

Developing Opportunities in Bio-Energy

Workshop
20th June



- Biogas Action Plan for Northern Ireland – aims to
 - gather a critical mass of companies and research interests relevant to the biogas supply chain in Northern Ireland.
 - set out a range of actions building our infrastructure and innovation capacity in this area up to 2020.
 - assist stakeholders in targeting partners, investment and future funding from Europe and other sources.





Developing Opportunities in BioEnergy (Biogas)

2:00	Introduction (Elaine Groom, QUESTOR),
2:10	Waste – value to the NI economy (Robert Brennan, B9 Organic Energy Intl)
2:25	Growing rural opportunities (Thomas Cromie, agriAD)
2:40	Opportunities through links with other regions (Elaine Groom, QUESTOR)
2:55	“3 minute pitches” from companies - Peter Watters - Nicholas Watts - Mark Kelly - Andrew Miller
3:15	Workshop – discussion of three questions
4:00	Feedback and Discussion



Developing Opportunities in Bio-Energy



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ATBEST



Advanced Technologies for Biogas Efficiency Sustainability and Transport

Funding scheme: EU Framework 7, Marie Curie ITN
Budget: € 3.86 Million
Duration: 4 Years, 1st July 2013 - 30th June 2017
Research team: 12 PhD and 2 Post Doctoral researchers

The ATBEST ITN will develop innovative research and training for the biogas industry in Europe. It comprises eight training sites located in the UK, Ireland, Germany and Sweden. It is a multidisciplinary collaboration between internationally-renowned research teams and industrial partners, each with complementary expertise in a wide range of environmental technologies.

14 researchers will be recruited and each will participate in secondments, 3 Summer Schools and an international conference. The aim is to establish long-term collaborations and develop structured research and training relevant to industry and academia along the biogas supply chain: biogas production from feedstock to its utilisation as an energy source.

Project Partners

- Queen's University Belfast (Coordinator)
- University of Duisburg-Essen
- Cologne University of Applied Sciences
- University College Cork
- Teagasc
- Linköping University
- Bord Gáis
- Scandinavian Biogas Fuels



Project topics

- Sustainability and Life Cycle Assessment of feedstock digestion systems
- Synergies from co-digestion of grass silage with other feedstocks
- Supplementation of trace elements to optimise biogas production – bioavailability and microbial response
- Development of macroalgae as substrate for biogas production
- Genomic optimisation of hydrolysis in biogas production
- Analysis of anaerobic fermentation process by online spectroscopic UV/Vis, NIR and MIR-measurement.
- Combined H₂S and CO₂ removal processes for upgrading bio-gas.
- Novel technologies for integrated biogas separation and compression
- Surplus electricity to biogas via hydrogen.
- Micro-reforming of biogas for micro-combined heat and power generation
- Biogas distribution concepts for the transportation sector
- Applications of biogas in chemical energy storage and liquid fuel production
- Developing strategies to facilitate the integration of biogas into the existing gas infrastructure
- Digestate distribution for large biogas plants; storage and transport.



Objectives



- Develop Stakeholder/Actor group; develop a website
- Create a database of local actors: facilities, experience, capability
- **Scope opportunities** for development and/or demonstration;
- Understand the funding opportunities and mechanisms for draw down of EU structural funds and research funding.
- **Build links with targeted partner regions**
- Identify regional strategic priorities related to biogas research and innovation development
- Develop an Action Plan for Northern Ireland which targets **capacity building for innovation** through cooperation with partner regions.



Website



- www.do-bioenergy.eu (registered only)
- Present NI as a region to potential partners and investors
- Database of companies in supply chain
 - directory of RTD demand and offer
- Analysis of opportunities and needs



Survey of Local Stakeholders



- Local capacity for innovation
- Know-how, experience, capability, opportunity, willingness to collaborate
- Facilities – current and gaps
- Training and support – current and gaps
- Strengths, Weaknesses, Opportunities, Threats

- How do we present this to other regions?
- Present “Can do” region for innovation



Timetable



- Since February – informal meetings
- June – 1st Stakeholder meeting
- Website – July – develop database
- Regional visits (tentative):
 - Sweden – July?
 - Germany – August
 - Hungary - September
- November: Host brokerage event in NI
- December- Complete Action Plan

Targeted Regions



Already developed links with:

- Ruhr/North Rhine Westphalia region in Germany
- Linköping (Östergötland Region) Sweden
- Eszak Alföld (North Great Plains) region in Hungary



Ruhr/North Rhine Westphalia



Ruhr	
Area	4,435 km ²
Population	5.2 million
Major City (ies) (Population)	Dortmund (580,000), Essen (575,000), Duisburg (501,000), (+seven >100,000)
Region Profile	Former mining and heavy industry; transformed by structural changes and sustainable development.
Primary energy demand	1170 PJ (calculated as 30% of the NRW value)
Primary energy production	433PJ
Estimate for biogas	9 PJ (production)
Regional Renewable Energy and/or Emissions Targets	4% electricity demand, 5% heat demand by 2020 (action plan Bioenergie.2020.NRW)
Biogas deployment	Silage (agricultural biomass), sewage sludge, organic municipal waste (compost); use mainly for electricity and heat.

Linköping, Sweden

- “Biogas City” – use is:
 - Mature
 - Widely accepted
- New Industry-linked Biogas Centre in Linköping University



Linköping, Sweden



Östergötland	
Area	10,562 km ²
Population	430,000
Major City (ies) (Population)	Linköping (147,000) Norrköping (130,000)
Region Profile	Former agricultural and textile industries – today, high tech information technology, engineering, medical technology and environmental technology
Primary energy demand	69PJ
Primary energy production	
Estimate for biogas	0.42 PJ (already in use)
Regional Renewable Energy and/or Emissions Targets	Municipalities of Linköping and Norrköping 100% CO ₂ neutral by 2025
Biogas deployment	Widespread production of biogas (from waste and sewage); extensive mature (and continued pioneering use) in all forms of transport.

Eszak Alföld, Hungary



- Agriculture contributes 11 % of the regional GDP, double the national average.



Eszak Alföld, Hungary



Eszak-Alföld	
Area	18,000 km ²
Population	1.5 million
Major City (ies) (Population)	Debrecen (208,000)
Region Profile	Historically strong agri-food sector, also engineering, chemistry. Great areas of natural preservation, tourism, emerging knowledge-based economy
Primary energy demand	105 PJ
Primary energy production	
Estimate for biogas	5.6 PJ from available resources
Regional Renewable Energy and/or Emissions Targets	heating and cooling: 18,9%, electricity: 10,9%, transport: 10%, total RES: 14,65% (national targets)
Biogas deployment	Some agricultural and waste treatment plants, regional waste disposal sites, and sewage treatment, for heat and electricity

Action Plan



- Capacity for innovation in Biogas supply chain
 - existing and potential capacities
 - supporting policies
- Research Agendas (needs) of companies
 - Specific initiatives and plans in cooperation with partner regions
 - integrate research agendas, finance sources
 - precise targets for actions to be carried out



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Workshop



3:10	<p>Workshop – discussion of three questions (15 minutes each)</p> <ol style="list-style-type: none"><li data-bbox="227 621 1777 731">1. If we fast forward to 2020 how do you see biogas contributing to the local economy?<li data-bbox="227 811 1535 859">2. What needs to happen (starting now) to achieve this?<li data-bbox="227 939 1622 1049">3. How can we address these needs and overcome potential barriers?
4:00	Feedback and Discussion