Emotionally Intelligent Communications

SHE TRANSMISSION STAKEHOLDER WORKSHOP

CUMBERNAULD

FEBRUARY 2019

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INTRODUCTION

On 26 February 2019, SHE Transmission hosted a stakeholder workshop to seek feedback from stakeholders to help inform its proposals for the RIIO-T2 Business Plan. The workshop aimed at gathering feedback from its stakeholders on the following topics: customer connections; innovation; and whole systems.

The workshop took place at the HVDC Centre in Cumbernauld. The event consisted of three presentations given by SHE Transmission representatives, each followed by round-table discussions. Quantitative feedback was gathered via feedback forms which stakeholders were asked to complete at the end of each session.

SHE Transmission instructed EQ Communications, a specialist stakeholder engagement consultancy, to independently facilitate the workshops and take notes of the comments made by stakeholders.

Every effort has been made to faithfully record the feedback given. In order to encourage candour and open debate, comments have not been ascribed to individuals. Instead, notes have been assigned to the type of organisation that each stakeholder represents.

EXECUTIVE SUMMARY

The workshop began with an introductory presentation from Michael Rieley, Commercial Policy Manager.

WORKSHOP ONE: CUSTOMER CONNECTIONS

The first feedback session started with a presentation from Lauren Logan, Commercial Policy Manager. After this presentation, stakeholders were asked to give their feedback. The key points raised by stakeholders were as follows:

- Overall, stakeholders felt relatively satisfied with SHE Transmission's proposed level of ambition for customer connections in RIIO-T2, scoring their satisfaction level as 3.67 out of 5 when asked to vote on it.
- When it came to the connections process, stakeholders felt most satisfied with the 'connecting' stage (3.5 out of 5) followed by the 'scoping' and 'application' stages (both 3.39 out of 5).
- At the 'scoping' stage, it was felt that information provision could be improved as some felt the information available online was sometimes inaccurate or out of date. Stakeholders wanted a better indication of the cost of a connection at the scoping stage, as well as clearer information on what the timescales would be.
- Overwhelmingly, the feedback on the application stage was that there was a greater need for more flexibility in the process. For example, it was repeatedly requested that customers be able to submit several options to SHE Transmission who should provide guidance on which would be the most cost efficient.
- Whilst the 'connecting' stage was the one that ranked most highly in terms of stakeholder satisfaction, stakeholders also felt that more flexibility could be applied here. For example, it was felt that when a customer downgrades their capacity requirements, others in the queue should be able to take up this capacity. Several contractors urged SHE Transmission to work more collaboratively with them at this stage in order to drive more innovative design solutions.
- In terms of the 'energised' and 'review' stages, most stakeholders were not able to provide feedback as they hadn't reached this stage of a connection before, although a couple of specific suggestions were put forward.
- In terms of what stage of the connections process stakeholders wanted SHE Transmission to be measured on, the suggestion was made that metrics needed to be applied to measure the cost passed on to customers in cases where connections were not being delivered in a timely way.

WORKSHOP TWO: INNOVATION STRATEGY

The second feedback session was introduced with a presentation from Andrew Urquhart, Commercial Manager, about the development of SHE Transmission's Innovation Strategy. After the presentation, stakeholders were asked to give their feedback through a series of engagement exercises and via a feedback form.

The main task was to identify which sub-themes stakeholders would prioritise for innovation investment under SHE Transmission's four main strategic themes. The results from the voting exercise in the feedback form have been summarised in the table below. The reasons given by stakeholders can be found in section two of this report.

Stakeholder-led strategy	1. Whole system design approach 2. Energy system transition 3. Commercial evolution
Safe and secure network operation	1. Network planning 2. Data driven network development 3. Asset / system security and resilience
Sector leading efficiency	1. Transformational health and safety 2. Procurement policy 3. New technologies
Leadership in sustainability	1. Connecting for society 2. Supporting thriving communities 3. Mitigating climate change

WORKSHOP THREE: WHOLE SYSTEMS

The final session was introduced by Bless Kuri, System Planning Manager, who explained SHE Transmission's proposed approach to whole systems. Afterwards, stakeholders were asked to give their feedback. The key points raised by stakeholders were as follows:

- In general, attendees had not had much involvement or given much thought to whole systems to date, so there was a sense that more work needed to be done to communicate whole systems with stakeholders.

- Stakeholders identified several challenges to whole systems, for example, the challenges involved in educating the end customer about the way they will consume energy in the future.
- In terms of the opportunities, stakeholders felt that there were real benefits to customers: both connections customers who could have more flexibility in their connections offers and the end customer who could pay less for their energy bill. The opportunity to support the decarbonisation agenda was also raised.
- Broadly, stakeholders supported SHE Transmission's proposed approach to whole systems. When asked how satisfied they were as part of the feedback forms, on average stakeholders answered 3.7 out of 5 with over half (56%) saying 'satisfied'.
- They also generally agreed with the proposed level of ambition to focus on whole system solutions within electricity transmission and distribution first (in RIIO-T1) before broadening out to other energy vectors, such as gas (in RIIO-T2). However, one stakeholder urged SHE Transmission to ensure readiness to accommodate the fast pace of change in the energy system transition, and several others felt that the amount the company was hoping to achieve by the end of RIIO-T2 was ambitious.
- Stakeholders were interested in the potential of data sharing, so long as the data being shared was relevant and accurate.
- Several stakeholder groups were put forward as those that should be collaborated with on whole systems. These included: electric vehicle manufacturers; the regulator; energy suppliers; economic development agencies; and the other transmission operators.
- In terms of focus areas for SHE Transmission's whole system strategy, stakeholders particularly supported placing an emphasis on network planning and investment. Other areas they felt required focus were 'black start' and system stability.

EVENT FEEDBACK

After the workshop, stakeholders were asked to complete a short feedback form. Some of the key findings are shown below:

- 47% of attendees reported that they found the workshop 'very interesting', with 53% opting for 'interesting'.
- 59% 'strongly agreed' that they had the opportunity to make their points and ask questions, whilst 41% 'agreed'
- 71% 'agreed' or 'strongly agreed' that the right topics were covered for them on the day, with 29% opting for 'neutral'.

- 41% thought EQ Communications' facilitation was 'very good', with 59% opting for 'good'. None voted for options neutral or below.

ATTENDEES

A total of 21 stakeholders attended the workshop, representing 15 organisations. The organisations represented on the day are shown below:

ABB
Balfour Beatty
DP Energy
EMEC
Energy Saving Trust
Energyline
Glasgow Caledonian University
Green Cat Renewables
Local Energy Scotland
Morgan Sindall Group
Russet Engineering
SSE
TNEI
Transport Scotland
Xero Energy

WORKSHOP ONE: CUSTOMER CONNECTIONS

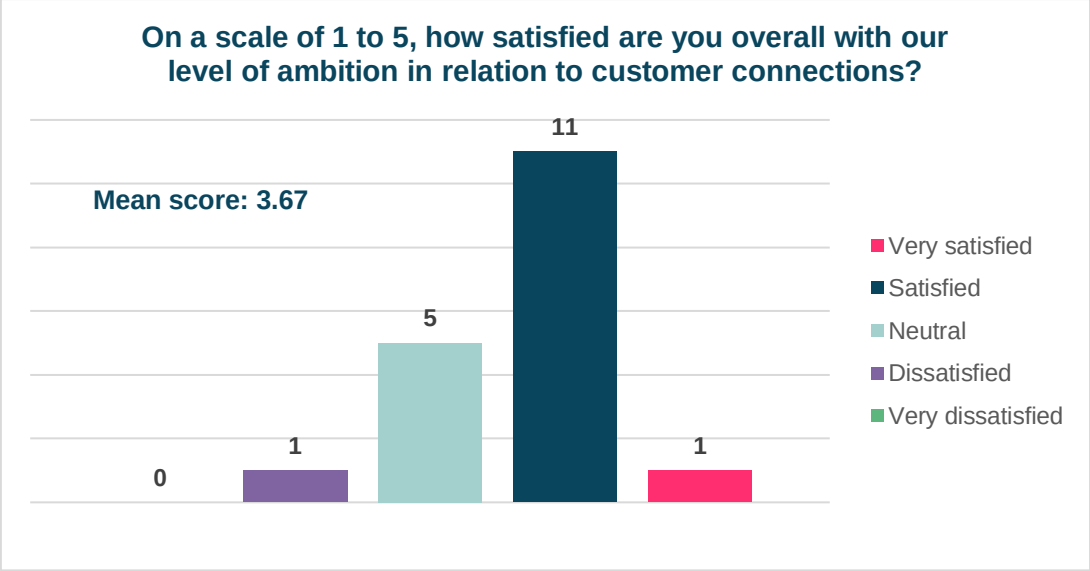
The first workshop began with a presentation from Lauren Logan, Commercial Policy Manager. The objective of the session was to get feedback from stakeholders on how the connections process could be improved at each of the stages in the connections process. The presentation provided an overview of this process and set out SHE Transmission's proposed ambition for RIIO-T2.

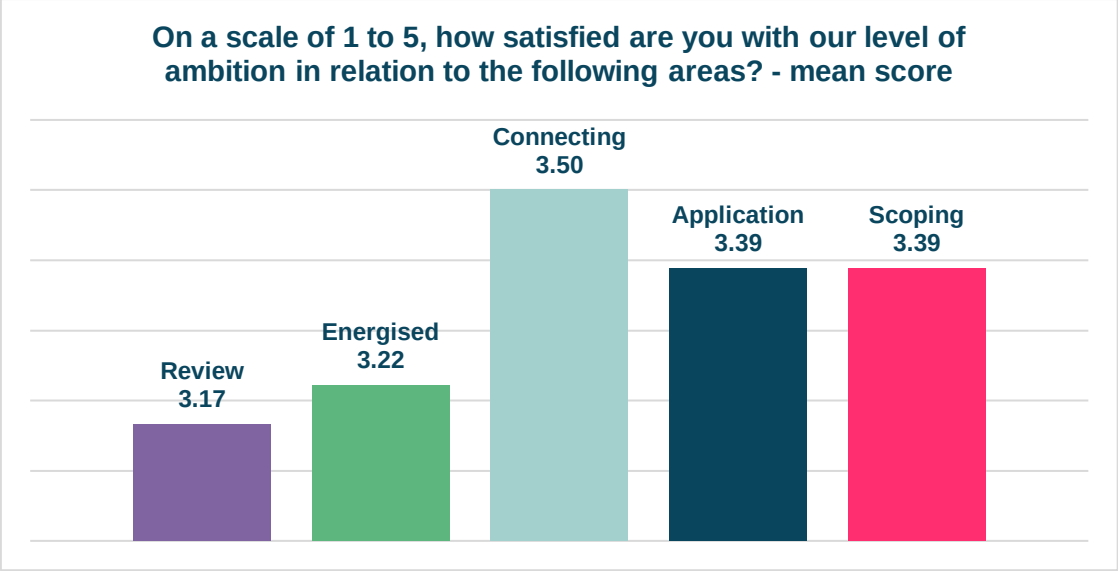
After the presentation, stakeholders were asked to give their feedback in a round-table discussion session. At the end, to provide some quantitative feedback, stakeholders were asked to complete a short feedback form. The feedback below has been summarised according to the questions asked during the discussion session, with the results from the feedback forms supplementing the feedback where appropriate.

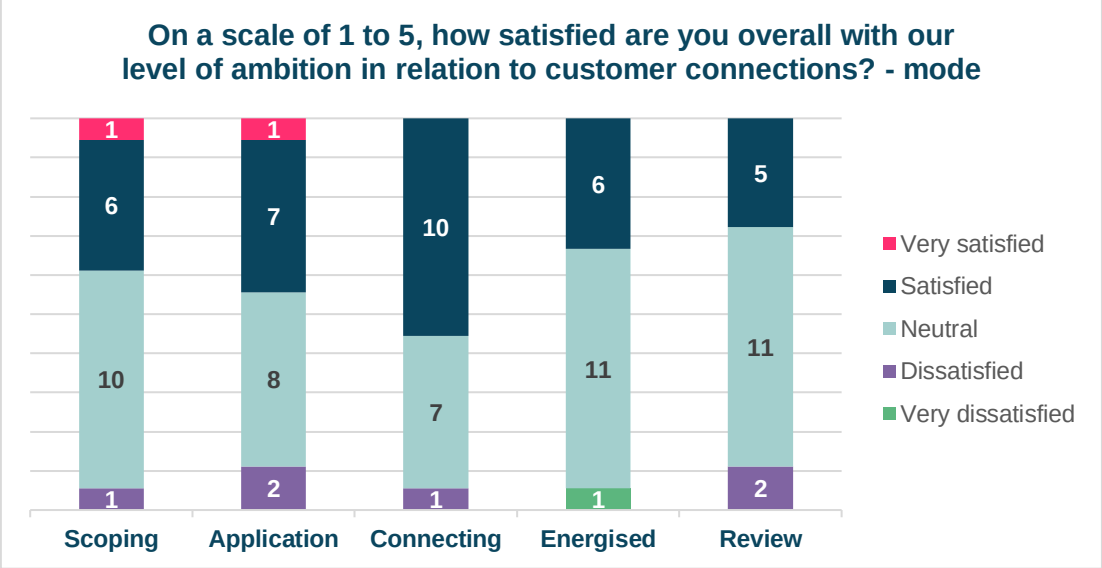
SUMMARY OF FEEDBACK

Overall, stakeholders felt relatively satisfied with SHE Transmission's proposed level of ambition in RIIO-T2. When asked to rate how satisfied they were on a scale of 1 to 5, the mean score was 3.67 (neutral to satisfied) – although the mode was satisfied (with 61% of answers).

When it came to the connections process itself, stakeholders felt most satisfied with the 'connecting' stage (3.5 out of 5) followed by the 'scoping' and 'application' stages (both 3.39 out of 5). Stakeholder feedback is shown in the graphs below:







The 'scoping' stage

At the 'scoping' stage, it was commented that information provision could be improved as some felt that the information available online was sometimes inaccurate or out of date. The comment was also made that the information on the website was somewhat fragmented and that it should all be in one place.

The capacity map was seen as a useful resource, although it was felt it could be more regularly updated and include more information. The example of the SPT's inventory register was given as a good example of this.

Stakeholders would like to be given a better idea of what a connection might cost at the 'scoping' stage, rather than having to submit (and pay for) a formal application in order to find

out. Others requested clearer information on timescales at the 'scoping' stage, as having the capacity available in a timely manner was project-critical.

When asked how satisfied they were with SHE Transmission's level of ambition in the 'scoping' stage, the majority of stakeholders felt neutral (56%), followed by satisfied with 33%. However, one stakeholder said that they felt 'dissatisfied' with the 'scoping' stage, with their reason appearing to be related to the lack of information on grid capacity.

The 'application' stage

Overwhelmingly, feedback on the 'application' stage was that there was a greater need for more flexibility in the process. For example, the suggestion was made that customers should be able to submit several options to enable SHE Transmission to provide guidance on which connection would be the most cost efficient. It was also felt that there should be some flexibility with regard to the three-month timeframe, especially if a customer is seeking a modification to an existing application.

One stakeholder made the point that they wanted to see more transparency at this stage in the process so that customers had a better understanding of how an application is progressing.

Data from the feedback forms showed that most stakeholders felt neutral or satisfied with SHE Transmission's level of ambition in the 'application' stage (83%). However, several stakeholders felt dissatisfied (11%).

The 'connection' stage

Stakeholders also wanted to see more flexibility at the 'connection' stage. For example, it was felt that when a customer downgrades their capacity requirements, others in the queue should be able to take up this capacity.

Stakeholders also wanted to be able to work more collaboratively with SHE Transmission to come up with more innovative solutions when it came to the design of a connection. Several contractors who are responsible for the construction of a project reiterated this point, asking to be engaged early in the process in order to help deliver innovative solutions for customers.

One stakeholder complimented SHE Transmission on the regularity of the updates it provides during the 'connection' stage, saying that regular communication was helpful. The issue of extended timeframes for modifications was also suggested.

The ‘connections’ stage was ranked the highest in terms of stakeholder satisfaction with SHE Transmission’s level of ambition for RIIO-T2, with an average score of 3.5 out of 5. The majority (56%) were satisfied.

The ‘energised’ stage

Most stakeholders had not gone beyond the ‘connections’ stage and were unable to answer this question. Suggestions that were made included that generators be allowed to run at a slight overload as there was evidence that this did not have any effect on the network. Another said that, as well as flexible connections, there also needed to be flexible outage plans.

Most stakeholders (61%) felt neutral about SHE Transmission’s level of ambition towards the ‘energised’ stage for T2. This may be because most had not reached that stage of a connection before. However, of those that had reached that stage, one stakeholder said they felt very dissatisfied with SHE Transmission’s proposed level of ambition because they wanted to see much more clarity on what outages were likely post-connection, as well as a way to record the total lost megawatt hours from planned outages.

The ‘review’ stage

Most stakeholders had not gone beyond the ‘connections’ stage and were unable to answer this question. However, one stakeholder suggested a new mechanism for generators to be able to reduce their costs, which needed approval from National Grid.

The same number of stakeholders (61%) felt neutral about SHE Transmission’s level of ambition towards the ‘review’ stage as for the ‘energised’ stage. Again, this was probably due to the fact most stakeholders had not reached this stage of a connection before. 11% felt dissatisfied, although it was unclear as to why.

Measurement

In terms of what stage of the connections process stakeholders wanted SHE Transmission to be measured on, the suggestion was made that metrics needed to be applied to measure the cost passed on to customers in cases where connections were not being delivered in a timely way.

Written recommendations from the feedback form

Stage	Recommendation
Overall	Good approach. Feels like a more detailed development required to achieve. Joined up thinking, on engagement, essential.
	Funding mechanisms seem to reduce the opportunity to build extra strategic capacity for the future.
	Reiterate point about early engagement of supply chain partners in the process - ability to innovate, plan resources, meet ambitions, connection dates.
	Involvement of OHL / Cable / Subs contractors to help SSE develop solutions at an early stage. More often than not, contractors are presented with a final solution which may not be the most efficient.
Scoping	Look at grid capacity availability and make this available to developers who could then tailor renewable offerings where capacity exists, currently without the need to reinforce the transmission network.
	[More information on] areas of the grid where capacity can be made available. On the impacts of upgrades onto the network. Other connection options if an area is heavily constrained. Any schemes on time restricted connections.
	Open communication seems to be an issue. Visibility of network capacity.
Application	Rigidity of application process versus offering some flexibility on timelines to offer and applications costs to make an offer (determined during scoping stage).
Connection	The project development and delivery place an impact on overall connection programme.
	There appears to be an inconsistency in the ability of SHE Transmission to commence design development at an early enough stage
Energised	Need to be much clearer on what outages are likely when post-connection during the connection offer process. Need to record the total 'lost MWh' from planned outages for all generators.

STAKEHOLDER FEEDBACK

Q. Scoping: What information and engagement (with us and other parties) would help you reach the application stage?

- "We are doing lots of feasibility studies for sensible EV charging locations. We approached SHE Transmission to sense check what we were doing, but because of connection offer expenses this was not possible. We used the GIS mapping system as a workaround, but it means we can't provide local authorities with the real cost. We need more guidance on cost at the scoping stage." Environmental group representative

- “The capacity map is very helpful as it has detailed information. It needs more information, such as completion dates like on the SPT inventory register. It is fairly up to date, although some project information could be updated more regularly.” Infrastructure / engineering representative
- “Some of the available information is a bit fragmented, for example information about capacity and costs. It would be useful to have everything in one place on the website.” Infrastructure / engineering representative
- “We usually assess all the online information and then we get in touch with SHE Transmission. You have been quick to get back in touch.” Infrastructure / engineering representative
- “There needs to be a process of engaging with small community projects and generators like in the Western Isles. They are put off because you need a statement of works and a big cable, which they can’t afford. You don’t know they exist as they’d be frightened off at earlier stages. You should work with organisations like Community Energy Scotland to ask people what they want to build by registering their interest on the website.” Infrastructure / engineering representative
- “It is very rare that, as contractors, we get asked to be involved in early stages. We are rarely asked for solutions or alternatives, but I think we should be engaged much earlier in the process as that would give you more opportunity to innovate.” Infrastructure / engineering representative
- “There is an issue with the level and detail of information available. We regularly have to go back and query information because it isn’t always accurate. Even when you can find the right people to speak to, then it can be quite slow. It could be over a week before you can hunt down the information you’re looking for.” Connections representative
- “Most of our customers go through the DNO. Back in 2015, we had connection times of 2023. This is way beyond what any development project could accept. You can’t predict beyond the next quarter let alone that sort of timescale. Connection times are so far in advance that it kills the project. This is very often even before any investors are involved. Very often the investors go in for planning consent, then spend a lot of money, but the project ends up not being able to go ahead.” Environmental group representative
- “I completely agree with that. If we knew in advance this area would have capacity over the next five years, we would be able to plan for that accordingly. We can see the capacity, but that capacity is virtual. Connection flexibility is crucial.” Environmental group representative

- “There does seem to be some confusion about who the developer talks to first.” Infrastructure / engineering representative
- “What a developer wants to know is when, how much, and how is that going to be paid. Distribution is straightforward, but where do you start with transmission? For example, with Active Network Management it is about understanding how you’ll be constrained and what percentage you’ll lose. It would be good to have a forecast of potential extra costs.” Infrastructure / engineering representative
- The whole process is based on submitting an application and getting an offer. Most applicants need to know about the stages before they make those applications. More also needs to be done to look to the future on the electrification of heat and transport. You can’t simply react to applications as they come in.” Environmental group representative
- “That’s a great point. The challenge though is that projects are based on applications, not viability. That’s a problem we’ve got to work out together as an industry, and more engagement on this is key.” Energy / utilities representative

Q. Application: What services could we provide to make the application process more efficient for you?

- “It is frustrating when you have several different options of places you could connect. It would be better to be able to submit a number of options and let the System Operator decide which connection would be easiest and most cost effective. In Canada, the System Operator publishes their plans and identifies an area where they will increase capacity. It is annoying that our regulation doesn’t allow for anticipatory decisions to be made.” Energy / utilities representative
- “We’ve no concept of your business planning. If we don’t have a clear understanding of your processes, this can impact our own plans, particularly when it comes to financing.” Energy / utilities representative
- “I don’t think reducing the timeframe for an offer from three months is necessary, as long as you know what it is in advance. However, some customers may be driven by shorter timescales. The important thing is flexibility.” Infrastructure / engineering representative
- “It’s not SHE Transmission’s fault, but they have to go through National Grid. The process is invisible and agonisingly slow. It can feel like going through treacle. Is there anything you can do about that? The process is quite rigid. It needs more transparency.” Infrastructure / engineering representative

- "The three-month timeframe is OK, but if a modification is required – even a small one – then you have to start all over again which doesn't seem fair. Two months might be sufficient for a reduction in megawatts, for example. It becomes more complex if you're changing your generation type, which is more similar to a new application, so I can understand why that would be another three months." Energy / utilities representative

Q. Connection: What services could we provide to ensure the connection works for you? What services could we provide to make sure your connection is delivered as desired?

- "We have done a couple of applications. Some flexibility regarding capacity would be good. If we dropped capacity, some flexibility would be good to iterate the requirement so that others can use it." Infrastructure / engineering representative
- "We're probably in your hands in terms of transmission and in terms of what the possibilities are in these scenarios. The question is what sort of innovative solutions there might be. They have a tidal energy project and they're planning to put an EV charger onto that. How many more of these applications might be possible? We would very much want to work with the right organisations to enable that. There are opportunities that would be good to talk about." Infrastructure / engineering representative
- "Storage is the logical extension of that." Connections representative
- "From a contractor's point of view, it would be good to get involved earlier to help SSE." Infrastructure / engineering representative
- "I agree. The people responsible for delivering the projects don't get engaged. If we get that visibility, then we can help earlier with providing solutions." Infrastructure / engineering representative
- "We did an embedded project that needed updates. SHE Transmission called us monthly with updates, which was really helpful. It was really good to have that engagement and that understanding about the delivery timescale." Infrastructure / engineering representative
- "There's a bit of frustration with timelines. If we're not involved early, then we get to the stage where we can't do something smart." Infrastructure / engineering representative
- "You're in a situation where the other planning is in place, but it's quite convoluted when you want to make changes. There's a new SEPA requirement whereby a CAR licence takes four months to get. This adds another thing that gets in the way of the innovation aspect." Infrastructure / engineering representative

Q. Energised: Once you are energised, we want to ensure our service continues. What services can we provide to ensure your project remains connected economically?

- "Running generators at a slight overload could be an option. I've got letters from SHE Transmission, for example, to say that transmission is running on 130% overload without there being any effect on the network. But when you suggest that, you're met with the answer 'we don't want to take any risks.'" Energy / utilities representative
- "A flexible connection may need to be extended into a flexible outage plan. Surely you have to have an equal amount of flexibility in term of outages." Environmental group representative

Q. Refresh: Thinking of re-powering or re-designing? What can we do to ensure your project remains efficient and economic?

- Stakeholders did not have any comments in response to this question.

Q. We want to keep delivering for our customers throughout RIIO-T2. What parts of the connection's customer journey would you like us to be measured on?

- "One of the big things we're seeing that we find frustrating is that timeframes could be reduced but they're not. There appears to be no pressure being applied effectively on the third-party owner to put extra men on the project. I would suggest that there should be an incentive placed on the third-party owner for this as there is a MWh loss in terms of unrecoverable loss. There should be some incentive or metric included on which the SO or TO is measured as there's no incentive for the generator to work faster or improve the network. This metric should show how much energy is being lost as, at present, these costs are being borne by the consumer through subsidies." Energy / utilities representative

WORKSHOP TWO: INNOVATION STRATEGY

The second feedback session was introduced with a presentation from Andrew Urquhart, Commercial Manager, about the development of SHE Transmission's Innovation Strategy. Andrew gave an overview of what stage the company was at in the development of its innovation strategy, as well as the input that stakeholders had had to date.

The main part of the presentation introduced the focus areas that SHE Transmission was proposing to prioritise in its innovation strategy, separated under the company's four overarching strategic themes.

After this presentation, there was an exercise at the tables where stakeholders were asked as a group to identify the top three focus areas that they thought SHE Transmission should focus their innovation on under each strategic theme. Taking the focus area that was the top priority under each strategic theme, they were then asked to explore it in more detail – identifying the sorts of activities that they felt would benefit from innovation. The facilitation props that were used to aide these two discussions can be found in Appendix 1.

At the end, stakeholders were asked to complete a short feedback form enabling them to vote individually on their top three priorities.

The feedback below has been summarised according to the questions asked during the discussion session, with the results from the feedback forms supplementing the feedback where appropriate.

SUMMARY

Stakeholders suggested several other sub-themes that SHE Transmission should include in its Innovation Strategy. These have been summarised in the table below.

Stakeholder-led strategy	Involving political stakeholders
	Greater collaboration so trials become business as usual
Safe and secure network operation	Technical policy
Sector leading efficiency	Digital evolution
Leadership in sustainability	None

Stakeholders were then asked to identify their top three priorities for innovation investment (under each strategic theme) and explain their reasons for this.

Stakeholder-led strategy

The top three sub-themes identified via the feedback forms (based on the mean score) were as follows:

1. Whole system design approach
2. Energy system transition
3. Commercial evolution

The sub-theme that was voted on most frequently was 'whole system design approach', which reflects the importance given to it during the table discussions.

The feedback form results differed slightly from the exercise conducted at the tables, only in so far as Table 2 listed 'customer engagement' as the third priority rather than 'commercial evolution'.

Stakeholders prioritised 'commercial evolution' for innovation investment because it was felt that there urgently needed to be a standardisation in codes. It was felt that customers were paying the price for inefficiencies due to the way that different companies were doing things. One stakeholder urged that the sub-theme be reworded to include regulation, so it becomes 'commercial and regulatory evolution'.

Stakeholders prioritised the 'energy system transition' for innovation investment as they felt it was fundamental, and the pace of change was fast so SHE Transmission could not risk getting left behind. It was also felt it played an important role in the decarbonisation agenda. Similar views were ascribed to 'facilitating connections' and 'whole system approach' too, with one stakeholder saying that they were all interconnected.

In the second exercise, stakeholders suggested a number of detailed activities which they thought could benefit from innovation under the following sub-themes: 'commercial evolution' (Table 1) and 'energy system transition' (Table 2). These are summarised at the end of this section.

Safe and secure network operation

Unlike the previous strategic theme, there was not much consensus on the key sub-themes to prioritise for innovation investment under this theme. The top three sub-themes identified via the feedback forms (based on the mean score) were as follows:

1. Network planning

2. Data driven network development
3. Asset / system security and resilience

The feedback form results differed from the exercise conducted at the tables, where ‘smart asset management’ came first on Table 1. ‘System monitoring and performance’ was ranked second on Table 2, despite coming bottom in the feedback form results.

During the discussions, stakeholders stated that they felt many of the sub-themes in this area crossed over. They also felt that they wanted to have a better understanding of what the challenges were in this area and how innovation could be used to make improvements. These reasons are reflected in the lack of a clear consensus on what the priority areas should be.

One stakeholder did say that ‘asset / system security and resilience’ was important, but that the network was so resilient that really it was about finding efficiencies that lead to cost savings. Another stated that ‘smart asset management’ was important because it facilitated communications and therefore enabled SHE Transmission to identify which areas of the network needed reinforcement.

In the second exercise, stakeholders suggested a number of detailed activities which they thought could benefit from innovation under the following sub-themes: smart asset management (Table 1) and network planning (Table 2). These are summarised at the end of this section.

Sector leading efficiency

The top three sub-themes identified via the feedback forms (based on the mean score) were as follows (the top two were joint first):

1. Transformational health and safety
2. Procurement policy
3. New technologies

There was a slight anomaly in the table exercise, as Table 2 ranked ‘efficient project delivery’ third, despite feedback form results ranking that the lowest (mean) sub-theme in this category.

The comments on the tables supported the prioritisation of the three sub-themes above. It was felt that health and safety ‘has to come first’ by several stakeholders, who felt that innovation could support the development of this area.

Stakeholders overwhelmingly agreed that existing procurement policy was limiting the ability of contractors to innovate. They urged SHE Transmission to focus on this area in order to ensure that the way projects are procured encourages innovation.

Finally, it was felt that new technologies were important as they would help drive efficiencies in the way that the network was operated.

In the second exercise, stakeholders suggested a number of detailed activities which they thought could benefit from innovation under the following sub-themes: procurement policy (Table 1) and transformational health and safety (Table 2). These are summarised at the end of this section.

Leadership in sustainability

The top three sub-themes identified via the feedback forms (based on the mean score) were as follows:

1. Connecting for society
2. Supporting thriving communities
3. Mitigating climate change

The results from the table exercise differed slightly: Table 1 ranked 'promoting natural environment' third and Table 2 ranked 'growing careers' third.

In the table discussions, 'connecting for society' and 'supporting thriving communities' were felt to be important from a social equality and affordability point of view. It was felt that supporting communities to remove barriers would support the Scottish Government's drive for equality and was the right thing to do.

Whilst 'mitigating climate change' was ranked third – and stakeholders stated that it was important – the discussions at the tables focused on some of the other sub-themes. It was remarked that SHE Transmission was really promoting the importance of biodiversity at the moment, so the drive to 'promote the natural environment' was coming across already.

The need to use innovation to 'grow careers' was felt to be important during the feedback at the tables. The need to promote the sustainability of what SHE Transmission does was stressed, as it was felt this would appeal to a younger generation. The suggestion was made that 'careers' might be the wrong word in this context, and that perhaps it was more about engagement.

In the second exercise, stakeholders suggested a number of detailed activities which they thought could benefit from innovation. As the highest priority for both tables was 'connecting for society', and both tables discussed activities under that sub-theme. These are summarised at the end of this section.

STAKEHOLDER FEEDBACK

Q. Is there anything missing?

- "I didn't see digitalisation. Through technology, commercially, it's how we interact with customers. It's probably a subset of energy system transition. Intelligent software is needed to allow processing data to make better decisions." Infrastructure / engineering representative
- "I think what's missing is technical policy, either at a national or network level. That needs to be part of it." Infrastructure / engineering representative
- "Low Carbon Network Fund (LCNF) funded trials never seem to become active. I've yet to hear of one that is active in Scotland. Greater collaboration is required so that these trials become business as usual." Energy / utilities representative
- "One thing that should be included is government policy. There's a limit to what SSEN can actually do." Connections representative

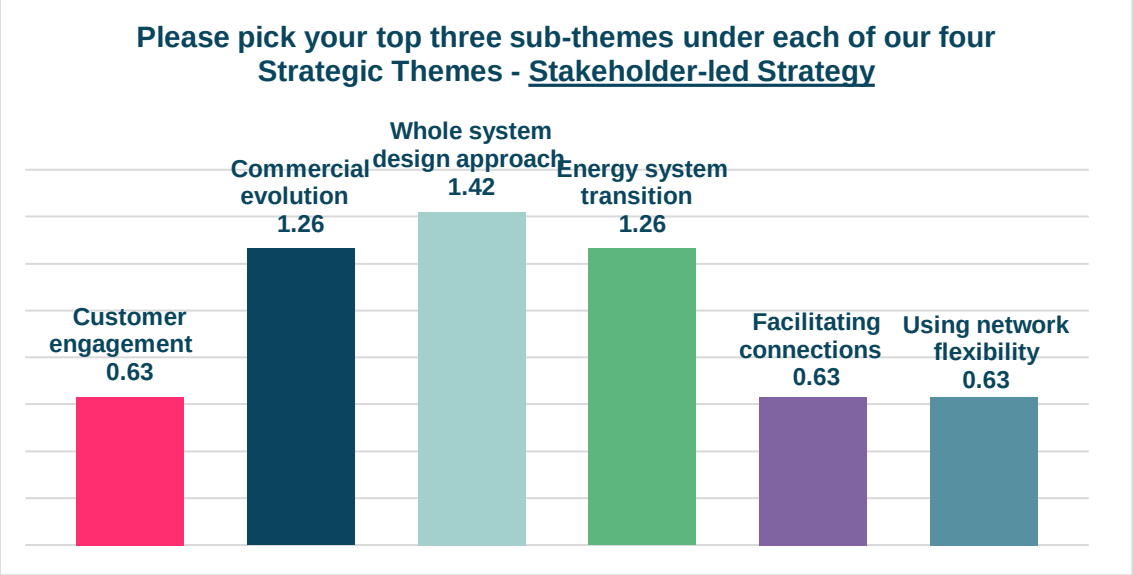
Q. What would be your top three priorities for SHE Transmission's Innovation Strategy – and why?

Stakeholder-led strategy

The results from the table exercises are shown below:

Table 1	
1.	Commercial evolution
2.	Energy system transition
3.	Whole system design approach
Table 2	
1.	Whole system approach
2.	Energy system transition
3.	Customer engagement

Results from feedback forms:



- "Hydrogen development as part of whole system is really important, and also how we use tidal power as a renewable resource." Developer / connections representative
- "Whole system, energy system transition and using network flexibility all go hand in hand. Thinking about electric vehicles, the whole decarbonisation agenda fits in there too. Whole system approach is key to developing that innovation piece too. Otherwise it's fragmented and won't encompass disparate elements. It is all about how the network develops and changes to move forward." Infrastructure / engineering representative
- "It is important to prioritise the energy transition because of the pace of change. If you get behind the curve you could be lost." Infrastructure / engineering representative
- "Commercial evolution can't be forgotten about. That's where ideas are being made. The processes and appendices aren't there and that makes it hard. Regulatory barriers make it hard to communicate properly." Energy / utilities representative
- "Yes, commercial evolution is important because of the differences in codes. The technology bit is the easy bit. The commercial communication bit is the difficult bit." Infrastructure / engineering representative
- "The last three sub-themes (energy system transition, facilitating connections and using network flexibility connections) are really the same thing." Infrastructure / engineering representative
- "Energy policy is still evolving and has such a huge impact on everything we do." Connections representative
- "In terms of commercial evolution, we think there should be one set of standards for the whole country so that there's no difference between projects running in different

parts of the UK. It's not an engineering issue, it's a company issue. The frustrating thing is that the consumer is paying for these inefficiencies resulting from different standards at different companies." Energy / utilities representative

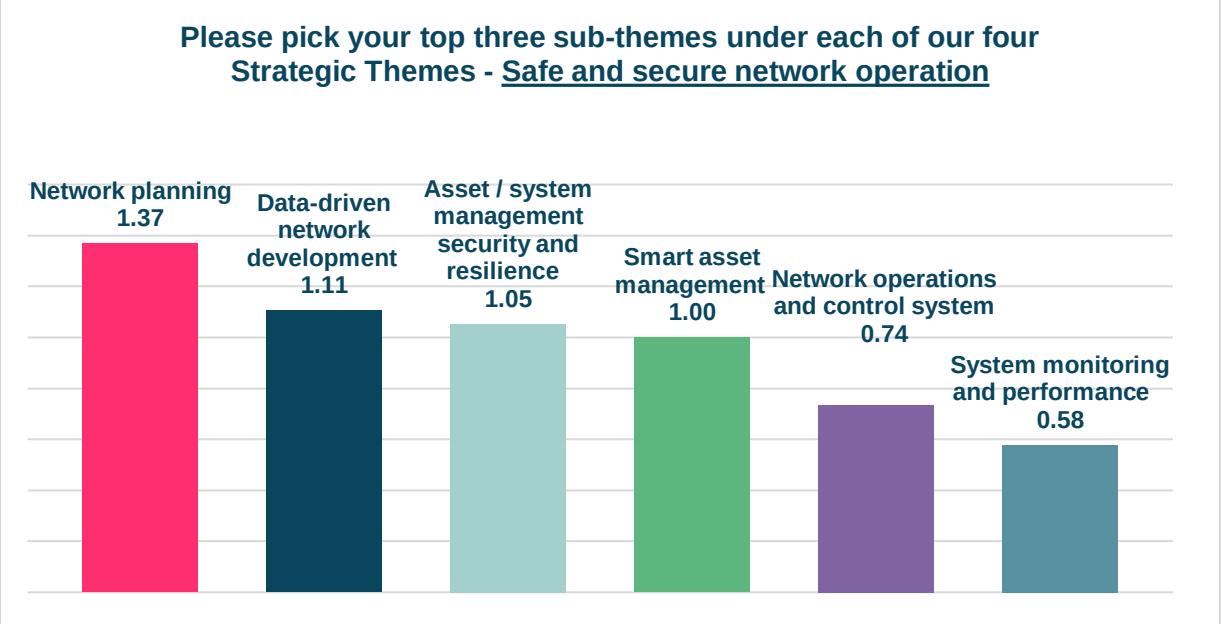
- "Energy system transition is most important for me. There's no incentive in connections for having low-carbon generation." Environmental group representative
- "How are you going to deal with conflicts between stakeholders? There's an assumption that all stakeholders are coming from the same perspective." Infrastructure / engineering representative
- "Without a whole system approach you remain in silos, especially when it comes to storage." Energy / utilities representative
- "There's an excuse process which allows people to say, 'We're interested, but it's government policy so we can't do anything about it' in terms of innovation." Environmental group representative
- "We're not in the game of silos any more, it's going to be a 'Team Scotland' approach to sort this out." Infrastructure / engineering representative

Safe and secure network operation

Results from table exercises are shown below:

Table 1	
1.	Smart asset management
2.	Data driven network development
3.	Asset / system management security and resilience
Table 2	
1.	Network planning
2.	System monitoring and performance
3.	Asset / system management and security resilience

Results from feedback forms are shown below:



- "More information about what the issues are would be good. For example, the kind of things you're doing in the area of cybersecurity." Academic
- "The sub-themes do morph slightly, for example around digitalisation. SHE Transmission could take a chunk out of operating costs by picking where investment is to be made. It all morphs together under technology." Infrastructure / engineering representative
- "Smart asset management allows you to be able to communicate back and forth and informs what reinforcement goes where so it is important." Environmental group representative
- "Asset / system security and resilience is important for a connections customer who has lost their connection through bad weather, for example. It is a very reliable network that only needs tiny improvements, so driving costs down is what we're really talking about. Apart from flooding or a line going down, we're talking about efficiency improvements." Infrastructure / engineering representative
- "Something that worked OK in one patch may not work in another area. That says to me there's a problem there because it provides an excuse not to implement something that could be quite useful." Energy / utilities representative
- "I think network planning is important because if you want to do something dynamically, you need to base it on consistent standards." Environmental group representative
- "From our experience, there is a hierarchy of standards, generally starting with National Grid for transmissions. There are subtle differences in terms of environmental standards. There's a reason at network level to have national standards. Whether

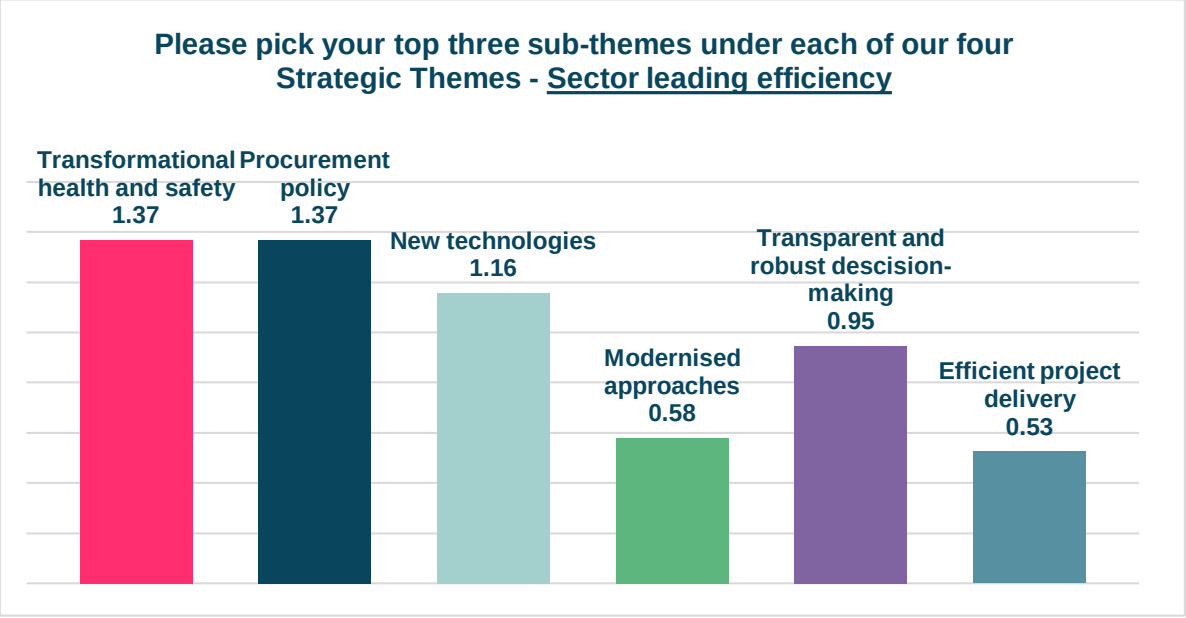
we're applying them correctly is another question, but in terms of standards they should be consistent." Infrastructure / engineering representative

Sector leading efficiency

Results from table exercises are shown below:

Table 1	
1.	Procurement policy
2.	Transformational health and safety
3.	New technologies
Table 2	
1.	Transformational health and safety
2.	Procurement policy
3.	Efficient project delivery

Results from feedback forms are shown below:



- “Procurement policy is really important. Commercial agreements downstream need to be looked at. Asking contractors to come up with innovative solutions comes with risk, so the discussion between contractor and client is vital.” Infrastructure / engineering representative
- “Does procurement policy include lobbying Ofgem? To allow SHE Transmission to be active and innovative in its procurement policy there needs to be a change.” Infrastructure / engineering representative
- “The challenge in this industry is that we all want to innovate, but the procurement process means we lose our advantage. We need this discussion.” Infrastructure / engineering representative
- “Transformational health and safety is really important. The people who get injured at work are generally the ones who work on site, so it is best to move people off site if possible so that activity is carried out in a tightly controlled environment rather than in an on-site environment.” Infrastructure / engineering representative
- “Transparent and robust decision-making is really important. You could lead the way in the sector given the amount of generation that is going on.” Developer / connections representative
- “I think new technologies is important. Devices help run the transmission network better. We need to work out a way to apply these technologies as we are missing a trick not deploying them. Digital evolution is a subset of new technologies.” Infrastructure / engineering representative
- “[Transformational] health and safety has to come first.” Infrastructure / engineering representative
- “I think the procurement policy has got to be agile. It has got to help enable what is right for that project.” Infrastructure / engineering representative
- “Efficient project delivery has to be there.” Infrastructure / engineering representative
- “New technologies are going to be important for squeezing out more efficiency.” Energy / utilities representative

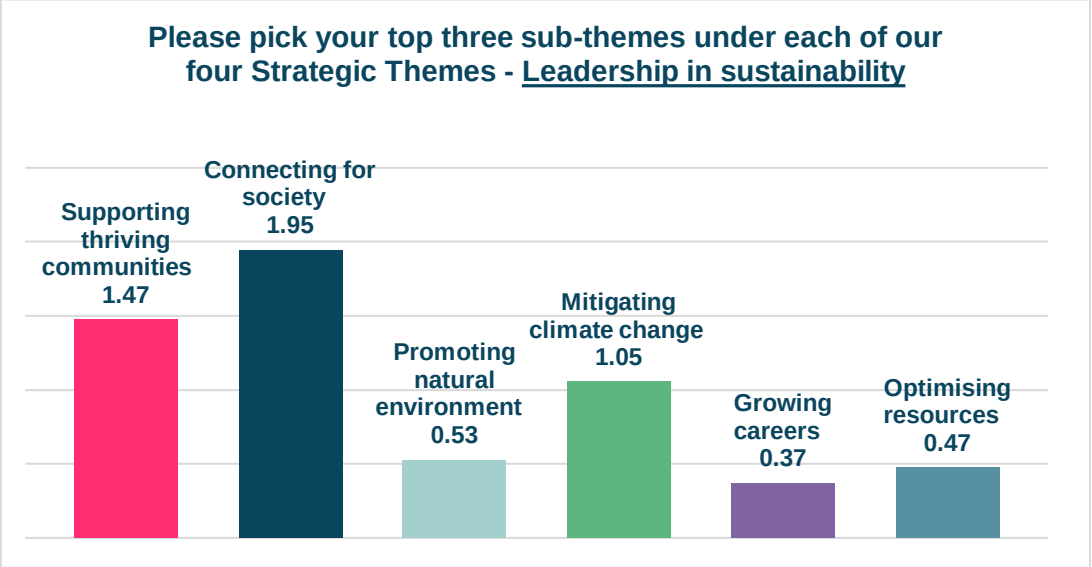
Leadership in sustainability

Results from table exercises are shown below

Table 1	
1.	Connecting for society

2.	Supporting thriving communities
3.	Promoting natural environment
Table 2	
1.	Connecting for society
2.	Mitigating climate change
3.	Growing careers

Results from feedback forms are shown below:



- "I think both 'supporting thriving communities' and 'connecting for society' are important. Removing barriers in communities opens and enables other things to happen. Scottish Government commitments for social equality and access are important here." Infrastructure / engineering representative
- "During the last workshop I attended, the message to leave the environment with positive biodiversity was really strong. That's a game changer for us. I would support using innovation for 'promoting the natural environment'." Infrastructure / engineering representative
- "Surely 'mitigating climate change' is a higher priority than biodiversity." Infrastructure / engineering representative

- “Affordability has to be at [the] top. Although the overall strategy is low carbon transition, if that costs five times the amount, nobody will sign up. There will be no development if that’s the case.” Infrastructure / engineering representative
- “You need to have innovative approaches to encouraging people to work for you. If you have a positive impact in Scotland, people will want to join a sector that is developing the energy industry so it’s about sustainability. The word ‘career’ might not be right. ‘Engagement’ might be a better, as it is a word that implies social interaction.” Energy / utilities representative
- “If we don’t tackle issues like recruitment, where will the next generation come from? Guys like me won’t be around in three to four years. The other thing is that the millennial generation work differently. They’re much more willing to embrace change, work differently and think of news ways of doing things. They want to work much more flexibly.” Infrastructure / engineering representative
- “I think there needs to be the long-term approach, making sure we look at the wider societal benefits of new connections.” Environmental group representative

Q. What are the sorts of activities / things that you would like SHE Transmission to innovate on in this area?

Taking the focus area that was the top priority under each strategic theme, stakeholders were asked to explore it in more detail, identifying the sorts of activities that they felt would benefit from innovation. The tables below summarise what was written on the facilitation boards, with some supporting quotes taking from the table discussion.

Stakeholder-led strategy

Table 1: Commercial evolution

#1 Priority	Commercial evolution
Activities	Reviewing industry frameworks
	Best practice / literature review
	Problem identification with customers

- “Reviewing industry frameworks for possible improvement and fighting for ways to improve how the industry works is clearly a good idea.” Infrastructure / engineering representative
- “Investigating other regimes and options is a no-brainer. You should be looking at whether best practice worldwide could be implemented.” Energy / utilities representative
- “Interrogating customers who interact with SHE Transmission and finding out where the bottlenecks are is vitally important.” Infrastructure / engineering representative

Table 2: Energy system transition

#1 Priority	Energy system transition
Activities	Engagement with System Operator
	Policy
	Correct incentives e.g. storage demand response
	Demand-led strategy
	Shout about trials

- “This is where engagement with the system operator and energy policy intersect. My one concern is that the wrong incentives are in place. At the moment, the cynic in me might say building stuff is good, but it’s better to build what is appropriate. Could you incentivise more demand response?” Energy / utilities representative
- “I think it has to be in this context something that has a much longer-term view. Being smart isn’t going to be enough. Whether infrastructure goes in doesn’t seem to be a factor at the moment.” Environmental group representative

Safe and secure network operation

Table 1: Smart asset management

#1 Priority	Smart asset management
Activities	Electric vehicles – engage on challenges with manufacturers and technological solution providers
	Standardisation of specifications – collaborate across industry
	Standardisation of communications protocols – same language

- “You should be engaging with electric vehicle manufacturers and tech solution providers and telling them the problem you want to solve, then letting them develop the solution to it.” Environmental group representative
- “Standardisation of communications protocols is a really important area. The problem is that some things are not talking to other things.” Infrastructure / engineering representative
- “Is it specified that smart technologies have to have certain protocols and standards? Electric vehicle charge points, for example, have no standardisation. Collaboration and standardisation are important. Technology evolves so quickly that there’s not much time to work out how to integrate with old equipment. We need to work out risks and strategies.” Infrastructure / engineering representative
- “IT and security are a part of this. A lot of equipment is bought that does lots of different things, and we now have to be clear about what it can handle and how these systems can be integrated.” Energy / utilities representative

Table 2: Network planning

#1 Priority	Network planning
Activities	Dynamic and seasonal ratings
	Better monitoring based on data

- “Seasonal ratings are a good idea. For example, if it’s a simple matter of switching a relay, then that’s a small price to play for a huge improvement.” Energy / utilities representative
- “You want a system to be responsive to different weather conditions, not just seasons.” Connections representative
- “That’s all well and good if you’ve already got monitoring in place.” Environmental group representative

Sector leading efficiency

Table 1: Procurement policy

#1 Priority	Procurement policy
Activities	How to procure innovation
	Engage supply chain
	Risk and reward contracts
	How to treat Intellectual Property (IP)
	Leasing of equipment
	Visibility of costs to connection customers

- “How to procure innovation is a tricky one. Early engagement with the supply chain is needed. Risk and reward contracts are a good idea. Framework contracting works, but risk and reward target cost is preferable.” Infrastructure / engineering representative
- “How you treat intellectual property is a problem.” Infrastructure / engineering representative
- “You should look at leasing equipment as opposed to owning it.” Energy / utilities representative
- “A developer will charge £3m, but sometimes the developer says it will take only £1.5m. Knowing where the costs come from for connection customers in advance would be good.” Infrastructure / engineering representative

Table 2: Transformational health and safety

#1 Priority	Transformational health and safety
Activities	Creating focus on design stage
	Health and safety must take priority
	Thinking of health, not just safety
	Pay for any inefficiencies – it's not all about speed

- "There needs to be a greater focus on looking at health and safety at the design stage. It has to be looked at holistically." Infrastructure / engineering representative
- "We talk about health and safety as if they're one and the same. We should design things out that pose an occupational health hazard, for example changing from lead to aluminium sheaths. There are things we've been doing, like horizontal termination, where if they're thought about and planned, they can be done, but it takes time." Infrastructure / engineering representative
- "I've been involved in a couple of situations when they've had to get access to the generator, and they've said we need 12 weeks to do that work. There is always a health and safety aspect to increasing the number of workers on a particular job. As engineers we can up with a solution when we have to, but until the dialogue is open then we can't come up with solutions." Infrastructure / engineering representative

Leadership in sustainability

Table 1: Connecting for society

#1 Priority	Connecting for society
Activities	Learning lessons from Orkney
	Early engagement

- “There are lots of lessons to be learned from the Orkney transmission project on what could be improved for these types of connections regarding affordability.” Developer / connections representative

Table 2: Connecting for society

#1 Priority	Connecting for society
Activities	Avoid short-term thinking
	Put across the case for what you are doing
	Transparency

- “We need big infrastructure in our grids to allow what the grid has to do for consumers.” Environmental group representative
- “It’s the market that’s the problem.” Infrastructure / engineering representative
- “Irrespective of what it is you have to do, people will be a lot more accepting if they understand why it’s happening, even down to the reason why certain roads are closed. If you’re really clear about the reasons, then people understand the benefit.” Energy / utilities representative
- “How do you incentivise a technology that you want to encourage? Do you have control of that sort of thing?” Environmental group representative
- “It’s a market-driven challenge. The market would have to respond to signals in terms of what we want.” Energy / utilities representative
- “In relation to that, why isn’t Scotland as a whole incentivising a more strategic approach?” Energy / utilities representative
- “On a similar theme, the Scottish Government is very ambitious, not just from the point of view of decarbonisation but economic potential as well. Do we want to be an exemplar globally? Do SHE Transmission and other transmissions companies share this goal?” Infrastructure / engineering representative
- “There’s an opportunity for a ‘whole system’-specific incentive. There are slim mechanisms within price controls to allow for that. That’s what we’ve got to try and demonstrate for T2.” Energy / utilities representative
- “The whole purpose of innovation is to push the regulations a bit.” Environmental group representative

- “Part of this is being realistic about what your ambition is and what’s expected.” Infrastructure / engineering representative
- “The innovation projects that happen seem to be under the radar until they’re happening. There are a lot of people we work with who would like to get involved at an earlier stage.” Environmental group representative

WORKSHOP THREE: WHOLE SYSTEMS

The final session was introduced by Bless Kuri, System Planning Manager. He explained what was meant by ‘whole systems’ and outlined what the company saw as the opportunities and challenges in that regard. He then set out SHE Transmission’s proposed approach to ‘whole systems’ and provided some initial detail on the company’s proposed strategy: data, collaboration, and focus areas. Stakeholders were then asked to give their feedback.

At the end of the discussion session, stakeholders were asked to complete a short feedback form enabling them to vote individually on their top three priorities.

The feedback below has been summarised according to the questions asked during the discussion session, with the results from the feedback forms supplementing this feedback where appropriate.

SUMMARY

In general, stakeholders had not had much involvement or given much thought to whole systems to date. There was a sense that, as a topic, it was very important but one that was very early in terms of its development. On the feedback forms, several stakeholders said that they did not feel qualified to comment, which perhaps demonstrates that more work needs to be done to communicate whole systems to stakeholders.

Challenges and opportunities

Stakeholders identified several challenges to whole systems. These included: the challenges involved in educating the end consumer about the way that the consumer uses energy in the future; the need to compensate electric vehicle owners if their cars are used as a storage solution because of the negative impact on the car’s battery life; how to plan for the variability between generation and demand in certain areas of the network; and the different planning requirements between the rural and urban networks.

In terms of the opportunities for whole systems, stakeholders generally identified those that would benefit the customer, such as the opportunity for customers to have more flexibility in their connections offers and, ultimately, for the end customer to pay less for their energy bill. The opportunity to support the decarbonisation agenda was also raised by stakeholders.

When asked how satisfied they were with the benefits that SHE Transmission had identified, on average stakeholders answered 3.4 out of 5 with the most common response being 'neutral' (56%). Compared to the other questions on the feedback form, satisfaction here ranked the lowest, which implies that SHE Transmission could do more to better articulate the benefits of a whole system approach.

Whole systems approach

Stakeholders were then asked what they thought of SHE Transmission's approach to whole systems. Broadly, they supported the proposed approach. When asked how satisfied they were as part of the feedback forms, on average stakeholders answered 3.7 out of 5 with over half (56%) saying 'satisfied'.

Stakeholders also broadly agreed with SHE Transmission's proposed level of ambition: to focus on whole system solutions within electricity transmission and distribution first (in RIIO-T1) before broadening out to other energy vectors, such as gas (in RIIO-T2).

However, one stakeholder did point out that the company could be left behind if, for example, the move to hydrogen accelerates quickly, and urged the company to ensure readiness to accommodate different rates of change. Several other stakeholders did say that they felt SHE Transmission's approach was ambitious given how much they were hoping to achieve by the end of RIIO-T2.

The role of gas in whole systems was identified as perhaps the most important point of collaboration between energy vectors. Despite this, whilst there was some disagreement, stakeholders generally felt that this should be examined in RIIO-T2.

The point was made that SHE Transmission is uniquely placed to do this given that the distribution network in the North of Scotland is run by another company within the SSE group.

Whole systems strategy

Stakeholders were interested in the potential of data sharing, although it was noted it was imperative that the data being shared is relevant and accurate. They requested the sharing of a range of different information as part of whole systems, although most in relation to electric vehicles. This included: peak demand data; the location of where electric vehicles are on the road network; and the availability and usage of electric vehicle charge points.

In terms of who SHE Transmission should collaborate with on whole systems, stakeholders suggested the following:

- Electric vehicle manufacturers

- The regulator
- The energy suppliers – about charging mechanisms
- Economic development agencies – about upcoming growth plans
- The other transmission operator(s) – particularly in Scotland

One stakeholder also made the point that SHE Transmission should establish a regular mechanism to update stakeholders on whole systems outside of industry forums and stakeholder workshops.

SHE Transmission set out their proposed areas of focus for their whole system strategy. Although stakeholders didn't comment on all of them, they did discuss the importance of network planning and investment – in particular, the integration between distribution and transmission to streamline reinforcement programmes.

In addition, stakeholders identified 'black start' as an area that requires a whole system approach between the transmission operators and the system operator. They also urged SHE Transmission to focus on addressing system stability as part of their whole system strategy.

STAKEHOLDER FEEDBACK

Q. How much involvement / how much thought have you given to whole systems in your role to date?

- "We're working on it right now. For example, with renewables, particularly hydrogen. The key is how this works with transmission operators." Developer / connections representative
- "For any developer, the boundary between distribution and transmission is a false one. We should be thinking more widely across gas and electricity." Infrastructure / engineering representative
- "Transport Scotland is doing some modelling in this area. It is relatively early doors, but they are working on energy scenarios up to 2022 and beyond. Some findings are due to come out at the end of 2019. That's as far as it's got." Infrastructure / engineering representative

Challenges and opportunities

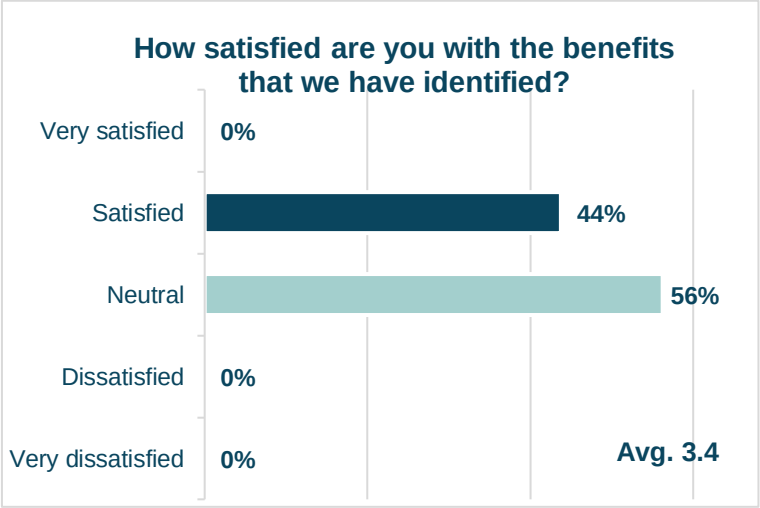
Q. What are the challenges to achieving a whole systems approach?

- "People don't understand there's an implication for every action, for example buying an electric car." Energy / utilities representative

- “Sometimes people don’t realise they need to charge their electric vehicle. Consumers want ease of use. No one cares about who owns what infrastructure and what company is in between. Changing mindsets about how people use power at home is a key change in how decarbonisation will happen. Plugging in EV and allowing a smart system to charge when the energy is cheapest. I don’t know how an organisation educates in that way.” Infrastructure / engineering representative
- “Electric vehicles are able to charge or discharge better than any other power distributor ever. If cars discharge, they lose battery life. If they charge at lower rate, they also lose battery life. They are providing a service to the grid. How does the operator see this? Could there be a monetary incentive for battery degradation?” Academic
- “In the Emerging Thinking document, there’s variability between new generation in different areas and different demand in different areas. If you have large energy demands [and] you’re unsure whether they’ll shift to electricity, how do you model and update those numbers during RIIO-T2?” Developer / connections representative
- “It’s the regulator’s problem and the Government’s problem at the end of the day.” Infrastructure / engineering representative
- “I think the viewpoint I’ve always taken is the challenges between the urban and rural networks are always going to be different. Breaking down the task in that way is going to be important when developing your whole system approach.” Infrastructure / engineering representative

Q. What do you see as the opportunities of whole systems? Do you agree with the ones that we have identified?

Feedback form results



Stakeholders left some written comments on the feedback form, some of which are shown below:

- “The benefits relate to customer costs and the support of decarbonisation. It seems to be less influential than the immediate issue of applying for connections”.
- “Future planning of DSO/TSO position to create customer collaboration”.

Round-table discussions

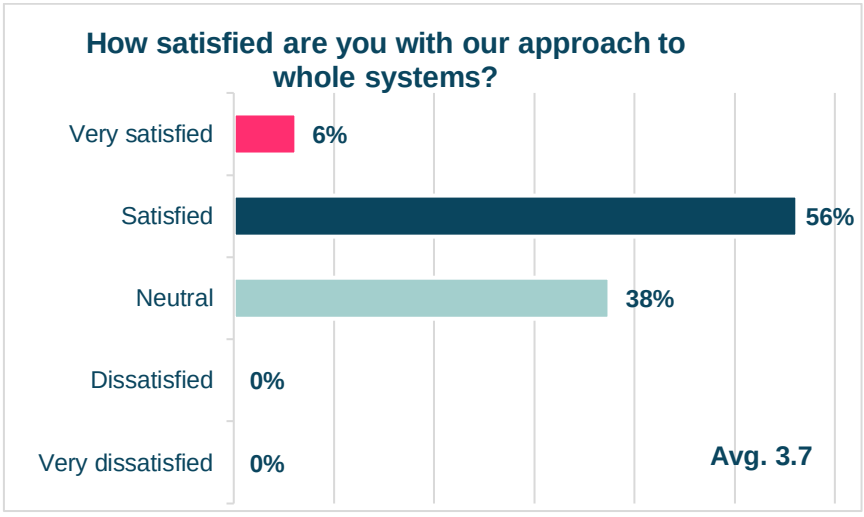
- “The storage capacity of electric vehicles could provide a huge opportunity.” Environmental group representative
- “Could the whole system approach offer a much greater value to the customer?” Environmental group representative
- “For a developer, if this approach allows us to approach you and ask where I should connect and at what voltage, that would be great.” Infrastructure / engineering representative

Whole systems approach

Q. How satisfied are you with our approach to whole systems?

Feedback form results

This question was asked as part of the feedback forms. The results are show in the graph below as well as a selection of the written comments.

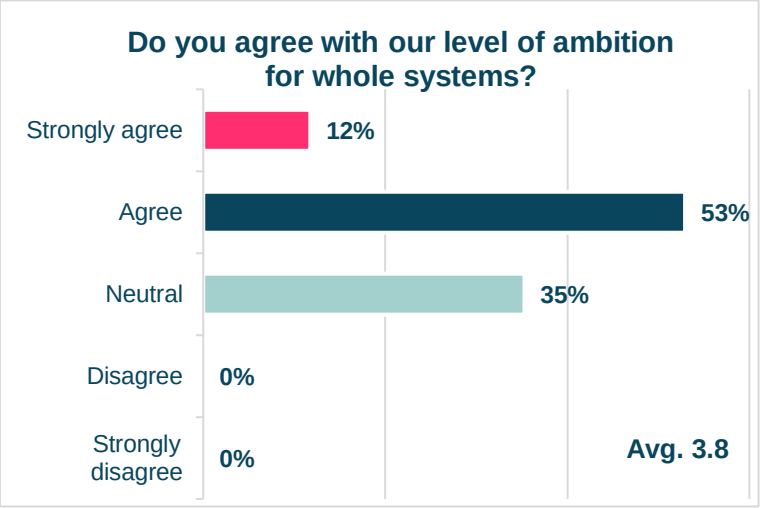


- “I believe this is the correct approach. SSEN being such a large organisation, a gentle approach to change is the right one.”
- “As a TO, there is a responsibility to your investors. However, in Scotland, communication between DNO/DSOs should be open.”

- “I feel the definition of whole system should be measured and redefined, as the influence appears to be limited to designated areas – what you have the ability to influence – not everything.”
- “You should include generation and demand. There is no mention of interconnections outside of the UK.”
- “It seems appropriate, but short-term readiness to accommodate different rates of change will probably be key.”
- “It is good to see a view towards other energy sectors, i.e. gas and hydrogen.”

Q. Have we got the right level of ambition with regards to whole systems (intermediate in T2)?

Feedback form results



Stakeholders left some written comments on the feedback form, some of which are shown:

- “It is very ambitious compared to where the TO currently is.”
- “I think your ‘beginner’ would be good progress within RIIO-T2 period – would be a step on from RIIO-T1 and within SSEN’s sphere of influence and control”.
- “Given the regulatory constraints, this seems reasonable”.

Round-table discussions

- “I think it feels about right, focusing first on distribution and transmission.” Infrastructure / engineering representative
- “If there is a change from natural gas to hydrogen or electricity, it could sneak up quickly. It could catch the transmission companies out.” Developer / connections representative

- “The future of gas is the biggest question. If we are moving towards a greener energy mix, something has to give. If people aren’t heating houses with gas, extra electricity is needed. Where will the energy come from to charge electric vehicles? You have to look at different things and get a more holistic approach.” Energy / utilities representative
- “Should it just be electric or gas, or a mix? Everything has to decarbonise to meet climate change commitments. No one knows what that means in terms of technology coming through.” Infrastructure / engineering representative
- “SHE Transmission is uniquely positioned to work towards a whole system approach for distribution and transmission. The big question is how to bridge the gap between electricity and gas. There are competing forces and unique dimensions here.” Infrastructure / engineering representative
- “It seems to me that’s a reasonable starting point. From an outside point of view, I’ve always felt that the gas providers don’t always talk to one another. There’s still a way to go to find a meeting of minds in this area.” Infrastructure / engineering representative
- “It’s a case of trying to run before you can walk. There’s so much planning that needs to go on even just at the electricity level, so trying to work with the gas sector seems to me to be a step too far in terms of what needs to happen first off with energy systems.” Environmental group representative
- “Who influences the System Operator’s appreciation of what’s required on whole systems?” Environmental group representative
- “Looking at electricity right now is the first stage.” Energy / utilities representative
- “I think the timing is key to this. How it works now is pretty early-stage in terms of whole system thinking. There’s a broader challenge for the System Operator in terms of increasing the market solutions. For example, how can we reduce constraint costs for our outages? How can we look at reinforcement? What are all the different schemes that are going on? It’s almost marking each other’s homework.” Energy / utilities representative
- “From a Scottish point of view, we’d like to create a competitive advantage, so creating a whole system approach here would take us down a positive route.” Infrastructure / engineering representative

Whole systems strategy

Q. What do you think of our approach towards data?

- “The data sharing element is fascinating in terms of what it will enable. If you want to coordinate, then you need information to coordinate on.” Energy / utilities representative
- “Peak demand data would be good to know.” Environmental group representative
- “If we could get information from the mobile operators that put SIM cards in electric vehicles that would be useful. The most useful thing is knowing the location of the cars, not knowing when they want to charge. This would enable you to know the rough areas they are in.” Energy / utilities representative
- “We know about the data of charging sessions. We don’t know how many cars got turned away by full charge points. We need to know where the vehicles will be and where they want to charge. We are looking at that right now. And it should be a collaboration. Working together to come up with a solution.” Infrastructure / engineering representative
- “In the future scenarios data, they presumably predict what’s going to happen?” Environmental group representative
- “My worry is that, when you get the initial information, it’s whether that information is relevant and accurate.” Environmental group representative

Q. What do you think of our approach towards collaboration?

- “Why not collaborate with electric vehicle manufacturers?” Infrastructure / engineering representative
- “Having communication that includes some form of commitment to send updates in between the industry forums and workshops would enable information to flow on a regular basis.” Energy / utilities representative
- “I think the regulator should be in there. I know that’s taken as read, but they’re culpable at the end of the day, particularly where it’s speculative.” Infrastructure / engineering representative
- “You’ve missed out thinking about the role of the supplier. If you want people to buy electricity differently, you need the supplier to reduce the cost of the electricity at certain times to change their demand profiles. You have no influence as the transmission operator. There is something broader here than just the gas distributors. It’s the energy suppliers who have the ability to set the price. [You] have to look beyond the network to the end customer.” Energy / utilities representative
- “In terms of the agencies responsible for the economic development in particular areas, there must be some advance notice of what they’re planning.” Environmental group representative

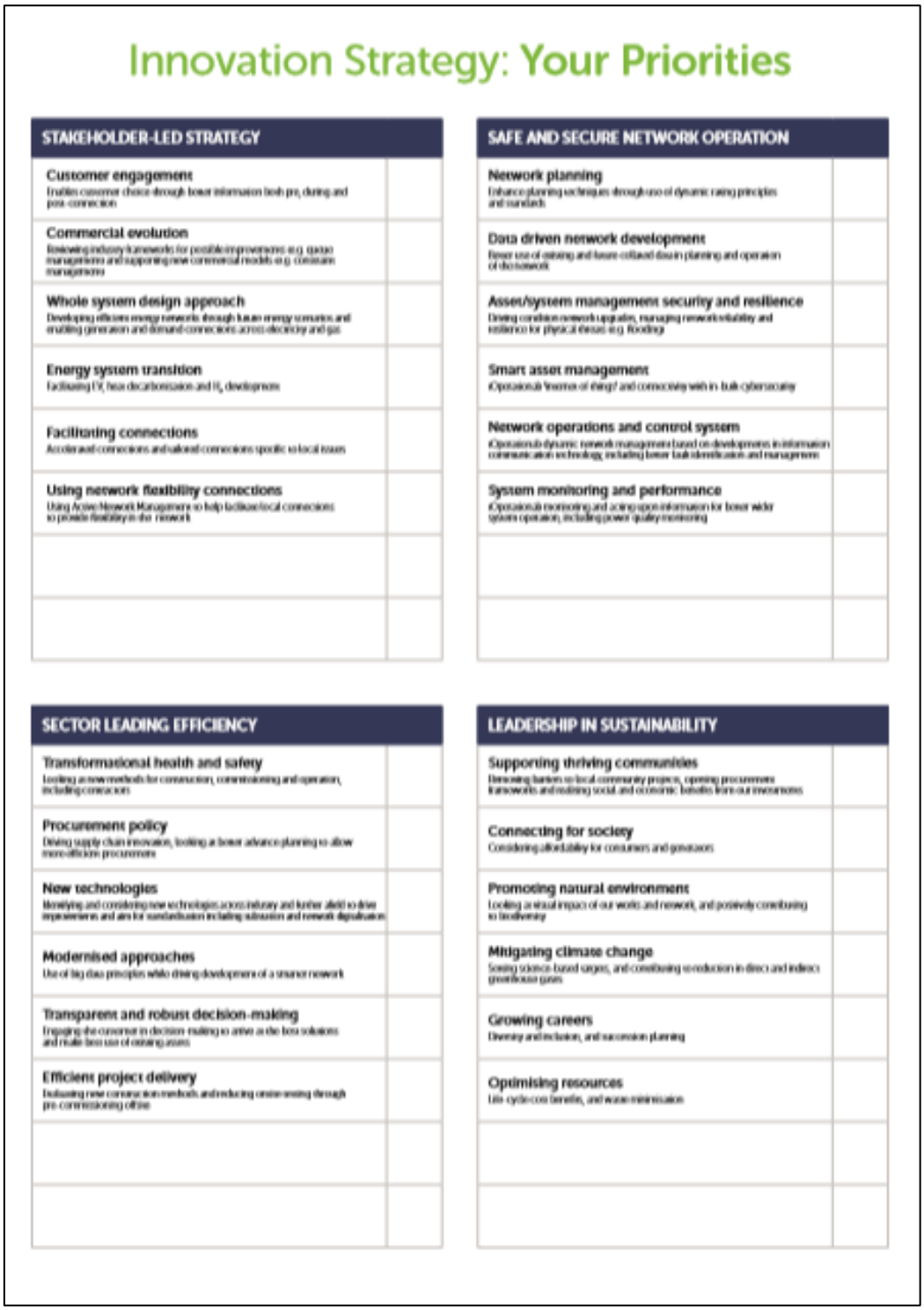
- “Is there a need for the two transmission operators in Scotland to work more closely together? My concern is that there is not enough cooperation between them.” Energy / utilities representative

Q. What do you think of our areas of focus?

- “There needs to be better integration with distribution and transmission at a local level. This will reduce the need for more capital investment in the local network. Looking ahead, it seems that the need for reinforcement could be reduced if TOs integrate better with the distribution network.” Infrastructure / engineering representative
- “Yes, network planning is really important. You could get a map of Scotland in terms of available resources and use that to help plan the network because people want to develop where there is high resource. That proactive type of approach needs to have more sway than it currently has.” Infrastructure / engineering representative
- “Black start is currently the responsibility of the transmission companies. That is an example of a whole system issue. At the moment, Scotland has a declining number of black start generators. Is that the fault of the System Operator or something that the Transmission Operators should be responsible for in their whole system planning?” Energy / utilities representative
- “You should take a steer from the MIGRATE project which aims to address stability issues in electricity system, across the whole EU. This is the sort of thing you should look to replicate as part of a whole systems approach.” Infrastructure / engineering representative

APPENDIX 1: FACILITATION PROPS

WORKSHOP TWO: INNOVATION STRATEGY 'PRIORITY FOCUS AREAS'



Innovation Strategy: Your Priorities

STAKEHOLDER-LED STRATEGY

- **Customer engagement**
- **Commercial evolution**
- **Whole system design approach**
- **Energy system transition**
- **Facilitating connections**
- **Using network flexibility connections**

SAFE AND SECURE NETWORK OPERATION

- **Network planning**
- **Data driven network development**
- **Asset/system management security and resilience**
- **Smart asset management**
- **Network operations and control system**
- **System monitoring and performance**

SECTOR LEADING EFFICIENCY

- **Transformational health and safety**
- **Procurement policy**
- **New technologies**
- **Modernised approaches**
- **Transparent and robust decision-making**
- **Efficient project delivery**

LEADERSHIP IN SUSTAINABILITY

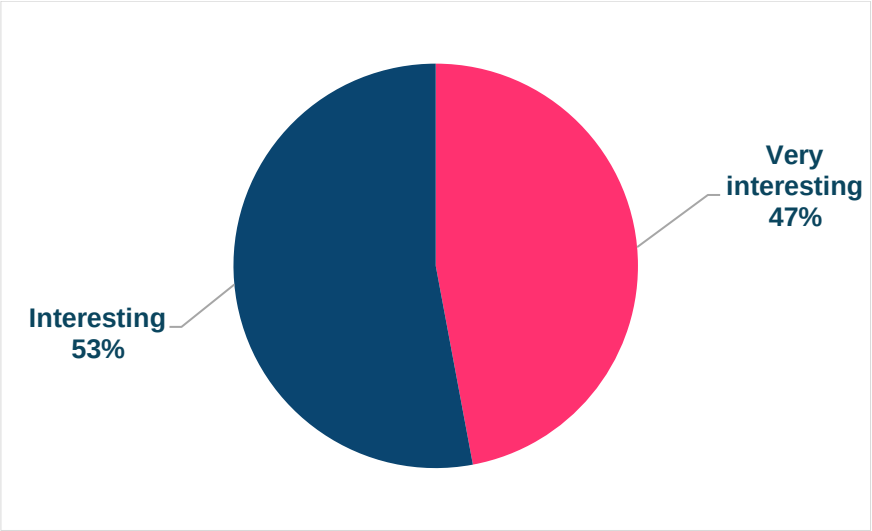
- **Supporting thriving communities**
- **Connecting for society**
- **Promoting natural environment**
- **Mitigating climate change**
- **Growing careers**
- **Optimising resources**

WORKSHOP TWO: INNOVATION STRATEGY 'KEY ACTIVITIES'

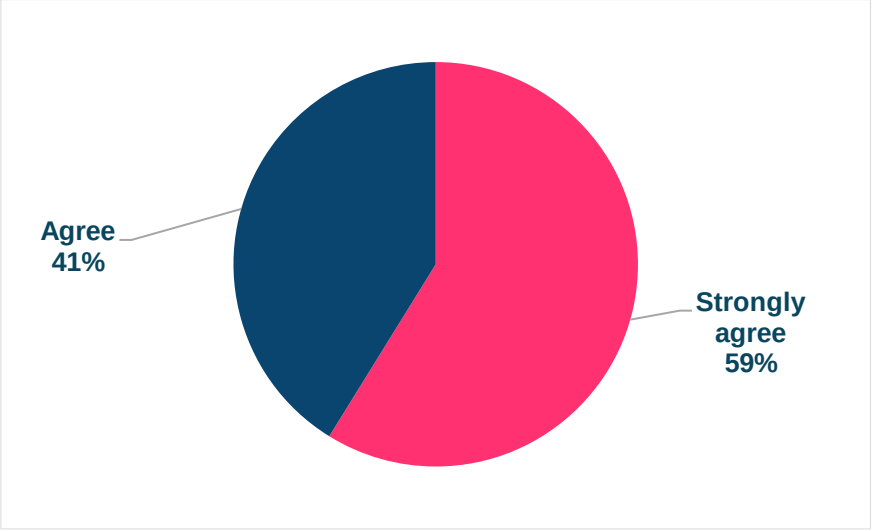
APPENDIX 2: EVENT FEEDBACK

After the workshop, stakeholders were asked to complete a short feedback form on what they thought about the workshop itself. The feedback was as follows:

1. Overall, did you find this workshop to be:



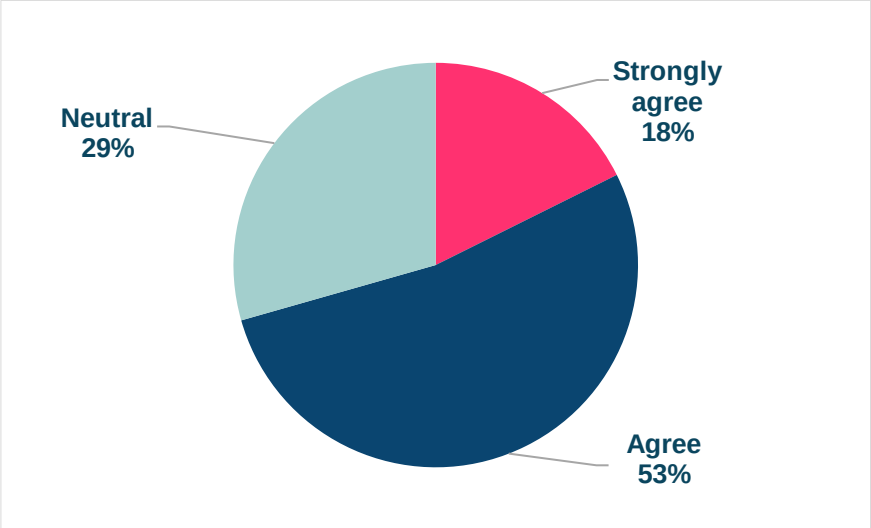
2. Did you feel that you had the opportunity to make your points and ask questions?



Comments:

- “The facilitators really helped.”
- “Good format and well facilitated.”
- “Well done EQ Communications!”

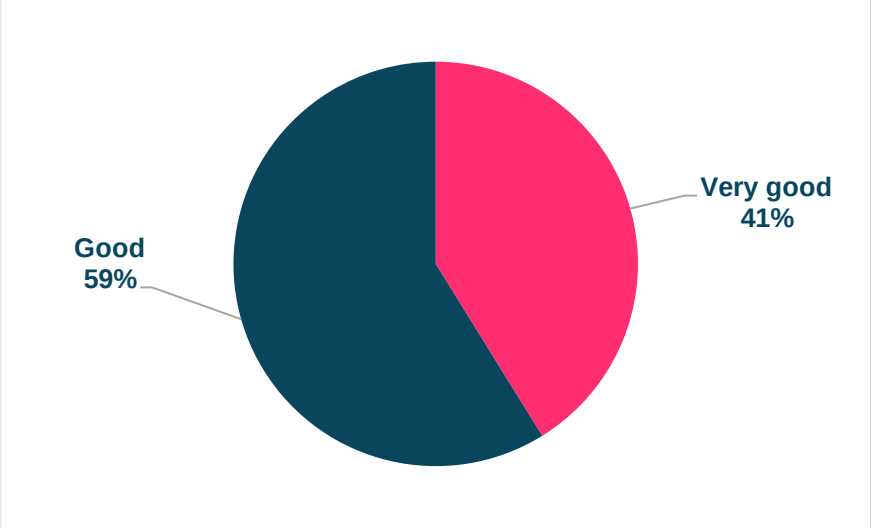
3. Did we cover the right topics for you on the day?



Comments:

- "It would have been great [had] more information about challenge engagement been provided."
- "I just felt that we lacked a 'generator' input."

4. What did you think of the way the workshop was chaired by your facilitator?



Comments:

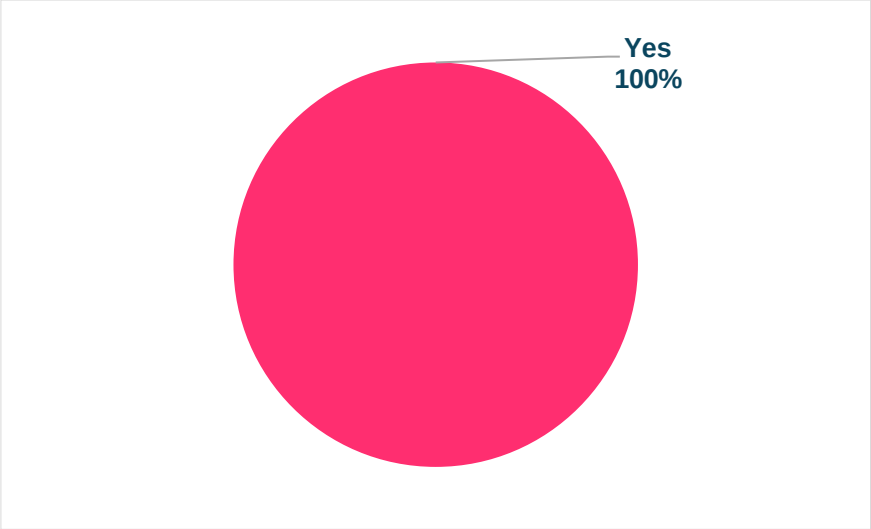
- "The day was well chaired and facilitated. EQ Communications did well to keep the conversations lively and bring people in."
- "It was excellent. Everyone was given an opportunity to speak and contribute."
- "They kept it moving and on subject."

5. Any other comments?

Comments:

- “Very useful and interactive session.”
- “Thanks for a good session. Focusing on connection process, incorporating whole system thinking, could be a quick win?”
- “It will be great to hear about the attitude of other DOs/TOs on these topics as well.”

6. Would you like to receive our post-event report, and invites to similar events in the future?



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