



Rome, Italy

Bioenergy in Italy

Guest editorial by Luca Benedetti, ExCo Member for Italy

Bioenergy in Italy plays an important role in the national energy framework, and particularly in the Renewable Energy Supply (RES) sector.

In 2014, about 8.2% of the gross final energy consumption was covered by bioenergy. If we focus on the RES gross final consumptions, the contribution from bioenergy to the total consumption rises to 48%.

Concerning the electricity sector, bioenergy production in 2014 amounted to 18,732 GWh (+9.6% compared to 2013) with an installed capacity of 4,044 MW. The 2014 production is due mainly to biogas power plants (43.8% with an installed capacity of about 1,406 MW), followed by solid biomass (including wastes – 33.1% with an installed capacity of about 1,610 MW), and bioliquids (23.2% with an installed capacity of about 1,027 MW). According to initial estimates, bioenergy production in 2015 should be about 18,894 GWh with an installed capacity of about 4,087 MW.

In 2014 the total amount spent by Italy to sustain bioenergy for electricity production amounted to €2.63 billion. Italian support policies on bioenergy have the aim of allocating primarily wood biomass, mechanically treated, to the heating sector and to promote the efficient use of waste and by-products and the use of biogas from livestock waste or by-products from agriculture, agro-food, agro-industrial, farming and forestry. Furthermore Italy encourages the realisation and the operation, by the farmers, of biomass and biogas plants operating in agricultural activities, in particular micro CHP and the use of sustainable bioliquids and biomethane in transport.

Considering the heating sector, bioenergy, including wastes, covered 70.9% of the energy consumption from RES in 2014, corresponding to 7.04 Mtoe, of which 6.73 Mtoe was from solid biomass (including the organic fraction of waste), 0.28 Mtoe from biogas and 0.03 Mtoe from bioliquids. The largest part of consumption is due to the use of bioenergy in the residential sector for heating, in particular the use of firewood (87.4%) – mainly in traditional fireplaces and stoves, pellet (11.8%), and charcoal (0.8%). According to initial estimates, in 2015 gross final energy consumption from bioenergy in the heating sector amounted to 7.69 Mtoe. Furthermore it is estimated that bioenergy produced around 0.2 Mtoe distributed through district heating networks and potentially it can still increase.

Italy is well positioned in the heating and cooling renewables industrial sector, especially in the biomass sphere, where about 65% of the technology installed is Italian-produced (data relating to 2013), including in the sectors with the highest technological content.

Concerning the transport sector, sustainable biofuels – according to the RED directive (2009/28/EC) – in 2014 covered 3.2% of transport final energy consumption, corresponding to about 1.06 Mtoe. Preliminary estimates indicate that in 2015 the gross final energy consumption of biofuels amounted to 1.18 Mtoe. Biofuels consumed in Italy are mainly produced from palm oil coming from Indonesia and Malaysia, followed by rapeseed oil mainly produced in EU Countries. In Italy a blending obligation is enforced and a double counting mechanism is applied to specific biofuels. Italian law lays out also a specific pathway leading up to 2022 for biofuel blending obligation quotas with sub-quotas on advanced biofuels (from agricultural and industrial wastes including UCOs and animal fats, residues, ligno-cellulosic materials, etc.).

Italy is the top country in the EU for the number of natural gas vehicles and promotes the use of biomethane in the transport sector. Biomethane offers a new possibility for the development of biogas plants other than for RES electricity.

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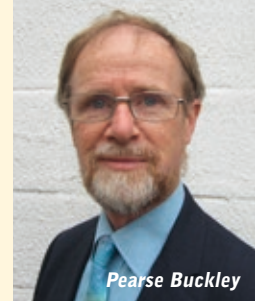
IEA Bioenergy News

IEA Bioenergy



From the Secretariat

ExCo77, Rome, Italy



Pearse Buckley

The 77th meeting of the Executive Committee was held in the GSE offices, Viale Maresciallo Pilsudski, Roma, Italy on 18-19 May 2016, with Kees Kwant as Chair, Sandra Hermle as Vice-chair and Pearse Buckley as Secretary. The meeting was hosted by GSE. The Chair expressed the appreciation of the ExCo to Benedetti and his colleagues for the excellent meeting arrangements. Some of the outcomes of the meeting are detailed below.

Changes to Executive Committee

A new Member for Belgium is Mr Yves Schenkel and a new Alternate Member is Mr Ruben Guisson; a new Member for Canada is Mr Alex MacLeod; a new Member for Finland is Ms Tuula Savola and a new Alternate Member is Mr Antti Arasto; a new Alternate Member for Ireland is Mr Denis Dineen; a new Member for Korea is Mr Sang-keun YU.

ExCo77 Workshop

A very successful workshop was held on the topic of 'Mobilizing sustainable bioenergy supply chains: opportunities for agriculture', which was organised in collaboration with GSE, FAO and IRENA. The workshop, with almost 100 attendees, included IEA Bioenergy ExCo Members and Task Leaders, participants from FAO, IRENA and GBEP and observers from Italy. The workshop presentations are listed below:

- Mobilizing sustainable bioenergy supply chains: general conclusions of the IEA Bioenergy study – *Tat Smith, University of Toronto*
- What FAO thinks and does about bioenergy and food security – *Olivier Dubois, FAO*
- Boosting Bioenergy: Sustainable paths to greater energy security – *Jeffrey Skeer, IRENA*
- Bioenergy market conditions – challenges and opportunities – *Pharaoh Le Feuvre, IEA*
- Mobilizing agricultural residues for energy – *Niclas Scott-Bentsen, University of Copenhagen*
- Biomass production in sustainably managed landscapes – *Ioannis Dimitriou, Swedish University of Agricultural Sciences*
- Bioenergy from agroforestry can lead to improved food security, climate change, soil quality and rural development – *Navin Sharma, ICRAF – World Agroforestry Centre, Kenya*
- Successful initiatives in developing countries in the field of wood energy development – *Karl Moosmann, GIZ, Germany*
- Perennial bioenergy crops on marginal lands – *Emiliano Maletta, Bioenergy Crops, Spain*
- Biogas production from seaweed, grass silage and slurry in rural coastal areas – *Jerry Murphy, University College Cork, Ireland*
- Livestock waste to biogas: the Italian 'BiogasDoneRight' model – *Piero Gattoni, CIB – Italian Consortium on Biogas and Gasification*
- Palm oil residues for biogas production – *Heinz Stichnote, Thünen Institute, Germany*
- Rapid Deployment of Industrial Biogas in Thailand: Factors of Success – *Joost Siteur, Clean Energy Adviser, Thailand*
- The potential role of biomethane in Italian transport – *Wolfgang D'Innocenzo, Italian Ministry of Economic Development*

The workshop presentations are available <http://www.ieabioenergy.com/publications/ws20-mobilising-sustainable-bioenergy-supply-chains-opportunities-for-agriculture/>

Progress with current Initiatives

Algae review

The report had experienced unanticipated delays but had been circulated in draft form just before the ExCo77 meeting. Following comments from ExCo members a final version will be sent for external peer review in July and the document will be ready for publication in September 2016.

Task 41 Project 5: Bio-CCS/CCUS

This two-year project (<http://task41project5.ieabioenergy.com/>) will identify short-term applications and elaborate on the most interesting CCU approaches. A summary report from the 1st workshop will be available soon at <http://task41project5.ieabioenergy.com/>.

Task 41 Project 6: Bioenergy and Grid Storage

This six-month project (<http://task41project6.ieabioenergy.com/>) is looking at identifying the role of bioenergy in grid balancing, identifying the role of bioenergy in storage, creating awareness and supporting market and policy assessment. The final report is expected in the 3rd quarter of 2016.

Task 41 Project 7: Bioenergy RES Hybrids

The scope of this one-year project (<http://task41project7.ieabioenergy.com/>) covers heating, cooling, fuels, electricity and chemicals. State-of-the-art reports will be published in July and the final project report will be launched at a seminar in Helsinki in November 2016.



Opening session of ExCo77 workshop



Delegates at ExCo77 workshop

Inter-Task Project: Bioenergy Success Stories

The project is developing a template for success stories and will produce ten examples. The first success story will be reviewed by ExCo78 in November and the project will be completed in the 2nd quarter of 2017.

Inter-Task Project: Measuring, governing and gaining support for sustainable bioenergy supply chains

This three-year project will include a number of case studies in forestry, agriculture and biogas. Three full reports and a synthesis report will be produced and a final workshop will be held in conjunction with the IEA Bioenergy Conference 2018.

Inter-Task Project: Fuel pretreatment of biomass residues in the supply chain for thermal conversion

The three-year project will demonstrate to policy makers and market actors what could be achieved with effective pretreatment. It will include seven case studies, two technology databases and a policy report, and be completed in the 2nd quarter of 2018.

Communication Strategy

The Executive Committee noted the effectiveness of the external support for communications and social media marketing, particularly with regard to the successful webinars that had been held. It was decided to continue with the webinar programme based on holding a webinar every second month over the next year. The Executive Committee also approved the preparation of scientifically based information briefing documents to support the deployment of bioenergy globally

Cooperation with International Organisations

FAO

Following the successful workshop held in conjunction with FAO at ExCo77 (see above), discussions are continuing on further collaboration, particularly in the context of work relating to the bioeconomy.

GBEP

Discussions are continuing on possible further collaboration in the framework of GBEP Activity Group 6: Bioenergy and water. Another area of potential collaboration that had been identified was linkage of GBEP indicators to the Inter-Task project on sustainable bioenergy supply chains.

IRENA

IRENA are in the process of developing a five-year vision with input from IEA Bioenergy. Further collaboration on global bioenergy potential is under discussion including an expert workshop on published data.

SE4ALL

A number of potential cooperative activities are being discussed. One of these is a project on advanced biofuels and the Chair and the Task 39 Task Leader are engaged in discussions to develop this further.

ExCo77 Study Tour



ExCo77 Study Tour Group at Bruni Enrico e Aldo Società Agricola farm

Following the ExCo77 meeting a group of eighteen IEA Bioenergy attendees participated in the study tour to the Bruni Enrico e Aldo Società Agricola farm to the north of Rome. The farm has 1,000 head of cattle and produces significant volumes of manure. The economic conditions for the farm were challenging prior to the development of the anaerobic digester. The unit was built at a cost of €1.7 million and commenced operation in 2009. It began with a nominal electrical power capacity of 250 kW_e, which was subsequently increased to its current 750 kW_e.

The anaerobic digester is composed of two 1,200 m³ vessels and operates at 47 °C, producing approximately 300 m³/hour of biogas. The plant includes a biogas activated carbon desulphurisation system. A typical feedstock of approximately 30,000 tonnes per year is made up of 50% manure. Other feed materials include olive milling wastewater and maize, with smaller contributions from chicken manure, cheese whey, fruit and vegetables and flour.

The biogas is fed to a cogeneration unit (gas engine with heat recovery connected to a generator). The electricity produced is sold to the grid at a price of €0.28/kWh_e and the heat is used to maintain digester temperature as well as providing space heating for offices and hot water for the cattle watering area. The annual operating costs are about 55% of the investment cost and the annual service and maintenance costs are about 7% of the investment cost. The estimated payback period is 5 years.

Task Focus

Task 43 – Biomass feedstocks for energy markets

Background

Task 43 addresses issues critical to mobilising sustainable bioenergy supply chains, including all aspects of feedstock production, its markets and environmental, social and economic impacts. The objective is to promote sound bioenergy development that is driven by well-informed decisions from land owners, businesses, governments and others based on solid scientific data produced in the Task activities. This is achieved by collecting, analysing, and sharing technical and non-technical information related to biomass feedstock supply and providing relevant actors with timely and topical analyses, syntheses and information. The Task takes global, regional and local approaches and includes commercial, near-commercial and promising feedstock production systems in agriculture and forestry. Task 43 has established several activities that address key questions of high relevance to the land use and energy sectors, and seeks new opportunities for collaboration with other Tasks as well as organisations outside IEA Bioenergy, while interacting with other research networks and programmes that have work plans in the same areas.

Our Work Program

Biomass production in agriculture and forestry will have to increase tremendously in order to provide feedstock for a bioenergy sector of a size reported by studies that model global energy system pathways towards meeting existing energy and climate targets. Task 43 will consequently investigate and communicate how dedicated biomass production systems can be expanded and how the required amount of biomass for energy can be sustainably produced. Activities within the Task will try to answer how the increasing demands for food, fibre and bioenergy can be met in the future. Studies integrating several disciplines will be conducted to analyse trade-offs, compatibility and synergies between food, fibre and energy production systems and the bio-economy. The Work Programme is organised in three Work Packages (WPs) that each include a set of activities interacting with each other (see Fig. 1). Research priorities in the WPs include:

- Landscape management and design for bioenergy and the bio-economy (WP1);
- Developing effective supply chains for sustainable bioenergy deployment (WP2);
- Governance of bioenergy supply chains (WP3)

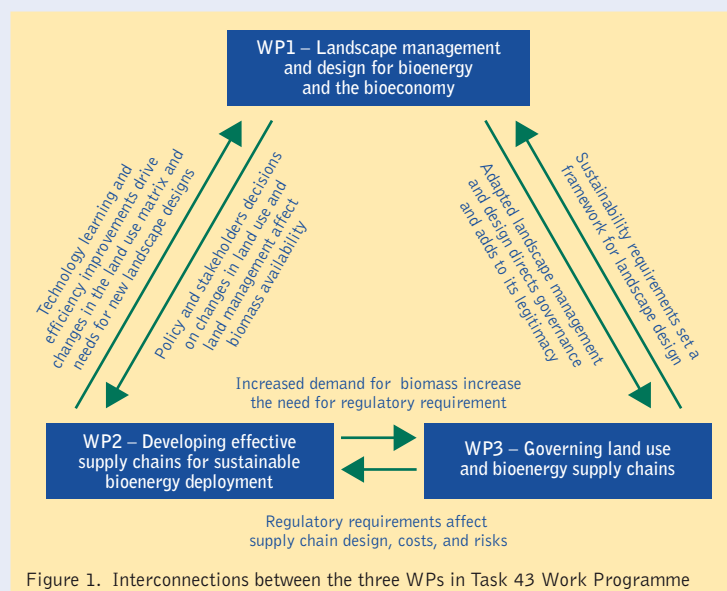


Figure 1. Interconnections between the three WPs in Task 43 Work Programme

A number of different deliverables will be produced within the different Task activities in the form of reports, policy briefs, webinars, workshops and meetings, and international events will be arranged to address key questions for the Task.

Additionally, Task 43 will participate in three of the IEA Bioenergy strategic Inter-task projects during the next three years collaborating with other Tasks:

- Bioenergy success stories (led by Task 40);
- Measuring, governing and gaining support for sustainable bioenergy supply chains (led by Task 40);
- Fuel pretreatment of biomass residues in the supply chain for thermal conversion (led by Task 32),

and will also contribute to the Exco report "Bioenergy in the Bioeconomy" together with several other Tasks and also organisations outside the IEA.

Activities during the previous triennium

The work of Task 43 in the previous triennium was developed around three key work areas:

- Land use and sustainable bioenergy feedstock supply systems;
- Assessment and certification of sustainability; and
- Socio-economic drivers in implementing sustainable bioenergy production and supply.

The Task engaged in the development and evaluation of methods and tools for sustainability assessment of bioenergy feedstock supply systems and provided expert advice and information concerning resources and techno-economic performance of biomass chains, and also information on performance in relation to sustainability criteria. Critical assessments of sustainability criteria and indicators, and influence of regulatory measures on conditions for rational forestry and agriculture operations represented important work. Additionally, major activities have taken place around the inter-Task project "Mobilisation of sustainable bioenergy supply chains".

The Task arranged fourteen events in the previous triennium, in collaboration with other Tasks and a range of other organisations and networks. Webinars, Task reports, books and publications in scientific journals contributed to strong outreach throughout the triennium. As an example of Task output, the book *Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes*, edited by Evelyn Thiffault and colleagues reports outcomes from the inter-Task project mentioned above. Detailed information on these outcomes can be found at www.ieabioenergytask43.org.



Current and planned activities in 2016

Building on the work that has been conducted during the previous years and in order to fulfil the objectives for the 2016-2018 period of Task 43, a number of activities have already been fulfilled and planned in the near future.

Workshop: Landscape management and design for food, bioenergy and the bioeconomy: methodology and governance aspects, 15-16 March, 2016, in Gothenburg, Sweden. This event was organised by Task 43 together with seven other national and international organisations and networks. The aim was to facilitate the sharing of views and experiences in methodologies and tools for assessing land-use impacts on biodiversity and ecosystems services, including an agenda for further advancement of science and knowledge in support of governance agreements on landscape management and design for food, bioenergy and the bioeconomy. An outcome publication is in preparation and follow-up activities are planned.

Webinar: Mobilising Sustainable Bioenergy Supply Chains

This webinar summarised the outcome of an inter-Task project addressing globally significant supply chains conducted by IEA Bioenergy inter-Task teams – boreal and temperate forests, agricultural crop residues, biogas, lignocellulosic crops, and biomass cultivated on previous grasslands and pastures. The project revealed that all globally significant bioenergy development has been underpinned by political backing, which is necessary for passing legislation in the form of mandates, renewable energy portfolios, carbon trading schemes, and the like. The mobilisation potential identified will depend on even greater policy support than achieved to date internationally. Webinar material and further information can be found at: <http://www.ieabioenergy.com/iea-publications/webinars/>. The final report from the inter-Task project can be downloaded at: <http://www.ieabioenergy.com/publications/mobilizing-sustainable-bioenergy-supply-chains/>.

Two webinars: Examples of Positive Bioenergy and Water Relationships

These webinars disseminate results from the work in GBEP – AG6 Bioenergy and Water, which is coordinated by Task 43 together with Task 40. The webinars highlight examples from Africa, Asia & the Pacific and Europe (1st webinar) and North and South America (2nd webinar). Webinar material and further information can be found at: www.globalbioenergy.org/programmeofwork/working-group-on-capacity-building-for-sustainable-bioenergy/activity-group-6/en/. A joint report was also published recently by IEA Bioenergy and GBEP, see www.ieabioenergy.com/publications/examples-of-positive-bioenergy-and-water-relationships/.

Study tour: Southeast United States Bioenergy Study Tour – 10-14 April, 2016

Oak Ridge National Laboratory hosted the tour, which highlighted innovations developed by the US Department of Energy (DOE) national laboratories, the US Department of Agriculture, industry, and others that support deployment of a sustainable bioeconomy. Participants included scientists from DOE, national laboratories, the IEA Bioenergy Tasks 38 and 43, universities, and industry as well as regional stakeholders such as landowners and nonprofit organisations. Seventy people attended the overview meeting, and 48 participants were on the 3-day bus tour that consisted of several stops and lectures that illustrated sustainability considerations associated with feedstock operations such as perennial grasses and woody residues as well as harvesting operations, logistics, and use of the materials for different purposes. The Tour facilitated communication concerning bioenergy crops in the US, with different places having unique land-use histories, regulations, and ways to implement good management practices. Participants learned how wood-based pellets for bioenergy can be produced in the SE US in a way that maintains or often enhances environmental conditions and keeps land in forests while displacing fossil fuels.

Workshop at the EUBCE-2016: The world needs more land-use change – 7 June, Amsterdam, the Netherlands

This event is organised by Task 43 together with GBEP, IRENA and ICRAF. This workshop highlights bioenergy as an opportunity to integrate new biomass production into landscapes to mitigate land use impacts and improve resource use efficiency and sustainability. Participants are invited to share experiences and views on how bioenergy production can be localised, designed and managed to support both provisioning and regulating ecosystem services to meet future demand for food, energy and materials, as well as nature conservation needs.

Workshop at the EUBCE-2016: Mobilisation of forest bioenergy: green dream or reality? – 7 June, Amsterdam, the Netherlands

This event is co-organised by IEA Bioenergy Task 43, the Tyndall Centre for Climate Change Research of University of Manchester (UK), and the Research Centre on Renewable Materials of Université Laval (Canada). Using the results of the IEA Bioenergy Intertask project on mobilisation of forest biomass as a canvas, the aim of this event is to discuss opportunities and challenges for forest bioenergy mobilisation in boreal and temperate biomes.

Task 43 workshop Vancouver (in conjunction with the next Task 43 business meeting):

A joint workshop organised by IEA Bioenergy Task 43 and the Forestry Task Force of BioFuelNet Canada (a Canadian research network on advanced biofuels) will be held on 22 September 2016 at the University of British Columbia. This event aims to bring together academics, students, experts, and industrial and community stakeholders from different countries to identify and discuss opportunities, challenges, best practices and knowledge gaps for mobilisation of forest biomass supply chains for the sustainable production of bioenergy, biofuels and bioproducts. The workshop will be built around presentations of case studies both by graduate students and experts from Canada and abroad, covering a range of geographic regions, feedstocks, end-products and maturity of project development, including cases developed by groups of students and a plenary discussion defining/highlighting the critical challenges, opportunities, and best practices.

This article was prepared by Ioannis Dimitriou.

For more information about Task 43 please visit the Task 43 website: www.ieabioenergytask43.org

Task 42 Biorefining in a future BioEconomy

Book published: Developing the Global BioEconomy

The book "Developing the Global BioEconomy" brings together expertise from three IEA Bioenergy Tasks – Task 34 on Pyrolysis, Task 40 on International Trade and Markets, and Task 42 on Biorefineries – to review and draw technical, market and environmental lessons from bioenergy to support the future deployment of a global BioEconomy. This book was recently published by Elsevier. <http://store.elsevier.com/Developing-the-Global-Bioeconomy/isbn-9780128051658/>

Task 39 Commercialising Conventional and Advanced Liquid Biofuels from Biomass

Recent Task 39 (liquid biofuels) participation in the ECO-BIO conference in Rotterdam (6-9 March 2016) and business meeting held in Delft, The Netherlands, 9/10 March 2016.

Task 39 participated in the ECO-BIO conference in Rotterdam on 6-9 March 2016, providing speakers for two dedicated sessions. The eight talks presented by Task 39 country representatives highlighted recent biofuel technology developments and commercialisation progress within their respective countries.

The Task 39 business meeting was held in Delft on 9 & 10 March 2016, directly following the ECO-BIO conference. This meeting was generously hosted by DSM, and Task 39 members were able to tour the DSM Pilot facilities at the end of the two day business meeting. During the meeting, country reports were presented, and then a discussion held on the current status of ongoing deliverables which include a study of advanced fuels in advanced engines, an updated report on the status of algal-based production, and a comparative assessment of leading LCA models. One of the great strengths and benefits of participating in an international network such as Task 39 is learning from each country's experiences. As has been the tradition within the Task, the meeting introduced a profile of what is going on in each member country in the general biofuels area. These country report presentations form the basis of one of the regular reports that compare-and-contrast the different approaches/policies that each country has used to encourage the development and use of biofuels. As detailed in each presentation (and the eventual report), this provides invaluable insights into the unique characteristics of each country and the latest developments in research, commercialisation and policy. The meeting also discussed other proposed new work such as updating the highly cited drop-in report, with an increased focus on aviation and marine biofuels.

Two guest speakers attended the Task 39 meeting, Misha Valk from SkyNRG and Sjors Geraedts from Goodfuels Marine. They described the work their two companies are doing to promote increased use of biofuels within the aviation and marine transport sectors, respectively.

Task 38 – Climate Change Effects of Biomass and Bioenergy Systems

Study Tour

Oak Ridge National Laboratory hosted a Bioenergy Study Tour in the Southeastern United States from April 10 to 14, 2016, in which Task 38 participated. This Study Tour highlighted innovations developed by the US Department of Energy (DOE) national laboratories that support deployment of a sustainable bioeconomy. The goal of the Tour was to have participants develop a better understanding of bioenergy systems in the southeastern United States. The Tour illustrated work supported by the DOE Bioenergy Technologies Office (BETO), the US Department of Agriculture, industry, and others. The Tour began with a one-day overview on April 11 and then consisted of a bus excursion with several stops, lectures and videos that illustrated sustainability considerations associated with feedstock operations such as perennial grasses and woody residues as well as harvesting operations, logistics, and use of the materials for different purposes.

On Thursday, 14th April 2016, IEA Bioenergy Task 38 met with Task 43 in Savannah (Georgia), where the following topics were discussed:

- The USA vision for the Bioeconomy
- Planning for the inter-task sustainability project "Measuring, governing and gaining support for sustainable bioenergy supply chains"
- An update on status for joint projects on albedo and decomposition: Nominations for reviewers
- A discussion on proposed joint Task 38/43 activities

In the afternoon of the 14th and on Friday, 15th April 2016, Task 38 held an internal meeting. At the meeting, attendees presented and discussed:

- The progress of work on metrics for quantifying climate change effects and choosing the reference system, towards completing papers for submission for publication
- The Bio-CCUS special project
- Updates on significant developments of relevance to Task 38 members and recent publications on the climate impacts of bioenergy
- Research updates from Task 38 members
- A comparison of decomposition models
- Planning for new work
- Member updates on significant policy developments

Task 36 – Integrating Energy Recovery into Solid Waste Management

New Report: Small scale Energy-from-Waste (EfW) – Drivers and Barriers

During the last triennium Task 36 worked on an update of a previous Task report on small scale EfW that was published in 2004. Since the technology has not changed markedly the decision was made to focus the new report on drivers and barriers rather than technology. The report is based on case studies in France, Sweden, and the United Kingdom. The report shows that despite clear disadvantages regarding economics of scale, there are still other aspects like better public acceptance, geographic location, the wish for local treatment of the waste, and security of supply that will create incentives for the small scale solutions.

The full report can be downloaded from here

<http://www.ieabioenergytask36.org/vbulletin/showthread.php?46-An-Assessment-of-the-Export-of-Municipal-Solid-Waste-from-the-UK-as-RDF&p=46#post46>

The earlier report with a focus on technology can be found at

http://www.ieabioenergytask36.org/Publications/2001-2003/Publications/Review_of_Small_Scale_Waste_Conversion_Systems.pdf

First workshop of the triennium: "Towards a sustainable waste management"

Task 36 arranged a workshop at the Malagrotta waste recovery plant in Rome on the 17th of May, 2016. The workshop was arranged together with ATIA ISWA Italia (<http://www.atiaiswa.it>) and RSE. The workshop gave an overview of the role of waste to energy and mechanical biological treatment (MBT) in Italy, Germany and France. There are large geographical differences in Italy when considering both aspects such as source separation, landfill usage, and the amount of waste being treated in waste to energy plants. While the northern parts of Italy have a higher degree of source separation and energy recovery from waste, the southern parts rely more on landfill. The production of Solid Recovered Fuel (SRF) for energy use is also predominantly present in central and northern parts of Italy. Italy would also need additional waste to energy capacity to reach the targets set by EU on landfilling.

In Germany, on the other hand, there has not been any new capacity for WtE and MBT built since 2009, but the use of landfill for municipal solid waste has been more or less eliminated.

In France the current focus is to improve the efficiency in the existing WtE plants with no new plants being built. The trend is also against MBT since there have been some negative experiences in using that method and the organic fraction being produced have ended up in landfill.

The workshop also included a guided tour of the waste recovery plant (2 MBT lines and a gasifier that has been closed down). The plant has a separate walkway around the MBT accompanied by informational displays to facilitate visitors.



Malagrotta Waste Recovery Plant

Publications



State of the art in sustainable biomass recovery technology/supply chain in forest operations

This IEA Bioenergy Task 43 report provides an overview of most efficient biomass harvesting technologies and supply chains applied in North America, Europe and Oceania. The productivity and cost of selected efficient technologies have been presented for each country with a brief description of source of the biomass and working method. Experts' opinions on the most successful biomass operations have also been stated briefly for each country. The main conclusions from various international studies have been provided at the end of the report in addition to future requirements for research and development in biomass harvesting operations. The information provided in this report can be a useful guide to industry and academic users. This publication can be downloaded from

<http://www.ieabioenergytask43.org/wp-content/uploads/2016/05/IEA-Bioenergy-Task-43-TR2016-02i.pdf>

Possible effects of torrefaction on biomass trade

Low-cost preconditioning technologies that can convert and modify different sources of solid biomass into a specification-driven bioenergy feedstock with similar or even better characteristics compared to coal could greatly enhance trade and usage of biomass in the existing transportation and conversion infrastructure. A mild pyrolysis process called torrefaction is on the verge of commercialisation, as the technology seems to have left the 'valley of death'. Current development leaves little doubt that this technology will find its way into the biomass-to-energy value chain in the next few years. This IEA Bioenergy Task 40 study focuses on the possible effects torrefaction may have on future international biomass trade. This publication can be downloaded from <http://www.bioenergytrade.org/downloads/t40-torrefaction-2016.pdf>



IEA Bioenergy Annual Report 2015

The IEA Bioenergy Annual Report 2015 includes a special feature article 'Energy, Fuels and Fertiliser from Biogas' prepared by Task 37. The Annual Report also includes a report from the Executive Committee and a detailed progress report on each of the Tasks. Also included is key information such as Task participation, Contracting Parties, budget tables and substantial contact information plus lists of reports and papers produced by the Technology Collaboration Programme. This publication can be downloaded from <http://www.ieabioenergy.com/wp-content/uploads/2016/03/IEA-Bioenergy-Annual-Report-2015.pdf>

The contribution of Danish forestry to increase wood production and offset climate change 2010-2100

This IEA Bioenergy Task 43 technical report shows that it is possible to increase the productivity of the Danish forests considerably and provide a significant contribution to Danish energy targets of achieving a 100% supply of energy from sustainable sources in 2050 as well as to the reduction of Danish CO₂ emissions. The potential for provision of these services from Danish forests is probably bigger than generally acknowledged given the fact that Denmark is a low forest cover country. This publication can be downloaded from <http://www.ieabioenergytask43.org/wp-content/uploads/2016/03/IEA-Bioenergy-Task-43-TR2016-011.pdf>



The status of large scale biomass firing

This IEA Bioenergy Task 32 report provides an overview of the current status of biomass cofiring. The report shows that the firing and co-firing of biomass as a replacement for coal in large pulverised coal boilers can be a very attractive option for the utilisation of biomass materials for power production, and for the delivery of renewable energy. This publication can be downloaded from http://www.ieabcc.nl/publications/IEA_Bioenergy_T32_cofiring_2016.pdf

Examples of Positive Bioenergy and Water Relationships

This report, which is the product of the GBEP/IEA Bioenergy collaboration includes examples that illustrate an encouraging variety both in terms of bioenergy systems and geographical distribution, and shows how solutions can be found that produce bioenergy while contributing positively to the state of water. These experiences are also meant to serve as sources of inspiration that other bioenergy producers can use to enhance the sustainability of their own activities. This publication can be downloaded from http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2015_events/AG6_workshop_25-26_August_2015/AG6_Examples_of_Positive_Bioenergy_and_Water_Relationships_Final.pdf



Status overview of torrefaction technologies

This IEA Bioenergy Task 32 publication provides an update of the status of commercialisation of biomass torrefaction. It contains both a review of recent research efforts and an overview of the progress made in commercialisation of the technology. This publication can be downloaded from http://www.ieabcc.nl/publications/IEA_Bioenergy_T32_Torrefaction_update_2015b.pdf

Mobilizing Sustainable Bioenergy Supply Chains

This report summarises the results of an IEA Bioenergy inter-Task project involving collaborators from Tasks 37 (Energy from Biogas), 38 (Climate Change Effects of Biomass and Bioenergy Systems), 39 (Commercialising Conventional and Advanced Liquid Biofuels from Biomass), 40 (Sustainable International Bioenergy Trade: Securing Supply and Demand), 42 (Biorefining – Sustainable Processing of Biomass into a Spectrum of Marketable Bio-based Products and Bioenergy), and 43 (Biomass Feedstocks for Energy Markets). The purpose of the collaboration has been to analyse prospects for large-scale mobilisation of major bioenergy resources through five case studies that determine the factors critical to their sustainable mobilisation. This publication can be downloaded from <http://www.ieabioenergy.com/publications/mobilizing-sustainable-bioenergy-supply-chains/>



ExCo74 – Bioenergy: land use and mitigating iLUC

This publication provides the summary and conclusions from the workshop 'Bioenergy: Land use and mitigating iLUC' held in conjunction with the meeting of the Executive Committee of IEA Bioenergy in Brussels, Belgium on 23 October 2014. The purpose of the workshop was to provide the Executive Committee with an overview of the issue of land use and mitigating iLUC. The aim was to stimulate discussion between the Executive Committee, Task Leaders, invited experts and various stakeholders and thereby enhance the policy-oriented work within IEA Bioenergy. This publication can be downloaded from <http://www.ieabioenergy.com/publications/exco74-bioenergy-land-use-and-mitigating-iluc-summary-and-conclusions-01-10-15/>

IEA Bioenergy Strategic Plan 2015-2020 – Brochure

This brochure presents an outline of the IEA Bioenergy Strategic Plan for the period 1st March 2015 to the 28th February 2020. The Plan recognises the dynamic environment in which bioenergy is being developed including such factors as the transition to a low-carbon, energy secure economy; the growing demand for food, feed and fibre to meet the needs of an increasing world population; and the emerging bio-based economy, producing a broad range of products from biomass to replace those derived from conventional fossil raw materials. The Plan emphasises the optimisation of the economic, environmental and social value of sustainable bioenergy. <http://www.ieabioenergy.com/wp-content/uploads/2014/12/IEA-Bioenergy-Strategic-Plan-2015-2020-Brochure.pdf>



IEA Bioenergy Events

| Executive Committee | Task Events | |
|---|---|---|
| <p>ExCo78 will be held in Rotorua, New Zealand, 9-11 November 2016</p> <p>ExCo79 will be held in Göteborg, Sweden on 16-18 May 2017</p> | <p>Task 32's schedule of upcoming events is</p> <p>Task 32 meeting and field trip; 4-6 October 2016, Maniwa, Japan</p> <p>Task 33's schedule of upcoming events is</p> <p>Task 33 meeting; 25-27 October 2016, Luzern, Switzerland</p> <p>Task 36's schedule of upcoming events is</p> <p>Task 36 workshop on the role of energy and smart waste management in the Circular economy, Dec 2016/Jan 2017, Paris, France</p> <p>Task 39's schedule of upcoming events is</p> <p>Task 39 business meeting in conjunction with ExCo78; 8-9 November 2016, Rotorua, New Zealand.</p> <p>The Task will also participate in the associated ExCo78 workshop focussed on Aviation and Marine Biofuels (10 Nov, 2016) as well as in the Bioenergy Australia conference in Brisbane, Australia (15-16 November 2016).</p> | <p>Task 42's schedule of upcoming events is</p> <p>21th Task42 Progress Meeting: Brisbane, Australia, coupled to the Bioenergy Australia 2016 Conference 14-16 November 2016.</p> <p>22th Task42 Progress Meeting: Gothenburg, Sweden, coupled to ExCo79 and a Thematic Stakeholder Workshop in co-operation with IEA-IETS on Industrial Biorefineries, May 2017</p> <p>Thematic Stakeholder Workshop together with FAO on Sustainable Biomass for Food AND Non-Food, date and place to be specified (2017/2018)</p> |

Other Events

UK AD & Biogas 2016

Date: 6th July, 2016 - 7th July, 2016
Location: Birmingham, UK
Email: enquiries@adbioresearch.org
Website: <http://adbioresearch.org/uk-ad-biogas-2016>

Microalgae Process Design

Date: 8th July, 2016 - 15th July, 2016
Location: Wageningen, NL
Website: <http://www.vlaggraduateschool.nl/courses/algae-design.htm>

Microalgae Biorefinery

Date: 18th July, 2016 - 20th July, 2016
Location: Wageningen, NL
Website: <http://www.vlaggraduateschool.nl/courses/algae-biorefinery.htm>

2nd Industrial Biotechnology and Bioeconomy Congress

Theme: Future prospects for Industrial Biotechnology and Economic Growth
Date: 28th July, 2016 - 29th July, 2016
Location: Berlin, Germany
Website: <http://industrialbiotechnology.conference.blogspot.ie>

International BioBased Economy Student Symposium

Date: 29th August, 2016 - 31st August, 2016
Location: Wageningen, NL
Website: <http://www.wageningenur.nl/en/activity/IBBESS-Conference.htm>

Biofuels International 2016 - 9th Biofuels International Conference

Date: 21st September, 2016 - 22nd September, 2016
Location: Ghent, Belgium
Contact: Tracy Whitehead
Email: tracy@biofuels-news.com
Website: <http://biofuels-news.com/conference/>

Italian Forum on Industrial Biotechnology and Bioeconomy

Date: 22nd September, 2016 - 23rd September, 2016
Location: Vicenza, Italy
Website: <https://www.b2match.eu/ifib2016>

Nordic Seaweed Conference 2016

Date: 12th October, 2016 - 13th October, 2016
Location: Grenaa, Denmark
Website: <http://www.algacenterdanmark.dk/conferences/nordic-seaweed-conference-2016.aspx>

5th International Conference on Biomass Energy & Exhibition (ICBE 2016)

Date: 16th Oct, 2016 - 19th Oct, 2016
Location: Beijing National Convention Center, Beijing, China
Contact: Shi Yi Wang
Email: cfbwsy@zju.edu.cn

The European Forum for Industrial Biotechnology and the Bioeconomy

Date: 18th October, 2016 - 20th October, 2016
Location: Glasgow, Scotland
Website: <http://www.efibforum.com/>

7th BioMarine International Business Convention

Date: 19th October, 2016 - 21st October, 2016
Location: Oslo, Norway
Contact: Veronique Erwes
Email: veronique.erwes@biomarine.org
Website: <http://www.biomarine.org/oslo2016/>

7th Carbon Dioxide Utilisation Summit

Date: 19th October, 2016 - 20th October, 2016
Location: Lyons - France
Website: <http://www.wplgroup.com/aci/event/co2/>

9th International Seminar on Gasification

Date: 19th October, 2016 - 20th October, 2016
Location: Malmö, Sweden
Contact: Kerstin Hoyer
Email: kerstin.hoyer@energiforsk.se
Website: <http://www.energiforsk.se/konferenser/international-seminar-on-gasification/>

RENEXPO® Poland

Date: 19th October, 2016 - 21st October, 2016
Location: Warsaw, Poland
Contact: Małgorzata Bartkowska
Email: bartkowska@reeco.eu
Website: <http://www.renxpo-warsaw.com/index.php?id=7&L=1>

American Institute of Chemical Engineers 2016 Annual Meeting

Date: 13th November, 2016 - 18th November, 2016
Location: San Francisco, CA, USA
Website: <http://www.aiche.org/conferences/aiche-annual-meeting/2016>

2nd International Conference on Green Energy and Expo

Date: 28th November, 2016 - 30th November, 2016
Location: Atlanta, Georgia, USA
Contact: Linda Baker
Email: greenenergy@conferenceseries.net
Website: <http://greenergy.conferenceseries.com/>

Bioenergy Australia Conference 2016

Date: 14th November - 16th November 2016
Location: Brisbane, Australia
Email: bioenergyconf@theassociationspecialists.com.au
Website: <http://www.bioenergyaustralia.org/pages/bioenergy-australia-conference-2016.html>

5th Conference on Carbon Dioxide as Feedstock for Fuels, Chemistry and Polymers

Date: 6th December, 2016 - 7th December, 2016
Location: Maternushaus, Cologne, Germany
Contact: Dipl.-Geogr. Dominik Vogt
Email: dominik.vogt@nova-institut.de
Website: <http://co2-chemistry.eu/home>

AlgaEurope

Date: 13th December, 2016 - 15th December, 2016
Location: Madrid Spain
Contact: p.hoftijzer@dlg.org
Website: <http://algaeurope.org>

ICBB 2016: 18th International Conference on Biofuels and Bioenergy

Date: 29th December, 2016 - 30th December, 2016
Location: Paris, France
Website: <https://www.waset.org/conference/2016/12/paris/ICBB/home>

5th Central European Biomass Conference

Date: 18th January, 2017 - 20th January, 2017
Location: Graz, Austria
Website: <http://www.cebc.at/en/home/>

Biobased World

Date: 15th February, 2017 - 16th February, 2017
Location: Cologne, Germany
Website: <http://www.biobasedworld.de/de/home.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: Direct Thermochemical Liquefaction

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Task 36: Integrating Energy Recovery into Solid Waste Management Systems

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Task 38: Climate Change Effects of Biomass and Bioenergy Systems

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Task 39: Commercialising Conventional and Advanced Liquid Biofuels from Biomass

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Task 40: Sustainable Biomass Markets and International Bioenergy Trade to support the biobased economy

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Task 42: Biorefining in a future BioEconomy

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Task 43: Biomass Feedstocks for Energy Markets

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