

PNG Energy Transition Update – June 2022

I'm writing today to share our fifth Phoenix Natural Gas Energy Transition Update.

This ongoing series of Energy Transition Updates seeks to inform interested stakeholders we've engaged with over the past months and years about recent Energy Transition developments and the emerging research which is informing our approach to decarbonising the NI Gas Network.

Last month featured the public launch of the results from a landmark biomethane study conducted by QUB researchers in conjunction with the Centre for Advanced Sustainable Energy (CASE) and several industry contributors (incl Phoenix Natural Gas, Agri AD, AFBI).

This research included an assessment of the volume of biomethane that could be produced from feedstock sourced from NI's large agriculture sector - specifically agricultural waste and underutilised grassland.

The in-depth assessment revealed that NI farms have the potential to contribute to the generation of over 6000 GWh of biomethane.

6000 GWh represents a substantial volume of renewable gas – equating to 82% of NI's 2021 gas distribution network demand – and the existence of such a significant resource significantly expands biomethane's potential role in Northern Ireland's journey to 2050 Net-Zero.

At a basic level, more biomethane equals more renewable gas, which in turn opens up more opportunities during our transition away from natural gas. In particular, as biomethane production techniques are relatively mature, it raises the possibility that the NI Gas Network could decarbonise faster than previously projected – offering strategic flexibility in the face of inflexible emissions targets.

The prospecting of injecting large volumes of biomethane into the NI Gas Network also has significant benefits for many sectors striving to decarbonise - industry, transport, power, buildings etc. However, it's agriculture where the greatest benefits are likely to be found.

Agriculture is often treated as the 'problem child' of net-zero. However, by supporting biomethane production, the sector can not only reduce the emissions associated with farming - while at the same time benefiting from a source of indigenous organic fertilizer and better soil nutrient management - but also support the decarbonisation of other sectors such as homes and industry.

But referring back to our previous updates extolling the need to focus on implementation - how can we best take advantage of Northern Ireland's biomethane opportunity?

As a first step, the necessary technical/regulatory preparations to allow biomethane to be injected into the NI Gas Network needs to be completed. These preparations are well advanced, and we expect the Utility Regulator/Gas Network Operator Biomethane Regulatory Workstream to be completed later this year.

At the same time, we need to continue to improve our understanding of how we might make best use of NI's biomethane resource by commissioning further academic research combined with enhanced levels of engagement with stakeholders. The establishment of the Inter-Departmental Biomethane Group was most welcome in this regard.

Industry, academics and government also have to establish a suitable 2030 biomethane target to focus minds and drive policy development. This should be in the 1000-1500 GWh range in order to support a significant decarbonisation of NI's distribution network (11-16%) but at the same time

ensure best value for the consumer as it maximises existing injection capacity on the network without requiring additional infrastructure investment. Such a target also offers an opportunity to test existing research/concepts, build up efficiencies of scale and create a body of evidence to determine the most efficient role for biomethane post 2030.

Finally, the success of any target will ultimately hinge upon the introduction of a support mechanism to encourage investment in biomethane production. There is a reason this very question was the first question from the floor at the results launch on 9th May. Work on this mechanism needs to start as soon as possible – informed by extensive research and stakeholder engagement.

Ultimately we believe that biomethane will play an important role in the NI Gas Network's Pathway to Net-Zero with its exact 2050 role determined by the experience gained from its initial deployment this decade. All we do know right now is there is a lot of it and that's going to be incredibly useful for many different sectors as Northern Ireland plc implements the reforms required to be Net-Zero by 2050.

I hope you find the items below both helpful and informative.

Best wishes,

Iain Hoy

Energy Transition Manager
Phoenix Natural Gas

Utilising Northern Ireland's Agriculture Sector to Decarbonise Heat

As outlined in the introduction above, over the past year, Queen's University Belfast researchers, supported by the Centre for Advanced Sustainable Energy Research and industry contributors (incl Phoenix Natural Gas, Agri AD, AFBI), have studied how NI's agriculture sector could be utilised to decarbonise heat.

The [results](#) of this study were [released](#) at a launch event on Monday 9th May at Stormont Hotel, Belfast with over 100 stakeholders in attendance. The key results discussed were:

- NI's total biomethane potential from (housed) cattle, pig and poultry manure plus underutilised silage is 753 million m³ or 7,527 GWh. After considering the thermal energy requirements of the production process, a net value of 6,124 GWh of biomethane is available.
- 6,124 GWh of biomethane equates to 85% of 2020 gas distribution network demand or c.67% of projected 2030 gas distribution network demand
- The vast majority of NI's biomethane feedstock – 83% - is located within 10km of the NI gas distribution network.
- Feeding Northern Ireland's livestock waste into anaerobic digestors could lead to a significant Greenhouse Gas emissions reduction of c.845,000 tonnes of CO₂ equivalent and at the same time offers new opportunities for agricultural nutrient redistribution.

This study has significantly revised upwards the projected volume of biomethane that could be produced in NI. This echoes results from similar studies in other jurisdictions such as the

Ecotricity/Imperial College London [study](#) that suggests the UK as a whole could produce 236,500 GWh of biomethane from its grasslands alone.

In addition, the European Union's May [REPowerEU plan](#) doubled the bloc's biomethane production target from 17bcm to 35bcm. The Renewable Gas Forum Ireland said the revised target [offered tremendous environmental, economic and social benefits for Ireland](#) with the industry preparing to invest up to €1.8 billion over the coming decade, including plans to develop up to 125 anaerobic digestion (AD) plants by 2030.

The full slides from the 9th May launch event can be found [HERE](#)

Phoenix visits Hydrogen Homes

In the most recent episode of our 'Phoenix Meets' series, Jonathan travelled to Newcastle-upon-Tyne to visit two new 100% Hydrogen Homes and the Winlaton hydrogen blending project.

The full interview can be accessed [HERE](#)

Featuring interviews with Hydrogen Home Liaison Officer Alex Brightman and Baxi's Jeff House, the interview explores how 100% hydrogen is used for heating and cooking in a modern home. Despite the revolutionary step of using Hydrogen rather than Natural Gas, it will surprise you how ordinary everything is.

After the tour, Jonathan travels up the road to nearby Winlaton to visit the first hydrogen blending trial in a public gas network. We get the details from Alex about how this project came to pass and local residents offer their views on their experience of using a 20% hydrogen gas blend.

Previous episodes of [Phoenix Meets](#) have featured Thomas Byrne (DfE), David Surplus (B9 Energy), Peter Dixon (Chairman, Phoenix Energy Holdings) and Martyn Bridges (Worcester Bosch).

Hydrogen Village trials take a step forward

The vision of replacing natural gas with hydrogen took another step forward recently when Ofgem [announced](#) the shortlist of projects for the upcoming Hydrogen Village trial.

Part of the UK [Government's Ten Point Plan](#) to accelerate the path to net zero by driving the growth of low carbon hydrogen, the proposal to undertake a Hydrogen Village trial will build upon the experience gained from the first 100% Hydrogen gas network in Fife.

While SGN's [H100 project](#) seeks to convert 300 homes to using 100% Green Hydrogen, the Hydrogen Village Trial aims to connect up to 2000 properties in either [Whitby](#) in Ellesmere Port (managed by Cadent) or [Redcar](#) (managed by Northern Gas Networks).

Ofgem will confirm which location will progress the trial in 2023, with the area converting to Hydrogen in 2025 for the duration of the programme - currently expected to last at least two years. The experience and evidence gained from this trial will inform the UK Government's 2026 strategic [decision regarding the role of hydrogen for heat](#).

National Grid launches Project Union

National Grid recently published a [Launch Report](#) for Project Union – its plan to repurpose existing natural gas transmission pipelines across Great Britain to create a low-cost hydrogen ‘backbone’.

Through the phased repurposing of existing natural gas transmission pipelines, National Grid aims to establish a 2,000km hydrogen backbone – connecting hydrogen production, storage and demand in locations as far apart as Teesside, Humberside, Grangemouth, Southampton and South Wales.

As an integral part of Project Union, National Grid’s [FutureGrid programme](#) will demonstrate that existing National Transmission Service (NTS) assets can be safely repurposed to convey Hydrogen via extensive testing at an offline purpose-built facility. As part of this programme, the appropriate operating standards will be developed as NTS assets are tested at different blends of hydrogen up to 100%.

In terms of timeline, the Project Union roadmap envisions a 2% hydrogen blend in certain areas of the NTS by 2025, increasing to 20% in 2027 and the hydrogen backbone linking strategic hydrogen production sites, including the industrial clusters, across the UK by the early 2030s.

It is important to recognise that while Project Union doesn’t include Northern Ireland per se, any changes to gas transmission arrangements in Great Britain will ultimately impact NI consumers as the source of NI’s gas – the Scottish-NI Pipeline (SNIP) - is connected to the NTS at Moffat. This means that the NI Gas Network (and NI consumers) may need to be ready to accommodate a Hydrogen blended gas supply from the middle of this decade.

Ballylumford Power-to-X Project

Closer to home, the [Ballylumford Power-to-X Project](#) was recently awarded £986,000 government funding to carry out a front-end engineering design study to demonstrate the validity of the Power-to-X concept as part of the Department for Business Energy & Industry Strategy’s Longer Duration Energy Storage Demonstration programme.

The project is a collaboration between B9 Energy, Mutual Energy, Islandmagee Energy Ltd and the Net Zero Technology Centre and seeks to create a full-cycle hydrogen economy, from production, storage and distribution to usage. This will involve generating Green Hydrogen from renewable energy sources such as wind and solar and then storing the gas in underground salt caverns for later use as carbon free fuel.

The project will provide invaluable knowledge by allowing the generation of real-world data and practical experience in developing a high pressure 100% hydrogen network and building an understanding of the associated legislative and regulatory framework surrounding such networks. Such knowledge will be invaluable as Northern Ireland accelerates its journey to Net-Zero.

More details

All feedback is very welcome, so if you have any comments, queries or are interested in discussing any of the issues raised in this update then please contact our Energy Transition Manager at ia.hoy@phoenixnaturalgas.com

All previous Energy Transition Updates can be found on the Phoenix Energy Transition [webpage](#) and our ‘Phoenix Meets’ series of Energy Transition videos can be found [here](#).

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