

NI ENERGY STRATEGY ROUNDTABLE

Options for Creating a Flexible and Integrated Energy System



**Cleaver
Fulton
Rankin**

IN PARTNERSHIP WITH
**Northern Ireland
Electricity
Networks**

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Foreword

A major sea change in how we make and consume all forms of energy is needed if we are to achieve net zero carbon emissions by 2050. At the core of this transition sits an energy system that will include electricity networks, carbon capture and storage networks and probably hydrogen. It will be a complex web of interaction that will need to be smart, flexible and consumer-focused.



**Stephen Cross, Director
at Cleaver Fulton Rankin**

The Department for the Economy is currently seeking views on how best to create such a system, as part of its consultation on options for a new Northern Ireland Energy Strategy. SONI and NIE Networks have also been seeking feedback from consumers and the industry as they too try to plot a path to net zero.

Cleaver Fulton Rankin, in partnership with NIE Networks, was therefore delighted to be able to contribute at such a vital stage in the ongoing debate with a roundtable event that heard from a wide range of stakeholders and experts, including the Utility Regulator, system operator, industry and consumer representatives as well as academics.

Event chairperson, Jamie Delargy, ably drew out valuable insight from all 15 participants. Key points from the discussion included the opportunity to develop hydrogen generation as a means of harnessing onshore and offshore wind energy, and options for replacing oil and gas in our heat and energy systems.

We hope that the discussion will help to inform responses to the Department's consultation and the wider debate on Northern Ireland's transition to net zero.

June 2021



Executive Summary

On Friday 4 June, Belfast law firm Cleaver Fulton Rankin, in partnership with Northern Ireland Electricity Networks, convened many of the key actors within Northern Ireland's energy sector to debate how the industry should create a flexible and integrated system over the coming decades.

Northern Ireland has made good progress on rolling out renewables, accounting for almost 50% of total electricity consumption in 2020, according to the Department for the Economy (DfE). However, the goal to achieve the binding target of net zero emissions by 2050 will pose considerable challenges for what is still a largely centralised, fossil fuel-based energy system.

To enable this transition, it is generally accepted that there needs to be far greater flexibility and connectivity. But what will this look like, how will it affect people and how do we make it happen? The roundtable heard potential answers to these and other questions and were reminded that there are no less than three bodies currently seeking opinions on these issues.

Among them is the DfE which published *Policy Options Consultation Paper* at the end of March. Meabh Cormacain, Energy Adviser at DfE, gave the opening presentation when she praised the great strides made in renewable power generating capacity, but added that there needed to be greater attention paid to the demand side, and especially at a smaller scale. This would require engagement with consumers, she said.

Paul Stapleton, Managing Director at NIE Networks, echoed Ms Cormacain's message, saying: "Consumers are not only power users now, but also providers of solutions, whether through demand-response solutions or controllable nodes." The role of the network company will shift from building and managing technical network assets to one where we will be at the centre of an integrated system, he said. Referencing the recent publication of *Networks for Net Zero*, he called for feedback, saying the company "is going to need a lot of engagement with customers and all stakeholders across the industry to figure our way through this."

Emma Morris, System Operational Manager at SONI (the system operator) also flagged up her organisation's document, *Shaping Our Electricity Future*, which closed to consultation on 14th June. The amount of renewable energy connected to the

system today will need to double within the next eight to nine years, which will require development of the network, she said.

Today, SONI is able to operate the system at 70% SNSP (System Non-Synchronous Penetration) but is looking at trailing 75%. To manage this, it is looking at how the markets will need to develop to fund investment in technical solutions to maintain the resilience of the electricity system, and eventually how to manage SNSP of up to 100%, while ensuring that the system is secure and stable. To do that, we need to bring on new technologies, she said.

Dara Lynott, Director at Electricity Association of Ireland (EIA), said that SNSP needs to be at least 85%. "I think that kind of flexibility means that you need to build grid," he said. "Without that grid and without that flexibility you will have a lot of renewables being told to dispatch down." He added that EIA modelling had shown that all interconnection currently planned will be needed, as will a significant amount of battery storage.

Peter Lantry, MD (Ireland) at Hitachi ABB Power Grids, strongly urged consideration to be given to additional interconnector capacity, while Emma Morris of SONI was more circumspect, saying: "We have to be realistic in what we can manage. We are a small island system, so we can only bring in so much. We can only export so much. For me, the key is really the second north/south interconnector."

The remit of the Utility Regulator was also debated as it is not currently obliged to consider decarbonisation, although this is under review as part of the Energy Strategy consultation. This is something that probably needs to change, said Paddy Larkin, Chief Executive of Mutual Energy, a point that the Chief Executive of the Utilities Regulator John French agreed with. "We have to move to a more agile place and look towards the net zero future," he said.

Steven Agnew, head of Renewable NI, also suggested that utility regulation should move from approving investments in the network just in time to ahead of time. "If we know that, then we can make investments in the network now, rather than waiting until the developer is banging at the door," he said.

There was discussion of the role that hydrogen might play, but little certainty. Patrick Keatley, a lecturer in energy policy and infrastructure at Ulster University, said hydrogen will have a role but that he did not know for sure what that would be. "I can see a really strong case for harvesting green hydrogen and using it for power. In Northern Ireland, we have got some characteristics that would really suit that."

Participants also heard how data and digitisation will also play an enabling role. "They are key to achieving our objectives," said Peter Langtry, but added that there is a huge amount of work to be done at the household level and on smart meters. The likes of Google and the Microsoft could produce platforms that enable consumers to actually make money. "Digitalisation will enable consumers to really engage with the networks and with the future decarbonisation story," he said.

Peter McClenaghan, Director of Infrastructure and Sustainability at the Consumer Council warned that consumers should not be left out of the discussion. "We are still struggling to get the message out there about what this will mean for them in relation to technology change, lifestyle change and issues around data privacy."

Karen Arbuckle, Chair of the Northern Ireland Community Energy Cooperative, also highlighted this lack of engagement, saying that there is neither a community energy development body in NI nor community energy programmes.



Welcome from Chair



Chair: Jamie Delargy

Jamie Delargy: Welcome to this roundtable discussion on the Northern Ireland Energy Strategy. We've a great line-up of participants, people playing key roles in the energy industry and the electricity sector, in particular. They will be sharing their analysis with us.

My name is Jamie Delargy and I'm your chair today for this event, which is co-hosted by prominent local legal firm, Cleaver Fulton Rankin, and NIE Networks, with support from public affairs firm, Chambré.

The Energy Strategy consultation paper is a very substantial document. Today, we are looking at just one part of it, chapter 8. It addresses how we should create a flexible, integrated energy system. That is a critical challenge as we decarbonise the economy by accommodating more renewables on the network. In the course of the morning, we will discuss a host of issues, including interconnectors, smart meters and whether there should be support for new microgeneration.

I am pleased to introduce Meabh Cormacain, Energy Adviser at the Department for the Economy.



Presentation

Presenter: Meabh Cormacain, Energy Adviser at Department for the Economy

Meabh Cormacain: I am briefly going to talk through the Energy Strategy. No doubt Jamie will have questions for me but I in turn will have questions for the group.

As a reminder, we have an open consultation on Energy Strategy options. It was published a couple of months ago and closes this month. It seeks views and evidence on our proposed Strategic Framework, one of which is the framework of principles and the flexible and integrated system that we will be talking about today. It also includes illustrative scenarios to 2050 and potential policy options. Today, the focus is on the Strategic Framework.

Our vision, as set out and what we are seeking feedback on, is to achieve net zero carbon and affordable energy. This sets the context for everything that we do. We hope that if we align with all of our key principles and all the policies underpinning that, then we will achieve this vision.

There are five key principles. There is no hierarchy of principles. They are interlocking. They are interlinked. Achieving one will probably mean achieving all, but at the very centre of our energy future is 'you', the consumer. So, when we look at all of our other principles, we should be looking at them through the prism of the consumer, but also 'you' potentially as an active citizen in Northern Ireland. The framework starts from this point, placing you, domestic business customers or consumers, at the centre.

Within those five principles we start, as I said, with placing consumers at the centre. We want to make energy much simpler for consumers. It is not a simple subject, and it is not enough that we just ask people to go and do things, behave differently, install new technologies without giving them the right kind of framework, information and advice. We have proposed to set up a new one-stop shop. We want to enable consumers who want to get involved. We want to protect those who cannot or will not get involved. We want to protect all consumers, but we may have to specify some that need specific protection. We want to ensure affordability and fairness.

Our next principle is about growing a green economy. This is something that is not just about energy. It is something that was captured in the 10X Economic Vision launched a couple of weeks ago by Minister Diane Dodds. We want to maximise

the economic impact of energy policies and have highlighted a few key ones. We have focused on the hydrogen economy as a specific opportunity for Northern Ireland. We know there is a need for greater innovation within both regulated and private industry. We also know that significant upskilling and retraining will be required to deliver the objectives of the strategy.

The next principle is 'doing more with less', a snappy title and it's crucial. Starting with energy efficiency, using less energy, whether that be through setting standards for new buildings, energy savings targets or minimum standards for existing buildings, which implies retrofitting. Then, there is the support that domestic and non-domestic consumers will need to actually implement measures in their own homes or businesses for energy efficiency. We want to make sure that people have trust in the work carried out by the industry and the installers that are coming into their homes and businesses. We also want to look at the behaviour of consumers. We want to help people change how they use energy – maybe within the home, maybe at work – but, beyond that, how they travel, how they get around. So, doing more with less is about energy efficiency to a large extent with regard to the fabric of buildings, but it is more than just that.

The next principle is to replace fossil fuels with indigenous renewables. There are really six words here: decarbonised power, decarbonised heat and decarbonised transport. Those six words represent a very significant amount of underlying policy and a very significant amount of work not just for DfE but for other departments and, indeed, for delivery bodies, including quite a number of people on this call. It is a simplistic way of saying we will decarbonise the energy sector, but just captured across these three key areas.

Decarbonising power, heat and transport will be crucially underpinned by the final principle, which is the one that today's discussion is going to focus on – a flexible and integrated energy system. This underpins a lot of what we are trying to achieve elsewhere. It is almost a framework for the 'how' of the decarbonisation of power, heat and transport. We have some specific proposals here.

We have said that we want to ensure flexible power generation, that we align demand, supply and markets and create the framework for that. This then requires a smarter, more digitised system. I would point out that we have been very successful in integrating high levels of renewables. We have been very successful at bringing on board and exceeding targets for renewable generation. The supply side has been absolutely excellent in terms of managing the network. But what we have not been as good at is the demand side, and especially at a smaller scale. So, how do we enable that flexibility and that responsiveness and that engagement at the demand side, and in particular for consumers through smart meters?

We also propose to facilitate decentralisation. We talk about active consumers here and about opportunities for energy communities and rolling out heat networks. There will be localised approaches to some of the issues, particularly decarbonising heat. There is no suggestion that we have one answer for everywhere in Northern Ireland. There is likely to be a diverse and potentially localised approach to decarbonising heat.

A flexible and integrated system, as already noted, will enable key aspects of other principles within the Strategy. You cannot deliver some of the Strategy without really looking crucially at this particular principle. There are areas where we believe it is important for Northern Ireland to take forward a flexible, integrated system, but we are also bound by EU Directives on flexibility and demand-side management, for example, and on increasing storage capacity and unbundling. People on this call are much more familiar with the relevant recast directive than I am but we are being pushed in a certain direction. But we are not doing this because we are being pushed. We are doing it because we also think it is important.

I see this personally as one of the greatest opportunities to create this flexibility and integration. We have done so well in integrating significant renewables. We have the wind resources. We intend to develop further renewables resources. Northern Ireland should have the capacity to manage and maximise these resources. It is really exciting, but it is a challenge because I also suspect – and I would be interested to hear your thoughts – that it is not something that we have, certainly within policy, driven forward up until now. It would be good to hear your thoughts on how we have approached this within the consultation and what steps you think we need to be taking as policymakers going forward.



Opening Remarks

Presenter: Stephen Cross, Director at Cleaver Fulton Rankin

Stephen Cross: I am delighted to welcome all of you to this roundtable discussion supported by ourselves, Cleaver Fulton Rankin, and NIE Networks. I am a Director at Cleaver Fulton Rankin, which is a Northern Irish commercial law firm with a strong focus on the energy sector. So, following the launch of DfE's consultation on policy options for the new Energy Strategy, we were very keen to organise a well-informed discussion involving a wide range of key figures in the energy sector. Our hope is that today's discussion will allow a mix of perspectives to be shared and to help to inform consultation responses.

I want to thank Meabh for joining us to set the scene on behalf of the Department. I hope you, Meabh, and the Department also find this morning's discussion useful. It is a testament to the importance the energy community in Northern Ireland attach to the new Energy Strategy that so many of you have come forward to join this discussion, so thank you.

As you say, Jamie, I just wanted to make a few general points about the delivery of the policies and the five principles outlined in the consultation paper. As Meabh says, it will be extremely important that there is a means of driving forward this policy. Looking at how government is set up at the moment, we have five government departments responsible for the different aspects of delivering sustainability, energy, transport, heat and social housing. We've the local councils, with their role in planning. We have seen, for example, how planning policy can conflict with the needs of renewable generation. So, it really highlights the difficulty and the challenges there will be in delivering these policies.

You know, it might be helpful, maybe, to think about the role a single agency could play in helping to coordinate the work of the departments, to oversee the process of delivering on the policy and the five principles, to add transparency and to help achieve these objectives. Having said that, although a single agency must have a degree of power and influence and power to make policies, I would also say that the industry and the market need some space to innovate and to deliver solutions, as well. I think that would be very important.

Northern Ireland as an energy community has the benefit of seeing how other regions in the rest of the UK and Ireland have shaped their own policies. There are a lot of examples we can take from the work that has been done. Hopefully, we can use and adapt those solutions that other areas have found to shape our policy. I am sure that will play a large part in developing the framework. I will now hand back to you, Jamie, to get the discussion going. Thank you.



Roundtable Discussion

Participants: Stephen Cross, Director at Cleaver Fulton Rankin; Paul Stapleton, MD at NIE Networks; Terry Waugh, CEO at Action Renewables; Sean Connolly, Interim Head of Business Acquisitions at AIB (NI); Karen Arbuckle, Chair at NI Community Energy Cooperative; Steven Agnew, Head of Renewable NI; Dara Lynott, Director at Electricity Association of Ireland (EAI); Paddy Larkin, Chief Executive at Mutual Energy; John Young, Head of Policy & External Relations (Ireland) at SSE plc; Chris Osbourne, Policy Officer at Ulster Farmers Union; John French, CEO at Utility Regulator; Emma Morris, System Operational Manager at SONI; Dr Patrick Keatley, Lecturer in Energy Policy & Infrastructure at Ulster University; Peter Lantry, Country MD for Ireland at Hitachi ABB Power Grids; Peter McClenaghan, Director of Infrastructure and Sustainability at Consumer Council

Jamie Delargy: Well, of course, work is already underway in identifying the right pathway towards creating a flexible and integrated energy system. SONI are consulting on the *Shaping Our Electricity Future* document and, of course, NIE Networks have published *Networks for Net Zero*. I want to find out what the reaction has been so far to that. Bringing in Paul Stapleton, Managing Director at NIE Networks. What have people been saying to you about your document and the ideas contained within it, Paul?

Paul Stapleton: Thank you, Jamie. You are right, we published a strategy paper called *Networks for Net Zero* as our contribution to the wider debate on the Energy Strategy and to support our own and maybe other people's responses to the consultation.

We have had a lot of very active engagement with stakeholders in relation to that paper. It sets out how we see the role of the electricity networks evolving and how our role will evolve as we support the achievement of the aim that we are talking about here this morning – an integrated and flexible energy system supported by renewables. Essentially, the challenge we have as an energy system is to move from a system that is dominated by fossil fuel generation operating two fixed networks to meet customer demands to a new system, which will be driven almost entirely by renewable energy sources, which are largely intermittent because the wind doesn't blow all the time and, as we know all too well, the sun doesn't shine all the time in Northern Ireland. Hence, the need for that flexibility. We need to do that in a way that does not cost the consumers. The future of energy needs to be affordable, as Meabh outlined. We also need a reliable system. If anything, society will need an even more reliable energy system as we move forward and we take on board the outcome of the implications of the Covid pandemic, with more people working from home, and so on.

So, that's the challenge for us. Our role as a network company will move from traditionally being primarily about building and managing technical network assets, moving power from central power stations in a radial way out to distributed customers to one where now we will be at the centre of an integrated system. There will be many different solutions. Certainly, there will be some thermal generation, a lot more renewables, distributed energy resources and battery storage with hydrogen playing an increasing role. As Meabh mentioned, it will be about engaging consumers. Consumers are not only power users now, but also providers of solutions, whether through demand-response solutions or controllable nodes. This may be electric vehicle users giving back power when the network needs it and taking power when there is an abundance of power available, for instance, when the wind is blowing.

We see the solution as a multi-faceted, integrated, flexible energy system with the electricity network and our role at the core of that. From being a traditional network operator, we are becoming a distribution system operator, in much the same way as SONI acts as the transmission system operator. There is a huge challenge for us to progress in that transition. Various aspects and strands of that are outlined in the strategy paper, *Networks for Net Zero*. We have also some questions and we are seeking feedback on that paper. It is available on our website.

This is my final thought – we certainly do not have all the answers in this space and we're going to need a lot of collaboration, a lot of ongoing engagement with customers and with all stakeholders across the industry to figure our way through this going forward. But we are certainly confident that there is a pathway to achieving the Department's vision of net zero carbon and affordable energy. We believe NIE Networks and the electricity network in general has a huge role to play in delivering that.

JD: I will pick up with you later on this transition from DNO to DSO. At this point, I would like to bring in Emma Morris, who's System Operational Manager at SONI. Of course, your document has been out a bit longer than the NIE Networks version. So, can you give me some idea of how people have been responding to what you have put out in your consultation paper?

Emma Morris: Our *Shaping Our Electricity Future* consultation closes on 14th June. We would really welcome feedback on that, so I would encourage responses from across the industry. We have had a lot of positive engagement around the industry. SONI is recognised as a world leader in integration of renewable energy on the transmission system and I think it is important to note how far we have come, both SONI itself along with our colleagues right across the industry, in terms of integrating renewable capacity into the system.

But we have a long way to go. We are currently able to operate the system at 70% SNSP (System Non-Synchronous Penetration). We have started a trial looking at 75% SNSP. As is set out in our consultation, there is a huge challenge ahead of us. We look at that in three ways:

- Around the network itself and how we need to develop the network to hit our targets for 2030. The amount of renewable energy connected to the system today will need to double within the next eight to nine years.
- We also look at the markets within the consultation and how they need to develop to fund investment in technical solutions to maintain the resilience of the electricity system with more wind, solar, renewables on the system.
- The big ones for me, as System Operational Manager within SONI, are the technical issues with managing renewables on the system. How we manage the levels of SNSP up to 100% at any one time, while ensuring that the system is secure and stable. To do that, we need to bring on new technologies. We need new policies, and we need new tools in order to help us manage that.

This is a huge challenge for SONI and the industry, and I echo Paul's point that we need collaboration right across the industry. Feedback so far has been very positive. The industry wants to engage with us. They recognise that need for collaboration and the fact that we all have to work together if we are going to achieve these ambitious targets of 2030 and beyond.

JD: Thanks very much, Emma. I am going to state a principle here, which is that regulated companies need regulatory approval for investment, on which they seek a return from customers. I think that is fairly straightforward. In light of that, does the regulator's mandate need to be expanded to take explicit account of the decarbonisation target? Paddy Larkin, Chief Executive of Mutual Energy, would you like to respond to that?

Paddy Larkin: Yes, I think it does. I think the DfE consultation paper has highlighted a few areas where the obligations on the regulator need to change. I guess the regulator needs that cover to move forward in a serious way with the regulated companies. I do think there is scope for the regulator to move some things on in the meantime.

Take one of the things that we are involved in, gas. The regulator has an obligation to promote the development of the natural gas system in Northern Ireland. Is that right, going into the future? It definitely needs to be debated and considered. The regulator does not have an obligation to decarbonise the energy system. That is not one of its key priorities. Should that be in there? It probably should if this is something that we want to deliver as a society. So, I think those matters are in the consultation under priorities. I think there are nine priorities, including supply, et cetera, that feed through. I think the regulator has a role and government has a role. Some of the things we talk about will come down to regulation and managing markets, but I think there are other areas of the future that will come down to major decisions at government level, while taking into account cost/benefit analysis for customers.

For example, interconnection in GB is pretty much taken on a case-by-case basis and the government determines whether or not that is of benefit to customers and, if it is, then it provides some long-term underpinning for those long-life strategic assets. There is no question of running competitions for it. Nuclear build in GB, again, will not go through a competitive market process. There will be long-term decisions taken in terms of price controls. I think those sorts of things will come into Northern Ireland, as well.

I think there are some major infrastructure questions in Northern Ireland as to what the future's going to look like. We have a great resource in terms of wind, and we are making good use of harvesting that wind. We can use it whenever it is blowing, absolutely, but where does power or heat or transport come from when the wind's not blowing? That is a fundamental question. There are different timeframes for that. SONI have done great work in terms of managing that within a period of a few hours or over a day. But what if you have long periods of time without wind, or with low wind?



Currently, when the wind is not blowing we produce it from thermal-fired generation. The markets we have to support that and encourage thermal-fired generation and we are building more thermal-fired generation in Northern Ireland. But, in the long term, what are we going to do? Where is it going to come from? We can interconnect but that is just burying our heads in the sand. Are our neighbours going to build something to provide it whenever the wind's not blowing? These sorts of things need some pretty major central planning and long-term infrastructure. We will need decisions. So, there's regulation and there's government involvement in terms of supporting and underpinning where we are going.

JD: I want to return to that vital question of whether we need conventional fossil fuel generation as back-up. I want to bring in John French, Chief Executive at the Regulator. Before you respond to what Paddy was saying at the outset of his remarks, I just want to point out that last week the GB regulator, Ofgem, approved funding to facilitate the installation of 1,800 ultrafast charging points at motorway service stations. Now, these are badly needed here but we don't see the same movement. Is there something you could do now, before your mandate is changed, to take into account the decarbonisation target?

John French: I think we already are. Since taking the role over in November, everything I have seen within the Regulator, and everything I have seen with the Regulator's board, is fully 100% behind the Department in the move to net zero. I know there are papers going to the board next month around charging points. We have been talking about how we can help NIE and other participants within Northern Ireland to facilitate that. I know Ofgem had their announcement last week, but I would probably say we were ahead of them before that. Some of these things are just a matter of time.

In terms of what Paddy was saying around the Regulator's duties, we fully agree with that. Our duties in energy were set out back in around 2003. That reflects the market that was present then. We have to move to a more agile place and look towards the net zero future. Our duties within this have to be taken account of. We are a body of statutes, and we have to move in line with our statutory duties. So, it is important that public policy is set correctly towards the 2030 targets and then on to the 2050 targets. Then, we can correctly support the Department and others within the industry in achieving them.

JD: I want to bring in Steven Agnew, head of Renewable NI. Steven, we have heard what John has said but do you think more could have been done more quickly? Are we laggards, really, in the sense of the decarbonisation agenda? I am not placing the blame on John! I just want to make that clear. We seem to be behind. What is your view?

Steven Agnew: I do not know if I am stealing your language or you are stealing mine. I have said in the past we risk going from leaders to laggards. I mean, in 2020 we were at 49% renewable electricity, which is world-leading and something to be incredibly proud of. But, at the same time, we had no new large-scale renewable connections in 2019 or 2020. Renewable NI is focused on getting the target of 80% renewables by 2030 but to deliver that, we will need three policy areas to align. That is the market area, grid and planning. We are focusing this part of the conversation talking about grid. I think I may be paraphrasing NIE a bit, but we need utility regulation to move from approving investments in the network just in time to *ahead* of time. Make anticipatory investments. I share with NIE the pipeline of renewables, the projects that are coming forward. I share that with NIE. I share that with SONI. I share it with the Utility Regulator and with the Department. We know where the development's going to come. If we know that, then we can be making the investments in the network now, rather than waiting until the developer's banging at the door saying, "We need to connect."

Sometimes, when I am in conversations about the 80% target, I hear "Well, it'll cost maybe an extra £200m to go from 70 to 80%." There are two points in that. We are going to 80% and we are going to 100%. It is not how much we spend, it is when we spend it and how we pass it on then to the consumer. We can finance that over time to make sure we make the necessary investments now, but the consumer isn't seeing all the cost upfront. The other aspect of it is that there is a net benefit for the consumer. Again, NIE's *Network for Net Zero* paper is really useful. They have shown by hitting 70% there'll be a net benefit for the consumer of 1% saving on bills. Our report, *The Wind Dividend*, showed in the last 20 years consumers saved net £135m. If we only ever looked at the network costs, we would never do any of this but if we look at the value to the consumer, the net saving, as it turns out to be, then going further faster is not only good for us as an industry or for tackling climate change, it is also good for consumer bills.

JD: Yes, and I should have acknowledged the astonishing achievement it has been to reach 50% renewable electricity. Really, really impressive. To some extent, I suppose, that is the fruit of decisions taken some years ago. Moving on, is there an appetite among lenders for funding investment designed to further the decarbonisation agenda? I'd like to bring in Sean Connolly, Interim Head of Business Acquisitions at AIB (NI). Sean, do the lenders want to divvy up to support investment in renewables?

Sean Connolly: Sustainability has become front and centre of our agenda in AIB. We have committed to a net zero approach by 2030. 70% of all of our new lending has to be green by 2030, as well. You may or may not know but renewable energy has been a target sector for AIB for some years. Certainly, in terms of risk and credit appetite, we have got ourselves comfortable because of the robustness of the support schemes that were available. If we are to continue as we want to be, it is critical going forward that they will be in place. In terms of our own options and the products we can offer, we have evolved on the personal side with green mortgages, for example, and loans specifically for electrical vehicles. On the larger, business corporate side, we are now starting to introduce sustainability-linked loans with preferential rates, as you can prove how you're adjusting among other things. It is our job in banking to ensure money goes to support a low-carbon and sustainable future, but we must point out that it is the robustness of the support schemes that are critical, then, in terms of getting our own credit appetite in line with our own thinking.

JD: Thanks, Sean. I'm going to bring in Terry Waugh, Chief Executive at Action Renewables. Terry, the banks might be quite willing to lend to very large projects but are your clients finding it easy to get money to support the investments that they want to make?

TW: We have got about 7,000 customers that have got small-scale PV installed at their house. Where do they go next with that? Well, they are looking at smart battery storage, the like that PowerOn is working with. We are working very closely with PowerOn on that.

The next investment for someone who has already got a PV system on their house is probably a smart battery storage system, which does not come cheap. I think the rule is if you have got a PV system, the chances are you are probably going to be able to afford to pay for the smart battery storage system. It may not necessarily be the kind of money that you are talking about, whereas for businesses in general it might be the kind of money they would be going to Sean to look for.

The challenge for us is looking at those 7,000 PV systems as a route to market. At the minute, there is not really a suitable route to market for those small generators. So, we need to be looking at some form of aggregated distribution for those small-scale PV customers. NIE Networks – and I have to say thank you to them – are doing a great job working with Girona. That is a fantastic project up on the north coast that's looking at behind-the-meter storage and DS3 (EirGrid and SONI's Secure Sustainable Electricity System initiative). I don't profess to be an expert but it's brilliant that NIE and SONI and the

Utility Regulator are working with the Girona project to learn from it and to understand how that can move forward.

JD: I want to look some way into the future, maybe beyond 2030. At that point, there will be all this demand from heat pumps, electric cars, along with the power that we need for ovens, televisions etc. Just imagine this happening in bitterly cold conditions where there has not been enough wind to recharge the batteries. Is it realistic to build a network to cater for that maybe once- or twice-in-a-decade demand peak? Or should we be looking at other options? In other words, is this drive to go electric really sensible, given what I have just outlined as a realistic scenario? Paul Stapleton, would you like to come in on that?

Paul Stapleton: That is the core of the challenge. How do we have a system that is integrated and flexible enough to cope with those very conditions you described? A cold winter's evening when the wind is not blowing. The electricity network is part of that system but it is not all just about the electricity network. I think the solution to what will meet our power, heat and transport needs on that cold winter's evening when there's no wind is a combination of the many factors we're discussing here this morning. So, certainly battery storage – large scale and small scale – that Terry talked about will need to be a factor. More interconnection that Paddy talked about will need to be a factor. Potentially having some thermal generation with carbon capture and storage is certainly a possibility. I think that will potentially be a practical solution.

I think in Northern Ireland specifically, there is a great opportunity for green hydrogen to play a role in that. When the wind is blowing and we potentially have too much energy available, we can capture that surplus energy to produce green hydrogen. Hydrogen can be stored and used again to power the system when the wind is not blowing. So, there is certainly a role that hydrogen can play. I think there is also a role for the demand/response side. How do we engage customers to use less energy when we want them to use less, when there's less available, and to maybe use more at the right time? Many of us already have a storage device in our homes through the hot water tank, which is a much-underutilised solution in terms of the future energy system.

In the 2030 to 2050 period you are describing, we will all have a battery outside our door in the form of an electric vehicle. Without adopting new technologies, without having to have a power wall or another battery system under the stairs, we will have solutions in our homes that can play a huge role in managing demand and providing that flexibility on the system. We will need a huge amount of smart technology to enable all that to happen

very effectively. I think there is a great economic opportunity for Northern Ireland because that smart tech space is a space where we have real strengths as an economy. If we invest in those kind of areas, invest in the technology and the supply chains that will support that locally. I suppose where is that money coming from? It is replacing the £2bn a year we're spending as an economy currently on imported fossil fuels. So, there is a huge economic opportunity in that journey, as well.

In summary, Jamie, it is possible. There are many aspects to the solution. We're not alone in travelling this journey. All other economies are looking to travel in a similar system. If you look at Europe or the UK, they see the future being energy efficiency first, electrification second, supported by other solutions such as hydrogen and biofuels into the future. But all enabled by this integrated and flexible system that we're talking about this morning.

JD: Dara Lynott, I believe that you have looked into the weather conditions that one might expect over a protracted period. If so, what is that telling you about how we should shape the energy sector moving forward?

Dara Lynott: It tells us how flexible the grid needs to be. I think, going back to the previous presenters from SONI, the grid has managed marvellous things up to date but it is nothing compared to what it has to achieve. I think while we have achieved a certain amount of SNSP, our study, which was our *Net Zero Future*, indicated that it needs to be at least 85% SNSP. I think that kind of flexibility means that you need to build grid. I think it is a particularly important message that will be coming back from industry to SONI – the need to build grid. Without that grid and without that flexibility, which is a challenge in itself, you will have a lot of renewables being told to dispatch down. They won't be able to accommodate the amount of renewables in the system.

The second thing is that if there is no one there to consume the electricity generated then, again, those renewables will not be allowed on the system. This 'dunkelflaute' – which is a German term for cloudy, calm, windless conditions – is a reality. It can happen for two-week periods. The study that we commissioned looked at 250,000 hours of weather data and pumped that into a plexus model to determine what would happen. What that said was you would need all interconnection that is currently planned. I suppose the importance of the north/south interconnector but also interconnectors to France, interconnectors from Rol over to the UK will need to be on the grid by 2030. You will need a significant amount of battery storage – nearly 1.1 gigawatts on an all-island basis. That is going from a standing start of zero.

So, you will require grid to be built, massive technology or innovation to be put in place to achieve greater than 85% SNSP, significant technology leaps in terms of battery storage. You will need interconnection and you will need a massive shift from petrol and kerosene over to plugs, to create the demand for all of these renewables that are going to come on the system. Could I just say, the customer then has to be very much involved in this transition. Smart metering is part of it but, in terms of policy there has been a lag because of the lack of policy in Northern Ireland, the likes of the Regulator is only coming into adding decarbonisation to their strategy.

Could I just say, from a policy point of view, smart technology only works if data can be shared. Therefore, there needs to be a very robust framework of how data, particularly around energy use, is used, when it is used, who uses it, where it's used. If that data does not flow effectively, then it would be very difficult to shift the types of energy usage to match the profile that is there from renewables. We already know that we are getting significant amounts of renewables that are dispatched down currently. If all of those issues – grid, operation, innovation, electrification – do not happen, those numbers are going to increase. That is a wasted opportunity.

JD: We are going to come back to smart meters and data sharing and visibility of data shortly, but I want to bring in Paddy Larkin here. Are we at risk of gambling everything on electricity if we rip out all the boilers and stick in heat pumps? We will, of course, electrify cars. Are we at risk of putting ourselves in a pickle here and does there need to be a concerted attempt to try to produce green hydrogen? We have got the network to supply large numbers of homes – not all, but large numbers of homes. I suspect that you would see some value in that, but can you guarantee we are going to get green hydrogen at a price that's not extortionate?

Paddy Larkin: Let us start by looking at energy. In the future if that is going to be carbon-free, there are a few places it can come from – nuclear, cleaned up fossil fuels. Blue hydrogen was talked about. You can use fossil fuels and capture the carbon after you burn it. It can come from renewables, or you can produce biofuels. Apart from the cleaned-up fossil fuels, there is no hydrogen in there. Hydrogen's a carrier.

The reason hydrogen is coming to the fore is, as Dara mentioned, dunkelflaute. The variability of wind is the issue for us. It is not really the variability of demand. If you look at the variability of wind, it is quite a simple sum to do. Take your demand profile over the year and you take your wind production over the year and just drive that up in your model, so that your wind production matches your demand. Then, you can see how much storage you need. Our sums come to about 600 gigawatts hours. Now, what is that in



terms people can visualise? Turlough Hill is about 3 gigawatts hours. If you had 1m electric vehicles each with a 30kW battery, that's about 30 gigawatts hours. We reckon you need about 600 gigawatts hours. That is a normal year, that's normal output coming from wind. Where does that come from?

Our gas network in Northern Ireland, we balance over the day. There are no real issues about how we are balancing that. We do that because there's storage in the pipeline. How much storage in the pipeline? There are about 11 gigawatts hours in the pipeline. They are talking about building a store at Islandmagee that can store enough energy to keep power stations running and the gas supply running for about 60 days in Northern Ireland. It is pretty massive; it is about 1,300 gigawatts hours if you build it all up and that is gas. If it were hydrogen, it would be about a third of that.

That, to my mind, is the area we are going to. How do we store? How do we store this energy that we are going to capture from renewables and everything else and use it whenever we need to use it? There is not really much out there. Pumped hydro storage is very good, but you need 200 Turlough Hills. We ain't got that. We might be able to do one or two in Ireland and I think we need to encourage it as much as we possibly can. But, really, once you go beyond that you have to store it using some form of chemical means. Battery storage was mentioned. Battery storage is really, really small. In fact, normally batteries do not even quote the storage in gigawatts hours. They quote it in megawatts, which is what it can output, not how long it can output it for. It is small and it's very expensive. It is really useful for balancing and flex-building in the network. But the longer-term challenge is how do we get our energy needs whenever the wind's not blowing?

Now, in the meantime and by 2030, it is fossil fuel generation. There is nothing else out there that does it. We need to build our power plants and use them because that is all there is. But in the longer term, we need to be thinking about how we store this harvest of renewables for whenever we need it. How are we going to carry it? We need to connect it geographically and we need to connect it across time. I do not see anything else out there, only hydrogen. Now, there are big challenges. What is it going to cost? Is it going to come through fuel cells or is going to be actually burned? There are massive challenges, but it is the only thing that I can see that actually connects that across time. Interconnection helps, it helps in the short term but if you are looking at is GB or France going to store 600 gigawatts hours for us? I do not think they have got the capability to do it. Are they going to build fossil fuel plants to actually supply us? Maybe some of it. Maybe there is some nuclear there, but they are not going to design their system to keep us going whenever the wind's not blowing.

The central problem is that hydrogen and using hydrogen as a store to harvest renewable power and get it to people whenever they want it is really the only thing that is out there at the minute. It is the only thing we can do in Northern Ireland.

We can store gas. There might be some room for some pumped hydro storage. Batteries can do it, but I just do not see the cost per gigawatt hour stored is anywhere near being relevant at the minute for long term storage.

JD: Patrick Keatley, you are a lecturer in energy policy and infrastructure at Ulster University. I think you have a view on hydrogen. Do you think it's a prospect that we can advance with or do you see it almost like-, Paddy's looking for a use for his pipes, if I could put it like that!

Patrick Keatley: A lot of points Paddy's making are absolutely correct but there are two things on that. Firstly, the role of hydrogen and the cost of hydrogen. At the moment, it is not clear what that is going to be. There are some things that we know and some things that we do not know. We know that we can electrify a lot of transport and we can electrify a lot of heat. We also know that we currently have a hugely inefficient system. We hit the target for 50% electricity from renewables last year, but we also hit the target of 15% of available wind being dumped. To me, there seems to be no point in progressing with connecting more and more renewables until we have worked out how to manage what we already have.

I am not having a go at Steven here because the wind industry, the renewables industry and the network operator and system operator have performed brilliantly in connecting the wind that we have. The market structures and the incentives to make use of that wind when it's available have not developed in parallel. We are already way behind where we should be in making the system more efficient by incentivising consumers into being more flexible in their demand. That is the topic for today. We are way, way behind in terms of developing system flexibility. We know that we can do that because we can see where it has happened, even in GB. The smart meter roll-out was disastrous but they are still way ahead in terms of the flexibility available to manage that. That comes from electrification. Electrification is, in the first instance, the way to manage that.

To go back to Paddy's point on hydrogen, in the long term, yes, hydrogen has got to have a role. At this stage, what that will be I do not know. I can see a really strong case for harvesting green hydrogen and using it for power. In Northern Ireland, we have got some characteristics that would really suit that. Potentially, the cavern storage at Islandmagee would be really useful for storing that and it is right beside a power station. I can see a really strong case for that. On the question of pipelines, I don't know.

That basically comes down to a question in 15 years' time, or whatever; can we afford a separate network just for heat in buildings? It is not clear to me at the minute that that would be justified. If we can electrify heat and transport and do it in a smart way, then that comes back to that question, will we actually need a separate network just for heat? If we can electrify heat and if we can roll-out energy efficiency and really max that up, which is really the first step to everything. There is no way to get to net zero without that. Will we, in that period of time, actually need hydrogen for heat in homes or will we have hydrogen as a power source?

JD: Paddy Larkin, would you like to come back in on that to respond to what Patrick said?

Paddy Larkin: Just to pick up what you finished with, Patrick, we use hydrogen for power. I actually agree. That is where hydrogen needs to come from, but it does not need to be used in an inefficient way through a power station. In the long-term, I think it needs to be fuel cells and I think it probably needs to be in people's homes. That is where, when the wind's blowing, the electricity's coming straight into your home and providing everything you need. When the wind's not blowing, you have stored it as hydrogen and hydrogen comes into your home and provides you with what you need, so you have that flexibility. We have networks there already. It should save having to double up. We can use the networks that are already there.

You are producing a fuel cell. The fuel cell output can drive a heat pump or it can drive your lights, or whatever way you need to use it. But you have a means – and it is quite an efficient means because you are not dumping heat along the way – of actually integrating the whole thing together and providing a way of storing it as you go. I do think it used for power. Hydrogen is a good chemical for converting into power. You can do it very efficiently through fuel cells, which are being developed. So, yes, I would go with you on that.

I think there is a long way to go in terms of stages where we go. In an initial stage where we're blending hydrogen and where blue hydrogen is coming through our pipes from across the water, it will be burned in power stations, and it will be burned in boilers because that's just part of the gas. But the long-term net zero, we are able to harvest it from surplus renewables stored when we don't need it. We can get pure hydrogen that can go into fuel cells and come back out as power. It's just an energy carrier.

Meabh Cormacain: Jamie, could I come back on a couple of points?

JD: Absolutely, yes.

Meabh Cormacain: First, it is good to hear your

perhaps provocative question around electrifying everything. Ripping everything out and plugging it in. But it is actually good to hear because with regard to the consultation, I gave a presentation yesterday and someone came back with a comment, "There seems to be a very heavy emphasis on hydrogen within the consultation." Clearly, we are doing something right if different people are picking up that we actually have completely opposing priorities within the consultation itself.

What I am picking up is that we have set a clear intention with regard to a flexible and integrated electricity network with additional support and engagement from consumers to facilitate the electrification of heat and transport. That comes across strongly. What does not come across strongly at this stage – and I'm wondering is it because we didn't get that particular emphasis through the policy development in working groups or is it almost a two-phase approach – is the energy system flexibility and connectedness, rather than the electricity system.

So, what Paddy's picked up on is better sector coupling. Does this group see almost a two-step process where we spend a certain number of years focusing on a much more integrated electricity system as it currently stands with regards to heat and transport? Then, perhaps set out in the next decade with more sector coupling? Is it an approach that should be very much in parallel from the start? I would be keen to hear if there are any thoughts on that. It is certainly something that I am picking up through this conversation.

A final point just to respond to Paddy's issue earlier around demand and levels of demand. I think we need to really remember that regardless of what direction we take-, I didn't include this in the presentation because of a lack of time, but when you look at the scenarios that we have, final energy demand does reduce very significantly in every single one of our scenarios, in order to reach 2050. In and around 50 gigawatts hours to 21, 21 by 2050.

JD: Does anyone want to pick up on what Meabh's raising there?

Paul Stapleton: I agree with Meabh's core point. I think we do need to consider these issues over different time horizons. We can look at the decade ahead of us, the period to 2030, with a reasonable degree of certainty in terms of what technologies are available to us to deploy and how best to deploy them to achieve the milestones that need to be set for 2030. But when you look at a solution like hydrogen, I think we are all agreed hydrogen has a huge role to play in the 2050 scenario. It is not yet clear how that will evolve but technically, and certainly economically, will we be using hydrogen to cook or dinners and warm our homes or will we be using it to



generate power back at the power station level and using fuel cells, as Paddy has mentioned?

I think it is too soon to be drawing conclusions on those kinds of issues at this point. It is a 30-year horizon we need to consider, and we need to keep a very open mind to see how technologies evolve over time and how the economics of those technologies evolve over time. I would probably agree with Meabh's point about looking at this over different horizons and with a degree of certainty, based on the technologies we know, for the next decade. But keep a very open mind over a 30-year horizon in terms of what combination of technologies might ultimately give us a solution by 2050.

JD: Bringing in Peter McClenaghan here, Director of Infrastructure and Sustainability at the Consumer Council. Are you not worried about higher tariffs for customers, especially those vulnerable and people less able to pay?

Peter McClenaghan: It has been a very interesting conversation. Yes, absolutely. A lot of this technology is going to cost them. My bigger worry at this stage, actually, is a step before the cost issue. It is consumer engagement. I think we are having, as Terry said off-air before we started, more and more engagement in this subject area than ever before. More engagement from policymakers and industry than ever before, but I think we are still struggling to break through to the end user and consumer and to get the message out there about what this will mean for them in relation to technology change, lifestyle change, issues around data privacy, and whether they're going to be undertaking microgeneration in their own homes. All those challenges are things that we need to discuss with consumers and get their understanding on and their buy-in to. I think if we're going to be a region that takes up that challenge that Steven set out of being leaders, not laggards, we need civic engagement and public buy-in in relation to this Strategy.

So, it's great to see that the Department is behind that. Meabh has outlined clearly how important consumer engagement is in this process, but I think it goes beyond the Department. I think it goes beyond the consumer council. I think everybody around this table, each organisation, particularly the industry players, have a role to play in engaging with their end users and making sure that people are on board with this. Yes, part of that, then, is affordability. From our research, it is quite clear that consumers, while they understand the net zero issue and they want to be involved for the most part, there are significant concerns around cost and affordability. So, anything that we can do to make sure that we're using low cost or no cost solutions as a first step is a really important point for consumers and ensuring that no disruption to consumers in their homes is also massively important.

JD: One of the issues touched on is interconnection. Now, last week we saw inauguration of a 1,400MW underwater cable. It is called NordLink and it runs between Norway and Germany, and another even longer cable between Norway and Great Britain is nearing completion. The Celtic interconnector is just 700MW. Should it be bigger? Are we being too modest in our ambitions? Maybe I could bring in Peter Lantry, MD (Ireland) at Hitachi ABB Power Grids.

Peter Lantry: Interestingly, I'm not allowed to speak about the Celtic interconnector because I have an NDA in place since I left EirGrid. So, I'll hand that one over to Emma who has already spoken brilliantly about the flexibility needs of the network.

From my perspective and listening to what Paul was saying and Emma earlier on, I think the network and the flexibility of the network is going to be key. On the issue of having too much power sometimes from renewables, and then not having enough power at other times, I would also say that there is a lot of innovation in that space happening at the moment. There is a lot of innovation coming from this island, in fact, to try and deal with those problems. I'm at a company now, Hitachi ABB Power Grids, where there are 36,000 people thinking about these problems and always coming up with solutions. We are launching different products almost every week. I'm six weeks in the business and there's something new every week. Even just today, there are sustainability initiatives globally that have been launched, which are great. All available on the internet.

For me, the socioeconomic welfare piece is so key. The impact on customers and the cost for customers both in Northern Ireland and in Great Britain will dictate sometimes whether these initiatives, these interconnectors are built. I think there is room for further interconnection between Northern Ireland and Scotland, to be honest. I would say that that interconnection – if I was to just look at the numbers based on my own experience of it – it already stacks up. Europe will support investment in interconnectors, even with third countries, if they see that there are benefits to Europe. An interconnector between Northern Ireland and Scotland actually does a lot to benefit Europe, as well. I think you have got UK and you've got Europe that would work together very, very proactively to support more interconnection. There's a HVDC, a high voltage direct current, think tank in Scotland. I think Glasgow University as well are very heavily involved in looking at these initiatives. They have some really, really clear guidance that says that there's going to need to be another 500 or 700MW of interconnection between the island and Great Britain. You want to reduce the distance of these things. Some of the closest points are from Northern Ireland to Scotland. Scotland has, in the past, limited some of the ability for Northern Ireland to export surplus to Scotland.

That is being alleviated all of the time. They are actually developing their network in Scotland and across the UK to help absorb more power from offshore, including Northern Ireland sources. I think that's a real opportunity for Northern Ireland now to look at that, actively think about whether another interconnector is something that you'd like to develop and grow. The technology is there waiting for you. You have lots of different competitors, including my company, that would gladly construct it for you.

I think the big thing to keep an eye on is the cost of commodities. They are really shooting up at the moment. That is a whole different debate, but customers should be aware of that. The cost of these things will go up. I still think the socioeconomic welfare benefit stacks up really, really well for another interconnector between Northern Ireland and the UK and GB. With that, then, you are able to export a lot of power, but you are also able to import power and a lot of it from nuclear, actually, when you are in difficulty. Now, I think the hydrogen solution, which Paul was talking to and Dara was touching on as well, is a real opportunity for this island as well. Northern Ireland, huge volumes of offshore wind is going to be coming. What you will need to do is convert it because you will not be able to use it all. Converting that and using that and making sure the network is facilitating that. For me, that's key.

JD: Emma, I will bring you in there. Certainly, Peter has put you on the spot. If you were given the money and told, "Emma, build us another interconnector," would you do it with Scotland or would you say, "Look, I'll tell you what, let's double the size of the Celtic interconnector."

Emma Morris: Well, I suppose we have to be realistic in what we can manage. We're a small island system, so we can only bring in so much. We can only export so much, so that has to be taken into account. I think if I was to choose, another interconnector with Scotland will only be benefit to Northern Ireland if they develop the network on the GB side. Very often, we find ourselves trying to export power from Northern Ireland to Scotland, but we can't do it because they just simply cannot take it.

For me, the key for Celtic and for Northern Ireland is really the second north/south interconnector. The Celtic interconnector will allow Ireland to tap into the European markets. We can't do that unless we get the second north/south interconnector. We've talked about the dispatch-down figures in Northern Ireland today. We try to minimise dispatch-down at all times, but we are operating with a constrained system. We would see the north/south as essential in order to minimise the dispatch-down on the system and, therefore, maximising the renewables that we have available to us.

JD: More renewables mean more challenges for those who have to have the job of matching demand and supply, like Emma there. There are solutions in the shape of fast response generation, battery storage and demand management, but is the right framework in place to enable these solutions to be introduced?

We're going to have a shortage of inertia, which has been termed the shock absorber for the electrical system. It's provided by these huge spinning turbines currently. When we start switching these fossil fuel generators off, then we have to look to other options. Batteries apparently are not ideal. So, let us say I had a flywheel. Is there the sort of framework which allows me to feed it into the system? I suspect not. Have we got the right framework to draw forward solutions that we will need as we decarbonise the system? Do you want to come in here, Paddy Larkin?

Paddy Larkin: I am only able to answer because I see what's happening across the water in GB. They do see a real shortage of spinning inertia, and particularly in the area we're connected to in Scotland. We are actually involved in a project there to try and bring some inertia in. Emma will know much better than me, but I think it is something we will need on the network. We pretty much provide the spinning inertia by having a minimum number of generators that we connect. So, we always make sure there is that spinning inertia on. But in lots of cases, I guess you might want to have them off because, let's say, a constraining wind so that they are coming on. You might want to actually shut those generators down. If you did have distributed-, what they call synchronous condensers, which are basically spinning motors around the place, it would help. They are expensive. The DS3 package that is out there at the minute (in terms of attracting bids in) wouldn't reward synchronous condensers in the same way that the GB process (their stability pathfinder process) does at the minute. So, it is something I guess the system operator will be keeping a fairly close eye on. Whenever they are needed, that DS3 system will be modified to attract it.

JD: Can you come in there on that one Emma to talk about DS3 and whether the incentives are in place. I was actually initially talking about, you know, if someone had a flywheel- and presumably some people will consider installing these or whatever, or something that would provide inertia – have you the framework in place to bring that into the system?

Emma Morris: Through our *Shaping Our Electricity Future*, we call that out. There is clearly an issue with inertia as we look to reduce conventional generation on the system. Through that consultation we are looking at the technical challenges that we need to address and the possible solutions. They are all



outlined in that solution, but also the need for the market to develop to incentivise those services that we will need in order to meet our targets out to 2030.

JD: Moving on to the issue of data. It is a bit dry, but it is critical, as we have heard. There has been an energy data workforce in Great Britain looking at this. It is recommending digitalisation of the energy system. Visibility seems to be terribly important. Peter Lantry, would you like to come in on that?

Peter Lantry: This part of the discussion is delving into a topic that is dear to my heart. I was on a programme that my previous company, EirGrid, sent me on. The FutureGrids programme. You get to talk about these issues of digitalisation across all of the different TSOs and DSOs in Europe. Data and digitalisation are really key to achieving our objectives. There is no way we can really get to net zero without it. For me, if you look at the TSO to DSO businesses, aggregators and households, all of those have to be talking together. They all have to be able to communicate. The TSO should be able to ask for some flexibility on the network and households should be responding. One of the things that needs to be developed to support that is a platform, a suitable platform, that allows all that information sharing to happen. Funny enough, all of the equipment that you might put into a transmission system or distribution system, a lot of it already has the digitalisation equipment ready to go. All it needs to be is plugged in and used. Often, if there are concerns about doing that people should not worry too much because we can actually connect to all that information and get that data.

It is actually at the household level and smart meters where there's a huge amount of work to be done. On top of that, you have the Googles and the Microsofts of this world that can produce platforms – it doesn't necessarily have to be this industry – that can really put sophisticated interactions for consumers to actually make money. One of the things that was said earlier on was, "How do we engage the consumers?" One of the big things for consumers is, "How do I make a few quid out of this? How does it impact me financially?" Digitalisation will enable consumers to really engage with the networks and with the future decarbonisation story. It is a feel-good factor I think also with that, as well as making money. For me, that is the key to digitalisation. Companies like mine and others are out there looking at global solutions right now. I think, as was said earlier, Northern Ireland has the talent to develop some of these solutions right now.

JD: John Young, you have been very patient. You are Head of Policy & External Relations at SSE plc. Would you welcome the introduction of smart meters? What do you see their benefit for your customers?

John Young: We certainly welcome the commitment that the Department made in their consultation to look at smart meters and carry out a revised assessment of cost/benefit. It is something that we were calling for. I think the reality is without smart meters, a lot of the types of technology and solutions that we have been talking about today are not going to be possible. So, really, they are the gateway to a more distributed, active consumer base.

I think from the other side as well, though, there is a certain amount of going back to the piece around the consumer and ensuring we spend money effectively from a consumer perspective. Actually, from a TSO perspective, from a market operator perspective, we need to know actually if we're going to be, for example, reimbursing people for microgeneration, PV, whatever it is. The more accurate data we can have on that, the more we can ensure that we are spending money effectively on behalf of the consumer on technologies like that. Again, smart meters have a massive role to play in that.

So, from our perspective, we certainly support it. Looking at smart meters again for Northern Ireland, it is a really complex thing to do and it will be a massive programme if we were to proceed. But if we do not, I think the door on a lot of solutions and technologies will unfortunately be shut. So, certainly we support it.

JD: Karen Arbuckle, you are Chair of the Northern Ireland Community Energy Cooperative. What should we be doing that we are not doing to encourage community energy generation and community energy involvement?

Karen Arbuckle: We're talking here about a lot of centralised energy generation. The EU legislation was very much about empowering citizens and communities and changing energy systems to more decentralised energy generation. That is where microgrids come into play, in giving our citizens that option and choice. To do that, though, they need to have some enablers. It's not just about incentives. It's about support. One of the key aspects that we have missed in Northern Ireland is getting our public bodies and our local councils working in partnership with citizens and communities in developing microgrids. The contracts for difference, if that is the way we're going to go, is going to preclude community energy development because it's too complex for communities to engage in. They just do not have the capacity to compete in those markets. There needs to be a ringfence for community energy in terms of taking part in those options and support for that. In Northern Ireland, we do not have a community energy development body. All of our other nations do and they have had so for quite some time. That needs to be an independent body with experts, like ourselves, who have gone through



setting up community energy projects and providing that advice and support to grow and develop the sector.

Community energy programmes is another thing that we haven't had either. So, there are lots of things that we need to catch up on. It's crucial that we do this because we need to change people's behaviours. This is not just about throwing money out there. This is about getting people engaged in this whole energy transition and empowering people to have a voice. To do that, community energy initiatives, microgrid generation and smart mix grids all encourage citizens. There is evidence across the EU that people become more engaged if they understand where their energy comes from. They're more receptive to the large-scale stuff that needs to happen.

JD: Chris Osbourne, you're Policy Officer at the Ulster Farmers Union. Would your members like to see a support mechanism that is simpler than the contract for difference, the CFDs that Karen has referred to?

Chris Osbourne: I think at the moment the contract for difference proposal is the only one on the table. My understanding is that it is only going to cover possibly the higher capacity installations and we want to see it possibly adapted so that funding is ringfenced and directed towards both existing installations and future installations. Now, that's not saying we want basically double funding – certainly not. It's just there are certain people out there who have got installations, but they don't actually have accreditation for payments or support. So, there are a lot of good sites out there that still have planning permission, still have grid connections, et cetera. It's a starting point but, like I say, we would be looking for funding to be ringfenced for smaller-scale renewables within the contract for difference proposals.

JD: With energy communities, microgrids, people putting in batteries, more and more people are going off-grid. Companies are going off-grid. So, is there a need for a review of the allocation of network costs? John French, would you care to come in on that one?

John French: Yes, I think that is a public policy decision to be made as part of the DfE Energy Strategy. We have got to take that all into consideration. Our we are very clear in terms of the current structure but, yes, you've got to make it fair for all consumers and businesses here in Northern Ireland.

JD: To conclude, I want to invite Paul Stapleton, who is going to sum up what he has picked up from today's discussions and, indeed, to conclude the whole event. So, Paul, the floor is now yours.

Paul Stapleton: Thank you, Jamie, and thank you for your very efficient hosting of the event. As I say, on behalf of NIE Networks we are very happy to be partnered with Cleaver Fulton Rankin in this morning's discussion. I think it has been a very timely and engaging discussion. It is great to have such a broad spectrum of views across the industry and, indeed, many of the stakeholders in the industry represented. It has been a very fruitful discussion as a result of that.

We heard a lot about the challenges ahead of us to deliver flexible and integrated energy systems. We heard a lot about the technology options and the different combinations of technologies that ultimately might play a role in achieving that vision and, indeed, about some of the key enablers that are needed, including digitalisation, evolving policy and regulatory frameworks, accessing capital, and so on.

I suppose to conclude, there were three key themes I drew from the discussion that we all need a collective focus on going forward. I'll start with the key point that Meabh mentioned around the economics of all this. Ultimately, what will this mean for consumer bills and what will it mean for the economy in Northern Ireland in terms of jobs and economic activity here? I think there's a real opportunity in this transition and Northern Ireland should see it as an opportunity and not a burden, in economic terms. As we look to replace the £2bn a year we spend on imported fossil fuels with indigenous renewable energy sources, we have to make that work at a customer level. The key ingredient there is growth in demand. If we can grow demand for electricity by replacing home heating oil, for example, or replacing petrol and diesel in our cars, that growth in demand will spread the infrastructure costs over a much larger volume, which means we can do this without increasing the unit cost of electricity. If you think of what we all pay as consumers for our energy, in a broader sense we have our electricity bill. You may have a gas bill or a home heating bill and you probably have petrol or diesel that you're putting in your car. When you put all that together, that is your overall energy bill. It is about finding a way to make sure we can reduce that. I believe we can.

The second key theme to touch on is around customer engagement. This cannot happen without customers. It's not just about replacing how we produce power, taking out thermal generation and putting in renewables. We absolutely have to engage the demand side and we have to influence customers behaviour with the right incentives and the right engagement. All of the elements that we've talked about. That's a really important part, whether that's large industry, whether it's communities that Karen talked about, whether it's the farming organisations and farming community that Chris talked about, all of these have a huge role to play in



energy transition. Or, down to individual customers and consumers that Peter mentioned. Engagement, I think, at all levels is really important. We need a societal discussion and debate about this. Not just among ourselves in the industry having a debate around these issues. As Terry said at the outset, it is really important this engagement lasts long beyond the lifetime of the development of the Strategy, right through the implementation and evolution of the Strategy process.

The final point I'll mention, Jamie, is the need for collaboration within the industry and between the industry and the various stakeholders. That's across the different sectors of the industry, so it's not just about the electricity sector but it has to be across electricity, transport, gas and renewables. All aspects of energy and, indeed, society have to be part of this. I think there is an onus on all of us from this discussion, the commitment to keep this discussion going, to engage with the Department's consultation which closes at the end of this month. I think it is really important that we all engage with that and encourage all citizens and players in society to engage with that. I think this morning's event has been a very timely contribution to that discussion.

Thank you, Jamie. I'll hand it back to you to close.

JD: Thanks very much, Paul. It only remains for me to thank NIE Networks and Cleaver Fulton Rankin for hosting this event and, indeed, to Chambré for supporting it. I think it's been a useful exercise. I hope you enjoyed it. I certainly have. Thank you, and goodbye.



NI ENERGY STRATEGY ROUNDTABLE

Options for Creating a Flexible and Integrated Energy System



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