



IEA Bioenergy Agreement

Task 33: Thermal Gasification of Biomass

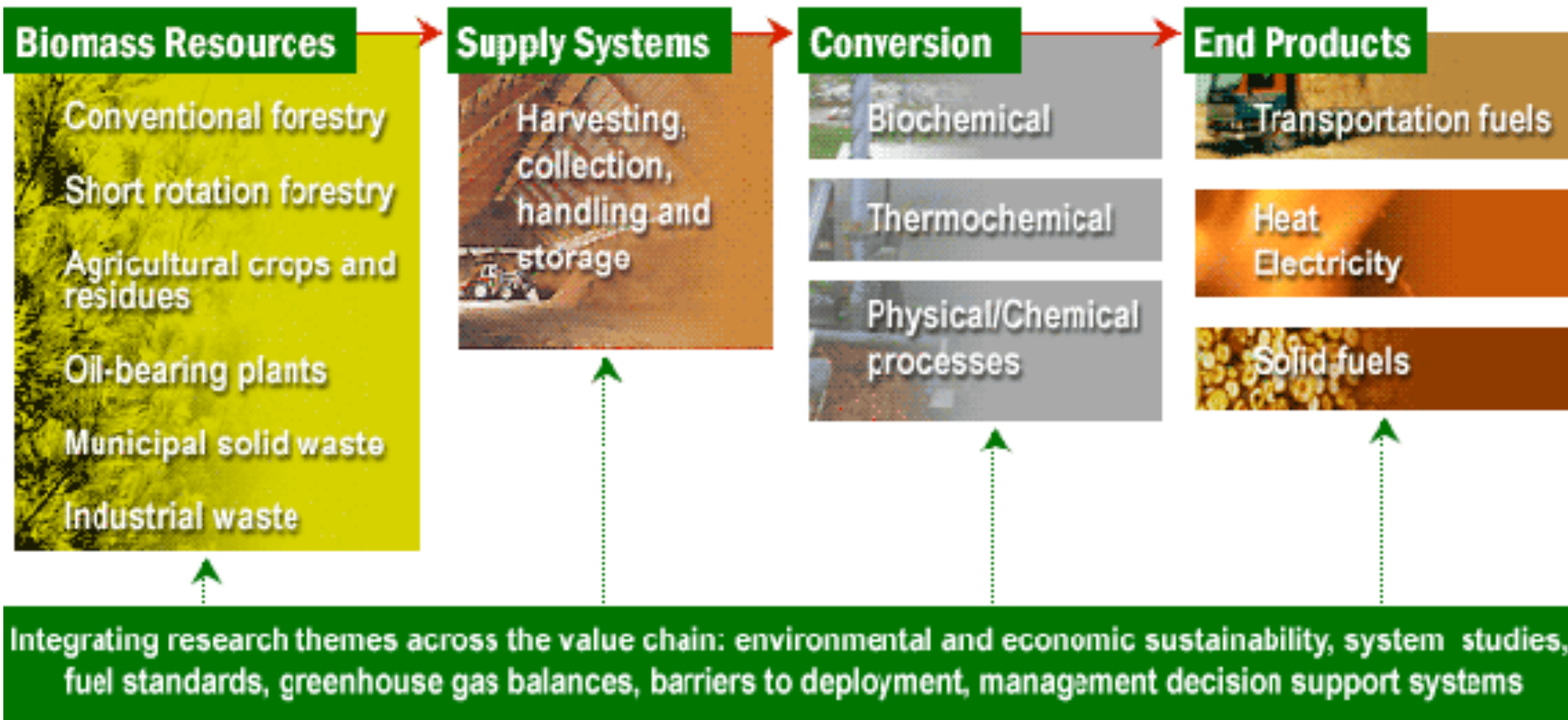
19 November 2013

System and Integration Aspects of Biomass Gasification Workshop

Kevin J. Whitty
The University of Utah
Department of Chemical Engineering



Scope IEA Bioenergy RD&D





Strategic Plan

Vision:

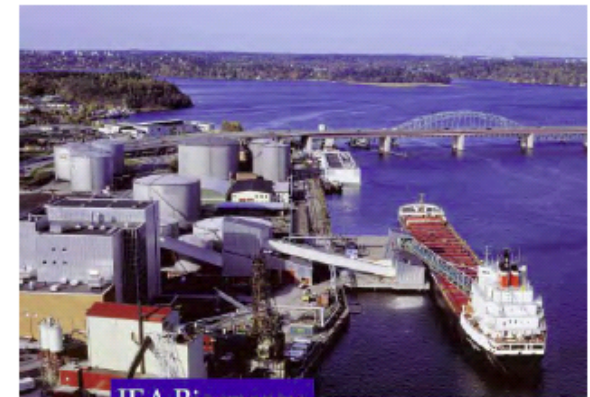
- Substantial bioenergy contribution to future global energy demands
- Increased security of supply
- Reducing greenhouse gas emissions

Mission:

- Commercialisation and market deployment of environmentally sound, socially acceptable, and cost-competitive bioenergy
- Advise policy and industrial decision makers

Strategy:

- Provide an international forum for sharing information and developing best practices
- Produce authoritative information on key strategic issues affecting deployment



IEA Bioenergy

IEA Bioenergy's vision is to achieve a substantial bioenergy contribution to future global energy demands by accelerating the production and use of environmentally sound, socially accepted and cost-competitive bioenergy on a sustainable basis, thus providing increased security of supply while reducing greenhouse gas emissions from energy use.

IEA Bioenergy, EBC, 2009-10

Strategic Plan 2010-2016



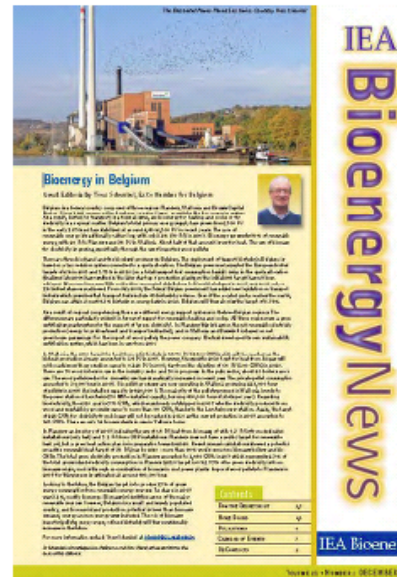
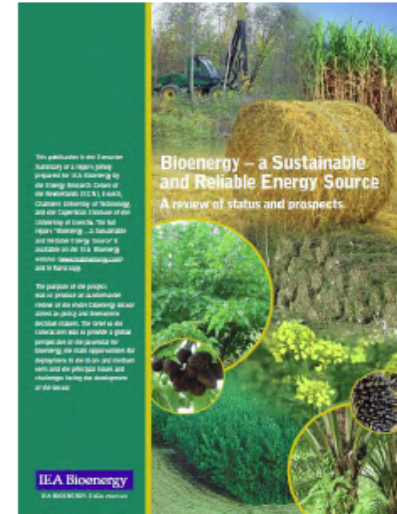
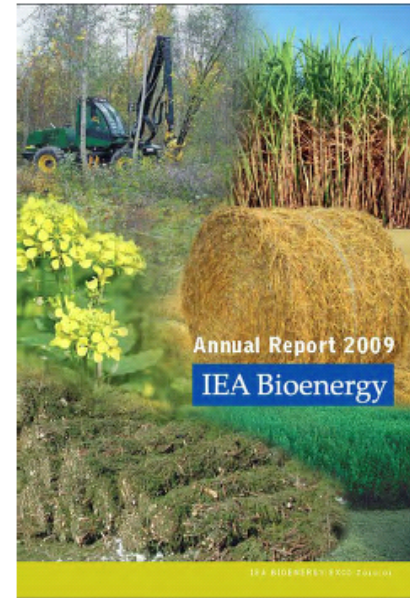
IEA Bioenergy Participating Countries

- Australia
- Austria
- Belgium
- Brazil
- Canada
- Croatia
- Denmark
- European Commission
- Finland
- France
- Germany
- Italy
- Ireland
- Japan
- Korea
- Netherlands
- New Zealand
- Norway
- South Africa
- Sweden
- Switzerland
- Turkey
- United Kingdom
- United States



Output / Deliverables

- Strategic position papers
- Annual Reports
- Newsletters



<http://www.ieabioenergy.com>

Project	✓
Research	✓
Business	✓
Policy	✓
Education	✓



IEA Bioenergy Tasks

Task 29 : Socio-Economic Drivers in Implementing Bioenergy Projects

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 : Greenhouse Gas Balances of Biomass and Bioenergy Systems

Task 39 : Commercialising Liquid Biofuels from Biomass

Task 40 : Sustainable International Bioenergy Trade - Securing Supply and Demand

Task 41 : Project 3 - Joint project with the Advanced Motor Fuels Implementing Agreement

Task 42 : Biorefineries: Co-production of Fuels, Chemicals, Power and Materials from Biomass

Task 43 : Biomass Feedstocks for Energy Markets



IEA Bioenergy Task 33: Thermal Gasification of Biomass

Task 33 is a working group of international experts with the aim to promote the commercialization of efficient, economical, and environmentally preferable biomass gasification processes.

Primary activities include:

- Networking
- Information exchange
- Standardisation
- Task meetings and workshops

<http://www.ieatask33.org>



Task 33 Participating Countries

- Denmark
- Italy
- Germany
- Finland
- The Netherlands
- New Zealand
- Norway
- Sweden
- Switzerland
- Turkey
- Austria
- USA



Task 33 Information Resources

- Technical Reports
 - Surveys
 - Case studies
 - Research reviews (e.g. gasification reaction kinetics)
- Country Reports
 - Biomass resources and opportunities
 - Survey of gasification research and plant construction
 - Updates on commercial projects
- Testing Protocols
 - Tar sampling protocol
- Workshops



Task 33 Workshops for 2013-15 Triennium

Workshops held in 2013

- Gasification research and technoeconomics (Golden, Colorado May 2013)
- System and integration aspects of biomass-based gasification

Potential topics for 2014-15 workshops

- Product gas cleaning and usage
- Tar formation, analysis and removal
- Small scale fixed bed gasification
- Analysis & measurements (trace components)
- Sustainability
- Fuel pre-treatment, demands of gasifiers on fuel quality
- Drop in fuels

Task 33

Thermal Gasification of Biomass



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IEA Bioenergy

Task 33 Website

Task 33
Thermal Gasification of Biomass

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IEA Bioenergy

- ▶ General Description
- ▶ Ongoing Tasks

▶ **Thermal Gasification of Biomass** Task 33 is a working group of international experts with the aim to promote the commercialization of efficient, economical, and environmentally preferable thermal biomass gasification processes.

▶ **Task Description**

▶ **Participants**

▶ **Publications**

▶ **Country Reports**

▶ **Meeting Minutes & Presentations**

▶ **Thermal Gasification Facilities**

▶ **Future Task Meetings**

Thermal biomass gasification is a process converting cellulosic biomass into:

- heat/power and steam and/or
- synthesis gas, which can be used for production of:
 - liquid fuels (biodiesel)
 - hydrogen
 - methane
 - mixed alcohols
 - other chemicals

DISCLAIMER:
The Task 33 / Thermal Gasification of Biomass, also known as the Task 33 / Thermal Gasification of Biomass, functions within a framework created by the International Energy Agency (IEA). Views, findings and publications of Task 33 / Thermal Gasification of Biomass do not necessarily represent the views or policies of the IEA Secretariat or of all its individual member countries.



Thermal Gasification Facilities Database

Map showing the locations of thermal gasification facilities worldwide. The map includes navigation controls and a legend.

Technology	Type	Status
<input type="checkbox"/> co-firing	<input type="checkbox"/> pilot	<input type="checkbox"/> planned
<input type="checkbox"/> CHP	<input type="checkbox"/> demo	<input type="checkbox"/> announced
<input type="checkbox"/> synthesis	<input type="checkbox"/> commercial	<input type="checkbox"/> under construction
<input type="checkbox"/> other innovative		<input type="checkbox"/> under commissioning
		<input type="checkbox"/> operational
		<input type="checkbox"/> on hold

Göteborg Energi
GoBiGas
 Ryahammen, Göteborg, Sweden
 synthesis conversion of lignocellulosics into SNG
 demo facility, under construction, start-up 2013
[more information](#)

Technology	Type	Status
<input type="checkbox"/> co-firing	<input type="checkbox"/> pilot	<input type="checkbox"/> planned
<input type="checkbox"/> CHP	<input type="checkbox"/> demo	<input type="checkbox"/> announced
<input type="checkbox"/> synthesis	<input type="checkbox"/> commercial	<input type="checkbox"/> under construction
<input type="checkbox"/> other innovative		<input type="checkbox"/> under commissioning
		<input type="checkbox"/> operational
		<input type="checkbox"/> on hold
		<input type="checkbox"/> stopped

Task 33

Thermal Gasification of Biomass



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Thank you for your attention