IEA Bioenergy Task 37
Energy from Biogas
An Overview
Prof Jerry D Murphy
Set up in 1978 by IEA

Member Countries

Australia
Austria
Belgium
Brazil
Canada
Croatia
Denmark
European Commission
Finland
France
Germany
Ireland

Italy
Japan
Korea
Netherlands
New Zealand
Norway
South Africa
Sweden
Switzerland
United Kingdom
USA

http://www.ieabioenergy.com/
IEA Bioenergy presently has 10 Tasks

Task 32: Biomass Combustion and Co-Firing
Task 33: Thermal Gasification of Biomass
Task 34: Pyrolysis of Biomass
Task 36: Integrating Energy Recovery into Solid Waste Management
Task 37: Energy from Biogas
Task 38: Climate Change Impacts of Biomass and Bioenergy Systems
Task 39: Commercialisation of Conventional and Advanced Liquid Biofuels from Biomass
Task 40: Sustainable Bioenergy Markets and International Trade: Securing Supply and Demand
Task 42: Biorefineries: Sustainable Processing of Biomass into a Spectrum of Marketable Biobased Products and Bioenergy
Task 43: Biomass Feedstocks for Energy Markets
Member countries participating in Task 37

Australia
Bernadette McCabe
Austria
Bernard Drosg / Günther Bochmann
Brazil
Cícero Jayme Bley
Denmark
Teodorita Al-Seadi
Finland
Saija Rasi
France
Olivier Théobald / Guillaume Bastide
Germany
Jan Liebertrau
Ireland
Jerry Murphy
Korea
Ho Kang
Norway
Tormod Briseid
Sweden
Mattias Svensson
Switzerland
Urs Baier
The Netherlands
Mathieu Dumont
United Kingdom
Clare Lukehurst / Charles Banks
Technical Reports Triennium 2013 - 2015

1. A perspective on algal biogas,
2. Nutrient recovery by biogas digestate processing,
3. A perspective on the potential role of biogas in smart energy grids,
4. Pretreatment of feedstock for enhanced biogas production,
5. Process monitoring in biogas plants
6. Source separation of municipal solid waste
7. Sustainable biogas production in municipal wastewater treatment plants
8. Exploring the viability of small scale anaerobic digesters in livestock farming
A perspective on the potential role of biogas in smart energy grids

Tobias PERSSON, Jerry MURPHY,
Anna-Karin JANNASCH, Eoin AHERN,
Jan LIEBETRAU, Marcus TROMMLER,
Jefferson TOYAMA

SUMMARY

This report documents the potential role of biogas in smart energy grids. Biogas systems can facilitate increased proportions of variable renewable electricity on the electricity grid through use of two different technologies:

- **Demand driven biogas systems** which increase production of electricity from biogas facilities at times of high demand for electricity, or store biogas temporarily at times of low electricity demand.
- **Power to gas systems** when demand for electricity is less than supply of electricity to the electricity grid, allowing conversion of surplus electricity to gas.

The report is aimed at an audience of energy developers, energy policy makers and academics and was produced by IEA Bioenergy Task 37. Task 37 is a part of IEA Bioenergy which is one of the 42 Implementing Agreements within IEA. IEA Bioenergy Task 37 addresses the challenges related to the economic and environmental sustainability of biogas production and utilization.
A perspective on algal biogas

Jerry D MURPHY
Bernhard DROSAG
Eoin ALLEN
Jacqueline JERNEY
Ao XIA
Christiane HERRMANN

SUMMARY

Algae are suggested as a biomass source with significant growth rates, which may be cultivated in the ocean (seaweed) or on marginal land (microalgae). Biogas is suggested as a beneficial route to sustainable energy; however, the scientific literature on algal biogas is relatively sparse. This report summarises a review of the literature and provides a state of the art in algal biogas and is aimed at an audience of academics and energy policy makers. It was produced by IEA Bioenergy Task 37 which addresses the challenges related to the economic and environmental sustainability of biogas production and utilisation.
Nutrient Recovery by Biogas Digestate Processing

Bernhard Drugl
Werner Fuchs
Tuduriffa Al Stedl
Michael Madsen
Bernd Linke

SUMMARY
This report reviews various approaches for processing of biogas plant digestate for the purpose of nutrient recovery. It covers both established and emerging technologies and assesses technical performance and where possible economics. Techniques for nutrient recovery from digestates are developing rapidly and aim to improve nutrient management in agriculture and in waste treatment systems.

The report is aimed at biogas plant developers and operators as well as agriculture policy-makers and was produced by IEA Bioenergy Task 37. IEA Bioenergy Task 37 addresses challenges related to the economic and environmental sustainability of biogas production and utilisation.
LEMVIG BIOGAS

AN EXAMPLE OF SUCCESSFUL CENTRALIZED CO-DIGESTION IN DENMARK

PUBLISHED: FEBRUARY 2013

ECONOMIC SUSTAINABILITY OF MANURE BASED CENTRALISED CO-DIGESTION

GOOD LEADERSHIP MAKES A DIFFERENCE

RIBE BIOGAS A/S DENMARK

PUBLISHED: MAY 2012

BIOGAS PIPELINE FOR LOCAL HEAT AND POWER PRODUCTION IN A RESIDENTIAL AREA

ZEEWOLDE, NL

PUBLISHED: OCTOBER 2011

NUTRIENT RECOVERY FROM DIGESTATE AND BIOGAS UTILISATION BY UP-GRADING AND GRID INJECTION

INWIL SWITZERLAND

PUBLISHED: FEBRUARY 2013

PIONEERING BIOGAS FARMING IN CENTRAL FINLAND

FARM SCALE BIOGAS PLANT PRODUCES VEHICLE FUEL, HEAT, ELECTRICITY AND BIO-FERTILIZER

PUBLISHED: FEBRUARY 2012

Web Address: www.iea-biogas.net
LINKO GAS
A REFERENCE PLANT FOR CENTRALIZED CO-DIGESTION OF ANIMAL MANURE AND DIGESTIBLE WASTES IN DENMARK

PUBLISHED: NOVEMBER 2013

BRUCK AN DER LEITHA (AUSTRIA)
MEMBRANE UP-GRADING OF BIOMETHANE FOR GRID INJECTION

PUBLISHED: APRIL 2013

BIO-ENERGY IN FAMILY FARMING
A NEW SUSTAINABLE PERSPECTIVE FOR THE RURAL SECTOR IN BRAZIL

PUBLISHED: SEPTEMBER 2013

THE FIRST ORGANIC BIOMETHANE PLANT IN DENMARK
DEMONSTRATION PROJECT AT BORDING ORGANIC FARM

PUBLISHED: JUNE 2013

Web Address: www.iea-biogas.net
The Biogas Handbook
Science, production
And applications

2013

Task 37
Work Programme 2016-2018
The Biogas/Biomethane Process Chain

- Source: dena, biogasregister 2011
Technical Reports Triennium 2016 - 2018

1. Food waste digestion systems.
2. International approaches to sustainable anaerobic digestion
3. Grid injection and greening of the gas grid
4. The role of anaerobic digestion and biogas in the circular economy
5. Validity of BMP results
6. Methane emissions
7. Sustainable Bioenergy Chains (Collaboration with Task 40)
All input welcome

All opportunities for dissemination welcome

Thank you for your attention

www.iea-biogas.net