Energy Strategy Call for Evidence

Response Template

How to Respond

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

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

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

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

Please send your response to:

energystrategy@economy-ni.gov.uk

Or alternatively by post to:

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

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

1. General Information

1. **Name (required)**

[redacted]

2. **Are you responding:**

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

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

If you are responding as an individual:

3. **E-mail address**

4. **Address**

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

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

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

6. **Organisation / Company**

Stream BioEnergy

7. **Position within Company / Organisation**

[redacted]

8. **Contact details**

   a. **E-mail address**

[redacted]

   b. **Address**

[redacted]

2. Energy in Northern Ireland

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

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

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

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

Q1 – In Denmark biogas became a political priority as a means to control agricultural waste management problems and provide a flexible renewable energy product. In 2012, an Energy Agreement set the goal to convert 50 percent of manure into biogas by 2020. The Danish biogas industry has experienced exponential growth since 2012 with an increase from 1,112 GWh/annum (PJ) to 3,892 GWh/annum. More significant is the growth in renewable natural gas (RNG) production. Since the first biogas was injected into the grid in 2013, in July 2018, Denmark reached a European record with 18% RNG in its gas grid. This growth has been supported through a combination of capital grants and feed in tariffs.

Q3 – In general we support implementation of the key energy-related recommendations from the CCC 'Reducing Emissions in Northern Ireland' report. In particular the report highlights that: "The large share of agriculture that is livestock-based in Northern Ireland means there may be more manure available for anaerobic digestion to produce biomethane than other parts of the UK: Northern Ireland has potential to generate between 130 - 580 million m3 of biomethane per year, which could provide up to 2000 GWh of heat or electrical energy. Manure has potential to be the largest feedstock source for anaerobic digestion in Northern Ireland, providing 50 - 300 million m3 per year".

The report also suggests providing support for 'low-regret' heat technology in the early 2020s. It suggests Northern Ireland can support moves away from oil boilers and resistive electric heating through financial support for low-carbon alternatives in both residential and non-residential properties. This can be achieved with biomethane gas-to-grid where technically feasible and anaerobic digestion (AD) where it can replace fossil-fuel space or process heating.

Q4 – Yes, a 30-year timeframe is realistic but will require interim targets to minimise jumps in the market and ensure a smoother profile toward the end 2050 net zero carbon goal. If possible we should aim to achieve targets sooner than planned given the climate emergency but proposed terms and targets must be long enough to allow adequate return on investment in renewable energy infrastructure and market certainty.

3. The Energy Transition in Northern Ireland

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

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

Q5 – Northern Ireland has a high proportion of its GHG emissions deriving from agriculture which faces a significant challenge to convert to a low carbon sector whilst also increasing output from the agri-food industry. It is therefore necessary to focus a significant amount of decarbonising efforts on this sector. Biogas plants can make a valuable contribution to achieving this objective by providing a sustainable outlet for a growing volume of agriculture residues and wastes that can be converted into renewable energy and biofertiliser whilst moderating GHG emissions.

Q6 – Stream BioEnergy operates a large-scale biogas plant near Ballymena, Co. Antrim, that generates 3MWe from 40,000 tonnes/year of poultry litter. This facility is the first of its kind globally to function with poultry litter as a sole feedstock and has been operating successfully since the end of 2017.

Stream is currently developing an adjacent large-scale expansion of this facility that will have sufficient capacity to cater for all the poultry manure generated in Northern Ireland. When operational this plant will generate 36MW of renewable green gas which would be equivalent to c.5% of the distributed gas used to heat Northern Ireland homes and businesses in 2017. This facility could be operational in 3 years and importantly is being developed at a site that is already connected the natural gas network.

Stream also has plans to develop further large-scale biogas infrastructure to serve the agriculture and waste sectors in Northern Ireland.

4. Consumers

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

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

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

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

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

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

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

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

Q7 – Larger-scale renewable energy projects deliver best value to consumers due to economies of scale. However, project size categories in subsidy schemes create artificial caps that limit the deployment of larger renewable energy projects. Future support schemes should be designed to avoid this impact which would also reduce reliance on higher support tariffs.

5. Energy Efficiency

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

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

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

a) New domestic and commercial buildings by 2050?;

b) Existing domestic and commercial buildings by 2050?

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

6. Heat

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

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

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

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

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

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

Q18 – The gas network could be extended throughout Northern Ireland and used to transfer increasing volumes of renewable green gas instead of natural gas. This would be the most efficient way to distribute and utilise biomethane. This green gas could be generated in biogas plants that utilise anaerobic digestion (AD) technology. This is a proven and efficient technology that delivers multiple energy, climate, environmental, societal and economic benefits. This technology is already well deployed in Northern Ireland with over 60no. plants currently operating with more in the development pipeline. Thus, renewable gas (biomethane) produced in this manner is an appropriate pathway to decarbonising Northern Ireland's heat sector prior to 2030. Beyond that, hydrogen will be another green gas that will assist further decarbonisation of the heat sector.

Q20 – Expansion of the gas network would bring help lower the carbon intensity of more homes that could connect the grid. This could be further reduced by introducing increasing volumes of green gas, such as biomethane, into the gas network. Biogas/AD is an established technology that is the most proven, quickest and cost-effective way to help decarbonise the heat sector. particularly with larger scale plants that can produce greater volumes of biomethane.

Q21 – Stream is currently developing a large-scale expansion of its operational Ballymena biogas facility that will generate 36MW of renewable green gas. This would be equivalent to c.5% of the distributed gas used to heat Northern Ireland homes and businesses in 2017. This facility could be operational in 3 years if an appropriate regulatory support framework is

implemented. It is important to note this facility is being developed at a site that is already connected to the natural gas network.

This project is one example of what can be achieved in Northern Ireland with the right level of support. There is further significant potential for large scale biomethane generation from organic waste projects within similar short timeframes, and this can be used to heat homes whilst offsetting GHG emissions.

Biogas/AD technology to produce biomethane is already well established throughout mainland UK with 2.1TWh of biomethane currently injected into the national gas grid, which is sufficient to heat over 170,000 homes. Overall, the biogas sector in the UK currently abates over 5 million tonnes of CO2 -equivalent. Proportionate benefits could be achieved in Northern Ireland if appropriate support schemes are introduced at levels similar to the rest of the UK.

7. Power

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

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

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

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

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

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

8. Transport

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

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

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

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

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

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

Q30 – Biofuel from biomethane can play a significant role in decarbonising the transport sector in Northern Ireland. This biomethane could be generated in biogas plants that utilise anaerobic digestion (AD) technology. This technology is already well deployed in Northern Ireland with over 60no. plants currently operating with more in the development pipeline. The biomethane can be compressed on-site to create a CNG or LNG which can be transferred by road to end-users or it can be injected into the gas network which is the most efficient way to distribute and utilise biomethane. The gas network could be extended throughout Northern Ireland and used to transfer increasing volumes of renewable green gas instead of natural gas. There are no technical barriers to injecting biomethane into the gas network to blend it with natural gas, as is common practice in many other European countries and mainland UK. The biomethane can be used as a vehicle fuel offsetting fossil fuel usage thus helping progressively decarbonise Northern Ireland's transport sector going forward. Hydrogen will be another green gas that will assist further decarbonisation of energy in the transport sector in the future.

Q34 – Biofuel from biomethane, either in the form of CNG or LNG, can be used to fuel commercial fleets and HGVs as well as farm machinery. Infrastructure is already being rolled out for CNG and LNG, both of which have lower carbon intensity than petrol and diesel. However, these can be further improved with the addition of biomethane to the mix.

9. Other Issues:

a. Security of Supply

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

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

Q36 – Having a domestic source of biogas would help with security of supply as the gas network can be used as a natural storage facility.

b. The Role of Data

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

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

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

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

c. Carbon Capture and Storage

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

d. Energy and the Economy

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

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

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

Q43 – An expanded biogas sector would generate many new direct permanent jobs in Northern Ireland. Employment would also be created in support industries such as engineering and manufacturing and other local professional services. There would be new business opportunities for sectors that can provide services to the biogas industry and the further development of the biogas sector would also promote more balanced regional economic development as significant investment is made in the local economy and revenue from the plants is likely to be spent locally.

An industry generating biogas from farm waste and agricultural organic residues would support sustainable development in rural areas, provide better control of energy costs for farmers, as well as offering new income opportunities to supplement family farm incomes which have dropped significantly in the past few years. It would also help attract young people back to farming.

Biogas plants can provide a solid foundation to support the continued economic growth of the Northern Ireland agriculture sector which in turn creates more employment and increases the gross output from that industry.

e. Delivery Framework for an Energy Strategy

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

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

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

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

Q46 – There is an urgent need for improved alignment of government policy and regulatory supports for renewable energy with regulatory approval processes such as planning applications, and connections to energy grids.

Q47 – Local government can set a strong example by using renewable energy in public buildings and converting transport fleets, including public buses and waste collection vehicles, to operate on biofuels such as biomethane and hydrogen.

Q48 – Introduction of a supporting regulatory framework that encourages development of renewable energy infrastructure as well as renewable energy support tariff schemes with appropriate intervention levels is essential to facilitate the transition to net zero carbon by 2050. The multi-sector benefits currently being realised from the biogas industry in mainland UK could also be achieved in Northern Ireland at a similar level of support.

Q49 – Yes, a single dedicated organisation to oversee sustainable energy interventions would streamline the development framework and remove unnecessary obstacles and barriers that currently hinder the development process.

10. Additional information

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

Q50 – Biogas/AD is a proven and efficient technology that delivers multiple energy, climate, environmental, societal and economic benefits. It can help Northern Ireland meet several important energy and non-energy European and national policy commitments and it has many wide-ranging cross-sectoral benefits. It also has an advantage of flexibility and can be deployed at different scales and designed to process many different organic feedstocks.

Biogas is a valuable product of AD that can be converted to energy via an on-site Combined Heat & Power Plant (CHP) and electricity generated from the CHP process can be used in neighbouring industrial or commercial enterprises or can be fed into the national power grid. The surplus heat generated can be used in industrial processes or for district heating systems.

Alternatively, the biogas can be upgraded on-site to biomethane for use as a natural gas substitute to help achieve our renewable heat and transport targets. The upgraded renewable gas can be injected directly into the gas network to maximise efficiency in distribution and usage. As AD provides a constant supply of electricity, gas and/or heat, it can be used to provide a stable base-load of renewable energy to the grid. The biomethane can also be compressed on-site to create a CNG or LNG which can be transferred by road to end-users.

Therefore, biogas/AD can play a significant role to help achieve an objective of increasing the level of renewable energy used in the power, heat and transport sectors.

As well as producing heat and power that can be fed into our communities, biogas/AD has an important role to play in the fight against climate change as it can reduce Greenhouse Gas Emissions (GHG). Landfilling and landspreading of organic wastes and animal manures generates uncontrolled emissions of methane to the atmosphere as the waste degrades. By diverting these wastes to biogas/AD, the organic materials are processed in a totally enclosed system which prevents the uncontrolled release of methane. Replacing fossil fuels with renewable energy generated in this manner also reduces GHG emissions.

Biogas/AD not only recovers the energy from organic waste, but it also produces a nutrient rich digestate that can be suitable for use as an organic soil conditioner or biofertiliser for agricultural and horticultural purposes thus reducing reliance on artificial

fertilisers that are becoming increasingly expensive to manufacture. The nutrients contained in digestate are more amenable to plant uptake than other organic fertilisers and thus its use in a circular economy has water quality, environmental and health benefits as it decreases organic pollution potential as well as reducing risk of spreading microbial contamination by avoiding landspreading of untreated manures.

Feedstock's for biogas production include domestic and commercial organic waste (MSW), industrial organic waste from the food and beverage processing industry and sewage sludge from wastewater treatment plants, and organic wastes from the agricultural sector. Biogas/AD can therefore also make a significant contribution to the management of organic materials in Ireland as well as achieving national and EU waste recycling targets.