



Berlin



Bioenergy in Germany

Guest editorial by Birger Kerckow, ExCo Member for Germany

Renewable energies are on the rise in Germany. By 2014, 11.3% of primary energy demand was supplied from renewables. Overall two thirds of the contribution of renewable energies are bioenergy. This translates into 30.6% of renewable electricity production, 87% of renewable heat provision and nearly 100% of renewable energy in transport. In 2014, bioenergy contributed 38,160 GWh of electricity, provided by, among others, 7,800 biogas plants. Biogas was upgraded to 1,347 GWh of biomethane in 170 plants. Also in 2014, 241,500 pellet boilers were in use and more than 3.6 million tons of biofuels were consumed in the German market.

How has this been achieved? The answer is through a combination of a supportive regulatory framework and extensive funding of research, development and innovation. The Renewable Electricity Act (EEG), guaranteeing prices for renewable electricity over 20 years, has provided investors with long term investment security and set an example for many countries in the world. Biofuels have benefitted from an energy quota, which has been replaced by a greenhouse gas reduction quota in early 2015, thus rewarding the most sustainable biofuels. The heat sector has seen investment aids and/or cheap loans to trigger market roll out. Bioenergy R&D has been funded generously by the federal government. Since 1992, the Federal Ministry of Food and Agriculture has the lead for federal R&D funding of renewable biological resources. The two current programmes with a budget of €83 million in 2015 are implemented by the Agency for Renewable Resources, FNR. There is no fixed budgetary share for bioenergy research, which amounts to €25-30 million per year. In addition, since 2008 initially the Ministry of Environment and then, since 2014, the Ministry for Economy and Energy have been funding the programme "Biomass Energy Use". The budget in 2015 amounts to €6 million. Other ministries and the German States are further sources of public funding of R&D. In many cases market development and R&D funding developed hand in hand. The biogas sector is a good example for this, where R&D helped in understanding the "black box" of microbial fermentation processes. For other sectors the approach is more a technology pull- bioliq, upscaling the thermochemical conversion of straw to advanced biofuels, is a lighthouse project in this respect.

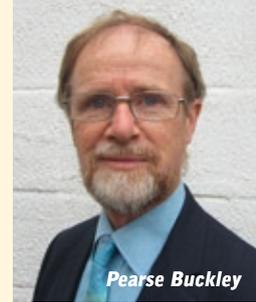
So is the future looking bright for bioenergy in Germany? Unfortunately not. Variable contributions of renewables pose a challenge to the German energy system. Wind and PV can secure more than two thirds of Germany's electricity demand on a windy summer day; however provision can be close to zero on a calm and misty day in autumn. Public perception of renewable energies has become rather negative recently. Criticisms relate to the high costs of the EEG, the food versus fuel debate, the impact of windmills on the landscape ("Verspargelung") as well as the expansion of corn cultivation ("Vermaisung") to feed biogas plants. Policy has reacted to this. EEG guaranteed prices have been cut heavily with the 2014 revision, and biogas plant construction has slowed down drastically. Biofuels are under pressure from the latest EU legislation putting limits on conventional biofuels, and stricter emission limits for biomass boilers pose a technical challenge for manufacturers. At the same time biomass will have to play a key role to achieve the German energy and climate targets for 2030 and 2050. The priorities of the BMEL/FNR funding programmes have been revised in 2015 to reflect these new challenges. Energy crop R&D is one key area to increase and diversify biomass production. The integration of bioenergy and other renewable energies, using bioenergy to balance variable contributions, is another focus. Signals are positive that bioenergy can continue to have a key role in Germany's transition to a sustainable, low carbon energy system.

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From the Secretariat

ExCo76, Berlin, Germany



Pearse Buckley

The 76th meeting of the Executive Committee was held in the Ramada Hotel Berlin-Alexanderplatz, Berlin, Germany on the 26th October 2015, with Kees Kwant as Chair, Sandra Hermle as Vice-chair and Pearse Buckley as Secretary. The meeting was hosted by Fachagentur Nachwachsende Rohstoffe e.V. (FNR). The Chair expressed the appreciation of the ExCo to Kerckow and his colleagues for the excellent meeting arrangements. Some of the outcomes of the meeting are detailed below.

Changes to Executive Committee

A new Alternate Member for France is Ms Elisabeth Poncelet; a new Member for Ireland is Mr Matthew Clancy and new Alternate Member is Mr Shay Kavanagh.

Election of Chair and Vice-chair

Kees Kwant of The Netherlands was re-elected Chair and Sandra Hermle of Switzerland was re-elected Vice-chair for 2016.

New Technical Coordinator

Following a call for applications and presentations from a number of candidates, the Executive Committee appointed Luc Pelkmans as the new Technical Coordinator, commencing on the 1st January 2016.

Work programme for new triennium 2016-2018

At ExCo76 the Task Leaders presented their new programmes of work for the triennium 2016-2018. There was a significant level of inter-Task collaboration evident in the proposals. All of the Tasks were given approval for the new triennium. The ExCo also considered two proposals under the Task 41 format and four proposals for special projects. With some additional amendments, it is expected that five of these will be approved early in 2016.

Progress with current Initiatives

Mobilising Sustainable Bioenergy Supply Chains

The final report of the strategic project Mobilising Sustainable Bioenergy Supply Chains was launched at the IEA Bioenergy Conference 2015 and is available for download from: <http://www.ieabioenergy.com/wp-content/uploads/2015/11/IEA-Bioenergy-inter-task-project-synthesis-report-mobilizing-sustainable-bioenergy-supply-chains-28ot2015.pdf>.

Algae review

The report is nearing completion and expected in the 1st quarter of 2016. Preliminary findings suggest that macro-algae production will continue to grow, primarily for human nutrition and specialty chemicals. Micro-algae production systems will move from pilot to profitable commercial enterprises over the next five years. However, significant production of algal biofuels are unlikely in the near term.

Communication Strategy

The Executive Committee approved a proposal for external support for communications and social media marketing. The work, which will take place from the 1st January 2016 to the 31st May 2016, will focus on expanding the reach of the IEA Bioenergy Twitter account and on developing a series of webinars based on the work of the Agreement.

Cooperation with International Organisations

GBEP

The collaborative project with GBEP on bioenergy and water held a very successful workshop in Stockholm in August. An expert group had been established and, following a call for positive examples, twenty submissions were approved and were included in the workshop. A joint report will be published in the near future. Active discussions are taking place on further collaborative work.

IRENA

Collaboration between IEA Bioenergy and IRENA continues to develop, with complementary actions including review of documents prior to publication. Jeffrey Skeer of IRENA attended the ExCo76 meeting and gave a presentation. He noted the very positive alignment of viewpoints between the two organisations. His presentation included global cost curves for primary bioenergy supply. He noted that Irena were preparing a biofuels brochure.

SE4ALL

The Chair advised the ExCo that IEA Bioenergy had signed a memorandum on the SE4ALL High Impact Opportunities (HIO) initiative, which also involved RSB, FAO, KLM and Novozymes.

End of Triennium Conference 2015

In the context of the COP21 meeting in Paris starting on the 30th of November 2015, the IEA Bioenergy Conference 2015 had as its focus 'Realising the world's sustainable bioenergy potential'. Some of the conclusions from the conference are as follows:

1. The status of bioenergy can be characterised as
 - a. being the largest global renewable energy contributor today
 - b. requiring a tripling of its contribution to global energy supply by 2050 to avoid exceeding the 2°C target according to scenarios from both the IEA and IRENA
 - c. generating some controversy regarding its sustainability



Christian Schmidt, German Federal Minister of Food and Agriculture and Kees Kwant, Chair of IEA Bioenergy



Delegates at IEA Bioenergy Conference 2015

2. Bioenergy has a crucial role amongst the renewable sources of energy where
 - a. it can provide renewable energy storage or power on demand in harmony with intermittent renewable sources
 - b. it can provide efficient renewable heating supply
 - c. it can uniquely meet renewable transport fuels needs – the heavy duty vehicles, marine and aviation sectors in particular
3. A significant increase in the sustainable biomass resource can be realised, as evidenced by IEA Bioenergy analysis which highlighted
 - a. the potential for efficient mobilisation of more biomass with appropriate governmental support and societal change
 - b. use of biomass in an integrated way in the bio-economy for both products and energy while optimising the value of the resource
 - c. use of biomass in the circular economy where waste is transformed into a resource
4. Bioenergy can deliver substantial greenhouse gas (GHG) emission reductions when implementation is carried out in an integrated way through
 - a. planting more biomass resulting in increased carbon uptake
 - b. exploiting biomass in sustainably managed systems (in forestry and agriculture)
 - c. increased investment in integrated landscape management to improve productivity and mitigate climate change
5. To realise increased sustainable bioenergy deployment good practices and examples exist. In Sweden, for example, increased forest area coupled with sustainable forest management has resulted in increased bioenergy deployment and reduced carbon emissions. Factors which have been vital to increased sustainable bioenergy deployment included
 - a. a stable, medium to long term policy environment
 - b. mobilisation of market forces through the creation of an enabling environment
 - c. an enabling environment for biobased energy and products through
 - i. consumer choice resulting in market pull for biobased products
 - ii. regulatory action through a carbon tax on fossil fuel based products

All of the conference proceedings can be downloaded from: <https://ieabioenergy2015.org/proceedings/>



ExCo76 Study Tour Group at Feldheim energy self-sufficient village

Tour 1: Excursion: The energy self-sufficient village of Feldheim

Sixteen international participants from around the world took part in the excursion to the bioenergy village of Feldheim. The group was given a presentation on the concept of the energy self-sufficient village, which included a wind farm, battery storage yet to be activated, a biogas plant and a woodchip fuelled district heating network. The project owes its success to the excellent partnership between the municipality of Treuenbrietzen, the inhabitants of Feldheim and the project developer Energiequelle GmbH. Questions from the participants centred on the development of cooperatives and their profitability, as well as on technical issues relating to renewable energy systems.

Tour 2: Verbio Ethanol Plant in Schwedt

The tour of the bioethanol and biomethane plant in Schwedt included twenty participants. The feedstocks for ethanol and methane production in the plant are collected from farmers or regional traders within a radius of about 150km. Due to the prevailing site conditions with mostly light soils, regular droughts and risk of frost, rye is one of the main cash crops in the region. After producing the ethanol, the distillers dried grains with solubles (DDGS) is used to produce biogas and organic fertilisers at the Verbio biorefinery. The biomethane plant is currently a demonstration plant. In a final stage envisaged for 2019, 40.000 tons of straw will be processed per year achieving a capacity of 16.5 megawatts. VERBIO Group also has currently the largest truck fleet with dual fuel technology in Germany.

Tour 3: Municipal wood-fired CHP plant in Berlin-Neukölln/ Gropiusstadt

Thirteen international participants toured the 20 MWe / 66 MWth wood-fired combined heat and power (CHP) plant, which was built in 2003 and can accept input ranging from fresh wood to very contaminated wood. The feedstock is shipped in by barge from a wide geographical area. The plant is heat driven and, through a 135 km heating network, supplies 50,000 households, commercial property and public facilities with thermal energy in an eco-friendly manner. The use of wood reduces the annual release of CO₂ by approx. 235,000 tonnes compared to previous coal combustion. The wood-fired CHP plant is thus making a major contribution to climate protection.

Tour 4: Waste to Energy Plant and Biogas Plant in Ruhleben

BSR is the largest municipal waste management company in Germany. It manages Berlin's municipal waste for 3.5 million people. In Ruhleben, in the neighbourhood of Berlin, BSR operates a waste incineration plant and a biogas plant for household waste. More than 2.3 tonnes of high-pressure steam is generated in the combustion of a tonne of waste. The steam is used for electricity generation and at the same time to supply the district heating network. The biogas plant, which started operating in 2013, handles 60,000 tons of municipal bio-waste per year in a dry fermentation process. Biogas is upgraded to biomethane and is injected into the municipal gas grid and is also used to fuel BSR's waste trucks – 50 % of the fleet is fueled in this manner. The utilisation of biomethane displaces 2.5 million litres of transport diesel with a reduction of 12,000 tonnes of CO₂ emissions.

Task Focus

IEA Bioenergy Task 42 – Biorefining in a Future BioEconomy

Overview of Task 42

Biorefining is the optimal way for large-scale sustainable use of biomass in the BioEconomy. By accelerating the sustainable production and use of biomass, particularly in a biorefinery approach, the socio-economic and environmental impacts will be optimized resulting in more cost-competitive production of food and feed ingredients, biobased products (chemicals, materials) and bioenergy (fuels, power, heat), reduced greenhouse gas emissions, and efficient use of available resources (raw materials, minerals, water).



The aim of Task 42 is to facilitate the commercialisation and market deployment of environmentally sound, socially acceptable, and cost-competitive biorefinery systems and technologies, and to advise policy and industrial decision makers accordingly. Task 42 provides an international platform for collaboration and information exchange between industry, small and medium enterprises (SMEs), governmental organisations (GOs), non-governmental organisations (NGOs), research and technology organisations (RTOs) and universities concerning biorefinery research, development, demonstration, and policy analysis. This includes the development of networks, dissemination of information, and provision of science-based technology analysis, as well as support and advice to policy makers, involvement of industry, and encouragement of membership by countries with a strong biorefinery infrastructure and appropriate policies. Gaps and barriers to deployment are addressed to successfully promote sustainable biorefinery systems market implementation.

(Country) Reports

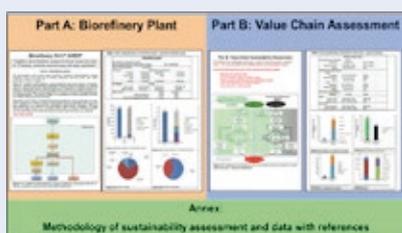
In recent years the following countries were participants of Task 42: Austria (AT), Australia (AUS), Canada (CAN), Denmark (DEN), France (FRA), Germany (GER), Ireland (IRE), Italy (IT), Japan (JAP), Netherlands (NL), New Zealand (NZ), Turkey (TUR) the United Kingdom (UK) and the USA (US). All have prepared Country Reports describing: overall (bio)energy production and use; biomass use for non-energetic applications; mapping of biorefineries, incl. commercial facilities, demonstration and pilot plants, major R&D projects and regional initiatives; Bio(based) Economy strategies; policy goals and instruments, and major national stakeholders (industry, SMEs, GOs, NGOs, RTOs, UNIs). These Country Reports are updated every three years.

Recent reports (and papers) that have been published are:

- Assessing Biorefineries Using Wood for the BioEconomy – Current Status and Future Perspective of IEA Bioenergy Task 42 “Biorefining”, G. Jungmeier (AT) et al.
- The role of industry in a transition towards the BioEconomy in relation to biorefinery, H. Jørgensen (DEN) et al.
- National BioEconomy Strategies IEA Bioenergy Implementing Agreement Countries, M. Beermann & G. Jungmeier (AT) / V. Pignatelli & M. Monni (IT) / R. van Ree (NL)
- Biorefinery Concepts in Comparison to Petrochemical Refineries, Ed de Jong (NL) & Gerfried Jungmeier (AT)
- Reducing volatility and financial risk and increasing returns by producing co-products in a lignocellulosic bio-refinery, Geoff Bell (AUS)
- Country Report Canada 2015, Maria Wellisch (CAN)

All reports can be downloaded from the Task 42 website.

Biorefinery Fact Sheets



Biorefinery Fact Sheet (BFS) set-up

While biorefining is considered to be very promising for the sustainable valorisation of biomass into food and feed ingredients, industrial biobased products and bioenergy, the integrated biorefinery processes often are difficult to understand. The technologies involved can be very complicated, and data on their technical, socio-economic and ecological performance are mostly very difficult to find. To facilitate biorefinery deployment, Task 42 developed a Biorefinery Fact Sheet methodology to provide a uniform description of the key



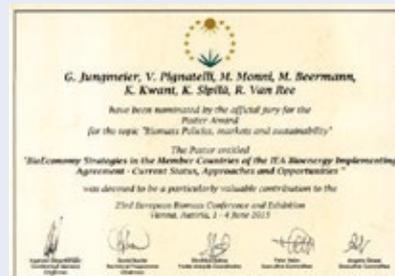
Task42 Visit to biorefinery facility MATRICA in Porto Torres (Sardinia), Italy

facts & figures of different biorefineries. Based on a technical description, classification scheme, mass and energy balance, and indicative investment and O&M costs, the three dimensions of sustainability are assessed and documented in a compact form, i.e. the Biorefinery Fact Sheet (BFS). The BFS consists of three parts. In Part A “Biorefinery plant” the key characteristics of the biorefinery facility are described by giving compact information on: description of the biorefinery, classification system, mass and energy balance, costs and revenues. In Part B “Value chain assessment” the sustainability assessment is described by giving compact information on: system boundaries, reference-system, cumulated primary energy demand, greenhouse gas emissions, and costs and revenues. In the Annex the methodology of – and data used in – the sustainability assessment are documented.

By the end of this year about 15 completed BFSs can be found for downloading at the Task 42 website. Task 42 is always looking for candidate biorefineries to prepare new BFSs, and the website offers the opportunity to build a BFS for your own biorefinery facility/concept (data-input-form available for downloading). If you are interested to do so, please get in direct contact with the Austrian Task 42 partner (Gerfried Jungmeier: gerfried.jungmeier@joanneum.at) for further advice on how to proceed.

Biorefining driving the Bio(based) Economy

Biorefining is the base for sustainable biomass use for the synergistic production of Food and Non-food within the BioEconomy. At the request of Executive Committee of IEA Bioenergy, Task 42 made an assessment of the National BioEconomy Strategies in IEA Bioenergy Implementing Agreement Countries. A poster based on the results of this work was presented at 23rd European Biomass Conference and Exhibition in Vienna, Austria, and was nominated for the Poster Award within the topic Biomass Policies, Markets and Sustainability.



Linked to this, Task 42 delivered a questionnaire-based assessment concerning the Role of Industry in a Transition Towards the BioEconomy in Relation to Biorefinery. The results of both assessments, and the prize winning poster, can be found for downloading at the Task 42 website.

Workshops and Conferences

Since its inception 9 years ago, Task 42 has organised 30-40 stakeholder meetings, excursions and workshops in the partnering countries. Task 42 also contributed to training activities for students, policy makers, industry/SMEs, and RTOs to acquire experience with the biorefining approach.

Most recently Task 42 organised the workshop “The Role of Biorefining in the BioEconomy” as part of the Global BioEconomy Summit 2015, in Berlin, Germany, 25-26 November 2015. A report of this event is available for downloading at the Task 42 website.

Work Programme 2016 - 2018

In the next triennium the work programme will be focused on 4 activity areas:

- Biorefinery Systems – Analysis and assessment of biorefining in the whole value chain
- Product Quality – Reporting on related biobased products/ bioenergy standardisation, certification and policy activities
- Evolving BioEconomy – Analysing and advising on perspectives of biorefining in a Circular BioEconomy
- Communication, Dissemination & Training – Knowledge exchange by stakeholder consultation, reporting and lecturing

Major deliverables will be:

- Biorefinery Fact Sheets (BFSs) – extended format with added qualitative description (other than GHG-emission reduction) sustainability aspects
- Biorefinery Expert System – based on BFSs and linked to the data-base developed by BioEnergy2020+
- Reports on Biobased Chemicals, (Fibrous) Materials and Proteins for Food, Feed and Technical Applications
- Country Reports
- Task 42 Brochure
- Thematic Stakeholder Workshops together with IEA IETS IA, FAO and OECD
- Conference & training contributions

This article was prepared by René van Ree.

For more information, please visit the Task 42 website: www.iea-bioenergy.task42-biorefineries.com

Task 32 – Biomass Combustion and Co-firing

On 29 October task 32 organised a full day expert workshop on more efficient and clean wood log stoves in Berlin that was well attended, mostly by stove producers. The workshop provided insight into the effectiveness of various technical measures that can help to further improve efficiency and emissions of typical woodstoves sold today. This included measures to improve the design of the combustion chamber, e.g. using CFD aided design tools. Other measures such as automatic combustion control and catalysts in stoves are very promising. A summary and all presentations are available on www.ieabioenergytask32.com

Task 33 – Gasification of Biomass

On the 2 December the 8th International Conference on Application of Biomass Gasification was held in Innsbruck, Austria. Representatives from leading European companies, scientific research institutions and associations gathered at the conference to discuss the latest European and international developments in this dynamic industry. The conference provided a good platform to share knowledge, experience and practical solutions among users, producers and scientists.

Speakers from nine nations offered insights into the possibilities and perspectives of biomass gasification, typical applications as well as innovations in the field of biomass gasification technology. Reports of practical experiences from leading plant operators completed the program and provided potential users' insights in the day-to-day operation of this sustainable CHP Technology.

The conference was organized by the Society for the Promotion of Renewable Energies (FEE) in cooperation with the International Energy Agency (IEA Bioenergy Task 33) and the Management Center Innsbruck (MCI). The presentations were held in English or German and will be available soon at the IEA Bioenergy Task 33 website (www.ieatask33.org).

Task 34 – Pyrolysis of Biomass

Doug Elliott, Task leader, presented a poster on behalf of Task 34 at tcbiomass2015, the international conference on thermochemical conversion science in Chicago, 2-5 November, 2015. The poster presented some of the results of the recently completed round robin on bio-oil production, which was organized by the Task. It included data from the analysis of the bio-oil products produced in 16 laboratories in 6 of the participating countries. The analyses were performed by Thünen Institute in Hamburg Germany.

Task 37 – Energy from Biogas

In Berlin Task 37 held the second of two business meetings in 2015. Country Reports were a main theme of the meeting and the opportunity was given to each member to present the status and progress of biogas and biomethane production and utilisation. Summary Powerpoint presentations can be downloaded from the Task 37 website - <http://www.iea-biogas.net/country-reports.html>. The consolidated annual Country Reports Summary for 2015 is scheduled to be published in January 2016.

Task 37 has recently published a technical report, "A perspective on algal biogas". Algae have been suggested as a biomass source with high rates of growth and which may be cultivated in the ocean (as seaweed) or on marginal land (as microalgae). Biogas is suggested as a beneficial route to sustainable energy, however the scientific literature on algal biogas to back up this claim is relatively sparse. This report contains a review of available literature and provides an assessment of the use of algae for large-scale biogas production. The authors conclude that a viable seaweed or microalgae biogas industry is a number of years away from providing significant quantities of renewable energy and much research is required to optimise prospective algal biogas systems. The report is aimed at an audience of academics and energy policy makers and can be downloaded from the Task 37 website (<http://www.iea-biogas.net/technical-brochures.html>).

Task 39 - Commercialising Conventional and Advanced Liquid Biofuels from Biomass

IEA Bioenergy Task 39 recently held a successful planning meeting in Berlin in conjunction with the IEA Bioenergy Conference 2015. The Task is fortunate to have good representation from academia, industry and government, with the strong industry involvement ensuring that projects are commercially relevant and will contribute to industry needs. The business meeting focused on current and future project collaborations with other Tasks including 38, 42 and 43, and the Advanced Motor Fuels (AMF) Implementation Agreement (IA). We were fortunate to have representatives of these groups participating in the Task meeting. Projects that were discussed included an update on the "Potential for algal biofuels production", which is a multi-Task activity, and collaboration with Task 38 on comparisons of different Life Cycle Analysis (LCA) models. Future work on LCA model comparisons will be led by Task 39's Antonio Bonomi (CTBE, Brazil) and Task 38's Helena Chum (NREL, USA). Task 39 will also be looking into "advanced fuels for advanced engines", co-led by Jurgen Krahl (TAC) and Franziska Müller-Langer (DBFZ) with the intent of connecting this work with complementary activities carried out by AMF in their Annex 52. Ongoing collaboration with Task 43 (biomass feedstocks) was explored, including integrating biomass production into current bioconversion systems and identifying smart ways to co-produce food and fiber.



Social gathering of participants in Task 39, Berlin October 2015

Task 43 – Biomass Feedstocks for Energy Markets

Associated with the major inter-task project for the last triennium, Mobilising Sustainable Bioenergy Supply Chains (please see the publications list on page 6), an Elsevier book will be published in 2016 focusing on the boreal and temperate forest supply chain. The work with the book is coordinated by Evelyne Thiffault at Laval University in Canada who is also book editor, supported by Tat Smith, Jack Saddler, Martin Junginger, and Goran Berndes as co-editors.

A book titled Advances in bioenergy - the sustainability challenge will soon be published by Wiley. Editors are Peter Lund, Aalto University School of Science, Finland, John Byrne, University of Delaware, USA, Göran Berndes, Chalmers University of Technology, Sweden, and Iacovos Vasalo, Centre for Research & Technology Hellas, Greece. This book will feature chapters contributed by members of Task 43.

Publications

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.ieabioenergy.com/publications/status-overview-of-torrefaction-technologies-a-review-of-the-commercialisation-status-of-biomass-torrefaction/>

Mobilising Sustainable Bioenergy Supply Chains

This report summarizes 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 analyze prospects for large-scale mobilization of major bioenergy resources through five case studies that determine the factors critical to their sustainable mobilization. This publication can be downloaded from <http://www.ieabioenergy.com/publications/mobilising-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/>

ExCo72 – Electricity from Biomass: from small to large scale – Summary and Conclusions

This publication provides the summary and conclusions from the workshop 'Electricity from Biomass: from small to large scale' held in conjunction with the meeting of the Executive Committee of IEA Bioenergy in Jeju, Korea on 12 November 2013. The purpose of the workshop was to provide the Executive Committee with an overview of electricity from biomass. 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/exco72-electricity-from-biomass-from-small-to-large-scale-summary-and-conclusions/>



2014 IEA Bioenergy Annual Report



The IEA Bioenergy Annual Report 2014 includes a special feature article 'Quantifying the Climate Effects of Forest-Based Bioenergy: Dealing with spatial and temporal boundaries' prepared by Task 38. 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 Implementing Agreement. This publication can be downloaded from <http://www.ieabioenergy.com/wp-content/uploads/2015/03/IEA-Bioenergy-Annual-Report-2014.pdf>

IEA Bioenergy Strategic Plan 2015-2020 - Brochure

This brochure presents an outline of the new IEA Bioenergy Strategic Plan for the period 1st March 2015 to the 28th February 2020. The new 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.



Enhanced emission performance and fuel efficiency of HD methane engines 2014 – Final report



This is the final report from the joint project between IEA Bioenergy Task 41 Bioenergy Systems Analysis and the Advanced Motor Fuels Implementing Agreement Annex 39 on Enhanced emission performance and fuel efficiency of HD methane engines. The goal of the project was to investigate how far the level of the development of methane fuelled engines for heavy duty vehicles had reached as well as to assess the potential to reach high energy efficiency, sustainability and emission performance. This publication can be downloaded from <http://www.ieabioenergy.com/wp-content/uploads/2014/09/Enhanced-emission-performance-and-fuel-efficiency-of-HD-methane-engines-2014-Final-report.pdf>

IEA BIOENERGY Task42 BIOREFINING

This brochure has been prepared by IEA Bioenergy Task 42: Biorefining – Sustainable processing of biomass into a spectrum of marketable bio-based products and bioenergy. Its purpose is to provide an unbiased, authoritative statement on biorefining in general, and of the specific activities dealt with within IEA Bioenergy Task 42 on biorefining. It is aimed at stakeholders from the agro-sector, industry, SMEs, policy makers and NGOs. This publication can be downloaded from http://www.ieabioenergy.com/wp-content/uploads/2014/09/IEA-Bioenergy-Task42-Biorefining-Brochure-SEP2014_LR.pdf



Consequences of an increased extraction of forest biofuel in Sweden – summary of the synthesis report



This Task 43 report presents a summary of the conclusions reached in a research synthesis report (Swedish Energy Agency report number ER2012:08 in Swedish) on environmental effects of forest biofuel extraction in Sweden. This publication can be downloaded from <http://www.ieabioenergy.com/wp-content/uploads/2014/06/Consequences-of-an-increased-extraction-of-forest-biofuel-in-Sweden-IEA-BIOENERGY-TR2014-1.pdf>

ExCo71 – Waste to Energy – Summary and Conclusions

This publication provides the summary and conclusions from the workshop 'Waste to Energy' held in conjunction with the meeting of the Executive Committee of IEA Bioenergy in Cape Town, South Africa on 21 May 2013. The purpose of the workshop was to provide the Executive Committee with an overview of waste to energy both at a global level and in the context of an emerging economy. 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/wp-content/uploads/2014/03/ExCo71-Waste-to-Energy-Summary-and-Conclusions-28.03.14.pdf>



IEA Bioenergy Events

Executive Committee

- ExCo77 will be held in Rome, Italy on 17-19 May 2016
- ExCo78 will be held in New Zealand on 9-11 November 2016
- ExCo79 will be held in Sweden in May 2017

Task Events

- Task 32's** schedule of upcoming events is
Task 32 will organise a session on biomass combustion derived aerosols on 14 June, 2016, at the Nanoparticle Conference at ETH Zurich. The agenda will be available at the task 32 website.
- Task 33's** schedule is
A Task meeting and workshop will be held in Trondheim, Norway 24-25 May, 2016.
A Task meeting and workshop will be held in Switzerland, October 2016.
- Task 34's** schedule of upcoming events is
A Task meeting will be held in Piteå, Sweden, 21-23 June, 2016.
A Task meeting is scheduled for Rotorua, New Zealand in November 2016.
- Task 36's** schedule of upcoming events is
Task meetings are to be determined early in the new 2016-2018 triennium.

Task 38's

schedule of upcoming events is
Task meetings are to be determined early in the new 2016-2018 triennium.

Task 39's

schedule of upcoming events is
A Task business meeting will be held in Rotterdam, Netherlands, 6-9 March, 2016 in conjunction with the EcoBio conference. Task 39 has been asked to organise speakers for two sessions of the conference and several Task 39 country representatives will present their work.

Task 40's

schedule of upcoming events is
Task meetings are to be determined early in the new 2016-2018 triennium.

Task 42's

schedule of upcoming events is
Task meetings are to be determined early in the new 2016-2018 triennium.

Task 43's

schedule of upcoming events is
Task meetings are to be determined early in the new 2016-2018 triennium.

Other Events

Fuels of the Future – 13th International Conference on Biofuels

Date 18th Jan, 2016 - 19th Jan, 2016
Location Berlin, Germany
Contact Markus Hartmann
Email hartmann@bioenergie.de
Website <http://www.fuels-of-the-future.com>

World Future Energy Summit

Date 18th Jan 2016 - 21st Jan 2016
Location Abu Dhabi, UAE
Website <http://www.worldfutureenergysummit.com>

Lignofuels 2016

Date 20th Jan 2016 - 21st Jan 2016
Location Munich, Germany
Contact Claire Taylor-Payne
Email claire@acieu.net
Website <http://www.wplgroup.com/aci/event/lignocellulosic-fuel-conference-europe/>

15th National Bioenergy Conference

Date 3rd Feb 2016
Location Dublin, Ireland
Contact Teresa O'Brien
Email contact@irbea.ie

World Sustainable Energy Days 2016

Date 24th Feb, 2016 - 26th Feb, 2016
Location Wels, Austria
Email office@esv.or.at
Website <http://www.wsed.at/en/world-sustainable-energy-days/>

World Bio Markets 2016

Date 14th Mar, 2016 - 17th Mar, 2016
Location Amsterdam, The Netherlands
Email david.sansom@greenpowerconferences.com
Website <http://www.worldbiomarkets.com>

South-East European Exhibition on Energy Efficiency and Renewable Energy

Date 5th Apr, 2016 - 7th Apr, 2016
Location Sofia, Inter Expo Center, Sofia, Bulgaria
Contact Maya Kristeva
Email office@viaexpo.com
Website <http://viaexpo.com/en/pages/ee-re-exhibition>

9th International Conference on Bio-based Materials

Date 5th Apr, 2016 - 6th Apr, 2016
Location Maternushaus, Cologne, Germany
Contact Dominik Vogt
Email dominik.vogt@nova-institut.de
Website <http://biowerkstoff-kongress.de>

International Biomass Conference and Expo

Date 11th Apr, 2016 - 14th Apr, 2016
Location Charlotte NC, USA
Email service@bbiinternational.com
Website <http://www.biomassconference.com/ema/DisplayPage.aspx?pageId=Home>

The BIO World Congress on Industrial Biotechnology

Date 17th Apr, 2016 - 20th Apr, 2016
Location San Diego Convention Centre, San Diego, USA
Website <https://www.bio.org/events/conferences/world-congress-industrial-biotechnology>

REGATEC 2016

Date 10th May, 2016 - 11th May, 2016
Location Scandic Triangeln, Malmö, SWEDEN
Contact Dr. Jörgen Held
Email info@renewtec.se
Website <http://regatec.org/venue/>

BIO International Convention 2016

Date 6th Jun, 2016 - 9th Jun, 2016
Location San Francisco, CA, USA
Email convention@bio.org
Website <http://convention.bio.org/2016/>

EUBCE 2016 – 24th European Biomass Conference & Exhibition

Date 6th Jun, 2016 - 9th Jun, 2016
Location Amsterdam, The Netherlands
Contact Maddalena Grassi
Email registration@etaflorence.it
Website <http://www.eubce.com/home.html>

7th International Bioenergy Conference and Exhibition

Date 15th Jun, 2016 - 17th Jun, 2016
Location Prince George, British Columbia, Canada
Contact Cam McAlpine
Website <http://www.bioenergyconference.org/>

UK AD & Biogas 2016

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

Biofuels International 2016 – 9th Biofuels International Conference

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

RENEXPO® Poland

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

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 32: Biomass Combustion and Co-firing

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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: Climate Change Effects

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Task 39: Commercialising Conventional and Advanced Liquid Biofuels from Biomass

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

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Task 42: Biorefining – Sustainable Processing of Biomass into a Spectrum of Marketable Bio-based Products and Bioenergy

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Task 43: Biomass Feedstocks for Energy Markets

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