IEA Bioenergy News

# Bioenergy in Sweden

**Guest Editoral by Björn Telenius, ExCo Member for Sweden**

Sweden is fortunate to have an energy system which is relatively $CO_2$ neutral, with only 4% of the supply being produced from coal. Electricity is produced in about equal shares from hydro and nuclear. Bioenergy plays an important and increasing role. The share of bioenergy has increased from about 10% of the supplied energy during the 1980s to 17% in 2004. In 2004, bioenergy supplied 110 TWh. Most of the biomass used was in industry (53 TWh) and in district heating (33 TWh). Other major sectors using biomass were residential housing, ie. houses without a connection to district heating (13 TWh) and CHP in industry and district heating networks (10 TWh). Despite an ethanol blend of 5% in petrol, liquid biofuels represented only a modest 1.6 TWh of the total bioenergy used.

Most of the bioenergy is produced domestically, with a major contribution being biomass from the forest industry. There are no reliable statistics of the quantities imported but estimates range from 4-9 TWh. The demand for pellets has increased rapidly. During 2004 about 1.25 million tons (6 TWh) were used, representing about 1% of total energy consumption.

Sweden's strategy to increase the share of renewable energy has changed over the years. The general principle has been to avoid product-specific subsidies or policy instruments. Instead the preferred policy instruments have been, for example, a $CO_2$ tax, and since 2003 a law on renewable electricity certificates. Such measures are not specific to bioenergy and some instruments, eg. the electricity certificates, lead to competition between the renewable energy sources. Bioenergy, and in particular heat produced from by-products and other cheap and readily available biomass, are among the most cost-efficient forms of renewable energy. Hence the Swedish energy and environmental policies have given bioenergy in general a strong position – especially low cost, high volume bioenergy.

Since the oil crisis of the 1970s, bioenergy has been given high priority in the R&D portfolio. Over the years Swedish energy R&D has covered most economically and environmentally relevant bioenergy topics. Often the R&D priorities have taken a 'user perspective', ie. with an objective to support commercial users, increase volume, cut costs, etc. rather than for example, developing cutting edge technology with a long-term perspective. Such orientation has been logical under current policy instruments which create a market-driven demand for bioenergy where R&D has reflected industries' needs. There are, of course, many exceptions and in particular during recent years. The three most ambitious projects by far in Sweden's overall energy R&D portfolio all concern development of new bioenergy technologies and processes: gasification of black liquor, fermentation of woody cellulose, and synthesis of liquid fuels via gasification. These technologies have all been considered central for advancing the current use of bioenergy. The current R&D balance also reflects the recent shift in focus towards transportation fuels.

The demand for bioenergy continues to increase, strongly driven by the law on renewable electricity certificates. This development calls for an R&D focus on feedstock supply and efficiency increases in conversion to electricity. Despite the already intensive use of domestically produced biomass, a 50% increase in domestic feedstock production has been estimated as practically achievable. However, mobilisation of such quantities may require a pricing of the feedstock that could have a major impact not only on the imported quantities but also on feedstock availability to the forest industries. The expected response to an increasing price for biomass will be a dynamic feedstock market involving both imports and exports, increased forest production intensity, and an expansion of agriculturally produced biomass for energy purposes.

For more information contact Björn Telenius at the Swedish National Energy Administration. Email: Bjorn.Telenius@energimyndigheten.se
or visit the website at: www.stem.se

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*Ena Kraft AB in Enköping. Courtesy E. Johansson, Sweden*

IEA Bioenergy

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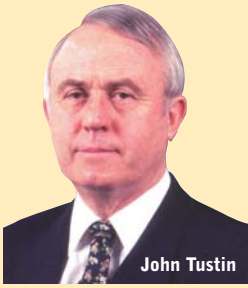
# From the Secretariat


John Tustin

## ExCo 58 Stockholm, Sweden

The 58th meeting of the Executive Committee was held in Stockholm, Sweden on 4-5 October, with Kyriakos Maniatis as Chairman and John Tustin as Secretary. The meeting was hosted by the Swedish National Energy Administration. The Chairman expressed the appreciation of the ExCo to Björn Telenius for the excellent meeting and study tour arrangements. Some of the outcomes of this meeting are detailed below.

### Changes in the Executive Committee

There is one new ExCo Member - Mr Andre Otto, South Africa. New Alternate Members are - Mr Brendon George, Australia; Dr Marcus Phago, South Africa; Dr Per Nielsen, New Zealand; and Dr Maria Fernandez Guitierrez, the European Commission.

### Election of Chairman and Vice Chairman

Dr Kyriakos Maniatis of the European Commission was re-elected Chairman and Dr J. Peter Hall of Canada was re-elected Vice Chairman for 2007.

### Task Participation for 2006

Germany confirmed it will join Task 36. Task participation by the Member Countries now totals 111.

### Tasks in the New Triennium 2007-2009

A substantial part of the ExCo58 meeting was dedicated to discussing and finalising the programmes of work and budgets for the Tasks in the new triennium. Apart from Tasks 29, 34 and 41 which were already approved, Tasks 30, 31, 32, 33, 36, 37, 38, 39 and 40 were all prolonged with new programmes of work and renewed participation by Member Countries.
There was one new Task approved - Task 42: Biorefineries (featured on page 5). There will thus be 13 Tasks in the upcoming triennium.

### Technical Coordinator Position

At ExCo58 a new position, Technical Coordinator (TC) was approved. The need for this position has arisen from the rapidly increasing requests from the Renewable Energy Working Party Secretariat at IEA Headquarters and also to provide a coordinating mechanism between the Tasks and the Executive Committee and a link between Tasks for projects where more than one Task is contributing. The TC will report to the Chairman and primarily work on a project-by-project basis. An important outcome is expected to be a significant improvement in the development and momentum of policy-relevant outputs from the Tasks. See also page 5.

*Bjorn Forsberg with the ExCo group at the TallOil district heating plant, Stockholm*

### ExCo58 Workshop

A very successful workshop titled 'Availability of biomass resources, certification/sustainability criteria and land-use and bioenergy in the Kyoto and post-Kyoto framework' was well attended by ExCo Members and Task Leaders. Presentations were:

- The Role of LULUCF in the Kyoto Protocol, in Countries' Mitigation Efforts and in Post-2012 Climate Policy - Hans Nilsagard, Ministry of Industry, Sweden
- Role of Bioenergy in the Kyoto Protocol in the EU-ETS and in Future Climate Agreements - Andreas Türk, Joanneum Research, Austria
- The Kyoto Protocol Target Achievement Plan - Dr Naoto Asami, The Institute of Applied Energy, Japan
- Global Biomass Availability: Assumptions and Conditions - Monique Hoogwijk, Ecofys, The Netherlands
- Market Driven Utilisation of Bioenergy Potentials - Tomas Kåberger, TallOil, Sweden
- Criteria and Indicators for Sustainable Production of Forest for Energy - Inge Stupak Moller, Forest and Landscape, Denmark
- Criteria for Sustainable Biomass Production - Jacqueline Kramer, University of Utrecht, The Netherlands
- Biomass Potential in Europe - Matti Parikka, Swedish University of Agricultural Sciences, Uppsala, Sweden
- The CAP and Bioenergy: Driver or Barrier - Philip Peck, IIIEE, Lund University, Sweden.

These presentations are now available on the IEA Bioenergy website.

Many of the presentations confirmed that the increasing contribution of bioenergy to meeting energy demand will result in competition for biomass between energy use and non-energy use (eg. pulp and paper, particle board). This process has already started and has, in some countries, led to effects on the energy market, eg. increased cost of wood pellets and large volumes of pellets being traded internationally.

With increasing international trade of biomass, questions related to the sustainability of biomass production in the countries of origin become important. Guidelines for certification are being developed and are already applied in some cases. Full implementation of certification is the prerequisite for establishing a standard practice of international biomass trade.

Lifecycle analyses can be used to calculate the effect of replacing fossil fuel systems with bioenergy systems in terms of energy and greenhouse gas (GHG) balances. If there is no systematic decrease in carbon stocks where biomass is produced, bioenergy is a renewable source of energy and considered to be carbon neutral. However, GHG emissions result from the input of auxiliary (fossil) energy and the use of fertilisers in biomass production and supply. Thus the GHG benefit of bioenergy may be less than the avoided emissions from replacing the fossil system, including its auxiliary energy. Some countries plan to account for this within their national GHG reduction programmes.

## Task Technology Reports

The new initiative for each Task to produce a Technology Report each year was successfully continued at ExCo58. Technology Reports tabled at the meeting included:

- Increasing Uptake of Bioenergy via the Energy Services (ESCo) Approach - Task 29
- Reliability of Biomass Supply Estimates is Critical to Realising the Bioenergy Potential - Task 31
- Decentralised Power Generation Technologies Using Biomass Combustion -Task 32
- National Perspectives on Biomass Gasification from Task 33 Member Countries - Task 33
- Mechanical Biological Treatment - Task 36
- Biogas as a Vehicle Fuel - Upgrading, distribution, fuelling and utilisation - Task 37
- Tools for Estimating the Greenhouse Gas Impacts of Bioenergy Systems - Task 38
- Choosing Biorefining Platforms for the Commercialisation of the Biomass-to-Ethanol Process - Task 39.

There was discussion at the meeting of how to give more profile to these documents. A committee was formed to prepare a proposal on how to maximise the utility of these products.

## Report from IEA Headquarters

There was a discussion of the report 'Technology Brief to the IEA Governing Board - Focus on Biofuels'. The Renewable Energy Unit (REU) will be continuing analytical work related to biofuels and IEA Bioenergy was invited to collaborate on this. There was general agreement that this should be accepted and implemented.

## ExCo58 Study Tour

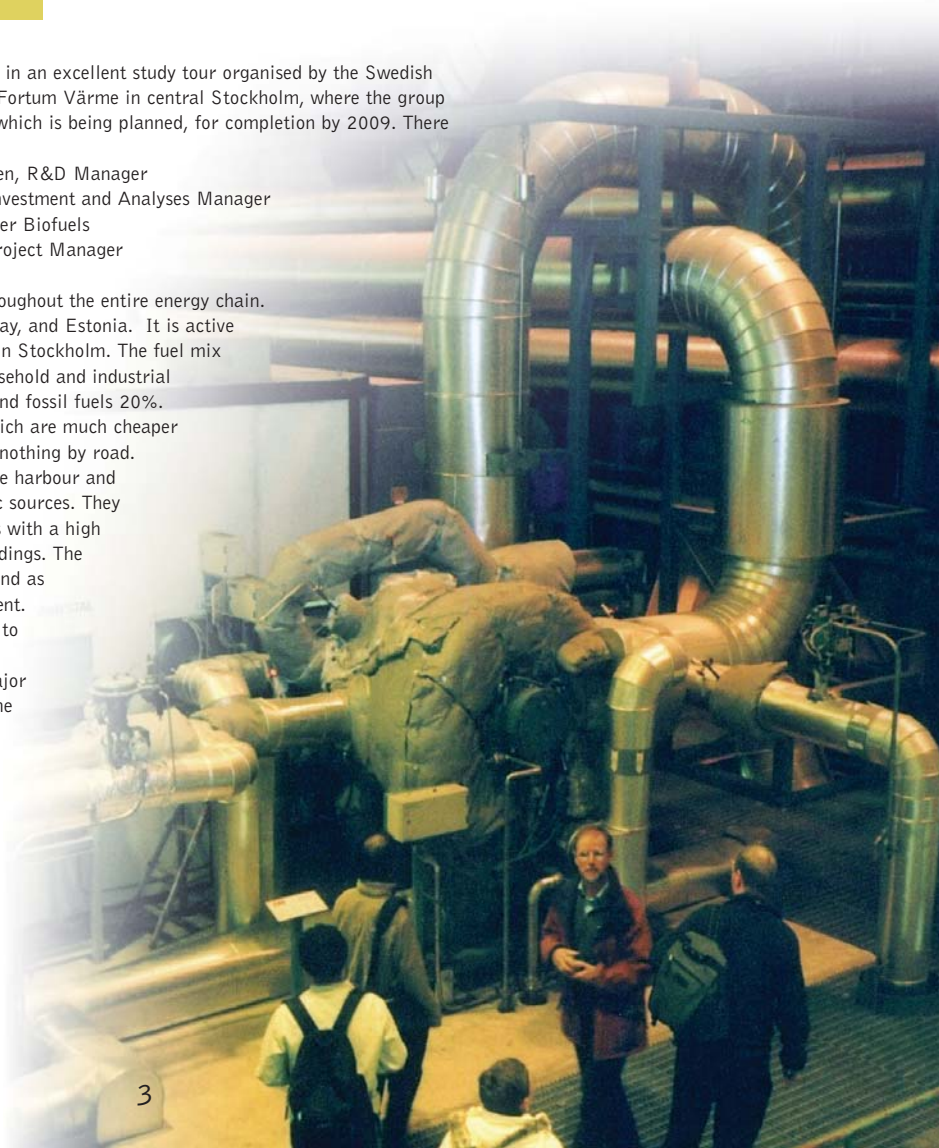
In conjunction with ExCo58, 25 attendees participated in an excellent study tour organised by the Swedish National Energy Administration. The first stop was to Fortum Värme in central Stockholm, where the group heard about the new 400 MWth bioenergy CHP plant which is being planned, for completion by 2009. There were four very interesting presentations:

- 'Presentation of Fortum Värme' - Eva-Katrin Lindmen, R&D Manager
- 'New CHP plant in Stockholm' - Mathias Edstedt, Investment and Analyses Manager
- 'Strategy for Fuel Supply' - Per Ytterberg, Lead Buyer Biofuels
- 'Project Bio CHP in Värtan' - Rickard Andersson, Project Manager

Fortum focuses on power and heat, with operations throughout the entire energy chain. It has 1.4 million customers in Finland, Sweden, Norway, and Estonia. It is active in 18 Swedish cities, and has 75% of the heat market in Stockholm. The fuel mix is biofuels (pellets) 39%, water and recycled fuels (household and industrial waste) 19%, energy from sea water and sewage 22% and fossil fuels 20%. The new Fortrum plant will be based on wood chips which are much cheaper than pellets. Fuel supplies will come by ship and rail – nothing by road. Everything will be underground between the ships in the harbour and the boiler. 70% of the biofuels will come from domestic sources. They are working on universal and robust logistical solutions with a high discharge capacity and zero disturbance to the surroundings. The boiler for the new CHP plant will be sunk into the ground as there is a 22 metre height restriction for the development. Fuel flexibility is important and has led to the decision to use fluidised bed in the design. Public perception of the project is important and this has driven some of the major features in the design, eg., underground logistics and the boiler. There are regular meetings with neighbours and no negative feedback so far. It has been helpful that the new plant is situated on land which is already in 'energy production'.

The second stop was at Ena Kraft AB in Enköping. The host, Eddie Johansson, made an excellent presentation and then led the group on a tour of the biomass-fuelled (wood chips) CHP plant which provides district heating for the local population.

*Right: Ena Kraft AB CHP plant in Enköping*



## ExCo58 Study Tour

*(continued)*

He said there was a high demand for biomass in the region, with a competitive situation for sawdust, forest residues, short rotation coppice (SRC) willow, and wood pellets. The cost of chipped SRC willow delivered to the power plant was €8.0 per MW hour compared with coal which was €9.5 per MW hour. Ena Kraft is now looking to rent 2,200 ha of land for SRC willow. They will offer a 12 year contract which will allow three crops of four-year willow to be produced.

*Kees Kwant (left) and Gerhard Justinger (right) with Eddie Johansson at Ena Kraft AB in Enköping*

An interesting innovation at the Ena Kraft operation was the use of willow plantations to treat and utilise decanted water from dewatering of sewage sludge. This water contains 25% of the nitrogen entering the wastewater treatment plant but less than 1% of the water volume. Thus by treating this water separately instead of pumping it back into the treatment plant the total nitrogen load is reduced by 25%. The relatively limited water volume enables storing in ponds during winter time, which is also required to reduce the number of pathogens. During the period May to September the water is used for irrigation of the adjacent willow plantation by use of drip pipes laid in every double row. To boost growth and further improve the overall nitrogen treatment efficiency of the wastewater plant, the system is design so that conventionally treated wastewater is added through the irrigation system. The irrigation load is approximately 300 mm per year resulting in a load of some 250 kg nitrogen and 7 kg phosphorus per hectare.

*The Ena Energi district heating plant in Stockholm, Sweden.*

The next stop was to see SRC willow with Magnus Jansson, from Lantmännen Agroenergi. This company has worked on SRC willow for more than 15 years and is at the forefront of developing willow varieties. Their business spans from production of plant material, to contract planting, harvesting, and marketing of willow wood chips. They also distribute sludge from municipal waste treatment stations as fertiliser for willow plantations, and develop machinery to rationalise the supply chain, from planting to delivery of wood chips to heating plants. Lantmännen Agroenergi has SRC willow activities in Sweden, the UK and Poland.

The group then returned to Stockholm for further visits. Firstly to a TallOil district heating plant, Ena Energi, built in an old quarry. This plant is fuelled by pellets and briquettes, milled to a fine powder before combustion. Bjorn Försberg, Global Market Manager for TallOil was in charge of the visit and provided detailed technical information to the party.

Finally the group visited TallOil's Head Office at the World Trade Centre. Hendrik Lundberg, founder and CEO of TallOil, made a very interesting presentation about his company, its philosophy, and operations. He especially focussed on opportunities for biomass and bioenergy. TallOil specialises in long term and sustainable biofuel solutions. Their expertise ranges from raw materials and techniques, to delivering complete turnkey biofuel applications comprising combustion technologies, hot water, and steam boilers and related equipment. The company was founded in 1993 in response to the growing interest in renewable biofuels and concern for the environment. Their business is aligned with the political climate as well as the market view for various types of energy. Lundberg explained that until governments take a stand regarding the control of greenhouse gas emissions, bioenergy cannot be utilised to its full potential.

Erik Ling, Business Development Manager (bioenergy) for Sveaskog also spoke. Sveaskog, a forestry company, is the largest land owner in Sweden. Biofuels are currently 4.8% of the total delivered volume from their operations and 2% of stumpage. The company views biofuels as a fast growing business, which will be increasingly relevant to future opportunities. Their forest fuel price to customers is approximately €13 per MWh.

*Magnus Jansson, Lantmännen Agroenergi (left), and Björn Telenius discussing SRC willow production. Courtesy S. Schuck, Australia*

# Task Focus

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

At ExCo58 a new Task was approved with seven Member Countries participating initially and three more observing in 2007. Task 42 will be led by Dr Ir Ed de Jong, assisted by Dr Ing René van Ree. The Operating Agent is The Netherlands.

A biorefinery can be defined as a facility that optimises the integrated production of materials, fuels, energy and chemicals. By producing multiple products, a biorefinery can maximise the value derived from the biomass feedstock. For example, a biorefinery may produce one or several low-volume, but high-value chemical products and a low-value, but high-volume liquid transportation fuel, while generating electricity and process heat for its own use and perhaps enough for sale of electricity. These high-value chemical products maximise profitability, while the high-volume fuel production helps meet national energy needs, and the power production reduces costs and greenhouse-gas emissions and minimises waste. The concept is illustrated in Figure 1.

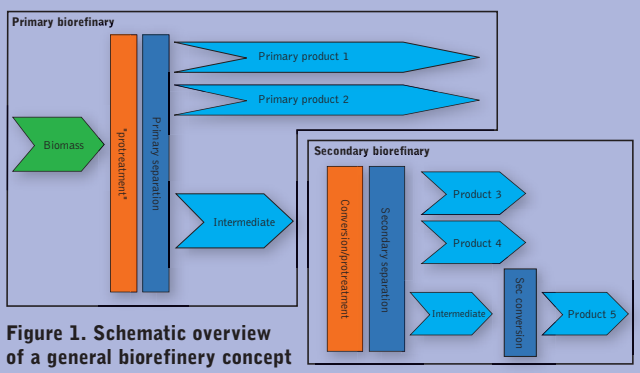



**Figure 1. Schematic overview of a general biorefinery concept**

A key driver for the development and implementation of biorefineries is the view that the growth in demand for energy, fuels, and chemicals, will place additional pressure on the use of resources and the environment. Accordingly, the thrust is in finding new technologies and creating novel processes, products, and capabilities to ensure the growth is sustainable. There is a common interest in shifting from a sole dependence on fossil resources to an industry based on plant-based resources. The shift to a bio-based chemical and material industry will alter the technological basis of the industry quite radically. Further research and technology adoption will indicate which new products and processes contribute to sustainability. This will be necessary for communication with non-governmental organisations (NGOs), the general public, regulators and policy makers about, for example, $CO_2$-emissions.

Task 42 addresses a new and very broad biomass-related field with a very large application potential. Releasing this potential will require collaboration between industry, research providers, government and NGOs to identify appropriate RD&D priorities and programmes as well as market introduction strategies.

Task 42 will cover a variety of market sectors eg. transport sector, chemical sector, power sector, agricultural sector, with a lot of interested stakeholders. It will also include a variety of biomass conversion technologies and, more importantly, integrated concepts of both (bio)chemical and thermochemical conversion technologies. Integrated biorefinery concepts convert a variety of feedstocks, including residues, into a portfolio of products with better energy efficiency, economy and environmental effects, than stand-alone processes often producing only one or two products.

The major objective of Task 42 is to assess the worldwide position and potential of biorefineries. It aims to gather new insight on the future possibilities for competitive, sustainable, safe and eco-efficient processing routes for the simultaneous manufacture of transportation fuels, added-value chemicals, heat and power, and materials.

For further information on this Task, contact Ed de Jong, Task Leader at: ed.dejong@wur.nl

# Notice Board

### Technical Coordinator

Dr Adam Brown has been appointed to the position of IEA Bioenergy Technical Coordinator. He will report to the Chairman and provide technical support on a project-by-project basis. Many will know Adam as he was Vice Chairman of IEA Bioenergy from 1987 to 1990 and Chairman from 1990 to 1993. He has worked in programme management and consultancy roles in the bioenergy sector for more than 25 years. Among other activities, he has also been the UK representative on the REWP and Chairman of DTI Advisory Committees on Biofuels and Wind Energy .He was the principle author of a report on the UK potential for heat from renewable sources - including biomass. He was also involved in establishing and managing a company - Biojoule Ltd - to produce process biofuels for co-firing. Adam currently has his own consultancy company 'Energy Insights Ltd' based at Didcot in the UK.

### Task 29

The following case studies illustrating the opportunities for biomass use in both urban and rural communities, best practice procedures and socio-economic drivers, have been completed by Task experts and are available for download from the Task website at http://www.iea-bioenergy-task29.hr/

- Zakanje Municipality, Croatia;
- Camphill Community Ballytobin, Co. Kilkeny, Ireland;
- Biogreen Energy Products Ltd., Co. Wexford, Ireland;
- Socio-economics of large urban wood-fuelled cogeneration: sustainable energy supply for Vienna, Austria.

Task 29's 'Educational Website on Biomass and Bioenergy' is operational at www.aboutbioenergy.info. This site includes a wealth of information on 'the oldest source of energy used by men'. It also provides the opportunity to pose questions to leading bioenergy experts.

### Task 32

Task 32 held two workshops in 2006: 'Fuel Flexibility in biomass combustion: The key to low bioenergy costs?' at the World Bioenergy Conference 2006 in May/June (Jönköping, Sweden) and 'Ash Deposition and Corrosion' in September (Glasgow, Scotland). Presentations from these workshops can be downloaded from the website at: http://www.ieabcc.nl/

### Task 37

2006 Country Reports for each of Task 37's member countries can now be downloaded at: http://www.iea-biogas.net/publicationsreports.htm

### Task 38

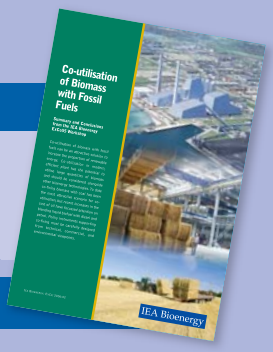
The Canadian case study on 'GHG Impacts of Pellet Production from Woody Biomass Sources in BC, Canada' has been completed. Both the full report and brochure are available at: www.joanneum.at/iea-bioenergy-task38/projects/task38casestudies/

### Task 39

Task 39 have a new-look Web page with extra features and services at: www.task39.org

# Publications

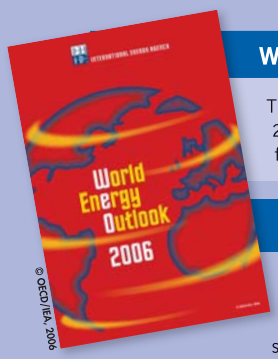
## Co-utilisation of Biomass with Fossil Fuels: Summary and Conclusions - ExCo55 Workshop




This workshop was held in conjunction with ExCo55 in Copenhagen, Denmark in May 2005. Its purpose was to inform the Executive Committee about the development of biomass co-utilisation with fossil fuels - in particular co-firing - and about the remaining barriers that need to be overcome in order to accelerate the penetration of co-utilisation technologies in the market. Download a copy at: http://www.ieabioenergy.com/LibItem.aspx?id=5346

## Sustainable Production Systems for Bioenergy: Forest Energy in Practice

Richardson, J., R. Björheden, O. Popescu and C.T. Smith (guest editors) 2006.
These are the proceedings of the 4th Annual Workshop of IEA Bioenergy Task 31. This workshop provided a forum to exchange information and discuss sustainable management, production and use of forest biomass for energy as an integral part of resource management and community development. The proceedings have been published in Biomass & Bioenergy 30(12):999-1081.

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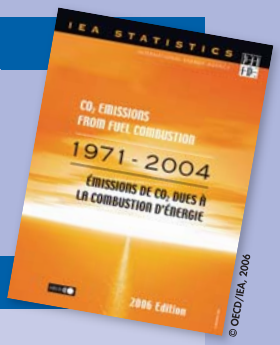
## World Energy Outlook 2006

This annual IEA publication provides medium to long-term energy market statistics, projections and analysis. Special topics in 2006 include how to change the unsustainable energy trends with alternative policies, the impact of higher energy prices, prospects for nuclear power and the outlook for biofuels. Buy a copy at: http://www.iea.org/w/bookshop/add.aspx?id=279

## $CO_2$ Emissions from Fuel Combustion 1971-2004

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The IEA prepares this annual publication as a tool for analysts and policy makers in many international fora such as the Conference of the Parties. The data in this book are designed to assist in understanding the evolution of the emissions of $CO_2$ from 1971 to 2004 for more than 140 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the default methods and emission factors from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Order a copy online at: http://www.iea.org/w/bookshop/b.aspx?Subject=Climate%20Change

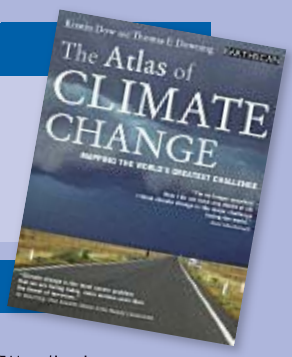
## Energy Statistics in OECD Countries, 2003-2004

This volume contains data on energy supply and consumption for coal, oil, gas, electricity, heat, renewables and waste. Historical tables summarise data on production, trade and final consumption. The book also includes definitions of products and flows and explanatory notes on the individual country data. Buy a copy at: http://www.iea.org/w/bookshop/add.aspx?id=28

## Proceedings of the 14th European Biomass Conference. Biomass for Energy, Industry and Climate Protection

The largest biomass event of 2005, the 14th European Biomass Conference was held in Paris, France. The proceedings contain 593 papers, covering topics such as R&D of Bioenergy Conversion Technology Systems; Demonstration and Market Implementation of Bioenergy in the Transportation Sector; Application of Biomass for Energy and Industrial Products; International Biofuels Trade, Strategy, Policy and Climate Protection Issues; Strategy, Policy and Climate Protection Issues, and Demonstration and Market Implementation of Bioenergy in the Heat and Electricity Sector. Order a copy from ETA at: http://p14177.typo3server.info/142.0.html

## The Atlas of Climate Change. Mapping The World's Greatest Challenge




Kirstin Dow and Thomas E Downing
This atlas examines the possible impact of climate change on our ability to feed the world's people, avoid water shortages, conserve biodiversity, improve health, and preserve cities and cultural treasures. It also reviews contributions to greenhouse gas levels, Kyoto commitments and efforts to meet the challenge of climate change. The atlas covers a wide range of topics, including warning signals, future scenarios, vulnerable populations, health impacts, renewable energy and emission reductions. Order a copy from Earthscan at: //www.earthscan.co.uk/

## Bioenergy in Europe: Opportunities and Barriers

The aim of this publication is to give a comprehensive overview of the opportunities for and barriers to bioenergy development in Europe. The study is carried out within the Bioenergy Network of Excellence 'Overcoming Barriers to Bioenergy' and covers EU policy issues and their implementation in Europe, biomass availability and technology development aspects, and RTD goals to overcome the barriers to bioenergy development. Download a copy at: http://www.bioenergynoe.org/?_id=179

## The Market for Renewable Energy Certificates Report

This report takes a look at what Renewable Energy Certificates (RECs) are, how they work, the role they can play in stimulating the development of renewable energy, different models for implementing RECs, current offerings of REC suppliers and customer purchases of RECs. Purchase a hard copy or download of the report at: http://www.researchreportsintl.com/products/product.cfm?report_ID=58

## Biomass Energy Data Book: Edition 1

Lynn Wright, Bob Boundy, Bob Perlack, Stacy Davis and Bo Saulsbury
This statistical compendium of biomass industry data is prepared and published by Oak Ridge National Laboratory. It covers ethanol, biodiesel, BioOil, the use of biomass for electrical power generation and heating, biorefineries, and feedstocks that are produced and used in the biomass industry. This first edition is only available online at: http://cta.ornl.gov/bedb/download.shtml

# Calendar of Events

## IEA Bioenergy Meetings

**Task 29** will meet in Spring 2007 in Voralrberg, Austria. Contact Keith Richards, Task Leader
Email: keith.richards@tvenergy.org

**Task 33** will be holding their first meeting in 2007 on March 26-27 in London, UK.
Contact Suresh Babu, Task Leader
Email: rsbabu8303@comcast.net

The next main **Task 34** meeting is likely to be in Salzburg, Austria in March 2007.
Contact Emma Wylde
Email: e.wylde@aston.ac.uk

**Task 36** will meet in the United Kingdom from 3-5 May 2007. Contact Grace Gordon
Email: Grace.Gordon@aeat.co.uk

**Task 37** Contact Arthur Wellinger, Task Leader
Email: Arthur.wellinger@novaenergie.ch

The next international **Task 38** workshop and meeting will take place in the first week of February 2007 in Austria.
Contact Susanne Woess-Gallasch
Email: susanne.woess@joanneum.at

**Task 38** is planning an international workshop on 'Policies, and instruments to promote bioenergy and bioproducts for GHG mitigation' on May 11th 2007, probably in conjunction with the 15th EU Biomass Conference in Berlin, Germany. The Task 38 business meeting will follow this, from 12 -14 May. Contact Susanne Woess-Gallasch.
Email: susanne.woess@joanneum.at.

**Task 39** will hold a 'kick-off' meeting for the new triennium on 15-16 January in the UK. They are also planning to meet in May 2007 in conjunction with the 29th Symposium on Biotechnology for Fuels and Chemicals in Denver, USA. Contact: Jack Saddler, Task Leader
Email: saddler@interchange.ubc.ca

**ExCo59** will be held in Golden, Colorado, USA on 25-27 April 2007.

**ExCo60** will be held in Germany in October 2007.

## Other Events

**Ethanol: The New Energy Paradigm (The Impact of Ethanol on Energy Supply in the Americas)**
11-12 January 2007, San Antonio, Texas, USA
Tel: +44 20 7017 7500
Fax: +44 20 7017 7599
Email: marketing@agra-net.com
Web: www.agra-net.com/usethanol

**Industrial Combustion of Waste in the Energy Challenge – Innovate or Stagnate (British Flame Workshop)**
16 January 2007, Sheffield, UK
Contact: Prof Tony Griffiths
Tel: +44 29 20 874316
Fax: +44 29 20 87 4316
Email: griffithsaj2@cf.ac.uk
Web: britishflame.org.uk

**Agricultural Wastes, Co-Products and Residues as Fuel for Combustion**
25 January 2007, Birmingham, UK
Contact: Rob Fenton
Tel: +44 21 204 3398
Email: r.b.fenton@aston.ac.uk
Web: //www.supergen-bioenergy.net/?_id=318

**ENVIRONMENT 2007 Exhibition and Conference**
28-31 January 2007, Abu Dhabi, UAE
Organiser: General Exhibitions Corporation
Tel: +971 2 444 6900
Fax: +971 2 444 6135
Email: ee@gec.ae
Web: //www.ee-uae.com/

**Fourth Energy Summit: Energy Future of the Balkans: Renewable energy sources and nuclear plants**
29 January 2007, Belgrade, Serbia
Tel: +381 6416 88054
Email: editor@energyobserver.com

**European Renewable Energy Policy Conference 2007**
29-31 January 2007, Brussels, Belgium
Tel: +32 2 546 1933
Fax: +32 2 546 1934
Email: erec@erec-renewables.org
Web: www.erec-renewables.org/events/2007PolicyConference/default.htm

**European Union Sustainable Energy Week**
29 January – 2 February 2007, Brussels and other European locations
Email: eusew@sustenergy.org
Web: //www.eusew.eu/index.cfm

**National Biodiesel Conference & Expo**
4-7 February 2007, San Antonio, Texas, USA
Fax: +1 719 539 0301
Web: www.biodieselconference.org

**Bioenergy Europe 2007 - Markets and Finance for Biofuels & Biomass**
5-6 February 2007, London, UK
Contact: Environmental Finance
Tel: +44 20 7251 9151
Fax: +44 20 7251 9161
Email: info@environmental-finance.com
Web: //www.environmental-finance.com/conferences/2006/Bio07/intro.htm

**National Ethanol Conference: Building New Horizons**
19-21 February 2007, Tucson, Arizona, USA
Tel: +1 719 539 0300
Fax: +1 719 539 0301
Email: registration@bbibiofuels.com
Web: //www.ethanolrfa.org/industry/conference/2007reg.php

**World Sustainable Energy Days 2007**
27 February - 2 March 2007, Wels, Austria
Contact: O.Ö. Energiesparverband
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Web: www.wsed.at

**European Pellets Conference**
28th February 2007, Wels, Austria
Contact: O.Ö. Energiesparverband
Tel: +43 732 7720 14386
Email: office@esv.or.at
Web: www.wsed.at

**Bioenergia 2007: Technology & Business Opportunities**
1-2 March 2007, Madrid, Spain
Contact: Ategrus
Tel: +34 94 464 1990
Fax: +34 94 424 3854
Email: ategrus@ategrus.org
Web: www.ategrus.org/

**World Biofuels Markets Congress**
6-9 March 2007, Brussels, Belgium
Web: www.greenpowerconferences.com

**EnergyReS - 1st International Expo on Energy Efficiency and Renewable Energy Sources**
8-11 March 2007, Athens, Greece
Contact: High Technology Expo Ltd
Tel: +30 210 9858249
Email: info@energyres.gr
Web: www.energyres.gr

**Biofuels Americas Conference & Expo III**
12-14 March 2007, Cartagena, Colombia
Contact: Kay Marshall
Tel: +1.605 323 0119
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**Energy from Waste 2007. Targets and Beyond: Waste Management and Energy Recovery in a Changing World**
14-15 March 2007, London, UK
Tel: +44 1722 716997
Fax: +44 1722 716926
Web: www.recyclingwasteworld.co.uk/conferences

**Success and Visions in Bioenergy**
21-23rd March 2007, Salzburg, Austria
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Fax: +44 121 204 3680
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Web: //www.aston-berg.co.uk/index.php?_id=97

**Biosuccess in Bioenergy - A European Workshop on the Thermal Processing of Biomass**
21-23 March 2007, Salzburg, Austria
Contact: Robert Fenton
Tel: +44 121 204 3398
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**The First Solander Pulpmill Bio-Refinery Symposium**
28-29 March 2007, Piteå, Sweden
Contact: Robert Bergman
Tel: +46 70 524 00 58
Email: robert.bergman@pnf.se
Web: www.nolia.se/solandersymposium/

**Clean Energy. Energy Saving**
28-30 March 2007, Tashkent city, Uzbekistan
Contact: Ms. Noila Muzafarova
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Web: //www.ieguzexpo.com/eng/

**China Eco Expo**
4-6 April 2007, Beijing, China
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Web: www.ecoexpo.com

**Zero Emission Power Generation Workshop**
16-18 April 2007, Gebze, Turkey
Contact: Elf Caglayan
Email: elif.caglayan@mam.gov.tr

**Bois Energie 2007**
19-22 April 2007, Orleans, France
Web: www.boisenergie.com

**3rd International Congress on Energy Efficiency and Renewable Energy Sources**
25-28 April 2007, Sofia, Bulgaria
Contact: Via Expo Ltd
Tel: +359 32 945459
Email: office@viaexpo.com
Web: viaexpo.com/congress-ee-vei/eng/congress.php

**15th European Biomass Conference & Exhibition: Biomass for Energy, Industry and Climate Protection - From Research to Market Deployment**
7-11 May 2007, Berlin, Germany
Tel: +39 055 5002280
Fax: +39 055 573425
Email: biomass.conf@etaflorence.it
Web: www.conference-biomass.com

**International Conference on Biotechnology Engineering 2007**
8-10 May 2007, Kuala Lumpur, Malaysia
Contact: Faculty of Engineering, International Islamic University Malaysia
Tel: +603 6196 4440
Fax: +603 6196 4442
Email: icbioe@iiu.edu.my
Web: //www.iiu.edu.my/icbioe

**Waste to Energy 2007**
9-10 May 2007, Bremen, Germany
Contact: Ines Freesen
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Web: www.wte-expo.com

**Risø International Energy Conference 2007: Energy solutions for sustainable development**
22-24 May 2007, Roskilde, Denmark
Contact: Vivi Nymark Morsing
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Web: www.risoe.dk/konferencer/Energyconf07/index.htm

**Eastern Biofuels Conference & Expo III**
29-31 May 2007, Prague, Czech Republic
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Tel: +1 605 323 0119
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**5th European Biorefinery Symposium**
30 May - 1 June 2007, Flensburg, Germany
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Web: //websrv5.sdu.dk/bio/workshop07.htm

**Nordic Bioenergy 2007**
11-13 June 2007, Stockholm, Sweden
Contact: Swedish Bioenergy Association
Tel: +46 8 441 70 80
Fax: +46 8 441 70 89
Email: info@svebio.se
Web: //www.nordicbioenergy2007.se/

**The 3rd International Green Energy Conference**
18-20 June 2007, Västerås, Sweden
Contact: Mälardalen University, Dept of Public Technology
Tel: +46 21 10 13 67
Fax: +46 21 10 13 70
Email: info@igec.info
Web: www.igec.info

**Renewable Energy Europe**
26-28 June 2007, Madrid, Spain
Contact: Samantha Malcolm
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**International Bioenergy 2007**
3-6 September 2007, Jyväskylä, Finland
Contact: Petteri Räsänen
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**Africa Biofuels Conference & Expo I**
25-27 September 2007, Durban, South Africa
Contact: Kay Marshall
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**20th World Energy Congress: The Energy Future in an Interdependent World**
11-15 November 2007, Rome, Italy
Tel: +39 06 8091051
Fax: +39 06 80910533
Email: info@micromegas.it
Web: www.micromegas.it

**Asia Biofuels Conference & Expo V**
11-13 December 2007, Singapore
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### Objectives of IEA Bioenergy

IEA Bioenergy is an international collaborative agreement set up in 1978 by the International Energy Agency (IEA) to improve international cooperation and information exchange between national bioenergy RD&D programmes. IEA Bioenergy aims to accelerate the use of environmentally sound and cost-competitive bioenergy on a sustainable basis, and thereby achieve a substantial contribution to future energy demands.

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**Task 33: Thermal gasification of biomass**
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**Task 36: Integrating energy recovery into solid waste management systems**
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**Task 37: Energy from biogas and landfill gas**
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**Task 38: Greenhouse gas balances of biomass and bioenergy systems**
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**Task 42: Biorefineries: co-production of fuels, chemicals, power and materials from biomass**
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