



Dublin

Bioenergy in Ireland

Guest Editorial by Matthew Clancy, ExCo Alternate Member for Ireland

Bioenergy has a critical role in Ireland's move to a more energy secure economy. Ireland imports 87% of its primary energy requirements and relies on imported oil for over 50% of heat and almost all of transport energy requirements. Increasing use of domestic biomass can reduce the exposure of Irish companies to oil price volatility and expand the use of renewable energy in the heat and transport sectors.

SEAI recently completed a number of analyses focused on the potential availability and cost of biomass resources, the costs of policy options to drive uptake, and the potential for Irish supply chains to maximise the value from investment in new technologies and biomass fuel. The evidence from these and other studies has helped inform the Government's recent Bioenergy Action Plan which sets out several measures to increase demand for bioenergy resources, enable the available domestic biomass supply and promote further research in the area.

Role in climate and renewable targets

Approximately half of the energy required to meet binding renewable energy targets in 2020 is anticipated to come from bioenergy. Ireland is 4th in the world in the use of wind to meet electricity demand. Much public discourse is focused on renewable energy in the electricity sector. Crucially, much of the renewable energy output from bioenergy technologies will displace Greenhouse Gas (GHG) emissions in sectors that count towards Ireland's GHG target.

% contribution towards 2020 Renewable energy targets

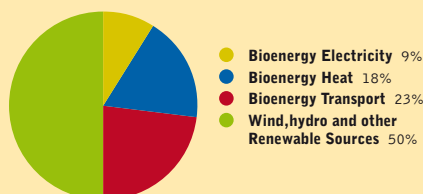


Figure 1: Contribution towards Ireland's binding 2020 renewable energy target by source

Potential resource availability

SEAI's analysis of the potential availability and harvesting costs of the national biomass resource shows that, given a rise in price sufficient to cover harvesting costs, the planned renewable energy output from bioenergy in the heat and electricity sectors could be drawn primarily from domestic resources. A doubling of current bioenergy prices could make this a financially viable prospect for most potential domestic biomass sources. The availability of competitively priced imports of refined wood products may limit the market for indigenous biomass. Policy aimed at stimulating demand for domestic resources needs to be cognisant of the potential impact of low cost imports.

The resource requirements for biofuels in the transport sector are far in excess of the domestic potential and availability of sustainable imports may be restricted. Biogas and biomethane can have a positive role in offsetting the use of oil in the transport sector and the Bioenergy Plan sets out measures to examine the potential for these.

Bioenergy polices and renewable heat

Policies are in place to encourage bioenergy use in the electricity sector through the REFIT scheme and in the transport sector through the Biofuels Obligation, notwithstanding the challenges associated with high efficiency CHP requirements and availability of biofuels that meet EU sustainability standards.

Policy for the heat sector is less well developed. SEAI analysis indicates that, even under optimistic assumptions, Ireland risks falling short of the 2020 targets. Any shortfall will expose the Irish exchequer to penalties, fines and compliance trading costs under both the Renewable Energy Directive and the 2009 Effort Sharing Agreement. To avert this scenario, the equivalent of an additional 200 large industrial sites or 300,000 residential dwellings need to change to a renewable heating source by 2020.

The Bioenergy Plan recommends a Renewable Heat Incentive (RHI) instrument as the primary means to close this gap. The analysis shows that the costs of an RHI type scheme are closely linked to how oil prices will develop in coming years, the extent to which imports of refined wood products are available, how effective energy efficiency policy is at reducing overall heat demand, and the degree to which an RHI tariff structure focuses on smaller scale renewable heat options.

The enterprise benefits of bioenergy

Biomass boilers in the industrial and services sectors tend to be most competitive compared to fossil-fuel options. Deployment of large scale biomass boilers in the Aurivo dairy plant in Ballaghaderreen and the Astellas plant in Tralee demonstrate willingness of market players to move to biomass – even in the absence of policy support. The biomass supply chain in Ireland is well positioned to capture some of the estimated €200 million per annum that sites such as these are expected to spend on biomass fuel. A move to biomass will benefit the long term competitiveness of rural industry, reducing the risk of re-location, if oil prices rise. SEAI analysis on the economy wide impacts of bioenergy estimates that an additional 5,500 jobs could be created in the Irish economy in 2020 if an RHI scheme is successful in delivering the heat target from domestic resources. About half of these jobs arise from the lowering of fuel costs for businesses who switch from oil while others arise in the forestry and agriculture sectors.

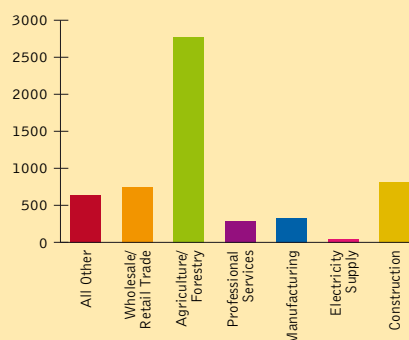


Figure 2: Additional jobs in 2020 by sector as a result of policy intervention in the heat sector

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IEA

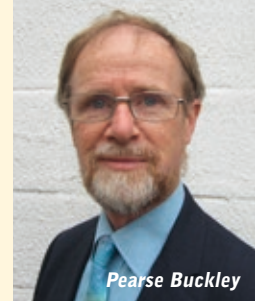
Bioenergy News

IEA Bioenergy



From the Secretariat

ExCo75, Dublin, Ireland



Pearse Buckley

The 75th meeting of the Executive Committee was held at the Grand Hotel, Malahide, Dublin, Ireland on 19th and 20th of May 2015, with Kees Kwant as Chair, Sandra Hermle as Vice-chair and Pearse Buckley as Secretary. The meeting was hosted by The Sustainable Energy Authority of Ireland (SEAI). The Chair expressed the appreciation of the ExCo to Kennedy and his colleagues for the excellent meeting and study tour arrangements. Some of the outcomes of the meeting are detailed below.

Changes to Executive Committee

A new Alternate Member for Germany is Dr Volker Niendieker: a new Member for Ireland is Mr Matthew Kennedy: a new Member for Italy is Mr Luca Benedetti: a new Alternate Member for The Netherlands is Mr Patrick Todd: a new Member for the USA is Mr Jim Spaeth.

ExCo75 Workshop

A very successful internal workshop themed 'Planning for the new triennium' was held on the 19th May. Detailed proposals for programmes of work for the triennium 2016-2018 were presented by Task Leaders. The ExCo also considered proposals for strategic projects which were seen as important accompanying actions. Several topics will be developed for presentation at ExCo76, at which final decisions on these and on Task participation will be made by the members.

Progress with current Initiatives

Mobilising Sustainable Bioenergy Supply Chains

The draft report of the strategic project *Mobilising Sustainable Bioenergy Supply Chains* is going through internal review. The work is providing important insights which will have wide applicability and guide development going forward. The final report will be presented at the IEA Bioenergy Conference 2015 in Berlin in October.

Algae review

Progress on this project is ongoing, although there has been some delay due to unforeseen circumstances. The report outline has been developed and questions that remain to be addressed have been identified. A key theme that is emerging is the competition with feed for fish. The report is expected to be completed and ready for presentation at the IEA Bioenergy Conference 2015 in Berlin in October.

Pre-study – Bioenergy boosted RES hybrids

Work on this project is continuing. A workshop is planned for early June followed by a report to be submitted to ExCo76 in Berlin in October.

Call for applications for Technical Coordinator

The Executive Committee approved the text of the Call for applications for Technical Coordinator document at ExCo75. The call is open and the closing date for receipt of applications is the 1st September 2015. Following review by a working group, presentations will be made at ExCo76 where the Executive Committee will make a final decision on the person who will commence in the role from the 1st January 2016.

National Strategies

IEA Bioenergy is working with IEA Headquarters to agree sharing of data on energy use held by the latter, particularly that relating to bioenergy. In tandem with this, IEA Bioenergy will launch a call for tender for a consultant to develop the template for a "countries' report". The consultant will complete the initial report for publication at the end of 2015.

Communication Strategy

The Executive Committee reviewed progress under the Communication Strategy. It was agreed that the LinkedIn Group, originated by the Secretary, would be opened more generally following a trial period involving members of the Executive Committee. The Communication Team were asked to consider integrating a number of Agreement dissemination channels, including websites and newsletters.



Chris Johnston, James Brown and Peter Frost who hosted the IEA Bioenergy visit to AFBI in Hillsborough

Cooperation with International Organisations

GBEP

The collaborative project with GBEP on bioenergy and water is progressing well. A workshop is planned for the 25-26 August. This will be followed by a short report including the main messages, which will be presented at the IEA Bioenergy Conference 2015 in Berlin in October.

IRENA

Following a number of exchanges between IRENA and IEA Bioenergy, the Executive Committee discussed the opportunity for cooperation with IRENA and agreed a number of actions to be taken to enable it. These are being discussed between the two organisations to define how the cooperation may move forward.

SE4ALL

The Executive Committee considered the opportunity to participate on the SE4ALL steering committee on high impact opportunities (HIO) for bioenergy and was positively disposed to the proposal made by the Chair. The matter will be pursued by the Chair on behalf of the Agreement.

Invitation to Estonia

A presentation was made to ExCo75 by the observer from Estonia. Following an internal discussion the ExCo unanimously approved an invitation to Estonia to become a member of the Agreement. The matter is being followed up by the Chair and Secretary on behalf of IEA Bioenergy.

End of Triennium Conference 2015

The programme for the IEA Bioenergy Conference 2015 has been fully developed and is available on the conference website at <http://ieabioenergy2015.org/>. Registration for the conference is open and those wishing to attend should register on the website at <https://ieabioenergy2015.org/registration/>.

ExCo75 Study Tour

Following the ExCo75 meeting a group of sixteen IEA Bioenergy attendees participated in the study tour to the Agri-Food and Biosciences Institute (AFBI) in Hillsborough, Northern Ireland.

In a welcome address, the Head of the Agriculture Branch Institute Dr Trevor Gilliland gave a brief overview. He noted that AFBI was a non-departmental public body and the remit of its Hillsborough Branch was to advance animal science and to improve livestock farming. Some of the topics addressed by the Institute included production efficiency, animal health and welfare and environmental sustainability. AFBI, with approximately eight hundred employees, engaged in work with European groups in large research projects.

Peter Frost noted that the site was first developed in 1840 by Lord Downshire and was transferred to its current use in 1925. Peter stressed that all activities on site concerned research. He gave an overview of some of the renewable energy activities in which they were engaged, including anaerobic digestion. Northern Ireland contained 6% of the farmed area of the UK and 14% of the digesters were located there. Thirteen digesters had been built in Northern Ireland and twelve were under construction. An important driver for this was the Renewable Obligation Certificates (ROCs) support, which was granted for renewable electricity produced. Each ROC had a current value of about GB£43. Anaerobic digesters with an electricity generation capacity of up to 500 kW could earn 4 ROCs per MWh, while those in the range 500 kW to 5 MW could earn 3 ROCs per MWh.

The group was taken on a tour of the facilities. This included a visit led by James Browne to the anaerobic digester, which had a 600 m³ primary digester capacity, a 600 m³ secondary digester and a gas storage bag of 300 m³. The feedstock was 20 tonnes/day of dairy cow slurry at approximately 8% dry matter (DM) and 3 tonnes/day of grass silage at approximately 25% DM. Biogas was piped approximately 400 m to a 70 kW_e CHP unit in the Environment and Renewable Energy Centre. The heat from the CHP was used to maintain the digester temperature and to heat a number of facilities on the campus. Chris Johnston conducted a tour of the Environment and Renewable Energy Centre where the group was also shown several biomass boilers including a 330 kW Froling wood chip boiler and a 130 kW multi-fuel Biokompakt boiler, which could burn various types of biomass with emissions monitoring. The wood chip boiler was mainly fuelled by short rotation willow wood chips grown on site and dried to a moisture content of between 20% and 25% before being fed to the boiler.



ExCo75 Study Tour Group at AFBI, Hillsborough

Task Focus

IEA Bioenergy Task 39 (Commercialising Conventional and Advanced Liquid Biofuels from biomass)

Overview of Task 39

Task 39 (Liquid biofuels) is fortunate to have the active involvement of industry, government and academic representatives from its 15 participating countries who each have a common interest in assessing the technical, policy and market issues that all impact the successful commercialisation of advanced biofuels. Bioenergy already is, and is expected to continue to be (until at least 2050), the largest contributor to the world's renewable energy mix. Although technologies such as combined heat and power (CHP) compete with other renewable technologies, such as solar and wind, to contribute to low carbon electricity generation, biofuels are anticipated to be the primary method of reducing transport derived carbon emissions, while for sectors such as aviation or marine, biofuels are virtually the only low carbon alternative. The Task benefits from not just active European participation, but with representatives from Australia, New Zealand, South Africa, Brazil, Japan, South Korea, Canada and the US, the network activities have input from all of the world's populated continents.

The Task is focused on three main activity areas that include; 1) Technology and Commercialisation of conventional and advanced biofuels, with an increased focus on advanced (especially drop-in biofuels) and technological and commercial developments in this area; 2) Policy, Markets, Implementation and Sustainability, and; 3) A Multifaceted Communication Strategy to facilitate knowledge transfer and dissemination of information, including a website, three Newsletters per year, meetings, conferences and workshops.

A fuller description of the Tasks participants and its outputs over the years can be accessed through the network's website (www.Task39.org). With the current low fossil fuel prices, and oil in particular, there is increasing pressure to determine how long it might be before advanced biofuels might be commercially viable. However, the recent announcement by some European oil companies that some sort of carbon tax should be established, indicate there is increasing recognition that low carbon transportation fuels are needed. Although the Task has previously reported on the considerable progress that has been made in producing bioethanol and biodiesel from biomass, these biofuels are not fully fungible with fossil fuels and do not make use of the vast infrastructure used to distribute and use fuels such as gasoline/petrol, diesel and jet fuel. Thus, the Task has increasingly looked into the production of so-called drop-in biofuels that are "liquid bio-hydrocarbons that are functionally equivalent to petroleum fuels and are fully compatible with existing petroleum infrastructure."

Drop-in biofuels

The Task recently published a comprehensive report on "*The potential and challenges of drop-in biofuels*" that described good progress in the "drop-in" biofuels arena while highlighting potential challenges, such as; the requirement for substantial amounts of inexpensive, sustainable hydrogen (H₂); the ability to integrate biofuel platforms into existing oil refineries; the effects of market demand (e.g., sulphur-free diesel), and; the influence of direct and indirect biofuel policies. The report categorised the various drop-in biofuels as being produced via oleochemical, thermochemical, biochemical or hybrid pathways, using examples of several of the companies pursuing each of these approaches. Although the oleochemical approach is the only fully commercialised drop-in biofuel platform, producing a drop-in fuel termed hydrotreated vegetable oil (HVO), the lessons learned from the production, supply chain, and use of this biofuel will help facilitate the commercialisation of the thermochemical and biochemical approaches that are at earlier stages of development. The report emphasised that there will be significant trade-offs between, either using external sources of hydrogen or, decreasing the final fuel yield if the hydrogen is derived from the biomass feedstock itself. This will also significantly affect the capital and operating costs of the process. For example, pyrolysis platforms that can leverage petroleum refining infrastructure are likely to entail relatively low capital costs and can be developed on a relatively small scale. However, their requirements for hydrogen and specialised consumable catalysts will likely be high. The report also highlighted the observation that the effective hydrogen to carbon ratio of the feedstock for each platform is strongly correlated with its processing costs. For example, the oleochemical platform uses relatively costly vegetable oil-based feedstocks that exhibit high H_{eff}/C ratios resulting in a relatively low cost of processing these feedstocks to biojet. The reverse is true for the pyrolysis platform where the low H_{eff}/C biomass (lignocellulose) feedstock is generally cheaper to acquire but is much more costly and energy/carbon intensive to process into liquid biofuels. These and other insights, as well as some techno-economic considerations for each drop-in biofuel platform, are described in the report (210 pages) and its associated executive summary (20 pages). Both reports can be downloaded from the Task 39 website (www.Task39.org) as will any future technological and commercial developments in the drop-in biofuel area.

Drop-in fuels in the aviation industry

The aviation industry's increasing CO₂ emissions have and will continue to have a disproportionately large impact on the environment. Aviation emissions are currently 2% of global and 12% of all transportation emissions. Although significant reductions have been achieved through improvements in the fuel efficiency of aircraft and ground operations, continuous growth in global air traffic (International Civil Aviation Organisation, www.icao.int) will result in increased aviation derived CO₂ emissions. The aviation industry has developed voluntary agreements, with a target to achieve carbon neutral growth from 2020 and an overall 50% reduction in CO₂ emissions by 2050, with the recognition this can only be achieved through the development of sustainable biojet fuels. Conventional jet fuel represents about 30% of an airline's operating cost and, as shown over the last year, prices can be highly volatile, dramatically affecting the profitability and long term sustainability of airlines. As mentioned earlier, the limited volumes of biojet fuels that are currently produced and have been used for demonstration flights, have almost exclusively been produced via the hydrogenation of vegetable oils. However, feedstock costs (and the limited extent to which these costs can be reduced by R&D) and ongoing food-vs-fuels/sustainability issues are anticipated to limit the growth and development of oleochemically derived biojet fuels. Thus, feedstocks such as sustainably sourced biomass will have to be used. Task 39's ongoing work will monitor technological and commercial developments for biojet production while assessing policy issues that might influence the commercialisation of these technologies.



Delegates at the Task 39 business meeting held in conjunction with the International Symposium on Alcohol Fuels (ISAF) in Gwangju, Korea from 10-14 March.

Update on progress and potential of Algal Biofuel

One of Task 39's most accessed reports has been the 2010 Algal Biofuels report which described global progress and highlighted various technical and economic challenges that the nascent Algal Biofuels industry faced (See www.Task39.org to download this original report). At the same time as the Task 39 members recognised that this well-read report could benefit from an update, there was increasing realisation that there was considerable strength, expertise and experience in the related Tasks within the IEA Bioenergy Implementation Agreement (IA). Thus, with the IEA Bioenergy Executive Committee's (ExCo) support, the update of the Algal Biofuels project has been expanded into a multi-Task activity, jointly led by Task 39's Les Edye (Australia) and Lieve Laurens (NREL), with valued contributions from colleagues in many of the other IEA Bioenergy Tasks. The final report will update progress in the commercialisation of algal biofuels, including macro algae, heterotrophic production, non-liquid biofuels (e.g., methane), and higher value co-products and is expected to be completed by the end of the year and available publicly in early 2016

Conferences and Newsletters

21st International Symposium on Alcohol Fuels (ISAF)

Task 39 was fortunate to be hosted by Professors Jin-Suk Lee and Kyu-Young Kang, (South Korean country representatives for Task 39) when we held our formal business meeting in association with the 21st International Symposium on Alcohol Fuels (ISAF), Gwangju, Korea, March.

Task 39 members featured prominently in the main ISAF program with Jin-Suk Lee (Korea), David Chiaramonti (Italy), Emile van Zyl (South Africa), Shiro Saka (Japan) and Jim McMillan (USA) giving keynote addresses, while the other country representative presented in the two Task 39 profiled sessions.

As well as discussing upcoming Task 39 activities and reports in our own Task 39 business meeting, the location provided an opportunity to also discuss potential collaborative/shared activities with our colleagues in the Advanced Motor Fuels (AMF) Implementing Agreement who also held their Executive Committee meeting in conjunction with the ISAF conference. The proposed project on "Advanced Fuels for Advanced Engines" was discussed with the hope that this could be developed as a joint activity.

37th Symposium on Biotechnology for Fuels and Chemicals (SBFC)

Every two years Task 39 has traditionally organised an industry led session within the "Symposium on Biotechnology for Fuels and Chemicals" (SBFC). This year the symposium was held in San Diego (27-30 April 2015), and the packed room (estimated attendance of 300) heard from 6 speakers representing Iogen, Novozymes, Abengoa, Borregaard, Genomatica and Katzen International. Each of these companies is at the forefront of commercialising advanced biofuels and sustainable bio-based chemicals.

Task 39 Newsletter #39 May 2015

One of the most recognisable and celebrated outputs of Task 39 is its three-times-a-year newsletter that summarises some of the Task's recent work while highlighting biofuels developments of interest to the larger liquid biofuels stakeholder community. One of the most valued and well-read sections of the newsletter is the country update from one of the Task 39 participating countries. The most recent newsletter featured an article on *Biofuels research and commercial development in Denmark*.

As described elsewhere in the newsletter, despite a challenging market situation for liquid biofuels, as a result of the dramatic decrease in crude oil prices over the past 9 months, biofuels continue to feature prominently in industry news reports. Production of cellulosic ethanol in the US continues to expand while new facilities abroad were recently announced (Beta Renewables and Novozymes in India). There have also been many recent reports in the news on the expanded production of drop-in biofuels, specifically for aviation, such as the construction of demonstration/commercial facilities announced by Fulcrum Bioenergy, Steeper Energy, Red Rock Biofuels, with UPM-Kymmene's wood-based renewable diesel facility already starting production.

This article was prepared by Jack Saddler. For more information, please visit the Task 39 website (www.Task39.org).

Task 32 – Biomass Combustion and Co-firing

Compared to small-scale decentralised biomass boilers, district heating enables the use of larger boilers that can achieve higher combustion efficiencies and lower pollutant emissions at lower costs. However, district heating itself also induces additional costs and energy losses. Therefore it is a challenge to find the most economic and efficient design of the overall biomass fired district heating system. Task 32 prepared two reports on the optimisation of biomass fired district heating networks to analyse where improvements could be made in both the design and operation. They can be found at http://www.ieabcc.nl/publications/statement_dhc.html

Task 33 – Gasification of Biomass

IEA Bioenergy Task 33, along with the University of Seville and the Fundación Ciudad de la Energía (CIUDEN) hosted a Symposium on Renewable Energy and Products from Biomass and Waste at CIUDEN's facilities in Ponferrada, Spain, 12-13 May 2015. The two-day symposium included 18 presentations from eight countries spanning a range of topics from technologies to commercial operations to policy. Symposium participants enjoyed a tour of CIUDEN's demonstration facilities for carbon capture and sequestration as well as a visit to the National Energy Museum in Ponferrada. Task 33 held its first business meeting of 2015 in conjunction with the symposium in Ponferrada. Presentations from the symposium are available at the Task 33 website (www.ieatask33.org) and a workshop report will be available soon.

Task 34 – Pyrolysis of Biomass

Task 34 held a meeting on 19-21 May in Hengelo, Netherlands. The meeting began with technical tours of pyrolysis facilities at the University of Twente and BTG. The business meeting was held on the 20th May including an update of the progress on the Round Robin, CEN standards development, and the usual country reports. On the 21st May the task members participated in the BTG Symposium to Mark the Opening of the EMPYRO Pyrolysis Plant.

The Round Robin on bio-oil production organised by Task 34 is coming to a conclusion. Three biomass feedstocks were distributed to participating laboratories with the expectation that they would use their process technology to produce fast pyrolysis bio-oil products. The products have been received from 16 laboratories in 6 participating countries for analysis at a central laboratory at the Thünen Institute in Germany. The task members will review the results of the analysis and a report will be prepared for publication in a technical journal.

Task 36 – Integrating Energy Recovery into Solid Waste Management

IEA Bioenergy Task 36 held its meeting in Bordeaux in France from 2-4 June. As part of the meeting there was a discussion workshop on factors that influence the integration of energy from waste into solid waste management in participating countries. This encompassed policies such as those designed to limit the amount of energy from waste in a region or country. Also discussed were policies that may alter the way in which waste is treated; stakeholder perceptions of waste management options; and the impact of increasing recycling and waste pre-treatment on energy recovery from waste. The findings of this workshop will be published on the Task web site. In addition the Task visited the energy from waste facility at Larrouza that generates heat and power, and the CHO 12MWe Europlasma gasification plant at Morcenx near Bordeaux.

Task 37 – Energy from Biogas

Task 37 has published a technical and policy report entitled, "A perspective on the potential role of biogas in smart energy grids". The report looks at how the biogas sector can be used to facilitate increased proportions of variable renewable electricity on the electricity grid. Two technology options are assessed; use of demand-driven biogas plants capable of controlled fluctuation of energy output by either local biogas storage or flexible anaerobic digestion process control, and power to gas systems. Power to gas uses hydrogen gas that is produced by electrolysis using electricity from wind and solar during periods of excess generation and combines it with CO₂ from biogas upgrading to biomethane to produce additional methane for gas grid injection, where it can be stored and used when needed. The full report can be downloaded from the Task 37 website: <http://www.iea-biogas.net/technical-brochures.html>

Task 38 Climate Change Effects of Biomass and Bioenergy Systems

On Monday, 25th May 2015 IEA Bioenergy Task 38 held an internal meeting in Växjö, Sweden, hosted by Professor Leif Gustavsson of Linnaeus University. At the meeting, attendees presented and discussed:

- Progress of work on metrics for quantifying climate change effects and choosing the reference system, towards completing papers for submission for publication;
- Updates on significant developments of relevance to Task 38 members and recent publications on the climate impacts of bioenergy, including a recent report and paper by Tim Searchinger
- Plans for completion of the work program for the remainder of the triennium, including review of contributions to the inter-task project on mobilising sustainable biomass supply chains, in relation to the climate change effects; input to the Task 39 review of algal biofuels; input to Task 43 review of albedo effects; discussion on modelling of soil carbon and litter turnover; and finalising plans for the Task 38 input to the end of triennium conference
- Refining plans for the next triennium, which will have a similar scope as the current period, that is, development and demonstration of standard methods for quantifying climate effects of bioenergy.

The meeting was followed by a 2-day conference Climate Change Effects of Biomass and Bioenergy Systems Conference, 26-27th May 2015, hosted by Linnaeus University. The conference included presentations on climate effects of managed forest systems, wood products and bioenergy, including presentations from four Task 38 members. The conference also included a visit to the Växjö Energy AB CHP-plant, Limnologen Wood-frame apartment buildings and Södra Climate Arena.

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

Workshop Biomethane International, 12th International Conference on Biofuels, Berlin, 19-20 January 2015

On 20 January 2015, the 4th "Biomethane International" Session was held within the conference "Fuels of the Future" in Berlin. The event was organised in close cooperation between the DBFZ and IEA Bioenergy Task 40. The session was chaired by prof. Dr. Daniela Thrän. The aim was to address international experts and stakeholders from economy, science and politics. In total, approximately 40 experts joined the session while presentations were given by international experts from five countries. They provided insights into the global and national status and trends for biomethane production and trade. The workshop summary and presentations are available on the Task 40 website (<http://www.bioenergytrade.org/>).

Workshop Biomass Trade and Supply in a Global Bio-Based Economy, Sassari, Sardinia, Italy, 5-6 May 2015

Many governments across the globe have defined national 'bioeconomy' strategies. However, it remains unclear how the current economy will shift towards a future bioeconomy where chemicals, materials, transport fuels, and other high-value products are derived from non-food materials. Under the banner of "Biomass Trade and Supply in a Global Bio-Based Economy", IEA Bioenergy Tasks 40 and 42, together with the European Commission funded project DiaCore, have hosted a workshop on 5 May in Sassari, Italy. Draft findings of a recent Intertask study between Tasks 34, 40, and 42 as well as results of DiaCore on the same topic were presented, and the viewpoints of policy makers and representatives from the biofuels, biopower, and logistics industry were discussed. The workshop also included a site-visit to the MATRICA Biorefinery (a Versalis-NOVAMONT joint venture). The presentations will be available on the Task 40 website soon.

Publications



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.

<http://www.ieabioenergy.com/wp-content/uploads/2015/04/ExCo72-Electricity-fromBiomass-Summary-and-Conclusions-13.04.15.pdf>

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. <http://www.ieabioenergy.com/wp-content/uploads/2014/12/IEA-Bioenergy-Strategic-Plan-2015-2020-Brochure.pdf>

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>

Monitoring Sustainability Certification of Bioenergy – Short summary



To support sustainable bioenergy deployment and overcome some of the challenges associated with the current status of sustainability certification, this IEA Bioenergy strategic study examined what is actually known and what can be learned from the current development and implementation of voluntary certification systems, about the role of voluntary certification schemes in the governance of biomass/bioenergy/biofuels sustainability and how this has affected actors along the supply chains and trade. This publication can be downloaded from

<http://www.ieabioenergy.com/wp-content/uploads/2013/10/Monitoring-Sustainability-Certification-of-Bioenergy-Short-summary.pdf>



On the Timing of Greenhouse Gas Mitigation Benefits of Forest-Based Bioenergy

This statement addresses a much debated issue – the timing of greenhouse gas (GHG) emissions and carbon sequestration when biomass from existing managed forests is used for energy to displace fossil fuels. The purpose of the statement, which is aimed at policy advisors and policy makers, is to explain the essence of the debate and propose a perspective that considers the broader context of forest management and the role of bioenergy in climate change mitigation.

<http://www.ieabioenergy.com/publications/on-the-timing-of-greenhouse-gas-mitigation-benefits-of-forest-based-bioenergy/>

Health and Safety Aspects of Solid Biomass Storage, Transportation and Feeding



This publication has been compiled as a joint effort by experts active in Tasks 32, 36, 37 and 40 of the IEA Bioenergy Agreement. It focuses on the health and safety issues of the supply chain of solid biofuels with the objective to highlight commonly used mitigation methodologies to promote a better working environment when dealing with solid biofuels. With the growth of the bioenergy sector, it is important not only that opportunities for bioenergy are implemented in an efficient and economic manner, but also safely. This publication can be downloaded from

<http://www.ieabioenergy.com/wp-content/uploads/2013/10/Health-and-Safety-Aspects-of-Solid-Biomass-Storage-Transportation-and-Feeding.pdf>

IEA Bioenergy Events

Executive Committee	Task Events	
<p>ExCo76 will be held in Berlin, Germany on 26 October 2015</p> <p>ExCo77 will be held in Rome, Italy on 17-19 May 2016</p> <p>ExCo78 will be held in New Zealand on 9-11 November 2016</p> <p>ExCo79 will be held in Sweden in May 2017</p>	<p>Task 32's schedule of upcoming events is November 29th, Berlin, Germany; Task 32 Workshop on Highly Efficient and Clean Wood Fired Space Heating Stoves.</p> <p>This workshop will provide an overview of recent research and development work to obtain cleaner and more efficient woodstoves.</p> <p>Task 33's schedule is October 27-29, Berlin, Germany; Task meeting.</p> <p>December 2, Innsbruck, Austria; 8th International Users Conference for Biomass Gasification co-hosted by Task 33, FEE, and MCI.</p>	<p>Task 34's schedule of upcoming events is October 29-30, Berlin, Germany; Task meeting.</p> <p>Task 37's schedule of upcoming events is October 29-30, Berlin, Germany; Task meeting.</p> <p>Task 39's schedule of upcoming events is October 27-29, Berlin, Germany; Task meeting.</p> <p>Task 42's schedule of upcoming events is October 27-29, Berlin, Germany; Task meeting.</p>

Other Events

UK AD & Biogas

July 1-2, Birmingham, UK

Website: <http://ec.europa.eu/eusurvey/runner/0cd57b89-8c5b-a57f-27d5-fc9ab31b776f>

Workshop on 'Renewable Carbon Sources Processing to Fuels and Chemicals'

July 9-10, Brussels, Belgium

Website: <https://ec.europa.eu/eusurvey/runner/0cd57b89-8c5b-a57f-27d5-fc9ab31b776f>

12th Annual World Congress on Biotechnology

July 19-22, Montreal, Canada

Website: <https://www.bio.org/events/conferences/agenda-2>

Advanced Biofuels Symposium 2015

July 22-24, Montreal, Canada

Website: <http://www.biofuelnet.ca/news-and-events/advanced-biofuels-symposium-2015/>

4th China Guangzhou International Biomass Energy Exhibition

August 18-20, Guangzhou, China

Email: jenny0124@aliyun.com

Website: <http://www.cnibee.com/en/>

Bioenergy 2015

September 2-4, Jyväskylä, Finland

Website: <http://www.bioenergyevents.fi/>

Renexpo Poland 2015

September 22-24, Warsaw, Poland, Warsaw

Website: <http://www.renexpo-warsaw.com/index.php?id=7&L=1>

Biofuels International, Expo and Conference 2015

September 22-24, Porto, Portugal

Website: <http://biofuels-news.com/conference/index.php>

The 5th Annual World Congress of Bioenergy-2015

September 24-26, Xi'an, China

Website: <http://www.bitcongress.com/wcbe2015/default.asp>

4th Conference on Carbon Dioxide as Feedstock for Chemistry and Polymers

September 29-30, Essen, Germany

Email: dominik.vogt@nova-institut.de

Website: <http://co2-chemistry.eu/>

Algae Biomass Summit 2015

September 30 – October 2, Washington, DC, USA

Website: <http://www.algaebiomasssummit.org>

6th BioMarine International Business Convention

October 12-14, Wilmington, NC, USA

Website: <http://www.biomarine.org/usa-2015/>

NWBC 2015 – The 6th Nordic Wood Biorefinery Conference

October 20-22, Helsinki, Finland

Website: <http://www.vttresearch.com/media/events/the-6th-nordic-wood-biorefinery-conference>

International Bioenergy (Shanghai) Exhibition and Asian Bioenergy Conference 2015

October 21-23, Shanghai, China

Email: info@ibsce.com

Website: <http://www.ibsce.com/cms2/>

IEA Bioenergy Conference 2015

October 27-29, 2015, Berlin, Germany

Website: <http://www.ieabioenergy2015.org>

tcbiomass2015: The International Conference on Thermochemical Conversion Science

November 2-5, 2015, Chicago IL, USA

Website: <http://www.gastechnology.org/tcbiomass/Pages/default.aspx>

BIT's 6th Annual World Gene Convention-2015

November 13-15, Qingdao, China

Email: hedy@bitconferences.com

Website: <http://www.bitcongress.com/wgc2015/default.asp>

Global Bioeconomy Summit: Innovation, Green Growth and Sustainable Development

November 25-26, Berlin, Germany

Email: info@bioekonomierat.de

Website: <http://bioekonomierat.de/?id=370>

Bioenergy Australia Conference 2015

November 30 – December 2, Launceston, Tasmania, Australia

Website: <http://www.bioenergyaustralia.org/pages/bioenergy-australia-conference-2015.html>

9th International Algae Conference

December 1-3, Lisbon, Portugal

Website: <http://algaecongress.com>

South-East European Exhibition on Energy Efficiency and Renewable Energy

April 5-7, Sofia, Bulgaria

Website: <http://viaexpo.com/en/pages/ee-re-exhibition>

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 36: Integrating Energy Recovery into Solid Waste Management

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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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