

IEA Bioenergy News

Bioenergy in Belgium

Guest Editorial by Yves Schenkel, ExCo Member for Belgium



Belgium is a federal country composed of three regions: Flanders, Wallonia and Brussels Capital Region. Since 1991, energy policy has been a regional issue, except for the tax exemption system. As a result, biofuel for transport is a federal issue, and bioenergy for heating and cooling or for electricity is a regional matter. Belgium's total primary energy supply has grown from 1,800 PJ in the early 1970s and has stabilised at around 2,400-2,500 PJ in recent years. The share of renewable energy is traditionally rather low, with only 3.1% (80 PJ) in 2007. Bioenergy represents 80% of renewable energy, with 29 PJ in Flanders and 34 PJ in Wallonia. About half of that amount is used for heat. The use of biomass for electricity is growing, specifically through the use of imported wood pellets.

There are three bioethanol and five biodiesel producers in Belgium. The deployment of transport biofuels in Belgium is based on a tax reduction system connected to a quota allocation. The Belgian government accepted the European biofuel targets of 2% in 2005 and 5.75% in 2010 (on a total transport fuel consumption basis). A delay in the quota allocation (finalised late 2006) has resulted in the later start-up of production plants, so the initial 2005 target has not been achieved. Moreover there was little motivation among fuel distributors to blend biofuels, and in 2007 and 2008 only a 1% biofuel share was achieved. From July 2009, the Federal Belgian government has adopted new legislation on transport biofuels which prescribes that transport fuels include 4% biofuels by volume. Even if the allocated quota reaches the market, Belgium can attain at most 4.3% biofuels on energy basis in 2010. Belgium will thus also miss the target of 5.75%.

As a result of regional competencies, there are different energy support systems in the three Belgian regions. The differences are particularly evident in terms of support for renewable heating and cooling. All three regions use a green certificates grants system for the support of 'green electricity'. In Flanders this is based on the net renewable electricity production (energy for pretreatment and transport subtracted), and in Wallonia and Brussels it is based on net greenhouse gas savings. For the import of wood pellets, the power company Electrabel developed its own sustainability certification system, which has been in use from 2006.

In Wallonia, the 2010 target for heat from solid biofuels is 14.76 PJ (4,100 GWh), which will be reached as the bioheat production already amounted to 14 PJ in 2007. However, the specific 2010 target for heat from biogas will not be achieved: the production came to 0.125 PJ in 2007, far from the objective of 0.36 PJ (100 GWh) in 2010. There are 70 wood boilers in use in the industry sector and 30 in progress. In the public sector, about 20 boilers are in use. The wood pellets sector for domestic use has dramatically increased in recent years. The private pellet consumption amounted to 39,000 tons in 2008. Six pellet producers are now operating in Wallonia, producing 215,000 tons of pellets in 2008 (the installed capacity is 420,000 t). The majority of the pellets produced in Wallonia is sold to the power station of Les Awirs (80 MWe installed capacity, burning 400,000 tons of pellets per year). Regarding bioelectricity, the 2010 goal is 370 GWh, which was already outstripped in 2007 when the electricity produced from wood and vegetable by-products came to more than 900 GWh, thanks to the Les Awirs power station. Again, the target of 225 GWh for electricity from biogas will not be reached in 2010 as the current production in 2007 amounted to 125 GWh. There are only 12 biogas plants in use in Wallonia today.

In Flanders an inventory of 2007 indicates the use of 9.4 PJ heat from biomass, of which 6.3 PJ is from dedicated installations (only heat) and 3.1 PJ from CHP installations. Flanders does not have a specific target for renewable heat yet, but a green heat action plan is in preparation towards 2020. Recent scenario calculations showed a potential proactive renewable heat target of 35 PJ/year by 2020 - more than 90% would come from biomass boilers and bio-CHPs. The total green electricity production in Flanders amounted to 1,640 GWh in 2007 which represents 2.7% of the total gross inland electricity consumption in Flanders (2010 target is 6%). 83% of the green electricity is from biomass origin, most is through co-combustion of biomass in coal power plants. Import of wood pellets to Flanders in 2008 for this purpose is estimated at around 400,000 tons.

Looking to the future, the Belgian target is to produce 13% of gross energy consumption from renewable energy sources. The share in 2007 was 3.1%, mostly bioenergy. Biomass is identified as one of the major renewable sources. However, Belgium is a small and densely populated country, and biomass inland production potential is lower than biomass demand, energy and non-energy uses included. The role of biomass imports (pellets, energy crops, refined biofuels) will thus considerably increase in the future.

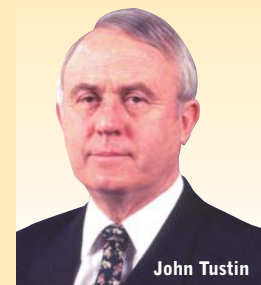
For more information contact Yves Schenkel at schenkel@cra.wallonie.be

Dr Schenkel acknowledges Luc Pelkmans and Nora Pieret, whose work forms the basis of this Editorial.

Contents

FROM THE SECRETARIAT	2,3
NOTICE BOARD	4,5
PUBLICATIONS	6
CALENDAR OF EVENTS	7
KEY CONTACTS	8

From the Secretariat



John Tustin

ExCo64, Liege, Belgium

The 64th meeting of the Executive Committee was held in Liege, Belgium on 30 September - 2 October, with Josef Spitzer as Chairman and John Tustin as Secretary. The meeting was hosted by the Centre Wallon de Recherches Agronomique (CRA). The Chairman expressed the appreciation of the ExCo to Yves Schenkel for the excellent meeting and study tour arrangements. Some of the outcomes of the meeting are detailed below.

Changes in the Executive Committee

A new Alternate Member is Ms Martina Ammer, Austria and Mr Mihai Tomescu is no longer an Alternate Member for the EC.

Election of Chairman and Vice Chairman

Dr Josef Spitzer, the Member for Austria was re-elected Chairman and Mr Birger Kerckow, the Member for Germany was re-elected Vice Chairman for 2010.

Contracting Parties

Both Korea and Turkey have received formal invitations to join the Implementing Agreement. They attended the meeting as observers. Korea plans to join Task 39 in 2010 and Task 32 in 2011. Turkey plans to join Tasks 32, 33, 37 and 42 in 2010.

Extension of the Implementing Agreement

The extension of the Implementing Agreement to 31 December 2014 is now approved following a review by the REWP and CERT. The End-of-Term Report prepared by the Secretary received positive comments. This report is available on the IEA Bioenergy website. The new Strategic Plan for the period 2010-2016 was also favourably received. The Chairman made a presentation at both committee meetings to achieve this encouraging outcome.

ExCo64 Workshop

A very successful workshop titled 'Algae – the Future for Bioenergy?' was well attended by ExCo Members, Task Leaders, and observers from Belgium. The presentations made at the workshop (listed below) are available on the IEA Bioenergy website.

- The Promises and Challenges of Algal-derived Biofuels - Al Darzins, NREL, USA
- Algae for Biofuel Production: Process Description, Lifecycle Assessment and some Information on Costs - Pierpaolo Cazzola, IEA Secretariat, France
- Fuel from the Sea? - Michele Stanley, The Scottish Association for Marine Science, Scotland
- BIOTREMA - a Collaboration on Biogas - Sten Björk, Trelleborg Municipality, Sweden
- Algae Biofuels: Challenges in Scale-up, Productivity and Harvesting - John Benemann, Benemann Associates, USA
- Algae Growing Systems - Peter van den Dorpel, Algaelink, The Netherlands
- Microalgae for Production of Biofuels and Bulk Chemicals - René Wijffels, Wageningen University, The Netherlands
- Algae Production Systems: Open or Closed – Lessons Learned from the Last Three Years - Marc Van Aken, SBAE Industries NV, Belgium

At the beginning of the workshop the Chairman posed some questions that the workshop should try and answer. The results were as follows:

- *When is the technology likely to be ready for commercial exploitation?* There is an extensive and well-documented history of research on algae with a recent resurgence of interest in national programmes. Commercial exploitation will depend on the extent of R&D and demonstration activity, but some niche applications with co-product production could be available within 5-10 years, and bulk production in the longer term.
- *What are the critical stages still required (R&D, trials, demonstrations)?* Given the wide range of unresolved issues, a balanced programme of R&D coupled with larger scale trials and demonstrations is necessary. The use of algae to produce a range of products via a 'biorefinery' approach is likely to be an attractive option.
- *What are the likely costs of producing energy from algae?* Current estimates of productivity vary widely. Similarly, cost estimates also vary widely and current costs are often unattractive, but there is considerable scope for reduction and optimisation, depending on co-product values. Best estimates of costs are promising at this stage of technology development.
- *What are the likely CO₂ savings?* There is significant potential for CO₂ absorption but matching seasonal absorption potential with sources may be challenging.
- *What are the main barriers to be overcome (technical and non-technical including financial)?* Currently there are a wide range of technical, institutional, and financial barriers, but there is plenty of room for improvements and breakthroughs. There are many different options available for consideration and these are likely to continue as different systems will fit various climatic conditions and ranges of products.
- *What role can IEA Bioenergy best play?* In the short-term IEA Bioenergy will provide an authoritative review of international activity and prospects (early 2010), and then be available as a focus for coordination of international efforts

ExCo65 Workshop

The theme for the next workshop will be 'Bioenergy Trade and Associated Sustainability Issues'. The planning committee is Adam Brown (Convenor), Tat Smith, Kieran Power, Kees Kwant, Paul Grabowski and Koji Kobayashi.



Yves Schenkel, the Member for Belgium (left) with Chairman, Josef Spitzer

Progress with Current Initiatives

- New Strategic Plan. The new Strategic Plan was printed and distributed in November.
- Bioenergy Technology Review. The Executive Summary has been produced as a stand alone publication. The main report will be published in December 2009.
- Handbook of Pellet Production and Utilisation. Production is on schedule, with printing of the handbook planned for February 2010.
- Report on Bioenergy and Land Use Change. Göran Berndes is leading the project which is co-financed with the Swedish Energy Agency. One report for policy makers and another for the scientific community will be produced. Final approval is expected at ExCo65.
- LCA strategic paper. Production has been delayed so that significant new material can be incorporated. A new version is expected to be available in December 2009.
- Collaboration with RETD. The joint project on 'Better Use of Biomass for Energy' is completed. A final version was presented at the RETD side event at COP15.
- Collaboration with AMF. The proposal from AMF for co-sponsorship of a joint project 'Fuel and Technology Alternatives for Buses' has been accepted. Finland, Germany, and the European Commission will participate through Task 41, Project 3.

Collaboration with FAO

Mr Miguel Trossero, Senior Forestry Officer with FAO, was an observer at ExCo64. He has been the long standing contact for The Agreement and took the opportunity to review progress with the MoU signed in 2000. He indicated good progress with joint meetings, workshops, and seminars; in exchange of publications and newsletter material; and in joint studies. He said overall there has been pleasing progress, however there was scope for more active collaboration especially in the areas of political awareness, sustainability, and bioenergy market opportunities in developing countries.

The Chairman noted that this was Miguel's last meeting as he would retire from FAO at the end of the year. He expressed the appreciation of the ExCo for the success of the MoU so far and said the ExCo would look forward to working with whoever succeeded him. He also wished Miguel a long and happy retirement.



Mr Miguel Trossero,
FAO, Rome

Changing of the Guard

At ExCo60 it was decided that Task Leaders should only serve for two triennia, or in exceptional circumstances three triennia. The idea was to create a change of leadership on a regular basis and at the same time provide more opportunity for wider Member Country involvement in Task leadership. It was hoped that such rotation would result in new ideas and stimulation of the Task work programmes. As a result of this decision some very experienced and dedicated Task Leaders have 'passed the baton' to new leaders for the upcoming triennium.

At ExCo64 Chairman Josef Spitzer paid tribute to the long and expert service from the outgoing Task Leaders: Jim Richardson, Task 31; Sjaak van Loo, Task 32; Suresh Babu, Task 33; Tony Bridgwater, Task 34; Niranjana Patel, Task 36 and Arthur Wellinger, Task 37. He expressed the appreciation of the Executive Committee for their expertise and commitment over the last decade and made a presentation to those in attendance.

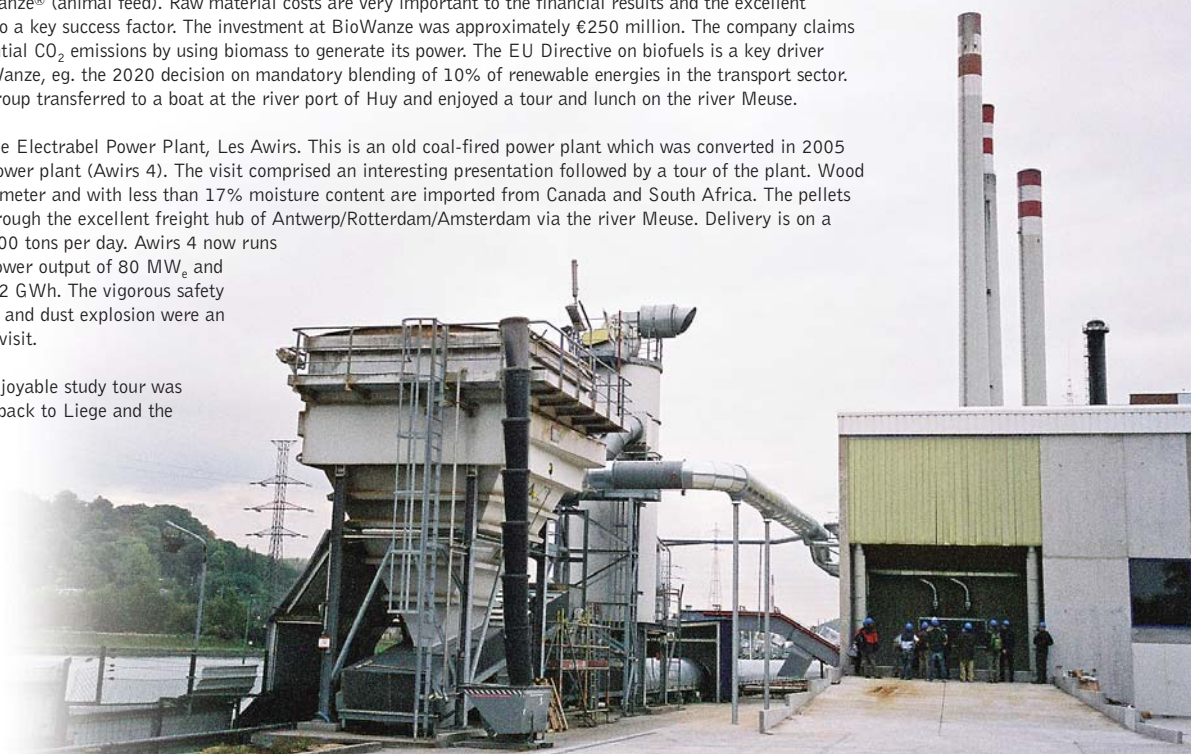
ExCo64 Study Tour

In conjunction with ExCo64, a total of 35 attendees participated in the study tour, which was designed to showcase biofuels and biopower on the banks of the river Meuse. The first visit was to BioWanze SA, at Wanze (Huy). BioWanze is a unique industrial plant producing bioethanol from cereals and sugar-beet and equipped with a full cogeneration plant burning their own biowaste. An excellent presentation on the Südzucker Group introduced the visit. Südzucker is a worldwide company with 18,000 employees. The group is organised into four business segments - sugar, special products, cropenergies (bioethanol) and fruit (eg. fruit juice concentrates). The group has five bioethanol plants including the one at Wanze, which is Europe's most innovative plant. It runs on wheat and sugar feedstocks and has an annual production capacity of 300,000 m³ of bioethanol. Innovative by-product concepts include gluten and Protiwanze® (animal feed). Raw material costs are very important to the financial results and the excellent logistics at Wanze are also a key success factor. The investment at BioWanze was approximately €250 million. The company claims to avoid 70% of the potential CO₂ emissions by using biomass to generate its power. The EU Directive on biofuels is a key driver for facilities such as BioWanze, eg. the 2020 decision on mandatory blending of 10% of renewable energies in the transport sector. Following this visit, the group transferred to a boat at the river port of Huy and enjoyed a tour and lunch on the river Meuse.

The second stop was at the Electrabel Power Plant, Les Awirs. This is an old coal-fired power plant which was converted in 2005 to a wood powder-fired power plant (Awirs 4). The visit comprised an interesting presentation followed by a tour of the plant. Wood pellets of 4-10 mm in diameter and with less than 17% moisture content are imported from Canada and South Africa. The pellets are delivered by barge through the excellent freight hub of Antwerp/Rotterdam/Amsterdam via the river Meuse. Delivery is on a 'just-in-time' basis at 1,200 tons per day. Awirs 4 now runs 100% on biomass with power output of 80 MW_e and production in 2008 of 622 GWh. The vigorous safety measures in place for fire and dust explosion were an interesting feature of the visit.

A most interesting and enjoyable study tour was completed by a boat trip back to Liege and the Ramada Plaza Hotel.

'State-of-the-art' pellet unloading facility at the Electrabel Power Plant, Les Awirs, Belgium



Notice Board

Obituary: Jean-François Van Belle

Friends and colleagues were saddened to learn of the unexpected death of Jean-François Van Belle on August 16, 2009 in Brussels. He was the National Team Leader for Belgium in IEA Bioenergy Task 31 throughout the period during which that country participated in the Task. Jean-François was a researcher at the Centre Wallon de Recherches Agronomiques in Gembloux, Belgium and latterly worked at Tractebel Engineering in Brussels. His particular interests were in forest operations and bioenergy supply chain logistics. His gentle yet dynamic character, combined with experience, interests and contacts well beyond his native Walloon region, was a great asset to the Task, particularly in helping to arrange a very successful joint workshop with Task 30 and Task 31 in Brazil in 2002. Jean-François leaves behind two young children.



Tony Bridgwater with his Don Klass Award. Courtesy GTI

Tony Bridgwater Recognised

Tony Bridgwater, former leader of Task 34 and Professor of Chemical Engineering at Aston University's School of Engineering and Applied Science, has been awarded the Don Klass Award for Excellence in Thermochemical Conversion Science. The award was presented to Professor Bridgwater on 16 September at the international *tcbiomass 2009* conference in Chicago, USA, in recognition of his extensive contributions to the field of bioenergy, as well as his past efforts as organiser of World Biomass Conferences.

Task 31

The final workshop of Task 31 took place in Wershofen in the Eifel region of Germany in October 2009. A total of 56 participants from eleven different countries took part in a programme organized by Jörg Schweinle, German National Team Leader of Task 31, and the Johann Heinrich von Thunen Institute of the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV).

The theme of the workshop was 'Forests under Pressure?! Bioenergy – Forest Industry - The Public.' This theme was explored through 27 technical presentations dealing with:

- Integrated woody biomass supply chains and land management to meet increasing demand;
- Sustaining site productivity: data and standards;
- Technology and economics of forest biomass supply chains; and
- Sustainable systems for integrated biomass production.

All technical presentations will be made available to participants on CD and formal papers developed from workshop presentations will be published in a peer-reviewed journal.

The first of two days of field visits focused on the Rheinland Wood Competence Centre in the town of Nettersheim where the work of the centre in promoting demand for wood, networking suppliers and consumers, and connecting forest, wood and nature conservation was presented. The town's biomass heating plant was visited, as well as nearby practical examples of fuelwood supply from hardwood stands. The Eifel National Park, Germany's youngest national park, and the Vogelsang complex were explored by participants on the second day of field visits.

The workshop included the final business meeting of Task 31, during which the activities of the Task were reviewed and plans for the transition to the new Task 43 (in which activities of Task 31 will be combined with those of Task 30) were discussed.

Task 33

Task 33 held its fall meeting in November 2009 in Breda, The Netherlands. A workshop on 'Gasifier Operating Experiences' was held in conjunction with the Task meeting. Invited speakers from Austria, Canada, Denmark, Finland, Spain, and the United States gave informative presentations on a number of gasifier systems, with



Task 33

an emphasis on solutions to technical challenges in gasifier operations. Representatives from member countries made presentations on the status of gasification activities in their countries. The Task meeting also included visits to the 253 MW electric NUON IGCC facility in Buggenum (co-gasifying 10% biomass) and the 75 MW thermal Essent gasifier in Geertruidenberg producing syngas from demolition wood (co-fired in a 600 MW electric PC boiler). During the Essent visit members also attended a workshop on gasifier operating experience and plans for future projects.

Task 38

In October 2009, members of Task 38 and 'The Graz Group' held an expert meeting to discuss land use & bioenergy: the need for efficiency & integration, and responsibility for emissions from bioenergy. The meeting was the first in a new format that will be used by Task 38 in the future, ie. brief presentations and the remainder of the day for discussion on the topics.

The outcome of the meeting is three policy briefs that outline a perceived problem, describe goals and propose solutions and a work plan to achieve the solutions. The policy briefs will be available for distribution at COP-15 in Copenhagen. The titles of the briefs are:

- Development of NAMA guidelines: Land-use and bioenergy
- Policy Options: Responsibility for emissions from bioenergy
- A Road map for LULUCF and REDD



Task 39 business meeting

IEA Bioenergy Conference - Biofuels and Bioenergy: A Changing Climate

Task 39 helped organise this very successful multi-Task conference in Vancouver in August 2009. The goals were to profile IEA Bioenergy through targeting senior people and showcasing the expertise and activities within the various Tasks. A capacity total of 300 delegates attended, with over 140 high-profile speakers. A feature of the conference was the strong participation by the Tasks and Task Leaders

and the involvement of many of the ExCo Members before and during the conference was also invaluable. Discussions at the conference focused on latest advances in bioenergy and the feasibility of biofuels in the commercial marketplace with the aim to advance bioenergy development and reduce fossil fuel dependency. The conference publication can be downloaded at: www.task39.org

In conjunction with the conference, a two-day forest management and supply chain field trip was organized for selected conference delegates to witness the impacts of the mountain pine beetle devastation in British Columbia's forests. This field trip included visits to log harvesting sites, to sawmills, pulp mills and wood pellet production operations utilizing the trees killed by beetles, and to cogeneration facilities.



Task 40 & ERIA joint workshop

Task 40 & ERIA joint workshop in Japan

In October 2009, Task 40 & ERIA (Economic Research Institute for ASEAN and East Asia) jointly organized a workshop in Tsukuba, Japan. The workshop revealed that a lot of biomass trade is already going on in the region, especially trade in solid biomass.

In 2008, significant amounts of wood pellets were exported from British Columbia to Japan for cofiring purposes, and also South Korea has set ambitious targets for increasing the use of wood pellets both for small-scale domestic heating and large-scale cofiring, which will require the import of large amounts of wood pellets in the years to come. South Korea already has agreements with Indonesia and Cambodia to grow the feedstock to satisfy this demand.

Australia is also rapidly becoming an exporter of wood pellets. While the first pellets produced in 2009 were shipped to Europe, Australian companies are also monitoring the developments in South East Asia with great interest. The liquid biofuels market is growing less rapidly at the moment, mainly due to high feedstock prices and sustainability concerns.

Presentations highlighted the status of ethanol and biodiesel production and trade between Thailand, Malaysia, Japan and China. In China it is currently forbidden to use food crops for biofuel production, and local biodiesel production is limited to waste oil feedstocks. As there are also no subsidies for biofuels in China, no import of liquids biofuels (or feedstocks to produce biofuels) is currently taking place. Malaysia and Thailand on the other hand are monitoring the global market for opportunities to increase exports of (palm oil for) biodiesel and ethanol in the future.

Overall, the workshop provided a great opportunity for participants from the industry, academia and policy arenas to exchange information (and possibly make a few new deals for increased trade in the region as well). Task 40 certainly plans to keep an eye on this region and possibly organize similar events in the years to come.

World Forestry Congress

Bioenergy was one of the main sub-themes of the 13th World Forestry Congress, held in October 2009 in Buenos Aires, Argentina. The Congress, the latest in a series which is held every 6 years, was organized jointly by the Government of Argentina and the Food and Agriculture Organization (FAO) of the UN. With more than 7,000 participants from 160 countries worldwide, it was one of the largest gatherings of forest sector delegates from government, industry, research, academia and non-government organizations ever held.

The overall theme of the Congress was 'Forests in Development: A Vital Balance'. This was explored through a series of sub-themes, one of which was 'Forests and Energy'.

IEA Bioenergy was well represented. During a half-day plenary forum focused on forests and energy, Jim Richardson, Task Leader of Task 31, and Jack Saddler, Task Leader of Task 39, addressed an audience of almost 1,500 people on the topics of 'Sustainable bioenergy production systems' and 'Technology perspectives on production of energy and liquid biofuels from cellulose' respectively. Tat Smith, Associate Leader of Task 31, spoke on 'Achieving the potential of bioenergy: opportunities and constraints' in a parallel sub-theme session also on forests and energy.

Task 31 and FAO's Wood Energy Program organized a side-event on sustainable management of woodfuel production in which information was presented on a joint publication they are developing offering criteria and indicators for sustainable woodfuel. The side-event featured speakers from Task 31, FAO and the World Bank.

The importance of bioenergy in the forest sector globally was recognized in the final declaration of the Congress. One of the nine key findings in that declaration, addressed to the FAO Conference, governments and international organizations worldwide, dealt specifically with bioenergy and proposed several strategic actions:

- Develop energy forests within the context of a sustainability framework to minimize the risk of unintended consequences across the forest, agriculture and energy sectors.
- Implement good governance policies for sustainable bioenergy development.
- Develop and improve technologies for more efficient production and diverse use of biomass for energy including second generation technologies.

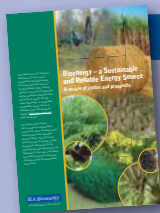
For more information about the World Forestry Congress 2009, visit www.wfc2009.org



Jim Richardson (left) and Jack Saddler speaking at the World Forestry Congress



Publications



Bioenergy - a Sustainable and Reliable Energy Source. A review of status and prospects

These publications are the Main Report and the Executive Summary jointly prepared by the Energy Research Centre of The Netherlands, E4tech, Chalmers University of Technology and the Copernicus Institute of the University of Utrecht. They provide an overview of the potential for bioenergy and the challenges associated with its increased deployment. Opportunities and risks in relation to resources, technologies, practices, markets and policy are all discussed. The aim is to provide insights into the opportunities and required actions for the development of a sustainable bioenergy industry. Both publications can be downloaded at:

[/www.ieabioenergy.com/Library.aspx](http://www.ieabioenergy.com/Library.aspx)



IEA Bioenergy Strategic Plan (2010-2016)

This is the fourth version of the Strategic Plan. The drivers of this new plan include:

- increased emphasis on security of energy supply;
- increased emphasis on greenhouse gas mitigation through the use of bioenergy technologies;
- the need to develop sustainable, non-food biomass resources that are environmentally sound;
- the need for large-scale development and deployment of new or improved technologies;

• the need to increase the strategic role of IEA Bioenergy and to enhance the support of IEA bodies in promoting their global energy strategy.

Download a copy of the plan at: [/www.ieabioenergy.com/Library.aspx](http://www.ieabioenergy.com/Library.aspx)

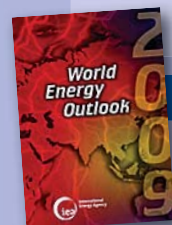


Bioenergy - the impact of indirect land use change

The 12 presentations from this workshop, which was held in conjunction with ExCo63 in Rotterdam in May 2009, are available to download at: [/www.ieabioenergy.com/Library.aspx](http://www.ieabioenergy.com/Library.aspx). The summary and conclusions from the workshop have been published and are available from the Secretary.

Biorefineries: adding value to the sustainable utilisation of biomass

This feature article provides an overview of the work of Task 42 and was prepared by the Task Leaders. It sets out to illustrate the developments in sustainable production for commercial, and close to commercialisation, energy carriers and co-products developed from biomass using biorefineries. Download a copy at: [/www.ieabioenergy.com/Library.aspx](http://www.ieabioenergy.com/Library.aspx)



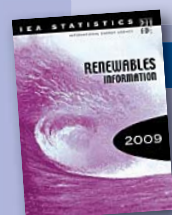
World Energy Outlook 2009

The 2009 edition of the Energy Outlook provides updated projections that take into account the implications of the global credit crisis, the economic slowdown and the recent slump in the prices of oil and other forms of energy. It also presents in-depth analysis of three special topics: financing energy investment under a post-2012 climate framework; prospects for global natural gas markets and energy trends in Southeast Asia. Order a copy from the IEA Online Bookshop at: [/www.iea.org/w/bookshop/b.aspx?new=10](http://www.iea.org/w/bookshop/b.aspx?new=10)

CO₂ Emissions from Fuel Combustion

In recognition of fundamental changes in the way governments approach energy-related environmental issues, the IEA has prepared this publication on CO₂ emissions from fuel combustion. The data in this book are designed to assist in understanding the evolution of the emissions of CO₂ from 1971 to 2007 for more than 140 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Order a copy from the IEA Online Bookshop at:

[/www.iea.org/w/bookshop/b.aspx?new=10](http://www.iea.org/w/bookshop/b.aspx?new=10)



Renewables Information 2009

This reference document brings together statistics on renewable and waste energy sources into a foundation for policy and market analysis. It includes an overview of the development of renewables and waste in the world over the 1990 to 2007 period; a corresponding statistical overview of developments in the world and OECD renewables and waste market; and then a detailed picture of developments for renewable and waste energy sources for each of the 30 OECD member countries. Download this publication at:

[/www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2037](http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2037)

The use of biomass for power generation in the US

The fourth edition of this report provides, 'a concise look at what's driving interest in biomass-fuelled generation, the challenges faced in implementing biomass-fuelled generation projects, and the current and future state of biomass-fuelled generation'. Purchase a copy online at: [/www.researchreportsintl.com/products/product.cfm?report_ID=134](http://www.researchreportsintl.com/products/product.cfm?report_ID=134)

Proceedings of the 17th European Biomass Conference & Exhibition

The 17th European Biomass Conference was one of the largest events in the biomass sector in 2009. The proceedings from this event provide an overview of the status and prospects of the global biomass sector. To order a copy of the proceedings, email publications@etaflorence.it

Switchgrass - a Second Generation Biofuel Feedstock Alternative

This research report delves into the current status of research and commercialization of biofuel production based on switchgrass. Switchgrass, a perennial grass variety, produces about five times the energy that it takes to grow. The report also throws light on the current state of the biofuel industry, the technological advancements and the level of interest from various stakeholders in investing in the research and commercialization of new and emerging bioenergy feedstocks such as switchgrass. Order a copy online at: [/www.researchandmarkets.com/product/2d32b8/switchgrass_a_second_generation_biofuel_fee](http://www.researchandmarkets.com/product/2d32b8/switchgrass_a_second_generation_biofuel_fee)

Future Bioenergy and Sustainable Land Use

German Advisory Council on Global Change

The central message of this report is that use should be made of the sustainable potential of bioenergy, which can be tapped all over the world, provided that risks to sustainability are excluded. However, this will require considerable international co-operation and co-ordination to ensure that the use of bioenergy does not endanger food security or the goals of nature conservation and climate change mitigation. The report thus presents an integrated vision that aims to provide policy-makers with guidance for the deployment of bioenergy. Purchase a copy at: [/www.earthscan.co.uk](http://www.earthscan.co.uk)



Calendar of Events

IEA Bioenergy Meetings

The **Task 32** meeting and workshop on 'Combustion of Challenging Fuels' will be held in conjunction with the European Biomass Conference in Lyon, 3-7 May 2010. Contact Jaap Koppejan
Email: jaapkoppejan@procede.nl

The next meeting of **Task 33** is likely to be in Finland in April 2010. Contact Richard Bain
Email: Richard.Bain@nrel.gov

Task 36 will next meet in Trondheim, Norway on 26-28 May 2010. Contact Pat Howes
Email: Pat.Howes@aeat.co.uk

The first **Task 37** meeting of 2010 will take place in Denmark on 5-7 May. It will include site technical visits and a workshop with local plant operators. Contact David Baxter
Email: david.baxter@irc.nl

Task 38 will be holding its annual conference 'Greenhouse gas emissions from bioenergy systems: impacts of timing, issues of responsibility' from 8-10 March 2010 in Brussels, Belgium. This will be in conjunction with Joanneum Research and Centre Wallon de Recherches Agronomiques. Contact Susanne Woess-Gallasch
Email: susanne.woess@joanneum.at

Task 39's next business meeting will take place in Cambridge, UK on the 20-21 January 2010. Contact Jack Saddler
Email: jack.saddler@ubc.ca

Task 40 will be contributing a number of speakers to the Biomass Power and Trade Conference in Rotterdam on 11-12 March 2010. Contact Martin Junginger
Email: H.M.Junginger@uu.nl

ExCo65 will be held in Nara City, Japan on 12-14 May 2010.

ExCo66 will be held in UK in October 2010.

ExCo67 will be held in Finland in May 2011.

ExCo68 will be held in Australia in October 2011.

Other Events

World Future Energy Summit
18-21 January 2010, Abu Dhabi, UAE
Contact: Nigel Clear
Tel: +44 7717 300681
Email: n.clear@elsevier.com
Web: <http://www.worldfutureenergysummit.com/>

Energy from Biomass and Waste
26-27 January 2010, London, UK
Tel: +49 2802 948484.0
Fax: +49 2802 948484.3
Email: info@ebw-uk.com
Web: <http://www.ebw-uk.com/conference.htm>

India Energy Congress 2010
31 January 31 – 2 February 2010, New Delhi, India
Contact: Indian Member Committee
Email: info@indiaworldenergy.org

Corporate Integration of Renewable Energy Conference
1-2 February 2010, San Antonio, Texas
Contact: Paul Hernandez
Tel: +1 312 602 9684
Email: phernandez@q1productions.com
Web: http://www.q1productions.com/eventPages/event_PCONF-4001.php

RETECH 2010
3-5 February 2010, Washington DC, USA
Contact: Kim Arellano
Tel: +1 713 343 1879
Email: Kima@tradefairgroup.com
Web: <http://retech2009.com/>

Bioenergy Expo
4-7 February 2010, Verona, Italy
Contact: Giuliana Bassan
Tel: +39 045 8298134
Email: bassan@veronafiere.it
Web: http://www.bioenergyweb.it/index_en.asp

International Biomass Trade Workshop
5 February 2010, Verona, Italy
Contact: Leonardo Nibbi
Tel: +39 055 4796 436
Email: leonardo.nibbi@unifi.it

Energy Now Expo 2010
17-18 February 2010, Malvern, UK
Contact: David Jacobmeyer
Tel: +44 1905 429018
Email: david@energy-now.co.uk
Web: <http://www.energynowexpo.co.uk/>

4th Intl Renewable Energy Conference (IREC)
17-19 February 2010, New Delhi, India
Email: ss.madan@nic.in
Web: <http://mnes.nic.in/pdf/irec-mnre.pdf>

Renewable Energy World Conference & Expo North America
23-25 February 2010, Austin, TX, USA
Contact: Jan Simpson
Tel: +1 918 831.9736
Fax: +1 918.831.9133
Email: revna-conference@pennwell.com
Web: <http://www.renewableenergyworld-events.com/index.html>

European Pellet Conference
3-4 March 2010, Wels, Austria
Contact: O.Ö. Energiesparverband
Tel: +43 732 7720 14386
Fax: +43 732 7720 14383
Email: office@esv.or.at
Web: <http://www.wsed.at/en/programme/european-pellet-conference/>

Nordic Biogas Conference
10-12 March 2010, Oslo, Norway
Contact: Henrik Lystad
Tel: +47 24 14 66 00
Email: henrik.lystad@avfallnorge.no
Web: <http://nordicbiogas.ezpublish.no/2010/conference>

Biomass Power & Trade
11-12 March 2010, Rotterdam, The Netherlands
Tel: +65 6345 7322
Fax: +65 6345 5928
Email: sasha@cmtp.com.sg
Web: <http://www.cmtevents.com/aboutevent.aspx?ev=100306&>

World Biofuels Markets
15-17 March 2010, Amsterdam, The Netherlands
Contact: Valerie Giblin
Tel: +44 20 7099 0600
Email: info@greenpowerconferences.com
Web: <http://www.worldbiofuelsmarkets.com/>

Salon Bois Energie 2010 (Wood Energy Expo)
18-21 March 2010, Saint Etienne, France
Contact: BEES
Tel: +33 3 84 86 89 30
Fax: +33 3 84 43 24 03
Email: info@bees.biz
Web: <http://www.boisenergie.com/sommaire-en.php3>

EU Sustainable Energy Week 2010
22-26 March 2010, Brussels, Belgium
Contact: EUSEW Secretariat
Email: eusew@sustenergy.org
Web: <http://www.eusew.eu/>

Green Fuels & Vehicles China 2010
8-9 April 2010, Shanghai, China
Contact: Ms. Rachel Yang
Tel: +86 21 5161 5339
Fax: +86 21 5180 9518
Email: rachel.yang@igvision.com
Web: <http://www.igvision.com/gfvc/>

Algae Biofuel Workshop 2010
12-13 April 2010, New Delhi, India
Contact: Grow Diesel Events
Tel: +91 11 32904064/65803335
Fax: +91 11 42404335
Email: info@growdieselevents.com
Web: <http://www.algaebiofuelsummit.com>

Bioenergy Markets East Africa: Expanding sustainable bioenergy production
27-29 April 2010, Maputo, Mozambique
Contact: Green Power Conferences
Tel: +44 207 099 0600
Email: info@greenpowerconferences.com
Web: <http://www.greenpowerconferences.com/>

18th European Biomass Conference & Exhibition
3-7 May 2010, Lyon, France
Contact: Angela Grassi, ETA
Tel: +39 055 500 21 74
Email: biomass.conference@etaflorence.it
Web: <http://www.conference-biomass.com>

Intl Biomass Conference & Expo
4-6 May 2010, Minneapolis, USA
Tel: +1 701 746 8385
Fax: +1 701 746 5367
Email: service@bbiinternational.com
Web: <http://www.biomassconference.com/ema>

Waste to Energy
5-6 May 2010, Bremen, Germany
Contact: HVG
Tel: +49 421 3505230
Fax: +49 421 3505340
Email: info@mgh-bremen.de
Web: www.messe-bremen.de

Energy Efficiency Asia 2010
17-18 May 2010, Shanghai, China
Contact: Bill Ren
Tel: +86 21 5236 0030/32
Fax: +86 21 5236 0029
Email: bill_ren@globaleaders.com
Web: <http://www.energyefficiencysummit.com/index.asp>

All Energy
21-22 May 2010, Aberdeen, UK
Contact: Jamie Thompson
Tel: +44 1423 524 545
Email: jamie@mediageneration.co.uk
Web: <http://www.all-energy.co.uk/Home.html>

Renewable Energy World Europe 2010
8-10 June 2010, Amsterdam, The Netherlands
Contact: Amy Nash
Tel: +44 1992 656 621
Fax: +44 1992 656 735
Email: amyn@pennwell.com
Web: <http://www.renewableenergyworld-europe.com/index.html>

4th International Bioenergy Conference and Exhibition: Shifting to biocarbons
8-10 June 2010, Prince George, British Columbia, Canada
Contact: Cam McAlpine
Tel: +1 250 961 6611
Email: info@bioenergyconference.org
Web: www.bioenergyconference.org

ABIC 2010: Bridging Biology and Business
12-15 September 2010, Saskatoon, Canada
Contact: ABIC 2010
Tel: 306 668 2659
Fax: 306 975 1939
Email: abic2010@agwest.sk.ca
Web: <http://www.abic.ca/abic2010/>

21st World Energy Congress
12-16 September 2010, Montreal, Canada
Tel: +44 20 7734 5996
Fax: +44 20 7734 5926
Email: info@worldenergy.org

FAME 2010
Summit and Exhibition - Defining the Future Biofuel Market
13-14 September 2010, Berlin, Germany
Contact: Derek Michalski
Tel: +44 20 8997 6060
Email: dm@greenworldconferences.com
Web: <http://greenworldconferences.com/fame.html>

Renewable Energy World Asia
2-4 November 2010, Singapore
Contact: Amy Nash
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Fax: +44 1992 656 735
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Web: <http://www.renewableenergyworld-asia.com/index.html>

Objective of 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 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 whilst reducing greenhouse gas emissions from energy use.

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Task 32: Biomass combustion and co-firing
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Task 33: Thermal gasification of biomass
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Task 34: Pyrolysis 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
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Task 38: Greenhouse gas balances
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Task 39: Commercialising liquid biofuels
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Task 40: Sustainable international
bioenergy trade – securing supply
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Task 41(3): Joint project with AMF
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Task 42: Biorefineries: co-production
of fuels, chemicals, power and materials
from biomass
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Task 43: Biomass feedstocks for energy
markets
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