HOUSE OF COMMONS

Environmental Audit Committee

Oral evidence: Green Jobs and the Just Transition, HC 903

Wednesday 3 February 2021

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Watch the meeting

Members present: Philip Dunne (Chair); Duncan Baker; Barry Gardiner; Mr Robert Goodwill; Ian Levy; Caroline Lucas; Cherilyn Mackrory; Jerome Mayhew; John McNally; Claudia Webbe.

Questions 1 - 66

Witnesses

I: Libby Peake, Head of Resource Policy, Green Alliance; Luke Murphy, Associate Director for Energy, Climate, Housing and Infrastructure, Institute for Public Policy Research; and Mike Hemsley, Team Leader, Carbon Budgets, Committee on Climate Change.

II: Sue Ferns, Deputy General Secretary, Trades Union Congress (TUC); Professor Josie Fraser, Deputy Vice-Chancellor, Open University, and Skills and Education Panel member, Institution of Engineering and Technology; and Martin Baxter, Director of Policy and External Affairs and Deputy CEO, Institute of Environmental Management and Assessment.

Written evidence from witnesses:

- Green Alliance (GRJ0064)
- Institute for Public Policy Research (GRJ0059)
- Institution of Engineering and Technology (GRJ0031)
- Institute of Environmental Management and Assessment (GRJ0025)

Examination of Witnesses

Witnesses: Libby Peake, Luke Murphy and Mike Hemsley.

Q1 **Chair:** Good afternoon and welcome to the Environmental Audit Committee for the first oral hearing of our new inquiry into green jobs. This follows our inquiry into greening the recovery from Covid. We have the first of a number of oral sessions today. We received over 64 pieces of written evidence by mid-January, and we will be having a number of hearings in the run-up to Easter.

We are going to use this session to provide an overview of the issue, and to look at how green jobs can help the recovery from Covid and help to achieve the ambitions of net-zero Britain. I am very pleased to be able to introduce our first witnesses. We have two panels. We will be dividing it at about 3.30 pm. The first panel are from organisations that have an overview and look at these matters.

I would like to start by inviting our witnesses to introduce who they are and where they are from.

Libby Peake: My name is Libby Peake. I am head of resource policy at Green Alliance, which is a charity and think tank that focuses on achieving ambitious leadership for the environment.

Luke Murphy: My name is Luke Murphy. I am associate director for energy, climate, housing and infrastructure at the Institute for Public Policy Research.

Mike Hemsley: I am Mike Hemsley from the UK's Committee on Climate Change. We are an independent Government adviser advising on the UK's carbon budgets. Most recently, we advised on the Sixth Carbon Budget and, within that, I led some of the work on jobs and skills. It is a pleasure to be here today.

Q2 **Chair:** Thank you. I would like to start with Luke. Perhaps you could try to set the context for us by giving us your perception of what "green jobs" actually means and whether it is a useful descriptor when we try to think about employment in the green economy.

Luke Murphy: Yes, I do think it is a meaningful term, and certainly as we have defined it in our work. It is fair to say that green jobs have traditionally been described as those that contribute to the preservation or restoration of the environment. Traditionally, that has been associated with jobs like renewable energy and energy efficiency. As the CCC's recent work on the Sixth Carbon Budget has highlighted, that is likely to expand to sectors that are increasingly going to have a low-carbon remit, like financial services.

The other thing I would like to add is that our work employs a broader definition, so relating green jobs to building a sustainable economy. When you employ that wider definition, you can then incorporate other professions that are needed to secure a sustainable economy, such as

health and care workers. I do think it is meaningful, but it is fair to say that there are different definitions of a green job.

Q3 **Chair:** Can you tell us how many people currently in employment could be defined as engaged in green jobs today?

Luke Murphy: I do not have the exact figure in front of me, but the CCC's recent work identifies around a quarter of a million in low-carbon sectors, but Mike might be able to answer that better than I.

Mike Hemsley: Those kinds of numbers are certainly correct. There is a bit of diversity in some of the numbers. Some of them are what we call direct green jobs, so maybe actually building renewables, but then there might also be indirect jobs that may be at a company that builds some parts that go into renewable energy but also works on parts for other things.

The other thing to add is that increasingly it is useful to look at not just green jobs but jobs that are affected overall in the transition. We are talking about a whole host of jobs here. There might be carbon-intensive jobs at the moment, such as oil and gas, but in the long run they can transition. They have useful skills that can transition to be green jobs as well.

Q4 **Chair:** That highlights the challenge here. Luke referred to the finance sector as going green, so would it be fair, do you think, to include the million people who work in the City as being engaged in the green economy?

Mike Hemsley: Our work definitely recognises the need for them to be engaged in the green economy. You might struggle to argue at the moment that they are all fully engaged in the green economy, but we would certainly be keen to see them brought in more and we are seeing attitudes change there. You certainly raise the correct point. All these types of professions—the legal profession, financing, project management and things like that—will need to adapt in some form to a green and sustainable transition.

Q5 **Chair:** We will get on to that, but it is raising the challenge in my mind that a definition of people engaged in low-carbon jobs today may be meaningless if we are transitioning most of the economy into that world over the next 10 to 30 years, in which case does "green jobs" mean anything? It is really the point of this session and this inquiry to try to get to the bottom of that.

If we go to the short-term impact of the economic recovery, Mike, how important are green jobs in the short term? We know that last July the Government announced with some fanfare the Green Homes Grant scheme as part of the summer economic package, in order to stimulate activity in retrofitting homes, for example, and they put a target of 200,000 jobs. How significant are green jobs to the economic recovery post-Covid?

Mike Hemsley: In a report to Parliament last year—our annual progress report—we looked at this and suggested that there is quite a lot of overlap between green jobs and the ability to support the economic recovery. That is because a lot of the things that we are looking at are fairly labour intensive, and those tend to be quite good things, when you have some unemployment, to bring people into the workforce, to be productive and to lead to some kind of economic recovery.

You are correct to highlight that energy efficiency and installation of low-carbon technologies under the Green Homes Grant is a really good step forward. We definitely expect that to lead to a surge in job creation. There are plenty of other things that could be done in the short term as well, and indeed are being done to some extent: investment in public transport, walking and cycling infrastructure, nature restoration as well. I would include tree planting and peatland restoration within that. Some money has been awarded for the former from the Government. We would also include flood resilience in that as well. We have shown that all of those can lead to short-term job creation that can also boost the economy.

Q6 **Chair:** That is a nice segue to Libby. Do you think there are short-term measures that can help the green economy, generate jobs and get people off the unemployment register?

Libby Peake: Absolutely. I would say that one of the main things that we should be looking to achieve by getting these jobs up and running as soon as possible is ensuring that there is no long-term scarring from unemployment. We know that unemployment is going to rise a lot in the short term and, if we don't re-engage the people who lose their jobs quite quickly, it means they could lose skills, they could become disengaged from the labour market and so on. In the long term it could have real impacts if we don't nip it in the bud.

In terms of things that we know—to build on some of the stuff that Mike said—we have done some research that looks into collating some of the stats that are out there with people who have identified so-called "shovel ready" jobs that could be accelerated quite quickly over the next couple of years. There are quite a few in the green sector that are ready to go. Regen says there are 18 gigawatts of green energy installations that have planning permission but are not off the ground yet. If those were accelerated, it would create 200,000 jobs, they say, so that is quite quickly.

You are speaking to the TUC later. It has said that investing £1.2 billion to purchase 4,000 electric vehicles would create 10,000 jobs. If half of UK towns and cities had best-practice cycle lanes and pedestrianisation over the next two years, it could create over 100,000 jobs.

Transition economics says that accelerating EV charging and infrastructure to 56% of rural businesses would create 23,700 jobs and, again, that is over just two years. Finally, Wildlife and Countryside Link

has identified 330 projects for nature restoration and tree planting that are ready to go. In the short term those would create 5,000 direct jobs and 5,000 indirect jobs, which may be smaller than others but, in light of the Dasgupta review we had yesterday, we know how important it is in securing the long-term viability of the economy to protect nature.

Q7 **Chair:** If these are ready to go, what is holding them back?

Libby Peake: In some instances they are waiting to have the funding in place. They have not necessarily had the funding from Government. The TUC's jobs require £1.2 billion to purchase, and if they don't have the money to purchase that, the jobs don't follow. Accelerating things like pedestrianisation and cycle lanes does require investment, but it is obviously investment that would be worth it in the long term.

Q8 **Chair:** Luke, can you pick up on that and give me a sense of whether you think the Government would be right to prioritise short-term measures to get people who have recently become unemployed back into employment quickly, and might that compromise some of the longer-term structural things that we need to change in order to shift the economy more radically towards the environmental agenda?

Luke Murphy: It is important to think about short-term job creation, but it is also important to keep in mind things like longer-term productivity and the longer-term impact on the economy, as I think some evidence to the Committee has suggested.

That being said, I would agree with Libby that the biggest risk at the moment is the risk of the scarring effect of unemployment. Many of the projects we are talking about here—including, for instance, the energy efficiency retrofits, the upgrading of our housing stock and the investment in better and more sustainable public transport—would result in both short-term job creation and those long-term productivity benefits that we are looking at. There are also lots of co-benefits to those kinds of investments as well: the cleaner air as a result of better transport; and the lower energy bills as a result of energy efficiency.

Therefore, yes, it is important that we think of those longer-term factors but, ultimately, I think we are talking about projects that can help to deliver both.

Q9 **Chair:** Finally, do any of you expect the upcoming Budget to set the direction of travel towards environmental measures to stimulate employment? Do you think that is high on the Chancellor's agenda?

Mike Hemsley: I think it probably is, and I definitely think it should be. We recognise what they have done so far as part of the short-term economic recovery package, and some of our recommendations from the Sixth Carbon Budget talk about extending that. Providing a longer-term focus, for example, for the Green Homes Grant doesn't just give you that short-term boost but, importantly, it gives the private sector the longevity to know they can invest for the longer term, keep people on in

these industries and allow it to grow over the long term. That can be a really positive example, and that kind of example can, and should be, extended to other sectors as well.

Q10 **Chair:** Libby, are your members hearing positive noises coming out of the Treasury?

Libby Peake: We are hearing positive noises, yes, but I would say it is not yet consistent and it is not yet at the level that you would need to have full confidence that it is the direction of travel. In the first instance, we would also like to see, in addition to investment in green jobs, a commitment not to invest more in jobs in the more polluting industries or that will hamper environmental goals. We should be seeing something like a net-zero test applied to all Government spending. If we adhere to that, it will make the long-term transition easier because we are not creating more jobs in industries that we will want to move away from.

Q11 **Cherilyn Mackrory:** Good afternoon, panel. I would like to understand a bit more about the impact of green jobs on the UK's longer-term economy and the number of green jobs needed to meet the UK's environmental ambitions. First, Mike, what impact can the creation of energy and nature-related jobs have on our longer-term economy?

Mike Hemsley: We produced some evidence alongside the Sixth Carbon Budget that suggested that investment in a transition to net zero can increase jobs and increase GDP as well. That is the high-level message, and I think there is probably broad consensus that that can be the case.

Overall, when you dive down into the specifics, there is perhaps a little more uncertainty. There are a few things that are clear. One is that there are hundreds of thousands of people already employed in green jobs in the UK. We know we will need hundreds of thousands more people to do more green things, not just, say, renewable energy and energy efficiency but things across a whole host of sectors in the future. The question then becomes: are those additional jobs or are those transfers from other industries? I think that largely depends on what is happening in the rest of the economy.

At times when there is higher unemployment, these might be additional green jobs. At times of low unemployment, it might be that people need to transfer from other sectors to do that. Taken together, this says a programme of investment like we set out in the Sixth Carbon Budget can lead to increased jobs and increased economic activity.

Q12 **Cherilyn Mackrory:** I want to expand on two things: first, whether you can quantify that at all and whether you have done any modelling as to what that might look like, adding figures to it. We are also talking about jobs and, from what I have heard so far, it sounds to me like they are very temporary, transient positions and not so much career choices. Could you expand on that a little bit, please?

Mike Hemsley: I would point to some quantification that we did alongside the Sixth Carbon Budget, which suggests an economic boost of around 1% to 2% of GDP from the kind of investment programme that we are talking about. That is consistent throughout the 2020s all the way up to 2050. That is in the order of around 300,000 jobs. That is the evidence we published. I would encourage you to look at a range of evidence on that as well, because I think there is agreement that there is a lot of uncertainty around that.

In terms of the longevity of the jobs, we see this as a big 30-year transition towards meeting the UK's net-zero target. We don't just see it as short term. I mentioned the Green Homes Grant, for example. We see massive opportunities to increase employment in energy efficiency and heat pump installation over the next year, but we see a need for that to continue at least all the way through to the mid-2030s, where our advice is that you should phase out the sale of gas boilers in favour of low-carbon heating solutions and you should upgrade most properties with energy efficiency solutions as well.

Beyond that, you will need to replace those low-carbon heating solutions. You will see the kind of industry emerge for heat pumps that we have for, say, gas boilers today. That is consistent across multiple sectors. In tree planting, you will see a natural rate of harvesting; electric vehicles as natural replacements; and maintenance needs as well. Therefore, it is definitely not just a short-term boost but a scaling up over the 2020s and then some consistency beyond that.

Q13 **Cherilyn Mackrory:** That is great. Libby, what role can the move towards a circular economy play in UK job creation?

Libby Peake: It offers considerable potential for job creation according to some research that we have done with WRAP. Before I get to that, may I quickly canter through some of the other economic long-term benefits it could have?

In the first instance we know that it can boost supply chain resilience, because it will reduce reliance on sometimes critical raw materials that have known supply chain risks. WRAP and the Aldersgate Group have estimated that it can add £75 billion in gross value added to the UK economy. It would potentially add £10 billion in profits to the manufacturing sector. It would help us get on track with our carbon budgets, which is something that the CCC is increasingly taking on board, which is great. It would also reduce biodiversity loss and susceptibility to future pandemics, because the UN has suggested that 90% of global biodiversity loss is caused by extraction and processing of resources.

There are all these fantastic reasons why we should be doing it, but it has not yet got the same policy attention and consistent policy as some of the other areas. It does not necessarily have these jobs that are ready to go to the same extent as some of the other areas I was talking about earlier, but if the Government changed that and grasped the long-term benefits it

could have, it could create 517,000 gross jobs. That would be in sectors including recycling, remanufacturing, reuse, repair and servitisation.

3Keel did some research for Greenpeace last year, which looked at the return of jobs for every £1 million invested in the green recovery. It found that the circular economy offers the most jobs: 29.1 jobs per £1 million invested. I was quite interested in reading that report because it is mainly looking at things like waste management and plastics recycling. Those are obviously important things that we need to have, but they are not the sectors that will offer the largest return on jobs. For every 1,000 tonnes of material that are handled there is 0.1 jobs in waste treatment, compared with two to 10 in recycling, and people estimate that there are up to 20 jobs in repair, remanufacturing and reuse per 1,000 tonnes of material.

Just to explain a bit, the figure that we have, the 517,000 figure that we calculated with WRAP, is based on assuming that there is 85% recycling, a 50% increase in remanufacturing—which is actually where most of the jobs are, and there are already quite a lot of jobs in things like aerospace in remanufacturing—and then a 25% increase in reuse and a doubling in servitisation, where people don't buy products but they rent or lease them.

I do think that it is quite achievable. We are definitely not on a trajectory for further recycling yet, but the other increases are not that unreasonable to assume if we get the policies in place.

Q14 **Cherilyn Mackrory:** Luke, from what Libby was saying it sounds as if we are part way along the road, even if it is only small way along the road. From your point of view, is there a clear idea of the number of jobs needed to meet the UK's environmental ambitions?

Luke Murphy: I do not think there is a firm figure out there. As Mike and Libby have pointed to, there are different figures and different calculations made by different organisations. It is clearer in some sectors, for example. In the energy efficiency sector, as has been highlighted, the total number of jobs that could be created between now and 2030 tends to average around a quarter of a million. That is certainly what our research suggests.

We also know the kinds of jobs that we need. We know that we need jobs in housing design and construction, and in the installation of those new technologies. It is less clear in some other sectors. One thing we have called for from the Government is a net zero and just transition delivery plan that can help set out what skills and jobs are required, and also learning from elsewhere; for instance, Sweden's fossil fuel initiative that created sector by sector plans, not just figuring out the emissions reductions and what we need to do in each sector but also the job and skill requirements and what that might mean for the skills and education system, too.

It is clear in some sectors but, overall, we need a clearer picture and the Government need to spend more time focusing on what is needed.

Q15 **Cherilyn Mackrory:** I think I know what is coming, but I will go back to Mike on this one—the others should feel free to jump in. The Government hope to create 2 million green jobs by 2030. Is this enough for the scale of the challenge?

Mike Hemsley: Given the estimates we have seen, those figures seem to be right for meeting the scale of the challenge. What we would encourage the Government to do is embrace the scale of the challenge across all sectors of the economy and give certainty to the private sector that this change is coming. With all these things—and we have seen it in renewables in the UK—there is good evidence that setting large targets for offshore wind has led to inward investment in parts of the UK and, crucially, in parts of the UK that are poorer than other regions. That is something the Government can encourage.

Doing that more across the board, setting the ambitious targets they have for phasing in electric vehicles, for example, and doing the same for gas boilers, all of that provides long-term certainty and will hand the job to the private sector. Ballpark 2 million could be right. I would emphasise—as Libby and Luke have also noted—the uncertainty around all of these, but I think the direction of travel should certainly be that we aim for more green jobs in all sectors and setting ambitious targets to reach there.

Q16 **Jerome Mayhew:** We have become familiar with comments about stranded assets but, of course, stranded assets, as we moved towards a green and net-zero economy, also encompasses the concept of stranded skills. Perhaps, Luke, you could kick off this discussion. Have you done some work, or do you have some idea, on how severe and how widespread the impact on jobs in high-carbon industries could be as we move through this process towards 2050?

Luke Murphy: Yes, we have done a lot of work as part of our cross-party Environmental Justice Commission at IPPR on what a just transition should look like in different sectors. It is fair to say that there will be a significant impact on certain high-carbon industries. This might include oil and gas, automotive, aviation and certain types of manufacturing.

One thing to highlight, though, is that in each of these sectors any job losses may be offset and, in some cases, exceeded by new job opportunities. Mike also said earlier that, in some cases and for some of these industries, it is about adaptation of existing skills rather than a wholescale retraining into entirely different jobs.

If you look at, for instance, oil and gas, we have recently produced a report "Net zero North Sea", which looks at the potential impact on the oil and gas industry. The important thing to note about that is that it is not just about sectors. It is about places as well. Many of these jobs are

going to be impacting particular areas where there has already been underinvestment in the past. In Aberdeen, for instance, oil and gas workers make up over 10% of the local economy.

Therefore, it is not just sectors we need to think about; it is about where they are placed and the impact it is going to have on these places, albeit recognising, as I said earlier, that some of these job losses can be offset by potential new opportunities. In oil and gas, for example, it could be offshore renewables, decommissioning, CCS and hydrogen, but that does involve a linked-up strategy from Government in terms of industrial strategy and investment, and a focus on the skills and education that is needed to retrain in those particular sectors and areas, too.

Q17 **Jerome Mayhew:** Can you expand a little more on that? In our history we have had many sectors of the economy that have waxed and then waned, without the need for Government interference to try to plan that transition. Most recently, we used to have—within the last 20 years—tens if not hundreds of thousands of bank workers on our high streets and, because of the rise in internet banking, we don't any longer. Those jobs have gone and they have been absorbed into the wider economy without direct Government intervention. In your view, what is so special about high-carbon jobs that requires such a level of Government interference, planning and foresight, frankly, which I am naturally inclined to think Governments are not very good at doing?

Luke Murphy: It slightly depends on the distribution of jobs. One thing that is most important about this is that in many of these high-carbon industries the jobs are concentrated in certain places and certain regions. If you look back to poorly managed and unjust transitions of the past, it has left some regions disproportionately worse off. You can look at coalmining areas, for example. There remain to this day high levels of worklessness and high levels of low pay as a result of that lack of intervention and support in the past.

Certainly, from our point of view, the argument for a just transition is not just about supporting—important though it is—those places and communities that are going to be affected. It could, in effect, inhibit the net-zero transition as well because we are likely to lose support for it if we don't put that kind of support in place, the lack of support that we perhaps saw in the past.

Q18 **Jerome Mayhew:** As I understand it, your argument is less about sector support and more about regional and geographical support. If that is the case, do you think enough is being done to plan for that transition in particular geographic regions? If not, what is your thinking on how that could be further improved?

Luke Murphy: We would argue that we have seen certain support and investment, for instance, in regions like the Tees Valley, but there are probably three keys things that we would say are missing. First of all, as others have mentioned, is a general lack of policy certainty and long-term

programmes. That affects both specific places but it is also true about green jobs across the piece. Unless we have long-term programmes, private business will not invest and plan for the skills that are needed in the future, so that is the first one.

Secondly, the very concept of a just transition isn't embedded at the heart of Government policy and decarbonisation policy. What do we mean by that? That effectively means working with workers and communities in the different areas to figure out the right industries and support that is needed there in future. Finally, we have an ill-equipped skills system to support the kind of transition that we need in these different places.

Those are some of the examples that we need, but there is definitely a lack of support and investment by the Government at the moment.

Q19 **Jerome Mayhew:** Mike, I see your hand up. I am going to come back to you in a second, if I may.

I want to develop this conversation. We do not just have competition and regional variances within a domestic economy. We also live in an international trading economy where we have, in our manufacturing terms, the risk of carbon leakage if we raise our carbon cost too much beyond the international comparators, and we have the potential to put our manufacturing base at a significant disadvantage, being undercut by imports of higher-carbon, lower-cost replacements to their products.

There is a concept that has been developed over previous years about carbon border adjustments that seems to be gaining traction. We know that the European Union went into a consultation process in July last year about carbon border adjustments. We know that Joe Biden's campaign team talked in the recent presidential election of implementing some form of carbon border adjustment for economies that are not pulling their weight in the transition.

Libby, is it time now for carbon border adjustment, and is it a good idea for the UK? If so, how would it look in practice and how do we get it over the line?

Libby Peake: The short answer is that the UK should absolutely be developing border carbon adjustment. The longer answers or the bigger caveats are that, first of all, we should not expect that it is going to deliver the sort of change that we need on its own. It needs to be used with a lot of other measures to be successful. There are also some considerable legal and practical challenges that we need to overcome before we are able to successfully implement a border carbon adjustment.

Essentially, a border carbon adjustment would work in that any goods that are imported from a jurisdiction that does not have equivalent carbon pricing to what we have in the UK would be subject to a tax. That would be with an aim of levelling the playing field, because we know

there are potential problems of job and carbon leakage if that does not happen, as you have highlighted.

In fact there are statistics that suggest that, over the course of 1997 to 2013, 40% of the decarbonisation that the UK achieved was through exporting, through jobs going abroad, through manufacturing going abroad. That obviously does not solve the problem of climate change unless they are being produced in a lower-carbon way, and in a lot of instances the opposite will be true.

Border carbon adjustment is meant to make it so that that does not happen anymore. It would also remove the need for free allocation of ETS permits or of carbon pricing benefits to heavy industry. When they are trade exposed, at the moment they quite often get free allocation of permits for the emissions trading scheme.

There are definitely reasons why we should be doing it, not least because the EU and the US are doing it and we do not want to be left behind. We also don't want to be in a situation where we have not contributed to the development of it.

In terms of the practical challenge, apart from the fact that no one has yet implemented one, there are also issues to do with accurately quantifying emissions, especially if you are looking at complex manufactured goods, which may have been through lots of different processes in lots of different countries and have lots of different materials from lots of different places go into them. Something like a phone, for instance, has 30 different elements in it and those will have been processed in lots of different countries. It is a massive exercise in gathering data to be able to quantify that.

Q20 **Jerome Mayhew:** Have some commentators suggested that you start off with four or five of the key contributors—aluminium, steel, cement—and then, as you get confidence and competence in the process from that small start, you grow out to the wider economy? Could that work?

Libby Peake: Exactly. There is no other way that we are going to be able to start, as it is much easier to quantify the embedded carbon that comes in a tonne of steel than it is to do it for a tonne of electronics, but—

Q21 **Jerome Mayhew:** Sorry, I am going to cut you short there because I am running out of time, but thank you very much for that answer.

Mike, I would not allow you to speak earlier. I am sorry about that. Could you come in on border carbon adjustments? In your evidence, manufacturing was identified as one of the areas that might take a hit in employment. With a border carbon adjustment, could you see that actually being reversed in the way that Frontier Economics found in assessing the steel industry? In its report it said that if we had a border carbon adjustment it would increase the competitiveness of the domestic steel sector and, therefore, increase employment. What do you think?

Mike Hemsley: We see no reason why you cannot maintain the UK's manufacturing base while decarbonising it. Indeed, there might even be ways to grow it. As you look around the globe, low-carbon industry is now the future of industry. You have China committing to it. You have the rest of Asia committing to it as well. It is increasingly the direction of travel, so if the UK is not also aiming for that, it is likely to be left behind. Yes, I would certainly support that kind of evidence.

We completely identify the need to protect UK industry in the interim period before you have a global low-carbon market for these kinds of goods, though. That can come in many forms. Carbon border adjustments could be there. I think you are right to highlight that there is likely a balance between effort and reward in the practicalities of how it is implemented, but some targeted support from Government should be introduced and maintained to avoid any issues with competitiveness. Manufacturing is key; agriculture could be another sector there as well.

Q22 **Jerome Mayhew:** Yes, interesting. My final question is to you, Mike. We have been given evidence that, rather counterintuitively, employment in the renewables sector actually fell between 2014 and 2018. What is the reason for that? Why do you think jobs have been lost from the sector when it is obviously a developing area that is developing a head of steam one would argue?

Mike Hemsley: That is interesting. I am afraid I don't know that evidence specifically, so I cannot comment on it, but it does sound slightly surprising. You would always expect some kind of fluctuation. We have seen a shift, for example, from household solar installations towards more largescale offshore wind, which might explain some of that.

Generally, the way to ensure you have more consistency in this kind of employment is longer-term objectives, like the Government have for 40 gigawatts of offshore wind by 2030, then also more targeted interventions like the offshore wind sector deal, which aims for a certain proportion of UK content, and also support for things like innovation and partnerships with industry that can lead to inward investment and jobs in the UK for these kinds of programmes—

Q23 **Jerome Mayhew:** It is interesting. I think that only 18% of the employment created by offshore wind in the United Kingdom has been in the United Kingdom. Most of it has been in Denmark and Germany.

A rather short-term argument on how you could address that would be to have local employment clauses within contracts. That is, of course, anticompetitive and drives up prices. Where does the CCC stand on that argument?

Mike Hemsley: We certainly do not have a defined position on that, but we recognise the kind of trade-offs you are highlighting.

Q24 **Jerome Mayhew:** Libby, do you have any comments on that?

Libby Peake: As Mike and Luke have suggested, we would highlight the need for long-term goals and interim targets. The automotive sector is definitely at risk of losing out on jobs if we don't consolidate the win that we have had by bringing forward the ban on the internal combustion engine, by giving the automotive sector interim targets for putting a number of low-carbon or zero-carbon cars on the market over the years. If all of a sudden we get to 2030 and they have not put in place or ramped up the sort of production that they need to see, we will have potentially lost a lot of jobs in that industry that otherwise we would not have had to lose. It is messaging from the Government that is needed there.

Chair: I am going to ask Barry Gardiner to come in quickly on carbon adjustment. I think you have a quick question, Barry.

Q25 **Barry Gardiner:** Yes, I want to pursue the issue of the carbon border adjustment tax. Clearly, what we have seen in terms of carbon leakage has meant that sometimes our own companies have been disadvantaged. The need to balance protection for UK businesses with support for developing nations to decarbonise has not always gone apace. Two things: first, can you suggest—maybe Libby first—how we can ensure that a border adjustment tax is actually incentivising British companies to reduce their emissions and giving them the space to do so, and can you suggest any ways in which an adjustment tax might help increase the speed at which developing nations themselves decarbonise, unless we have a greater focus on assisting them to do so?

Libby Peake: As I was saying, it should not be seen as a panacea that is going to do everything, so heavy industry is going to need more targeted support. I suppose the ideal thing would be to have quite a high carbon price quite quickly, but that is obviously not something that is going to be possible so, again, you need a long-term trajectory there.

In terms of helping other countries decarbonise, theoretically a border carbon adjustment gives them incentive to do it just from the fact that otherwise their goods will be charged when they are imported into the UK, but obviously the UK should be—

Q26 **Barry Gardiner:** Without the resource to make that transition, though, it is difficult for them, isn't it? That is the point.

Libby Peake: Yes, exactly. The UK, and not only the UK but the developed countries, should be using their climate finance to make sure that other countries can decarbonise and should be exporting our skills and our knowledge about how to decarbonise to the other countries as well.

Q27 **Barry Gardiner:** Yes. Luke, do you have anything to add on that?

Luke Murphy: I do not have anything to add, other than to say that we broadly support the idea of border carbon adjustment, but I would agree with both Libby and Mike that it is not a panacea and we need to

underpin support for our domestic industry through our industrial strategy and investment as well.

Q28 **Caroline Lucas:** At the risk of making this a session on border tax adjustment rather than on green jobs, my first question is to Libby. Before I get to the main question, I was just reflecting that I used to work for Oxfam and 20 years ago we were talking about border tax adjustment, so it is interesting that it has not come very far over that period of 20 years. In those days we were talking specifically about the revenues raised being earmarked to go back, in particular, if the source of the product was coming from developing countries, to enable them to transition more effectively and more quickly. I would be interested to know whether that is still being discussed in circles around border tax adjustment right now. That is the first thing.

The second thing, just to put my proper question to you, is about the circular economy. You made a really strong case earlier about the jobs potential of the circular economy. Could you say anything about how you think the circular economy would also contribute specifically to ideas around a just transition?

Libby Peake: With regards to whether or not the money would be ring-fenced from a border carbon adjustment, I haven't heard about that specifically in relation to border carbon adjustment, but there has been a lot of talk about the revenues of any shift towards green taxes and what would make them more acceptable and what people would like to see. In a lot of instances—probably in contrast to what you would hear coming out of Treasury or what I have heard so far coming out of Treasury—people do want to see it reinvested back into green things. It would be a similar logic for having something like that in border carbon adjustments and using the climate leadership in that way. Sorry, what was your second question?

Caroline Lucas: The other one was about the contribution of the circular economy to ideas around just transition specifically.

Libby Peake: Certainly, in terms of the opportunity of having jobs all around the country and ensuring that there is good employment around the country in all the different sorts of areas, it does offer a lot of potential in that regard because when you want to repair something, and even when you want to recycle or treat material, you want to have jobs in the areas where that material is created.

Our initial research with WRAP was looking at net job creation, which will be changed now because of the change in the employment market. At the time we found that the circular economy jobs were most likely to be net jobs in areas where there was high unemployment. They are not going to be taking away from other industries; they are going to be creating new industries. There is definitely potential in that regard.

I would also say that, if you are looking at things like whether we might be losing out on primary manufacturing, a lot of the skills that would be

required for remanufacturing are quite similar to original manufacturing. With remanufacturing it makes more sense to be more centrally located. If it was planned in a way where you could create the remanufacturing industries in similar industrial areas, that would help in some instances to lower the impact on affected communities.

Q29 **Caroline Lucas:** Lovely, thank you. That makes good sense. I have a question for Luke about consumption emissions, which is one of my passions, the fact that we do not account for our consumption emissions. Have you done any work or had any thoughts about what role adopting a consumption-based emission approach could play in ensuring that the necessary jobs are actually created in this country and are not exported overseas? Do you think that would have an impact on that?

Luke Murphy: In some ways a border carbon adjustment mechanism is a realisation of that kind of approach, where you are taking into account your broader emissions so, yes, I think it is sensible. It is something that IPPR has argued for.

Something that we found is that in 1970 UK consumption emissions were just 0.2% higher than our territorial emissions, whereas they are 37% higher today, so it is important we look at it. We think that is an important factor. We don't think it should replace a production-based approach. It is important that countries continue to focus on the emissions that they make at home but, in order to avoid carbon leakage and the other things we have talked about in relation to carbon border adjustment, it is important that we think about consumption emissions. We have called on the Government to consider whether a legally binding target, or at least some form of target, would be beneficial and to take advice from the CCC on that. On that point, Mike might be able to report on whether that is a good idea.

Q30 **Caroline Lucas:** I would love to know from Mike if that is a good idea and, also, just how complicated is it? We touched on it when we were talking about the fact that a phone has 30 different components, so working out the emissions embodied in any given product is complicated, but is it doable and how should we do it?

Mike Hemsley: It is doable because we report on consumption emissions, and that is increasingly something that the CCC is shifting towards as well. In the Sixth Carbon Budget we did not just report on the UK's domestic emissions, both historically and what we think they need to be in the future, but we produced pathways for the UK's consumption emissions as well. That suggests that, yes, they are significant at the moment. They are declining at the moment, and we think they can decline around 90% by 2050 as well. That does not mean to say we cannot do anything about them, and we definitely should, but again you get into the practicalities of measuring some of these things quite quickly.

Again, it probably falls under the same kind of ideas we are talking about with carbon border adjustments. There are a few big things you can

probably track in terms of consumption emissions, which might be quite easy, but once you get into the complexities of it you get into the effort/reward trade-off where it gets a bit difficult. We can and do track them now, and we should take them seriously as part of the UK's effort to decarbonise.

Q31 **Caroline Lucas:** I will come to Libby in just a second. When we had the Minister, George Eustice, in front of us a few weeks ago, he said that the Government were thinking about the idea of reducing their overseas footprint and so forth. Are you aware of any practical work going on right now to do that in Government?

Mike Hemsley: I am not aware of any practical work, but I have definitely heard of the idea.

Libby Peake: I just want to make an observation about the calculation of it. I would say that the UK is ahead of a lot of other countries, in that we regularly report on our consumption emissions and we have a fairly robust mechanism for doing that. It is different to working out the carbon emissions of a specific product. It uses multiregional input-output modelling to track the flows of goods and materials through economies. The CCC and the University of Leeds have a fairly good idea. They report to Defra every year on the UK's consumption emissions.

We have a good idea of what they are, and I would say we also have a moral obligation to start using them in a better way, given that we import so much carbon in imported goods compared with other countries. We need to start tackling that, and we have the tools to start doing it.

Q32 **Caroline Lucas:** That reminds me that you gave a figure earlier. Can I just check I got it down right? I think you said something like 40% of emissions reduction has been achieved by offshoring our jobs. Was that right?

Libby Peake: That was between 1997 and 2013 when the study was conducted: 40% of the reductions were, yes, from offshoring manufacturing.

Q33 **Caroline Lucas:** Do you think it will be much less from 2013 onwards?

Libby Peake: I think it has slowed down. Putting more emphasis and possibly having a parallel target for consumption emissions would be a good way to ensure that it keeps coming down.

Q34 **Caroline Lucas:** My last question is on what we can learn from other countries that have managed transitions of this nature.

Mike Hemsley: Unfortunately, I have had a look for this and I haven't seen much evidence of goods, just transactions being conducted in the past. I have seen something from IDDRI in France, which tried to collate some of the evidence and basically suggested some principles. Those principles are still useful and relevant for the UK.

The principles are mainly: acknowledge that it is happening already, don't ignore the fact that you are already in a transition towards net zero and, at the very least, do some kind of planning towards it.

I would go back to a point that Luke made earlier. We have awareness of the kind of sectors that are going to be impacted by this transition, and we have an awareness of the kind of new jobs we need to create in this transition as well. What we are missing is the mapping of those two things on a regional basis and saying, "Where are those impacts? Where are the skills we have now that need to transition, and do those things overlap?"

We are not saying that the Government have to actively manage the whole transition, but at least do a risk assessment and form some kind of plan of where interventions are likely to be necessary. The Government have the Green Jobs Taskforce at the moment, and that would be a really useful output of something like that.

Luke Murphy: We have looked at lessons from just transitions around the world. It is fair to say that, as Mike said, the experience is mixed, but there are four key lessons that we found looking at other transitions.

First, it is about the development of a positive vision, so making sure that we are focused on the journey towards something positive rather than just away from something negative. The way in which you describe carbon-intensive jobs and communities that have a long history in that is quite important in that regard. Secondly is engagement, so heavy engagement with both the workers and the communities that are affected through the transition. Thirdly is co-design and co-production. The most effective transitions have involved social partnerships between Government, business, workers and unions, civil society and local communities. That is really important in terms of building trust for whatever transition is coming. Then, finally, while funding isn't everything, it is necessary and essential to support the transition in different locations. Those are the four key lessons we learned from transitions abroad.

Libby Peake: I definitely agree with that, and certainly what we want to see is a lot of involvement with people to determine what good looks like. In a lot of ways we have that already for climate. We know what we want to get to for climate. We don't yet have that for things like biodiversity and resource use, and that is a real failing of the current approach. Other countries are perhaps better and have done that more, but nobody has done it to the extent that it needs to be done.

Q35 **Ian Levy:** Luke, you talked earlier about the oil and gas industry. Could you expand a little on what needs to be done to successfully retrain and reskill workers in the industries that are in transition? In Blyth we have the Port of Blyth, and I wonder if a lot of those people who have worked in oil and gas primarily could then reskill to work in the offshore wind industry.

Luke Murphy: Yes, that is absolutely right. One of the first things we need—as you have highlighted—is an understanding of the skills that we have within the carbon-intensive industry and then an understanding of the skills that we need for the industries and the sectors to which they may transition. It is having that basic understanding because there is an overlap as you rightly say, for instance, for oil and gas workers between the skills that they have. It does not necessarily mean for all the job opportunities that they will need to be wholly retrained. For example, for oil and gas workers there are job opportunities in decommissioning, and it could be an export opportunity for the UK to support the decommissioning of oil and gas elsewhere in the world.

You need an understanding of the skills we have and of the skills that we need. Then you need a more supportive skills system as well, and you need investment in place-based industries and support in those areas that are going to be most affected. That is something that we have called for for the oil and gas industry and the net-zero deal, that it is co-designed, importantly, given the balance of powers that they have between the Scottish Government and the UK Government, with skills and education devolved but oil and gas policy being held by the UK Government, and then a plan that is co-produced with workers and communities.

We have called for things like just transition funds and commissions that will bring together the required parties—as I said earlier, the trade unions, employers, business, Government and the local communities—to try to figure out what new industries are needed, where the investment is needed, and then you have the skills system supporting the workers alongside that. You need much more planning in that regard in order to deliver it. I know we will get on to it later, but there are also a number of reforms to the skills system that need to be undertaken to support workers to retrain.

Q36 **Ian Levy:** Mike, you might want to take the next question. Before the lockdown I was fortunate enough to go and have a tour of the Nissan car plant. I saw some of the electric vehicles that were being produced there, which was really interesting. Is there a clear picture of the extra skills needed to meet our environmental ambitions?

Mike Hemsley: There is a clearer picture emerging, and we pointed to some of the skills gaps in the Sixth Carbon Budget. Where the picture is really clear is in buildings decarbonisation, where we have identified a need for about 200,000 extra workers. A lot of those are in the construction industry, working on energy efficiency, and, similarly, a lot of those are in the heating, ventilation and air conditioning industry as heat pump installers. Indeed, there will be some overlap between the two.

Across other sectors the picture is a little less clear. With electric vehicles there is a bit of a consensus that they are slightly easier to manufacture and maintain, so it could be quite easy to transfer existing workers

without going through rigorous new training programmes. I think there is also an acknowledgement that there needs to be some action in investment in that industry to ensure the UK has some advantages in doing the EV manufacturing itself, rather than just importing batteries from elsewhere. There is a bit of a risk that you might lose out there. That is slightly tangential to the skills issue, but it is certainly related.

In other areas, we have identified farming. Leaving the EU brings forward a successor to the CAP system. That is more payments for environmental goods and services. There is definitely a skills gap in training farmers and landowners to do the environmentally beneficial things we want to do with the land. Those kinds of examples are probably relevant across all sectors.

Q37 **Ian Levy:** Staying with you, Mike, and Libby may want to come in on this because she touched earlier on the automotive industry. We recently had an announcement in Blyth Valley for the Port of Blyth, which is that Britishvolt will be building a gigaplant in Blyth on the river. This will have, in a 24-hour period, 3,000 staff employed on the shop floor producing car batteries for the automotive industry, and then we have the supply chain, which is another 5,000 jobs. Could you touch on a couple of questions? Is there a risk that a lack of skills might prevent a green recovery, when we are going to need 3,000 jobs on the shop floor, and what are the key steps needed to start overcoming the skills gap if there is a gap?

Mike Hemsley: I will touch on it briefly. I think there is a risk. The electric vehicle transition is really fast moving. There is talk about giga factories being built all over the place. Without some co-ordinated action—that could be in the local area or, indeed, some supportive investment from the Government for those kinds of factories—there is a risk that the UK misses out on that. Alongside that, I think there is a targeting exercise needed in saying, "What kind of skills do we need in EV manufacturing? Do we have those already? Can we transition them? Do we have them in the local area and, if not, how do we get them quite quickly?" Like you highlighted, it is a moving window.

Libby Peake: I will just add a note of urgency. If other countries rapidly pull ahead of the UK, which isn't necessarily going to happen, it will obviously be quite difficult to claw back those sorts of jobs, that manufacturing, if they are well established in other countries.

I point again to the green skills commission and taskforce that the Government have. They should obviously be quite concerned about that and leading a review to look at that as well as the wider question of where skills are needed and how to ensure that they are in place.

Ian Levy: Certainly, as the MP for Blyth Valley, I have a vested interest that we get this gigaplant to Blyth but, also, that we do not have a massive carbon footprint supplying those batteries to the likes of Nissan that are based in Washington. That would have a massive impact as well. Thanks for your comments.

Chair: That brings our first panel to a conclusion. I would like to thank Libby Peake, Luke Murphy and Mike Hemsley for their very insightful contributions today. You are very welcome to stay as we move into our second panel.

Examination of Witnesses

Witnesses: Sue Ferns, Professor Josie Fraser and Martin Baxter.

Q38 **Chair:** I would like to welcome Sue Ferns. Sue, you are from Prospect and you are representing the Trades Union Congress. Perhaps you could introduce yourself and the relevance of your role to these discussions.

Sue Ferns: I am the senior deputy general secretary of the Prospect trade union, where I lead on the union's climate work. I am also representing the TUC today, because I am the general council lead on climate and energy.

Chair: Thank you very much. We are also joined by Professor Josie Fraser from the Open University. Josie, could you explain your relevant role, please?

Professor Fraser: As you said, I am deputy vice-chancellor at the OU. I am also a member of the skills and education panel at the Institution of Engineering and Technology. It is because of their evidence submitted to the panel that they have asked me to join today.

Chair: Thank you very much. We are also joined by Martin Baxter from the Institute of Environmental Management and Assessment.

Martin Baxter: Hello, everybody. I am Martin Baxter. I am the director of policy and external affairs and deputy chief executive at IEMA. We are the professional body for people working in environmental and sustainability roles.

Chair: Thank you. Having had the perspective from external observers, we are now going to ask you, the representatives of the professional associations and trade unions, a few questions on similar themes.

Q39 **John McNally:** My first question is to Sue on the just transition and for our Committee to understand, to hear from you in some detail, the impact on the regions and sectors in the UK of this just transition. Could you outline to the Committee how significant a shift to a low-carbon economy could be for individuals and regions with high-carbon sectors?

Sue Ferns: What we know is that, at present, roughly two thirds of UK emissions come from high-carbon sectors. Those sectors directly employ just under 1.7 million workers, so that gives the scale of it. That is across a number of sectors, energy supply, energy-intensive industries, aviation, automotive, manufacturing and vehicle repair. It is across sectors and it is also across the economy, but there are specific regional impacts.

Prospect has today, with the Community union, published a report on just transition that focuses on thermal energy generation and the experience in the steel industry that clearly highlights impacts in the north and Midlands as regards to coal, and in the north-east in particular in relation to the steel industry.

My union has also done a fairly granular analysis of the UK power sector that shows that closure of UK coal and oil plants over the last 10 years has directly impacted 14,500 jobs. Many of those were crucial sources of local jobs in former industrial heartlands, including Wales, Yorkshire and the Midlands. We also know that is set to continue over the next decade. Our analysis shows that the remaining coal and gas plants support around 10,000 jobs across the UK but, again, with a strong regional focus in the East Midlands, Yorkshire and Humberside. Although there is some impact across the UK, it is very clear there are certain regions that will be disproportionately impacted.

Q40 **John McNally:** Thank you very much for that answer. I would like to move on to Martin and Josie, to hear their opinion on this question, probably the most important question following on from what you have just said.

Where would you say the responsibility lies primarily in terms of what more needs to be done to understand the impact of changing the economy and the jobs in the nations and regions of the UK? As Sue outlined just now, various areas will obviously be highly impacted much more than others.

Martin Baxter: It is really important that we understand the nature of the impacts and the pace of change, because it is the pace of change that can really adversely affect the ability of the community to respond and be able to get into place an appropriate transition. From that perspective, we absolutely need a national picture and something co-ordinated at national level to give us the understanding. In our evidence, we called for not just a green skills and jobs taskforce and a central repository of all this information but also a body that will help to co-ordinate across different sectors and in different places to enable us to make these transitions in an effective way.

If we do not understand, first, where places are vulnerable and, secondly, what skills and capabilities they have that can be redeployed in the jobs market, we may end up with communities left behind and that is not the aim of this whole transition. It is about bringing that picture together at a national level, and then for regional actors and sector bodies to take the appropriate action.

Professor Fraser: It is really important that we are clear about how we ensure there is good support and an ambitious strategy for adult skills. Government policy has to incentivise adult education and the full ecosystem of that between localised community education providers

where there will be regional impact, to local FE colleges and national providers of part-time higher education like the OU.

Everybody has a part to play in that journey, to understand the National Skills Fund, one of the recent Government commitments that came up in the skills White Paper recently, and to think about removing barriers to people in these high-carbon industries who will need to retrain and will have huge impacts. That is very important.

There are barriers currently for people who want to retrain and access funding, such as the equivalent and lower qualification rule that basically means in England that if you already have a degree in one subject, you are not eligible for student loan funding to change direction and retrain because, in effect, you have already used your entitlement, apart from in some key subjects. We need to think hard about that and how we increase flexibility so people who are impacted have routes and scaffolding packed around them so that they are able to retrain for the newly focused economy and the greener jobs we need.

Q41 **John McNally:** Going back to look at how the closure of steelworks impacted on our communities and the lack of planning, it is not rocket science. We should understand how communities are impacted and the cost to the rest of the community. If you fail to prepare, you are prepared to fail. Sue spoke about the 14,500 jobs that have already gone in the last 10 years, which should be a clear indicator for everybody in all Governments and local authorities to work together on this. Thank you very much for that, Martin, Sue and Josie.

My third question is back to Sue Ferns. It appears to me that Scotland is going in a diametrically opposite direction from the rest of the UK on renewables employment. Going to the graph we had before, Scotland has grown renewable sector jobs by 19%, England has reduced by 31% and the UK overall has reduced by 22%. Could you explain your thoughts on that? Why do you believe job numbers in the renewables sector have been falling? What are your concerns about the quality of the new jobs in the low-carbon sector? I read Prospect's comments on migrant workers being used, the injuries and the time lost to the offshore sector. Can you give us your thoughts on that particular question?

Sue Ferns: Scotland does stand in marked contrast to England on this issue. The two key factors are having a policy framework that is clear and consistent, which has been the case in Scotland but less so in England. That policy framework is backed up by active intervention, which is an essential part of a green industrial strategy.

Our experience outside Scotland has been very much based on market-led frameworks. We saw a growth in renewables employment when there was a generous subsidy regime, but the corollary of that is that as those subsidies started to be withdrawn in 2015-16—I am particularly thinking about the renewables obligation and the feed-in tariff—that had a hugely

significant effect on the growth trajectory in renewables jobs, particularly in solar.

That was one issue. Then in 2017 we had the then Chancellor, Philip Hammond, announcing there would be no new subsidy support for renewables beyond what had already been committed. We are now seeing contracts for different rounds that are based on driving down cost, because that is how you win the work. That driving down of cost means that developers do not build into their auction bids the costs needed to train and develop staff. They seek out the cheapest sources of labour and equipment, and that is usually outside the UK. RenewableUK has calculated that the majority of value created by UK offshore wind projects is captured by non-UK businesses.

Where we have growth, and offshore wind has been a bit of an exception in this picture, most of those contracts are going outside the UK. That does matter because they are cost-driven contracts. It means we are not seeing in the UK provision being made for trainees who would be able to become the operators and managers of the future. It has also impacted the quality of employment. We have drawn attention to instances where workers have been paid below the minimum wage, but I would also like to draw your attention to an exchange of letters between the Health and Safety Executive and SafetyOn, the offshore health and safety wind body that is still expressing concern about the safety culture and the number of incidents recorded offshore.

There is something there that we need to be concerned about. It is quite interesting that, if you compare offshore wind with offshore oil and gas, there is a very different picture. One of the key differences is that offshore oil and gas is a well-unionised sector. Offshore wind, as yet, is not a well-unionised sector.

Q42 **John McNally:** That is extremely interesting. To put you in the picture, where I live there are a lot of people, good friends who have gone into the offshore oil and gas sector who are obviously well impacted by previous disasters. One of them in particular works in the health and safety division and is constantly on at me in particular about keeping standards up, improving levels and not letting anything deteriorate or we end up back in a race to the bottom. The last question is hopefully a bit cheerier for you. Could you tell us any success stories of job creation in impacted areas that can be emulated?

Sue Ferns: We have some good examples on a relatively small scale where we have worked with companies, for example, in the energy sector to successfully transfer workers from other parts of their energy businesses into renewables. That has worked very well through a process of consultation and, as you highlighted earlier, proactive planning. You cannot do this in five minutes. You have to plan ahead for it, and it requires all parties to work together to achieve those outcomes.

In countries like Germany, for example, they planned very well for the closure of the coal sector in a striking example of social partnership in practice between Government, industry, unions and other social partners, backed by a commitment of funding from Government, where they worked so successfully together that they have been able to achieve a lot over a relatively short period of time.

That is not rocket science. A key, repeated theme from this is the importance of national, sectoral and regional-level social partnership. I believe we have a collective will to solve this, but it does need a collective effort to do that.

John McNally: That is very interesting, Sue. Thank you very much, and Martin and Josie.

Q43 **Barry Gardiner:** Sue, it is good to see you again, and it is fascinating to hear what you were saying about Germany. I understand that Germany and France require employers to pay for reskilling for all compulsory redundancies. Is that part of the package of measures you would wish to see here?

Sue Ferns: I think there is a contribution to be made by Government, and there is a contribution to be made by employers. Employers have responsibilities. There is an example from Scotland of the transition training film that was used in offshore oil and gas. I do not think that is a perfect example, but it is a good example that could be built upon in the rest of the country.

We already have a network of skills bodies that are led by employers who do not currently have that responsibility but could be repurposed to give them that responsibility. There is already a lot of money spent on training, but who is getting access to that training and reskilling is the issue.

We know from evidence that the people who get greatest access to training are managers and professionals, and maybe we need to be thinking about reprioritising some of that for people who are faced with transition through no choice of their own. There is more that employers can do within their existing programmes and their existing spend by making it available to different groups of workers.

Q44 **Barry Gardiner:** To be clear, are you saying that, in order to prepare, retrain and reskill people for the new economy, you feel there needs to be a shift of focus on the retraining and reskilling so that it is not just reaching a top echelon, a managerial echelon, within the workforce but is much broader based? Is that the message you want to convey?

Sue Ferns: That is a big part of the message I want to convey. You may also be aware that the TUC has called for lifelong learning accounts as well. I know we have the Government's lifetime skills guarantee, which has given some priority to environmental and green technologies that we

welcome. But, as has already been said, that is not accessible to people who already have a level 3 qualification.

We need something above and beyond that, and the TUC would see a role there for lifelong learning accounts that would allow people to access other learning that may not be provided by their employer. I do not think this is wholly an employer responsibility, but I think we need to bear in mind that these days people will change jobs and careers a number of times over their lifetime, so this cannot be a one-off. There should be an opportunity to be able to draw on a lifelong learning account maybe at two or three points of a person's career.

Q45 **Barry Gardiner:** Maybe this is a good point to bring in Josie Fraser again. You made a powerful point that, if you have already had level 3, that is your lot. How would you wish to see that changed? Looking at your sector as a whole, the adult education sector, how can it be better prepared, perhaps better funded, for the level of retraining and reskilling you think is needed?

Professor Fraser: The Commons Education Committee report on adult skills and lifelong learning did a good job on this and thinking it through. Things that would make a big difference are better focused information, advice and guidance around careers and training opportunities for people at all ages and life stages, whereas our current National Careers Service tends to be very focused on a framework that assumes that education and study will be frontloaded to those aged 18 to 21, rather than thinking lifelong.

That is going to require funding and policy frameworks that incentivise the public to be able to hop on and hop off as they need to, exactly as was just said, but it also needs to incentivise learning providers. We are seeing in this post-Covid world a massive rise in online education. At the Open University we have large numbers of students registering with us this year across all ages for degrees, but there is also an increase in the number of people accessing free learning on our OpenLearn platform or accessing short, bite-sized accredited learning and non-accredited learning for interest, for career skills development, on FutureLearn, which is the ed-tech company the Open University co-owns, across all sorts of disciplines and areas including frameworks around greening and career development. The increase in the number of people there is absolutely enormous.

Key things I would want to see would be tuition and living cost support for students taking smaller credits of HE-level learning, 30 or 60 credits, a modular focus so that FE and HE can offer modules and providers are incentivised to combine and allow people to put those pieces of learning together in ways that work for them as their careers develop over a multi-career lifetime.

We should be considering how we incentivise that funding to target particular geographies and particular skill shortages we know are

emerging in the green economy. It is critical that this includes the apprenticeship levy. It is employer-led and means that you can study while working, so your employer very quickly gets the benefit of your learning as you learn rather than waiting until a fixed point a few years down the line. I think that will be really important.

Q46 **Barry Gardiner:** That is really helpful. You are emphasising the need for flexibility as a whole, and then looking at the critical areas where there are likely to be skills shortages or wholesale redundancies and making sure there is particular funding targeted towards those areas. Is that correct?

Professor Fraser: Yes, absolutely.

Q47 **Barry Gardiner:** Would you wish to see recommendations like that coming out from our inquiry?

Professor Fraser: That would be super. There is lots of evidence out there. In the Institution for Engineering and Technology survey, when they went out to engineering and technology businesses and talked to people about their sustainability strategy, only 7% of those businesses said they did not need additional skills to deliver what they needed to deliver. Interestingly, although I take the point made earlier about this needing to be training that reaches across the people affected, a lot of the skills needed are innovative thinking, strategic management skills and skills that help people to be agile in how their business needs to pivot or develop. There is a whole range of skills at a whole range of levels, so it is all about flexibility.

Q48 **Barry Gardiner:** Martin, your institute has highlighted that 80% of the workforce we will have in 2030 is already in the workforce today. I think that is a key statistic for us to note. You have called for sector transition plans. You heard what Josie said about the importance of targeting. How would you see that operating, what would they look like and how would they function?

Martin Baxter: The challenge is that, as we have seen, there are so many people already in employment. The employment and climate challenges we face mean that, if we are going to step up to the mark, everybody will have to do something differently, and they will have to be given the tools, the methods and the different ways of working to be able to do that.

There are emerging examples of what are looking like interesting and potentially effective transition plans. We need to ensure we are not just talking about a transition to net zero. The Environment Bill has a whole set of new ambitions, so if we are going to become a restorative economy that is low carbon, we need to understand the expectations of each sector across the whole piece on environment and climate.

If I take an example from the new homes sector, it is one we have had a little bit of involvement in through the Broadway Initiative. It has been

mapping out all the environment and climate goals that they need to achieve. If you think about a new home, it needs to be net zero in terms of its operation. It needs to be able to generate power, so solar. It needs to be incredibly energy efficient. It needs to use water really scarcely. It probably needs to be able to use grey water as well as potable water. It needs to be able to charge an electric vehicle. It needs to be able to swap electricity between that vehicle and into the home through smart technology, and it will have to deliver biodiversity net gain in the development of that scheme.

If you put all that together, the question is what are the changes that need to be made across the whole system to be able to deliver that in a coherent way? It is not just looking at one particular segment in isolation. For example, if we just put in heat pumps will that do the trick? No, because that will not deal with all the other bits that need to happen. If we only look at whether we have enough installers for heat pumps, perhaps we miss out on the jobs that could be created from manufacturing heat pumps.

Coming up with a plan that says what the changes are that need to be made to be able to address all these in a coherent way, with skills and capability enhancements built in alongside, then you can start to develop a plan. In the next month or so, in March, the Future Homes Task Force will come out with its plan, and I think it would be really interesting to see how that becomes a blueprint for other sectors.

One of the concerns I have is that too many sectors are looking only at net zero and are not looking at our wider employment plans. If we are thinking about food and drink, we need to look at how we manage land and the connection into our natural capital and natural assets, how we are going to enhance those and what the skills and capabilities are to build that into the way businesses operate.

That provides an opportunity for them to start to look at not just an individual sector but also the interface and collaboration that is needed with other sectors. We know, for example, if we want to hit the per capita consumption targets for water, new homes will be part of the solution and, therefore, the homebuilding sector will have to play a role in helping the water companies achieve part of their targets, and the same with electricity and energy.

Q49 **Barry Gardiner:** If I can try to summarise your message, on the back of what Josie was saying about flexibility, you are saying that in the central transition plans you need to be focusing on a holistic solution in each of these areas. That will, not just in the example you have set out, be about new build. It will also be about retrofit, and it is about how you bring all those skills together. Is that correct?

Martin Baxter: Absolutely. The new homes should be the easy one on which the rest of the retrofit comes, and you have then created a lot

more job opportunities aligned to our long-term environment and sustainability goals.

Q50 **Barry Gardiner:** Sue, finally, I wanted to give you the opportunity to talk further about the lifelong learning accounts, how they would work and how they dovetail with the skills guarantee the Government are offering. I also want to pick up on what you said about the difference between the oil and gas sector, which is heavily unionised, and the renewables sector, which is not. What importance do you attach to that? It is very difficult to persuade people to transition into those new jobs if they are not sure their terms and conditions will be protected, as they are by the unions in the existing fossil fuel industries. How do you approach that transition from your union perspective, and how do you see the Government and employers engaging to ensure there is that co-operation between management and the workforce in the new set-up?

Sue Ferns: I think that is right. Against a background where we did a survey of all our 150,000 members a year ago and, irrespective of the sector they worked in, climate and responding to the climate challenge was their second highest priority. Pay was their first. You would expect that in a trade union.

All the members I talk to across the energy sector are very much up for the climate challenge, making their contribution to it, and they want to be able to do that. They want to embrace new technology and make a positive, personal contribution, but there are barriers. One is that, particularly if you are in a skilled professional role, you have a standard of living, and you have a location, so place is important and family ties and communities are important. Sometimes it is possible to transfer within a geographical location, but increasingly that is not the case. You have to be able to incentivise people to do that, and for some people there is not enough incentive at the moment. Others simply do not have a choice; they are losing their job, and they need to find alternative employment.

We do our best. We try to engage with all kinds of employers, but it is difficult if you cannot access and you cannot have those conversations and there is not a willingness to have those conversations. I certainly speak for my union when I say we do not want anything given to us on a plate. What we want is the opportunity and the access to have those conversations and to make our own case. We think we have a strong case to make.

Q51 **Barry Gardiner:** I certainly know that, in the energy sector, EDF has one of the largest unions, GMB, engaged at the Hinkley site. They have always worked very co-operatively together and feel that it has been beneficial for the project as a whole, I think.

Sue Ferns: Absolutely. EDF is an example of a good company that works well with a range of unions, including our own, but what you will find is that across different business units there are different management

teams and different attitudes. That is life. I think we could make a positive difference in all those companies, and we are committed to the same kind of transformational change that they are committed to. It is quite hard, but I do think whether or not it is a union—and I think a union is the best way to exercise it—influence over the working environment and over safety has to be done collectively. You cannot leave it to an individual to do that, and we do not want to be in the situation of having HSE investigations because there has been a fatality or a serious incident. A progressive union voice should be part of a progressive sector. We are on that journey, but we are far from completing that journey at the moment.

In relation to the lifelong learning accounts, I agree with Josie that what we need is something that is a bit more flexible. If you are talking about the green economy and taking the broader vision that Martin has and which I share, you have people in different kinds of positions, you have potential new entrants including people who have lost their jobs as a result of the Covid pandemic, you have people already working in relevant roles who will need to adapt and be flexible as those roles change over time, and you have people whose roles simply will not continue and they need to look for different types of employment. Immediately, you need flexibility around the training solutions available to them.

You also have, as has also been said, a high proportion of the existing workforce who are going to be the people who have to deliver the green economy. Some of those people might have attained craft qualifications decades ago and have not been near a college or full-time education for most of their adult life. You have to think about that in terms of how you can offer that training, that extra education, to those groups of people, which again highlights the need for flexibility. As I have already said, this is lifelong learning. There are very few people coming into the labour force now who will not need to adapt over time.

We would like to see some contribution by Government to a lifelong learning account, and also the flexibility perhaps to allow employers to pay in money and, in some cases, perhaps match payments from an individual as well, because I do not think this is one size fits all. I am not an expert on this, but looking at the recent consideration by the Education Select Committee, I think it is also in a place where, provided there is a sufficiently rigorous design and monitoring of lifelong learning accounts, it would give more control back to individuals, it would give more flexibility across a range of learning and skills pathways, and ultimately it would help to keep people in employment and keep people in good-quality employment.

Chair: Thank you, Barry. Over to Duncan Baker. Duncan, I know you may have to skip off to the Chamber at some stage, so please just do so if you have to.

Q52 **Duncan Baker:** Thank you, Chair. I should be able to get started, and I

will keep an eye on the clock.

I want to talk about the green skills gaps, what causes them and what can be done. Turning to Martin Baxter first, and then Sue Ferns, our focus on green jobs has so far, I would say, been led towards low-carbon jobs and the just transition, so in effect the first step on the way is: what do you consider green jobs to be?

Martin Baxter: This is an interesting question, and the discussion in the earlier panel was very much geared towards those jobs in new and emerging sectors. I think the reality, though, is that all jobs are going to have to be done in a greener way if we are going to hit an economy that puts sustainability at the heart of it and that we become a restorative economy that is able to live within one planet living and so on.

When you start to look at the role of building a capability across the whole workforce—and I mentioned earlier that 80% of people in employment today will be involved in employment in 2030—there is huge upskilling to be done. As a membership body we have members in all parts of the economy, in all sectors and in all places. We have people in sustainability roles in financial services, in retail, in extractives, in consultancy, so they are across the board and across all parts of the public sector. Those individuals are helping to guide and shape the response of their organisations to the environment and climate challenges, but also unlocking the opportunities as well, but the effectiveness that they have is in part determined by the contributions that everybody else in the organisation makes. We see that green jobs are, in part, full-time roles, but it is the ability of people to do things in a greener way that is really the important piece that is going to guide the economy to where it needs to be.

If I give some examples, in terms of procurement we do not just want to be procuring solar panels and all the rest of it. We want all procurement to look through the lens of sustainability, environment and climate so that organisations are able to specify in appropriate ways and they can understand what labour practices might be. They might be specifying material compositions, they might be specifying the performance of a product that helps their organisation to meet its sustainability goals. Equally, we need all designers to be designing with environment and climate in mind, so again in terms of making material choices, the way in which their products might be used in practice, the ability for a product's materials to be disassembled at the end of life, if that is what is needed, and be brought back into use.

We have a very broad view of what we mean by green jobs, and I think it goes further than that as well. We have some really good examples within our corporate partners who are using green champion networks to drive cultural and behavioural change in their organisations. An example would be Nottinghamshire NHS Foundation Trust, which now has over 600 people who are helping to be the eyes, ears and champions of greening the way in which they operate as an organisation. Similarly, the

Ministry of Defence has recently established one as well, and we see lots in the private sector. I think there is a real opportunity to engage everybody in the world of work in doing things in a greener, more effective way.

Q53 **Duncan Baker:** That is a very broad understanding. Sue Ferns, are you in agreement with that?

Sue Ferns: I do agree with that, and we play our part in it in training some of our representatives to be environmental advocates. I also think there are key sectors that need to contribute in terms of green jobs. We have talked about energy, and I would say some of those jobs exist already but are becoming more important. For example, as we get more renewables on to the system, you need to balance supply and demand more carefully. That is a green job that will continue to evolve.

Transport, obviously, is another large component, including electric vehicles or hydrogen-powered vehicle manufacture and charging infrastructure. You spoke earlier about the domestic sector, retrofitting and work on domestic heating systems. All of that is important.

I think it is really important that we do not forget the natural environment. The Prime Minister's 10-point plan talked about the natural environment with an emphasis on tree planting, but we have to think about it more deeply than that. It is about land management, it is about things like peatland restoration, and so on.

We must also not forget the role of research and development in this agenda. We have among our membership some world-class climate scientists, people who are nature conservators, nature managers and so on. I am also mindful that the Energy Systems Catapult has said that the chances of our reaching net zero by 2050 will depend very heavily on our ability to increase the scope and pace of change. We do not know yet all the technology solutions. We do not know yet everything that we need to deploy, so we need a skilled research and development workforce as well. We need that in the private sector, but we also need it in the public sector, contributing to the policy framework and policy instruments, too.

Q54 **Duncan Baker:** I want to bring Josie Fraser into the next question, just to start us off. Do we need a comprehensive skills audit to better inform policymaking and identify skills gaps? Do we fully understand the skills that we have out there to be able to deliver the environmental ambitions that we have?

Professor Fraser: It is a really interesting question, and quite complex. If I think about it from an Institution of Engineering and Technology point of view and their data and surveys—and obviously they deal with a lot of engineering and tech companies that will deliver that R&D and those developments that we hope will take us to net zero and beyond—it is worth saying that recent IET surveys have done a pretty good job of being clear about where employers in those industries see their skills

gaps. It is a mixture of how many engineers they can find with the right specialist skills and knowledge for the roles, which is quite a high proportion of the skills gap identified in engineering and tech companies, but it is also a mixture of solving complex problems, advanced and specialist IT skills.

Interestingly, some of the recent surveys that the institution has undertaken have demonstrated that, even if you just look at engineering employers—and we know how many engineers are keen and eager to apply their really diverse problem-solving skillset to problems of sustainability—up to one in five engineering companies said they had not done anything in terms of technology or business change to lower their environmental impact in the last five years. That 19% is a much higher number than anyone would want or expect.

I think we have quite a good idea of where the skills gaps are, and we need to work hard to encourage a broader range of people to do the training, the education and the development they need to move into these fields where they can drive that R&D, they can drive that thinking, and then they can help those companies that are focused across a wide range of manufacturing and all sorts of other areas where engineers and technologists are critical to change, to drive it within their companies as well as drive the technology out into the wider world. There is quite a lot of data out there, but there probably needs to be work to draw some of that together.

Q55 **Duncan Baker:** Martin Baxter, are you in the same position? Do we know where those skills gaps are?

Martin Baxter: I am not sure we are that certain about where the skills gaps are and when they will emerge. We are in a very dynamic situation where there is rapid policy development, there are new ideas coming forward, there are new obligations that we are putting on to the economy. We have ramped up our ambition on climate change, which is great, so we now have a 100% emissions reduction target. We are embarking on a new set of national targets for other parts of the environment, so a resource productivity target is likely to come through on the Environment Bill. There will be new requirements in terms of biodiversity, which has been mentioned a little bit. If I look at the Environment Bill, we have biodiversity net gain, we have a biodiversity credit system and we have local nature recovery strategies, and we will have the whole country covered by one. We will have nature recovery networks and partnerships, we will have an enhanced duty on biodiversity on local authorities, not just to conserve but to enhance biodiversity in their areas, and there will be reporting requirements on biodiversity.

Do we have a real understanding of how that manifests itself, not just in terms of people working in ecology but also applying it? If we are building biodiversity net gain into decision making for new developments, that is not just having the information there to provide into it, but we also need

our decision-makers to be able to understand what this information means.

I am very clear that this is dynamic and, therefore, just expecting that we can do this once and it will be fine and it can sit around for the next five or 10 years is not going to cut it. We need to be constantly reviewing and understanding where the skills gaps are and what the timescale is to generate those skills. Some are going to require full-time, long-term education into higher education and postgraduate education, and that takes quite a long time to build up capacity. If we are thinking about a hydrogen economy, at what point do we start to build up those capabilities? It is the pace of change that we need to understand, where the jobs are and where the capacity gaps might be. Looking across all aspects of the economy, I don't think we have that picture.

Q56 **Duncan Baker:** I will have to dash off, otherwise the audio-visual unit in the Chamber will be getting extremely panicky about where I am. Sue Ferns, could you give us your opinion on that as well, please?

Sue Ferns: I agree with Josie that we have a lot of skills gaps in STEM-based areas, but that is a very broad definition and having more people with STEM skills in their broadest sense is something that we need.

I also agree with Martin that this is a dynamic system and it needs to be actively managed. We do not yet know all the skills that we need. We know they will change over time, and I think it needs to be proactively monitored and driven across a range of sectors. Where we are much less clear is, at a granular level, on what kinds of skills are needed.

Coming back to the earlier conversation about the importance of place, companies will know—and it is possible to look at it in more granular terms in a region, subregion or locality—about requirements and the skills that already exist. I do not think we have in place a way to effectively co-ordinate that with all the agencies that need to respond to it or, indeed, to build that into a national picture.

Q57 **Chair:** Just picking up on where Duncan left off, you were talking about spreading green skills across all sectors of the economy. Martin, you called in your evidence to us for a green jobs and skills commission to spearhead a specific green jobs and skills strategy to help corporates meet this challenge. Could you elaborate a little on what you think that strategy should comprise?

Martin Baxter: One of the key things is to distinguish between careers, education, jobs and skills. People are using these terms in potentially different ways, but for us this challenge has to start right in the early years of education. We need to be able to build a future workforce that is environment and climate literate, but that also has an aspiration to want to help to solve some of the big problems that we face, and to see that as an opportunity, so starting to build that career aspiration. To do that you cannot just assume that people will want to come into these jobs,

because we are in competition, if that is the right phrase, with lawyers and accountants and doctors and others, so there are career choices that people can make. If you leave it too long before thinking about this, suddenly your career aspirations have been narrowed because you have made the wrong choices in GCSEs and beyond. Having that in place is really important.

For us, diversity and inclusion is a critical issue. "Disappointing" does not really cut it, but the environment and sustainability profession and sector is one of the least diverse. There has to be a wholescale plan and strategy for dealing with that, and that starts to unpick a lot of the things about inclusivity and access to higher education. What we see is that the majority of people in our profession are degree-educated. That excludes a lot of people in society, so it is building new routes into the profession. It is good to see some of the apprenticeships coming through, and perhaps we can discuss that later. That provides an opportunity.

I think it is about mainstreaming. It is recognising that all organisations need to be part of this journey and, therefore, understand what skills and capabilities they are going to need. Then start to fix some of the problems that we have about silo thinking, which partly comes from policy making but also in things like the apprenticeship system. Very few apprenticeships are climate enabled in terms of our net-zero future, yet we really need to weave greening through the whole of the apprenticeship framework so that everybody is able to do their job in a greener way. This commission really needs to be playing across education and business, and across all sectors to understand the skills gaps, to be able to identify where there are weaknesses and gaps, and to work across different agencies to be able to fill those in a coherent way.

Q58 **Chair:** I will pick up the education point with Josie in a second, but you have referenced the evidence you sent to us about lack of diversity within the environment professions. I think you said that, of 202 professional groups, environmental professionals are the second worst in terms of diversity, so you have 200 bodies above you. Is that because it is seen as a white, middle-class, British profession to go into? What are you doing as an association to try to change that perception?

Martin Baxter: In part it is that. I alluded to early career choices. Do people recognise that this is a career to which they might aspire? Would it give a career that is durable, well-paid, exciting, interesting? Does it have standing? Those are some of the issues, and I also mentioned the education piece as well.

We did some work with NUS and the Equality Trust in 2018 to shine a light on this and to get a better and deeper understanding. More recently, we have been working up a diverse sustainability initiative, which we will be launching next month, looking at how we embed a more inclusive approach into professional qualifications, to get right into career choices to give people from different backgrounds an opportunity to be part of

the solution, but also to challenge where there are practices that discriminate and to work through those and change them.

Q59 **Chair:** Josie, we heard evidence in one of our other inquiries, I think it was from the Society of Motor Manufacturers and Traders, who said that the educational establishment, certainly for that sector, is geared up, understandably, for educating people how to become motor mechanics if they are looking for an engineering qualification within the auto sector, and there is hardly anybody being trained in how to look at the prospect of vehicles becoming electric over the next decade. It laid down the challenge to the university sector and the colleges and training providers to get with the project. What is the Open University doing about this?

Professor Fraser: I think we would do a lot. If I think about it from an OU perspective, part of our mission is to educate the wider public about all sorts of areas and issues, and we achieve that with things like our BBC co-productions, so things like *A Perfect Planet* that is on at the moment, the work we did around raising awareness about the challenges of ocean plastics in our last big BBC co-production with David Attenborough. That comes from colleagues across the OU being interested and excited to try to raise awareness around sustainability issues.

It is an interesting challenge that Martin and your previous evidence is posing around how we get diversity into the workforce that is driving this. Probably the motor mechanic is a good example. How innovative can we be across the sector, whether that is HE, FE, apprenticeship providers or employers, about reaching out into primary schools, into early education, where children are already deciding that engineering is hard hats and for boys, or that it is physics and maths and not for girls? Only 9% of engineers are women; that is a huge problem. We do not design solutions for big planetary problems when we are engaging only half of the people on the planet to solve the challenges.

There is a real responsibility for universities, colleges and schools to think about how they encourage more young women, young girls, into thinking about these subjects. The OU works very hard to provide a general engineering degree that allows lots of different specialisms and is open to anybody. One of the challenges when I talk to colleagues in other HE sectors about engineering degrees is that they have an A-level physics and maths requirement to admit anybody. Virtually no girls take physics and maths A-level, so you already have a very narrowed population. We have demonstrated at the OU that we can teach degree-level engineers starting from a baseline that does not assume you already have A-level maths and physics, which is an exciting way to increase diversity. I think there are other innovative ways that we will increase diversity in that workforce that can drive so many of the solutions to climate.

Apprenticeships are an absolutely critical challenge. We need them because they are fast. As you gain skills and knowledge, you are already in the workplace applying them so there is no lag time, but we also need the standards for apprenticeships to flex a little bit. Standards are

sometimes very prescriptive. They are designed at a certain point in time, so if the standard for your apprenticeship to become a mechanic or to become an electrician is all about current technologies and does not incorporate green technologies, that is a huge problem. If the standard was written more flexibly, we know that in reality if you train an engineer, a technician, a technologist, they can apply it to all sorts of problems and all sorts of scenarios. We need to be careful about how we work up those standards so that they do not just meet current needs but are future-proofed as well.

Chair: Sue, in response to some of the questions from Claudia Webbe, I hope you will be able to come in on the apprenticeship point that has just been made.

Q60 **Claudia Webbe:** It is a real pleasure to be able to speak with all of you today. Thank you for participating; it has been a fascinating discussion thus far.

Of course, the critical question is how we ensure that the education system prepares people for those sustainable jobs for a sustainable future. I want to touch on that, ensuring that we have a golden thread running through the entire education system, and that it is not just a set of one-off subjects. Josie, is the education sector prepared for the skills and training needed?

Professor Fraser: We are at HE level, or we would argue that we are. We have apprenticeships, we have degrees that train people, and you could argue that we could do a better job of providing more examples that are from the sustainability and grand challenges like the climate crisis and less examples from planes, trains and automobiles in our engineering marketing and training, but the reality is that, if you go across universities that are training engineers and technologists, they are doing that. They are very aware of that, and it is one of the ways that we are trying to increase diversity in our student body for engineering, because the examples around sustainability engage a wider audience.

I think there is good evidence that there is thoughtfulness about equipping people with multidisciplinary problems to solve, about equipping people with complex problem-solving skills that include sustainability and environmental issues in our education system. Part of the challenge is how we engage more people in hands-on work experience and placements that will put them in the path of these kinds of careers. How do we perhaps do a better job of helping our teachers understand how they can bring these skills and these problems to life for younger children, so that they start to consider the sorts of careers that Martin and his team represent? There is a multilayered approach that needs to build up towards the skills that are needed.

There is no doubt that time is the biggest barrier for a lot of people to feel that they can engage with education. When you talk to employers that is what they say. The Institution of Engineering and Technology has

done some surveying of its engineering and tech employers to encourage them to engage with education, and nearly half of them said that the biggest problem is finding the time to get out into schools, to get out into local colleges or universities. A quarter of those employers said that they did not engage at all with the education system.

Even though it is an industry that has a lot of skills gaps and wants more people to come through our training and our education to fill those skills gaps, we need to find a way to support employers to do that engagement early and to open the doors to people so that they are looking for those courses that will prepare them, and that I think the sector is well prepared to provide.

I also think there is work we can do collectively as an education sector, in FE and HE, to help provide support to teachers so that they are better equipped to work with young people to advocate and drive pupils to make the choices that will allow them to access these professions.

Q61 **Claudia Webbe:** I do not know if anybody wants to pick up a bit more on the school system. I know Josie talked very much about the higher education system. Does anybody want to come in on the school system?

Martin Baxter: Students Organising for Sustainability, part of the National Union of Students, did some research and found that, I think, only 18% of teachers felt they were readily equipped to teach about climate and its implications. That is a starting point that suggests there is a big job to do to equip people with the ability to embed this in teaching and learning.

It has to be done not just as a standalone, it is about how to integrate this into the way you teach physics, the way you teach other subject areas, and the way you enthuse people about this. We know there is a big concern about climate and the environmental crisis. What you do not want to do is to frighten people to the extent that they feel they cannot be part of the solution. This is about weaving into the education system right from primary school and beyond to demonstrate that we can make change and that they are part of the solution and, in fact, they are going to be critical to that, and that they can get jobs and careers.

To do that you need to give teachers the tools to be able to do it effectively. That does require time. Josie is absolutely right that in a time-compressed world, particularly at this moment in time when teachers are having to do a combination of face-to-face and online learning and deal with all of that—put that to one side, because hopefully we will be out of that—you then have to build it into professional development and support for everybody who is involved in education.

Q62 **Claudia Webbe:** In a sense that draws into the question, because we know that 70% of teachers polled in 2019 said that the school curriculum needs a radical overhaul to prepare students for a sustainable future. I will ask each of the panellists what their view is about that.

Professor Fraser: I think that is a fair point. If we want to move to a completely different economy in the future, we need to overhaul the curriculum and we need to think about it from a young age. I would like to think that some of the things the OU has done with the BBC is one of the reasons why it is at the forefront of teachers' minds. There are things that we are doing, like the partnership with broadcasters, to inform people. We know that *Blue Planet II* influenced consumer behaviour, consumer views and public understanding about the use of plastics. That has had a huge impact and influence on lots of people's behaviour. We try to build on that.

The Open University has its OpenLearn site that provides completely free resources. We have over 90 resources and courses on there on the environment, including one on renewable energy. We know it reaches lots of people; we have had over 90,000 requests so far for the poster that goes with the current *A Perfect Planet* programme. Those short courses can quickly help teachers and staff gain skills and knowledge that might help them in the classroom. They are there and they are free, and that is part of our mission to provide open educational resources to people. The challenge for teachers with a very packed national curriculum to follow is that, even though there may be resources there that could help them, how do they find the time to build that in? We need to think that through quite carefully in thinking about the national curriculum and what we are preparing pupils for.

Q63 **Claudia Webbe:** Martin, how can teachers and staff be successfully trained to prepare students for the skills needed?

Martin Baxter: In part, if I take our own organisation, we provide a lot of resource for our professionals to be able to take continuing professional development journeys, so that they can start to understand what is happening in terms of new tools and techniques that are coming out that have to apply in their work. All professions take that. I think this is working with the teaching profession, the professional bodies and the teaching unions, because the unions also have an important role to play, to start to create that professional development journey.

Then it has to be the employer, which is the schools themselves and the governors, who say, "This is really important; this is about the future of our children, the economy and the society that they are going to be living in" and giving space for that. This is always about priorities, and it is easy to deprioritise this because you have something else that you have to do. This is about everybody recognising that we have to build a future by educating young people, and teachers have to be part of that; therefore, we have to equip them with the time and resource to do it, and build that into their professional development and learning.

Q64 **Claudia Webbe:** Josie, a final thought from you on the higher education sector and what more needs to be done for this to take shape within higher education and learning.

Professor Fraser: It is an interesting question. The Institution of Engineering and Technology had interesting feedback from employers who are looking to employ people into engineering, technology and technical jobs where they believe that those employees will have the right skills to develop sustainability. Looking across that group of employers, there was very clear feedback that what they critically want higher education to offer students in those discipline areas is more chance to get relevant work experience and more engagement with business. That came from the employers, but it is also those employers who agreed and said that they did not engage that much with colleges or universities because of time pressures to do that engagement.

Anything we could do to increase apprenticeships as a route, to increase easy upskilling and retraining for existing employees that is bite-size when they face skills gaps, that modular approach to lifelong learning, will be a big development that allows or encourages HE to find ways to support a role in developing the workforce to tackle the challenges of sustainability. Although I am talking very much from an engineering and technology technical perspective, because I think it is absolutely critical in these sectors, there are also a lot of other perspectives to draw on. We need to be thinking about how we train managers, leaders and senior leaders in organisations to think about building sustainability into the heart of their business, whether that is through procurement, through the ways in which they think about their buildings, or their workforce management. There are so many areas where higher education could think very creatively about the curricula for educating professionals across a wide range of discipline areas. The same will apply in other parts of the education sector as well, of course.

Q65 **Claudia Webbe:** Can I ask a final question to Martin on the whole issue of apprenticeships and what role apprenticeships can play? How can sustainability be weaved into all of them to make sustainable development, and the future of sustainable development in terms of jobs, real?

Martin Baxter: I have a couple of points. The first point is that we are very encouraged that there is a new environmental practitioner degree apprenticeship and a sustainability business specialist master's degree apprenticeship, partly because they offer a funded route that can really enhance diversity and inclusion. That is one aspect that we are pushing.

Apprenticeships are not very good at taking what I would call horizontal issues and applying them through all apprenticeships. You could probably say that most roles in work need to have some aspects of sustainability, and some aspects of health and safety, yet the whole apprenticeship system seems to be about trailblazer groups coming together to identify a need and to develop an occupational standard and a set of requirements on the skills and capabilities that somebody needs to have. Potentially you end up just reinventing a similar type of approach for parts of jobs multiple times. I think there is a real opportunity to look

across the whole of the apprenticeships and, if not all, the vast majority should have elements in those jobs about how you do that job in a net-zero environment in a sustainable way. How do you do it in a way that will help you to look after your own health, safety and wellbeing and that of others? That should be a straightforward obligation for all apprenticeships.

If you start to do that, there are probably more efficient and effective ways in which you can deliver that content that is fairly generic at one level but is then contextualised for every job family and every individual role. I think that would be a really powerful way for many people who are already in employment being able to access, for example, apprenticeship levy funding through their employer to upskill and add value very quickly, as Josie has mentioned, back into the workforce. You also become a more rounded employee who is able to play a full role in this transition.

Q66 Click here to enter text.**Claudia Webbe:** I know we are short on time, but does Sue have anything she wanted to add on either apprenticeships or sustainability?

Sue Ferns: I will be brief, but I have a few points to add. I agree with much of what the other two panellists have said, and I am glad that Josie made the connection between education and the employers, because I think that is important.

Providing all this extra resource and encouraging people is great, but let's be honest, we have had this issue of underrepresentation of women and people from minority ethnic communities in these sectors for a very long time. We now have an environmental imperative to do something about that. Encouragement and everything that has been talked about is really important, but I do not think it is enough. We need to apply more leverage to this.

For example, when we look at apprenticeships, there is woeful underrepresentation of women in engineering and related apprenticeships. Can't the Government apply some leverage to that—it is a Government flagship programme—to improve the diversity of apprenticeships? Yes, we need to be inclusive, but we need a harder edge to ensure there is greater diversity there.

It is really important to expand the pipeline, but we must also stop the leaks from the pipeline when people are in employment. Some 75% of female engineers wishing to return from a career break or maternity leave do not return because the flexibility is not there and the work patterns are too inflexible. When you get a young woman who goes out into employment and cannot get PPE that fits her, we have to address these issues at the same time. We really need initiatives, but we need an approach to systematically address some of those real and casual barriers that exist once you are in employment as well. I think we need that holistic approach.

Chair: I would like to conclude by thanking our panellists, Sue Ferns, Josie Fraser and Martin Baxter, for a very good and, if I may say so, slightly more specific session than we had from the first panel, which was also very valuable. Thank you for your support today. I would like to thank members of the Committee in particular for staying on a little beyond our normal end time, and I thank Andrew Bax, who put together the brief for today's session.