



Vienna State Opera House, Austria.

Bioenergy in Austria

Guest Editorial by Josef Spitzer, ExCo Member for Austria

Around 50% of Austria's land area is covered by forests, of which 85% are exploited for industrial purposes. This is the basis of a long tradition of utilising forest and wood processing residues for residential and industrial energy. Initially mainly used for firewood in residential heating, the successful development of advanced conversion technologies has enabled expansion to include efficient energy supply systems to meet industrial and municipal energy demands for heat and power. In addition to forest-based bioenergy, energy production using feedstock from agricultural operations and residues from the food and feed industry forms an increasing share of bioenergy production and currently (2010) amounts to about 15% of Austria's primary energy supply. Together with 11% from hydropower and 2% from waste and solar technologies, the renewable energy component of Austria's primary energy supply has grown to 28%.

Bioenergy is expected to make a major contribution in reaching the target of 34% of energy from renewable sources by 2020 set by a European Commission Directive for Austria. Of the additional 122 PJ/a of primary energy from renewables, the share from bioenergy will be 70 PJ/a, corresponding to an increase of 41% over the current value of 172 PJ/a. However, this will not be achieved by increasing the deployment of currently available conventional bioenergy systems alone. To be competitive these systems will need to be improved in terms of both cost and efficiency. New technologies will need to be made available on a commercial scale, in particular for the production of transport fuels. To support industry in developing these, RD&D programmes have been established with public financing. Market introduction is being supported by investment subsidies for demonstration plants as well as by operating subsidies, e.g. through increased feed-in tariffs for bioelectricity and biomethane production.

Research funding has increased considerably during the last five years. Until 2007, public expenditures for energy research had been in the range of 20-40 M€ per annum (p.a.). Since that time and with the establishment of the Austrian Climate and Energy Fund public spending has increased to 120 M€ p.a. More than half of this money goes into research on improving energy efficiency, which is seen as the key to establishing a future oriented energy system. One quarter is devoted to the improvement and development of renewable energy systems. The main share of these funds goes to solar and bioenergy systems, with bioenergy funded at a level of 15-20 M€ p.a. over the last five years.

The challenges associated with the development of a future oriented energy system were recognised early in the era of 'modern energy research' in the 1970s, and lead to the conviction that international co-operation is essential for success. Austria has taken advantage of the opportunities offered by the Energy Technology Network of the International Energy Agency, by establishing the platform 'IEA Research Cooperation' for funding and administration of the Austrian participation – since 1979 in the case of IEA Bioenergy. In many cases the partnerships developed in this network have been successfully used in other international programmes, such as the Framework Programmes of the European Commission.

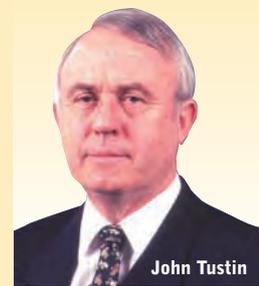


Bioethanol production from grain: 240,000 t/a plant operated by Agrana Bioethanol GmbH in Pischelsdorf near Vienna, Austria. Courtesy: Agrana.

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From the Secretariat



John Tustin

ExCo70, Vienna, Austria

The 70th meeting of the Executive Committee was held at the Parkhotel Schönbrunn, Vienna, Austria on 12 November, with Birger Kerckow as Chairman and Pearse Buckley as Acting Secretary. The meeting was hosted by the Austrian Federal Ministry of Transport, Innovation and Technology. The Chairman expressed the appreciation of the ExCo to Martina Ammer, Josef Spitzer and their colleagues for the excellent meeting and study tour arrangements. Some of the outcomes of the meeting are detailed below.

Changes in the Executive Committee

New Members are: Mr Luc Pelkmans, Belgium and Mr Trond Vaernes, Norway. New Alternate Members are: Dr Yves Schenkel, Belgium; Mr Kevin O'Rourke, Ireland; Professor Don-Hee Park, Korea; and Mr Khanyiso Zihlangu, South Africa.

Election of Chairman and Vice Chairman

Birger Kerckow of Germany was re-elected Chairman and Paul Grabowski of the USA was re-elected Vice Chairman for 2012.

New Contracting Parties

Interest from potential Member Countries has continued with Observers from Russia and Greece present at the meeting. Russia was represented by Dr Boris Reutov and Professor Raif Vasilov. Vasilov made a presentation on 'Bioenergy in Russia'. He indicated that bioenergy is a national priority in Russia and that RD&D on this topic would be managed through the Russian Bioenergy Technology Platform which was established in November 2011. The Platform will be coordinated by the National Research Centre 'Kurchatov Institute' and includes five Ministries and Agencies among its members. The main responsibilities of the Platform are to develop a strategic research agenda, coordinate R&D within the agenda and strengthen international cooperation. Targets have been set at 10% bioenergy in heat and electricity generation and 10% biofuels in total motor fuel use by 2020. Vasilov provided details of the significant biomass resources available in Russia from forests, agricultural residues, waste streams and the potential of energy crops on under-utilised land. He concluded by indicating that Russia had an interest in Tasks 36, 37, 40, 42 and 43. On the basis of the presentation the ExCo approved that Russia should be invited to join the Implementing Agreement.

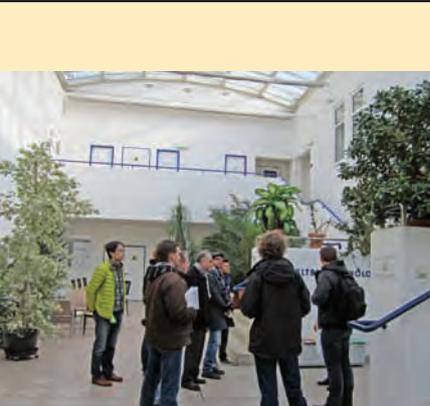
Greece was represented by Professor Antonis Kokossis from the National Technical University of Athens, School of Chemical Engineering. They have a special interest in Tasks 36 and 42. It is hoped that Professor Kokossis will attend ExCo71 and make a presentation along the same lines as that by Russia.

Tasks in the New Triennium

At the meeting the Task Leaders presented their new programmes of work for 2013-2015. They had been asked to plan for enhanced inter-Task collaboration and this trend was evident in the revised proposals. Task 29 will now be merged with Task 43: Biomass Feedstocks for Energy Markets. The other nine Tasks were all approved to continue in their present form. Member Country commitment to participating in the new Tasks is currently being finalised. The possibility for special projects, outside of these Tasks, will continue to be facilitated through Task 41: Bioenergy Systems Analysis.

Monitoring Sustainability Certification of Bioenergy

Luc Pelkmans, the Leader, provided an update on progress with this Strategic Project. He identified the wide range of certification schemes that have been established, with the greater number focused on biofuels. While schemes have many aspects in common, there are nevertheless important differences, e.g. level of complexity, with simpler systems being more commonly applied. The worldwide survey on certification schemes elicited 194 responses from a broad range of stakeholders. The majority view, favoured a mix of voluntary schemes and regulation, although it was clear that regulation was still the key driver for participation in a scheme. It was difficult to find good data on how much biomass trade was certified and sustainability governance varied between regions. IEA Bioenergy had an important role to play in providing an independent view and analysis, in engaging various stakeholders and in working towards a global framework of definitions, verification requirements and methodologies. The next step will be to circulate the report to the ExCo for comment. The main findings of the report will be presented at a workshop connected to the World Biofuel Markets Congress in Rotterdam in March 2013.



Study tour participants at the IFA Tulln Biogas Research Facilities.



Vienna biogas plant treating organic food waste and street cleaning waste and providing heat to a municipal district heating grid.



Two stage fermentation testing of biogas feedstocks at IFA Tulln.

Study Tours

The Executive Committee joined with the delegates to the Bioenergy Conference 2012 and participated in four excellent study tours around Vienna. In total there were 90 participants. Details are as follows:

Tour 1: Bioenergy 2020+ Research Facilities including pilot- and demonstration gasification plants at Güssing and Oberwart. The main focus of this tour was the biomass gasification plants. The University of Technology is famous for its development of indirect steam gasification with internal combustion that has been scaled-up to a demonstration size of 2 MW_e and installed in Güssing. In 2009 it was extended with a methanation plant bringing the SNG to gas grid quality. Embedded in the demonstration plant is a research centre as one of the branches of Bioenergy 2020+, a competence centre for the development and demonstration of 'Energetic use of Biomass'. The ongoing research focuses on hydrogen production from syngas and the production of FT diesel.

The gasifier RD&D is a success story. The principle has been applied in four industrial plants of increasing size in Oberwart, Villach (Austria), Ulm (Germany) and Göteborg (Sweden). The tour included the plant in Oberwart with an input of 8.7 MW forest wood and an output of 2.4 MW_e and 4MW heat. Total efficiency is 70%. The plant operates over 7,500 hours a year. The electricity is fed into the grid, while the heat provides district heating (90/70°C) to a large shopping centre and a hospital. 4 MW_e is produced by two Jenbacher engines with an efficiency of 40%, 400 kW is produced in an ORC with a design efficiency of 18%. Peak heat is produced with natural gas.



Gasifier Güssing.

Tour 2: IFA Tulln Biogas Research Facilities; the Vienna Biogas Plant; and the Reidling Agricultural Biogas Plant. IFA Tulln was founded in 1994 as a research institute focusing on biotechnology for agriculture. The institute is linked to three major Austrian Universities, namely the University of Natural Resources and Life Sciences, the University of Veterinary Medicine, and the Vienna University of Technology. Today, more than 150 employees work in the six departments of IFA. The activities range from molecular genetics to innovative analytical methods, from environmental process development and biopolymers to animal and plant production. There is also an intensive research programme in the field of biogas carried out in conjunction with Bioenergy 2020+.

The municipality of Vienna opened a biogas plant in 2007. It is situated near a waste incineration plant and the central wastewater treatment plant of Vienna. In this biogas plant 17,000 tonnes of organic waste like leftovers from canteen kitchens and the waste from biowaste collection are used to produce 1.7 million m³ of biogas per year. The biogas is burned in a boiler, producing heat which is fed into the municipal district heating grid.

Reidling is a village in the region of Tullnerfeld. The owner and operator of the biogas plant is Karl Pfiel, a farmer with approximately 5,000 pigs. Within one year 7,000 tonnes of pig manure and 11,000 tonnes of energy crops are used as substrate to produce biogas. The plant produces 12,000 m³ of biogas per day. The biogas is burned in two gas engines (CHP, GE Jenbacher) which have an installed electrical power of 500 kW each. The thermal energy is fed into a district heating network which is 4 km long and supplies 20 households, the kindergarten and the elementary school of Reidling with hot water.

Tour 3: Forest biomass power station operated by Wien Energie in Simmering. The plant is a joint venture of Wien Energie (Vienna municipal utility) and Bundesforste (Austrian National Forests). It has been operating since 2006, when it was the biggest plant of its kind in Europe. The fuel is forest biomass collected within a radius of 100 km around the plant. The FBC boiler with a fuel power input of 66 MW (annual input corresponds to 1% of the annual wood growth in Austria's national forests) is operated as a CHP system for 7,500 hours per annum. Depending on the heat output for the municipal district heat system the electric power output ranges from 16-25 MW with a total (heat and electricity) efficiency of up to 77%. The price of heat is determined by the loss of electricity income caused by the reduction of electricity production when producing heat. The economic basis of the plant operation is the subsidised feed-in tariff of €102/MWh_e, compared to the market average of around €50/MWh_e. The power station supplies around 48,000 households in Vienna with electricity and 12,000 with district heating. Austria had been set a target to increase the share of electricity produced from renewable energy to 78.1 % by 2010. This power station was an important part of the efforts to achieve the objective.

Tour 4: 'Hundertwasser' Waste Incineration Plant operated by Wien Energie in Spittelau. With a total installed electrical capacity of 400 MW and an output of 40 GWh of electricity and 500 GWh of heat, the Spittelau waste incineration plant is the second largest facility in Austria's district heating network. It supplies more than 318,000 homes and 6,200 business customers with heat and hot water. Today the subsidiary of Wien Energie ranks among Europe's largest district heating utilities due to the 1,153 km of pipeline network.

The plant had for a long time been referred to in common parlance as a 'heavy polluter'. To supply the New General Hospital with energy, the waste treatment facility was built in a central location, only 2 km from the hospital. After a fire in 1987, then mayor Helmut Zilk advocated the reconstruction and modernisation of the plant. We owe it to his perseverance that the painter Friedensreich Hundertwasser turned the sober purpose-built facility into a unique piece of art. The Austrian artist and nature lover agreed to create the design of the façade and the chimney only after the city of Vienna pledged to equip the district heating plant with state-of-the-art emissions treatment technology. The successful and exemplary synthesis of technology, ecology and art became a tourist attraction.



Tour 3 group.

Task Focus

Task 40: Sustainable International Bioenergy Trade

For almost a decade, Task 40 has been focusing on supporting the development of sustainable international trade in bioenergy. In recent years, we have seen tremendous growth in the trade of biomass commodities such as biodiesel, fuel ethanol and wood pellets. The internationally traded volume of these three commodities increased by a factor of 10 between 2000 and 2010. The two main policy drivers behind this have been renewable energy targets (and related GHG emission reduction) and security of supply, mainly for liquid biofuels. However, the increasing demand for biomass (and related pressure on natural resources and demand for new land to produce biomass) has also triggered a fierce debate on the sustainable production of biomass – in the first instance for liquid biofuels, but also for solid biomass.

The recent introduction of mandatory sustainability policy frameworks for liquid biofuels in USA and the EU is now having an impact on global trade patterns (currently investigated by Tasks 40, 43 and 38). The possible introduction of mandatory sustainability criteria for solid biomass by the European Commission may have similar effects on solid biomass trade flows.

In this rapidly developing and changing arena, Task 40 is providing sound market and scientific information to industry, policy makers, NGOs, academics and other stakeholders, e.g. by organising workshops and publishing free reports on current topics. Perhaps the most well-known report (with over 12,000 downloads since the beginning of 2012) is the wood pellet market study, which describes the wood pellet industry and international market and trade flows in Europe and North America. It also includes perspectives on domestic use and trade of wood pellets in emerging markets in Asia and Latin America and the challenges in ensuring a sustainable pellet trade. It provides estimates of global wood pellet production and consumption and their trends, production capacity, utilisation rate, trade statistics, prices and other trade information at country level for 2010. Finally, it also sketches scenarios as to how the global pellet trade may develop further until 2020, showing strongly increasing trade volumes in the EU, but possibly also the Far East.

Other reports published in 2012:

- focus on the potential role of biofuels in commercial air transport – biojetfuel,
- illustrate the global wood chip trade for energy, and
- discuss the implementation of sustainability requirements for biofuels and bioenergy and related issues for markets and trade.

Several other studies, on the potential impact of torrefaction on international bioenergy trade, the long-term perspectives for bioenergy trade and an overview of the largest industrial biomass/bioenergy users in the world, are scheduled for publication in 2012. Last but not least, Task 40 is working hard on a manuscript for a book on bioenergy trade, in which the experiences of the past three triennia are summarised. All these studies can be downloaded free from the Task website www.bioenergytrade.org.

The first workshop co-organised by the Task in January 2012 in Berlin focused on biomethane trade. The European market for biomethane is growing rapidly, and so the trade of biomethane across borders is becoming more important. Various



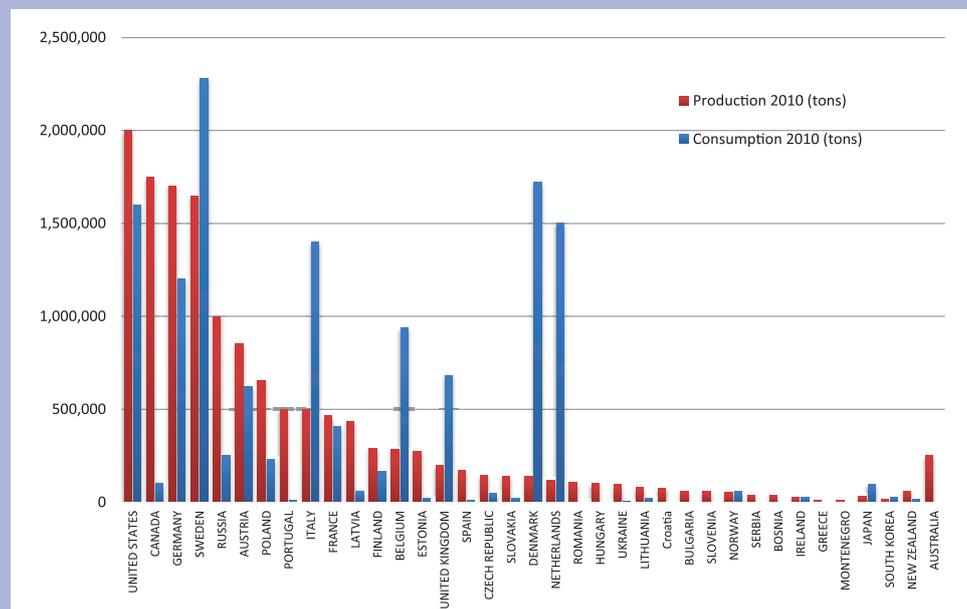
IEA Bioenergy Task 40 members at the biogas trade workshop in Berlin, Germany

possibilities for better use of biomethane and knowledge exchange between different countries were presented and discussed. Biogas certification is expected to simplify this trade while at the same time addressing sustainability issues (including origin). Another scenario for international cooperation could see the implementation of a heavy duty dual-fuel truck corridor from north to south which involves different countries along the route. Experts agreed that instruments should be developed to secure the fair evaluation and trade of biomethane in Europe.

Another more recent workshop on the science-policy interface around the environmental sustainability of forest bioenergy took place in October in Quebec City, Canada, and was co-organised by Tasks 43, Laval University and Natural Resources Canada, in cooperation with the IEA Bioenergy ExCo and the Global Bioenergy Partnership. The workshop involved key European, Canadian and American experts involved with research and policy development in the bioenergy sector. They discussed the sustainability of forest bioenergy through field visits, scientific presentations and moderated discussions. Topics included:

- information about the state-of-the-art in forest biomass practices at international and state levels and in Canadian provinces
- 'on-the-ground' examples of the key features of Canadian forests and on-going research projects on the sustainability of forest biomass harvesting
- a better understanding of how science can inform policy-making and support development of governance mechanisms, and
- knowledge of how levels of governance from the local to the global level can interact to ensure both sustainability of forest management and the vitality of domestic and international biomass markets.

Other Task 40 workshops in 2012 included a session in Milan on 'Biomass and Bioenergy – an Investor's Perspective – Challenges and Opportunities for the Financial Community'; a Task 40 session on international bioenergy trade during the IEA Bioenergy Conference in Vienna; and a half-day session on bioenergy trade on the Pacific Rim, during the 2012 Canbio Conference in Vancouver. Finally, the Task also held a one and a half day meeting in Moss, Oslo, to discuss current business, including the progress of several studies and the planning of the work programme for the new triennium. The meeting included a half day field trip, during which attendees visited the biorefinery Borregaard and stove manufacturing plant Jøtul near Oslo.



Wood pellet consumption and production by country in 2010. Source: Global wood pellet industry market and trade study, IEA Bioenergy Task 40, January 2012

Finally, Task 40 is saying goodbye to two of its long term members. Founding father and leader since our inception, Prof. André Faaij (Utrecht University), is leaving after nine years of enthusiastic leadership. Over the years, Task 40 developed from a small Task with four members in Europe, to one of the larger Tasks in the Bioenergy Agreement, with 14 members on four continents, making the outreach of the Task truly global. He actively promoted the output of the Task including the recent IPCC SRRES report, and guided the publication of numerous reports and the organisation of more than 30 workshops. He is handing over the reins to his colleague Martin Junginger who will be jointly leading the Task from January 2013 onwards with Peter-Paul Schouwenberg (RWE Essent). Frank Rosillo-Calle, the UK National Team Leader from the start, is retiring at the end of 2012. We would like to thank André and Frank for their long term efforts and passion to support the development of global bioenergy markets.

This article was prepared by Martin Junginger and Peter-Paul Schouwenberg. For more information, please visit: <http://www.bioenergytrade.org>

IEA Bioenergy Conference 2012

The IEA Bioenergy Conference 2012 'Linking policy, science and industry' took place in Vienna from 13 – 15 November. It attracted 240 participants from 31 countries to the historic Schoenbrunn Conference Centre. It was the second triennial conference of IEA Bioenergy following Vancouver in 2009. Three years of Task work were presented along with state-of-the-art contributions from internationally known scientists in the field of bioenergy. A total of 60 scientific and industrial speakers from 16 countries presented their achievements in research, development and industrial-scale applications. In the opening plenary session, keynote addresses by the Austrian Ministry for Transport, Innovation and Technology, the Austrian Climate and Energy Fund, the International Energy Agency's Renewable Energy Division and IEA Bioenergy emphasised the links between policy, science and industry.

Four excursions to selected sites around Vienna highlighted R&D facilities and commercial bioenergy plants thus providing an excellent overview of bioenergy developments in Austria. Very positive feedback from the participants indicated that the conference was a great success. This was a tribute to the Programme Coordinator Arthur Wellinger, the Conference Organizer Michael Fuchs, and their organising team.

Quebec Workshop on 'Sustainability'

A strategic workshop on the environmental sustainability of forest bioenergy took place on 3-5 October in Quebec City, Canada. It was co-organised by Tasks 43 and 40, along with Laval University and Natural Resources Canada; and in association with the ExCo and GBEP. The workshop involved key European, Canadian and American experts involved with research and policy development in the bioenergy sector. They discussed the sustainability of forest bioenergy through field visits, scientific presentations and moderated discussions. Topics included:

- information about the state-of-the-art in forest biomass practices at international and state levels and in Canadian provinces;
- 'on-the-ground' examples of key features of Canadian forests and on-going research projects on the sustainability of forest biomass harvesting;
- a better understanding how science can inform policy-making and support development of governance mechanisms; and
- knowledge of how levels of governance from the local to the global level can interact to ensure both sustainability of forest management and the vitality of domestic and international biomass markets.

Participants obtained a first-hand view of Canadian forest management. Most were impressed with what they saw. This event definitely helped European regulators to understand the Canadian situation better than they could through correspondence or holding meetings in Europe. The result is likely to be that when the EU mandatory sustainability criteria for solid biomass are finally released, they will reflect the Canadian situation and be written in such a way that Canadians will be able to comply under existing practices. In particular, the regulators recognized that a blanket prohibition on biomass from primary forests as defined by FAO would be very serious for Canada and that a better approach has to be found.

Task 34: Pyrolysis of Biomass

Recent accomplishments by the Task include publication of two articles in the Energy & Fuels journal: 'Results of the IEA Round Robin on Viscosity and Stability of Fast Pyrolysis Bio-oils' and 'Guidelines for Transportation, Handling, and Use of Fast Pyrolysis Bio-Oil. Part 1 –

Flammability and Toxicity'. Still in progress are publications on the state-of-the-art in biomass pyrolysis in the participating countries and a second article on the second phase of the round robin including extended tests of bio-oil viscosity and aging.

Task 37: Energy from Biogas

Task 37 has recently published major reports on 'Quality management of digestate from biogas plants used as fertiliser' and another success story 'Economic sustainability of manure based centralised co-digestion'. A number of other reports are imminent covering: source separation of biodegradable wastes, pre-treatment of feedstocks for biogas plants, biogas process monitoring and the economics of small-scale biogas plants. The studies underpinning these three reports address different ways of improving the economic performance of biogas production. As the Task approaches the 2013-2015 work programme the emphasis on environmental sustainability factors involved in biogas production and utilisation will increase. In preparation for this the fundamentals of environmental sustainability of the biogas sector have been addressed in a new 'Biogas Handbook' that is being prepared with major input from Task participants and external experts. The handbook will be published early in 2013. The new work programme will involve closer collaboration than before with other Tasks on both economic and environmental aspects.

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

On 27-29 November, CanBio partnering with Task 40 organised a workshop in Vancouver to showcase growth in bioenergy markets and partnership opportunities. This event provided an opportunity to network with key industry, non-profit, and public sector stakeholders from North America, Europe and Asia. Conference presentations and panel discussions covered a range of topics with global bioenergy trade as a main focus. Task 40 participants contributed to a session on trends in bioenergy trade – especially new demand for wood pellets in East Asia, and issues of sustainability certification and logistics. Task 40 also moderated a forum on torrefaction.

Colleague Recognised

Professor Hermann Hofbauer from Austria was awarded the Johannes Linneborn Prize for his outstanding contribution and leadership for over 30 years in developing important technologies for energy carrier production and sustainable energy generation from biomass by thermochemical methods. He is known especially for his work on producing syngas from biomass by dual zone circulating fluid bed gasification which attracted worldwide attention and admiration.

Hermann is active in many international networks and advisory committees, chairman of scientific boards, and in various IEA groups including Task 33. He is also a key researcher at the competence center 'Bioenergy 2020' Gasification. In addition, he has focused on educating young people through leading positions at the University of Technology in Vienna.

The European Linneborn Prize was established in 1994 for outstanding contributions to the development of energy from biomass. All those within IEA Bioenergy congratulate Hermann on his well-earned award.



Quebec workshop group

Publications

Future Biomass-based Transport Fuels

The summary and conclusions publication from the workshop held in conjunction with ExCo67 in Helsinki, Finland, on 10 May has been published and can be downloaded at <http://www.ieabioenergy.com/LibItem.aspx?id=7459>



2011 IEA Bioenergy Annual Report

The 2011 Annual Report contains a special feature article 'Current Status of Production and Thermal Utilisation of Biomass Pellets' prepared by Task 32. Also included is a report from the Executive Committee; a detailed progress report on each of the Tasks; and key information such as Task participation, Contracting Parties, budget tables and substantial contact information, plus lists of reports and papers produced by the Implementing Agreement. It is available on the IEA Bioenergy website at: <http://www.ieabioenergy.com/LibItem.aspx?id=7315>



Using a LCA Approach to Estimate the Net GHG Emissions of Bioenergy

This strategic report was prepared by Mr Neil Bird, Joanneum Research, Austria; Professor Annette Cowie, The National Centre for Rural Greenhouse Gas Research, Australia; Dr Francesco Cherubini, Norwegian University of Science and Technology, Norway; and Dr Gerfried Jungmeier, Joanneum Research, Austria. The report addresses the key methodological aspects of life cycle assessment with respect to greenhouse gas balances of bioenergy systems. It includes results via case studies, for some important bioenergy supply chains in comparison to fossil energy systems. The purpose of the report was to produce an unbiased, authoritative statement aimed especially at practitioners, policy advisors, and policy makers. This publication can be downloaded at <http://www.ieabioenergy.com/MediaItem.aspx?id=7099>



Thermal Pre-treatment of Biomass for Large-scale Applications

The summary and conclusions publication from the workshop held in conjunction with ExCo66 in York, United Kingdom, on 12 October 2010 has been published and can be downloaded at <http://www.ieabioenergy.com/LibItem.aspx?id=7190>



Bioenergy, Land Use Change and Climate Change Mitigation

This report was prepared by Associate Professor Göran Berndes, of Chalmers University of Technology, Sweden; with input from contributing authors Dr Neil Bird, Joanneum Research, Austria and Professor Annette Cowie, The National Centre for Rural Greenhouse Gas Research, Australia. It was co-financed by IEA Bioenergy and the Swedish Energy Agency. The report addresses a much debated issue – bioenergy and associated land use change, and how the climate change mitigation from use of bioenergy can be influenced by greenhouse gas emissions arising from land use change. The purpose of the report was to produce an unbiased, authoritative statement on this topic aimed especially at policy advisors and policy makers. The publication can be downloaded at: <http://www.ieabioenergy.com/LibItem.aspx?id=6770>



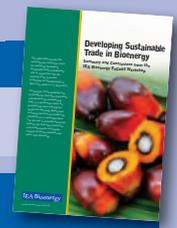
Bioenergy, Land Use Change and Climate Change Mitigation - Background Technical Report

This report was prepared by the same authors as detailed above, viz. Berndes, Bird, and Cowie. It was also co-financed by IEA Bioenergy and the Swedish Energy Agency. The purpose of this background report was to supply a more detailed, fully referenced version for practitioners, and researchers, in support of the short version (IEA Bioenergy: ExCo:2010:03) which was aimed at policy advisors and policy makers. This publication can be downloaded at <http://www.ieabioenergy.com/LibItem.aspx?id=6927>



Developing Sustainable Trade in Bioenergy

The 'summary and conclusions' publication from the workshop held in conjunction with ExCo65 in Nara City, Japan in May 2010 has been published and is available to download at: <http://www.ieabioenergy.com/MediaItem.aspx?id=6880>



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

These publications are the Main Report and the Executive Summary, both 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: <http://www.ieabioenergy.com/Library.aspx>



Algae as a Feedstock for Biofuels - An Assessment of the Current Status and Potential for Algal Biofuels Production.

In 2010, IEA Bioenergy Task 39 and the IEA Advanced Motor Fuels Implementing Agreement both commissioned reports on the status and potential opportunities for Algal Biofuels. While there were substantial similarities in the findings of the two reports, each report provides unique perspectives on different aspects of the technology and the opportunities. This summary draws on both reports and can be downloaded from <http://www.ieabioenergy.com/LibItem.aspx?id=6967>

The Pellet Handbook: The Production and Thermal Utilization of Pellets

This handbook, produced by Task 32, is the first comprehensive guide in English which covers all aspects of pellets. The book is extensively illustrated and contains comprehensive practical information. It addresses all of the major stakeholders in the pellet market, ranging from raw material producers and suppliers, pellet producers and traders, manufacturers of pellet furnaces and pelletisation systems, installers, engineering companies, energy consultants, and end users. The handbook was written by experts within Task 32, and with significant input from Tasks 29, 31 and 40; and external experts. Financial support was received from IEA Bioenergy and the Austrian organisations Landesenergieverein Steiermark and BIOS Bioenergysysteme GmbH. It was edited by Ingwald Obernberger and Gerold Thek of BIOS Bioenergysysteme GmbH and can be ordered from Earthscan, see <http://www.earthscan.co.uk/?tabid=102497>



IEA Bioenergy Events

ExCo Meetings

ExCo71 will be held in Cape Town, South Africa on 21-23 May 2013.

ExCo72 will be held in Korea on 11-14 November 2013.

ExCo73 will be held in Denmark in May 2014.

Task Events

Task 33's schedule of upcoming meetings is:

- May 2013, Italy. Task 33 meeting and associated workshop 'Feed Systems for Biomass Gasification'. Dates and location to be confirmed.
- October 2013, USA. Task 33 meeting and associated workshop 'Lessons Learned from Biomass Gasification Projects'. Dates and location to be confirmed.
- May 2014, Sweden. Task 33 meeting and associated workshop 'Techno-economics of Gasification-based Processes'. Dates and location to be confirmed.
- October 2013, Switzerland. Task 33 meeting and associated workshop. Dates and location to be confirmed.

Task 34's schedule of upcoming meetings is:

- 17-18 April 2013, Karlsruhe, Germany, Task meeting, technical visit, and development updates.

Task 37's schedule of upcoming meetings is:

- 17-19 April, Switzerland. Task meeting and workshop. Location to be confirmed.
- September/October 2013: Task meeting and workshop. Date and Location to be confirmed.

Task 38's schedule of upcoming meetings is:

- March 2013, the Netherlands. Task meeting. Date and location to be confirmed.

Task 39's schedule of upcoming meetings is:

- 23-27 March 2013, Stellenbosch, South Africa. A Task meeting will be held in conjunction with the 20th ISAF Symposium. The Task will contribute to sessions and plenary talks.
- 29 April-2 May 2013, Portland, USA. There will be an Task 39 sponsored evening session within the 35th Symposium on Biotechnology for Fuels and Chemicals.
- Oct-Nov 2013, South Korea. Proposed business meeting and technical session at conference. Dates and location to be confirmed.
- 20-23 January 2014, Berlin, Germany. Business meeting and joint Task 42 workshop. More details to follow.
- 27-29 May 2014, Jönköping, Sweden. Joint workshops with Task 43 and possible involvement with the World Energy Symposium.
- Nov-Dec 2014, Australia/New Zealand. Joint meeting with Bioenergy Australia. Dates and location to be confirmed.

Task 40's schedule of upcoming meetings is:

- 11-13 March 2013, Rotterdam, the Netherlands. Task meeting and joint workshop with Task 43 and WBM. Dates to be confirmed.
- October 2013, Miami, USA. Task meeting. Dates and location to be confirmed.

Task 42's schedule of upcoming meetings is:

- 12 March 2013, Rotterdam, the Netherlands. Biorefinery Platform Session at the World Biofuel Markets Congress 2013.
- 11 April 2013, Wageningen, the Netherlands. Task meeting, alongside the International BFF-2013 Symposium.
- 3-7 June 2013, Copenhagen, Denmark. Biorefinery Session at the 21st European Biomass Conference and Exhibition.
- August 2013, Ireland. 3rd European Biorefining Training School, co-organised by NUI Galway/TCBB. Dates and location to be confirmed.
- November 2013. Task meeting. Dates and location to be confirmed.
- September-December 2013. Workshop on Future Market Demand for Biomass from a BioEconomy Perspective. Dates and location to be confirmed.

Task 43's schedule of upcoming meetings is:

- 12 March 2013, Rotterdam, the Netherlands. Task 43, 38, 40 dissemination workshop to present the results of the inter-Task project 'Monitoring sustainability certification of bioenergy'.
- 13 March 2013, Rotterdam, the Netherlands. A project meeting for the Strategic project 'Mobilising sustainable bioenergy supply chains' is tentatively scheduled.
- 14-15 March 2013, Rotterdam, the Netherlands. Task workshop 'Governing water quality and quantity in bioenergy feedstock production' held in conjunction with the World Biofuels Markets Congress, along with a Task business meeting

OTHER EVENTS

World Future Energy Summit

15-17 January 2013, Abu Dhabi
Web: www.worldfutureenergysummit.com

Fuels – Conventional and Future Energy for Automobiles

15-17 January 2013, Stuttgart/Ostfildern, Germany
Web: www.tae.de/en/kolloquien-symposien/7th-international-colloquium-fuels.html

Fuels of the Future 2013

January 21-23, 2013, Berlin, Germany
Web: www.advancedbiofuelsusa.info/

8th World Biofuels Market Congress

12-14 March 2013, Rotterdam, Netherlands
Web: www.worldbiofuelsmarkets.com/

20th International Symposium on Alcohol Fuels (ISAF)

25-27 March 2013, Spier Estate, Stellenbosch, Cape Town
Web: www.isaf2013.co.za/

European Biomass to Power 2013

10-11 April 2013, Krakow, Poland
Web: www.wplargroup.com/aci/conferences/eu-ebp3.asp

35th Symposium on Biotechnology for Fuels and Chemicals

29 April 2013 - 2 May 2013, Portland, USA
Web: www.simhq.org/sbfc/

SolarExpo

8-10 May 2013, Verona (Italy)
Web: www.solarexpo.com/SE/EN/

21st European Biomass Conference and Exhibition

3-7 June 2013, Copenhagen, Denmark
Web: www.conference-biomass.com/

World Bioenergy Conference 2013

27-29 May 2013, Jönköping, Sweden
To be confirmed
Web: www.elmia.se/en/worldbioenergy/

3rd International Conference on Algal Biomass, Biofuels and Bioproducts

16-19 June, 2013, The Sheraton Centre Toronto Hotel, Toronto, Canada
Web: www.algalbbb.com/

Energy and Sustainability 2013

19-21 June, 2013, Bucharest, Romania
Web: www.wessex.ac.uk/energy2013

China International Bioenergy Exhibition 2013

3-5 July 2013, Beijing (China)
Web: www.chinaexhibition.com/Official_Site/11-2293-CIBE_2013_-_China_International_Bioenergy_Exhibition_2013.html

Transportation Technologies and Fuels Forum (TTFF)

5-6 February 2013, Ottawa, Canada
Web: www.transportationforum.net

2013 3rd International Conference on Future Environment and Energy-ICFEE 2013

24-25 February 2013, Rome, Italy.
Web: www.icfee.org

World Sustainable Energy Days

27 February – 01 March 2013, Wels, Austria
Web: www.wsed.at

5th International Bio-based Chemicals Conference and Exhibition

13-14 March 2013, Rotterdam, Netherlands
Web: www.worldbiofuelsmarkets.com/EF/?sSubSystem=Prospectus&EventCode=BC1303NL&sSessionID=332265d81fa6a477b4e2a25f691bc247-16064977

Renewable Energy World Europe Conference and Exhibition.

4-6 June 2013, Vienna, Austria
Web: www.renewableenergyworld-europe.com/index.html

World Renewable Energy Congress-Australia 2013 Conference

14th to 18th July 2013, Perth, Australia
Web: http://www.promaco.com.au/events/WREC_2013/index.html

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 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 34: Pyrolysis of biomass
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Task 36: Integrating Energy Recovery
into Solid Waste Management
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