of workforce issues for more than two decades. There is nothing necessarily particularly new here in the challenges. They are tied to an intersecting set of issues that are entrenched in our education and training system. That relates to chronic issues related to funding and the lack of that, issues around who pays and who benefits within that system, and issues with under-investment from employers. There is the relationship between further education and higher education, the actual role that employers play within the education and training system and the underpinning policy architecture around how the whole of the system is structured and managed.

There is lots that we can learn about this from history and international contexts. I will try to be very brief here as an introduction. Our research has shown that the way in which the education and training system is managed as a market has not succeeded. It has led to confusion, fragmentation and low-quality offerings, which fundamentally shape the skill supply for exactly the sorts of challenges we are talking about here. We have emphasised a need to shift the way in which the education and training system is run from competition to co-ordination, where the state plays a much greater role in managing the process of skill supply to meet demand.

The second key point that I really want to emphasise is that, again, our research has shown that tinkering on the skill-supply side—so adapting curricula and looking at introducing more courses—cannot take place in isolation. You have to engage with the demand-side issues as well and work directly with employers and the broader industry on redesigning



HOUSE OF COMMONS

jobs and ensuring that new work is properly resourced and structured, and good as well. The jobs that we are talking about need to be good jobs.

Q2 Chair: Thank you very much for those introductions. On the comparison with the town gas transition, which two of you mentioned, do you have examples of how the workforce was trained to do that work?

Dr Calvillo: That was before my time. My understanding of how it happened is that there were a bunch of policy changes that helped in this instance. It was the post-war era when British Gas got nationalised and integrated quite a few separate companies into one. That helped in co-ordinating, managing and developing the skills at that scale. That more centralised approach helped in this instance. Picking on the point that Professor Robson made, this was less competition and more of a co-ordination effort that helped in developing that.

Chair: Richard Hanna, do you have anything additional from your research?

Dr Hanna: There is nothing I can add on the workforce planning aspect of that. I have looked at it more as an energy transition, but not in terms of workforce planning.

Q3 Mike Reader: It is interesting to hear you picking up on town gas. I recognise that we need to learn from that. From reading the evidence we have had so far, we have a real challenge of a smaller ageing workforce who are leaving the profession and a much bigger challenge, potentially, of bringing new people into industry. Can you think of any other examples in workforce transformation of where we have had to bring in a lot of new people into industry, rather than just doing a transition of existing workforce? It would help us to look at other examples.

Dr Calvillo: It is a difficult parallel to draw. Unfortunately I do not think I have a concrete example in mind, to be honest. Sorry.

Q4 Chair: Are there any quick wins for the Government in this skills transition?

Dr Calvillo: In my book, there are a couple of quick wins that are also low cost and have been highlighted by colleagues. I am sure that it will come back again in further questions. There is this co-ordination across Departments and better co-ordination across the devolved nations as well, having a clear plan that is long-term and goes beyond parliamentary terms and not changing policies. All that will help and drive confidence from the supply side, but also on the demand side, as Professor Robson was highlighting. That co-ordination and level of policy certainty is a quick win.

Professor Robson: I would probably push back on the idea of a quick win in this space. Apologies for this, but research and experience has shown that focusing on quick wins here, and particularly in workforce



HOUSE OF COMMONS

planning, often leads to quick failures. That leads to a certain amount of soul searching and wound licking, which ultimately delays things. Talking about big wins here is probably more effective and important. There is a really big opportunity to shift the underpinning political architecture from competition to co-ordination and from market-based approaches to system-based approaches. That is not quick, but that is really big, important and impactful.

Q5 Chair: You are arguing for a change in the way the education system operates. Do you want to say a bit more about that, or quite a lot more about that?

Professor Robson: I will dig deeper into what I started off saying. At the moment, for probably the last two decades in England at least, we have had a model where the idea of quality and skill supply has been based on the invisible hand of the market as the steer towards improving provision and making sure that there is an agile response to shifting skills demands. We have analysed and looked at all of this. It is not just me; plenty of other researchers and commentators have done this. We have seen that what tends to happen within this market-based system, where the state takes the regulator role rather than perhaps a more co-ordinating role, is a homogenisation of provision through competition, a fragmentation of the system and a very confusing set of education and training pathways for both trainees and employers to navigate.

Increasingly in Wales and Scotland, we are seeing a shift to a much more co-ordinated and collaborative system. The relationship, for example, between higher education and further education is structured around a model of complementarity and collaboration. There is a deliberate effort to work together, rather than in competition, to meet the needs of the employer and of the individual. That is probably where we need to get to and are beginning to get to in England. We will see how the post-16 education and training strategy emerges, which I think will start to push towards that shift in exactly that sort of underpinning political philosophy.

Q6 Claire Young: As you have had Wales and Scotland taking that approach sooner, do you have evidence from that that you could send us that would demonstrate the point you are making?

Professor Robson: We are beginning to do research. In a project funded by the Nuffield Foundation, we are doing a cross-devolved nations analysis of post-16 education and training. The emerging findings definitely show that a more co-ordinated system is easier to navigate from the perspective of young people and learners, and enables employers to engage within that system in a much stronger and more detailed way.

Things are still emerging in terms of the UK, but there is international evidence. The classic cases that are often held up for more co-ordinated systems are Germany and Singapore. New Zealand has developed a quite co-ordinated tertiary system. Australia is moving in that direction too.



HOUSE OF COMMONS

The international evidence also points to a success around more co-ordination and collaboration between vocational and academic sectors. The issue, of course, in some of those examples is the fact that states such as Singapore are really small. Scotland is smaller compared to England. That is why there is probably increasing interest in talking about co-ordinated systems at a regional level.

Q7 Chair: Richard Hanna, you wrote to us about the definition of green jobs. How well does the definition serve in meeting the Government's plans and the demand for jobs that will follow?

Dr Hanna: There are a number of different elements to this. There is the greenness. There are green jobs and net zero jobs. Whichever definition is actually used needs to have a policy purpose. It is no good trying to measure something unless there is a policy behind it. We can talk about net zero jobs, and it is certainly worth trying to have metrics on those, because we have clear objectives in that space, and then there are wider green job policy objectives.

Also, green jobs should not just be measured in terms of a job being entirely green. They should be measured in terms of the extent to which a job is green, so metrics can be used to look at tasks and activities. What proportion of a job's task or activity components are actually green?

Q8 Chair: Do you want to give some examples of the sorts of jobs you are referring to?

Dr Hanna: It could be, say, a job in a renewable energy sector, but not all the jobs in a particular company are directly related to technology. It could be, say, professional or IT jobs that are not, in and of themselves, green or low-carbon.

Dr Calvillo: That is a very good point on the labelling of green jobs. As part of research and various projects, we found that people feel a bit anxious about the term "green jobs" and the label of "green jobs". It feels like a green job is only being on top of the wind turbines. Some of these, as Dr Hanna highlighted, could be very much green, but they are not labelled or considered as that. Lots of people who could potentially do those jobs feel, "That is not for me because I work in a grey industry. That is green," even though it is exactly the same thing, but they think, "That's not for me," so they push back against that transition. It is important to be careful with the term "green job" and make sure that it is more inclusive and supports diversity as well.

Q9 Mike Reader: Just for my clarity, because I do not know how the data is captured, if you are a customer service team working for a clean energy provider, does that count as a green job? Is that how Government are defining green jobs? Does a green job become something where you are an engineer or a technical person doing something? How are you defining green jobs?



HOUSE OF COMMONS

Dr Hanna: There are limited metrics in this space. There is the Government's low-carbon and renewable energy economy survey, which directly measures jobs in different renewable energy sectors, such as onshore wind or offshore wind and so on. It does not really provide any granular detail beyond that. Are there jobs in the wider supply chain?

Q10 **Chair:** What is stopping there being greater detail about what jobs are available and how they are defined?

Dr Hanna: I guess that it is because the Office for National Statistics has not needed to do it in its standard occupational classification metrics. Until now, this granularity has not been required, and it requires quite a bit of work to actually go through the data and pull out the occupational codes that are green, if you like.

Q11 **Chair:** You suggested in your written evidence that we could learn from what happens in the United States. Do you want to say a bit more about that?

Dr Hanna: There is the O*NET classification in the United States, which measures more green tasks and activities and allows you to look at technical skills and softer non-technical skills as well. That is a model that the UK could look to learn from.

Q12 **Ms Billington:** I am interested in the definitions of green jobs for the purposes of understanding how we would use the data and what the purpose of definitions is. I am particularly interested in, for example, how we encourage people into particular sectors. I am also interested in how Government might categorise jobs for the purposes of saying that they have hit particular targets. That is not necessarily the same as actually managing to achieve what they need to achieve. Could we have a little bit of clarification from your perspective as to how you do that definition in order for the definitions to be functional and useful for Government, administrators, decision makers, people trying to make decisions about what kind of job they might do, trainers, educators and employers? I want the full works, really.

Dr Hanna: If we just take net zero jobs, if we have better metrics that are actually telling us the extent of jobs, or maybe the skills within jobs, tasks or activities that are related to net zero, we can build a better picture of the extent of the workforce and perhaps where skills gaps might lie. That provides a basis to plan for "Where are the gaps? Where do we need to direct policy to address those gaps?" That would be the idea of it.

Ms Billington: Is that not that more to do with the skills than the job?

Dr Hanna: It is both.

Q13 **Ms Billington:** If you are a construction worker you might, like you say, perceive yourself as being in a grey industry, but actually, if you are skilled in order to be able to do retrofit, insulation, heat pump installation



and so on, the proportions of your job and the functions that you discharge become increasingly green over time as you train and develop. I cannot imagine that that many 16, 17 and 18-year-olds in my patch are saying, "I want to have a green job in construction." They are saying, "I want to make sure that I am earning enough money to have a house and a family." If somebody says to them, "If you learn these things, you will be able to do that," it matters less to them, but it matters to somebody.

Dr Hanna: It matters to the Government as a central planner in order to make the net zero transition.

Q14 **Ms Billington:** Sorry for following up on this. It might not matter to those 16, 17 and 18-year-olds but we know that there are segments and demographics who are deeply excited about the possibility of doing a green job. How do they know that they are really doing a green job when they should be insulating houses, not sitting at a laptop in Hackney—just for the shallowness of the comparison?

Dr Calvillo: I have a quick one on that, because it is an excellent point. We have heard that from stakeholders and at universities. My colleagues in geology are complaining that they have fewer people trying to do geology because they link that as an oil and gas sector job, whereas there are a lot of green jobs within geology, such as offshore wind and everything on sub-surface elements and the storage of CO₂. There are lots of green jobs there. It is important not to, as you rightly say, focus too much on the label. It is important for planning purposes but it is more about trying to make it a synonym for a good job that is also good for the planet. It is a good job for you to build a career. Yes, it is a challenge, but we need to sell the good message on that.

Q15 **Ms Billington:** Can I follow up a bit? I am very interested in your idea about co-ordination and planning, particularly because some people have been arguing that we need a war footing in order to achieve energy security as well as the net zero achievement. You are still working in a market with those 16, 17 and 18-year-olds—can they do something else?—as well as those people who say, "No, I don't want to do that. It's dirty." There is still a market element of this, in terms of attracting people to do particular jobs. I am interested in how the definition or characterisation of these jobs can help to create the pathways into well-paid, good jobs that meet our targets, without people ending up saying, "Why am I doing this? I would rather do something else."

Professor Robson: This is an excellent point. This discussion has pointed to just how challenging it is to define green jobs. This is an issue. The O*NET definition is very useful, but that highlights three strands. We are talking about completely new jobs, jobs that require new skills and then exactly those sorts of jobs that you have highlighted, where the envelope around them shifts and they become green.

The point here is that we probably need to shift the language from talking about jobs and green jobs to actually talking about careers. That is what



matters. It is not filling these short-term job holes to install a heat pump or whatever it may be. What matters in that market of young people choosing careers is a career. It is something that is going to attract them for the longer term. We should shift the language around jobs to careers and shift the focus to talking about the long term rather than the short term.

At the heart of a lot of the discussion here is an assumption that we are talking about quick technological challenges or quick technological fixes, which has, at the centre, a sort of fit-and-forget mentality. You fit a heat pump, do whatever it may be and that is it. You move on. That is not attractive for a young person thinking about getting into a career in construction. You need to build into the discussion ways of talking about maintenance and ongoing tasks and work that are appealing and fit into the idea of a good job, as Dr Calvillo highlighted, that can be understood broadly for the individual and the country. That probably means fundamentally shifting the narrative at the policy level.

Q16 Chair: I have one more question before I move on to Mike Reader. Many of the people who are potentially installing heat pumps—they are now often installing gas boilers, but the same point applies—are sole traders or part of very small businesses. How do we get the data that is needed to address the points you have just been making without putting significant burdens on them, which they already have as a big concern about the whole approach to transition?

Dr Hanna: One way of measuring the extent of net zero jobs or green jobs in this space is to automatically code job advertisements. That could be an alternative to going out there, contacting SMEs with surveys and overburdening them. Nesta has developed a database called the Open Jobs Observatory. It is a pilot, but it has used it as a preliminary way to detect green job adverts. That allows it to build up an idea of the distribution of green jobs in the UK. As I say, it is a pilot, but it is something that could be extended more widely.

Q17 Mike Reader: I am going to ask you some questions about career pathways. It was quite interesting, in looking at the early submissions we have had, that there is not a single common view. Some submissions have said that the existing workforce is enough to deliver transition and clean energy. Some have said that we should be focusing on new entrants, because we have lots of retirements and obsolete skills. But an overwhelming majority said that we need both: we need existing workforce and new entrants on well-structured career pathways. Professor Robson, you gave us some very good evidence on that, so I will start with you. Could you set out for us whether career pathways in the clean energy sector are clear, well-structured and resourced? Do they meet the needs of future new entrants and also the existing workforce?

Professor Robson: Thanks for the question. In a sense, I have probably partially answered this already in my previous point. The answer is probably simply no. There is a lack of clarity here, and that comes down



to the muddy definitions around what these pathways are. What is probably required is exactly what I said earlier: a demand-side set of interventions where work is done directly with employers and stakeholders to map out in detail what these sorts of career pathways might look at, taking a very broad view that captures new kinds of work. It is really easy to get sucked into just focusing on new kinds of work and technical skills associated with that, but we need to also talk about the ways in which existing roles are changing and the kinds of upskilling needs that are required. That requires really fine-grained analytical work that brings in stakeholders and employers to collaborate to map out these decent careers.

Q18 Mike Reader: On that, and to slightly play devil's advocate, most suppliers or trade bodies would say that they have already done that work. They have set that out, produced White Papers and policy documents and told Government what they need. They now need the skills and the people to deliver what they have told Government. Where is that disconnect? Industry, I hear, feels like it has done that work. It has said what it needs, but you are saying perhaps that there is something still to do to close that gap.

Professor Robson: I do not mean to appear too overly critical of industry, but there is a tendency within employers to focus really overtly on short-term skills gaps for jobs that are needed now. It is absolutely right and fine to emphasise that, and there is a need to fill those roles. What I am talking about is a much longer-term view, which perhaps leads to some conflict between the short term and the long term, particularly in this net zero space, where the needs of the sector as a whole are aligned with the needs of the economy. That means potentially some difficult conversations about what those jobs not just are but should be in a five, 10, 15 or 20-year horizon period. That might mean some tensions and conflicts between a focus on the needs of the business and a focus on the needs of the economy and society.

Q19 Mike Reader: That is really interesting. In the short term, Government have the Clean Power 2030 Action Plan, and have been relatively clear with industry about what they are looking for. We heard in evidence last week that, for emergent technologies and that longer-term pipeline, there is still a lot of uncertainty. I will ask this for others on the panel. Do you think Government need to do more to set out that longer-term vision towards 2050 in particular, and where we will go in terms of technology, skills and the like, so that we can build those long-term career pathways, rather than just short-term skills requirements?

Professor Robson: Briefly, yes, absolutely I do. There is a role for education and training to play in this too, and that means equipping people with the skills to navigate that uncertainty. That is exactly what has been referenced already: those employability skills and broader transferable skills that will enable that ability to deal with uncertainty.



HOUSE OF COMMONS

Dr Calvillo: I completely agree. We have heard that from our research and work talking to stakeholders in the industry. They say that many new entrants to the market struggle to do it, because maybe they see a job for the next five years, but they do not know what happens after that. That uncertainty really puts people off. That long-term career pathway and having certainty in their job will go a long way.

Q20 **Mike Reader:** Can I ask a question about the existing workforce? We have seen in evidence that under the last Government adult learning dropped by nearly 50%. Funding for adult learning was down at least 30% under the previous Government. What do the new Government need to do in terms of practical steps to help to prepare the existing workforce for the skills we are likely to need?

Professor Robson: The issue with adult education is really critical. That has been underfunded and undervalued. It has also led to intense inequalities in the workforce. Certain parts of the workforce are able to engage in ongoing continuing professional development and adult education and others simply do not have access to it or it is not valued in their careers. Shifting that and the funding for that is really important.

There are probably questions around whether a loan-based model for continuing education or adult education is completely the right way, and whether that is actually going to overcome some of those embedded inequalities within the system. There are also broader issues around how you structure the whole underpinning approach. I have talked about shifts from markets to systems as an approach. There are maybe broader issues around the quality of provision that exists that people are able to engage in, particularly in terms of re-skilling. What exists is something of a wild west in that space, with very little oversight or regulation of the quality of continuing professional development. There is a very clear role for Government, or perhaps Skills England, to play in having oversight of that.

Q21 **Chair:** Is there a desire among training providers to make the kinds of changes you are very strongly advocating?

Professor Robson: Yes, I think so. I do quite a lot of work with the Association of Colleges. There is a pretty strong desire certainly for a shift towards a much more co-ordinated system and away from competition. We have done a lot of work with them that has highlighted the damage that has been done by the current model, which has left them underfunded and in competition for resources and young people, particularly with higher education. I do not want to put words into their mouth but, broadly speaking, within that space there is an interest in greater regulation and thinking about competency and minimum standards much more strongly.

Mike Reader: I wondered whether either of you would like to come in on that. If not, I will ask my final question.



Dr Calvillo: I echo the points made. The consistency in the skills and the quality of the skills is important. We have that in higher education to an extent. An engineer trained here in London will be just as good as an engineer in Scotland. We might not have the same across vocational training, so it is important to tackle this.

Q22 **Mike Reader:** Professor Robson, you have partly answered this already, so apologies for going over the same ground. You talked about the demand side and the need to redesign, but to what extent can we rely on employers and professional bodies alone to meet the training demand for what is a much larger appropriately skilled workforce that we need?

Professor Robson: This is an absolutely critical issue. It is a well-known and ongoing issue that employers in this country are under-investing in ongoing education and training. We are now, as a country, investing about half of what employers invest in Europe. This is really problematic. The question is probably not so much whether we can rely on them but whether we can increase engagement from employers.

To do that, we need to unpack what may be the issues around why employers are not investing in and engaging appropriately in education and training. There are a variety of reasons. It could be fear of poaching and competitors taking the workforce. There is maybe too much of an emphasis on low-skill business models, which is problematic. Broadly speaking, though, it comes down to the overall structure that we have, particularly in England, of our education and training system. That has increasingly positioned employers as outside the process of education and training.

Although they are positioned as stakeholders and work has been done to put employers at the heart of the system, the actual active engagement in that has been limited. Increasingly, employers have been positioned as customers of a skills system with consumer rights, rather than actively engaged in doing that with responsibilities. Responsibilities can be understood in different ways. It could be financial responsibilities. Ideally—we can learn from international comparisons here—those responsibilities involve much more active engagement in looking at skills demands, but also looking at the processes around skills formation and pedagogic approaches.

All these things are absolutely critical. You cannot do that if you have pushed the employer bodies too far out of that system. Critically, we need to bring in more partnership. We need to find policy structures to bring in better partnership working between employers and the industry.

Q23 **Chair:** To follow that up, is there a way of incentivising employers to want to increase their involvement in training?

Professor Robson: That is a really wicked problem, actually. I do not have any easy answers for that. If I did—

Chair: We would be doing it.



Professor Robson: It comes down to the structures that you have in play—so creating spaces and opportunities for proper partnership working. That probably means having functioning bodies. IfATE was part of that previously, but there may be questions around whether it is able to engage properly with a large enough body of employers. The question now is whether Skills England will be able to take on that role in an effective way. That is where the questions need to be asked and answered.

Chair: That is helpful. Do either of you have anything to add?

Dr Hanna: There is one idea around shared apprenticeship schemes, where companies co-own and co-fund apprentices. That could be a potential model.

Dr Calvillo: I agree on that one. Also, the models in Germany and other parts could be copied a little bit, where an interest from the companies to develop their own workforce to the level they want and the quality they need helps them to deliver their own economic services and products. A good example that comes to mind is what Octopus is doing now. It is trying to basically do the whole supply chain itself, and you could argue that it is making some good progress on that. If there is that policy certainty that there will be demand for this, the companies are likely to invest in developing the workforce that can help to deliver their products to market.

Q24 **Ms Billington:** Can I follow up on this idea about getting the employers involved? One stakeholder in this, or mover in this space, is local authorities, which are both providers of jobs and commissioners of further education. Could they be one of those lead anchor employers that might say, “We are committed, for the next 10, 20 or 30 years, to transform the fabric of the assets that we own. We will need X amount of workforce to do that and therefore we will employ those people if you train them”? Is that something that could be done in order to kickstart a pipeline of trained people who would, at least for a short period of time, possibly longer, be employed by that local authority and then be able to enter the job market for other employers?

Dr Calvillo: Absolutely, yes. That goes back to some of the previous points I already mentioned. We need a big driver of demand here, because, if we leave it to the market, it has not happened. That local authority can be the big anchor demand.

Q25 **Ms Billington:** Why has that not happened?

Dr Calvillo: That is a good question. There was probably more need to drive down the message from up top and say, “Forget about everything else. We really need to go all in on heat decarbonisation or energy efficiency. Here is the funding. Do it quickly.” That will help in this instance.

Q26 **Wera Hobhouse:** I think we can all agree that having a well-trained



HOUSE OF COMMONS

workforce is in all our benefit. I sometimes worry that maybe employers feel that you spend all your time and investment on a person and then they move on to other things. That is probably about looking at the interest of an employer: "What do you get out of it for the long-term retention of your staff?" That is probably a buy-in thing that we need from employers.

My questions are around the required skills level and occupational barriers to access. Professor Robson, how do the levels of competence mandated in legislation vary for the workforces likely to be involved in clean energy 2030 as against decarbonising buildings?

Professor Robson: There is clearly more emphasis and legislation around competence in clean energy. The issue that we have here, or a very significant issue, is that the buildings workforce has largely operated in a laissez-faire world. There probably is a real need to raise minimum competencies there. There is a need for regulation that is much more co-ordinated to ensure that the two are more closely aligned. They should not be different. There is a good overlap. Raising those minimum competencies in buildings construction is absolutely critical.

It is really important to talk about competence here. It is easy to talk about just skills, but competence is critical. When we talk about skills, we are really talking about the ability to do a task or to do something. When we are talking about competence, we are talking about the effective use of skills, knowledge and experience to do something in the real world, on the ground or in homes, whatever it may be. Unpacking that and raising minimum standards for those sorts of competencies is really key in the construction space.

Q27 **Wera Hobhouse:** Could you give us a real-life example, since we are talking about real-life competencies?

Professor Robson: Let us talk about somebody working on a building site. The ability to install a door frame is a skill. That is an important skill. If you are talking about a set of minimum net zero-related competencies, you need to understand the supply chain around wood. You need to understand how that piece of work fits into the overall site and the work of colleagues, and how your waste gets disposed of on that site. That is the sort of thing that I am talking about: having a much broader understanding, as a minimum level, of how a piece of work and a skill fits into the overall professional occupational system that you are working in. That is exactly what we are getting at.

Dr Calvillo: Having that greater understanding of the system could also help you with that transferability of skills. You could apply those examples to other sectors a little bit more easily if you have that big understanding as well.

Wera Hobhouse: Do you mean for transferrable skills?

Dr Calvillo: Yes.



Q28 **Wera Hobhouse:** How might a balance be struck between regulating high standards and competencies and ensuring that the jobs market is accessible and able to fill skills shortages in time?

Professor Robson: I do not think there needs to be a zero-sum game between those two things—between high standards and competencies and skill shortages. The issue here is probably a need to reframe our assumptions about education and training and how that should work. A market-based approach has led to an unresponsive system. I have been reasonably clear about that, so I do not want to repeat that. The point about a more co-ordinated system is that if you are able to have more Government intervention and clearer work with employers, you can engage in longer-term planning to at least partially mitigate those immediate short-term shortages. You have planned for a set of changes much more overtly, so there is less risk of that.

There is better horizon-scanning as well if you are working more closely with employers, so changes in the labour market can be planned for. Critically, in a more co-ordinated and collaborative system you will hopefully achieve a workforce with more transferable skills. They are able to apply a broad-based level of competency, skills or whatever it may be to a shifting set of demands. You can alleviate some of those pressures that come up with short-term demands as things change and new technologies evolve, if you have that base level of transferable skills.

Q29 **Wera Hobhouse:** My next question leads into that. Is there scope for improving the framework of relevant bodies so that it is clearer to workers and consumers who is responsible and accountable for training, accreditation and delivery? Would that also be part of that bigger system thinking?

Professor Robson: I think so. I personally think there is an urgent need for this, and our research has argued for this. It is worth differentiating between initial education and training and ongoing professional development. We have touched on this a little already. In particular, the continuing professional development world is, as I have said, a wild west. It is a really mixed quality of providers and provisions. There are commercial interests.

Wera Hobhouse: Yes, we know; we had a session on retrofits.

Professor Robson: It ranges from everything from somebody trying to sell a product and attaching a programme of education and training to that, to having a briefing and a bacon bap. There is this massive mix of quality there. Having something that sits over that and tries to think about the quality, not just the quantity, of provision is absolutely clear.

It is this messy space. I keep talking about construction here because it is particularly messy. If we compare that to something like an MOT, there you have something that is very simple. You have a framework, one body and one system that is really easy to navigate from a consumer point of view. In the construction industry, if you are interested in learning



HOUSE OF COMMONS

something, you have to navigate a whole range of things. If you are a consumer trying to employ a construction worker, working out who is qualified with what and what those qualifications mean is incredibly challenging. Having something that sits over the top of that and provides clarity—one framework, one system and one body that makes sense—is critical.

Q30 Chair: Is there an organisation that you think should do it that exists now?

Professor Robson: I do not think there is an organisation that exists now that might be able to do that. I keep referring to Skills England. There are a lot of hopes and dreams resting in Skills England.

Chair: You are giving this to Skills England as well.

Wera Hobhouse: I was just thinking of Skills England.

Professor Robson: Put it in that direction and see what happens.

Q31 Torcuil Crichton: Thank you all for coming in and giving your evidence. To pick up on that point, Professor Robson, you talked about quick wins becoming quick losses, but surely a simple win is that co-ordination you are talking about. Is that body you are talking about perhaps not Skills England, because remember we are talking about Scotland, England, Wales and Northern Ireland? Could it just be the Office for Clean Energy Jobs? It should play a UK-wide role in making sure that these skills are the same across all the nations. Also, can you address the feasibility of taking these skills from England to go and work in the north of Scotland, or to come from Northern Ireland to go across to Wales?

Professor Robson: Devolution is really important here, as is regionalisation. The portability of skills is a real challenge.

In relation to the Office for Clean Energy Jobs, critically, how that interfaces with Skills England is important. How that interfaces with the Scottish Funding Council and Medr in Wales is absolutely essential as well. Although that is a big win, I do not think that it is a simple win. There are a lot of challenges to think through in how you do that co-ordination, but it should be done and pushed for.

In terms of the portability of competencies working across different devolved nations, there are clearly challenges associated with that. That is why having a much stronger co-ordination role for those Governments and England catching up with Wales and Scotland is absolutely essential.

Q32 Torcuil Crichton: You anticipated my next question. Are the requirements that different between different nations?

Professor Robson: I do not think I could answer that in enough depth.

Torcuil Crichton: Can anyone else help me with that?



Dr Calvillo: I am also not an expert on building regulations, for example. I know that there are differences. Also, there are specific geographical challenges that apply. I would argue that the same basic skills that you need will apply for someone working in the south of England and going to Scotland.

Q33 **Torcuil Crichton:** There are differences, though. It is 13 degrees and sunny outside just now. Where I come from, the wind just now is blowing 52 miles an hour from the south-west. The houses are heated by fuel oil or peat. An air-source pump just is not going to cut it. While there is uniform regulation for products and technical safety across the whole of the UK, is there a need for flex to take into account the geography and different climates?

Dr Calvillo: That is a very good point. I had that discussion with a colleague who works in heat pumps as well. The basic approach you should take is the same. You still need to analyse your property, see what is built, what the general environment is, do your heat loss assessments, your assessment of the different technologies and size it properly. You change your coefficients and parameters to get to the right system for you, but you, in my opinion, should have the right skills and accreditations to say, "I can do it just as easily here as in Scotland. The system will be different, but my capability as a professional in this area can help to deliver."

Q34 **Ms Billington:** Can I follow up on that? I do not think I agree, on the basis that people become specialists in typologies of housing, for example, based on their experience, and quite often they are in places. The experience of Torcuil's constituents will be very different from mine, even if we are both in coastal communities, because our homes were built at different times with different kinds of fabric. Much as we want a base standard for everybody who is doing that stuff, we also will want people who will go, "I know how to do that because I did that down the road." If you expect it all to be exactly the same everywhere, we have seen where roll-out has had some significant failings because there is not that knowledge and understanding of place.

Dr Calvillo: I completely agree and I did not mean to say that we implement everything the same. It is not quite the same. I mean that, in the process of you building and designing the system, the skills that you need to do that, like as an engineer working here or in London, are similar. You apply it differently, if that makes sense. The solution should be tailored to the specific needs of the place, but you as a professional should know what applies here and what applies in Scotland, if that makes sense.

Q35 **Torcuil Crichton:** Anecdotally, Chair, and for you, Dr Calvillo, we find that even within Scotland one size does not fit all.

Dr Calvillo: Absolutely, and you have the differences around oil, access to the gas network and so on. It can be more drafty and there can be



more wind. It will be different. I have done some work in the Scottish isles, for example, and they have huge levels of fuel poverty, very old housing stock and not great building qualifications over there. It goes back to the point that Professor Robson made before about that low-skilled type: "I always do the same everywhere I go. It does not matter what the property is." That is the danger that we can have here. Of course, that is not what we are trying to argue, but rather the opposite: train well, train once and you can do it everywhere.

Q36 Torcuil Crichton: I would just make the point again about whether there should be a UK-wide co-ordination through the Office for Clean Energy Jobs. Dr Hanna, do you have any thoughts?

Dr Hanna: The Office for Clean Energy Jobs is slightly unfortunately named and linked to the clean power mission, which means that, by name, it does not sound as holistic as it should be. It should be about making a net zero transition across electricity, heat, industry, transport and decarbonisation, but certainly it has that overview. It could be managed by the Office for Clean Energy Jobs, but there is potentially some need for a UK-wide competency framework or national occupational framework that has defined minimum standards for certain occupations, but with potential to build in place-based flexibility.

Chair: This is a very good topic for the Minister when they come and give their evidence at the end of this inquiry.

Q37 Anneliese Midgley: Thank you for coming and giving evidence to us. I am going to go into a bit more about supporting workers transitioning from high-carbon sectors. You have touched on some of this in your evidence previously in this session. Given the complexities of industrial transitions that you have all touched on in this session, do you think it is realistic to expect a direct, large-scale transfer of jobs from one sector into another? Going on from that, how should policy makers address the challenges of workforce displacement when industries wind down?

Dr Hanna: There is quite high potential in terms of transferable skills from the oil and gas industry to other sectors, such as offshore wind, CCS or hydrogen renewables. Some examples would be that, say, expertise in geological modelling related to sub-surface and reservoir exploration could potentially be used in carbon capture and storage, hydrogen storage or geothermal energy. Another example would be that offshore oil platform experience translates well to floating wind, potentially. In the oil and gas industry there is extensive drilling and well-management experience that translates well to geothermal energy, carbon dioxide injection and so on.

Those are a few examples and there is a lot of potential transferability there. In terms of actually making that transition, we as policy makers need to do better in terms of building closer links between sectors that are at risk of losing jobs and sectors that are going to be bringing people in.



Q38 Anneliese Midgley: Going on from that, recent experiences in Port Talbot and Grangemouth suggest that redundancy is often more likely than redeployment. Do you think we have sufficiently planned for this transition? What are the challenges around that? In reality, what does a just transition actually mean? Where is the “just” when you look at communities like that?

Dr Hanna: There is a point, going back to metrics as well, that I did not mention, which is that we need to be measuring jobs at risk and new opportunities at a regional and local level as much as is possible, so that that can aid workforce planning. There needs to be a whole range of measures around labour market planning and regulation. There are considerations around company transition plans—so requirements for employers to provide sufficient termination packages or early dismissal notices. In Sweden, there is an example of job security councils, which undertake collective bargaining agreements to provide early access to reskilling opportunities for workers. That would also benefit from the closer links between the incoming industries and the outgoing industries.

There are separate issues. In the oil and gas sector, some jobs are very well paid and that can be a disincentive against making the shift across. Another point is that some contractors might move from high-carbon sectors to low-carbon sectors and back to high-carbon sectors, so it is not necessarily a one-directional thing.

Q39 Anneliese Midgley: I will open it up to you all, because I am interested to hear your answers. We have had the GMB here, which represents the sector with its members. It has raised the issue of wages, but also said that it has called for funding that might include direct grants, tax incentives or transitional wage funds that support older workers in particular in those carbon-intensive sectors to retrain. I would like your thoughts on that and the other questions that have come previously, Dr Calvillo and Professor Robson.

Dr Calvillo: Those are very good points and I agree with Dr Hanna’s points there. Not all in the oil and gas sectors will need to transition. People working on an oil rig right now can very easily just go and work on an oil rig in the middle east, for example. They might not want to transition. That is a fact, unfortunately. One reason is, of course, the high salaries. We are going to be using oil and gas for a while still, here in the UK and across the world, so there will be demand for highly skilled and very specialised people on that.

There will be other parts around the supply chains that should be easier to transition, as Dr Hanna highlighted—for example, the offshore sector and the industrial decarbonisation sector, with transport and the storage of CO₂. There are opportunities there also, as a new export market, for example. We have done work on that. There is that potential for bringing in emissions from Europe, providing that as a service and bringing in a new type of economic development there.



There will be others around the more indirect elements who will require some support, definitely—for example, the caterers and the people who work around the supply chain but not directly on oil and gas, who support the workers who work in oil and gas. We need to look after that and, as Dr Hanna mentioned, see what is coming after and try to match the two things.

Professor Robson: I do not have a great deal more to add. I fully agree with everything that has been said. The only thing that I would put in is that when we talk about transition, this word “just” that you have highlighted is critical. It is really easy to talk in macro terms and forget the individuals involved in the transition. There is a whole range of social and cultural issues around work and the kind of work that people want to do, which need to be discussed and factored in. We need to talk about the agency of individual workers here too and empower people to navigate that space in a way that they want to.

Q40 **Anneliese Midgley:** How do you bring that in? How would you do that?

Professor Robson: In terms of policy discourse, ensure that stakeholder voices are included in discussions. From an education and training perspective, it is about giving people transferable skills and talking about education, training and re-skilling pathways that give people more opportunities than perhaps sit at that macro level of, “X is going to go into Y.” That gives individuals agency to choose what sorts of roles they might want to take on.

Q41 **Anneliese Midgley:** It is the reality of it though: a lot of times the individuals in those workplaces will feel like things are being done to them, rather than that they are part of it. They are not going to see any agency in going in and representing themselves. In reality, what does that look like and how realistic is it?

Professor Robson: I am a strong believer in empowering individuals. That maybe means Government holding employers to account more to ensure that individual workers are not left behind and are not feeling that stuff is being done to them. Beyond that, I probably would not want to get into too much more depth.

Q42 **Anneliese Midgley:** Finally, I think you mentioned earlier, Dr Calvillo, not losing out to offshore competition. We face challenges in manufacturing, infrastructure, supply chain readiness and skill shortages. What steps should be taken to ensure that the economic benefits that are possible from the 2025 to 2030 clean power projects remain here?

Dr Calvillo: That is a very good question. We need to do a lot of things. Having that policy certainty on the change happening will go a long way, in the sense that people feel that they can transition safely, there will be a career for them and there will be well-paid jobs that are secure in the long term. The new interest to the market is the same.



HOUSE OF COMMONS

Going to that point of those communities, there is that sense of identity as well. If you are from Aberdeen and always worked on oil and gas and your dad and granddad did the same, it is very difficult to break that cycle. We need to start early, look at it in a more positive light and say, "A green job is a good job. It is coming. It is good for us. Let us embrace it," instead of, "We are not sure what is going to happen in five or 10 years' time." That goes a long way. Having that certainty and bringing people together through good messaging will help massively.

We need to be very careful about offshoring because we can lose all those skills that we have developed over the last few decades on offshore, for example, on renewables and on oil and gas. As Dr Hanna said, all the drilling and the sub-surface geology are very valuable skills. There are very high-skilled people there who we do not want to lose. There is also greater global competition now. There is a very good chance that these people can go to the US, for example, if there is a better job option there.

Q43 Chair: How well are we doing in delivering the policy certainty that you referred to?

Dr Calvillo: It is not great. It is getting better. There is the constant moving the goalpost of, "We are banning gas boilers from this date," and then, "Not this date and this is a different date." The green new deals come, last for a little bit and the grant ends. These types of changes are very damaging to the sector's ability to make informed decisions on how to invest and also for householders making a decision on, "I am going to invest in this because it is good long term."

There are also positives there. The good positive here is electric vehicles. We are not there yet, but it seems that now all the effort that happened before has gone to a place that is a little bit more self-sustained. There is less Government intervention needed. Manufacturers are developing and selling more electric cars. People are buying more electric cars. People who have them love them. My father-in-law has one. He is fully converted and converting everyone he knows. There are good stories there, but the more certainty we can do it with the better.

Q44 Chair: I felt we were going back to your opening answer about the 1960s transition and that, if it worked then, it can work now.

I have one other question. Robert Gordon University has quoted a figure of 90% of medium-to-high skills transferability. What is a realistic figure that we could expect for workers in oil and gas to actually transfer? You were talking about how they have other options in oil and gas elsewhere in the world. What is realistic?

Dr Calvillo: That is interesting and I guess goes back to other points made before. There is a potential for many of these skills to be transferable. How quickly that can be delivered is a little bit more of an unknown. Even though they are the same potential skills, people might need to retrain and upskill a little bit as well.



There is a bigger point that is probably worth highlighting as well. We should not bank on the oil and gas sector workforce to help to deliver net zero necessarily, because the scale is not quite there. There are lots of people working in oil and gas of course, but maybe not enough to deliver net zero. The other one is that the timelines do not match. The sector is declining; it is doing so slowly, but it is still declining. There will be freed-up capacity from the workforce, but not to the scale and on the timelines we need. We have done some work on that. As part of our industrial decarbonisation work, we looked at how oil and gas transitioning to CCUS, for example, can help to ease the workforce constraints. Because of the timelines, the effect that you get is quite limited.

Chair: James Robson, do you have a percentage that you want to give?

Professor Robson: I would not commit to a percentage.

Dr Hanna: No, I do not have a percentage. I know that the International Energy Agency has done analysis on this in terms of likely displaced oil and gas workers and likely transferable workers, but I do not recall numbers off the top of my head.

Q45 **Ms Billington:** I wanted to follow up on one of the questions from my colleague Anneliese about the skills transfer. You mentioned the skills transfer between the oil and gas industry and renewables. We have learned from evidence we have taken in other places that although the skills might be transferable, the jobs are less well paid in the renewables industry than in the oil and gas industry, even though the oil and gas industry is declining, the renewables industry is expanding, and demand should be up and therefore pay should be up. Can you explain a little what you understand to be the drivers behind this disparity and what can be done to tackle it?

Dr Calvillo: That is a very good question and a very good point. I have heard the same from people working in the industry. If you look at the average, it is definitely higher, but there is a subset of those jobs that are extremely well paid that drive the average up. I do not think that those people will transition. As we said, they are probably just going to go and find a job somewhere else.

Q46 **Ms Billington:** Sorry to interrupt. This is even for jobs that are comparable. They are being paid less in the renewables industry, even though they have similar skills, and skills similar to what they do in the oil and gas industry are required. It is not just the average; it is the specific.

Dr Calvillo: That is a very good point. Going to the previous point, we cannot force anyone. If people still want to work in the industry because it pays more and they can find a job somewhere else that can help that, that is fair enough.

Q47 **Ms Billington:** Forgive me. I know that we are talking to people who,



generally speaking, believe in central planning, co-ordination and so forth, but it strikes me, as somebody who has some kind of understanding of how the market works, that if it is a growing industry and short of people to do stuff, why is it not having to pay people more to match what they are paid in a dying industry?

Dr Calvillo: That is a very good point and talks to a bigger problem of the constrained labour market. The more that labour market is constrained—there are not enough people to do the jobs, basically—the higher you need to pay them. For example, if you want to bring people from oil and gas to work in renewables, you need to match those salaries. The problem with that as well is that that brings everyone's salaries up and will make the cost of delivering higher.

Q48 **Ms Billington:** I cannot believe that the people who are making renewable energy are thinking so much about the cost of the consumer that they are keeping the pay low, which might be reducing their ability to recruit the skills they need to generate the energy.

Dr Calvillo: That is true, but most of the cost of the renewables, for example, will come from the CfDs, which set the general project price and the returns on that. I completely get that and I guess we got an example where, if the price is not high enough, the projects do not go ahead. There was a round last year where they got no takers because the price was not quite what the project developers needed. The more that constrained labour comes into play, the fewer people there are to actually deliver and, as we are ramping up now, the more shortages there will be. The price will continue to creep up and it could reach a point where you will get the same salaries for someone in oil and gas or renewables.

Q49 **Ms Billington:** We are hoping the market is going to work.

Dr Calvillo: We are hoping that we can do something about the skills shortages so we do not get to that point; otherwise you will pay it on your energy bills. The price will go up on everything net zero.

Q50 **Torcuil Crichton:** Following on from that in one sense, instead of talking about skills transfer, we are talking about physical transfer of people across the country. Christian, I am sure you are aware already that to strengthen the grid in Skye there is talk of a work camp for 350 people. To get the interconnector across to the Western Isles we will need to build housing for 300 other people—hopefully legacy housing in that case. Are we going to see a lot more of that across the UK in time to come?

Dr Calvillo: Yes, I think so, especially as, as you rightly highlighted, lots of the renewables that we will see in the UK will be in the northern parts of the country, where there is less housing available. The locals are struggling for housing as it is and it will get worse. That is something that, again, will probably make the cost of labour higher, because that needs to be considered as well.

Q51 **Torcuil Crichton:** Dr Hanna, can we deliver clean energy by 2030 and



decarbonising by 2050 alone? Can we do it with British jobs for British workers, or will we have to go into the international market?

Dr Hanna: In all likelihood we probably cannot do it completely on our own. There is good potential that, where we can source local labour, we should be. For things such as renewables construction, heat pump installers, retrofit installers or maintenance engineers, we should be trying to source those jobs locally. Market economics will dictate that it will be difficult for us to set up extensive manufacturing bases in different renewables technologies, such as heat pumps, although there are at least several manufacturers now in the UK. We need to source some of that labour overseas.

Q52 **Torcuil Crichton:** It has been put to us that the existing immigration skills charges could be redirected into domestic training. Is that feasible, or are there other mechanisms the Government could use to offset the lack of skills we have in the country?

Dr Hanna: There are a number of initiatives in the EU. One is a shared talent pool of workers. The European Commission has initiated this. The idea is that it is providing a database of adverts or details about candidates who are looking to move to specific low-carbon jobs in particular countries in the EU. That is something that the UK could look at drawing from.

Q53 **Torcuil Crichton:** Finally, can I ask whether anyone knows where these workers may come from? Where will the welders come from? Where will the heating engineers come from? Is there a specific geographical part of the world where we have abundances in these sectors?

Dr Calvillo: It is something I want to look at in a new research project. I do not have the information yet, but watch this space.

Torcuil Crichton: You can write to us about that if you like.

Q54 **Ms Billington:** We have talked a little bit about this. New technologies arise. Costs can go up and down. Sometimes policies fail and Governments, dare I say it, change. How much policy certainty can be expected given the 2030 and 2050 timeframes? That is "expected", not "wanted". What can you expect?

Dr Calvillo: That is a good question. We are now in a better position than we were maybe five or 10 years ago, in the sense that we have a clearer road map of where we need to go. We know that electrification will be key in all this. For that, we need lots more renewables and heat pumps. We also need electric vehicles and everything that goes around it, such as networks and so on. There are fewer questions around that, at least till 2050. For that reason, there is less chance that things will change massively, but the detail is where we probably want to be as certain as possible, because that will drive the investment. Policy certainty, in addition to investment from the Government, gives the



HOUSE OF COMMONS

certainty to private investors to also chip in, develop their workforce and develop the required changes.

Q55 **Ms Billington:** We need the certainty at sector level and at technology level also. We have seen the switch back on, for example, home heating, which has meant that we do not have a supply chain or consistency of uptake.

Dr Calvillo: Yes, absolutely. Earlier discussions about, “Is it going to be hydrogen? Is it going to be heat pumps? Is it going to be this? Is it going to be that?” were not helpful. That delayed people. Big industry and energy companies did not want to invest in a potential technology that is not going to be used. We have moved on from that, thankfully. We can move forward and have a little bit more certainty on that. Still, the demand needs to be there, meaning that people need to want to take the heat pumps. That is also where the policy certainty will have a big role to play.

Q56 **Ms Billington:** Professor Robson, are there any downsides to having stricter standards or requirements for publicly procured work compared to the rest of the market?

Professor Robson: This is a fascinating question. It links with your previous point about local authorities playing a role too, and whether that can kickstart demand. The issue here is whether the top end of the system in terms of standards can pull up the bottom end. The answer that I have is that I do not know. I would probably want to do quite a lot more modelling on that to see whether it is likely to work. There is some evidence internationally that it would do.

There is also evidence around the potential perverse consequences of relying too much on public procurement as a way of changing the system. There is the potential risk of a two-tier system here. In order to change the whole of the workforce—you might be able to shift the top end with public procurement interventions—you have to have some kind of regulatory mechanisms to change the bottom as well.

Ms Billington: You have to have a high standard, but you have to have a floor.

Professor Robson: Exactly, yes. That is critical. More modelling is needed, but it almost certainly cannot be done in isolation.

Q57 **Chair:** You said there was some evidence internationally; which countries is that from?

Professor Robson: I would have to check that from my files and come back to you, if that is okay.

Q58 **Ms Billington:** Historically, there is evidence of the impacts of having higher standards in public procurement.

Professor Robson: I am not aware of that.



Ms Billington: I was thinking of direct labour organisations and the skills required to be hired by the local authority, dare I say it, at a time when local authorities used to hire people to do stuff on the assets that they owned, for example. I was interested to see, in that context, whether we have explored and understood what the downsides of that would be.

I am aware of how, a bit like the town gas thing, we can get a little bit misty-eyed about how things happened in the past. I was interested, Dr Hanna, in your brief summary of some of the challenges for the workers in that transition. I would not like us to make recommendations that suggested that we needed to return to some halcyon days when there were high standards of training and so forth for employees of local direct labour organisations and everybody else just lifted accordingly. I want to understand a little bit about what we know historically, as well as in terms of international comparisons. Is there such work?

Professor Robson: I do not know whether others want to come in on this. I am aware of some work. Colleagues of mine in SKOPE have done historical analysis, particularly funded by the Edge Foundation. They have done a package of these things. I do not have that at the top of my mind to bring in.

Ms Billington: You might be able to provide it for us in writing.

Professor Robson: I can certainly dig that out for you.

Q59 **Ms Billington:** That would be really helpful. Dr Calvillo, how might any tensions be overcome between increasing obligations in public procurement on the one hand, and opening up access to procurement of SMEs on the other?

Dr Calvillo: As with all things in life, you need to strike a good balance between the two. You will probably need some sort of Government procurement, but also allow for the SMEs to play a role. That balance will be different depending on the sectors and probably also depending on separate locations. In certain areas, maybe more rural and remote areas, the SMEs may take a bigger role than in others. It is difficult to know for a fact but, for example, my colleagues in the Energy Demand Research Centre have done work on SMEs and procurement around that. What was happening before was probably too much reliance on SMEs to take everything. We probably need to be careful on that as well.

Q60 **Ms Billington:** Where have you found evidence that there has been too much reliance on SMEs?

Dr Calvillo: That was on low-carbon heat, for example. It was the training for new entrants to the market on low carbon heat, heat pump installation and so on. Up until recently—I know this from my colleagues in Skills Development Scotland—they were saying that the basic realistic route to market for new entrants to that workforce will be SMEs taking an apprenticeship. Of course, the numbers are more limited on what they can actually take, maybe one at a time and things like that. There is more of that evidence at the moment.



Q61 **Claire Young:** I want to talk about one of the other themes that came through in the written evidence, which is about consumer demand then driving increased labour demand. There was some concern that members of the current workforce feel they do not need to retrain because there will be plenty of work doing what they are doing at the moment. Professor Robson, how might the Government avoid any regulatory push requirements placing too high a cost burden on consumers?

Professor Robson: The issue that you have raised is really important in terms of an apparent lack of demand, meaning that workers do not want to retrain. Our work has got loads of interviews with gas boiler fitters, for example, saying that there is absolutely no reason to even look at heat pump training because they feel they have enough work to take them all the way up to retirement. There is this sense that if we can change that consumer behaviour and change demand, we can change the approaches within the workforce to retrain and engage in greener technologies and installations and those sorts of issues.

It is easy to think about whether there are initiatives that can be introduced, whether that is financial incentives, maybe grants for heat pumps or whatever it might be, to try to change that consumer behaviour. There is another way of looking at this, which is that it is often the workers who have an enormous impact on exactly the choices that consumers make. It is the gas boiler fitter who will say, "Why did you not go with the Vaillant? I know them," and so on. As a consumer, why would you go with somebody else? Why would you push back against the person who is going to do the work and risk that? Thinking about that dynamic is really important.

This feels like a vicious cycle. What do you change? Is consumer demand a chicken-and-egg situation? That is a really problematic issue. Perhaps it is not surprising that the person coming from education and training should say, "Maybe the solution is around education and training," but it has a role to play. If we could get the education and training right and the offers right for people to reskill and think more broadly about what it is they are skilling into and for, that may be a way of changing that workforce and consumer demand and starting to shift that vicious cycle into a virtuous circle.

By thinking about the education and training, what we are really coming back to is talking not just about the short-term skills to install a boiler or whatever it may be, but longer-term career choices, and shifting from that fit-and-forget mentality to a longer-term maintenance relationship with a consumer around a piece of greener technology, and crafting a good career around that.

Q62 **Anneliese Midgley:** On that—this relates to what we were talking about before—we have previously had evidence that as well as what you have raised, gas boiler fitters are paid about £10,000 more than heat pump fitters. Also, for them to be trained, they will lose thousands of pounds in terms of loss of earnings, and the grant is not enough to cover it.



Also, very few people know what heat pumps are yet. They are not all clamouring to get one. Where is the incentive? How is this imposed on reality? Where are the incentives for those people to retrain, when the balance is in favour of them staying in their old jobs, fitting and maintaining the gas boilers?

Professor Robson: You are exactly right. There needs to be a fundamental shift in the recompense associated with that. That needs to be driven. It is clear that the market is not ensuring that those wages are met by the needs of society, so there needs to be some kind of intervention to push that and to reshape that. There needs to be a shift in the narrative around this. That has an impact on the consumer and on the supplier.

Dr Calvillo: Can I add a quick point on that? Having had a similar experience talking with gas engineers and with heat pump practitioners, they said lots of the challenge is that they lose lots of time on talking to the client before actually doing any job, and then after, when the commission is faced because, as you say, people do not know about them and do not know how to operate them. They work differently, so they are a bit unsure. They need more hand holding, and that takes quite a long time.

That role of the energy adviser and the energy planner, which is probably less sexy relative to the heat pump installer or the more high-line jobs, is very important. We need more people like that that, who can help people reduce that time—the commissioning and pre-commissioning—and make the thing work swiftly, because that will reduce the cost of installations and increase the margins for the installers as well.

Q63 **Claire Young:** What you are doing is challenging the basic premise of my question. The evidence is saying that if we increase consumer demand, that will increase the labour demand. All the questions are around the various things you could do. This question was around the Government doing something in terms of regulation to push people. For example, you could extend the requirements from new build to existing owner-occupied homes, private rented or whatever. You would have a regulatory push that would then create consumer demand, but are you suggesting that that is the wrong way to go about it, so we do not need to worry about the high cost burden on consumers that that would then represent, because you do not think it is the right thing to do in the first place?

Professor Robson: I am a typical Oxford professor, challenging the question, and I am going to do it again. I am not convinced the evidence is actually saying that if you solely raise consumer demand, you have solved the problem. The evidence that I have seen, with the work that I have done, at least, suggests that one of the reasons why the behaviour of suppliers is not changing is because the consumer demand is not there. It is not necessarily a case that, if you give consumers incentives and you add the demand, it is still going to change the behaviour of the supplier, because, in a sense, they are the gatekeepers as well.



HOUSE OF COMMONS

Q64 **Claire Young:** Is it a necessary but not sufficient condition, or is it not even necessary?

Professor Robson: I think it is a necessary but not sufficient condition. You have to get the demand up, but you cannot do it on its own.

Q65 **Claire Young:** If we come back to the original question, you accept that it is necessary to increase consumer demand. In that case, how do we avoid that putting too high a cost burden on consumers?

Professor Robson: Coming back to my answer, in order to avoid putting too great a cost burden on consumers, it is about dealing with the fact that, because it is necessary but not sufficient, the sufficient part is changing the behaviour of the suppliers. What is needed is actually focusing on that as a mechanism to raise consumer demand, in tandem with the behavioural change of suppliers. At the same time, that does not put the burden on the consumers. What it does do is put some burden on the workforce. That is actually where we are getting to. There needs to be this shift in both consumer demand and workforce behaviour.

Q66 **Claire Young:** My next question is about incentivising consumer take-up without the Government having to make significant fiscal commitments, but it sounds like where you want the fiscal commitments to go is in shaping the behaviour of the suppliers.

Professor Robson: That is my opinion from the work that I have done in talking to suppliers.

Claire Young: In that case, how can that be done without fiscal commitments from the Government?

Professor Robson: I am not sure it can be. There is some cost associated with that.

Chair: Richard Hanna, you have commented on this in your written evidence.

Dr Hanna: Yes. There is the £7,500 boiler upgrade scheme grant that covers individual installations of air-source heat pumps and ground-source heat. In addition to that, it is pretty important that we look at the potential different ways of rebalancing the relative cost of electricity and gas, because more green levies are levied on the price of electricity compared to gas. There are different ways of doing that, but if you could potentially get the relative cost of electricity down, that would help to reduce the running costs of heat pumps. That may help to encourage more innovative business models in the sector among the suppliers, such as heat as a service, but there are also other ways that you can use smart tariffs or flexibility to reduce heat pump costs as well, or wider-scale market reform. Again, a lot of that may entail more fiscal commitments as well.

In addition to that, something that certainly can be done without so much fiscal commitment is just trying to generate positive case studies of heat



pump installations, for example, for early adopters, and to actually have good data to measure heat pump performance. That transparency and data can in turn help to weed out bad installations and bad installers, but this issue of the actual quality of building retrofit installations is really important.

For example, there have been lots of issues with solid wall installation in the eco schemes and the quality of those, and issues with installers who do not understand much about the negative implications that some of those installations can have on a building. For something like the microgeneration certification scheme, there are still a lot of heat pumps that are installed outside of that scheme, because only companies rather than individual tradespeople need to be certified by that scheme. Policy that is targeted at improving the quality of installations will help to build reputation. That is a key thing that should be prioritised.

Q67 Claire Young: Finally, is there anything the Government can do to further stimulate the existing efforts that others are making to increase demand, like the third sector and early adopters?

Dr Hanna: In terms of green jobs more generally, as we were saying before, there is low public awareness. The public do not even really know what a green job is. Making the public at large more aware of career opportunities that are available in low-carbon and green industries is something that the Government could look to do through national campaigning.

Q68 Wera Hobhouse: Just very quickly—we have moved on—a real-life example that I remember was that I wanted to buy an electric vehicle, and the guy in the sales room absolutely wanted to sell me a combustion engine. I thought, “Is that because they are actually also committed to selling their stock, or do they have an agreement with their suppliers that they push for the old things and the old models before they are going into the new ones?” It is all related to each other. You then do not get the workers or the people promoting that you should go to the new product, rather than buying an old one.

Chair: We have had evidence of a big stock of gas boilers as well. It is a similar point. Is that what you are finding?

Professor Robson: That is exactly the point that I was making, yes.

Q69 Ms Billington: Can I follow up on that in terms of the regulatory environment, particularly when we are talking about housing, retrofit and making sure that people have the right kit? How useful would it be for us to have a significant reform of the EPC, which at the moment creates some perverse incentives, where heat pumps do not get you any points on an EPC. Insulation can do, but not always. What effect would that have in terms of creating the demand that we are talking about?

Dr Hanna: It would be extremely useful. That would be a real game changer, to be honest, because EPCs are not based at all on real-world



monitoring data. It is a points-based system. It is ridiculous. That could then create a framework to incentivise homeowners, for example, to actually look to either improve their properties in terms of their energy performance, or buy properties with better energy performance, knowing that those properties actually have proper, measured performance, and not a scale that is just completely unreliable.

Q70 Ms Billington: That is very helpful. Can I follow up a little on the supply of labour? Claire asked a bit about the third sector and so forth, but again the local authority can actually make a big difference on this. Those that have assets, particularly homes, can recruit and arguably train or commission the training for those employees. That would then create a workforce who, once they have finished—forgive me for the fit and forget—can get it all installed in all the social housing, which then means you have a trained workforce that at least have some starting skills that might be transferable to the private sector, including the private rented sector. What role can you see for local authorities in developing that workforce, which could be that supply element of the equation?

Dr Hanna: If that can be done well and you have positive case studies of installations resulting from direct labour organisation workforces, that would—

Ms Billington: They do not even need to be direct labour organisations, do they? It can be commissioned.

Dr Hanna: Yes. If it was a direct labour organisation, that might have some advantages in terms of helping to maximise the consistency of competencies in that workforce. If you start contracting labour, you come back to the whole issues that you have in the construction industry more widely.

Ms Billington: You can see a role for local authorities in being able to contribute to this workforce supply.

Dr Calvillo: Can I briefly jump on that? In Scotland—and probably around the UK; I am not quite sure—you have the local heat and energy efficiency strategies. Local authorities have dictated that they need to do a plan.

Ms Billington: That is only in Scotland.

Dr Calvillo: Okay, it is only in Scotland, but we have seen that, and they have that remit. They need to do it, and integrating the workforce in that plan will be very beneficial.

Q71 Ms Billington: Having said all that, in my pro-statist mindset, do we really need to be spending public purse to incentivise workers to take up jobs that should already be quite rewarding, long term and comparatively well paid? Why are we chucking good money at this when the private sector should be able to pay people well enough to do this?



Dr Calvillo: That is a fair point. You want to get the best value of your taxpayers' money, of course. It goes back to that policy certainty and the right signals to the private sector to actually chip in money and crowd in investment. In our research centre we have looked at research on energy efficiency. You have targeted public funds on energy efficiency to tackle fuel poverty, for example, that will kickstart the supply chain around it and crowd in funding to retrofit all households, for example. That is the positive element that gives that element of certainty. Also, the investment from Government can help to de-risk the private investment. We have seen that with renewables, with the CfDs: because of the CfDs, the costs have been brought down. There is a role there.

The main, final outcome is that what you get out of this is warmer and more efficient homes. We have done lots of research on that, and there is lots of research available. A warmer home and a more efficient home will give more money back to people. It brings better economic returns for the household, but also for the economy. You can have more money to spend on other things outside your home.

Also, the co-benefits of warmer homes are less sick people, increased productivity and educational attainment, and lower costs to the NHS. There are a bunch of things that we should keep in mind, not only thinking about the direct energy bill return but in a wider sense.

Q72 **Ms Billington:** We hear a lot about this from economists. We have yet to convince the Treasury of this particular benefit to not just the public purse but the overall economy. Professor Robson, to what extent can public expenditure solve the workforce issues highlighted today?

Professor Robson: This is linked to the previous answer. It is clear to me, as I have been advocating for a strongly co-ordinated approach, that public expenditure sits at the heart of this. The point that you make about local authorities is really key here. The question you asked earlier was why it has not happened before. Money is key. There has been a lack of funding. Putting money towards that seems like an essential part. It is also part of a broader, place-based approach to education and training.

Public expenditure cannot solely be the driving force here. We have to bring in investment from employers. That is also key. As I highlighted before, I do not have a particular answer for incentivising employers to increase investment in education and training, other than changing the structures through which they are involved in the system. Providing a much more engaged role for them, through organisations such as Skills England and so on, is part of that, to ensure that voice and responsibility are key to it. That is how you get that balanced partnership investment between public and private.

Q73 **Ms Billington:** We have a shortage of people who can train young people. What could public expenditure do to help with that?



Professor Robson: We absolutely need to pay people in VET more. Teachers and trainers need to be paid more.

Q74 **Ms Billington:** It has to be competitive with what they can get for installing a kitchen down the road.

Dr Hanna, within the existing constraints, are there better ways to assign public spending to ensure that workforce is in place?

Dr Hanna: The first point I would make is that, as the panel have said many times, a predictable and consistent policy environment can help to ensure that you make the best use of public spending, but also to potentially incentivise the industry and companies to actually invest in longer-term training initiatives.

There are examples of industry collaborations, such as SSE and Equinor with the Dogger Bank wind farm. They have set up a £1 million offshore wind community fund, and it is basically supporting local education projects in North Yorkshire. It is locally led as well, so local skills stakeholders can propose what STEM learning activities they want from that community fund. That is quite a good example of more of an industry-led initiative in this space. It does not quite answer your question.

Ms Billington: It is interesting to find ways that you can get the money elsewhere. I do not know whether we have all accepted that there is not much money around.

Q75 **Claire Young:** I want to follow up on that final point about better ways of assigning existing spending. One thing that has been raised with me locally with regards to green jobs is whether the unspent apprenticeship levy could be localised and used within the local further education college network to better support skills training in the area. What are your views on that?

Dr Calvillo: I am trying to develop some work on apprenticeships and low-carbon heat with the MCS Foundation. I do not have an answer yet, but I know from talking to them that lots of colleges might be teaching things that are not necessarily needed locally at the moment. There is probably that further integration with the employers to work together, to make sure that you get better planning on what we should be teaching. That could be because of funding, and that they do not have enough funding to bring new teachers in to develop the new courses, but also just general co-ordination, as they do not exactly know what is useful for the local community. This could be an interesting way of doing it. I am open to that.

Q76 **Chair:** I have a final question, and it is really a yes or no answer from each of you. Will we achieve the clean power 2030 target, and will we decarbonise buildings by 2050, without further Government intervention in workforce planning? I ask you each in turn to say yes or no.

Dr Calvillo: It is unlikely.



HOUSE OF COMMONS

Chair: There is always a way around that.

Dr Hanna: No.

Professor Robson: No.

Chair: An unlikely and two noes. With that degree of unanimity, we finish the session. Professor James Robson, Dr Christian Calvillo and Dr Richard Hanna, thank for your evidence this afternoon, for the extensive written evidence you provided beforehand, and for agreeing to follow up on a number of issues that have been raised with you this afternoon.