Energy Strategy Call for Evidence

Response Template

How to Respond

This template replicates the questions asked in the Call for Evidence found at: https://www.economy-ni.gov.uk/energy-strategy-call-for-evidence

It is recommended that you should read the full consultation document before completing your response. Please note that the text boxes used throughout this template can be expanded to accommodate your response – there is no character limit.

For further information on how we handle your personal data please read our Privacy Notice

Early responses are encouraged but all responses should arrive no later than **5pm on 20 March 2020.**

Please send your response to:

energystrategy@economy-ni.gov.uk

Or alternatively by post to:

Energy Strategy
Department for the Economy
Netherleigh
Massey Avenue
Belfast
BT4 2JP

Quote the reference "**Energy Strategy Call for Evidence 2019**"

1. General Information

1. **Name (required)**

[redacted]

2. **Are you responding:**

   ☐ **as an individual (please complete 3 to 5 below)**

   x on behalf of an organisation / company (please complete 6 to 8 below)

If you are responding as an individual:

3. **E-mail address**

4. **Address**

5. **If you are responding as an individual, please read the Privacy Notice and tick the statement below as applicable.**

   ☐ **All responses will be published on the Department for the Economy website following completion of the Call for Evidence process. Please tick if you are content for your name to be published alongside your response.**

If you are responding on behalf of an organisation / company:

6. **Organisation / Company**

Electric Ireland

7. **Position within Company / Organisation**

[redacted]

8. **Contact details**

   a. **E-mail address**

[redacted]

   b. **Address**

[redacted] [redacted] [redacted] [redacted]

2. Energy in Northern Ireland

Q1. What lessons can we learn from elsewhere in addressing energy within an overarching climate action framework?

Q2. What are the key considerations for decarbonising Northern Ireland's energy sector given existing linkages to other jurisdictions?

Q3. To what extent should Northern Ireland implement the key energy-related recommendations from the CCC 'Reducing Emissions in Northern Ireland' report?

Q4. Do you agree with the 30-year timeframe? If not, please state your preferred approach and reasons.

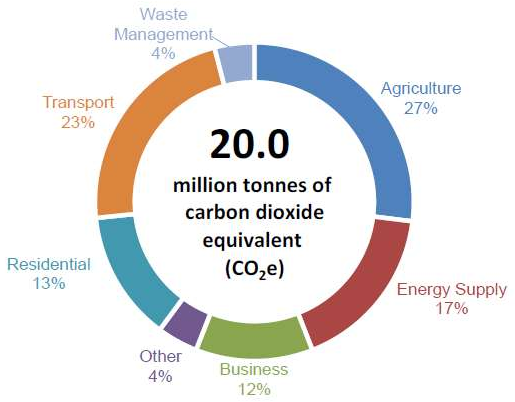
Q1. What lessons can we learn from elsewhere in addressing energy within an overarching climate action framework?

Climate change is one of the biggest challenges facing humanity and globally there is a critical need to reduce greenhouse gas (GHG) emissions to protect future generations. This is acknowledged in a range of international agreements and national policy documents that set out ambitious targets to restrict global warming and eliminate greenhouse gases.

Northern Irelands Emissions

DAERA has reported that in 2017[1] energy related GHG emissions accounted for c.65% of the overall GHG emissions in Northern Ireland – this underlines the criticality of developing an energy strategy focussed first and foremost on GHG emissions reductions.

Figure 2: Greenhouse gas emissions by sector
Northern Ireland, 2017



[1] https://www.daera-ni.gov.uk/news/northern-ireland-greenhouse-gas-inventory-1990-2017-released

Energy related emissions can be further categorised in those emissions covered under the EU Emissions Trading System (i.e. EU-ETS comprising of the electricity sector and elements of the Industrial & Commercial sector) and emissions not covered by the EU-ETS (i.e. non-ETS emissions – primarily heat & transport).

Installations of a certain size and greater (power generation and large energy users) are part of the EU-ETS; this is a cap and trade scheme for emissions where each tonne of carbon emitted by an installation must be matched by a certificate with these certificates traded on open markets. The aim of the ETS is to decarbonise the large energy emissions sectors by 2050 by removing the number of certificates in circulation each year.

Northern Ireland will remain part of the ETS as per the Withdrawal Agreement and GB has indicted that there will be a carbon pricing mechanism in place at the end of the transition period.

The existing carbon price floor in GB builds on the principals of the EU-ETS and has resulted in an accelerated reduction in carbon intensity of the electricity sector.

Evidence Base

When putting in place a whole of system decarbonisation strategy for the coming 30 years, there is a significant body of evidence available to support this. A number of these are set out below;

- In May 2019, the Committee on Climate Change published the paper Net Zero[2] - The UK's contribution to stopping global warming – this paper was the supporting evidence base which allowed the UK Government to legislate for net zero by 2050. There are significant learnings in this report in developing an NI strategy.
- As quoted extensively in this Call for Evidence, the Committee on Climate Change published a dedicated report on reduction emissions in Northern Ireland[3]. This publication provides extensive research on decarbonisation in Northern Ireland and provides an evidence-based blueprint in many sectors for reducing emissions by 2030.
- In November 2018, the European Commission published its Clean Planet for all Communication[4] which set out significant detail about the path to carbon neutrality and included a number of decarbonisation strategies.

When considering the decarbonisation of energy emissions, electrification has a significant role to play. The electricity system has shown itself to be on a pathway

[2] https://www.daera-ni.gov.uk/news/northern-ireland-greenhouse-gas-inventory-1990-2017-released
[3] https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/
[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0773

to decarbonisation and further has the potential to produce low carbon electricity at scale. As the carbon intensity of the electricity production sector deceases, increased electrification of the heat and transportation sectors provides a no regrets pathway to decarbonisation of the overall energy sector.

There is mounting body of evidence that suggests that electrification will be the key to decarbonising many sectors of the world economy;

- In Brussels, the pan European electricity representative body Eurelectric completed an electrification study in 2018 (Decarbonisation Pathways)[5]. The study shows that removing the barriers to adopting electric technologies together would enable the reduction of EU emissions by 80-95% between now and 2050. An economy where up to 60% of final energy consumption is directly coming from decarbonised electricity can be achieved, leading to climate protection as well as societal and environmental benefits.

- In the US, a comprehensive study by the National Renewable Energy Laboratory[6] found significant potential for the electrification of buildings, transport and industry to reduce emissions across a range of penetration scenarios.

- WindEurope published a report "Breaking New Ground" which recommends increasing electrification across the European Union's power systems from its current level of 24 percent to 62 percent by 2050[7].

- Electric Ireland's parent company ESB has given significant consideration to how Ireland might decarbonise and in 2017 published a report[8], in conjunction with international consultants Poyry entitled "Ireland's Low Carbon Future - Dimensions of a Solution". The Dimensions Report considered broader energy emissions in a holistic manner (namely heat, transport and electricity) and sets out a series of "low regret" recommendations informed by international precedent right across the various energy sectors. The key tenet of the Dimensions Report is the moving to a low carbon society and economy through the increased electrification of heat and transport underpinned by the decarbonisation of electricity through the deployment of zero or close to zero carbon electricity production technologies. Many of the findings and themes in the Dimensions Report have relevance for decarbonisation in Northern Ireland.

- From a total energy perspective - a Marginal Abatement Curve (MAC) was completed as part of the development of the ROI Climate action plan[9] with the aim of determining the least cost pathway to 2050 targets; such work would be

[5] https://www.eurelectric.org/decarbonisation-pathways/
[6] https://www.nrel.gov/docs/fy18osti/70485.pdf
[7] https://windeurope.org/about-wind/reports/breaking-new-ground/
[8] https://www.esb.ie/docs/default-source/publications/dimensions-of-a-solution---full-report-with-contents-links.pdf?sfvrsn=fa083bf0_8
[9] https://www.dccae.gov.ie/en-ie/climate-action/publications/Pages/Climate-Action-Plan.aspx

beneficial for Northern Ireland. Devising policy measures that deliver low carbon electricity & storage solutions driving the electrification of heating & transport require detailed modelling of the entire energy system to ensure the delivery of measures that deliver the most cost-effective solutions for society.

Carbon Budgets for Northern Ireland

Decarbonising the energy sector is multifaceted and complex – the current thinking is that energy is an integrated problem. Low carbon heating, transport and electricity and energy storage are best achieved by looking at the entire energy system in an integrated way and using one part of the energy system to help the others. The approach taking by the UK provides a basis for addressing the complex set of issues in an integrated fashion with overall carbon reduction being the ultimate goal. Multi-year carbon budgets underpinned by legislation provide the basis for all other policy measures – driving policy makers and solutions to deliver the most effective carbon reductions on a trajectory towards net-zero.

To provide certainty for policy making in Northern Ireland, we can see merit in setting explicit emissions reduction targets locally. This would involve identifying an appropriate Northern Ireland contribution to the UK wide net zero commitment for 2050 and at appropriate intervals before then. Scotland and Wales have carried out this exercise and both have legislated for emissions reductions through their devolved administrations.

The Energy Consumer

Ultimately, the range of initiatives and policy measures identified as part of this energy strategy framework need to be developed and implemented with those impacted by the measures at the centre of the solution. All measures must deliver real and demonstrable long-term benefits to the end consumer which can be monitored and tracked – this must work at a micro level.

Each of the options discussed within this reply is underpinned by an assumption that customers can be persuaded to enlist and contribute to any associated initiatives. These initiatives can involve loans and material financial outlay by customers many of whom are already well stretched. It is very unclear that customers economic circumstances will be sufficiently robust to enable such enlisting absent improvement in the general economic environment and / or significant grant support and incentives.

Key Points

In this submittal we have addressed the relevant questions asked in the call for evidence. At a high level we believe the following key points should form part of the resultant strategic energy framework;

- A strategy that is built primarily around GHG reductions, forming a critical part of an overall, Northern Ireland economy wide carbon reduction target.
- A clear pathway to full decarbonisation of electricity production.
- Cost effective solutions optimised through whole system modelling.
- Customers at the heart of the transition to a decarbonised society.
- An acknowledgement that general societal economic wellbeing is necessary to facilitate decarbonisation at a micro level.
- A just transition for workers and businesses supported by policy to ensure that the "new economy" is supported while become established.
- The ending of fossil fuel heating in new domestic & commercial properties.
- Improving the building fabric and decarbonising the heating source of existing domestic and commercial buildings
- Continued support for the electrification of transport.

Q2. What are the key considerations for decarbonising Northern Ireland's energy sector given existing linkages to other jurisdictions?

As mentioned above, decarbonisation of society is a complex undertaking with many moving parts all of which is made more complicated the closer to net zero it is wished to go. Alignment and integration play a key role in any decarbonisation pathway. We have already seen significant integration of markets and systems across Europe which is supporting decarbonisation. This should be no different for Northern Ireland and indeed there are opportunities available here. At a high level there will be certain areas where Northern Ireland will integrate with different markets and there will be areas where it has localised plans. In general, though, integration will be based on underlying fundamentals and sound reasoning.

- There are many areas where Northern Ireland will look to Great Britain (GB) for alignment and policy learnings. GB is one of the most advanced jurisdictions in the world in terms of thinking on decarbonisation and has done significant work on electricity, heat and transport. Therefore, Northern Ireland will be able to call on significant support and inspiration there.
- There are areas where alignment and integration with Ireland should be pursued. In particular, the all-island electricity market is underpinned by a

common governance structure in the SEM Committee and that can be leveraged for delivering a decarbonised electricity system. There are other areas such as transport where alignment will be appropriate. For example, as part of the SEM and as the energy market moves to encompass more of the distributed energy sector and consumers in general, consistent and coordinated policies in both NI and ROI will allow an efficient all-island market that will benefit both jurisdictions. Furthermore, alignment of carbon pricing, renewables supports and environmental policies which will be important in the context of maintaining a well-functioning cross-border economy again supporting the objectives of both NI and ROI.

- The 2019 amendment to the UK Climate Change Act[10], which enshrined in law a 2050 net zero emissions target based on 1990 levels will affect any climate and energy targets in Northern Ireland. Northern Ireland currently accounts for approximately 4% of the overall UK carbon emissions. Setting decarbonisation targets for Northern Ireland will need to be in the context of meeting its obligations under this climate change act. Delivering on those targets can be assisted by the efficient operation and functioning of electricity markets on the island of Ireland.
- The relative size of Northern Ireland in the context of the overall UK market needs to be considered in relation to UK wide decarbonisation support schemes and the fact that projects in NI may be too small on a relative scale and may miss out on support – specific sizing of projects for NI should be considered. Furthermore, consideration of participation in ROI schemes or at least the legal basis for same should be explored.

In summary, there will be times when greater integration with Great Britain is the most appropriate way forward and there will be times when integration with Ireland is appropriate. Both decisions can be based on the underlying circumstances pertaining to the issue at hand.

Q3. To what extent should Northern Ireland implement the key energy-related recommendations from the CCC 'Reducing Emissions in Northern Ireland' report?

The CCC recommendations are sensible and well supported by their own and international research. We suggest the recommendations should form a key part of the development of a specific Northern Ireland Energy Strategy and approach to decarbonisation and associated policy measures, where the unique aspects of

[10] https://www.legislation.gov.uk/ukdsi/2019/9780111187654

the NI energy landscape can be factored in. The CCC should be asked for regular assessments as part of a climate governance framework in NI.

Q4. Do you agree with the 30-year timeframe? If not, please state your preferred approach and reasons.

We agree that 30 years is appropriate, given the importance of the 2050 timeframe set out in the Climate Change Act and in the Paris Accord. However, all climate and energy plans need to include a more detailed focus on the period 2020-2030 to reduce emissions early and to avoid fossil fuel lock-in due to investment cycles. The policy measures adopted e.g. carbon budgets on 5-year cycles should be devised to ensure that cost-optimality over the 30-year framework is achieved.

A detailed schedule / roadmap between now and 2050 should be developed in order to track the progress. This roadmap should include critical milestone dates.

3. The Energy Transition in Northern Ireland

Q5. What are the unique characteristics of Northern Ireland that need to be considered in a net zero carbon energy transition?

Q6. Is your organisation undertaking or planning to undertake projects to support the energy transition? If so, please provide further details.

Q5. What are the unique characteristics of Northern Ireland that need to be considered in a net zero carbon energy transition?

The climate and energy landscape in Northern Ireland has many similarities to that in ROI – thus decarbonisation measures at a local and societal level recommended in ROI may be more cost effective to implement than those based on a GB system basis. However as already noted specific modelling for Northern Ireland's unique circumstances is advised.

Key characteristics particular to Northern Ireland include[11];

- Large percentage of population located in rural areas – highly dispersed.
- Low penetration of natural gas in homes and businesses – Just over 30% of homes use gas for heating in NI – a slightly higher percentage in ROI, compared to approximately 85% in GB.
- Relatively low proportion of industrial heat (requiring very high temperatures).
- High penetration of renewable electricity.
- High proportion of farming and agribusiness per capita compared to GB for example.
- Compared to GB, there is a smaller customer base of Large Energy Users and so the energy intensity of industry is lower and more akin to that seen in ROI[12].
- Transport links in particular rail is limited in rural areas – leading to a high level of dependency on individual cars for transport.
- NI has lower disposable income per head[13] and relatively higher levels of fuel poverty compared with the rest of the UK and that of ROI.
- High reliance on imported fossil fuel compared to the rest of the UK and like that for the ROI.
- NI operates as part of a small-scale Island electricity system with limited interconnection to UK & European mainland.

[11] https://www.theccc.org.uk/publication/reducing-emissions-in-northern-ireland/
[12] https://www.uregni.gov.uk/market-information
[13] Office of National Statistics in the UK (ONS)

Q6. Is your organisation undertaking or planning to undertake projects to support the energy transition? If so, please provide further details.

- ESB eCars[14] currently operate a network of over 300 Standard AC electric vehicle charge points and 17 Rapid chargers in Northern Ireland. Customers are currently able to charge on this network for free. ESB e-cars are currently looking at opportunity to improve and expand this network. However, the commercial justification for expanding electrical vehicle infrastructure is challenging while take-up of electric cars is low.
- ESB Smart Energy Services (ESB SES)[15] is working with Large Energy Users (LEUs) in R.O.I. and N.I. to reduce their CO_2 emissions. ESB SES through behind the meter energy efficiency projects assists LEUs to meet their ambitious carbon reduction targets and carbon neutrality targets. ESB SES will also work with LEUs implementing behind the meter (private wire) funded on site generation projects (solar, wind, heat pumps, CHP etc.). Planning application rules and regulations need to be reviewed to make sure that they are practical and workable. In order to make an impact and to make progress, planning application should be quick and simple to obtain. Grants will need to be considered for behind the meter generation projects.
- Plans to roll out decarbonisation incentives to customers need to be supported by societal wide education and supported by policy measure to ensure that they are beneficial for both consumers and companies involved in their provision.

[14] http://www.ecarni.com/
[15] https://www.esb.ie/our-businesses/smart-energy-services

4. Energy Consumers

Q7. How should we ensure that energy remains affordable for domestic consumers? What approach should be taken to eradicate fuel poverty?

Q8. What steps could be taken to improve the relative cost competitiveness of larger non-domestic consumers?

Q9. Is a strategic position of "enable and protect" the correct policy stance?
   a) What policies or schemes are needed to enable active consumers?
   b) What policies or schemes are needed to protect vulnerable consumers?

Q10. What types of advice and information are required by all consumers and what are the best mechanisms for facilitating this?

Q11. Are there examples of successful citizen energy projects in Northern Ireland and elsewhere that have delivered improved energy efficiency and/or clean energy to local communities?

Q12. What opportunities are there in both urban and rural areas for citizen energy communities in Northern Ireland? What role could government have in facilitating these?

Q13. What evidence can you provide that identifies the challenges and opportunities for NI energy consumers in decarbonising energy?

Q7. How should we ensure that energy remains affordable for domestic consumers? What approach should be taken to eradicate fuel poverty?

It must be ensured that the policy measures implemented are based on sound analysis and deliver decarbonisation in a cost optimal manner taking the energy system in its entirety. Any burden associated with the decarbonisation of our economy must be equitably shared across society with both commercial and domestic consumers contributing.

As the economy decarbonises new business lines and jobs will become viable – policy makers must ensure that the workforce is provided the necessary training and skills to contribute to these new areas and in turn improve their levels of remuneration. Further detail on the economic opportunities are provided in the answer to Q43.

In addition to growing businesses based on decarbonising the economy – Northern Ireland should set clear targets for decarbonisation to attract those global companies looking to base themselves in an economy which places climate change and the measures to reduce its impacts at the heart of its

economic and energy strategies. Encouraging higher levels of better paid employment through attracting global employers into NI requires a high skilled work force. Northern Ireland already has a highly skilled workforce but will need to develop those skills to focus more firmly on maintaining secure energy supplies a larger focus on renewables and on energy efficiency to meet these companies' main needs. Energy policy should be developed alongside wider constructs to encourage these employers into the market here.

Meeting the needs of the Northern Ireland's electricity system in terms of power production, security of supply is costly due to low interconnection and size of the market. However, both ROI and NI electricity systems have benefited through the increased market size offered through the joined all-Island SEM market and further benefits have been delivered through the delivery of the ISEM market upgrade in 2018[16]. Further interconnection between the two markets will offer further savings – SONI have estimated[17] that the North-South interconnector will deliver between £29M - £43M benefits across both markets in 2030.

There are higher levels of fuel poverty in NI as a result of many factors, unemployment, low paid labour, oil/coal heating, increased cost of transport (on all goods which are imported) and commuting costs. There needs to be schemes in place to help consumers who can pay, to pay in an affordable manner, that could be through loan schemes on bills etc. These possible solutions need detailed analysis e.g. considering how to manage consumers who move suppliers and determining whom should receive government assistance.

A move away from oil & solid fuel heating must be made. Low carbon retrofit of homes is a powerful tool in improving energy affordability, reducing or eliminating fuel poverty and greatly improving health outcomes and lowering health costs.

We must however recognise that the fuel poor were possibly already struggling to pay bills and provide heating, therefore this would need careful consideration to ensure no additional financial burden on the poor in society.

Q8. What steps could be taken to improve the relative cost competitiveness of larger non-domestic consumers?

Strong energy management to reduce energy use. Energy Management Systems to the ISO50001[18] standard or similar have proven to be an excellent tool to assist in reducing the energy consumption. ISO 50001 requires the customer to maintain a register of opportunities and to prove on an annual basis that energy efficiency projects have been implemented. Measurement and

[16] https://www.semcommittee.com/publications/sem-19-071-sem-annual-report-october-2018-september-2019
[17] https://issuu.com/designtactics/docs/soni_north_south_interconnector_-_a?e=1919908/34185602
[18] https://www.iso.org/iso-50001-energy-management.html

Verification (M&V) of the energy savings should be carried out in accordance with IPMVP. From a business perspective there is not always the need to invest time and manpower in the actual ISO certification and the annual renewal. ISO 50001 is a good system and businesses should be incentivised and encouraged to obtain this Energy Management Certification

As outlined above increased the all island wholesale market and improved interconnection delivers reduced cost of the electricity system which helps this objective.

Q9. Is a strategic position of "enable and protect" the correct policy stance?

Electric Ireland supports the policy position of enabling and protecting consumers as we transition to a decarbonised economy.

As noted above in respect of energy affordability and further on in this response in relation to the impacts of decarbonisation on the economy, it needs to be acknowledged that the overarching societal economic dynamic requires addressing to enable consumers and businesses participate in the decarbonisation journey.

a) What policies or schemes are needed to enable active consumers?

The energy strategy framework and the resultant policy measures need to be developed and implemented with those impacted by the measures at the centre of the solution. All measures must deliver a real and demonstrable long-term benefit to the end consumer which can be monitored and tracked – this must work at a micro level.

Ultimately, customers will only pay for any products/services devised if they have bought into the idea and requirement, they must make a tangible difference to their lives i.e. reduce the energy usage and ultimately reduce the amount they are spending on energy. Importantly without reducing their standard of living. Without customer engagement and cooperation nothing much will change or at best will change very slowly or will await mandated action (which can often be unpopular). The success and level of take up of PV systems in NI shows that customers will engage when supports are in place to adapt new technologies.

Moving to a smarter energy system - allowing consumers to benefit from new ways of buying, utilising, selling and storing energy - appropriate use of time of use tariffs - allowing energy to be consumed at times when prices are lower.

As mentioned previously, electrification can play a key role in decarbonising society, particularly in an electricity system with high levels of variable RES. To

achieve this, we will need to move away from using load profiles in electricity settlement. There is already a wholesale electricity market with 30-minute prices and in the future customers with flexible demand such as EVs will be able to use electricity at times of low prices. If load profiles are still being used there will be no way to credit the customer with moving their demand. Therefore, a scheme is needed to roll out intelligent meters across Northern Ireland.

Customers should have the ability to have easier access to energy data to give them information about their own energy use. This would allow them to have more control over their own consumption, technologies and self-generation (or third parties to do so on their behalf if they agree) and enable the delivery of associated consumer benefits.

It should be noted that energy customers will have many new and exciting ways to interact with the low carbon transition. For example, we are already seeing many customers with solar PV on their homes. Additional measures in the future will include smart appliances, electrification of hot water, smart charging electric vehicles and potentially vehicle to grid technology.

b) What policies or schemes are needed to protect vulnerable consumers?

It is important that the interests of the vulnerable customer population are protected; and any policy positions adopted will need to recognise the additional challenges involved in gaining the support of this group.

Use of fossil fuels be they oil/gas/solid fuels for heating and transport may attract higher costs associated with the cost of carbon - developing a policy that will enable electrification of those sectors in conjunction with the decarbonisation of the electricity generation sector will ultimately keep energy costs manageable.

For all types of consumers, their needs to be guidelines and measures to protect the consumer where incentives or schemes driving decarbonisation are being targeted specifically at them. That they cannot be miss sold schemes that are not appropriate for their specific circumstances.

Many of the schemes will involve potentially large amounts of capital outlay for consumers, so should be regulated in same way as car sales, energy suppliers etc. with regards to sales and marketing practices. It cannot be assumed that companies will adhere to a set of standards if they are not published or monitored. It is important to note that not all companies who will end up providing provide these services will be electricity supply companies.

Q10. What types of advice and information are required by all consumers and what are the best mechanisms for facilitating this?

The means by which or society and economy will decarbonise will be multi-faceted and for the majority of consumers novel. Technology and solution advice will be mainly focused on benefits of energy efficiency improvements, renewables, roles of prosumers, electrification of heating & transport and the move to digital energy system. From a financial perspective, consumers will want to clearly understand benefits versus costs, how to access and avail of grants and low-cost financing as appropriate.

Clear communication is vital. It is important that customers clearly understand where and why they are being asked to contribute in the area of energy and climate change policy. This will necessitate the development of appropriate customer communications which seek to explain why customers should change their behaviours and/or purchase new product/services which will aid them in making their contribution to climate change.

Communication needs to be impartial and originate from trusted sources. Government bodies and local authorities could be considered or the establishment on an independent agency like the Energy Saving Trust in GB or the SEAI in ROI should be considered. The advice imparted to consumers must be accurate and fulsome, the body imparting the advice must be seen as a trusted advisor.

A single independent source of information will avoid the need for consumers to make multiple enquires and reduce the risk of mixed messages and therefore confusion.

Q11. Are there examples of successful citizen energy projects in Northern Ireland and elsewhere that have delivered improved energy efficiency and/or clean energy to local communities?

- The Utility Regulator's discussion paper on the Review of Northern Ireland Sustainable Energy Programme[19] gives a good overview of the Energy Efficiency programmes available in Northern Ireland, which have delivered much benefits to customers, particularly in the vulnerable sector, and also the programmes available in GB and Scotland.
- SEAI Better Energy Communities[20] supports new approaches to achieving energy efficiency in Irish communities. Upgrades can take place across building types to reduce energy use and costs throughout the community, aiming to deliver energy savings to homeowners, communities, and private

[19] https://www.uregni.gov.uk/news-centre/review-nisep-discussion-paper
[20] https://www.seai.ie/community-energy/sustainable-energy-communities/

sector organisations. All projects should be community oriented with a cross-sectoral approach. In 2018 there were 235 sustainable energy communities representing over 10,000 citizens.

- Tipperary Energy Agency "SuperHomes"[21]. TEA launched their near zero energy building (NZEB) programme in 2015, initially under the SEAI BEC Scheme and subsequently under the SEAI Deep Retrofit Pilot Scheme. This pioneering professional-led retrofit advisory offering has delivered ~300 No. deep retrofits across the ROI and has successfully demonstrated the potential for deep decarbonisation of the existing housing stock and has informed the recently published Climate Action Plan.
- StoreNet[22] is a consortium project, based in Ballyferriter, Dingle Co. Kerry. It involved the installation of battery storage systems and solar PV systems in 20 homes and the aggregation of these into a Virtual Power Plant. This project demonstrated how battery storage and solar PV can help customers to be more sustainable and to cut their energy bills. The customers who participated in the project saw these impacts, with customers who also shifted their load patterns to avail of night rate making the largest saving. These StoreNet customers regularly compare notes and have developed their own "energy community" providing the consortium with feedback and the experience from a customer's point of view.

Q12. What opportunities are there in both urban and rural areas for citizen energy communities in Northern Ireland? What role could government have in facilitating these?

As outlined in the UR report on the review of the Northern Ireland Sustainable Energy Programme (NISEP) & Energy Efficiency Provision (August 2019), a shift in focus away from fossil fuel heating systems will require increased funding. Citizen energy communities could be a mechanism to deliver programmes more efficiently, by delivering programmes of scale, and energising communities to participate. This would work well for group retrofitting, especially in more rural communities. Government would need to work to draw up guidelines to determine what defines a citizen energy community and how it should operate (governance/finance etc) and the appointment of a body to oversee its delivery.

[21] https://superhomes.ie/
[22] http://www.ierc.ie/news/launch-ierc-storenet-project/

Q13. What evidence can you provide that identifies the challenges and opportunities for NI energy consumers in decarbonising energy?

Further reference can be made to the UR review of the NISEP & Energy Efficiency Provision and the engagement programme and call for evidence results contained within. The following key observations from the report provide crucial insights in respect of consumer sentiments towards decarbonisation;

- Participants were receptive to the message of promoting energy efficiency, and many had taken steps/continued to take steps to reduce energy consumption within their home. The main driver of these actions was to save money, although a few commented on the positive environmental effects. A few also confirmed that they were deterred from making their home more energy efficient due to the outlay costs, which they could not afford in their current circumstances.
- Most participants were unfamiliar with any energy efficiency scheme provisions available in NI, including NISEP and its individually named schemes. Where there was awareness, it tended to be vague. These findings extend to programme beneficiaries themselves, who explained that they had come across the energy scheme they had applied to by chance. No programme beneficiaries were aware that the scheme they availed of is connected to NISEP.
- There was little awareness of the nature of the funding model for NISEP. However, the amount contributed by the average household was overall felt to be fair and participants were generally in favour of the fact that the scheme is tailored to those most in need. Some participants would like to have seen a widening of the criteria and indicated that they may be willing to pay more depending on the criteria, while other participants held the opinion that 'all contribute, therefore all should be able to benefit'.
- Those in private rented accommodation commented that they would be reluctant to apply to a scheme that might cost them money as they would not want to put money into a home that they did not own. There was concern expressed that those individuals living in the rented accommodation were at a disadvantage when it came to be being able to obtain help from energy efficiency schemes in general.

Ability and willingness to pay for any energy efficiency measures came across strongly in the consumer research and this matter needs to undergo serious consideration to ensure that any policy measure but in place will deliver decarbonisation measures that tangibly benefit the end consumer.

"40% of consumers would not be willing to pay anything on top of their existing monthly bill for the additional services they selected and a further 15% would only be willing to pay £1. The mean willingness to pay is £1.69 per month (or £20.28 per year). Nevertheless, 12% of consumers would be willing to pay £5 more per month and 4% would be willing to pay even more than this"

The 2016 Northern Ireland House Condition Survey[23] provides further insights into the challenges of decarbonisation specifically for those in fuel poverty and thus the economic challenge of addressing this cohort of society;

- 22% of households were in fuel poverty
- Low income continued to be a significant cause of fuel poverty in Northern Ireland (55% of households with an annual income of less than £10,399 were in fuel poverty). Indeed, 78% of all households in fuel poverty had incomes of £15,599 per annum or less
- More than half (52%) of households living in older dwellings (pre 1919) were in fuel poverty.
- One-third (34%) of households living in small villages, hamlets or open country areas were in fuel poverty.
- Almost two-fifths (38%) of households headed by an older person (75 plus) were in fuel poverty and one-third (34%) of older household types were fuel poor.
- Fuel poverty was higher in households with HRPs who were not working (32%) or retired (31%).

[23] https://www.gov.uk/government/statistics/northern-ireland-house-condition-survey-2016-main-report

5. Energy Efficiency

Q14. What, if any, energy efficiency target or targets should be set for Northern Ireland?

Q15. How should we define, measure and monitor energy efficiency to optimise its potential in our homes, business, economy and environment?

Q16. What are the most important policy levers for government to ensure zero carbon in:

a) New domestic and commercial buildings by 2050?
b) Existing domestic and commercial buildings by 2050?

Q17. What should the future of energy efficiency support look like and who should be the key delivery bodies?

Energy efficiency and carbon emissions go together. Energy use in itself is not bad for the environment, but the sources of energy that have historically been used have associated carbon emissions. As we move to a low carbon society, there are two clear ways to reduce carbon emissions - reduce energy use and use lower-emissions energy sources. Fossil fuels have been historically cheap and easy to produce, thereby facilitating poor efficiency. Future energy sources are more technologically challenging and may prove be more expensive to produce. This requires a re-think in how we use energy. Higher efficiency energy use requires lower levels of input energy and results in lower carbon emissions.

Electric Ireland favours a carbon emissions reduction strategy with significant energy efficiency measures through a move to EVs and retrofitting of housing and commercial stock as we believe it is the lower regrets strategy.

Q14. What, if any, energy efficiency target or targets should be set for Northern Ireland?

Carbon reduction targets should be the foundation of Strategic Energy Framework. Energy Efficiency targets can support this carbon reduction objective and should be directly linked to these targets.

As Northern Ireland's energy and carbon emissions mix is unique within the UK (e.g. ~ 70% of homes use oil/solid fuel for heating in NI compared to ~15% in GB), targets set should be specific to NI and specific to each sector. Modelling of the entire energy system will identify the contribution that can be made by energy efficiency. It will prevent the over-allocation of scarce resources across multiple sectors. It will also

emphasise the importance of taking early actions to reduce energy consumption and carbon emissions. Lifecycle economic analysis of targets (taking account of the cost of carbon in regulatory policy) should be included.

Energy efficiency in new and existing buildings requires particular focus. Improved energy efficiency of the building stock will reduce carbon emissions, reduce customer bills and allow optimum deployment of low carbon heat. Furthermore, addressing energy efficiency, improves comfort levels and addresses health issues due to cold/damp and air quality issues associated with some fossil fuel heat sources. Irrespective of the decarbonised fuel pathway, energy efficiency in the building sector is required, meaning interventions in most homes and businesses is inevitable. To ignore the energy efficiency gap in homes and business premises would leave customers exposed to future energy prices which are largely unknown and would mean a missed opportunity to address unhealthy homes.

Besides better air quality, the potential to reduce greenhouse gas emissions and energy consumption are the most important motivation for the electrification of transport. Electricity does not only allow delivering energy from renewable sources to the vehicle, but also the possibility to use vehicle batteries connected to the smart grid for temporary storage of energy from fluctuating sources such as solar and wind.

A joined-up approach to energy-efficiency measures and delivering low carbon heat & transport is recognised as best practise (CCC report).

Q15. How should we define, measure and monitor energy efficiency to optimise its potential in our homes, business, economy and environment?

The important target of energy efficiency can be realised through the electrification of heat and transport. If energy efficiency targets are to be set, they should be based on final energy consumption to assist in the promotion of electricity, which as previously mentioned is on a set pathway to decarbonisation as part of the EU-ETS.

- In relation to the built environment, energy efficiency targets though suitable EPC ratings, CO_2 emissions and annual energy use per employee should be considered.
- For transport, EV numbers and overall CO_2/km could be considered

Knowing the starting point is critical. Performance of buildings has been measured for many years through the EPC process[24]. Analysis should be performed on the EPC database to identify the current state of the building stock. The EPC information is not focussed appropriately on energy efficiency or carbon intensity. Perhaps SAP could be reconfigured to deliver more specifically on the NI SEF objectives. Having this knowledge allows appropriate targets to be set to achieve the 2050 ambition and

[24] http://www.epcregister.com/

interim targets. If there are gaps in the EPC database, measures to encourage EPC take-up should be devised. Research project representative sample surveys or research projects like the Intelligent Energy Europe Tabula Project[25] should be established.

The overall carbon budget should be the most important measure of success. It captures the progress across all measures and importantly the effect of speed. Progress can be tracked by tangible metrics e.g., number of heat pumps installed or EVs sold. This allows the targets to be identified with and will highlight the effectiveness of individual policies. These more tangible targets should stem from modelling of the overall SEF ambition. Reporting should be brought together in a more coherent, consistent fashion, perhaps by a single body. Reporting should be annual and delivered as close as possible to the year end in question.

Q16. What are the most important policy levers for government to ensure zero carbon in:

a) New domestic and commercial buildings by 2050?

As per the GB, Netherlands and more recently in ROI, Northern Ireland should plan now for the ending of fossil fuel heating in new domestic and commercial properties.

Buildings constructed from this decade will be the zero-carbon stock in place for 2050. Setting the right minimum energy rating new building standards now is likely to be much more cost-effective than retrofitting to the same standard at a later date. This is a real low regret option where increasing emissions from growth are mitigated with no appreciable cost to the exchequer and no significant cost to new home or business owner.

Building regulations are the key lever for the new build sector. Evidence is clear from ROI where most new houses have heat pumps, driven by economic decisions following strict building regulations. Further consideration for the new build sector like rate reductions to kick start the industry should be considered.

Figures for new building CO_2 emissions in NI are not readily accessible but those from England & Wales provide a good reference as they employ similar building regulations and calculation methodologies. In 2019 the average emissions from new homes in England & Wales was 1.65 tonnes CO_2 per year[26]. In ROI, driven in the main by appropriate building regulations, the annual CO_2 emissions are

[25] http://iher.ie/file_upl/brochure.pdf
[26] https://www.gov.uk/government/collections/energy-performance-of-buildings-certificates

approximately 60% lower[27] if using a heat pump, noting that 55%[28] of new houses in ROI in 2019 used a heat pump for the primary heat source.

b) Existing domestic and commercial buildings by 2050?

Much of the domestic & commercial building stock in Northern Ireland needs a fabric upgrade - while significant measures have been achieved NIHE homes, it is clear from the housing condition survey 2016, NIHE homes are now more energy efficient than owner occupied and private rented property and there is a clear challenge in this sector. Homes in Northern Ireland use more energy and emit more CO_2 than the EU average with Northern Ireland having by no means the coldest winters or the hottest summers (although we do not have a specific reference for this statistic in NI – considering the housing stock and fuel usage is similar in NI to that in ROI – the 2018 Energy in the Residential sector report[29] identifies that the average Irish home emits 58% more CO_2 that the EU average). Higher emissions than the EU average is driven by several factors including age and quality of building fabric, a lack of district heating and high levels of oil & solid fuel burning.

From a commercial buildings perspective, the cost/benefit for the commercial sector will be different from the domestic sector. To ensure uptake of energy efficiency measures, policy levers could include carbon tax, accelerated capital allowance, green leases, rates changes, an imposition of minimum efficiency standards. Not all of these measures will be appropriate, however and careful consideration will have to be taken when designing the suite of measures to adopt to avoid unintended consequences such as wealth transfer, driving landlords out of the market and causing cash-flow issues for businesses.

From a domestic perspective numerous studies have pointed to multiple benefits of significantly upgrading building fabric for both individuals and society.

- For householders' bills are reduced, asset values increase, and living environments become healthier and more comfortable.
- For society economic output is increased, thousands of new jobs are created in the construction sector, exchequer finances are bolstered, fuel poverty is reduced, greenhouse gas emissions decline, and energy security is enhanced.

Retrofitting of the existing building stock is not easy and probably represents one of the more difficult areas to address in a path to a low carbon economy. This is

[27] Based on analysis from;
- DEAP at https://www.seai.ie/home-energy/building-energy-rating-ber/support-for-ber assessors/domestic-ber-resources/deap4-software/
- SEAI at https://www.seai.ie/publications/Energy-in-Ireland-2019-.pdf

[28] https://ndber.seai.ie/BERResearchTool/Register/Register.aspx

[29] https://www.seai.ie/data-and-insights/seai-statistics/key-publications/energy-in-residential-sector/

because there are so many individual buildings with so many individual decisions required. The key challenges in term of retrofitting existing housing stock include;

- Understanding what is required – providing clarity as to what kind of retrofit must be completed to get housing or commercial stock up to a climate proofed level and as to what heating technology works best. Until clear direction is provided here individuals and businesses will be unwilling to invest in case, they are told what they have done is not enough or is the wrong thing. Clear and appropriate minimum standards need to be set from the outset with the methodology for achieving compliance subject to minimal interpretation.
- There is a lack of independent advice. Householders seeking to carry out significant work on their residence need to get advice that is not just from their builder or materials supplier. The role of trusted intermediaries (like Tipperary Energy Agency "SuperHomes" who work on the householders' behalf should be considered.
- Access to low cost finance is required. The states resources are best focussed on social houses, vulnerable customers and those in fuel poverty, but some state intervention is needed in the can pay sector. If the state could provide low cost finance and tax rebates to this sector it could have a real stimulating effect. Access to a range of financial stimuli will be required (e.g. grants, low interest finance, tax incentives etc.) to stimulate householders to undertake energy retrofit works. KfW Energy Efficient Refurbishment model[30] is a leading example of a financing programme that incentivises home upgrades.
- Measures to address the supply of labour with the right skills is required through training, retraining etc.

Knowledge of the energy efficiency rating of homes and associated energy costs should be more widely available – in particular for people purchasing homes and those in the rental market.

Electric Ireland believes that a working group or task force is required to address this challenge. The working group should be established and chaired by a government department and should include a broad range of stakeholders including relevant government departments and broader industry stakeholders such as construction industry groups, equipment manufacturers, banking groups and energy industry representatives. This working group should develop a committed long term retrofit programme with clear targets for the coming 15-20 years.

Delaying action in this area to later in this decade will possibly be too late to have any impact on 2030 targets. A national retrofit programme is essential to address energy efficiency.

[30] https://www.kfw.de/inlandsfoerderung/Privatpersonen/Bestandsimmobilie/

Q17. What should the future of energy efficiency support look like and who should be the key delivery bodies?

While the NIHE and the NIESP has delivered significant improvements in the priority (Vulnerable) Customer sector – and as evidenced by the NIHE housing condition survey, a boost to the private sector and especially the privately rented sector is needed.

In ROI a range of energy efficiency and other energy related supports is administered by the SEAI[31] – provides links with local authorities and recommended contractors all through state funded grant schemes.

SEAI historically delivered supports through a range of schemes – mostly capital grants. Deployment of these single or shallow measures has been very successful: 375,000 homes received grants between 2000 and 2016. Under the Climate Action Plan, these individual, shallow measures will likely be phased out. The structure of supports into the future will possibly converge to a single scheme to deliver CAP objectives of retrofit and heat pump deployment.

A similar approach could be followed in Northern Ireland where supports are focussed on the delivery of stated decarbonisation objectives. Supports must be well-designed to avoid unintended consequences. Supports should target specific market failings or economic or structural barriers to delivering energy efficiency. The delivery of support(s) to drive carbon reductions should be delivered by a single body to ensure alignment.

Support should be delivered via more than just financial stimuli. As stated previously a working group should be established to identify the areas where supports are needed, such as facilitating low interest finance, independent advice and standards, as well as supporting skills and workforce.

The delivery of energy efficiency measures across hundreds of thousands of homes requires decisions and input from householders and landlords. There are a series of challenges which the householder must overcome. To make the journey easy and to ensure the appropriate standards are designed for and delivered, trusted advisors should act as intermediaries for customers. These “One Stop Shops” will not deliver the contracting works themselves, but will liaise between the contractor and the customer, ensuring quality and independence. SuperHomes Ireland is a good example in this regard.

As already mentioned SuperHomes, which leverages SEAI funding provides a ‘one stop shop’ for energy retrofit projects aiming to give homeowners the opportunity to retrofit their house to an ‘A’ energy rating standard. A SuperHome is a highly efficient home that combines a range of the most appropriate and cost-effective energy measures. SuperHomes design a whole house solution. The components work together

[31] https://www.seai.ie/

successfully to deliver a healthy, efficient and low carbon home, carried out in one carefully planned installation.

The essential measures in a SuperHomes Retrofit are:

- Air to water heat pump as the primary heating system.
- Airtightness improvement (reducing draughts and heat loss)
- Advanced ventilation as demand control ventilation for healthy air quality.
- Insulation to a high standard

6. Heat

Q18. What is the appropriate pathway and timeline for the decarbonisation of heat between now and 2030, and subsequently to 2050?

Q19. What are the appropriate ways to measure the progress of decarbonising heat?

Q20. What are the most cost-effective and sustainable steps that government might take to accelerate the reduction of the carbon intensity of heating fuels?

Q21. Is decarbonisation of the gas grid a viable option and what evidence can be provided on both the speed and affordability of decarbonising the gas grid?

Q22. What evidence can you provide on the opportunities for district heating schemes in Northern Ireland and where should responsibility lie for facilitating these?

Q23. Can you provide any evidence or information on the opportunities for geothermal heat supply?

Q18. What is the appropriate pathway and timeline for the decarbonisation of heat between now and 2030, and subsequently to 2050?

It is critical that policy acknowledges the source of carbon emissions from heating as being fossil fuels and seeks to remove them as soon as possible. Understand that the number of homes that must be retrofitted before 2050 means that half-measures cannot be undertaken to 2030. Interventions made now should deliver, in so far as is possible, most of the carbon reductions required for that building to 2050. The decarbonisation of heat should begin in earnest as soon as possible. Technologies deployed should have a clear and proven pathway to (near) zero carbon. Deployment of (in particular) air source heat pumps offers a no-regrets solution. Heating emissions should be tackled at source rather than relying on offsets such as Solar PV. Examine the feasibility of district heating from Irish Heat Atlas[32] and progress projects that are feasible, especially where linked to industrial heat or waste heat from businesses.

<u>Timeline</u>

The scale of the challenge facing Northern Ireland in respect of decarbonising the heating sector requires that a 2050-time horizon is adopted. Targets set in to 2030 should be fully compatible with the 2050 ambition and timeline. Targets set to 2030 should not undermine

[32] https://euf.maps.arcgis.com/apps/webappviewer/index.html?id=101b7da79a7d4e09a92402bd4ce8384c

the 2050 ambition and must be carefully thought through to prevent interim measures being undertaken only to be underdone post 2030. Targets - including carbon budgets - should be set to 2050 ambition and worked backwards to define annual activities. The challenge to decarbonise heat includes 800,000 as well as thousands of commercial premises. Activity to decarbonise heat should begin in earnest as soon as possible to avoid building up an insurmountable backlog to 2050.

Pathways

Multiple pathways are needed to achieve 2050 decarbonisation goals. Activity to tackle this challenge must be taken as soon as practicable. Solutions deployed must have clear and proven pathways to decarbonisation.

Energy efficiency needs to be considered as the primary decarbonisation pathway. Reducing heat demand is an undeniable means of cutting emissions in the first instance. The balance of emissions can then be further reduced through switching to a low carbon heating source. The benefits of energy efficiency continue beyond carbon reduction, such as energy bill reduction, comfort improvements and health benefits.

Higher performance buildings enable the deployment of heat pumps. Heat pumps are the ideal pathway to decarbonise space and water heating in tandem with energy efficiency measures. They combine unparalleled energy efficiency with the benefits of being electrically powered. Heat pumps are a proven technology with 1.25 million installed across Europe in 2018[33].

Domestic Sector

Deployment of heat pumps should begin now as they are a no regrets option. The same cannot be said for any other heating solution at present. The cumulative nature of carbon dioxide emissions towards a fixed carbon budget means that savings made in year one is compounded annually. Thus, a low-carbon solution implemented today (such as a heat pump) is superior to a low-carbon solution implemented in 2030 or 2040. This should be done in a co-ordinated, whole home approach to ensure optimum performance, led by the working group we have called for in the section on energy efficiency.

Evidence from the Deep Retrofit projects completed by Tipperary Energy Agency in Ireland has shown that a combination of energy efficiency and fuel switching to heat pumps can reduce carbon dioxide emissions by 83%– this amounts to savings of over 10 t CO_2 per home per annum. As the electricity system continues to decarbonise, these annual savings will increase over time. If similar results were achieved across the building stock in Northern Ireland, it could make a significant annual contribution to carbon reduction targets.

[33] https://www.ehpa.org/fileadmin/red/07._Market_Data/2018/2018-05-06_Heat_Pumps_in_Europe_2019.pdf.

There is a clear trajectory for decarbonising electricity. Per the latest DAERA[34] reports greenhouse gas emissions per unit of electricity generated (carbon intensity) has decreased by 36% from 631gCO_2/kWh in 2004 to 406gCO_2/kWh in 2017 (ROI figure in 2018[35] was 375gCO_2/kWh – noting that NI & ROI operate as a common electrify market). This decrease has been driven by a combination of increased efficiency in the generation portfolio, decreases in coal fuel generation and increases in renewable generation. With renewable generation increasing on an annual basis (renewables produced 43.7% of electricity consumption in NI in 2019) and the planned closure of coal generating stations during the early part of this decade the carbon intensity of electricity generated in Northern Ireland is expected to continue to decrease over the near to medium term. Furthermore, as detailed earlier in this consultation response the functioning of the EU-ETS will ultimately drive the carbon emission from power generation to zero by 2050. There is a clear co-benefit from sector coupling – the power industry has in place targets to reduce carbon production and the heat sector can benefit by utilising this decarbonised fuel course.

In new build, of course energy efficiency should be critical, but there is a simple opportunity to implement near-zero carbon heating solutions also. District heating linked to low carbon sources (such as waste heat or heat pumps) should be considered in urban areas. Low carbon heating solutions should be deployed in new homes. Heat pumps are the only single building heating solution which match the 2050 ambition. If other solutions emerge, then they should be considered, but other potentially zero carbon sources should not be put in place unless they are proven at scale, as they lock the customer into an uncertain future.

In ROI, it is evident that heat pumps in new buildings are becoming the heating solution of choice Heat pumps are not only displacing oil boilers but gas boilers too – 55% of new build houses in 2019 deployed heat pumps not because of gas grid access issues but because there is a growing confidence in the technology which can be provided at no additional cost to the homeowner.

Commercial Sector

The commercial sector is more varied than the domestic sector in the types of heating demands and the scale and nature of the premises. Where heat is used for space or low temperature water heating, the pathways should be similar to the residential sector, with energy efficiency and electrification being the primary pathways. Bespoke solutions may be required; however, many companies can help deliver the optimum solution. For higher temperature applications, low carbon solutions are not yet readily available. Where a low carbon solution for industrial heat applications is developed, it should be focussed on these more challenging use cases, particularly, where that source of heat is a scarce or expensive resource, instead of delivering low grade heat in space or domestic hot water applications.

[34] https://www.daera-ni.gov.uk/news/carbon-intensity-indicators-published
[35] https://www.seai.ie/data-and-insights/seai-statistics/key-publications/energy-in-ireland/

Q19. What are the appropriate ways to measure the progress of decarbonising heat?

From a domestic perspective, total carbon emissions of the building stock is the most appropriate measure, as it recognises the addition of new build homes. It also allows the benefit of tackling the worst performing homes to be included. Secondary measures should be the number of homes retrofitted to the required standard and the rate of conversion to low carbon heat sources (in particular, heat pumps).

For the commercial building sector, the focus should be twofold – energy efficiency and total carbon emissions/carbon intensity. Energy efficiency targets should be set as heating final energy consumption and carbon intensity as carbon emissions per kWh heat delivered. In the industrial heat sector, overall carbon dioxide emissions will be the primary metric to measure progress. Efficiency of processes will be useful to monitor, as will the proportion of heat load having switched from high-carbon sources to low carbon sources.

As for domestic properties, a better understanding the current state of the heating sector starting point is critical. Progress should be separated between the low temperature space heating and high-temperature industrial (process) heat. To measure the carbon emissions of the commercial building stock, SAP may have to be redesigned.

Q20. What are the most cost-effective and sustainable steps that government might take to accelerate the reduction of the carbon intensity of heating fuels?

As with determining all decarbonisation measures, system wide modelling looking out over the period to 2050 is the best method to determine the most cost-efficient pathway. Incremental improvements over the short term may prove more costly to implement closer to 2050 factoring in the cost of carbon and the time remaining to achieve targets.

The primary fuels used currently in NI are oil, solid fuel, natural gas, biomass and electricity. Of these fuels, as detailed elsewhere in this response, it is electricity that is becoming more sustainable in a clearly measurable way. Incentives should be continued to promote and stimulate the development of renewable, zero carbon electricity capacity. As the carbon intensity of electricity decreases, so too do the carbon emissions of any electrically-driven heating system, such as heat pumps.

Any incentives to decarbonise other fuels such as gas or oil must include the lifecycle carbon emissions of the fuels and indeed the overall potential for that fuel to deliver heat. Caution should be shown before further supporting low-percentage blends of low-carbon fuels into carbon-intensive fuels. The focus, effort and supports should be on decarbonising, not simply reducing carbon. Such mixed messaging could lead consumers to make decisions that lead to continued fossil fuel lock-in and divert attention and funding from activities that will deliver 2050 objectives.

Q21. Is decarbonisation of the gas grid a viable option and what evidence can be provided on both the speed and affordability of decarbonising the gas grid?

Use of gas for heating in NI is different from the rest of the UK in that gas has low penetration and there is a substantial rural population. Decarbonising the gas grid is a high-risk option, a number of relatively new and unproven at scale (e.g. Hydrogen) technologies need to be developed to make it work and this leads to high risk. NI is different from UK in that gas has low penetration in domestic space heating and there is a substantial population in rural areas. It is likely to be lower risk to avoid expanding the gas grid and to look to heat pump retrofit to replace oil fired boilers. NI has a high penetration of renewable electricity, which is helpful.

The gas network delivers heat at 224 gCO_2/kWh via a condensing boiler. This figure is relatively unchanged for the last number of years. Oil boilers can deliver heat at 273 gCO_2/kWh. Based on the latest figures from DAERA electricity delivers heat through a heat pump at 135 g/kWh[36] and as detailed above the carbon intensity of electricity production is decreasing and on a clear pathway to zero. Deploying heat pumps and building fabric upgrades now is a no-regrets irrespective of the future of the gas network.

There is still potential for delivery of low carbon gas through the existing infrastructure in the future. The flexibility offered and high temperatures possible could be advantageous for decarbonising some hard-to-reach sectors, such as industrial process heat. Two such options are Anaerobic Digestion and Hydrogen

- In Ireland, the volumes of biogas from Anaerobic Digestion production could be as low as 3 TWh per annum[37]. This amounts to approximately 6% of 2017/2018 gas demand or 13% of non-power demand. This potentially scarce resource should be deployed in the most appropriate use cases for NI.
- Power to gas from renewable electricity (green hydrogen) depends on further expansion of renewable electricity. The roundtrip efficiencies of power to gas will be much lower than direct electrification via heat pump. Low carbon Hydrogen from Steam Methane Reforming relies on Carbon Capture and Storage (CCS), which is yet an undeveloped market.

A mistake to be avoided is the assertion that using decarbonised gas eliminates the need to improve the energy efficiency of the building stock. Any renewable fuel is a valuable resource which may be difficult or expensive to produce. In a future of uncertain energy prices such valuable resources must not be wasted. Irrespective of the future of the gas grid, existing homes and commercial premises must be addressed to improve efficiency.

[36] generation carbon intensity of 406gCO_2/kWh and a SCOP of 3 gives 135g/kWh.

[37] Number established by cross referencing the findings from the "Sustainability Criteria Options and Impacts for Irish Bioenergy Resources" report with the earlier findings in the SEAI report "Assessment of Cost and Benefits of Biogas and Biomethane in Ireland".

In the short to medium term, gas will continue to deliver for power generation and existing heating applications. The long-term role for gas will become clearer as the roles for CCS, power to gas and biogas are established.

Q22. What evidence can you provide on the opportunities for district heating schemes in Northern Ireland and where should responsibility lie for facilitating these?

Northern Ireland is part of the Heat Atlas Europe project[38]. It should be feasible to establish from this work the locations where district heating is viable. District heating relies on supporting legislation and regulation, as well as seed funding to become established. So, the primary responsibility is on Government. After that, local authorities are appropriate sponsors of the development of network in specific areas as they are local, have powers to open roads and are linked to public representation of the communities they serve. There are numerous examples in UK (including Scotland) of new DH networks[39].

Q23. Can you provide any evidence or information on the opportunities for geothermal heat supply?

No comment on this question

[38] https://www.districtenergy.ie/heat-atlas
[39] https://www.gov.uk/guidance/heat-networks-overview

7. Power

Q24. What is the appropriate pathway for the decarbonisation of power from now to 2030, and subsequently to 2050?

Q25. What target for electricity consumption generated from renewable sources by 2030 is ambitious, achievable and affordable?

Q26. How can the new infrastructure necessary to meet a new renewable electricity target be delivered in a timely, affordable and acceptable way for consumers and society?

Q27. What innovations and solutions could contribute to meeting a new renewable electricity target?

Q28. What market incentives and support are necessary for investors to deliver the investment in renewable generation assets at a scale that will achieve a new renewable electricity target?

Q29. What steps need to be taken by Government to facilitate investment in offshore and marine renewables for NI?

No comments on this section

8. Transport

Q30. What would be an appropriate pathway to decarbonised energy for transport to 2050?

Q31. What role should active travel have in the decarbonisation of the transport sector and what should government do to support this?

Q32. What energy infrastructure is needed to facilitate the uptake of electric vehicles in line with UK Government's 'Road to Zero' targets?

Q33. How will transport integrate with other energy uses (e.g. homes with solar generation, battery storage, EV charging) and what can government do to optimise the opportunities represented by this integration?

Q34. To what extent can alternative low carbon transport fuels contribute to decarbonisation of the transport sector?

Q35. Do you have any data/research to help inform and reduce the carbon intensity of our transport energy in order to achieve net zero carbon by 2050?

Q30. What would be an appropriate pathway to decarbonised energy for transport to 2050?

Globally, electric vehicles will be the primary method to decarbonise private cars and light goods vehicles and in time other areas of transport. Significant progress has been made in battery density and costs. Bloomberg New Energy Finance forecast[40] that battery costs will drop to around $94/kWh by 2024 from over $1000/kWh in 2010. These prices make large cars and SUV's cost competitive with Internal Combustion Engines (ICEs) and closing in the expected cost competitive price for small cars of about $80/kWh.

This will make Electric cars and vans cheaper to manufacture than a conventional vehicle, but also make other areas such as larger trucks and buses more cost competitive, particularly when taking operational costs into account.

Major advances are being made to electrify buses which circulate in urban areas, with many of them now deployed across China, and in cities such as Amsterdam, London and Madrid. While an electric buses' upfront costs are often more expensive. studies suggest their lifetime costs are lower and they provide benefits such as improved air quality and lower noise levels compared with diesel vehicles.

[40] https://about.bnef.com/blog/battery-pack-prices-fall-as-market-ramps-up-with-market-average-at-156-kwh-in-2019/

Significant progress has already been made to improve battery performance in order to electrify these areas and this is expected to continue in the coming years. This decarbonisation is achieved by the higher efficiency of EVs compared to ICE vehicles and also by moving emissions from the non-ETS sector to the ETS sector (supported by a decarbonising electricity system).

To ensure EV ownership becomes mainstream, policy makers need to ensure that existing supports are maintained and that enduring arrangements are in place for a modal shift to EVs. The premature removal of electric vehicle incentives could have a significant negative impact on the EV market and would send a wrong signal to potential EV drivers. Policy makers must ensure that the market is supported sufficiently until such time as EV growth will be sustained organically.

While there has been significant consideration of electrification of domestic and light commercial transport, ESB can see merit in consideration of greater use of the rail network albeit an electrified rail network. In general, Ireland has low levels of rail freight and this is likely due to a preference for road haulage given shorter distances and the now very good road network. It is also caused by the externality of climate change not being priced into road freight.

Q31. What role should active travel have in the decarbonisation of the transport sector and what should government do to support this?

Electric Ireland fully support that active travel and public transport will be key for decarbonising transport, however where these are not possible, we should ensure that the journey is undertaken in a zero-emission electric vehicle.

Evidence from Europe[41], the US, Canada all show that cycling is a high impact option. Bike schemes in urban areas have proved extremely popular across multiple cities including those in ROI and GB. Increasing the use of bikes in urban areas require separated cycle lanes and facilities such as cycle parking and connectivity with an expanded public transport network including more park and ride hubs. Better public transport can make walking more of an option. Active promotion by Government can set example by adopting these modes where possible.

Q32. What energy infrastructure is needed to facilitate the uptake of electric vehicles in line with UK Government's 'Road to Zero' targets?

Key energy infrastructural measures that are required to enable electric vehicle uptake in Northern Ireland:

[41] https://ecf.com/wp-content/uploads/ECF_CO2_WEB.pdf

- Develop a specific 2030 & beyond EV target for Northern Ireland and based on those targets develop the long-term scenarios to facilitate planning of critical infrastructure and incentives to ensure that those targets can be supported.
- Create a cross Departmental Task Force to look at what measures are required to reach the target and to reduce barriers to EV adoption. This would include developing a charging infrastructure plan for NI, reviewing the suitability of current planning legislation, ensuring NI acquires available infrastructure funding and promotes EVs to the public.
- The NGO Transport and Environment[42] recently released a report showing the ratio required of public chargers to EVs into the future. This is an excellent source of evidence in our view. The T&E report also highlights the need for charging facilities for taxis. Electric buses will charge in garages but may also require on street charging infrastructure.
- It is vitally important that a robust charging network is in place across Northern Ireland and not just in high population urban centres. Even though only around 15% of charging is expected to take place away from the home, the public charging infrastructure is very important to facilitate longer distance journey's and provide confidence to EV drivers and the public. Given the low number of electric vehicles in circulation, the operation of public charging infrastructure is currently not commercially viable and will require additional public support, however it is essential to ensure the transition to EVs in the near term. Electric Ireland is of the view that the cost of providing public charging infrastructure is very low in comparison to the impact it will have. We believe that efforts should be made to leverage the available funding from OLEV and other sources to expand the charge point network in Northern Ireland.
- Regulations for new buildings and building retrofits should ensure that these buildings be pre-wired for EV chargers and new apartment blocks, office complexes and commercial/industrial facilities should have a sufficient number of chargers installed.
- Installation of home chargers should continue to be supported.
- Ensure consistent standards and cross jurisdictional compatibility for public charging networks and destination charging locations.
- Look at the feasibility of developing a low emission zone in Belfast similar to those being developed in GB.
- It should be mandated that new electric taxis are low emission vehicles with a clear road map towards a fully electric taxi fleet in Belfast. Suitable rapid charging infrastructure should be installed to support this.

[42] https://www.transportenvironment.org/press/eu-needs-15-times-more-public-chargers-2030-help-become-climate-neutral-analysis

- Incentive schemes for EV parking in cities, combined with park and ride charging facilities and the consideration of congestion charges in major urban areas should also be considered.

Q33. How will transport integrate with other energy uses (e.g. homes with solar generation, battery storage, EV charging) and what can government do to optimise the opportunities represented by this integration?

As technology enabling decarbonisation increases, policy makers, system operators, suppliers and industry in general must provide consumers with ways to interact with the energy they both consume and produce. There are several areas in which transport will interact with other energy uses in particular electricity;

- Charging EVs based on the cost of electricity at different times based on demand profiles and the generation of renewables will assist in reducing peak demand and provide means of reducing the curtailment of renewable generation when demand is low.
- Controlling when EVs charge – provided the vehicles are fully charged when required by consumers will further assist in reducing system costs as the level of network upgrades required can be managed with smart grids determining when and where charging should occur.
- Utilisation of behind the meter renewables generation e.g. solar and to some extent storage will also provide a means for consumers to reduce costs further contributing to the management of peak demand on the electricity system as a whole.
- EV's can also act as a means of electricity storage for the home and also as a means of energy arbitrage – charging when costs are low and exporting when there is sufficient incentive to do so.

Key enablers of the integration of decarbonised transport with the wider energy system include;

- The areas identified above are all possible with current technologies – however the commercial viability for implementing these solutions will take time to materialise and will be proportionally to the growth in adoption of EVs - incentives to launch pilot schemes should be considered to ensure early adoption and a greater assessment of the benefits for both consumers and the system in general to be quantified and accounted for in forward planning.
- Smart "2-way" EV chargers will be necessary to facilitate both the consumption of electricity from the grid – but also to export electricity from the home or business as outlined above – in this regards, Electric Ireland welcomes OLEV's decision to only provide home charge point grants for "smart" chargers. This will allow new products to be developed which will enable cheaper EV charging for

customers at home, facilitate renewable generation on the electricity system and minimise reinforcement of the grid.

- Smart metering is likely to be required to facilitate both time of use charging and the ability to both import and export electricity from domestic and commercial premises.

Q34. To what extent can alternative low carbon transport fuels contribute to decarbonisation of the transport sector?

It is very early days for low carbon fuels. Much of the low carbon fuel added to transport fuel in the EU has been produced from palm oil raising ethical and sustainability concerns. 'Second generation' biofuels from more sustainable organic sources (such as waste) are either in the early stages of development or the feedstocks are limited in volume. Biogas, depending on the feedstock, can be relatively low carbon but is likely to have limited availability. There is evidence from recent low-emission bus trial that the carbon savings from natural gas are low to marginal.[43]

The best option for heavy transport in the near term may be to regulate for more efficient vehicles, reducing emissions and giving scalable solutions such as Hydrogen fuel cells and electric vehicles the opportunity to develop and become cost effective.

Q35. Do you have any data/research to help inform and reduce the carbon intensity of our transport energy in order to achieve net zero carbon by 2050?

An excellent report which looks at what is necessary to facilitate and encourage EV adoption is the Electric Vehicle Energy Taskforce's report "Energising Our Electric Vehicle Transition"[44]. Work by this task force is still continuing and is being led by the Low Carbon Vehicle Partnership.

[43] https://www.gov.ie/en/publication/7251e2-low-emission-bus-trials-report/
[44] https://www.lowcvp.org.uk/projects/electric-vehicle-energy-taskforce.htm

9. Other Issues:

a. Security of Supply

Q36. What specific risks to security of energy supply are likely to emerge as a result of our changing energy mix, and what actions can be taken to mitigate these?

Q37. What measures or indicators could be adopted or developed to monitor energy security of supply?

Electrification of heat and transport provides a no regrets pathway to full decarbonisation of those sectors, supported by a generation mix increasingly made up of renewables. These factors will invariably increase demand on the electricity generation system and a growing need for system services. The need for system modelling to determine the most cost-effective pathway is critical, work done by SONI[45] in assessing the generation system needs should be continued on an annual basis as the pathway to decarbonisation becomes clearer. Adequate time is necessary to allow policy makers, system operators and generation businesses develop and deploy the necessary solutions to ensure a safe and secure electricity system. Interconnection along with functioning energy markets with adjacent jurisdictions should continue to be strengthened.

b. The Role of Data

Q38. What is the most cost-effective method of capturing consumer energy usage data in electricity and natural gas (where meters are in place)? In heating oil (where there is no metering obligation)?

Q39. What concerns need to be addressed regarding data privacy, security and/or ownership?

Q40. What are your views on applying the key recommendations of the Energy Data Taskforce for NI?

Q41. What organisations or businesses do you see as having a key role in optimising the value of data? How will they do this?

[45] http://www.soni.ltd.uk/customer-and-industry/energy-future/

Q38. What is the most cost-effective method of capturing consumer energy usage data in electricity and natural gas (where meters are in place)? In heating oil (where there is no metering obligation)?

Energy usage data currently available to consumers, energy suppliers and operators is limited in its ability to take advantage of the technological advances available across the energy system, in homes and in businesses to provide the information necessary for the transition to a digitalised energy system.

Cost benefit analysis of smart metering deployments in various jurisdictions indicate a range of benefits to end consumers – primarily in the areas of time of use costs associated with reduced peak and overall energy usage – however there are numerous unquantifiable benefits that over time will improve the benefit of smart metering to end consumers including;

- Smart grid facilitation and development
- Smart homes and devices
- Development and uptake of electrical storage
- Facilitating the development of energy communities
- Supporting EV penetration
- Enabling prosumers

In ROI, the CRU smart metering cost benefit analysis[46] indicated a broadly neutral NPV. In GB a series of cost benefit analysis undertaken by Dept. BEIS has shown over a series of studies from 2013 to the latest in 2019[47] (incorporating real world data from smart meter deployment) a net benefit is seen for each individual household of £250 over the appraisal period with further savings in the business sector and the CCC indicating that benefits will continue to be seen as the UK moves towards net zero by 2050.

Statistical information on energy imports/exports, built infrastructure and transport are all critical in the context of modelling to determine cost effective decarbonisation solutions. Processes need to be developed to adequately and accurately build up this information for Northern Ireland.

Q39. What concerns need to be addressed regarding data privacy, security and/or ownership?

The benefits of access to energy data from a decarbonisation, consumer, innovation and societal perspective need to be balanced in the context of security and privacy matters in the context of GDPR[48] (or similar legislation). The benefits of access to consumer energy data will only be fully realised if network companies, licences suppliers and authorised third parties are provided access to this

[46] 2017-CRU17324
[47] https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019
[48] https://gdpr-info.eu/

information and if necessary, a legislative basis should be set to ensure this. At a minimum, anonymised energy data at a granularity should be available to ensure that the systems, consumer engagement, product/technology innovation and overall energy usage reduction are best placed to ensure a pathway to full decarbonisation. Lessons learned from the deployment of smart metering programmes in other jurisdictions should be considered in this context.

Q40. What are your views on applying the key recommendations of the Energy Data Taskforce for NI?

The recommendations of the Energy Data Taskforce provide a good set of principles in terms of the requirements for access to and usage of consumer and system energy information. We strongly support the concepts of maximising the value and visibility of data, this however needs to be considered in the context of GDPR (or similar) legislation and as noted in Q39 a legislative basis will need to be set to ensure that the recommendations are workable.

Q41. What organisations or businesses do you see as having a key role in optimising the value of data? How will they do this?

- Policy makers (both Governmental and NGO) - utilising energy data for system wide modelling to ensure the delivery of cost optimal policy measures
- System operators – ensuring the delivery of a network that supports decarbonisation and enables increasing levels of consumer engagement
- Suppliers & Industry in general – developing consumer focussed products & services through consumer led innovation.

c. Carbon Capture and Storage

Q42. What steps, if any, should NI policy-makers consider with regard to the development or implementation of CCUS in NI?

No comments on this section

d. Energy and the Economy

Q43. What specific economic opportunities will arise from the decarbonisation of energy?

Q44. What skills are needed to realise the potential economic benefits of energy in the future?

Q45. What are your views on the future of overall energy demand in NI and how can we ensure that any potential demand growth aligns with our net zero carbon target?

Q43. What specific economic opportunities will arise from the decarbonisation of energy?

The net costs or benefits of the decarbonisation of the energy system and the ultimate move to a zero-carbon economy will involve a wholesale transformation of several of society's most important socio-techno-economic systems e.g. energy, transport, land-use, food and buildings. Such a transition will entail fundamental structural changes in the economy, some sectors will benefit while others e.g. those involved with fossil fuels will decline. By decarbonising energy and reaching net zero emissions the risks of climate change and associated negative impacts on the economy will be reduced.

The transition to 'net zero' by 2050 will not happen by itself. It depends totally on public policy, working in partnership with business and the whole innovation system: to develop and deploy the required new technologies at the necessary speed and scale, and to stimulate the consumer demand to pull these technologies through markets at scale. What policies are implemented, and how, will largely determine the costs of the transition, and whether it is achieved at all.

These changes will need to be handled fairly if the transition is to win social acceptance. A just transition for workers and businesses currently working and operating in sectors that must cease to function to ensure full decarbonisation is a definitive requirement of any strategy.

Rather than naming specific job types or business lines it may be clearer to identify the sectors that will change – the timing associated with these changes will depend on how and when policy measures are implemented.

Sectors in decline - fossil fuel industries will decline – power generation from coal, oil and ultimately gas will cease, fossil fuel supplies for heating and the associated equipment providers, installers and those servicing the equipment will need to pivot to sectors supporting decarbonisation

Sectors in transition & growth - several sectors, such as power generation and buildings will undergo significant change as the move to renewable generation, greater consumer engagement, greater energy efficiency requirements and the electrification of heat grow, the transport sector and those supporting it could receive a significant boost from the move to electric vehicles and public transport in general. The digital economy and associated increases in the use of data and technology in the energy sector will require a whole host of new skills and competencies.

These sectors will require increasing numbers of new business lines and workers trained in their provision – both in the context of workers moving from existing sectors in decline and a focus through education of delivering new additions to the workforce that are trained and educated in the skills required to help in the generational challenge of fully decarbonising our economy.

More broadly, decarbonisation implies the move to a more circular economy, where materials are reused rather than wasted. Greater focus on recycling, repairing and renting, could create new lines of work and associated businesses.

Just as the businesses and workers involved in the sectors declining require a just transition - the growth of new businesses and jobs skills supporting decarbonisation must be nurtured and supported during the initial transition phase, innovation must be encouraged and provided sufficient economic support, business models must be developed underpinned by a clear long-term policy measures, support and targets e.g. % renewables, building retrofit targets, eV numbers.

Q44. What skills are needed to realise the potential economic benefits of energy in the future?

See answer to Q43

Q45. What are your views on the future of overall energy demand in NI and how can we ensure that any potential demand growth aligns with our net zero carbon target?

Both the UK National Grid future energy scenarios[49] and the 2019 SONI Tomorrow's energy scenarios consultation[50] provide scenarios as to the future growth of electricity demand considering numerous factors across the energy landscape including energy efficiency, electrification of heat/transport, storage,

[49] https://www.nationalgrideso.com/future-energy/future-energy-scenarios-fes
[50] http://www.soni.ltd.uk/customer-and-industry/energy-future/

renewables penetration and industrial growth. In both reports electricity demand is seen to increase with the residential sector seeing the greatest percentage changes.

From a total energy perspective - a Marginal Abatement Curve (MAC) was completed as part of the development of the ROI Climate action plan with the aim of determining the least cost pathway to 2050 targets; such work would be beneficial for Northern Ireland. Greater decarbonisation and renewable penetration should result in a reduction in fossil energy imports for Northern Ireland as transport, households and industry reduce their reliance on fossil fuel imports.

e. Delivery Framework for an Energy Strategy

Q46. Do the existing division of responsibilities and powers across government enable the most effective approach to the overall aim of decarbonising energy? If not, what are your suggestions for improvement?

Q47. What are the opportunities for local government to contribute to the delivery of the net zero carbon target?

Q48. What are your views on how statutory duties and accompanying legislation and regulatory frameworks would need to change to facilitate the transition to net zero carbon by 2050?

Q49. Is there a need for a dedicated organisation to champion, lead and deliver sustainable energy interventions? If so, what should this look like?

Q46. Do the existing division of responsibilities and powers across government enable the most effective approach to the overall aim of decarbonising energy? If not, what are your suggestions for improvement?

Collective responsibility across governmental departments in Northern Ireland is the best approach – an all of government plan to tackle climate change and the associated decarbonisation of the energy sector would be desirable, underpinned by clear cost-effective policy measures informed by system wide modelling. Northern Ireland should consider the development of an overall energy climate action plan and carbon budgets in the context of UK net-zero 2050 target. A governance structure embedded in legislation similar in nature to that in operation in Scotland or Wales or that outlined as part of the ROI Climate Action plan should also be considered to ensure impartial delivery of the overall plan.

As an example, the following governance structures are to be enabled as part of the ROI Climate Action Plan

- An independent Climate Action Council to recommend the carbon budget and evaluate policy.
- 5-year Carbon Budget and sectoral targets with a detailed plan of action to deliver them. A new Climate Action Bill to give legislative effect to the requirement to set rolling 5 yearly budgets. Penalties will be imposed where emissions exceed limits.
- A Climate Action Delivery Board overseen by the Department of the Taoiseach to ensure delivery. This new Board will oversee the implementation of the Climate Action Plan and will require a progress report to be submitted to Cabinet and published each quarter.
- Enhanced accountability to the Oireachtas Climate Action Committee – more regular reporting and updating to the Committee. The Government will also support the establishment of a Climate Action Office, within the Oireachtas, similar to the Parliamentary Budget Office, to provide robust advice and evidence to the Climate Action Committee regarding the impact of particular policy decisions on the decarbonisation and climate action objectives.
- Carbon proofing all Government decisions and major investments - the Plan envisages all Government memoranda and major investment decisions will be subject to a carbon impact and mitigation evaluation.

Q47. What are the opportunities for local government to contribute to the delivery of the net zero carbon target?

Local government can contribute by reducing energy use in its buildings and transport fleet and sponsoring the developing of specific heat networks as in areas where they are feasible. Local authorities working in conjunction with local energy agencies supporting their communities in making the change (see trusted advisors below) are particularly effective. Local authorities will have a key role in ensure the enforcement of key policy measures e.g. building controls.

Q48. What are your views on how statutory duties and accompanying legislation and regulatory frameworks would need to change to facilitate the transition to net zero carbon by 2050?

As outlined previously in this response the Northern Ireland government requires specific accountability and control over the climate change and energy sector policy measures required to decarbonise Northern Ireland. Legislation whereby the NI Government takes on accountability for the NI part of the UK carbon budget and delivery of local climate action should be seriously considered. The approach taken by Scotland is a good example in this context.

Areas where specific legislation are required in an NI context have been identified across the various sections of this response, notably

- Carbon budgets with specific 5 year deliver plans
- Energy Efficiency – building regulations for both new buildings and those undergoing major refurbishment.
- Electrification of heat/transport – Bans on the use of fossil fuels in new buildings and legislation to facilitate the necessary infrastructural changes to deliver a low carbon economy.
- Vehicle regulations – to consider the ban of new petrol/diesel vehicles
- Governance framework as outlined above
- The ability to set appropriate financial measures – in the context of decarbonisation should be the subject of consideration in the development of any NI specific climate action plan and 2050 target. E.g. carbon price and renewable support measures.

Q49. Is there a need for a dedicated organisation to champion, lead and deliver sustainable energy interventions? If so, what should this look like?

The UK model with the CCC drawing up the overall framework, is one of the exemplars worldwide. International experience shows that, beneath that, the concept of local NGOs acting as impartial 'trusted advisors' is very effective and even essential. These bodies, with expertise and a low carbon mandate, help individual customers, businesses and communities to take the necessary actions.

We suggest that NI should look at how best to implement this model, guided by learnings from the local experience of bodies already performing some of this work.

The role of the SEAI in ROI is an excellent model for which NI should consider. As with comments made in the context of NI specific action plans and governance framework this body should be set-up through a NI specific legislative framework

10. Additional information

Q50. Is there anything else you would like to add in response to this Call for Evidence?

Regulation of the Energy Supply Sector

The energy supply market is heavily focussed on the regulation of suppliers only. It must be recognised that a lot of players may enter parts of the energy market in future to provide the variety of decarbonisation services and products referenced throughout this consultation response. These new service providers must be subject to regulation including standards and guidelines to ensure consumer confidence in respect of the correct and cost-effective delivery of the products and services they offer.

The current process where certain types of products require up front regulatory approval (e.g. for exit fees etc..) even though they are not regulated tariff will need to be assessed when it comes to introducing the multitude of different products and services delivering decarbonisation, process works currently only for basic tariff structures.