Renewable Gas:
A key fuel in the transition to a low carbon future

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Presentation overview

- Gas Networks Ireland introduction
- Customer demand for sustainable gas
- GHG emissions & where renewable gas can deliver benefits
- What renewable gas solutions bring
- Key projects
- Sustainable gas network vision
Gas Networks Ireland

- Gas Networks Ireland owns, operates, develops and maintains the natural gas network in Ireland.
- World-class Modern Gas Network
- Over 13,500Km:
  - 2,422Km Transmission Network
  - 11,288Km Distribution Network
- More than 675,000 gas consumers
  - 650,000 homes
  - 25,000 businesses
- Over 160 population centres
- 19 counties
The transition to decarbonisation
Listening to the largest energy Customers
Survey of Manufacturing Industry in Ireland

Coordinated through Energy Suppliers (natural gas & lpg)
~ Top 300 companies surveyed; 18% response rate

- 89% confirmed Thermal Energy is their primary energy demand and critical to their business
- 87% use gas (natural gas or lpg) as their primary fuel
- **75% confirmed corporate or company specific decarbonisation targets**
  - more significant in scale than National targets
  - & renewable gas would be instrumental in supporting them achieving these targets
  - No change required
    - Secures existing investment and competitiveness
    - Highest efficiency & competitiveness for new investment
    - Security of Supply

- 62% of companies confirmed they are looking to expand their business in Ireland
- 10% plan to expand outside of Ireland
  - renewable gas supported and accessible in most other countries

Source: RGFI & Energy Suppliers
National GHG Emissions 1990 - 2015

Source: EPA
**GHG Emissions – Energy & Non-Energy Emissions**

**Electricity**
- 13% Higher than 1990 reference.
- The main focus of National Policy to date.

**Heat** – Space & Water Heating, Industrial processes, & CHP.
- 11% Lower ....
- Significant savings achieved with High Efficiency measures.

**Transport** – predominantly Diesel & Petrol.
- 109% Higher .....  
- Biofuel blending measures.

**Non-Energy** – Agriculture and Industrial emissions.
- 9% Lower .....  
- Strong demand from both sectors to decarbonise
  - FDI – Corporate Obligations
  - Origin Green – Compete on greener credentials

Data Source: EPA
GHG Emissions – Demand & Economy

- Ireland population ~ 4½ Million People.
- Agri’ Food & Beverage produced for 33 Million.
  - Also significant Pharma’ & other Mfg.
- >40% Workforce directly employed or in direct material supply chain.
  - Service sectors highly dependent.
- Trade / Exports critical to economy.

- **Decarbonisation** – products, processes and energy
  - Essential for future growth and competitiveness.
    - FDI – Corporate Obligations
    - Origin Green – Compete on greener credentials
  - **Solutions need to address emissions in multiple sectors.**
    - Renewable Gas does that.

Data Source: EPA & SEAI
Renewable Gas – GHG Savings

GHG Emissions Savings
Improves soil, water & air quality
- Enhances food productivity
- Boosting rural economy
- Diversifies farm income
- Carbon negative
- Sustainable & indigenous
- Compatibility: No change for the customer
- Secure competitiveness and growth
- Attract & secure FDI
- Security of supply via the national gas network
Typical GHG emissions/savings from different sources

- Net Greenhouse gas (GHG) savings from manure biomethane ~140% relative to natural gas (i.e. carbon negative)
- This includes carbon saving from avoided GHG emissions from conventional manure storage as per IPCC guidelines
- Net GHG savings from biowaste biomethane (including agri-food processing residues) ~80% relative to natural gas
- Net GHG savings from grass biomethane ~ 75% relative to natural gas

Green Gas Certification

Auditor
issues guarantee of
quantity and quality

quantity of biogas
entered into accounts

Producer

Trading Partners
trading, splitting

Consumer
receives guarantee

production

natural gas grid

Renewable Gas Forum
Irish Green Gas Ltd

Gas Networks Ireland
Guidance for the industry

• Optimisation study and modelling - UCC MaREI/ERI

  – Assessment of the impact of incentives and of scale on the build order and location of biomethane facilities and the feedstock they utilise

  – Available feedstock's within economic reach of AD / injection facility

  – Over 40% of available feedstock either on or close to the gas network

Source:
UCC ERI, MaREI, Teagasc. Funded by SFI & GNI
Researchers: Richard O’Shea, David Wall, Prof’ Jerry Murphy, Ian Kilgallon, & James Browne
Collaboration project – overview

- Feedstock receiving hall and store
  - Pig slurry, belly grass, spent silage / crop residues, expired supermarket food, and food industry waste.

- De-packaging and feed preparation
Collaboration project – overview

- Anaerobic Digesters

- Other facilities on site:
  - Pasteurisation & storage
  - Boilers and CHP

- Current phase of development
  - Gas purification and separation
    - With thermal energy recovery
  - Gas grid injection facility
  - CO₂ processing facility
Gas Grid Injection

- Automated Gas Quality Control
  - Gas analysers
  - Metering & comm’s
  - Odorant addition for safety

- Several industry partners
  - Template for all grid injection projects.
  - CH$_4$ for Manufacturing Industry clients and CNG vehicle operators.
  - CO$_2$ for industry applications.
Our Vision for the Gas Network
Our Vision for Renewable Gas

- Mitigating climate change needs collaboration across sectors; but significant synergies and opportunities exist.
- Develop a clean, renewable and carbon neutral fuel
- Contributes to security and diversity of gas supply
- Provide a sustainable way of managing organic waste
- Reduce CO$_2$ emissions by over 900,000 tonnes
- 20% of gas demand can be renewable by 2030
- Over 40% of biogas feedstock’s are either on or close to the gas network.
- We want to support a national roll out of renewable gas production and injection facilities
- Initial rollout phase ~ 8 grid injection points across Ireland
- Meet the growing demand for renewable gas from multinationals that have signed up to corporate responsibility obligations with regard to climate change
- Facilitate the use of renewable gas in transport through CNG filling stations
Conclusion