



City of Istanbul

# IEA Bioenergy News

## Bioenergy in Turkey

Guest Editorial by **Ufuk Kayahan, ExCo Member for Turkey**

The annual biomass energy potential in Turkey is estimated to be around 32 Mtoe, and the total recoverable biomass energy potential is estimated to be 17 Mtoe. Current total annual biomass consumption is 4.8 Mtoe – 4.9% of the national primary energy supply. Among the biomass consumers wood-based industries and households consume the largest share of biomass energy. Household use is mainly combustion of wood in stoves. The lumber and the pulp and paper industries burn their own wood wastes in large furnaces and boilers to supply 60% of the energy needed for their own operations. Bioelectricity provides 0.1% of total electricity production. 22% of the bio-based electricity is produced by wood-based biomass technologies, while 23% is produced from biogas. The rest is produced from municipal solid waste.

The national target for renewable energy (biogas, biomass, wind, solar, and hydro) is to provide at least 30% of electricity generation by 2023. Key support mechanisms to reach this target are: connecting priority, reduced license fees (exemption from the annual fee), exemption from license obligations for small-scale generators (0.5 MW and less) and reduced fees for project preparation and land acquisition (up to 85% discount of land use fees). In 2011, the renewable energy law was changed and the feed-in tariff for biomass-based electricity was increased from \$5.50/kWh to \$13.30/kWh. Also up to \$3.70/kWh of additional support for national technologies was added to the feed-in tariff.

Turkey's research focus areas are: small-scale gasification/combustion systems for local electricity generation (100-500 kWe); centralised large-scale electricity generation for high biomass potential areas (co-firing at present plants); scale-up and commercialisation of current pilot-scale biogas applications; biomass upgrading processes (pelletisation/briquetting); and transport fuel production from biomass.

The Marmara Research Center (a government organisation located at Kocaeli) has eight different research institutes including the Energy Institute. One of the most important research areas of the Energy Institute is bio-based technologies. Currently several national and international projects are ongoing including combustion, gasification, biogas and bio-based liquid fuels.

For more information please contact Ufuk Kayahan at [ufuk.kayahan@tubitak.gov.tr](mailto:ufuk.kayahan@tubitak.gov.tr)



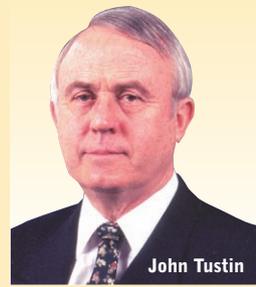
The new biogas plant at Izaydas, Kocaeli.

### Contents

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



# From the Secretariat



John Tustin

## ExCo69, Istanbul, Turkey

The 69<sup>th</sup> meeting of the Executive Committee was held at the Larespark Hotel Istanbul, Turkey on 8-10 May with Birger Kerckow as Chairman and John Tustin as Secretary. The meeting was hosted by the Tubitak Marmara Research Centre, Energy Institute. The Chairman expressed the appreciation of the ExCo to Ufuk Kayahan and his colleagues 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 Member is Mr Shinji Furukawa, Japan. New Alternate Members are: Dr Göran Berndes, Sweden; and Dr Jonathan Male, USA.

### ExCo69 Workshop

A very successful internal workshop on 'Planning for the new Triennium' was held on 8 May. Each Task Leader presented a developed proposal for the new triennium. The Chairman said it was pleasing to see that the participants were being consulted on the detail of the various work programmes. The progress with inter-Task collaboration was also pleasing, although it was evident that more could be achieved in this area. Final decisions on Task participation will be made at ExCo70 in Vienna.

### New Secretary, Pearse Buckley

Mr Pearse Buckley, Ireland, was appointed as the new Secretary and Fund Administrator. Buckley has a BE (Hons) in Mechanical Engineering and post-graduate qualifications in environmental science and technology. His MSc thesis was 'An investigation of short-rotation forestry as a source of energy in Ireland'. In total he has had more than 20 years of experience in the bioenergy industry. His most recent position has been Programme Manager, Bioenergy and CHP at Sustainable Energy Ireland (SEI) in Dublin. At SEI his role included policy advice to the Irish government, designing and implementing national support programmes for commercial development and applied R&D, and representing Ireland in a number of international fora, including IEA Bioenergy. He has been the ExCo Member for Ireland since 2002 and will take up his appointment on 1 January 2013.



### New Strategic Project

A new project 'Mobilising Sustainable Bioenergy Supply Chains' was approved with total funding of US\$208,500 – US\$139,000 from the Strategic Fund. Dr Tat Smith the Associate Task Leader of Task 43 outlined the major challenges that need to be resolved. These are:

- Developing competitive feedstock supply and value chains, based on identification of appropriate feedstock and conversion technologies, including co-produced bio-based products and their substitution of alternative products.
- Quantifying positive and negative environmental and socio-economic consequences of different bioenergy supply chains, including benefits of co-products.
- Assessing the effects of sustainability risk mitigation techniques on feedstock availability and cost.
- Developing governance of sustainable supply chains that provides sound operating conditions for actors along the supply chains while addressing concerns about various risks associated with bioenergy. As feedstock production is geography dependent, another layer of complexity is added as site-specific issues need to be reconciled within the context of global supply chains.

The project will involve experts from: Tasks 29,38, 39, 40,42 and 43. Task 43 will lead and coordinate the project which will take three years to complete, with much of the work being undertaken during the new triennium (2013-2015).

### Collaboration with the Advanced Motor Fuels Implementing Agreement

There have been some excellent joint projects with the Advanced Motor Fuels (AMF) Implementing Agreement. Recent examples include:

- *Task 41, Project 3 'Fuel and Technology Alternatives for Buses'*. This project aimed to assess the overall efficiency, emissions, and costs for several fuel and drivetrain technology options for buses. A draft report is now available and a final report is expected by the end of August.
- *Task 41, Project 4 'Biomethane in Heavy Duty Engines'*. This project will present emission and engine performance from state-of-the-art methane-fuelled heavy duty engines, either dedicated gas engines or diesel engines fuelled with a combination of methane (in various forms) and diesel. Two Contracting Parties from IEA Bioenergy (the European Commission and Norway) have agreed to participate.

At ExCo69 the Chairman made a presentation to highlight the many benefits from the two IAs working together, including: shared costs and pooled technical resources; avoidance of duplication; facilitation of technical consensus; and increased credibility with CERT and the IEA Secretariat. He said further collaboration could include the following:

- Annex XL: Life Cycle Analysis of Transportation Fuel Pathways.
- Annex XLI: Advanced Marine Fuels and Propulsion Technologies.
- Annex XLIII: Performance evaluation of passenger car fuel and power plant options.

The Chairman concluded that the potential for increased synergies included closer cooperation between the Secretariats, sharing of project proposals on common interests and issues; workshops and conferences; and outreach. There was general agreement that IEA Bioenergy should capitalise on these opportunities in the new triennium.



Chairman Birger Kerckow with Dr Serhan Dağtaş, Director of the Marmara Research Centre, Energy Institute.

## Strategic Plan 2010-2016

A draft set of performance indicators for the Strategic Plan was approved by the Executive Committee. Successful application of these will require full commitment from the Task Leaders in support of the Secretary and Technical Coordinator. This is the first time that the Executive Committee will formally measure progress with the strategic objectives.

## Communication Strategy

The Executive Committee revisited the 'communication strategy' paper prepared by the former Technical Coordinator, Adam Brown. The paper addressed the following elements: identification of target groups; a review of existing communications; a strategy for communication including objectives; and suggested actions. There was agreement that while IEA Bioenergy produced quality outputs they needed effective dissemination, so the strategy must focus on both products and channels. The latter needed more work. The significance of ExCo Members as conduits for information back to national stakeholders was emphasised – with the Netherlands highlighted as having a good model for others to follow. The importance of using major international organisations as 'vehicles for dissemination' was also emphasised. The Technical Coordinator was charged with revitalising the communication strategy and in doing this to involve the whole Agreement.

## IEA Bioenergy Conference 2012

An end of triennium IEA Bioenergy Conference will be held in Vienna on 13-15 November. The goal is to raise the profile of the Agreement by targeting senior people and showcasing the expertise and activities within the various Tasks. The conference will provide stakeholders with an insight into the recent research and market developments in bioenergy. Presentations will address all stages of bioenergy systems: from growth of biomass, to conversion to energy carriers and provision of energy services. Cross cutting topics like sustainability, socio-economics and trade will also be discussed. Policy makers will benefit from the latest policy recommendations based on the global technology network. For more information please visit <http://www.ieabioenergy2012.org/>

## Study Tour

In conjunction with ExCo69, 28 ExCo Members participated in the study tour. The first stop was at Izaydaş (Izmit Waste and Residue Treatment Incineration and Recycling Co. Inc.) founded by the Metropolitan Municipality of Kocaeli in 1996. The group was met by General Manager, Muhammet Saraç, who welcomed the group and explained that the company dealt with both domestic and industrial waste. He gave a film presentation on Izaydaş and led a discussion session. This was followed by a bus tour of the Kocaeli site which embraced an incineration plant for hazardous materials, a medical waste plant, a plant for treating leachate waters, a large landfill area; and a new biogas plant (completed in December 2011).

The biogas plant was of particular interest. The Tubitak Marmara Energy Institute and local universities were the project partners and Kocaeli Metropolitan Municipality was the client. The aim of the project was to develop low cost/high efficiency biogas systems suitable for animal and agricultural wastes, to integrate these systems with internal combustion engines and to spread the use of biogas technologies within Turkey. At this plant biogas is produced from agricultural waste, green vegetable waste, and poultry/cattle manure. Key statistics on an annual basis are: 350 KWe; 11,000 tons of treated biowaste and 5,000 tons of digestate (fertiliser). The wider advantages for Turkey from this project are: gaining valuable experience in the construction of biogas plants; fostering a new biogas market; creation of employment opportunities; and rural development.



*Pilot plant facilities at the Marmara Research Centre, Energy Institute.*

The second stop was at the Tubitak Marmara Research Centre, Energy Institute. The group was met by Director, Dr Serhan Dağtaş, who welcomed the group and gave a film presentation. The Energy Institute was separated from the Energy Systems and Environmental Research Institute (ESERI) in October 2004 to become a separate organisation. Staffing is currently around 170 including support personnel. The group was shown an impressive array of laboratory and pilot plant facilities, including a major project on 'liquid fuel production from biomass and coal blends'. The activities around this project were production of syngas via gasification; cleaning of syngas; gas reforming and CO<sub>2</sub> capture; production of liquid fuel from synthesis gas and development of catalysts; and heat integration to enhance system efficiency. The facilities included a pilot-scale bubbling fluidised bed gasification system and a pilot-scale fixed-bed gasification system. During the visit the group were hosted by a number of the researchers involved with these projects and were very impressed by their knowledge and enthusiasm.

Chairman, Birger Kerckow, expressed the sincere appreciation of the group to the Energy Institute for a most interesting visit.



*Study tour group at the Energy Institute*

# Task Focus

## Task 39: Commercialising Liquid Biofuels from Biomass

The work of Task 39 is at the forefront of the renewable fuels strategy of many countries as, with dwindling petroleum reserves and soaring transportation fuel demand from China, India and other emerging economies, the world needs alternatives such as biofuels. Biofuels can generally be defined as liquid transportation fuels that are derived from crops (such as sugar cane, corn, rape seed, sunflower, etc.) or biomass (such as forestry and agricultural residues or energy crops such as switch grass, short-rotation trees, etc.). In direct response to the OPEC oil crisis, pioneering countries such as Brazil and USA have greatly expanded their production of 'traditional' or 'conventional' biofuels such as sugarcane or corn grain-derived ethanol. Other countries such as Germany quickly followed suit by expanding their production of oil seed bearing crops such as rape/canola. These so-called 'first generation' biofuel technologies (now defined as conventional biofuels) have helped establish much of the infrastructure and policies that are in place to make biodiesel and bioethanol significant commercial realities in many parts of the world. Countries such as Brazil continue to improve on many aspects of sustainability as well as the economics of making ethanol from sugarcane. However, in other parts of the world various economic and social (e.g., food versus fuel) considerations have encouraged the development of advanced biomass-based biofuels technologies based on biochemical, thermochemical and hybrid process routes (sometimes referred to as second/third generation biofuels etc.), including biofuels derived from algae.

The Task covers the full range of technologies involved in conventional and advanced biofuels production and benefits from the input and advice of its participants. Although each of the participating countries might have highly varied biofuel strategies as well as different geographical opportunities (or constraints), they share a common interest in trying to develop biofuels in a sustainable and economically viable way. One of the primary activities of the Task is to act as an international forum for information exchange, bringing together key biofuel stakeholder communities and helping to disseminate important information on biofuel development and commercialisation.

Through the active engagement of the Task's network of experts it is possible to compare and contrast the various national approaches to biofuels deployment, considering both technology and policy dimensions. The Task also promotes international collaboration to help accelerate biofuels development by identifying technical/engineering barriers and assessing the readiness for commercialisation of various biofuel technology platforms and strategies. This is achieved through international business meetings, electronic networking (website, webinars, newsletters, email updates), commissioned reports and collaborations with other IEA Bioenergy Tasks, IEA HQ and international agencies such as FAO, World Bank, etc.

Recently, Task meetings have been hosted by four countries (USA, Brazil, Italy, and Denmark). Typically the Task business meetings are organised to be associated with international biofuel conferences such as the annual 'Symposium on Biotechnology for Fuels and Chemicals' (Seattle), the 'Brazilian BioEnergy Science and Technology' Conference (BBEST, Brazil), the International Symposium on Alcohol Fuels (ISAF, Verona) and the 'Advanced Biofuels in a Biorefinery Approach' (the Bio4Bio meeting, Copenhagen, Denmark). All these conferences provided the opportunity for a formal Task presence and for presentations by Task representatives from industry, government and academia.

The business meeting in Brazil (August 2011) was hosted by Petrobras and held at their new, central research centre (CENPES) in Rio de Janeiro. In addition to the normal highly informative 'country updates' on biofuel development from each of the Task country representatives, there were many presentations by leading experts from various Brazilian companies, universities, research institutes and government groups. These focused on Brazilian and global biofuels markets. It was clear that in Brazil, sugarcane can supply 'sugar platform' biofuel production in an economic, ecological and sustainable manner. As well as fermenting sugars to ethanol, work is underway to develop a diversity of more energy dense, hydrocarbon molecules (beyond ethanol) using biological and hybrid approaches for renewable chemicals and fuels production. In addition to Petrobras, other petroleum-based companies such as BP and Shell are investing in Brazil, building on the already established catch-phrase that Brazil will ultimately become the 'Saudi Arabia' of biofuels production.

Along with a Task session within the BBEST conference, members benefited from a two day field trip to visit sugarcane-based ethanol mills, a sugarcane cultivation research centre, the new Brazilian national laboratory CTBE (dedicated to development of advanced biofuels technology for Brazil) and other company facilities.

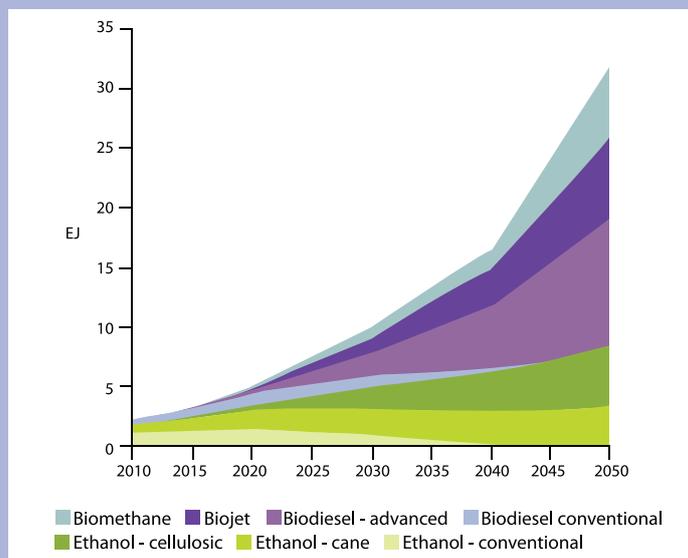
The Task participated in highly successful and informative meetings in Seattle and Verona, and also took part in the Bio4Bio's Advanced Biofuels in a Biorefinery Approach (ABBA) meeting in Copenhagen (February 2012). This meeting was jointly organised with Task 42. Following parallel business meetings of both Tasks, the Task 39 participants were heavily involved in the two day ABBA conference. Many of the leading companies working in the biofuels/biorefining area presented their plans for the future, including Inbicon, Borregaard and AB Sugar. All of whom are successfully marketing biomass-derived products such as ethanol, C5 molasses and specialty lignin-based products. Following the symposium there was an informative field trip.



Task 39 country experts at the Petrobras' central research facility CENPES in Rio de Janeiro, Brazil.

Another role for the Task has been to identify gaps in knowledge where specifically commissioned reports could deliver valuable input to the IEA Bioenergy network, by providing a better understanding of key issues and how best to develop the potential of specific areas. For example, algal biofuels have recently received a lot of attention and, by leveraging the algal biofuels expertise of members of the Task at NREL and the commercial experience of companies growing algae, the Task produced a report titled 'Current Status and Potential for Algal Biofuels Production'. Subsequently, in conjunction with the Advanced Motor Fuels Implementation Agreement, a joint executive summary titled 'Algae as a Feedstock for Biofuels' was published in late 2011. Other recently completed reports include 'Biodiesel GHG Emissions; Past, Present and Future'; 'Status of Second Generation (advanced) Biofuel Demonstration Facilities'; and 'From 1<sup>st</sup> to 2<sup>nd</sup> Generation Biofuel Technologies'. Each of these reports has formed the basis for ongoing collaborative work and helped communicate the activities of the Task to the broader stakeholder community. Communication is one of the Task's primary activities, with the newsletter (three per year) and website ([www.task39.org](http://www.task39.org)) providing the main vehicles for dissemination. The newsletters provide updates on recent biofuel developments and usually profile activities occurring in one of the participating countries. Recent newsletters provided updates on biofuels policies and technology developments in Sweden, Austria and Germany. The website contains a comprehensive 'Biofuel Demonstration Facilities' database (<http://demoplants.bioenergy2020.eu/>) which details the publically available information on many of the biofuel pilot and demonstration facilities being operated or constructed around the world. To date the emphasis has been on Europe and North America. The website also provides links to the Task's commissioned reports as well as to many of the IEA Bioenergy reports and activities of other organisations working in the biofuels area. In 2011 there were over 300,000 visitors to the site.

The Task recently contributed to the IEA HQ project '2011 Biofuels for Transport Technology Roadmap'. This document demonstrates that, if the world aspires to reach the GHG reductions that are described in the 'Blue Map' Scenario, it is likely that biofuel use will have to grow from its current 2% share of global transportation energy to over 25% by 2050. It is estimated that this scenario could reduce CO<sub>2</sub> emissions by 2.1 Gt per year. Although production of some conventional biofuels such as sugarcane-derived ethanol are expected to continue to grow, as they can be produced both sustainably and economically, it is projected that advanced biofuels such as Fischer-Tropsch and other energy dense hydrocarbon type diesel and jet fuels are where biofuels are expected to contribute the most over the next 40 years (see figure below).



Global energy use in the transport sector in 2050 (BLUE Map Scenario), Source: IEA, 2010.

This article was prepared by Sergios Karatzos, Jim McMillan and Jack Saddler. For more information, please visit: <http://www.task39.org>

## Gasification Facility Database

A major deliverable for Task 33 is development of an interactive gasification facility database. The database has been activated and is available on the Task 33 website at <http://www.ieaTask33.org/>. Task Members have been requested to update the database with information specific to their countries, and the database will continue to be populated with additional facility information as it becomes available.

## Task 34: Pyrolysis of Biomass

Task 34 is busy finalising several journal publications generated by the Task participants. Recently a report 'Results of the IEA Round Robin on Viscosity and Stability of Fast Pyrolysis Bio-oils', and a collaborative publication 'Guidelines for Transportation, Handling, and Use of Fast Pyrolysis Bio-Oil. Part 1 – Flammability and Toxicity' have been sent for journal review. These publications will be submitted to the journal *Energy & Fuels*.

Also in preparation is the report 'State-of-the-Art of Fast Pyrolysis in IEA Bioenergy Member Countries' with contributions from each of the participating countries. This will be submitted to *Renewable & Sustainable Energy Reviews*.

## Task 38: Greenhouse Gas Balances of Biomass and Bioenergy Systems

On 12-13 April, Task 38 hosted an expert meeting on 'How to present the timing of emissions from bioenergy in LCA and GHG accounting' at the Argonne National Laboratory, Chicago. Approximately 20 experts, mostly from USA, gave short presentations on various aspects of the topic and discussed views, opinions and results. The presentations are available on the Task 38 website (<http://www.ieabioenergy-task38.org/>).

In the second phase of the meeting the participants broke into two groups to discuss in more detail sub-themes related to timing of emissions from bioenergy in LCA and GHG accounting. These sub-themes were:

- metrics – what should we be estimating and how does this interface with socioeconomic metrics?
- reference system – what should bioenergy be compared with?

No conclusive positions were reached and to facilitate progress the group has a goal to develop discussion papers on these subjects and to meet again in association with the IEA Bioenergy Conference in Vienna (<http://www.ieabioenergy2012.org/>). The Task would like to thank Michael Wang and his staff for helping organise this meeting.

## Task 39: Commercialising Liquid Biofuels from Biomass

The Task previously published two updates of the Biofuel Implementation Agenda Reports (Comparing and contrasting

policies in Member Countries to help catalyse biofuel use and development). These summaries of national progress towards biofuel production targets have become an important tool. The most recent version of this report will include an expanded section detailing the various biofuels policy approaches while comparing the relative successes of the different policies that have been used by the various Member Countries to try to develop their respective biofuels industries. A draft report will be ready for review by mid-2012.

A third report, which looks at the potential of so-called 'drop-in' biofuels, is also in progress. Conventional (previously called 'first generation') biofuels (sugar and starch ethanol and oil crop-derived FAME) are not readily compatible with the existing petroleum/oil refining infrastructure. Newer, more petroleum-like biofuels (drop-in' hydrocarbon biofuels) now represent a major area of interest and development in many research laboratories and companies around the world. This report will build on the expertise of several of the groups associated with Task 39 and is expected to be released later in 2012.

## Task 43: Biomass Feedstocks for Energy Markets

Bioenergy and water are inextricably linked. In a world where some countries already face water stress – and where over 70% of global freshwater use takes place in the agricultural sector – bioenergy development might present considerable challenges from the perspective of water quantity as well as quality. At the same time, by leveraging the introduction of efficient water management techniques and providing energy for water pumping and cleaning; and by providing a wider range of land use options to optimise the use of land and water, bioenergy development provides opportunities to improve water productivity and increase access to water. Proper integration of bioenergy systems with forestry and agriculture can also reduce some of the impacts of present land use, such as eutrophication and soil erosion.

Task 43 organised a workshop on 'bioenergy and water' during the Bioenergy Australia 2012 Conference, Twin Waters, Australia on 22-25 November. The workshop was a follow-up to the workshop 'Spotlight on Bioenergy and Water' held in July 2010, organised with The United Nations Environment Programme and the Oeko-Institut. These workshops are components of a larger effort to advance knowledge and promote information exchange concerning the bioenergy and water nexus in the global community. The aim is to stimulate dialogue with organisations working on the issue, and promote sound, well-informed bioenergy development.

The Australian workshop included a series of presentations covering different perspectives on bioenergy and water, with time for discussion and debate. The outcomes were detailed in a report which was delivered to the 6<sup>th</sup> World Water Forum held in March 2012 in Marseille, France.



Task 38 Expert Meeting attendees, Chicago, USA

# Publications

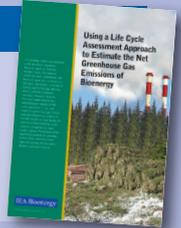


## 2011 IEA Bioenergy Annual Report

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>



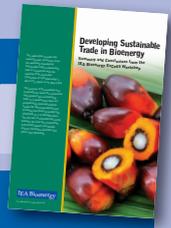
## Bioenergy, Land Use Change and Climate Change Mitigation - Background Technical Report

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>



## Algae - the Future for Bioenergy?

'The summary and conclusions' publication from the workshop held in conjunction with ExCo64 in Liege, Belgium in October 2009 has been published and is available to download at: <http://www.ieabioenergy.com/DocSet.aspx?id=6436>



# IEA Bioenergy Events

## Executive Committee

- ExCo70** will be held in Vienna, Austria on 12 November 2012, along with the end of triennium IEA Bioenergy Conference.
- ExCo71** will be held in South Africa on 21-23 May 2013. Dates to be approved.
- ExCo72** will be held in Korea in October 2013.
- ExCo73** will be held in Denmark in May 2014.

## Task Events

### Task 29's schedule of upcoming meetings is:

- 28-29 October 2012, Berlin, Germany. A Task meeting will be integrated in the final event of the national German model project bioenergy regions. Task presentations will be part of parallel workshops and key presentations will be integrated into the plenary sessions.

### Task 32's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria. A joint workshop on recent developments in small-scale biomass combustion will be held as part of the IEA Bioenergy Conference.

### Task 33's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria. A joint workshop will be held in conjunction with the IEA Bioenergy Conference.

### Task 34's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria: Task meeting and final reports. This meeting will be held in conjunction with the IEA Bioenergy Conference.

### Task 36's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria: Task meeting in conjunction with the IEA Bioenergy Conference.

### Task 37's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria: Task meeting in conjunction with the IEA Bioenergy Conference.

### Task 38's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria. A joint workshop will be held in conjunction with the IEA Bioenergy Conference.

### Task 39's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria. A joint workshop will be held in conjunction with the IEA Bioenergy Conference.
- February 2013, South Africa. Task meeting and participation in ISAF. Dates and location to be confirmed.
- May 2013, Portland, USA. Task meeting and participation in 35<sup>th</sup> SBFC. Dates and location to be confirmed.

- Jan 2014, Berlin, Germany. Participation in the 10th BBE/UFOP International Congress on Biofuels. Dates and location to be confirmed.
- May 2014, Sweden. Task meeting and participation in the World Bioenergy Symposium. Dates and location to be confirmed.
- September 2014, South Korea. Task meeting. Dates and location to be confirmed.

### Task 40's schedule of upcoming meetings is:

- 12-16 November 2012, Vienna, Austria. A Task meeting and joint workshop will be held in conjunction with the IEA Bioenergy Conference.

### Task 42's schedule of upcoming meetings is:

- 29 October-1 November 2012, Wageningen, the Netherlands. 2<sup>nd</sup> European Training Course on Biorefining.
- 12-16 November 2012, Vienna, Austria. A Task meeting and joint workshop will be held in conjunction with the IEA Bioenergy Conference.

### Task 43's schedule of upcoming meetings is:

- 19-20 September 2012, Portugal, Spain. Joint event organised with Task 43 and COST Action FP0902 'Economic Sustainability of Forest Fuel Supply Chains'.
- 12-16 November 2012, Vienna, Austria. A Task meeting will be held in conjunction with the IEA Bioenergy Conference.

## OTHER EVENTS

### EUROSOIL 2012

2-6 July 2012, Bari, Italy  
Web: [www.eurosoil2012.eu](http://www.eurosoil2012.eu)

### 6th International Conference on Waste Management and the Environment

4-6 July 2012, New Forest, United Kingdom  
Web: <http://www.wessex.ac.uk/12-conferences/waste-management-2012/page-2.html>

### Pacific Rim Energy & Sustainability Congress 2012

6-8 August 2012, Hiroshima, Japan  
Web: <http://www.presco2012.org/>

### Chilean International Renewable Energy Congress

4-5 September, Santiago, Chile  
Web: [www.greenpowerconferences.com](http://www.greenpowerconferences.com)

### CEWEP 6th Congress on Energy and Resource Efficiency

6-7 September, 2012, Wurzburg, Germany  
Web: [www.cewep.eu](http://www.cewep.eu)

### BOSTER 2012

14-16 September, 2012, Beaulard-Oulx, Italy  
Web: [www.fieraboster.it](http://www.fieraboster.it)

### World Biofuels Markets Brazil 2012

18-19 September 2012, Sao Paulo, Brazil  
Email: [samantha.coleman@greenpowerconferences.com](mailto:samantha.coleman@greenpowerconferences.com)  
Web: [www.greenpowerconferences.com](http://www.greenpowerconferences.com)

### Biomass Power Generation Brazil

18-19 September 2012, Sao Paulo, Brazil  
Email: [samantha.coleman@greenpowerconferences.com](mailto:samantha.coleman@greenpowerconferences.com)  
Web: [www.greenpowerconferences.com](http://www.greenpowerconferences.com)

### Science for Biomass Feedstock Production and Utilization Conference

2-5 October 2012, New Orleans, USA  
Web: <http://sungrant.tennessee.edu/NatConference/>

### COMBURA 2012

3-4 October 2012, Maastricht, the Netherlands  
Email: [brand@stw.nl](mailto:brand@stw.nl)  
Web: [www.combustioninstitute.de/COMBURA12-First\\_Announcement.pdf](http://www.combustioninstitute.de/COMBURA12-First_Announcement.pdf)

### 26th Gastech Conference

8-11 October 2012, London, UK  
Email: [info@gastech.co.uk](mailto:info@gastech.co.uk)  
Web: [www.gastech.co.uk/conference/](http://www.gastech.co.uk/conference/)

### 4th International Conference on Ocean Energy 2012

17-19 October 2012, Dublin, Ireland  
Email: [icoe2012programme@conferencepartners.ie](mailto:icoe2012programme@conferencepartners.ie)  
Web: [www.icoe2012dublin.com](http://www.icoe2012dublin.com)

### Low Carbon Earth Summit 2012

19-21 October 2012, Guangzhou, China  
Web: <http://www.bitcongress.com/nef2012>

### 4th Nordic Wood Biorefinery Conference

23-25 October 2012, Helsinki, Finland:  
Web: [www.vtt.fi/nwbc2012](http://www.vtt.fi/nwbc2012)

### Venice 2012 Symposium 'Energy from Biomass and Waste'

12-15 November 2012, Servolo, Venice, Italy  
Email: [info@eurowaste.it](mailto:info@eurowaste.it)  
Web: <http://venicesymposium.it/>

### IEA Bioenergy Conference 2012

13-15 November 2012, Vienna, Austria  
Email: [kurt.koenighofer@ieabioenergy2012.org](mailto:kurt.koenighofer@ieabioenergy2012.org)  
Web: <http://www.ieabioenergy2012.org/>

### 11th Greenhouse Gas Control Technologies Conference (GHGT-11)

18-22 November 2012, Kyoto, Japan  
Email: [ghgt11@ghgt.info](mailto:ghgt11@ghgt.info)  
Web: <http://www.ghgt.info/index.php/Content-GHGT11/ghgt-11-overview.html>

### Third Latin American Congress on Biorefineries

19-21 November 2012, Pucón, Araucanía, Chile  
Email: [contacto@biorefinerias.cl](mailto:contacto@biorefinerias.cl)  
Web: [www.biorefinerias.cl](http://www.biorefinerias.cl)

### Bioenergy Australia 2012

26-28 November 2012, Melbourne, Victoria  
Email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au)  
Web: [www.bioenergyaustralia.org](http://www.bioenergyaustralia.org)

## 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.

# Key IEA Bioenergy Contacts

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Task 29: Socio-economic drivers  
in implementing bioenergy projects  
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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  
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Task 37: Energy from biogas  
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Task 38: Greenhouse Gas Balances  
of Biomass and Bioenergy Systems  
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Task 39: Commercialising Liquid Biofuels  
from Biomass  
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Task 40: Sustainable International  
Bioenergy Trade – Securing Supply  
and Demand  
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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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