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Building partnerships to deliver net zero - New Sustainability solutions for industrial clusters

Accenture and Microsoft worked with the AMRC, SSE and National Grid on a project to explore how partnerships can fuel new sustainability solutions for industrial clusters.

Transcript

Hello and welcome to our panel session covering key insights from a new whitepaper produced by Accenture and Microsoft on the decarbonization of industrial clusters. Great to have you with us today, now we're lucky enough to be joined by four experts who are ready to share their thoughts over the next 30 minutes or so.

First of all, Toby Siddall, hello Toby. Hello and thank you very much for having me here today, it's a pleasure. Great to have you here, Toby is a Managing Director at Accenture. Wonderful to have you with us. Next up we have Matt Higham, hello Matt.

Hello, how are you doing? Great, good thanks. Good to have you here, Matt is the Chief Digital Officer at Microsoft UK. Also joining us is Oonagh Grady. Oonagh, hello. Hello everyone, great to see you there, Oonagh is the Head of Hydrogen Development at SSE. Great to have you with us, and last but not least we have Tony Green, hello Tony. Hi, how are you doing? Yeah, good thank you.

Good to have you here. Tony is the Project Director for Hydrogen at National Grid. Great to have you all with us today, let's get started straight away by understanding the fundamental forces behind the whitepaper and what makes them so relevant right now.

Matt maybe you can kick us off. Could you just tell us a little bit about the recent industry trends and national priorities that are driving the thinking around decarbonization for industrial clusters right now?

Yeah sure. I guess it all started back with the Paris agreement when the UK government baked the Paris agreement targets into law, which is one of the first world countries certainly the were able to do that. That's then built a whole swathe of regulation and ambition around decarbonization as we would hope to see, particularly in the industry sector with the six industrial clusters, which has been responsible for over 50 percent of the UK's national carbon footprint and our target of 78 reduction by 2035.

It really drives a huge investment profile and opportunity for transformation and opportunity for more sustainable manufacturing in the UK. Yes, plus Brexit as we see obviously, we're going to be wanting to bring more manufacturing back to the UK as well to shorten that supply chain and hopefully decarbonize some of that. So yes, it's important that industrial clusters are at the centre of all of that and how we can help them accelerate.

Yes Oonagh, I mean under the pressure is on there's lots to do there are lots of priorities out there how are they shaping what you're doing at SSE already? With those future priorities in mind, what are you up to and how does this inform that?

Yes, obviously the main trend in the prior sector as we kind of looked at achieving net zero is the movement to a renewable led system which my colleagues in SSE renewables, the projects like sea green and jogger bank are already very much at the forefront of. But as we transition to this new world, we will still need to maintain system flexibility to ensure stability and security of supply.

But also, to ensure continuous access to low carbon power for these periods when wind does not blow and when the sun does not shine, and this is where we believe low carbon thermal power through solutions like carbon capture and storage and hydrogen has a key role to play. And this thinking very much aligns with recent government policy commitments in these areas. Including the recently announced 10-point plan and more recently the UK's first ever hydrogen strategy, and obviously the continued progress that's being made on business models for these first for client technologies.

But these policy initiatives really place the UK as an international leader in net zero and a shining example for the rest of the world, which is COP26, and coming up quite soon this is an opportunity for the government really to move from that commitment to rapid action to see the foundations for net zero and these new technologies in place by 2030.

I mean you've given us a little bit of a layer of the land there, I mean that takes one heck of a meticulous approach. There are so many different sources of new energy, new priorities, new regulation, COP26 happening. I mean there's so much going on, so I guess you really have to start to take this in your stride Oonagh. Really start to lay out priorities as you go forward even if they change later on.

Very, very much so and as the phrase goes a lot on but now it's about that movement really and using COP26 as movement into action and to getting those foundations into the ground.

Yes. Toby let's bring you in, what key features for you of industrial clusters are influencing their decarbonization priorities? You know, what are they up against?

I mean I think what's interesting about industrial clusters and Oonagh and Matt have laid it out pretty clearly, is that they're these areas of intense economic activity, so they're really important to the UK to livelihoods but also intense energy consumption, and therefore emissions. And they represent numerous different industries that are co-located as well and that's an really important feature here.

But that means together they've got an obligation and an opportunity to work very differently to tackle a number of common issues that we have both with respect to eliminating carbon emissions. You know, 50 percent of the carbon across the UK, that's a massive target to go at and they can really get at that.

But then also in co-location there are also things around improved air quality, driving jobs and moving into you know a low carbon economy as we move forward. So that these fascinating areas of opportunity for us, and what is great is what we can learn in one, we can also apply elsewhere around the world. So, I think important is the leading role that the UK is playing in it. And we've really done as accenture recently did some work with the World Economic Forum, and we've looked at so what are some of the keyways that industrial clusters can tackle these challenges. We've identified for which I'm sure we'll touch on as we go through.

But around system efficiency, how they collaborate together, how they reuse materials circularity, electrification of heat or renewable heat where we can where it's not too heat intensive in some of the processes. And, hydrogen and carbon capture and you know I would bow to Oonagh and Anthony on much of that but look forward to the conversation.

Let's go to you, look every cluster every industry has its own set of priorities there are many there we've already heard. How are you and the National Grid working with them to try to find the best route forward? And that'll be I guess on mass.

Yes, so picking up on a couple of comments there that Toby made we are thinking about them in terms of clusters but one of the key things we're trying to do is join them back together again.

So, we've got to focus on decarbonization through the best routes possible whether it be electrification or whether it be hydrogen and CCUS, whether it be green hydrogen and so on. But one of the things we've got to be able to do is make sure we're resilient. So, point solutions are not particularly great for resilience. So, one of the things we've been focusing on is how can we actually transition the network we've got today to be able to support clusters of the future?

So, today we supply two-thirds to three-quarters of GB's energy through the national gas transmission network. So, I'm currently looking at how do we repurpose around 2000 kilometres of that to be a hydrogen backbone for the future that actually supports the decarbonization of the industrial clusters. So, you stop thinking about the most point solutions you actually then provide resilience between them and you don't just have to look at the industrial clusters, you can look at all of the industry between them.

So, you start eating into the rest of the decarbonization challenge that's further down. So yes, you can learn from each one we need all of them to get going but then we can join the dots, and that's where we can really accelerate.

It sounds as though that's it's the glue, it's the working together, it's the transition between them. It's like smart cities in some way, you know if you can start to bring them together then those disconnections become less important.

Absolutely, I mean the point of resilience is a really key one. I mean we operate our network today I think it's 99.96% resilient. You know we just don't have outages in it. Industry has always got the energy that it needs to run.

So, in say a hydrogen world where you've got an electrolyzer running or you've got an SMR running you know are you going to have that level of reliance when you come back to do maintenance, or whatever. If you've got a pipe that's coming from the next industrial cluster you can bring that in. Equally, you've got access to storage and one of the things we've got to really think about in this energy transition is how and where are we going to store the energy we need. Oonagh said earlier what happens when the wind doesn't blow and the sun doesn't shine, hydrogen is our answer and hydrogen we can store as a gas and we can store it in the same way as we store natural gas today, but we're going to need lots of it. So, we need pipe work to link those points.

I think it's really exciting. There's a lot in hydrogen technology there's so much fascinating stuff going on, really quite exciting. Matt look chapter two of the white paper looks at a systemic efficiency it looks at circularity looks at electrification at scale we're already chipping away at that. What part do each of those play in in this overall equation?

They're pivotal for us to be able to succeed in the future. I mean the systemic efficiency has to be achieved we were able to leverage technology like data ecosystems to deep data analytics, IOT is obviously one of the enablers there as well as the technology. To be able to measure that level of granular telemetry from devices and from assets, to be able to understand the efficiency levels right across the manufacturing supply chain.

Right across the energy supply chain, across supply chain as a whole, but also, we need to start measuring things like natural equity and impact and natural equity as well and building that into our business model. But that systemic efficiency has to be progressive, has to be continuous. It can't be something we just do once. It has to be a continuous development of efficiency so that we reduce cost, we remove volatility from market and we increase the operational efficiency that is being demanded by our consumers, and our customers and our planet as a whole.

Yes, super key. I mean the opportunity for the circular economy and regenerative capitalism is absolutely massive both economically but planetarily as well. No business model is predicated on anything past the point of extraction, we need to start minimizing the

amount we extract from the world as we all know in our finite resources and other areas, so you mentioned their widespread electrification. It's just a widespread energy demand and that's only going to exponentially grow over time. We're seeing that new processes take more energy, in order for us to be able to do that we build this incredible recycling and circularity capability hopefully that we could in the future again, that's going to need probably more energy than we took to take things out of the ground in the first place. So, we need to have to answer is a perspective, we need to have a grid and a capability to be able to support that for the future moving forward.

Toby, we've heard a lot about Hydrogen, the excitement there. There's a lot of exciting stuff there if that can be harnessed and stored. What are your takes on the potential of hydrogen? Also, carbon capture and storage? What do you feel about those?

So, I think that the two go very much hand in hand in many ways and Tony already mentioned hydrogen is a really promising form of storage for us right, both now and long term.

But at the moment, probably more blue hydrogen. Tony you said it's going to take a while where are we going to create the green hydrogen in time? And that comes with you know carbon capture requirements alongside it. But then your hydrogen early doors again hopefully you know we'll see it in areas where there's very high temperature industrial processes that that need the support from that hydrogen. And so, what's interesting is they'll both kind of move along into some clusters may be far more appropriate to make these breakthroughs than other clusters depending on the mix of industry that they have.

But both of them require a bit of collaboration around who's going to invest in it, how are we going to share some common infrastructure around it and how we're going to make sure we're getting the right balance. So, if we're making hydrogen and we're emitting CO2, and making it because it's a good storage or it's an alternative to get up that innovation curve on you know cleaner heat intensive heat then we've got a way to capture that hydrogen.

And then long term if we do get the green hydrogen that we're looking for Tony, and it's in there it's kind of the right sort of places. There are still some balancing roles to be played. You know from gas-fired power stations and that they're super important technologies but for me we're going to have to club together to get the economies and the return on the investment to make sure these technologies thrive.

Yes, and Tony that you know, yes, the question of green hydrogen is a very big one but perhaps for now, you know next steps to make it work. Toby talks about collaboration that's got to be important? That in fact, to bring everybody together that is probably one of the most important things apart from the technology.

I think that's the key thing on all these projects because no one of us have got all the answers. So, whether you're focusing on blue hydrogen trying to get CO2 off the ground into particular industrial solutions or power stations, that brings together a whole group of different people from a technology perspective, from the consultancy arena, from the infrastructure providers themselves and some of this cuts across the various regulatory models that currently exist.

So, this is one of the challenges I think as we move forward, I think with the whole hydrogen agenda we get a little bit hung up on the different colours. And actually, I often refer to blue hydrogen as a transitional technology. We are going to need it, we are going to need every colour of function, and whether you focus on your turquoises, your pinks, your yellows, there's all sorts of other colours out there that we could get into if we really wanted to.

But you know my personal views, we're going to need all of them. I have to say I'm colour-blind to hydrogen because my job ultimately is to move hydrogen from A to B in the new world so I don't care what colour it is. But we are going to need lots of it. The blue is a transitional technology, might take us out to even 2050, 2060, 2070. That gives green the

opportunity to scale so I think the key is making use of it in the right places.

So blue hydrogen, probably into the high temperature industrial places, green hydrogen first of all probably into heavy goods vehicles and moving it around in that transport sector. That's where you've got the win-win. So, the industrial clusters can benefit in multiple ways by having both blue and green available to them.

And from that, we can scale to lots of other things as well.

Oonagh, while we're talking about collaboration, any examples that you have on how you're working with you know industry on some of the solutions and what their impact already is or could very well soon be on carbon emissions? How are you working with people?

Yes, I think in SSE terminal in particular, we see ourselves as an enabler or not only prior factories decarbonization but industrial decarbonization and I suppose we see it in three ways. Firstly, together with our co-development partner Equinor. We have built a suite or sorry we're looking to develop and hopefully build a suite of low-carbon thermal projects which as I said will complement the renewable system. So, we are looking at power stations fitted with carbon capture and storage in Scotland and in the Humber region, and then in addition to that on the hydrogen side of things we're looking at a full value chain.

Power for using hydrogen and it will be at scale. But that also includes hydrogen storage and that's in the Humber region. What all of those projects will ensure is that when the wind doesn't blow and when the sun doesn't shine, you do have continuous access to low carbon power and the flexibility that the system requires and that means that those industrial players have the option for decarbonization through that electrification.

In addition to that, I think the other key enabling role we have is all of those projects that I have just listed there have been un-locked by clusters. So, without the cluster movement in both Scotland and in the Humber region we would not have the ability to develop those power stations.

But, our role in this is we can be an early adopter. Every technology needs an early adopter, and the bonus of having power here as an early adopter is that because of the scale of the CO2 emissions or because of the scale of the hydrogen we require, we can actually underpin the business case for that shared infrastructure within those clusters. Meaning that when it comes to the time when it's right for the industrials to move, that infrastructure is already in place. And then I think coming back to a point that Tony made around hydrogen, as you do scale up hydrogen demand and as industrials switch to hydrogen usage.

There is going to be a need to balance that supply and demand and at projects like our hydrogen storage project at Aldebara in the Humber is exactly trying to enable that. So, it's offering that solution as the hydrogen economy scales up to match that that supply and demand. So really, I will say the answer really is we see ourselves in thermal, while developing our own projects also enabling the decarbonization of industrial players, in a in a more wider way.

So, it was important to go and we've heard that's quite a glimpse isn't it? That's quite a glimpse of how clusters can work together and start to take an integrated approach. You know any of the thoughts on how that involves? How clusters can work together in this case? Yes, clearly SSE have worked really hard to bring everybody together and push people in the right direction or bring them in the right direction. Any other thoughts their Matt?

Yes, I mean there's lots of cooperation we're starting to see, so think about consortium-based outcomes to de-risk things like innovation and investment. Work with the organizations like the high value manufacturing catapult who are built and the whole catapult entities are there built to bridge that private public investment funding capability to access those investment funds.

Be able to share across the industry, look at your supply chain. Really think about how you

could work with that supply chain and the financial houses to release capital for this sustainable transition in line with the COP26 goal of 100 billion over the next 10 years.

Government are massively getting behind that. So, there's going to be funds there for you to tap into to de-risk, that investment not just financial risk but also that R&D piece as I said. That integration piece is really going to be important work with big organizations and other organizations to help you accelerate the data culture. So, that you can share data in a more open and transparent way, to start bridging some of these challenges that everybody faces.

Absolutely, Toby you hinted at earlier on let's talk about, and let's continue Matt's points on open data also digitalization. Look, why and chapter three of the white paper does look at that, why are they so fundamentally important to cutting emissions? Why is digitalization, open data you know in some ways at the heart of making it work?

I think it's a massively complex problem and you've got so many different parties that need to play different roles. And if we're going to deliver on an energy transition that's affordable and fast enough for everybody, and that means real commitments from businesses and from consumers and it means doing that now as soon as we possibly can.

I think it goes beyond just proving investment cases with some data, it actually moves into how we deliver on this, how do we operate together? Without huge checks and balances and audits. How do we know that everyone's changing the way they're operating? Or if you go into maybe some of the huge capital projects that we're going to have to develop and deliver. We can change the way we work right from the earliest design phases to try and accelerate some of these and take some cost out. But as I say, I think you know the currency for all of this is data and digitalization, and that that's going to be how we can collaborate and collaborate faster.

Oonagh for you, how is the recent change into more digital measurement and you know asset maintenance? How has that started to affect you and have you seen benefits from that?

Yes, as a business with you know asset spreads, assets but also people and spread across the UK and Ireland. Digitalization is obviously key and it's key to transforming the way we work basically. But also, with regards to company performance so you know data, using our data intelligently means that we can create. You know, we can enable a coordinated approach across our fleet, and what that does is it capitalizes on real-time information. Meaning that we're making smart business decisions at the right time when they're required.

And our most recent example of this, or ongoing example, is obviously our QP2 power station in the Humber. And it is a first of a kind, it's due to be the most efficient plant in in Europe when it comes online later next year. But we have been working with Siemens, who are obviously our technology partner on that plant, to integrate AI based solutions to optimize the plant performance and what we are doing, is we're taking the learnings from that process and obviously we'll look to apply them to our entire fleet.

But it's also about day-to-day performance. It's about smart devices and wearables for plant maintenance and it's about potentially using robotics for repetitive tasks. And then I thought the other and very key thing to SSE, is about improving safety and security. And especially in you know the cyber security risks world. But, also with regards to you know virtual safety checks, and you know risk assessments and ensuring the information is in the right place at the right time, for people to use it to ensure that our safety and security is quite a candy basically.

I mean Matt, there are so many different elements there, so many that can be affected and can be improved by digitalization, but on the macro scale operational strategies also you're looking at business models. These can perhaps be improved so that your business is fit for the future and is working in a more, well a more efficient way.

It's fundamental to the future of business to be able to do short, medium and long-term

planning now. So, tactical becomes strategic just as much as some of that long-term piece. Imagine if we get to a point where we've got a digital toilet for the UK and its energy infrastructure, we can understand the grid, that know exactly what's going on in the demand profile can forecast both they need to be spending in order to maintain the outcomes. As a business you could hook into that.

You could understand exactly where to build your business, where to scale your business into, you could know exactly where you tap into the skills of the UK citizens. It could be incredible for the organiser, for the country as a whole, for the economy and closing some of those socio-economic gaps as well. So, pivotal success moving forward in a sustainable way

Absolutely. Toby big question, it's an old-school question. But how do you get lots of stakeholders, different people within the business, people outside the business, all these partners to get behind the new solutions, and make decisions together, and work in the same direction? Because everybody has to do this to build momentum.

I think you know with the commonality that is coming out of this call it's really encouraging right, and I think people have got the bit between the teeth there's true common purpose and goal. But, I think like most things, it's about transparency. And you know if you're going to start to work together, take risks, invest together and commit to you know new value pools and that could be in terms of return on investment and most importantly in terms of you know CO2 impact. That means you need real transparency and all members of a cluster or any ecosystem that's coming together to tackle a much, much bigger challenge means that they need to have confidence that the value pools are there.

They know how you invest, and you impact them, that you are going to change your own consumption patterns and you're confident that others are changing theirs. And I think that with you know the sophisticated modelling and you know Matt mentioned the digital twins, or using some of the open data and sharing that then actually we can be more upfront with that transparency. From identifying a value case, to supporting you know multi-party investment decisions, to almost running the commercial structures that you might need in an ongoing marketplace.

That is super-efficient, because I don't think anyone's pretending there's massive you know margins from doing things differently, what we have to avoid is cost and checks, and balances. And we need to know that everyone is spending all their time just focused on the price. But I think we can do that and I think we're starting to have ways to get the transparency that we need.

Tony, you obviously agree with that. How's it work at the National Grid, I suppose? You know? That transparency and trust therefore also if you handle the information, the working together well, means clarity, which is very important to what we're talking about today.

It absolutely is, and Toby and Matt provided me a great segue there because work we're doing at the moment on that hydrogen backbone that I talked about earlier. We call it project union. We've been talking over the summer with over 50 key senior stakeholders around industry, around government, around regulators, talking to them about the potential backbone. Now, the potential backbone, we've been evaluating on some very high-end optimization tools that we've been running on Microsoft's cloud since before Christmas, which will put a smile on Matt's face I'm sure. Because ultimately what we're trying to prove is that the plans we've got ahead are absolutely needed under all eventualities, we're trying to make sure that I call it, we're trying to find the no-brainer solution that everybody can agree on.

And that's challenging, trying to get everybody on board bought into it, so we've got a combination here of very proactive stakeholder engagement but also utilizing that digitalization approach. Utilizing all the tools we've got in our arsenal now, we couldn't have done this 10 years ago. So we're using all the high-end optimization tools to evaluate all of those potential scenarios and we're sharing those with people and showing them.

So, you know we and ultimately that allows us to adapt and adopt as different things change as we go forward.

Yes, you know no-brainer solutions often have to be simple, now there ain't no simple here, I'm not saying I'm not seeing a lot of simple. What I'm seeing is a lot of people moving in in a similar direction which is fantastic. But the complexity is part of this and Matt the chapter four of the white paper does look about, look around, complexity, looking at risk, around size, these are new projects, these brand-new projects, new ways of working. What do you think the key priorities should be in terms of de-risking? Or trying to manage the solutions well? So that everybody is working together that the projects do come to be at the end of the day?

It is a moment to ask but it's there's also the age of things how do you eat an elephant. But it's about working in partnership, I think what we've seen through covid and through sustainability, is that the time is now for net new business models, net new partnerships. We don't all have the answer but we're all very keyed in to solving towards the solution and not just for economic or competitive advantage.

This is something that we all want to be part of. And we've got everything from large organizations like ourselves, institutions like the National Grid, the government's, start-ups, there's a huge wealth of capability, mind share creativity and the finance as well that's sitting there waiting as well. So
we really can crack this, it's more about let's have a think about how we can join up in more consortium-based thinking.

How can we open risk level to each other? So that we're not all taking it on or individually taking on too much risk. And it's got to work. We've got to do this to save humanity, the planet and the ecosystem that sits around us. So, let's approach it with that, holding the value of the outcome as high, if not higher, than any economic value we could ever place on it.

Absolutely, I think you've said it all really but I'll throw the final question to Oonagh really. For you what is the power of really working together making decarbonization a collaborative effort? What do you think that does for us? And you know how excited can you be about it? With the great news we've heard today

Yes, I think I've been very lucky over the last two years. I've had a front row feature to the power of something like zero carbon Humber. I was there on the first day of the first meeting of the grouping of the partnership and I've seen where we have come in that journey. So, where competitors, natural competitors have come to the table and been united behind a common goal which is to secure the low-carbon infrastructure and unlock all our projects.

But I think one of the key parts of it is looking across that grouping, so to have to make these projects a reality. It is a complex value chain and there are interdependencies in each part of that value chain. So for example, in zero carbon Humber, yes SSE are experts or we believe we're experts in developing large capital infrastructure projects. Particularly in power, but the likes of national great ventures have the experience in developing pipelines and operating you know regulated assets. While the likes of Equinor, and our partners BP in the east coast doctor have that offshore, and critical offshore experience of those elements. What that means is by all of those coming together, it gives investor confidence. Because it knows the right person is doing the right thing with regards to their expertise. And what that means is for companies like mine, when they look to their right, or to their left, with regards to those entry dependencies, they have that investment confidence. And similarly, with government, it's the right people doing the right thing in in the right places.

But the other part about this, and I think that sometimes this isn't just about technology, this is about creating I suppose, well not only creating, but safeguarding and creating jobs in industry heartland. And the key message here is that these projects, yes, they're technology, yes, they're technical fees. But they are also about you know, really bringing these industrial heartlands back to life in a in a you know a new way.

Absolutely well said. Well, I'm afraid that's all we have time for. Thanks very much to our guests, Toby, Oonagh, Tony and also Matt for sharing their wonderful insights and their forecasts for the future.

There's a lot of potential to decarbonize industrial clusters collaboratively. We've heard a lot of the stories and a lot of the insights there from our panel.
There's a lot more to understand, and that's exactly what the white paper does. It's available to download right now so please do that, it's a fascinating read.

Until next time, all the best, take care.