

# Developing in Opportunities in BioEnergy: Biogas Action Plan Workshop, 20<sup>th</sup> June 2013

The format for the workshop was as follows:

Introduction (Elaine Groom, QUESTOR),
Waste – value to the NI economy (Robert Brennan, B9 Organic Energy Intl)
Growing rural opportunities (Thomas Cromie, agriAD)
Opportunities through links with other regions (Elaine Groom, QUESTOR)
“3 minute pitches” from companies: - Peter Watters; Nicholas Watts; Mark Kelly; Andrew Miller
Workshop – discussion of three questions
Feedback and Discussion

Thirty-eight participants attended and were divided into 4 groups of 5-8 persons for discussions. Groups were asked to discuss three questions interdependent questions (Figure 1, below)

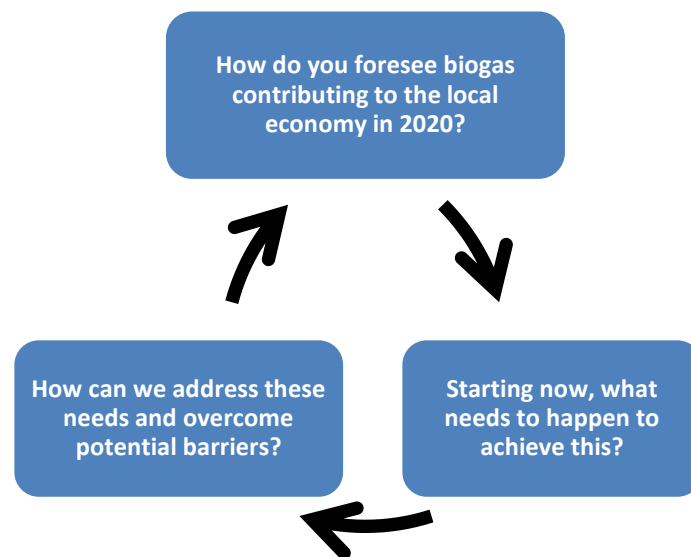


Figure 1. Workshop Questions

## Potential contribution to the local economy in 2020

Discussion of contributions to the local economy included:

- farm diversification and rural employment;
- contribution to energy security offsetting fuel imports for both electricity generation and road fuel;
- balancing renewable energy load from wind and other variable sources.

From the presentations and discussion the following scenarios were set out:

## **Farm Scale Plants**

- B9 estimates that 150 farm scale plants are needed simply to deal with the manure produced locally. Nutrients from digested manure would displace imports of inorganic fertiliser and contribute to environmental management as NI is a Nitrate Vulnerable Zone.
- Farm scale plants will also be able to use grass silage (over and above that needed for animals) and other energy crops. A proportion of larger farm scale plants with appropriate facilities will also be able to handle waste. With CAP (Common Agricultural Policy) reform (which many attendees admitted they were unfamiliar) many farms will face change anyway. Using 10% of the available grassland and very conservative conversion factors could provide an additional 80MW of electricity and 120MW heat.
- Farms with AD plants may become attractive for location of symbiotic businesses able to use the heat/electricity. Alternatively farms may further diversify to add greenhouses able to use the CO<sub>2</sub>/heat/digestate (including hydroponics). These scenarios will benefit the rural economy and provide or secure jobs.

## **Waste to Energy Plants**

- Increasing diversion of organic material from 'waste' to 'resource'
- Increased energy production from this resource – electricity and heat, but also biofuels and (eventually) bio-based chemicals.
- Even more co-location of plants beside waste producers and/or large energy users as opportunities are recognised

## **Uses of Biogas**

- Groups of smaller plants contracted to gas upgrading/grid injections stations (biogas => biomethane). Such stations offering point of sale for compressed biomethane to consumers or commercial fleets.
- Co-location of biogas plants with wind production offering alternatives to curtailment.
  - Use of heat to maximise energy recovery from compressed air storage
  - Conversion of hydrogen (from electrolysis) to methane in digesters
- Increasing use of compressed natural gas (with biomethane, Bio-CNG) in commercial HGV fleets, which has taken off in Europe and now in GB. A CNG station co-located with the gas terminal in Dublin will use biomethane as % of fuel to ensure the Renewable Transport Fuel Obligation (RTFO) is met.
- The food industry, which relies on HGV movements for export from NI, will move to using CNG and Bio-CNG as it offers the greatest well-to-wheel carbon reduction to aid in reducing the carbon footprint of food.

The groups recognised that these scenarios were possible, however much of the resource available to produce biogas is not quantified or there is high uncertainty over the resource. It was therefore considered a priority to produce and verify such information.

## **Barriers to achieving such potential**

Discussions focussed on the non-technical barriers, these encompass:

- Lack of knowledge and understanding of biogas, across many different groups of stakeholders

- Issues around finance availability which is a huge challenge due to the high cost of the technology
- Policy issues

### **Lack of knowledge**

- The Financial Sector's lack of knowledge of AD technology and its operation has led to unnecessarily stringent requirements in preparation of funding and contracts. Some of these arise due to lack of knowledge of the supply chain (waste contracts; agricultural feedstock supply).
- Regulators and planners' lack of knowledge of the technology and uncertainty over risks has similarly had effects.
- Developers in the renewable energy sector and policy makers are unaware of the potential of AD, especially the wider benefits and it is thus very much overlooked in favour of wind power in future provision of renewable energy. In many cases the shortcomings of AD (real or perceived) have been seen as "showstoppers", and the development of viable alternatives to overcome such issues has been overlooked.
- The general public do not understand the technology and perceive certain aspects as a threat

Specific targets and knowing the size of the opportunity would help focus interest. This is best done by providing quantification of the opportunity – using credible figures developed in a transparent manner. This would 'educate the market' on the opportunities and capabilities of biogas and widen knowledge beyond its use in electricity production and CHP. There is little incentivisation for anything other than electricity generation

Areas where development and dissemination of information would be beneficial are:

- Use of biogas as vehicle fuel
- Alternatives to grid access (an infrastructure barrier)
- Quantification of feedstocks and issues around contracts and costs
- Uses for heat (& CHP)
- Detailed requirements for funding (of plant construction)

There is a need for increased numbers and types of partnerships, whether formal or informal, to develop and share knowledge for the benefit of the whole sector. It was commented that "Biogas needs to go from Zero to Hero".

Knowledge gain through formal training also needs to be built up. SW College in particular is addressing this issue.

### **Policy Issues**

Several areas were discussed where policy is unclear or is lacking, due to disconnected policies across departments. In the energy area this occurs despite the existence of SEIDWIG. In some cases, other initiatives seem at cross-purposes. For example the current thinking within the Food sector and the Agri-Food Strategy Board (AFSB) seems to be at odds with the need to develop sustainable energy and the desire of some farmers to do so. Other examples of this include policies within NI Water. Waste policies also do not seem to encourage the recovery of energy or resources such as nutrients from wastes.

Within current policies, some require to be amended as technology develops to overcome barriers. An example of this is the lack of incentives for energy storage, other than the ability to sell electricity at peak

times. Storage enables removal of the disincentive of curtailment (of wind farms) and also eases of access to the grid.

### **Finance and costs**

As the local and UK market is immature in the areas of biogas-related technologies, most technology providers lack the track record required by funders. Current business plans are therefore often seen as unrealistic and therefore not funded. In addition, most farmers want to own everything. They need to embrace new finance options and both financiers and farmers need to compromise.

The scale of the resource is known (grass; waste) but there is a need to target higher efficiency lower cost plants. The cost of plants could be halved without need for CHP units and grid access. Small low pressure pipelines are an alternative; however this area needs a critical mass of small groups of plants supplying larger hubs (e.g. for biogas upgrading). It was suggested that for income other than electricity, (biogas; road transport) large players (e.g. Sainsbury's) are needed for investment in NI.

Technical developments in new technology should aim to half the cost of farm scale farm scale plants from £2M to £1M. There was a general view that once such obstacles were out of the way, things could grow quickly and biogas then would become attractive even for small farms.

### **Actions suggested to overcome barriers**

There were some practical suggestions for action that would help the sector achieve its potential to contribute to the NI economy. :

- Collection and dissemination of information aimed at understanding the opportunities
- Development of actions to promote understanding and acceptance of the technology
- Development of case studies and generic plans to show alternatives to some of the barrier issues (especially financial barriers)
- Working with policy-makers to identify and overcome policy gaps

There is a great deal of knowledge within NI of how to develop and exploit biogas for the benefit of the local economy; however this is spread across many individuals and companies up and down the supply chain. It is suggested to have small Working Groups to produce and verify information that can be used in the actions above.

For development of European cooperation it is also desirable to have a research agenda, which covers the spectrum from applied research to demonstrations.

Elaine Groom & Angela Orozco, July 2013.

QUESTOR Centre  
David Keir Building, Stranmillis Road, Belfast BT9 5AG  
Email: [a.orozco@qub.ac.uk](mailto:a.orozco@qub.ac.uk)  
Tel: 028 9097 5613 (direct)  
Tel: 028 9097 5577 (reception)  
Fax: 028 9066 1462