

IEA Bioenergy Task 37

Energy from Biogas

Knowledge sharing opportunities for Australia
during the 2016-2018 triennium

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NTL: Task 37

Bioenergy Australia Conference
Brisbane, QLD, 14-16 Nov 2016



Overview



- Review major national and international events of 2016 for Task 37
- Summary of topics for the 2016-2018 triennium
 - Development of technical reports and success stories/case studies



■ ARENA supported Bioenergy Australia Biogas Workshop

- Parramatta 25th July, 2016
- Melbourne 27th July, 2016
- Gold Coast 2nd August, 2016

Presentation : IEA BIOENERGY TASK 37: Energy from Biogas
How do we shape up on the International stage?

See <http://www.bioenergyaustralia.org/pages/biogas-workshops.html#booking>

■ IEA Task 37 meetings

- Summary of first meeting: April 13-15th Wallingford, England
- Overview of second meeting: November 17-18th Toowoomba, Australia

IEA Bioenergy Task 37 meeting - UK



1. Close off work program 2013-2015

- Recent reports completed:
 - Anaerobic digestion of sewage sludge (Switzerland)
 - The economics of small scale AD (UK)
- Reports to complete:
 - Methane emissions (Germany)

See <http://www.iea-biogas.net/technical-brochures.html> for a full list of technical brochures



IEA Bioenergy Task 37 meeting - UK



2. Work program 2016-2018

- Objectives

- To carry out expert technical work on sustainable digestion of substrates, associated reactor configurations and utilisation of produced biogas
- To provide expert technical support to assess the externalities of biogas systems
- To provide guidance and advice on best practice to policy makers
- To provide technical support to policy makers and to the public

See <http://www.iea-biogas.net/work-program.html>



IEA Bioenergy Task 37 meeting - UK



Half day workshop involving UK industry and government agencies

- Process optimisation
- Small scale AD – Launch of the small scale AD brochure
 - Invited to present a 20 min talk on small scale technology in Australia
- Panel discussion

Technical tour in afternoon visiting 2 biogas plants

- Icknield Fm Biogas plant
- Battle Fm Biogas plant



IEA Bioenergy Task 37 meeting - Australia



Business Meeting in Toowoomba, Queensland, Australia

November 17th-18th, 2016

AND

Bioenergy Australia Conference and Technical Tour

November 14th – November 16th 2016, Brisbane, Queensland, Australia

Hosted by Bioenergy Australia
and the National Centre for Engineering
in Agriculture, University of Southern Queensland



IEA Bioenergy Task 37

Technical reports for the 2016-2018 triennium



Key activity at this week's Task meeting will be continuing discussion of content of technical reports identified at UK task meeting

1. Food Waste Digestion Systems (Korea and Switzerland)

Report will investigate:

- The issue of variability of food waste
- Collection systems
- Frequency of collection
- Focus on domestic and commercial food waste rather than processing waste



2. Grid injection and greening of the gas grid (France)

The Green Gas Commitment includes 6 European Gas Grids who have an ambition of substituting 100% of natural gas with green renewable gas by 2050.

Report will investigate:

- How the industry will evolve
- Rationale behind using biogas to produce biomethane instead of CHP
- The importance of green gas in supplying renewable energy in transport and in renewable heat for industries on the gas grid



3. International approaches to sustainable anaerobic digestion (Australia)

Report will investigate:

- The concept of what constitutes sustainable biogas systems in the context of financial and environmental factors
- Simple, well designed systems which are cost effective and have minimum reliance on subsidies
- Systems that involve good practice vs high potential for bad practice
- Emphasis will be placed on international approaches outside Europe, optimum use of biogas, minimization of travel distances, relative costs of materials



4. The role of anaerobic digestion and biogas in the circular economy (Denmark)

Report will investigate:

- AD as a multi-process system including for waste treatment, environmental improvement, renewable energy production and biofertiliser production
- Flexible end product applications in renewable electricity, heat and transport fuel
- Innovative systems. For eg:
 - Seaweed biogas may have a role in multi-trophic aquaculture
 - Microalgae may scrub carbon from a bioenergy power plant and provide feed for a biogas plant
 - Anaerobic digestion has applications in liquid biofuel and biorefinery systems



5. Best practice guidelines for Biogas Industry (Germany)

Focus of the report is to evaluate the veracity and applicability of biomethane potential (BMP) assays

Report will investigate:

- The importance of inoculum in the BMP result and whether the inoculum is suitable for the feedstock
- Different systems have found to yield different BMP results
- Commentary on statistical analysis (such as ANOVO) and kinetic modelling may be discussed
- Benefits of using continuous systems digestion of the substrate over a period of time to give specific methane yields (SMY) corresponding to different organic loading rates (OLR) and hydraulic retention times (HRT)
- Essential operating conditions would also be obtained such as pH, TAN, VFAs, FOS/TAC



6. Biomethane as a Transport Fuel (Sweden)

Following the IEA AMF publication http://www.iea-amf.org/content/fuel_information/methane this short report will provide up to data to reflect comparisons of modern natural gas vehicle engines.



Success stories and case studies



1. A success story on a Brewery in Austria at Guuesser
2. A case study on gasification to biomethane at the GoBiGas facility in Gothenburg
3. Biomethane at a sugar beet factory in Switzerland
4. A case study of a power to gas facility in Germany upgrading biogas to biomethane supervised by the Fraunhofer
5. A case study of an emission study at a biogas facility in Berlin
6. A case study on application of biogas to the pork industry in Australia
7. A case study on small scale biogas facilities in Holland
8. A case study on three upgrading biogas units including for landfill gas
9. A case study on very large digesters built in Denmark
10. A case study from Finland

<http://www.iea-biogas.net/success-stories.html>

<http://www.iea-biogas.net/case-studies.html>



Task Business Meetings for 2017/2018



- Denmark + workshop on sustainability and socio-economic analyses
- The Netherlands + workshop on grid injection and farm scale biogas.
- Finland
- Ireland



Feedback and contributions welcome...



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