

The Challenge of Carbon Capture Utilisation and Storage: Podcast Transcript

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This is Collaborate a Net zero podcast brought to you by the ECITB. In this series, we will talk to experts at the forefront of the energy transition. It will cover a wide range of topics from technologies that are key to unlocking industrial decarbonisation, to regulation, policy development, and perhaps most important of all, the skills needed to help industry deliver net zero. Thanks for listening.

00:00:32:06 - 00:00:36:03

Carol

Welcome to collaborate transitioning to net zero.

00:00:36:04 - 00:01:09:09

Carol

Today our focus is on carbon capture, utilisation and storage or CCUS and the challenge for engineering construction. So CCUS is accepted as one of the solutions to support the UK government and companies in heavy emitting industries in delivering their net zero commitments. Today I'm joined by Andy Lane of BP and Olivia Powis of the Carbon Capture and Storage Association to discuss the case for CCUS, including infrastructure development, technology, social acceptance, investment and more.

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Carol

Welcome. You can find out more about Andy and Olivia in the podcast description. So Olivia, why is CCUS an essential element of the drive to achieve net zero targets?

00:01:22:12 - 00:01:38:05

Olivia

I mean CCUS or carbon capture utilisation and storage is a critical technology for delivering net zero. And what it really does is it helps us decarbonise our industrial sectors.

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Olivia

So Andy can talk about, you know, where they're doing that on the East Coast, but it allows us to capture CO2 emissions from industrial sources and from power sources and to enable us to develop products like cleaner steel or green cement and safely store the CO2 underground permanently.

00:02:00:00 - 00:02:07:15

Olivia

So, you know, it is it plays a critical role in helping the UK deliver its net zero target.

00:02:08:00 - 00:02:16:03

Olivia

It'll reduce greenhouse gases and also help reduce hydrogen that could be used for heating and transport.

00:02:16:03 - 00:02:30:07

Andy

Olivia, Maybe I could chip in on that because that's a fantastic introduction explaining the full the full breadth of industries that we're working with in the East Coast. So this is Teesside and Humberside. They cover all the things that we are talking about.

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Andy

So we've got, you know, chemical manufacture. There's, we've got waste to energy plants, we've got power stations, thermal power stations, we've got hydrogen production facilities both existing and new. But also it's an opportunity, I think, to decarbonise new industries and attract them to the UK as well. So you're seeing sustainable aviation fuel facilities being proposed on the East Coast and they're big consumers of hydrogen as an example.

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Andy

So these things knit together into an ecosystem and CCUS is what kind of underpins it all. And there's one thing I'd just like to end at the end of that, and that's the sort of the net bit of net zero that there's something here about being able to extract carbon from the atmosphere and store it underground as well as preventing it getting there in the first place.

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Andy

So in the UK, one of the government's priorities is around what's called bioenergy CCS. So this is taking biomass that's combusted, that's burnt and then capturing the CO2 that's abated from that. Now in a in a a mass balance perspective that's taking CO2 out of the air into biomass and then eventually storing it. So these create what's called negative emissions, and that's what gives you the net in net zero allows you to offset things that are virtually impossible to reduce directly themselves.

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Andy

And there are a number of those kind of facilities proposed or existing today in Humberside and Teesside region. So there's an extra piece about actually carbon removals from the atmosphere as well as preventing carbon get into the atmosphere in the first place.

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Olivia

Yeah, and those carbon removals will be critical and decarbonising the industries like aviation that will find it really, really difficult. Otherwise. So they will remove that CO₂ out of the atmosphere and can continue sort of long beyond 2050 and it will continue to take CO₂ out of the atmosphere. So the Beccs and Dex bioenergy and carbon capture and storage and direct air capture and storage, it all uses the same technology of storing the CO₂ and under the ground.

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Carol

Excellent, that's fantastically positive. So it's that going beyond just reducing the carbon emissions of existing industries and actually encouraging growth of new industries. And actually those net reduction and with with the biomass as well. It's that fascinating and interesting actually. Thank you.

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Carol

What do you see then are the sort of key enablers and the barriers around CCS and that sort of sustainable industrial development and transformation?

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Andy

In terms of the enablers, the UK is really well positioned to build this CCUS business.

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Andy

It's got the sort of geological richness that is the North Sea. So North Sea is very well understood and there's masses of potential areas to store CO₂ in. So just to put it in context between the Norwegian and the UK sectors around about 70% of the storage capacity in the North Sea comes in those two countries. So it's a good benefit of a kind of long term oil and gas business and the geological basin that is the North Sea.

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Andy

So plenty of places to store. That's a great way to start. You know, if you don't have any stores CO₂, then you're going to have a bit of a problem with the CCS project. So that's one I think the second would be and government deserves credit. Here is the the construction of the regulations associated with the future of CCS is well thought through here in the UK.

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Andy

It is, you know, I think, the envy of many other countries in the world and it allows individual parts of industry to to have regulatory regimes that allow them to decarbonise and link up with the the transportation and storage infrastructure that's necessary to move the carbon out and storage under the North Sea. In the case of the east coast of the UK.

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Andy

So the regulations, they're not quite finished yet, but they're nearly there. And the construct, the design of those, the jigsaw puzzle of pieces that fit together I think is well worked here and is well thought through. We do spend quite a lot of time talking to other countries and other projects around the world who are very interested in what's happening in the UK in trying to use pieces of that structure to build their own industries.

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Andy

So I think those are two things where we're well advantaged. Obviously there's still significant industry in the UK and it's localised in particular areas, so a lot of the big emission sources are relatively close together. That's kind of helps efficiency. So those are the things I draw as the advantages. I mean, Olivia, did you want to come in on, on any other those?

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Olivia

I think yeah. I mean I think one of the key, the key points to make in terms of of what's driven the development of the sector in in the UK and really this time sort of moved it forward is is legislation of net zero. So having that that legislation there as a as a route and direction to industries to decarbonise is is has been absolutely critical in sort of driving it forward and then having you know, building on that and having the legislation and in the energy bill and then the regulatory regime around that has really helped move the industry forward as well as undeterred, you know, as well as us having the assets both

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Olivia

in terms of the offshore assets to be able to store the CO₂, but also the skills and the expertise and knowing how to manage those and the people who understand her to do that wanting to evolve into those into those jobs and to move that forward. So I think we have also I mean, we should also note that we've had a commitment of funding from the UK government in this year's budget, which is obviously going to really help drive that investment forward.

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Olivia

But we now what we really need, I think one of the barriers is that long term view of how that investment is going to be deployed and how and to give that signal to companies and investors that this is this is a long term industry and and one that we know there are lots of companies that are willing and and already are investing millions into it will create and sustain many, many jobs.

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Olivia

But we need that certainty in terms of of how the industry will move forward, particularly in the early stages, I think to get the first projects really up and running.

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Andy

The key step of the journey in the most difficult ones, always the first step.

00:09:02:10 - 00:09:22:01

Andy

And that's where we are right now. It sees us in the UK. So really getting those first projects off gives everybody the confidence that the regulations were the confidence for the supply chain to invest in and the confidence. And I think we'll come to this at some more detail later to build the skills pipeline necessary to deliver all of these things.

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Andy

And, you know, one of the you know, one of the features of CCUS and all the industries that are enabled by it's just the scale of investment that's necessary to decarbonise the UK sort of industrial areas. It's prodigious, it's huge investments. You know, that's a fantastic opportunity. But you know, it's a significant challenge at the same time.

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Andy

And almost the size of it becomes a bit of a barrier in itself. But I think the most important point is let's get on with it. The first steps, the important one, and then sustaining Olivia has just said, you know, sustaining that view of long term predictable stability and expectation. That's the environment, industry needs to invest. The supply chains need for, you know, establishing the facilities they need.

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Andy

And frankly, people need that confidence to want to join our industry and to want to develop the skills they're going to need to participate in this going forward. All of those things are underpinned by that sort of long term confidence and structure so that we can all see through not just the first projects and the second projects, but into the fifth and the tenth and the fifth.

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Andy

And so I think that that's a key thing that we all need to work towards in the coming months and years. And I think we all know, you know, we've just, as you say, has published a delivery plan that updates.

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Olivia

And I think one of the things we are now is, is a global race. So the UK is really well positioned to move forward very quickly. We've got these really good business models. We have the regulatory regime almost finalised. But meanwhile there are other countries that are that are instilling other types of incentives and moving forward. And we know that there are, you know, companies could move, investors can move, projects can move, and people will move with them. So we've got to make sure that we're really moving forward quickly in the UK to make sure that we maximise this opportunity and that we don't then lose the existing industries that we've got because we don't want them to move overseas to to the EU to make use of their carbon capture and storage facilities if we don't manage to build out

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Olivia

here. So I think all of this is, is all driving and driving us towards really sort of rapid progress in the industry. We see huge growth in our membership and in the number of projects that want to access CCUS in the UK. So there's a there's a massive opportunity, as Andy said. But I think we've just all these things have got to align and got to move quite quickly.

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Olivia

And, you know, we can't we can't wait for a perfect solution. We've just got to get going. Yeah, yeah. And I suppose that's always been a bit of pain for that sort of first project to push forward and kind of carve the path for for those that that are following and some sort of longer term piece. You know, there is that sort of government ambition to establish at least one low carbon industrial cluster by 2030 and, and the world's first net zero carbon cluster by 2040.

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Carol

And you're speaking about that sort of what needs to be in place for that longer term piece. So four actions, do you see that government industry, the skills sector, need to put into place to to help make that happen.

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Olivia

The ambition is to deliver to six US clusters by mid 2020s and four by 2030.

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Olivia

We've got a map in the in the seas to say where we put all the clusters on and we've now got 12 on that. So four have got a route forward and you know there are another set of clusters at various stages of development, but all with industries located close to them that need to decarbonise and make use of CCUS.

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Olivia

So we know, we know there's a huge ambition here and a huge need and a huge potential and we have the storage capability to deliver it. So I think I mean what we need, we're also looking towards a general election, so we have that uncertainty. But what we really need to do is to to move forward to, to, to get those first investment decisions made to enable the first clusters to move forward, to learn from them, and to give the signal to the supply chain that there will be opportunities here.

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Olivia

It's building up these first two clusters to the next two clusters. The third and fourth have also been selected, but we don't know which projects have been selected yet, so we need to move forward rapidly with that. And then really, I think this is just he's been calling for a long time for a longer term competitive allocation. So for projects right across the UK to

be able to express their interest to bid into a competitive process and to access that storage, there are lots of stores.

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Olivia

We have more licenses that have been awarded this year, so there will be stores under development out and and to really grow that industry at pace and to do it, you know, to not do it. So incrementally, I think we need to we need to be moving all these points together. And that's absolutely critical for the supply chain and the skills point, because it's far more interesting to invest in an entire industry and to build up a skills base and invest in training programs and all of those points around.

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Olivia

And in a longer term industry, in an industry that's very sizeable rather than just one or two projects that will that will initially get going. So I think it's really having that longer term view, removing some of the barriers, certainty, cross-party agreement and certainty, you know, as we move forward. And we do, you know, we know that there's support on from both sides, but in ensuring that that we can move through all those regulations and make that a quickly and, and those economic regulatory agreements to make sure that all of that could really move quickly despite elections and in other external factors.

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Andy

So Olivia has just given a fantastic description of the opportunity that the things that need to be done to deliver that. I think if we could summarise the whole thing as scaling up really we need to get going and that we need to scale up quickly. And I think that that applies to industry, that applies to supply chains, that applies to government and the way that government approaches this, it actually applies to the skills sector too.

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Andy

And I guess my you know, my take on this is that it's really important that that industry and the skills sector probably enable by the government as well work closely together to have a level of transparency and visibility to where these jobs are going to be created, what kinds of jobs can be created, what skills are going to be necessary to execute this?

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Andy

Because, you know, I do think we've got a genuine risk here that that we have the, you know, the intention and ability to to invest in these huge projects and make a fantastic impact on net zero. And frankly, where

these projects are in the UK are places that deserve investment as well from a sort of national perspective. But we won't have necessarily the skill set of people available to actually deliver all that.

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Andy

So I think, you know, within within the opportunity there is a threat to and you know, I'd like to to believe that we should work very closely together to at least illuminate the opportunity and then start putting measures in place to strike, try and stop encouraging people, highlighting what the opportunities are going to be over the future and the fact that they're not short term, but they're long term and that this is really, you know, a second industrial revolution that we're going for here.

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Andy

We are reskilling, retooling the entire country in a low carbon manner. And that's a fantastic opportunity set across many sectors, not just us. CCUS is a relatively small part. I think, frankly, of the opportunity that goes with energy transition. But it's important part and it's also it's an enabler of a lot of other things. So it's a key that unlocks the door and we need to make that work.

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Andy

But, you know, the opportunity for that is large and making that joined up. So, you know, you asked a question, Carol, about the skills sector engaging with industry and government being part of helping us all identify, need and identify programs and opportunities to pull through all sorts of different groups of people to become, you know, the skilled employees of the future to deliver.

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Andy

This, I think, is a really important opportunity. I think we should probably talk some more about that in the rest of this podcast.

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Carol

Yes, perfect, I mean, you've really taken us nicely into that sort of conversation of focusing in on skills for CCUS
So, you know, partly a capacity issue, partly a capability challenges, and those differences and tweaks that will be required to the existing workforce for transitioning into an into carbon capture utilisation and

storage. So, Andy, what do you see as the the sort of capacity and capability challenges for the US and how do we address those?

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Andy

It's a great question and it's something that on the Green Jobs delivery group, we're focusing on a lot across all of the transition industries. So maybe I'll start that to answer this by taking a little step back and just look at all the other industries which are going to grow dramatically as a part of the energy transition.

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Andy

So, you know, I look up to see us in the sense of the transportation and storage of CO₂, but there are other groups looking at hydrogen and what the hydrogen called a B means for skills that are people looking at power and distribution networks. We know electricity is absolutely fundamental. Decarbonised electricity is absolutely fundamental to the energy transition.

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Andy

But there's also big areas like, you know, buildings, heat, heat pumps, insulation, EV charging, EV maintenance. Agro agro businesses, the farming and forestry industries are going to have some profound changes as part of this. So it's quite multidimensional and the one thing that many of the industry share in common, I think is a common set of skills actually, that the necessary in nuclear power, hydrogen, CCUS construction, transportation, the majority or a big chunk of those skills actually are common across all of those industries.

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Andy

So your coal construction skills are the thing that equity knows best of all those cuts across really all of those areas. So, you know, all of the pipe fitting welding instrumentation, electrical roles are kind of common across quite a lot of that. And where we and sees us focus on all particular projects, not particular geographies, they're a relatively small part of a bigger picture.

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Andy

And if we we are anxious that there won't be sufficient workforce to deliver projects related to see us, actually that means there's a bigger problem on a national level because it's the same people that we're looking for, for all those other sectors that I've mentioned. So I think the awareness of the needs and the scale of the needs is the first step.

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Andy

And I guess because I'm a relatively close to it at the moment, I'm, you know, shocked on the one side and optimistic on the other side. It's just the scale of the needs here and how much of it cross cuts across multiple industries. There are things in the US that are a bit more unique to the US world.

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Andy

Some of the stuff that we do offshore, for instance, some of the store work, some of the drilling technologies, they look a bit more like oil or gas skills in a sense. I think that there's a skills transition that will occur from could have heritage oil and gas activity and will be transposed down to look at the stores.

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Andy

But when it comes to the pipelines and particularly when it comes to all of the projects that connect to the pipelines where the carbon is captured in the first place, that that is classic construction in the first instance. And like all big capital projects, you know, the big bump in jobs happens during construction. And then once those high capital activity phases are over, we move into an operate phase and there are less roles.

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Andy

So a lot of those just less than there are joint construction. And of course, the construction phase is obviously at the beginning. So the bump happens very quickly and is really quite significant. And so those are sort of the big picture issues. We can talk more about the issues of place. All the white people are available in the right place as well as with the right skills.

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Andy

How what are we going to do to attract people into this sector over time? You know, it's not about necessarily about purely about skills we have today, but it's the skills we have tomorrow, in the next day. What do we do to make this an attractive place to work? What does the skill set to do to help us help industry and train and develop people who are who are new to the industry?

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Andy

But also, what do we do to train people who are already in the industry, already in other industries and have an opportunity to cost? Right? How do we bring in people that historically have not necessarily been involved in great numbers in the kind of the construction end of our business? Have we been more women to our industry? How do we bring more ethnic diversity into our industry that there are there are when we've got a challenge that's as big as the challenge I believe we have, we need to be growing on every part of the population to play a part in this.

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Andy

And it's important that every part of the population sees energy transition as being something that's good for them and that creates an opportunity for them. It has to be sort of democratic in a sense, an open to all. So those are some of my sort of initial thoughts. And I think ACORN, TB, working closely with CASA and closely with with industry, you know, forming a you know, the nucleus of a group where many other people are working together to try and identify, first off, what's the scale of the challenge of what is the challenge?

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Andy

And then secondly, and what are we going to do about this and how can we organise ourselves? Do we need things from government? Is it about organising things ourselves? How do we set this up with a view to the long term? This isn't all about what I can fix today and tomorrow for a problem. That's the following day. This is something that's a generational change that we need to make.

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Carol

Yeah, absolutely. Olivia, for you, anything you would like to add to that? I mean,

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Olivia

I think yeah. And is, is sort of outlined to really the scale of the opportunity but also of the challenge. I mean, we have, we have some numbers that this is just say and you know, it's a double whammy if you we protect we estimate we'll protect 77,000.

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Olivia

Existing jobs in areas like steel, cement, chemicals. And so we'll keep those jobs. But then also create up to 70,000 new jobs. And as Andy said,

they vary the different types of jobs, but a lot of them are high value jobs. But some of them those particular, you know, around the sort of construction phases, it is possible that with the phasing of the development of clusters, you know, we would have similar workforces going from one project to the next, but that's got to be developed.

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Olivia

But also we're competing with lots of others, other sectors within energy and big infrastructure projects. So and we know that they are all on a similar timeline and trajectory. So there is there is huge competition. And I think that I mean, I think those points are and what we can do as an industry to you know, to work together and to work right across the energy sector and with the construction sector in terms of identifying the key skills, where are the gaps, what can we do?

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Olivia

And a lot of that work is already well underway. And what can we do to direct resources to engage people in the opportunity. But also to train and incentivise them to go into it. But it's a long term project and it requires a lot of people to work together. And it does require investment.

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Olivia

And and even I mean, we produced a skills paper earlier this year and some of the points of things that you may not have even think about that, you know, some perhaps as a shortage of trainers as well as well as people. You know, it's so it's the workforce, but also the people who's going to train the workforce and what are the opportunities to do that.

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Olivia

So I think, you know, by by working together with the green jobs delivery group, it's really critical that we identify, you know, where where the synergies are, where we can work together, what those opportunities can be, not just across to us, but right across the sector is huge. But and, you know, and sort of as I said at the beginning of this point, it's a double game.

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Olivia

We either protect these jobs and gain all these new ones or we don't gain any of the new ones. And we lose the existing ones as well. So, you know, it's a no brainer. We need to do it. And the says, you know, these are in areas that are earmarked for levelling up. They are industrial areas

that where these jobs are absolutely critical to the survival of those areas and to and to the local economy and will attract other industries to it.

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Olivia

Once the infrastructure's there, other companies will relocate there and make use of that infrastructure and bring more jobs and more skills to the area. So it's really a win situation. But, you know, there are a lot of a lot of areas and challenges that we've got to really address. And building up a skilled workforce takes time. And so there is, you know, we have to we have to be getting on with it now.

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Carol

Yeah. Yeah. It's interesting. You both sort of touched on that sort of the timing required for those those interventions in terms of, you know, the attraction needs to start now for feedstock into, you know, a couple of or a few years time and, and making sure that when you're pump priming the market it's at the right time to get the right people in the right place. I think within ECITB we've recognised that the capacity piece, goes where the demand goes way beyond what we can achieve through new and traditional apprenticeship and undergraduate and trainee new entrant routes. So it's about, you know, how else can pump prime the market and bring people into the sector and make that attractive as well.

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Carol

So we're kind of widening access routes into engineering constructs. And so, you know, the likes of a scholarship program where we're taking people into colleges or training centres for 1 to 2 years where they can then maybe go into an apprenticeship or direct in to into employment or, you know, something that's been been piloted up in Teesside.

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Carol

And the trainee maintenance operative program. And again, we've done that down in Pembroke as well. So it's around those industrial clusters where we're partnering with employability agencies. You know, people plus Jobcentre and National Careers Service so that we're delivering the skills and safety training with that sort of program of employability, support for people that are, you know, maybe long term unemployed, even, you know, ex-offenders, just broadening up traditional interest routes into engineering construction.

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Carol

And there's an awful lot more of that. You know, there are other skills, bodies and a lot of a lot more of that required.

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Olivia

That's where the partnership with with ECITB and and other similar organisations is critical because we don't have that expertise, you know, in the industry and and it's much you know it's working with organisations like yours that will help roll that out and not reinvent the wheel and make it make use of best practice.

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Olivia

I mean, there are lots of companies that will be investing in CCUS and are willing to invest in their workforce. But they don't need to to to sort of do the work from scratch each time about how best to do that, because there are organisations that are already well-established and have links and that can can help us do that.

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Olivia

So I think it's as much about making sure we're tied into that to the right opportunities.

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Andy

I'd agree with that, that there is a great best practice around some of the things that the offshore wind businesses, for instance, has done over the last few years, maybe a little bit further down the road than we are on this.

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Andy

And they'd be quite systematic about some of this. Some of the big projects Hinkley to Crossrail have met the same problems in advance and started to do some different things, particularly to try and increase the attractiveness to sort of areas that were underrepresented historically in the kind of workforce. I think there's some interesting lessons from that. But this is a big challenge for us and, you know, we need to go.

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Andy

It's all points really. We need to go back into schools, back way back to junior schools to start challenging that. We need to help the teachers

understand, I think, a particular careers parents understand the scope of the opportunities because, you know, that's where that's where children in school get a lot of their inputs from. And then you need to move through all the schemes that you've mentioned, Carol, you know, from apprenticeship then through graduates and every part of it, there's a there's a piece of of activity for everybody here.

00:31:18:11 - 00:31:39:08

Andy

But I think it it's particularly important from a social justice perspective to make sure that that's very visible to the places in which we're going to invest. So, you know, as many of the jobs as we can create a local to the people who are close to where the investments are going and they're seeing benefits of the investment coming to their region.

00:31:39:11 - 00:32:02:10

Andy

And I think, you know, I could talk sort of Teesside and Humberside, particularly where we're working I know we're working closely with Redcar College and putting apprenticeship schemes together there and starting kicking off that process. It's a small contribution at the moment. Hopefully it will grow over time, but you do have the benefit of, you know, generations worth of familiarity with engineering, construction and industry.

00:32:02:13 - 00:32:30:14

Andy

I think, you know, we all know there's a there's a strong and proud engineering heritage in that part of the world and this is plumbing into to that and where that particularly where the US activity happens is largely in those kind of areas. Maybe it's different with you know you're talking about maintaining these or other in other types of infrastructure, but the carbon capture and the projects that go with it by large are going to those big industrial areas anyway.

00:32:30:14 - 00:32:54:01

Andy

It is the Teesside's and besides, it's tens, it's solar and it's Pembroke that you've mentioned. It's the north west, it's central belt of Scotland, the north of Scotland, those kind of areas where we're all heavy industry remains. But that's also where society is really quite familiar with these businesses and it is not seen as something new. It's seen as something that parents and grandparents and uncles and aunts have been doing for four years.

00:32:54:01 - 00:33:19:06

Andy

And it's the norm, which in other parts is less so. So we need to draw everywhere. But I do believe it's important that that opportunities is really transparent and enabled for those communities that are most local to to where to where we're going to be investing.

00:33:19:06 - 00:34:01:03

Olivia

And I think if we do it really well, there is then a huge opportunity to export those skills and services as well.

You know, it would be it's about creating local jobs in these areas and long term sustained jobs. But there is also opportunity to then, you know, once we've if we build up our supply chain and skills base, we can export that expertise to to other areas across the world that we know are looking at developing carbon capture and so it's it's a it's a it's another export opportunity, which also makes it an attractive area to go into, I think for people because it is you know, this is an exciting industry and it is one that will that will be growing globally and there and there will be many, many opportunities related to it.

00:34:01:03 - 00:34:07:15

Olivia

So yeah, there's huge opportunity and just need to, to, to make it happen.

00:34:07:15 - 00:34:08:14

Carol

Absolutely, exporting engineering expertise. We've got a strong heritage in that and already. So yeah, it'd be great to see carbon capture, utilisation and storage being the next iteration of that, super.

00:34:24:05 - 00:35:01:06

Carol

So I think we're probably nicely sort of coming to our conclusions. Have you got some final thoughts on a call to action that you would like to make? Olivia?

00:35:01:06 - 00:35:18:08

Olivia

I mean, I think I've sort of made it through, but I think that long term vision and certainty of the industry and and cross-party support government committing to it is essential to have that pathway so that there is a everyone can see that there will be a role for an ongoing supply chain and skilled workforce and delivering CCUS across the UK.

00:35:18:08 - 00:35:39:05

Andy

getting going the first step of the journey is just so important. We need to get going and that's what will deliver that. I think we talked a little bit about collaboration, but collaboration I think is super important on these clusters and this issue is by its very nature a collaborative kind of activity. So I'd encourage that behaviour to continue. And as we just ask all of us really who were involved in this are part of our job is to get out and tell a story and be visionary about it and encourage people and try and illuminate what a fantastic opportunity this is and create more understanding. This is an industry that's not well understood.

00:35:39:05 - 00:36:16:05

Andy

We do know that. And you know, our job in the industry and all the people that work with us, I think is to that transparent and to make that attractive because in the end that will be what draws people to us and we need that to happen. So it's on all of us really to to tell that story, to be to be passionate about what this does locally around skills, what it does nationally around carbon targets, what it does internationally around exports and the ability to service other industries and grow carbon capture around the world is a fantastic opportunity for the UK and for for all people within the UK, and I'd just like everybody to understand that. So I think all of us have a role to play in that.

00:36:20:02 - 00:36:35:07

Carol

I think on that note, it's, it's nice to draw to a conclusion. So I thank you both very much for your time today and really just sharing your your knowledge, experience and thoughts. And finally, that call to action.

00:36:36:02 - 00:36:36:15

Olivia

Thank you. Thanks, Carol.

00:36:36:15 - 00:36:38:09

Andy

Thanks, Carol. Thanks. It's been great talking.

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