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NORTHERN IRELAND ENERGY STRATEGY
CONSULTATION RESPONSE
30 June 2021

Introduction

Sustainable Northern Ireland is a charity that works with Northern Ireland's public sector to inspire, influence and inform action on sustainability and climate change. Through our network, we support and empower public sector collaboration to accelerate action on climate change and deliver a sustainable future for all.

Sustainable Northern Ireland welcomes the opportunity to respond to the Department for the Economy (DfE) consultation and looking forward to its publication and to working with DfE on its delivery.

Response

Q1: Do you agree with the overall goal of achieving net zero carbon energy no later than 2050?

Yes, however it is important to note that the overarching government climate objective should be to bring all greenhouse gas emissions in Northern Ireland to net zero no later than 2050. Otherwise gains made reducing carbon dioxide emissions in the energy sector could be offset by increases in methane emissions in the agri-food sector, if agricultural policies continue to encourage growth of livestock numbers.

In terms of the energy sector, SNI recognises the importance of setting a long-term goal of a net zero energy system and believes that 2050 should be latest date by which this should be achieved. SNI notes that the Committee on Climate Change's (CCC) 'Balanced Pathway' within its Sixth Carbon Budget does envisage Northern Ireland (NI) achieving net zero carbon by this date.

However, SNI also notes that the 'Balanced Pathway' also includes a UK zero carbon electricity generation by 2035. Given NI power system emissions have already decreased by 45% on 1990 levels, SNI believes this ambition should be included in the NI Energy Strategy.

In additional to the CCC requirement, the International Energy Agency (IEA) Net Zero by 2050 roadmap sets 2035 as the point by which all advanced economies must achieve a fully decarbonised power system.

Q2. Do you agree with the proposed vision of "net zero carbon and affordable energy" for the Energy Strategy?

No. Our energy system must deliver affordable energy, ensure security of supply, and reduce carbon emissions – the so-called "energy trilemma" – whilst also avoiding unintended damage to the natural environment. This is crucial not only to maintain a healthy natural environment, but also to maintain public support for renewable energy. It is important therefore that energy security and environmental sustainability is reflected in the vision.

Investment will be required to make the shift from an energy system that is still predominantly based on fossil fuels to one that is net zero carbon emissions. However, achieving a net zero target by 2050 is not in itself enough if we are to meet the larger ambition of making a fair contribution to mitigating the effects of climate change and keeping warming below 2°C. The speed at which we make this transition will determine the level of emissions between today and reaching our end goal, as is highlighted by the MAREI Zero by 50 study.

Early action delivers approximately half the emissions of a delayed action pathway. As far back as 2006 the Stern Review concluded: “the benefits of strong and early action far outweigh the economic costs of not acting.” This remains true today.

We already have the technologies we need to decarbonise power and given that electrification will play a crucial role in the decarbonisation of heat and transport, it makes sense to decarbonise the power sector first. SNI believes this can and should be achieved by 2035.

We should avoid facile arguments that set consumer interests and achieving climate ambitions as mutually exclusive targets. In fact, when it comes to power decarbonisation, experience to date and future modelling suggests that there is net consumer benefit which increases with increases in renewable penetration.

To ensure a just transition, the question is not ‘if’ we make the necessary investments, nor is it ‘when’, as we must act early to achieve our goals. The key question is ‘how’ we finance the investments to ensure that consumers do not see upfront price hikes only for these to be offset later. Early action does not have to mean early payment. For example, network investments are typically paid back over 40 years.

Delayed action will not result in savings, in fact it is likely to be more expensive and less effective, so the spending envelope is at least equal for early action. For both financial and environmental reasons, earlier, more ambitious targets for power should be seen as a least regrets option.

Regulation will be key to delivering early action. Our current regulatory model was successful in facilitating the 2010 Strategic Energy Framework, however we now need to move at an unprecedented pace and our regulatory approach needs to adapt to this new climate. Further detail on this is provided in response to Q18.

Q3. Do the five principles identified provide clear direction around the approach that we want to take with the Energy Strategy?

Yes, but measures should be implemented in harmony with nature and communities. The following aspects are missing from the proposed principles:

Local - Energy solutions should be local, wherever possible, and consumers / communities should be encouraged to generate their own power from distributed energy resources where appropriate, to encourage energy security, community buy-in and maximum local economic benefit.

Environmentally sustainable – We should not grow a ‘green’ economy at the expense of the environment or our health. For example, nuclear power is considered a zero-emission energy source however the extraction and processing of uranium into nuclear fuel is extremely energy-intensive (which generates carbon dioxide emissions) and thermal pollution from nuclear power plants also adversely affects marine ecosystems. It is therefore, on balance, not deemed environmentally sustainable.

Q4. Are there any key delivery priorities for the Energy Strategy not captured? If so, please outline what you believe should be included.

Sustainability – balancing and promoting environmental protection and social equality, whilst delivering the priorities of the Energy Strategy.

In addition, SNI believes that a green economic recovery from coronavirus should be a priority in the Energy Strategy.

Q5. Do our proposed indicators adequately allow us to measure success at achieving the proposed Energy Strategy outcome? If not, please advise on what alternative metrics should be used.

There is no proposed measure for energy security. We propose:

- Diversity of fuel supplies in the energy market (success is an increase in this indicator)
- Interruptions or shortages in supply (success is a decrease in this indicator)
- Energy Imports (success is a decrease in this indicator)

There is no proposed measure for energy localisation and community empowerment:

- Jobs and turnover for community-scale clean energy projects (success is an increase in this indicator)
- Households generating energy on site (success is an increase in this indicator)

Other proposed metrics:

- Carbon emissions by sector (success is a decrease in this indicator)
- Renewable share of final energy demand (success is an increase in this indicator)
- Renewable share of final electricity demand (success is an increase in this indicator)
- Hydrogen Demand (success is an increase in this indicator)
- Reduction in CO2 emissions relative to 1990 levels (success is an increase in this indicator)
- Compatibility with Paris Agreement (success is being compatible with 1.5°C)
- Proportion of oil used in home heating (success is a decrease in this indicator)
- Deployment of EV charging points (success in an increase in this indicator)

Q6. Do you think there are significantly different illustrative scenarios which should be developed? If so, please provide further information.

Sustainable NI believes energy policy decisions should be guided by the energy hierarchy, which prioritises energy demand reduction (through energy efficiency and behavioural change) first, followed by a transition to renewable net zero, affordable energy sources.

Policy decisions and measures should offer maximum benefit to society and the environment. One technology or industry should not be prioritised over another to prevent existing assets becoming stranded. Decisions should be based on the merits of each individual technology or fuel source and be subject to a full sustainability appraisal.

Use of natural gas should be phased out as it releases CO2 emissions into the atmosphere. Whilst it may be comparatively better than coal and oil for home heating, it is not as environmentally friendly as other forms of renewable heat, e.g., heat pumps running on 100% renewable electricity. Whilst Carbon Capture and Storage is mooted as a potential companion solution to natural gas, commercially viable carbon capture for CO2 storage technologies does not exist at present.

There is a train of thought that biomethane and hydrogen could eventually replace natural gas for home heating, which are examined in more detail below:

<u>Biogas</u>
Even though carbon may be sequestered during the growth of the biomaterials that generate biogas, the combustion of biomethane still releases CO2 into the atmosphere, and therefore must have carbon capture and storage built in at the point of combustion. However, bio-energy conversion combined with Carbon Capture and Storage (BE-CCS) technologies do not exist at present.

Biogas is a controversial fuel due to the variety of feedstocks that can be used to produce it. Feedstocks should not include crops (like maize) or imported biomass materials (which could drive deforestation in other countries). Feedstocks such as livestock manure, or agriculture waste and residues, which do not compete with farmland used for food production, are less controversial. However, the difficulty in using agriculture by-products is ensuring installations are not too big and are located in the right place, in order to avoid transport-related costs and emissions. Another challenge relates to the biomethane production process itself and the risk for potential leakage of methane. To ensure trust in the industry a robust system of Guarantees or Origin (GOs) will be needed to certify how the biomethane is produced, with what kind of feedstocks and from where.

This will help ensure feedstocks are produced as close as possible to where it's consumed, and meet sustainability requirements.

Hydrogen

SNI envisages electrification being the primary solution for domestic heating needs. As evidenced in the Networks for Net Zero study, powering heat pumps directly is between 4-7 times more efficiency that using the electricity to power an electrolyser to generate hydrogen to inject into the gas grid to fuel home boilers.

Whilst green hydrogen is well suited for nice applications, such as HGVs, shipping, aviation and renewable energy storage, questions remain about how hydrogen will be generated at scale, and the amount of energy and water that will be required to produce large quantities of hydrogen, in a scenario whereby homes are heated in whole or in part by hydrogen.

Q7: Do you agree with the four consumer population groups we have identified? Please advise on key considerations within each.

a) Domestic vulnerable consumers
b) Other domestic consumers
c) Small businesses
d) Larger businesses

SNI proposes the inclusion of public sector.

A key consideration within each group is capacity. Support should be weighted so that groups most vulnerable and with the least capacity to shoulder the cost burden of the transition themselves, are given the most support. Businesses seeking to compete in challenging and competitive markets will also be a key consideration.

Q8. Do you agree with the five measures identified to "enable and protect" consumers? If not, please outline what else should be included?

a) Making available information and advice
b) Offering proactive "wrap-around" support
c) Providing financial support measures
d) Driving change
e) Reviewing statutory protections

SNI is content with the five measures identified.

Q9: Do you agree with the proposed scope of the "one stop shop"? Please advise on any different activities you think should be included.

Yes, we agree with this approach and broadly support the recommendations of the independent report of the University of Exeter[1] that NI develops a new independent energy body which scrutinises the energy transition on an ongoing basis, advises the Assembly and the Executive, is a centre of expertise and works with other organisations as a delivery body.

Its primary aim would be to ensure the implementation and adoption of energy efficiency across all sectors, as well as the development of new technology for use in with renewable energy sources and the decarbonisation of energy supply. It could also fund and supports research into new technologies and their deployment in sectors including bioenergy, electric vehicles, the combination of heat and power systems, and ocean energy. It could run public initiatives aimed at supporting domestic and community energy.

[1] https://ore.exeter.ac.uk/repository/bitstream/handle/10871/125035/Energy%20governance%20for%20the%20Northern%20Ireland%20energy%20transition%20final%20published.pdf?sequence=1&isAllowed=y

This new body could work closely with a future independent environmental regulator, and any future climate commissioner or climate office, to hold the government to account on the energy transition.

Q10: Which approach do you think should be taken to create this organisation? Please outline your rationale.

The government should create an independent national sustainable energy organisation. It could be funded by EU replacement funding and could be modelled on the Sustainable Energy Authority of Ireland, albeit not an Arms Length Body (ALB). This independence is considered important, so that as well as being a delivery body, it can also carry out an oversight and scrutiny function.

Q11: Do you believe that additional financial assistance to protect certain groups of consumers should be introduced? If so, please identify what consumers should be targeted and what support would be needed.

Yes. As well as dedicated schemes that target energy efficiency support to priority groups (e.g., the future replacement for NISEP and Affordable Warmth Scheme), there should also be a financial support mechanism (e.g. a cash rebate on bills) to compensate low-income groups for the inevitable green taxes that will be added to consumer bills to support decarbonisation of energy.

We believe consumers who fall into the following groups are considered 'vulnerable' to fuel poverty:

- People on a low income
- People over 70

<u>General population</u>

SNI believes that where possible a 'pay as you save' model should be adopted. As outlined in the consultation document, and elsewhere in this response, many of the investments needed for the energy transition will result in net savings. However, payments will need to be made up front to realise these savings. This is true at:

i. system level e.g. investment in grid to facilitate greater renewables penetration will result in a reduction in wholesale electricity cost.
ii. domestic level e.g. investment in an electric car will result in significant fuel savings.

Not all consumers have the same ability to finance these investments upfront. Grid costs are typically socialised and financed over many years so consumers can pay as they save. This approach is easier for system investments where investments are made on behalf of consumers.

For domestic heat and transport investment, support will need to be provided. This could take the form of car and boiler scrappage schemes, grants and low interest loans.

If it is identified that such steps still exclude some groups from the benefits of the energy transition, then additional support should be considered.

Grow a Green Economy

Q12: Do you agree with the four identified priority clean energy sectors:
a) Energy efficiency
b) Renewable energy
c) Hydrogen economy
d) Circular economy
Please advise on any additional areas that you believe should be prioritised and your reasons for this.

We note that three of the priorities are centred on principles ('efficient', 'renewable', 'circular') the fourth (Hydrogen Economy) is specific to a technology / industry. Policies should, wherever possible, be technology agnostic and support a mix of solutions to promote diversity, resilience and

prevent an over reliance on once fuel source. Also, State support for one industry may dilute resources available for emerging solutions that have yet to be fully explored and tested. For example, geothermal energy is a promising source of energy for space heating which can be produced at very high efficiencies and distributed by heat networks, but it has not yet received the level of government support that hydrogen has.

We note new research[2] published by University College London's Energy Institute which shows that hydrogen-dominated heating would cost consumers 73% more compared to pathways relying on district heating and heat-pumps. We therefore advise some caution around the promotion of the hydrogen economy and caveats around its potential application.

Q13: Do you agree with the economic growth opportunities identified within energy efficiency? What supporting policies do you believe are needed to take advantage of these?

Yes. Invest NI's resource efficiency support is only available to larger businesses. Future programmes must offer support to all businesses and employers, irrespective of size. As a minimum, businesses (including SMEs) should be able to access a free technical audit that provides recommendations about opportunities to save carbon and money. There will need to be a complimentary capital grant scheme to implement the recommendations of the audits. Smaller businesses might need access to greater levels of support and assistance given their limited resource.

Q14: Do you agree with the economic growth opportunities identified within renewable energy? What supporting policies do you believe are needed to take advantage of these?

We believe there should be a greater emphasis on direct sources of renewable heat, e.g., shallow and deep geothermal energy or combined heat and power, and the distribution networks that might be required to support them (e.g., district heating). These will benefit the economy in terms of jobs and resource efficiency savings.

Microgeneration is mentioned, but to ensure public support for the clean energy agenda, there should be greater emphasis on community energy in the Strategy. The Joint Committee for Community Energy has called for a dedicated strategy on Community Energy. As a minimum, communities should be directly involved in large-scale and small-scale projects and have a share in economic benefits brought by the energy transition.

The proposed independent energy body should provide advice and expertise to community groups to set up and run share offers, so that community groups, households and individuals can invest in clean energy developments in their local area.

In addition to setting a RES-E target, Sustainable NI would like to see capacity targets also included in the Energy Strategy, mirroring the approach taken in the ROI programme for government.

TES provides a useful analysis of the capacity of each technology needed. Sustainable NI commends the 'Accelerated Ambition' pathway which outlines a high electrification, 80 by 30 scenario.

To unlock this investment three key policy drivers are needed:
1. a route to market
2. grid investment
3. an efficient and facilitative planning regime.

Route to Market

[2] https://assets.researchsquare.com/files/rs-629226/v1/a309e9a5-04d5-49ac-8b9e-66fc8c9efc31.pdf

Since the closure of the NIRO in 2017 Northern Ireland has been the only part of these islands without a renewable electricity support scheme. As a result, no new large-scale projects were connected in 2019 and 2020, and while merchant projects are starting to emerge it is unlikely that the necessary capacity will be developed without some form of price balancing mechanism.
The Renewable NI Pipeline Survey, April 2021, shows that there are 1,124MW of onshore wind and 1,300MW of offshore projects in various stages of development. It is important to note that the lead time for offshore projects means that these projects will not connect before 2030 and that onshore wind and solar will provide virtually all new renewable generation up to that point.
Both the CfD in GB and the RESS in ROI have demonstrated success in stimulating the growth of renewables and a similar scheme is necessary to unlock the investment to deliver these pipeline projects.

Corporate Power Purchase Agreements (PPAs) represent an additional route to market. On their own, these will not be sufficient to deliver the necessary capacity but can make an important contribution by delivering new renewable generation at no extra cost to the wider consumer. However, the non-recognition of NI Renewable Electricity Guarantees of Origin (REGOs) by the EU threatens the development of the corporate PPA market across the island.

Grid Investment

In 2020 constraint and curtailment events resulted in a total Dispatch Down (DD) level of 14.8% in Northern Ireland resulting in lost revenue of £25m to wind farm providers. While 2020 saw a significant drop in demand due to Covid, there has been a steady rise of DD levels since 2016. Furthermore, DD levels in Northern Ireland are consistently higher than in ROI, including curtailment which, in theory, should be equal across the all island grid.

While there are issues relating to the SONI/EirGrid methodology for managing curtailment, another key aspect has been the delayed North-South Interconnector (NSI). The NSI is required to deliver an efficient power system and facilitate the free flow of electricity North-South. While theoretically, we have an all island system, we are in effect running two adjacent systems with minimal interconnection between them. In fact, we have better East-West interconnection than we do North-South. Without delivery of the NSI, and other grid infrastructure, the proposed 70% target is unachievable as DD levels will rise to the extent that investment in new renewable generation will no longer provide the necessary returns.

Planning

While this consultation is not primarily concerned with planning, getting planning policy right will be an essential part of delivery on the ambition of the Energy Strategy.
Sustainable NI welcomes the review of the Planning Act and the forthcoming review of planning policy for renewables. It is essential that planning policy aligns with the Energy Strategy and facilitate its delivery.

That said, we cannot simply sit back and wait for these reforms. The planning system needs to become more efficient and effective now and some of the required changes, such as improving planning timelines, can be actioned now by properly resourcing the system.

Three key amendments are required to planning policy to facilitate a green economic recovery.

1. A duty to facilitate the delivery of net zero at all levels of the planning system

To achieve the ambitions set out in this response we will need to deliver new renewable generation and associated infrastructure at an unprecedented pace. Our planning system must facilitate, not frustrate, this objective. Regional policy cannot be contradicted by Local Development Plans (LDPs) which could have the effect of creating a presumption against renewables.

2. Statutory timeframes for major and regionally significant applications

In NI, a wind farm application will typically spend more than two years (852 days2) in the planning system, more than double that in GB (378 days).

Industry evidence shows that it typically takes Natural Environment Division 12 months to respond to wind farm applications, despite a targeted response time for statutory consultees of 21 days.

We need realistic timeframes and to properly resource the planning system to ensure such timeframes are met. There needs to be accountability for all statutory consultees and provision for applications to progress should a consultee fail to meet the timeframe set.

3. Policy for battery storage applications

Since the Chief Planners Update 7 (CPU7) in December 2020, investment in battery storage projects in NI has stalled. SNI is aware of projects where applications for battery storage to be co-located with new wind farms have been withdrawn, so as not to put the overall application at risk. Battery storage will be an essential component of a decarbonised power system. With 578MW remaining in the pipeline, significant investment is being put at risk due to the policy to treat battery storage as generation. It is clear that bespoke policy, devised in consultation with industry, is needed for battery storage.

Q15: Do you agree with the economic growth opportunities identified for hydrogen production, demand, and manufacturing within the hydrogen economy? What supporting policies do you believe are needed to take advantage of these?

Policies which incentivise or extend the life of fossil fuels can no longer be justified in the net zero context. We must be unwavering in pursuing a high electrification scenario with hydrogen being part of the solution where electrification cannot provide the full answer.

In very simplistic terms, using electricity to provide heat directly to homes is more efficient than using electricity to produce hydrogen to then provide heat or power. For this reason, electrification should be the primary solution. Renewable technologies can already produce low carbon electricity at the lowest cost to the consumer.

However, not all our needs can be met through electrification and this is where hydrogen can play an important role. In transport green hydrogen could be used to fuel buses, lorries, ferries and possibly even planes. While today petrol and diesel co-exist, it is likely that a net zero future will require both electric and hydrogen vehicles. Hydrogen can also play a role in heavy industrial processes.

Hydrogen and electrification can be complimentary with otherwise constrained or curtailed wind being used to power electrolyses to produce hydrogen, during times of low demand. This can both maximise the value of our renewable capacity as well as provide a form of storage thereby facilitating the transition to a 100% power system.

Research and development into how hydrogen can be used most efficiently in sectors such as electrification and transport, should underpin a clear strategy for where hydrogen is best deployed. The overall goal should be to increase the investment certainty for hydrogen-based technologies, driving down the overall cost of both producing and consuming hydrogen.

Proposals to produce electrolysers locally are welcome and have the potential to further expand the number of jobs in the green economy. Northern Ireland has a strong manufacturing and engineering base and the potential to be a leader in what will be an expanding market.

However, as previously stated, hydrogen may not be an efficient solution to our heating needs. While the idea that we can simply decarbonise the gas grid with homeowners retaining their current heating system may seem attractive, it is unlikely that the gas grid can be fully decarbonised at the pace needed and current boilers can only operate up to 20% hydrogen penetration. There is no low carbon heating solution that will not require consumer investment and disruption.

Q16: Do you agree with underpinning principles identified within the circular economy? What supporting policies do you believe are needed to take advantage of the potential economic opportunities?

Yes, we agree with these three principles. Prevention of waste is key, and all possible policy levers across government for the responsible consumption and production of materials must be used (e.g., building regulations, national planning policy framework, local planning policies, waste and recycling, and public procurement) to set mandatory monitoring, reporting and ideally targets for waste, embodied carbon, and the circularity of materials in relevant applications – particularly in the construction sector.

Ultimately fiscal measures should be introduced that make the most polluting activities more expensive and the less polluting activities cheaper (e.g., landfill tax, plastic bag levy, carbon taxes etc). These alongside schemes that make re-use easier and more financially attractive e.g., kerbside deposit return schemes, will accelerate behaviour change and help facilitate the circular economy.

Q17: Do you agree that we should develop a green innovation challenge fund? If so, what scale and type of innovative projects should this support?

Yes, it is vital that we continue to invest in research and development to ensure NI is at the forefront of new technology innovations. The testing of tidal technology at Strangford Lough is an example of how NI can provide learning for the rest of the world.

A clear plan for support and budget for research and development is needed. When it comes to early commercial technology like Floating Solar and Floating Wind, engagement with researchers at our universities can support further development.

To facilitate deployability at a commercial scale, it is essential that the Contracts for Difference is extended to NI, with ringfenced capacity and different technology pots. Support will be required for early power to gas projects to facilitate proof of concept. Costs will come down as we develop efficiencies through learning and scaling up.

Decarbonising heat is perhaps our biggest challenge and support will be required to pilot district heating projects. DfE should look at successful innovation programmes in other countries and consider how these types of funds can be tailored to the specific challenges NI faces. For example, in Scotland, the Low Carbon Infrastructure Transition Programme was designed to help transition to net zero, supporting projects to develop business cases across a wide range of areas (e.g. energy systems, low carbon heat).

We support the proposal for a Green Innovation Challenge Fund and to utilise Phase 2 of the £850 million funding for City Deals to develop collaborative clean energy projects with local councils, bringing together key stakeholders to develop feasible proposals that align with net zero energy.

We suggest a methodology is developed to target future funds towards the most carbon intensive and ‘hard to abate’ sectors first e.g., transport and energy in buildings.

Q18: Do you believe that we should work with the Utility Regulator to review how energy regulation can facilitate a green recovery and green innovation? If so, how can this be done in a way which protects consumers from the higher risks associated with innovation projects?

It is clear the regulatory approach taken in the previous decade is not suitable to facilitate the delivery of our decarbonisation objectives. Based on the TES analysis we need 2.75GW of new renewable generation by 2030 to achieve 80% RES-E, in a high electrification scenario. We will need to deliver system upgrades at an unprecedented pace. While the current regulatory approach helped us to achieve our target of 40% RES-E by 2020 it is not fit to facilitate the rate of change that we now require. In order to make this shift in approach it will be necessary to incorporate “facilitating the delivery of a net zero energy system” into the Utility Regulator’s mandate.

SNI notes similar changes are anticipated in Great Britain in respect of OFGEM, with the UK Government's Energy White paper stating: "The Strategy and Policy Statement will require the Secretary of State and Ofgem to carry out their regulatory functions in a manner which is consistent with securing the government's policy outcomes, including delivering a net zero energy system while ensuring secure supplies at lowest cost for consumers."

A wider review of the Utility Regulator's approach should be considered with a view towards harmonising the approach of the regulatory authorities (RAs) across the island, to ensure the integrity of the Single Electricity Market (SEM) and to maximise our ability to decarbonise power generation across the island.

SNI would like the Utility Regulator to have a greater focus on value to the consumer. We are concerned that in assessing cost only that the benefits to the consumer are missed. For example, it will cost more to invest in a higher level of renewable penetration however as NIE Networks "Networks for Net Zero" study demonstrates, achieving 70% RES-E by 2030 would result in a 1% net saving on consumer bills.5 Baringa estimates there to be additional net consumer saving of more than 50m resulting from 80% RES-E in comparison with the 70% scenario. This type of cost benefit analysis is needed when assessing the impact of the energy transition on consumers.

Additional powers for the Utility Regulator should also be considered as part of a review. For example, there has been a long standing need for an allowance for rebating for connection charging. While clustering has been an effective way to connect new renewable generation in an efficient manner, the costs have been borne by early connectors, with those coming later benefitting from that investment. Provision for rebating would allow costs to be shared in a fairer manner. As the electricity system and network changes to achieve zero carbon there will be the need for continuous change and improvements to connection policy.

However, such a change currently requires primary legislation and therefore should be included in a wider Energy Bill, with such connection policy changes in the future being within the remit of the Utility Regulator to approve. It is noted that currently the CRU in Ireland has powers to set connection policy and rules.

In the context of net zero, SNI believes it is time to review the requirement of the Energy Order (Northern Ireland) 2003 to "promote the development and maintenance of an efficient, economic and co-ordinated gas industry in Northern Ireland". Such a review should consider whether its replacement with a duty to promote the development of the renewables industry would support the achievement of decarbonisation targets.6

Q19: Do you agree with a focus on research mapping, research funding, business linkages and UK opportunity scanning to maximise the impact of the local research base with clean energy specialisms? Please identify specific opportunities in the local research base that could be progressed.

NI has extensive knowledge in the development of offshore renewable energy and geothermal energy. Our universities are testing offshore wind and floating solar projects and also deep and shallow geothermal energy applications, and there are extensive opportunities locally that could be linked to the Northern Ireland energy market.

Queen's University Belfast, Ulster University and AFBI have good experience in wave and tidal research which could be transferable to the offshore wind industry for example.

To date, NI has not benefitted to any significant extent from the many research opportunities in the UK for research in, for example, offshore wind. The NI Executive could encourage the ORE Catapult and BEIS to consider regionally based schemes which would enable smaller initiatives and projects to be progressed.

Q20: Do you believe that utilising and tailoring existing education and training routes can meet the short-term skills needs of the clean energy sector? How can activities within these routes be shaped to meet the needs of the sector?

Yes, we recommend this is carried out in close consultation with the Higher Education (HE) sector and existing industry bodies. The HE sector is already working collaboratively to promote green skills, tailoring existing course materials, developing new courses, and sharing learning across the sector through existing forums.

Engineering focused MSc programmes in the area of offshore renewable energy and geothermal energy are needed to advance the development of innovative technologies.
Re-skilling for the fishing industry, and oil and gas industries would be useful. Offshore wind projects require survey and guard vessels as well as crew transfer vessels. Fishermen who are considering utilising their vessels for another purpose could receive training to enable them to provide these services and build up a new business.

The East of England Offshore Wind Skills Centre is a training centre in Great Yarmouth that was established to retrain local people to get sustainable jobs in the offshore wind sector. Aura and Green Port Hull commissioned a study entitled Skills and Labour Requirements of the UK offshore wind industry 2018-2032. The study was funded with support from the Regional Growth Fund. The study has conservatively estimated that each MW of wind results in one direct job.

In NI for a notional target of 1GW of offshore wind, would result in 1,000 new jobs.
The study found that the most significant demand in the sector is likely to be technicians and engineers, which will account for approx. 50% of the new jobs. Given that the labour market for these types of jobs is already extremely tight, consideration should be given to creating new courses focusing on the skills required in the sector generally and with a special focus on attracting females and those from different ethnic backgrounds.

The specific skills which will be required include:
• Project Management
• Mechanical, civil and electrical engineering
• Instrumentation
• IT and network system skills
• Science – marine biology, geophysics, hydrography and oceanography
• At a practical level, advanced first aid and rescue and offshore specific skills such as living in confined spaces, working at heights, team working etc.

Q21: Do you agree with the proposal to establish an Energy Skills Forum to shape the future skills needs of clean energy sector? If so, what do you believe the role, remit, and membership of such a group should be? If not, what alternative routes are there to provide this role?

SNI supports the development of an Energy Skills Forum. This is a task that the independent energy body can review and make recommendations on.

Q22: Do you believe that there is a need for specific measures aimed at ensuring a just transition in Northern Ireland? If so, please advise on what the focus of these should be in addition to the education and training routes already proposed for a low carbon workforce.

SNI recognises that our energy transition should be a just one making sure it does not deepen pre-existing social inequalities. The economic burden of the transition should be weighted towards the most polluting industries.

In terms of consumer protection, it is important there is wide access to the benefits of the transition and that a pay as you save model is operated, where possible, for the consumer. Where up-front costs cannot be immediately mitigated by savings then vulnerable consumers should be protected.

To ensure a just transition, measures to accelerate a green energy transition should also:

- support jobs and growth of jobs that are environmentally and socially sustainably
- create work that is high value, fair and sustainable
- reduce inequality as far as possible
- help reduce poverty and derivations of poverty such as fuel poverty

Specific measures that support a just transition include:

- Use the polluter pays principle when introducing carbon taxes and weight green taxes by income bracket if possible
- Target fabric-first energy efficiency grants and financial support to vulnerable groups
- Bring forward a national green buildings scheme with grants to unleash a retrofit revolution, tying minimum energy efficiency requirements onto grants and loans for renovation work
- Raise building regulations to increase energy efficiency and demand for green building materials and services
- Require the provision of renewable generation as part of the building regulations for new housing.
- Establish mimimum standards for embodied carbon in construction
- Provide direct financial support for micro (<50kW) renewable generation
- Set a minimum energy efficiency rating for the rental or sale of existing housing by a specified date.
- Provide community capacity building, following the model of Local Energy Scotland
- Extend Contract for Difference (CfD) to include distributed renewable projects i.e. those that are <5MW

It is important that a multi-faceted approach is taken to ensure that workers do not become the victim of an 'unjust' transition. A combination of employer investment in low carbon technologies and government support for reskilling can ensure that those in traditional industries share the benefits of the energy transition. The Irish Congress of Trade Unions (ICTU) developed recommendations for a just transition for Bord na Mona7. We need an employer, trade union and government partnership to deliver similar solutions for transitioning industries in NI.

Do More With Less

Q23: Do you agree that an energy savings target should be set for Northern Ireland?

Yes, this should meet and ideally exceed targets already set in Scotland, England and Wales given the acute fuel poverty situation in Northern Ireland.

Q24: Do you agree that Minimum Energy Efficiency Standards should be set to drive improvements in energy efficiency? If so, what buildings should be the early priorities for introducing minimum standards?

Yes. It is vital that minimum energy efficiency standards are required for all domestic premises across all tenures. Both social and private landlords will need a lead in time for any increase in required standards to ensure that we do not see a drop in the number of available homes. New homes should be built to the highest energy efficiency standard to ensure future proofing.

Early priorities should include social housing, the Private Rented Sector (PRS) and the public sector buildings.

Q25: Do you agree with the general scale and proposed pace of change outlined in the five phase plan for building regulations? If not, please outline what achievable timescale or programme should be implemented and your rationale for this.

No, the approach could be accelerated and streamlined as follows:

Phase 1 - interim uplift during 2021/22 to bring NI in line with where other regions of the UK are planning to be in 2021/22, essentially leapfrogging phase 1 and going straight to the levels currently proposed under phase 2. This would make up for valuable lost time and recognises the

fact that the technologies and skills already exist to meet the requirements being proposed elsewhere in the UK.

Phase 2 – would be a consultation followed by an uplift in 2026/27 to consider the 'Future Homes and Future Buildings' standards (or its equivalent in other regions of the UK).

Phase 3 – a further review in 2029/30. This would review the position and consider issues that have not been addressed in previous phases.

Q26. Do you think that we should seek to explore how the rates system can be used to encourage energy efficiency? If so, please outline key issues that would need to be considered.

Yes. Homeowners who invest in energy-efficiency measures should receive incentives to do so. Currently making home improvements can result in an increase in rates. Where such improvements reduce emissions, it is important that no such 'penalty' results. SNI recognises that rates reduction or rebates can be used to encourage energy efficiency and would welcome this, but it is important to ensure that those who cannot afford such improvements are supported in other ways.

If rates are going to be linked to energy performance, issues around the accuracy of EPCs must be addressed. EPCs are based on theoretical energy performance and do not consider measures installed post-construction.

Income generated through rates incentives could be ring-fenced for green retrofit schemes, administered by local councils.

Q27. Do you agree that we should introduce a pilot domestic retrofit scheme by spring 2022, followed by a substantive scheme as part of a "one stop shop" approach? If so, what changes are needed to the wider energy efficiency support landscape to ensure a joined-up approach?

Yes. There should be a single scheme operated by a trusted local provider, with separate support packages for priority groups (the clinically vulnerable and fuel poor) and non-priority groups.

The scheme could be an extension of the Affordable Warmth Scheme, which already refers vulnerable residents to grants and support for energy efficiency improvements, utilising the existing experience and networks of environmental health officers in councils and other delivery bodies.

There should be a single communication campaign or brand, with simple messages and an easy sign-up process. There must be robust quality assurance standards in place to prevent rogue traders installing insulation in properties where it is not appropriate and/or in buildings without appropriate ventilation.

On top of a dedicated green homes grant scheme, green finance in the form of low-interest loans should be available for larger works or more expensive measures. Energy efficiency requirements can be tied into loans for home renovations and extensions, and can be either provided by Banks or by government e.g., sovereign green bonds.

VAT for repair and renovation of buildings should be reduced to 5% (or less), to incentivise people to retrofit rather than re-build, and VAT on energy efficiency measures and zero-carbon technologies should be zero-rated.

Q28: Do you agree that we should ring-fence the PSO funding for vulnerable consumers including the fuel poor? If so, do you believe the PSO for energy efficiency should be increased to provide additional funding for this group?

SNI agrees that where support in addition to a pay as you save approach is needed those vulnerable consumers should be supported first.

100% of PSO funding should be ring fenced for vulnerable customers.

The level of funding available for vulnerable groups should be raised if possible, and criteria should be extended to include vulnerable groups (people over 70, or with a health condition or disability) as well as low-income groups into a single scheme.

The funding will have to come from somewhere. Currently PSO is only collected from electricity bills. Very little tax is collected on home heating fuels such as oil. VAT is charged at 5% for home heating fuels instead of the usual 20% fuel duty. This subsidises gas and oil and therefore hampers the transition to cleaner fuel sources. The VAT rate is also unfair, because it benefits the wealthy who tend to use more fuel. By increasing fuel VAT, the proceeds could be ring fenced to insulate the homes of the poor and provide rebates if necessary, making sure low-income groups are not unfairly affected by the levy.

Q29: Do you believe that green private finance solutions have a role to play in supporting domestic consumers to invest in energy efficiency? If so, what specific green finance solutions should be explored?

Investing in energy efficiency can result in net savings, however there are up-front costs that many will not be able to afford. In such cases low/no interest loans should be provided for energy efficiency and low carbon technologies. Additionally, government grants may be provided from the revenue raised from carbon taxes, fuel duty, energy company obligations, stamp duty incentives, rates incentives etc.

Q30: Do you agree that Invest NI should deliver a pilot energy efficiency support scheme for businesses, to be followed by a substantive scheme delivered through the proposed “one stop shop” organisation. If so, what type of support do you believe is most appropriate for different groups of business consumers?

Yes, however Invest NI support only extends to large businesses, which means SMEs and microbusinesses have not received any support in the past. This gap needs to be resolved.

The initial support should be free (e.g., an energy or environmental audit) and further support should be commensurate to the organisation’s size and the nature of its energy demands.

There should be a similar scheme for public sector organisations, including local government and local government.

Q31: Do you believe that green private finance solutions have a role to play in supporting non-domestic consumers to invest in energy efficiency? If so, what specific green finance solutions should be explored?

Yes. As outlined previously, ability to pay for green investments will vary across energy consumers. This is equally true of business consumers therefore it is important that there is access to affordable finance for both commercial and domestic consumers.

There should also be a finance support to improve energy efficiency on the public sector estate. This could mirror ‘Salix Finance’ in GB, which operates as a non-departmental public body and provides government funding for public sector energy efficiency improvements.

Q32: Do you agree that we should seek to develop skills and capability, enhance quality assurance and standards, and use an accreditation body to provide guarantees on work undertaken by the energy services for retrofit sector? If so, how can we help to prepare the sector for these changes?

Yes, it is important that installers are properly regulated to include industry standards. This applies to both energy efficiency and low carbon technologies.

Through close consultation with the higher education sector and trade bodies to upskill the existing labour force and broaden the remit of existing trading standards bodies to include retrofit services. The proposed independent energy body can provide technical support and oversight.

Q33: Do you agree that information, awareness, and behavioural change should be a key strand of future energy efficiency support? If so, what are the key behaviours that should be targeted?

Yes. It is important that consumers are empowered to be energy efficient. Messages should emphasise the importance of comfortable living temperatures rather than simply turning down heat which could have unintended consequences.

Behaviour change can be stimulated through price incentives (e.g., time of use tariffs, rates rebates etc) and greater awareness through the roll out of smart technologies (smart meters, smart heating controls etc.)

Q34: What measures do you think can have the most impact to support people to reduce the miles they travel in private vehicles? Please explain your rationale.

Access to alternative modes of travel is key when looking at strategies to reduce private vehicle miles.

However, smart positioning of new homes in relation to local services and public and active travel networks (connectivity) is critical in prevent locking in households to private car use. In this regard, the Planning Policy Statement on Development in the Open Countryside needs to be reviewed as it is not in line with sustainable development principles.

Every home in Northern Ireland should have access to reliable broadband for home working and employers should encourage agile and flexible home working policies, with larger employers encouraged to use regional office hubs to minimise commuter traffic into and out of Belfast. In tandem, parking rates and availability of car parking in larger cities needs to be reviewed and tiered to incentivise greener travel behaviours alongside the introduction of clean air zones in congestion hot spots.

There needs to be a reliable and integrated regional public transport system with more local bus and train services, and access to safe active travel infrastructure that links homes to places of work and education. This means increasing spending on infrastructure for walking, cycling, bus and rail networks and the de-prioritisation of cars in urban centres. These measures will all have an impact on reducing the number of journeys by private car.

Replace Fossil Fuels With Indigenous Renewables

Q35: Do you agree with setting a 70% renewable electricity target by 2030, whilst retaining the flexibility to increase this to 80%?

No, the target should be more ambitious.

SNI supports an 80% renewable electricity target by 2030. While NI has still to set its own climate target, and there is some debate about when we should reach net zero Greenhouse Gases, there is a consensus that we should be at net zero carbon by 2050 at the latest. The CCC and the IEA have also pointed to the need for zero carbon power by 2035. If we are to electrify heat and transport, it makes sense that in doing so we transition these sectors to a clean, green power system.

Northern Ireland has a long coastline compared to its land area, with a plentiful supply of offshore wind energy available. With policies and market incentives to scale up offshore wind and solar

energy, 80% of our electricity needs can be met by zero-carbon renewable technologies that already exist today.

For renewable energy production to be environmentally sound, it must replace and reduce the production of fossil fuel derived energy as well as take the total environmental impacts of the new projects into consideration. The key to ensure minimal consequences for the planet is thorough knowledge and a comprehensive planning process.

It is important that the definition of 'renewable electricity' includes a requirement that the power must come from renewable zero carbon sources, and that a mechanism exists to prioritise technologies with the lowest carbon intensity. Combustion of renewable biomass, biogas, and landfill gas release carbon dioxide into the atmosphere and require additional carbon capture, utilisation and storage technologies, which do not currently exist. While proponents of these fuels argue that carbon emissions are offset through carbon sequestration of the biogenic material that produces the fuel, opponents argue there could be a negative impact on the environment overall as land is set aside or converted for fuel generation that could otherwise be used for food production or habitats for wildlife.

Power is, however, only responsible for 16% of total energy consumption in Northern Ireland. This means there must also be a broader renewable target for all energy consumption. We recommend that renewable energy generation should account for at least 50% of energy demand across electricity, heat, and transport by 2030 – matching Scotland's target.

Q36: Do you agree with the criteria outlined to consider any future increases in the renewable electricity target?
a. Projects can be delivered in a cost-effective manner.
b. Offshore wind can be delivered by 2030.
c. Storage technologies can minimise system curtailment of renewables.
d. Greater clarity on electricity demand for heating and transport.
e. Consumers' bills are not disproportionately impacted.
If not, what alternative criteria might be used?

SNI is concerned by this proposal and believes that a more ambitious target should be set for 2030. Higher and ambitious targets send a locational signal to developers, to build projects and drive investment into NI. We cannot expect developers to invest over and above what is being driven by the target set. Higher targets create higher confidence in the market and will therefore attract investment and development.

We are concerned that DfE expects that the market will deliver over and above, in order to subsequently incentivise a higher target from the Executive. Higher targets are supports to drive renewable deployment, not the other way round. Furthermore, most of the criteria that the department has suggested as indicators for when they should consider a higher target, are within the control of the Executive. For example, whether offshore wind is delivered by 2030 does not depend on industry in the first instance, but rather is dependent on whether there is a functioning route to market for this technology in NI, whether the planning system is appropriate, leasing rounds available and grid infrastructure ready to be delivered. Industry is developing offshore projects across these islands and is ready to invest in NI should the right policy be in place.

Additionally, whether storage minimises constraints is not something that industry can deliver on its own, but this can be incentivised by the system operators given direction from the Executive to solve connection issues. SNI would urge DfE to think of whether increasing the target will meet the outcomes of the Energy Strategy. We believe increasing the target to 80% will enable a net zero carbon system and be affordable to consumers. We already know that a move towards renewable generation reaps benefits to consumers financially and socially.

Reaching a higher penetration of renewables, quicker, will make that easier in the long run when we are faced with critical milestones around decarbonising heat and transport. Increasing the target to 80% is a no regrets option.

Q37: Do you agree that we should explore with BEIS the possibility of extending the Contracts for Difference scheme to Northern Ireland? If so, what terms would be needed to ensure generation in the region whilst protecting consumers?

Yes, NI should be included in Contracts for Difference (CfD) Auction Round 5. Northern Ireland should also be included in the next Crown Estate leasing round.

Overall, there should be developer led grid investment.

Q38: Do you believe it is possible that an offshore wind project in Northern Ireland could be operational before 2030? If so, please outline what targeted actions could be taken to deliver this.

Yes. Offshore wind farms, with both floating and seabed-mounted turbines, hold vast potential as a sustainable energy source and as a contributor to the shift from fossil fuels to renewables. Whilst all energy projects affect nature to some degree, proper planning and mitigation measures must be in place to construct offshore wind farms without significantly damaging the environment.

The first step towards achieving an offshore wind project in Northern Ireland is to develop a Sectoral Marine Plan for Offshore Wind Energy to identify the most sustainable options for the future development of commercial-scale offshore wind energy, supported by detailed assessments of the potential environmental, social, and economic impacts. This is likely to begin with initial scoping work to identify Areas of Search and the statutory assessment criteria for this. Once the sectoral marine planning process is agreed, NI would be able to run a leasing round for commercial-scale offshore wind energy, as Scotland and England have done.

Q39: Do you believe that a fixed platform offshore wind project should be targeted to be part of the renewable generation mix? If so, how would you propose some of the challenges associated could be overcome?

NI was excluded from leasing Round 4 in the UK due to what TCE considered to be adverse visual impact. According to the TCE Offshore Wind Leasing Round 4 – Regions Refinement Report '99% of the Northern Ireland characterisation area is within 13km of the coast and is therefore constrained by risk and uncertainty associated with visual sensitivity from shore'.

It is the view of SNI that it is for the planning system to determine what constitutes unacceptable visual impact and that the 13km exclusion zone is arbitrary. SNI notes that the permitting of projects within 13km allowed the market to develop in GB and that NI should be given the same opportunity. This will result in greater scale of offshore delivery and allowance for the development of an NI supply chain.

The Crown Estate should therefore consider leasing rights for projects within 13km from the coast for NI projects. This would open opportunities for fixed offshore projects.

Regardless, offshore development has progressed, and fixed projects are now feasible at greater depths than the time of the previous leasing round and it is possible that NI fixed offshore projects could be developed beyond 13km from our coastline.

Q40: Do you believe that floating platform offshore wind offers the best long-term opportunities for offshore wind in Northern Ireland's waters? If so, what additional steps could be taken to encourage these projects?

Noting the limited seabed likely to be suitable for fixed bottom offshore wind, floating platform offshore wind offers the best opportunity for offshore wind to be developed at scale in Northern Ireland.

We note that Scotland has already demonstrated a floating wind farm at Hywind, which was the first in the world.

Floating wind projects offer higher load factors and a may offer a better Levelised Cost of Energy (LCoE) and potentially lower environmental impact than fixed ones. By the middle of the decade, floating offshore wind may be more commercially viable due to increased take up of the technology around the world.

Ultimately, choices about which form of offshore wind projects to pursue will require economic, social, and environmental appraisals to identify the most sustainable option.

Q41: Do you believe that other marine renewables can play a key role in our renewable generation mix? If so, please identify what technologies offer the greatest potential and what steps can be taken to support these.

Yes, there is a significant tidal resource in North Antrim with two tidal energy sites - Torr Head and Fair Head. Torr Head is fully consented, while Fair Head is still awaiting final consent approval. Together these sites could add 200MW of predicable generation to the system. The most significant issue for these projects is a viable route to market. The LCOE of tidal energy is still more than other forms of generation, however the balancing effect that tidal energy could potentially have on the grid should be taken into consideration. Given the location of both projects, there is potentially high grid connection costs which will add to the overall LCOE of the projects.

Q42: Do you agree that a strategic approach to planning the location of renewable projects should be taken? If so, please outline practical steps that could be taken to deliver this.

Yes, see earlier comments about developing a Marine Plan for offshore renewable energy.

There should be a similar strategy for onshore renewable development, and greater powers for local authorities that integrate energy planning and spatial planning. This would enable the development of area-based Energy Masterplans, linked to Local Development Plans, so that councils can develop strategies for district heating and other community scale energy infrastructure. Sites should be selected to minimise any potential negative impacts on communities and wildlife.

Councils could set targets for renewable energy generation in their areas and use the planning system to support the achievement of these targets. The proposed independent energy body could support this, through a dedicated local authority support programme.

Q43: Do you believe that there should be a requirement for renewable developers to share some of the financial benefits of developments with local communities? If so, what share do you think would be reasonable? If not, please provide your rationale.

It is right that communities that host renewable developments see local benefit and to assist that government (or a government funded body) needs to become the third partner in community benefits schemes. While renewable developers have become adept at delivering community benefit schemes, government has a role to play in empowering communities and building capacity to maximise the benefits.

Local Energy Scotland manages the Community and Renewable Energy Scheme (CARES) and provides an example as to how government can support communities in achieving maximum benefit from hosting renewable projects. It also publishes the Community Benefits Register which both enables communities to understand the nature of the benefits that can be delivered in additional to the investment in renewable projects and allows the industry to showcase the investment it is making in communities.

The Scottish Good Practice Guidance recognises the unique nature of each project requires flexibility of approach. Renewable generators are now contributing over £22m/year to community benefits schemes as a result of this approach.

This shows that a more prescriptive approach is not necessary and experience in ROI suggests a fixed community benefit requirement can be counterproductive. The renewables industry has been incredibly successful at driving down the Levelised Cost of Electricity (LCoE) resulting in net savings on consumer bills. This contributes to the aim of delivering affordable energy.

However, by requiring a community benefit payment of €2 million as part of the Renewable Electricity Support Scheme (RESS), this results in higher bid prices which locks the consumer higher electricity prices than may otherwise be the case. While it can seem laudable to insist on higher community benefit, it is important to strike a balance between rewarding the host community and adding to consumer bills. The inflexible nature of RESS does not allow for such a balance to be struck.

The approach of shared ownership, while often seen as the optimum form of community benefit, should be approached with caution. The additional requirement of community ownership has resulted in at least a six-month delay to the RESS-2 auction. Community ownership is complex and results in significant legal challenges. The resultant delays are contrary to the need to act with urgency in tackling climate change and hinder investment that can deliver for the community, the economy and the environment in so many other ways.

It is important to deliver a just transition through the democratisation of energy generation and any policy of shared ownership should be carefully considered. It is worth nothing that despite policy objectives this form of community benefit is yet to be established in any region of these islands.

However, community generation can be achieved through regulation requiring micro generation in all new build housing, direct support for micro installations on existing housing and the opening of CfD auctions for projects of <5MW. Combined with the type of community support provided by Local Energy Scotland there is significant opportunity to build on the success of expanding electricity generation from the three traditional power generators to the c. 23,800 generators we have today.

One further consideration that needs to be taken account of when developing a community benefits policy is the possible extension of the CfD scheme to NI. As highlighted previously, projects in NI are already at a competitive disadvantage in respect of projects in GB. If there was a set community benefit requirement, this would further inhibit the ability of NI projects to be competitive in any UK wide auction. While it is SNI's strong opinion that any extension of the CfD must include ringfenced capacity for NI projects, it is important regardless that we aim for competitive bid prices to meet the affordable energy requirement.

Q44: Do you agree with taking separate approaches to on-gas grid and off-gas grid consumers? If not, what approach should be taken?

SNI recognises the need to prioritise off gas grid consumers for additional support, however those who have not yet switched to gas should also be included in any support scheme for heat pumps.

SNI would caution against taking a separate technology approach to on-gas grid consumers as it may have a tendency to lean towards gas-based technologies to utilise the infrastructure already there and legitimise government investment in the gas network. However gas, biogas or hydrogen may not be the optimal fuel in terms of environmental impact and cost.

There is a strong emphasis in the Consultation on gas, and very little emphasis on direct heat sources such a geothermal energy, which should be explored further and given greater weighting.

Q45: Do you agree that we should not rule out potential low and zero carbon heat solutions at this stage? If not, please outline your rationale.

Yes, Current research appears to show electrification provides the most efficient route to heat decarbonisation and therefore should be prioritised for immediate investment.

Due to the rate and scale of innovation in this area globally and locally it is good to keen an open mind on options. Less mature, zero carbon heat solutions should not be ruled out, in fact they should be prioritised for trialling to understand more about their potential applications.

Q46: What low and zero carbon heat solutions do you believe we should prioritise for trials? Please identify where such trials should be focused and what key issues should be tested within each.

Heat pumps provide the most efficient solution for low carbon heating and should be supported in parallel with energy efficiency, with home not yet connected to gas being prioritised.

Shallow geothermal (heat pumps) should be trialled in rural areas, on a range of housing archetypes, whilst deep geothermal should be trialled as part of an urban district heat network.

Biogas should be trialled on farms and other rural community buildings, in a bid to reduce transportation of fuels and promote circularity.

Q47: Do you believe that the role of heat pumps should be different depending on whether consumers are on or off the gas grid? Please outline what you think the specific roles should be.

Whilst homes not yet connected to gas may be prioritised for heat pumps in the short term, over the medium term all homeowners should have the option to choose to switch to a heat pump even if they are on the gas grid.

Heating decisions should be based on the merits of the technology (cost efficiency, security of supply, environmental impact) and not be determined by the presence of gas infrastructure in the area – as the gas network, and subsequent government investment in it, is linked to a policy framework that pre-dates our climate commitments.

Q48: Do you agree that Northern Ireland should develop a pilot grant scheme to support low carbon heat technologies for domestic and small non-domestic consumers? If so, please identify key issues that need to be considered in designing and delivering such a scheme.

Yes, the efficiency of the technology and the sustainability and availability of fuel should be key considerations.

Q49: Do you agree that legislative and regulatory steps should be taken to facilitate biomethane injection into the gas network?

No. Heat pumps have been identified by the Committee on Climate Change as the primary technology for decarbonising heat. Biomethane and biomass should only be prioritised in buildings where a heat pump is not feasible. We have concerns if steps are taken to legislate for and regulate the industry, the government will be facilitating a ‘one size fits all’ for on-grid properties.

It is important that we prioritise investment in the greenest forms of heating, not just ‘greener’ forms.

Whether or not biomethane is a net zero carbon process depends on the feedstock and where plants are situated, as transport emissions arising from the movement of biogas from source to the site of consumption could offset carbon savings generated in producing the fuel.

There is a danger if a close link is established between biogas ‘fed’ by food waste and agricultural waste, there will be a market incentive to increase waste from these sources to meet demand for fuel – which would have a net negative impact on the environment.

If cleaner forms of renewable heat exist, state regulations should align with and support those technologies and be removed from more polluting solutions.

Q50: Do you believe that support should be provided to encourage biomethane production for injection into the gas network? If not, please outline what alternative approach should be taken to decarbonising the gas network.

Yes, on the proviso that strict criteria are used to regulate the industry. Biogas is a controversial fuel. The industry must stay rooted in the local economy through guarantees of origin that fully disclose the sustainability of the fuel. Otherwise there is a risk that it could have a net negative impact on the environment by incentivising waste, encouraging intensive agricultural practices, and competing for natural resources.

Q51: Do you agree that the local Gas Network Operators should develop and publish a plan to decarbonise gas out to 2050? If so, what key issues must be considered within it?

Yes. This should include full decarbonisation of gas power generation by 2035. Any assessment of so-called 'green' gas (or alternatives proposed by the industry) must include a lifecycle analysis of carbon impact and assessment of wider environmental impacts. There must be no net environmental damage, and solutions should be carbon neutral or carbon positive.

Q52: Do you believe that on-gas grid consumers should have the option to retain oil boilers for use with biofuels? If not, what is a viable timeline for introducing a ban on oil boilers for on-grid consumers?

A complete ban on new oil boilers should be introduced alongside support for alternative low carbon heating solutions. Households in fuel poverty must be adequately supported.

Q53: Do you believe that off-gas grid consumers should have the option to retain oil boilers for use with biofuels? If not, what is a viable timeline for introducing a ban on oil boilers for off-grid consumers?

SNI does not view biofuels as a sustainable long-term solution. Government must encourage consumers to convert traditional oil and gas boilers to zero-carbon forms of heating using grants or incentives alongside or after measures for insulating homes are introduced. This could take place over a 5 – 10 year period, with a ban thereafter provided appropriate replacement technologies and government support is in place.

SNI believes government grants for oil boilers must end.

Q54: Do you agree that the local Oil Industry should develop and publish a plan on how biofuels could play a role in decarbonising heat out to 2050? If so, what key issues must be considered within it?

Yes. The methodology must include a review of the carbon intensity of alternative fuels and technologies, as well as wider environmental impacts.

Q55: Do you believe that support should be introduced to promote the uptake of biomass for off-grid consumers? If so, please advise on what support is needed and where it should be focused.

The Committee on Climate Change says that the UK government should end most support for biomass burned for heat, except in niche applications, as a last resort.

SNI does not view biomass as a sustainable long-term solution.

Q56: Do you agree that the sale of coal and wet wood should be banned in Northern Ireland? If so, do you believe this should be extended to include other solid fuels with the exception of kiln dried wood?

Yes, SNI agrees with this proposal provided adequate support is provided to households in fuel poverty who rely on open fires in winter.

Q57: Do you agree that we should develop a Northern Ireland specific strategy that sets an overarching, long term plan for cleaner, greener transport and shows how we will meet net zero emissions within the transport sector? If so, what Northern Ireland specific issues need to be factored into this to accelerate the uptake of Zero Emissions Vehicles?

Yes. The strategy must consider challenges including our rural settlement pattern, high car dependency and limited access to public and active transport in rural parts of the province.

There is a significant amount of commuter travel into and from Greater Belfast, with a relatively low proportion of the workforce living there. This is due, in part, to the low cost of parking in the city centre, dispersed settlement patterns, and lack of access to cheap reliable public transport - particularly in rural areas.

Public spending on roads currently dwarfs spending on public transport and active travel. This trend needs to be reversed, as evidence shows that widening and improving roads only serves to increase the number of journeys by cars.

Local authorities are well placed to co-ordinate local efforts to support a modal shift to low-emission travel through local planning policies, working with the private sector to increase EV charging infrastructure, and through town centre management. However, councils require dedicated support to help them co-ordinate local sustainable travel plans. We note that council sustainable transport activity is likely to focus on air quality in town centres, as this is where their responsibility currently lies.

Q58: Do you agree that an EV communication campaign should be run in Northern Ireland? If so, what key messages would be most impactful for consumers as part of this?

Yes, clear and consistent messages that communicate the cost savings and public health benefits of EVs over petrol and diesel vehicles may help instil consumer confidence in the technology and will accelerate growth in the market, alongside improvements in public charging infrastructure.

Q59: Do you agree that the private sector and local government have a key role to play in developing EV infrastructure? If so, what barriers can government address to ensure that such projects are commercially viable?

Yes. Government has overall responsibility for roads and pavements and so must ensure that any projects led by the private sector in partnership with local government do not encounter legal barriers that could jeopardise progress. For example, provision of legal assurance to Charge Point Operators that EV charge points will not be moved for a stipulated time, to ensure the project is commercially viable for charge point operators. Also, the Department must ensure the necessary parking enforcement measures will be provided for EV charging bays, where necessary.

Q60: Do you agree that we should develop an EV Charging Infrastructure Plan in collaboration with public and private partners? If so, what should the key priorities of the plan be?

Yes. There should be a strategic approach to the roll out of EV charging infrastructure in Northern Ireland, with Department for Infrastructure playing a co-ordination role. An EV consortium involving public and private sector partners should be established to help identify barriers and enablers to accelerate EV charge point roll out. The EV Charging Infrastructure Plan should identify ways of scaling up capacity in local councils on sustainable transport matters, as they are chronically under resourced in this area. Shared project management or ‘wrap-around’ support would help councils deliver on the aims of the EV Charging Infrastructure Plan and enable them to play a key role in delivering the NI Sustainable Transport Strategy.

Q61: Do you agree that public sector contracts can be a key driver for developing technologies and markets for alternative fuel vehicles? If so, what specific opportunities are there that could be progressed?

SNI agrees with this proposal and has no further comments to make.

Q62: Do you agree that collaborative research will be important to demonstrate alternative fuels? If so, what are the best routes to identify and progress potential projects?

SNI has no comment to make.

Q63: Do you believe that Compressed Natural Gas, Liquid Natural Gas and/or synthetic fuels can play a role as an interim measure to decarbonising transport? If so, how can government help to encourage the private sector to trial and use these fuels?

No, the Committee on Climate Change says that biofuels should no longer be blended into fuel for cars and vans from the 2030s. SNI believes that electrification and hydrogen can provide a zero carbon solution for all transport needs and these should be the focus of government support.

Q64: Do you believe that CCUS can play a role in Northern Ireland? If so, what potential applications could be the initial focus for demonstration projects?

SNI believes that CCUS should only be deployed only as a last resort.

At present however, there are no operational CCUS sites in the UK due to the high infrastructure costs, lack of commercial viability, and concerns around safety. Therefore, in developing a future Energy Strategy, any technologies that rely on CCUS should be treated with caution, until the solution is fully market-ready.

Q65: Do you believe that our approach to petroleum licensing should change in line with our commitment to decarbonise energy?

Yes, petroleum licensing should stop. There should be a ban on all fossil fuel extraction and processing in Northern Ireland and the Petroleum (licencing) Act (Northern Ireland) 1964 should be amended to reflect this.

Create a Flexible and Integrated Energy System

Q66: Do you agree that the Electricity Network Operators should produce a pathway to creating a flexible and integrated energy system? If so, please provide evidence to demonstrate what the initial priorities of such a plan be?

The System Operators (SOs) will be crucial to realising the ambitions of the energy strategy and as such, they should be set targets for delivery. As well as a >95% System Non Synchronous Penetration (SNSP) target for 2030, the SOs should also be aiming to achieve zero carbon system services and have targets to minimise constraint and curtailment.
In 2020, 14.8% of the NI potential renewable generation was ‘turned down’. This level of clean, indigenous renewable generation could have provided power to 145,000 homes but was instead displaced by conventional generation powered by polluting imported fossil fuels. As well as pushing up the wholesale electricity price, this resulted in approximately £25m of lost revenue for renewable generators. Unless addressed this will continue to have a knock-on effect for consumer bills and hinder the achievement of the goal of affordable energy. It could also inhibit investment in new renewable generation and increase the overall carbon emission from the electricity sector.

The SOs are responsible for minimising Dispatch Down (DD) levels and should be held accountable through the setting of targets for curtailment and constraints. Currently generators are seeing unacceptable delay in the build out of Associated Transmission Reinforcements (ATRs) that are committed to as part of the connection agreement. There appears to be little accountability on this with both generators and consumers bearing the costs.

Making SOs responsible for delivery on DD targets will help alleviate this. There should also be a requirement to publish quarterly ATR reports as is the practice in ROI. Given the common ownership of the Transmission System Operators (TSOs), it is hard to understand why this is not happening already. In NI it seems to be a case of what does not get measured, does not get done.

A grid connection process is needed for hybrid units. As outlined by KPMG in the Distributed Generation report:

“Installing multiple technologies behind a single meter connection can add a lot of value to the system if controlled and operated appropriately. This would also create the opportunity to utilise the scarce resource that is grid connection in a much more effective manner.”

The recent strategy consultations by SONI and NIE are welcome. These strategies, along with a clear NI Energy Strategy, will help provide the pathways required to change the electricity systems and networks to accommodate the levels of renewables required to meet future RES-E targets and the overall net zero carbon target. These strategies should also allow for the growth in electricity demand that will be required to decarbonise the heat and transport sectors. It is critical that the NIE and SONI strategies do consider beyond 2030.

As well as planning for how to achieve the 2030 targets we also need to be developing the electricity network and system that will be required to achieve a zero carbon energy system. Lessons from the development of infrastructure, like the North-South Interconnector, have shown that electricity infrastructure needs to be planned over a long-term horizon.

Progress needs to be made on accommodating hybrid generation projects. As outlined by KPMG in its Distributed Generation study, wind and solar hybrid projects can deliver a higher total load factor, maximise grid connection and bring capacity and system service benefits. The synergy between these two established, low-cost technologies will be an essential part of achieving the goal of affordable zero carbon energy.

Co-location of storage will become ever more desirable as we move towards a zero carbon system. This will likely be the case for electrolysers as demand for hydrogen increases and costs come down. It is important that innovation is not frustrated by regulation or lack thereof.

Critical to delivering these System Operator strategies and pathways is resourcing. There will be increasing challenges in connecting more renewable generation, demand and supporting technologies. There are also increasing challenges in developing and operating the electricity network and system with very high levels of renewables and increasing levels of demand.

To address these increasing challenges and facilitate the changes required it is critical that the System Operators and the policy makers in DfE and the Utility Regulator are sufficiently resourced.

Q67: Do you agree that conventional power generation can play an important role in the pathway to decarbonised energy? If so, what opportunities and barriers exist for such plants?

Whilst conventional power stations will have a role in maintaining system stability and security of supply as we phase in renewable and low and zero carbon technologies, we disagree with the statement that they play an ‘important’ role in the pathway to decarbonised energy.

The Committee on Climate Change Sixth Annual Carbon Budget outlines a pathway for a fully decarbonised power system by 2035. As we increase our renewable capacity it is vital that we reduce the minimum conventional generation (min gen) as this is the most significant factor causing constraints.

It is important that the Energy Strategy demonstrates that government is committed to phasing out fossil fuels completely and provides clarity that the grid must be net-zero carbon by 2050, with an ambitious interim target for 2030, so that investors are in no doubt about the future of the energy market.

Q68: Do you believe that further interconnection will be needed in the future? If so, is a new revenue mechanism needed to bring forward this investment?

SNI fully supports the development of the second North-South interconnector (NSI), and it is vital that there are no further delays to its construction. There is no better example to highlight the inability of the NI planning system to deliver energy infrastructure in a speedy manner. Lessons must be learned, and changes made, that ensure decisions are made in a timely manner, for the benefit of developers and communities alike.

SNI also support the development of the Greenlink and Celtic interconnectors. These new interconnectors will help reduce all-island curtailment. It is critical this infrastructure is delivered on schedule within this decade. Delays to these interconnectors will impact on dispatch down levels of the renewable generation required to meet the 2030 targets.

It is also critical that the export capacity on the Moyle interconnector is increased. We welcome announcements on the potential increased physical export capacity on the interconnector. It is critical that works by SONI and NIE in Northern Ireland to enable the full export on the Moyle interconnector are delivered on schedule. It is also important that SONI work with National Grid to maximise the potential for the British Transmission System to facilitate imports from Northern Ireland at times of high renewables on the island of Ireland.

Going beyond the 70% RES-E target and to allow for the renewable sector to maximise the potential for export will require further interconnection. SNI would propose that the Transmission System Operators (TSOs) carry out analysis on future interconnection opportunities, including Multi-Purpose-Interconnectors, considering the potential for future offshore renewable projects.

This analysis should be published to assist the development of new interconnectors by both the TSOs and private developers.

Q69: Do you agree that our power system should be based around flexible solutions to align demand and supply? If so, please advise on what key decisions are needed to achieve this.

Yes. Security of supply must be an essential component of the NI Energy Strategy and will require a blending of technologies as referred to in response to Q6.
The integration of zero carbon services can help create an integrated energy system that better balances demand and supply.

Battery storage will be a key enabler for greater renewable penetration. However, since CPU7, investment in battery storage projects in NI has stalled. SNI is aware of several co-location projects where applications for battery storage to be co-located with new wind farms have been withdrawn so as not to put the overall application at risk.

Battery storage will be an essential component of a decarbonised power system. With 578MW remaining in the pipeline, significant investment is being put at risk due to the policy to treat battery storage as generation. Bespoke policy, devised in consultation with industry, is needed for battery storage.
Hydrogen has the potential to be an additional storage solution if a suitable market emerges (see Q70).

Moving towards a zero carbon energy system will result in increased electricity demand due to the electrification of heat and demand. This new demand, as well as changes to how existing demand operates, should be more flexible. This flexibility will be important for the operation of an electricity

system with very high renewables. To achieve this flexibility unnecessary barriers will need to be identified and removed, similar to how the SONI DS3 programme identified and addressed barriers to having high levels of renewables operating on the electricity system. There should be an objective from the Energy Strategy to require the SONI & NIE Flextech programme to encourage and enable flexible demand.

The Strategic Energy Framework was incredibly successful in connecting new renewable generation however did not integrate demand side management in parallel, resulting in the high levels of DD referred to in response to Q66. The delay of the NSI has undoubtedly contributed to this but other solutions should also have been progressed.

SNI notes that the Electricity Directive, which requires the roll out of smart meter technology, was meant to be implemented by the end of 2020 but this aspect has yet to be progressed. The installation of smart meters as part of a wider policy to incentivise off peak electricity use, will help provide the necessary balance between demand and supply.

SNI notes the Ulster University *Smart Meters and Flexible Demand in Northern Ireland* and concurs with a number of its recommendations, including:

• the roll out of smart meters through the Distribution System Operator (DSO),
• the introduction of Time of Use (ToU) tariffs and peak reduction incentives.

In order to maintain the integrity of the SEM, it is important that there is a complementary approach taken in NI and ROI.

The RULET programme is developing a model to use otherwise turned down renewable generation to provide free electricity to fuel poor homes. This provides an example of how homeowners can be incentivised to use their electricity at times of otherwise low demand and high output. This type of dynamic pricing allows consumers to make savings while providing system balancing services.

Q70: Do you believe that the SEM and DS3 offer sufficient market routes to support the deployment of flexible technologies for generators of all sizes? If not, please provide evidence to demonstrate what additional market routes may be needed.

DS3 has been successful in providing a market for battery storage providing fast acting reserves in NI, with 110MW currently operational and a further 578MW in an ever-increasing pipeline.

However, DS3 revenues are expected to reduce as more providing units come to market and will have the effect of cannibalising revenues. Consideration needs to be given to future market support and long-term frameworks for storage and new low carbon inertia technologies that will be required to reduce minimum conventional generation levels on the system and increase the penetration of renewables. The current DS3 framework is set to end in 2024 and further clarity on the system services budget and enduring market design is needed to support ongoing investment.

The capacity market or new system service products may also have to play more of a role in supporting longer-duration energy storage technologies, where there is not currently a viable route to market through DS3 alone. Longer-duration storage can replace the need to constrain on emissions intensive fossil fuel peaking plant and provide capacity adequacy to reduce the risk of system stress events.

The DS3 market is highly geared towards fast acting reserves and shorter duration storage projects. More consideration will need to be given as to how the DS3, capacity and energy markets interact to ensure new investment in technologies that are flexible enough to operate in a system with very high renewable penetrations and can provide a range of services to help manage increasing renewables, providing value to consumers.
Planning issues alluded to previously will also have to be resolved if we are to continue to deliver storage projects at scale.

Q71: Do you agree that a policy framework should be put in place to enhance access to and use of consumer data? If so, please outline key considerations that need to be factored into this framework.

SNI recognises that access to consumer data is key to facilitating demand side management and that this should be balanced with the necessary consumer protections.

Q72: Do you believe that we should take forward the Energy Data Taskforce recommendations in Northern Ireland? If so, please advise on key differences with Great Britain that need to be factored in.

SNI supports this approach and has no specific recommendations.

Q73: Do you agree that a Cost Benefit Analysis of smart meters should consider the broader benefits they can bring to consumers as an enabler of energy data and a smart system? If the CBA for smart meters is not positive, what alternative approaches can be taken to deliver these benefits for consumers?

SNI notes that the introduction of smart meters is an outstanding action from the Electricity Directive and should be progressed as soon as is practicable. It is important that a CBA takes into account the broader benefits for consumers including the improved efficiency that this will bring to our wider energy systems.

Q74: Do you believe that financial support should be provided for micro-generation to increase the number of active consumers in Northern Ireland? If so, what should this support look like? If not, what are the alternatives?

SNI recognises that our energy transition should be a just one. Traditionally there were three main power generators in NI. The deployment of renewables has increased this to c. 23,800. To deliver a just transition we must continue to democratise energy generation to ensure that the benefits are available to the greatest number.

Micro generation should be supported directly, through financial incentives, and indirectly through building regulations requiring renewable generation.

There are multiple ways we can achieve this:

I. Require the provision of renewable generation as part of the building regulations for new housing.
II. Set a minimum energy efficiency rating for the rental or sale of existing housing by a specified date.
III. Direct financial support for micro (<50kW) renewable generation
IV. Extension of Contract for Difference (CfD) to include distributed renewable projects i.e. those that are <5MW
V. Community capacity building following the model of Local Energy Scotland
VI. Otherwise ‘turned down’ wind to be used to provide free heating to those in social housing

In addition, Government could consider varying feed-in-tariff rates to incentivise non-intermittent renewable electricity generation such as that derived from geothermal power.

Q75: Do you agree that network charging in a decentralised energy system will need to change? If so, what are the principles that should be adopted in distributing future network costs across consumers?

It is important that grid costs are appropriately socialised across all consumers, including those who self generate, especially if they have access to the grid for export purposes.

Q76: Do you agree that a new regulatory framework is needed to protect consumers who engage in decentralised arrangements? If so, what consumer protection measures should be part of this?

SNI agrees that a new regulatory framework is needed. Further detail on our priorities were included in response to Q18.

Q77: Do you believe that energy communities have a role to play as part of the energy transition? If so, what support is needed to progress these? If not, what are the alternatives?

Energy communities provide an opportunity to deliver direct benefits to people as a result of the energy transition and therefore should be supported. We would call on government to create an enabling environment for the growth of the community energy sector in Northern Ireland through the adoption of a community energy definition; the recognition of the additional economic, environmental, societal and educational benefits of community energy, and ensuring the Energy Strategy has a strong focus on enabling citizens to develop, own and operate community energy projects in their entirety.

We suggest the Department for the Economy adopts the following priorities:

1. Provide a policy to support growth in community energy with a complementary investment strategy, as part of the Northern Ireland Energy Strategy
2. Set ambitious targets for community energy development and growth, in line with the other parts of the UK
3. Provide a locally operated community energy development body, to support the development and growth of community energy enterprises and initiatives

We also call on the Department of the Economy to:

- Provide support for a Community Energy Enterprise Programme for the lifespan of the Energy Strategy
- Develop financial mechanisms to secure and support the growth of community owned renewable energy production and sales for the long-term (Community ROCs, Feed-in-Tariffs etc)
- Promote interdepartmental support and policy alignment to facilitate the growth of Community Energy enterprises and initiatives.

Q78: Do you agree that the potential of geothermal energy should be further explored, supported by a legislative and regulatory framework? If so, what applications do believe there are for geothermal energy in Northern Ireland?

Yes - a clear set of legislative measures and associated regulations need to be set out to facilitate the development of the geothermal sector in Northern Ireland. A number of research studies have shown Northern Ireland has suitable strata for deep geothermal power. Shallow geothermal abstraction and reinjection well schemes are suitable in conjunction with ground source heat pumps for building heating and cooling and are compatible with small, medium, and large-scale district heating schemes.

<u>Potential applications</u>

Community heat networks – an assessment should be carried out of the most suitable locations for a geothermal heat networks based on geology, demand, location, scalability, risk etc.

Agriculture - geothermal energy can be used for any processes where large-scale heating or cooling is required such as milk pasteurisation, food processing, or large-scale greenhouse horticulture projects that grow fruit and vegetables associated with warmer climates such as blueberries or avocados.

Alcohol breweries - the brewery industry in Northern Ireland is thriving. The brewing process requires high temperature heat energy, which can be supplied by geothermal energy.

Legislation is necessary to support commercial development of geothermal resources. Government support and private sector investment will be required to achieve this. Key to accelerating the geothermal share of heat demand includes an attractive feed in tariff, project insurance and an open data policy to facilitate information sharing and learning.

Regulation

Legislation should differentiate resources and the methods of exploitation for these. For example, in the case of Ground Source Heat Pumps a way to allow for systems installed to be registered and recorded would help facilitate long term subsurface management of shallow aquifers and geothermal resources allowing energy.
Legislation and regulation are already in place in NI with respect to open loop groundwater and surface water systems through the NIEA. However, requirements for recording installation and associated data from the closed loop systems is not.

Similarly for deeper geothermal resources, legislation, regulation and a licensing system would increase private sector confidence in developing deep resources and would help secure funding for developing projects.

Q79: Do you agree that further trials of heat networks should be carried out? If so, what key issues do you think should be tested through these?

SNI supports this proposal.

A Heat Map of Northern Ireland can be used to reveal opportunities for the development of heat networks in the region. Detailed feasibility studies will then be necessary to investigate linking supply (e.g., Combined Heat and Power generation) with demand (e.g., housing developments or public amenity buildings), followed by the development of long-term planning policies to support heat networks.

Trials are necessary alongside regulatory change, to understand the technical and commercial elements needed to deliver heat networks. Demonstration projects should test different scales e.g., micro-generation technologies up to large-scale heat networks. Trials should test different kinds of heat sources, funding models, and levels of rurality.

The Department may wish to trial blending energy sources, whereby several technologies are used within a single energy centre to ensure efficient and reliable operation across a range of heat demands. The heat supply sources will affect the economics and carbon intensity of the heat networks, so this is an important area to research.