

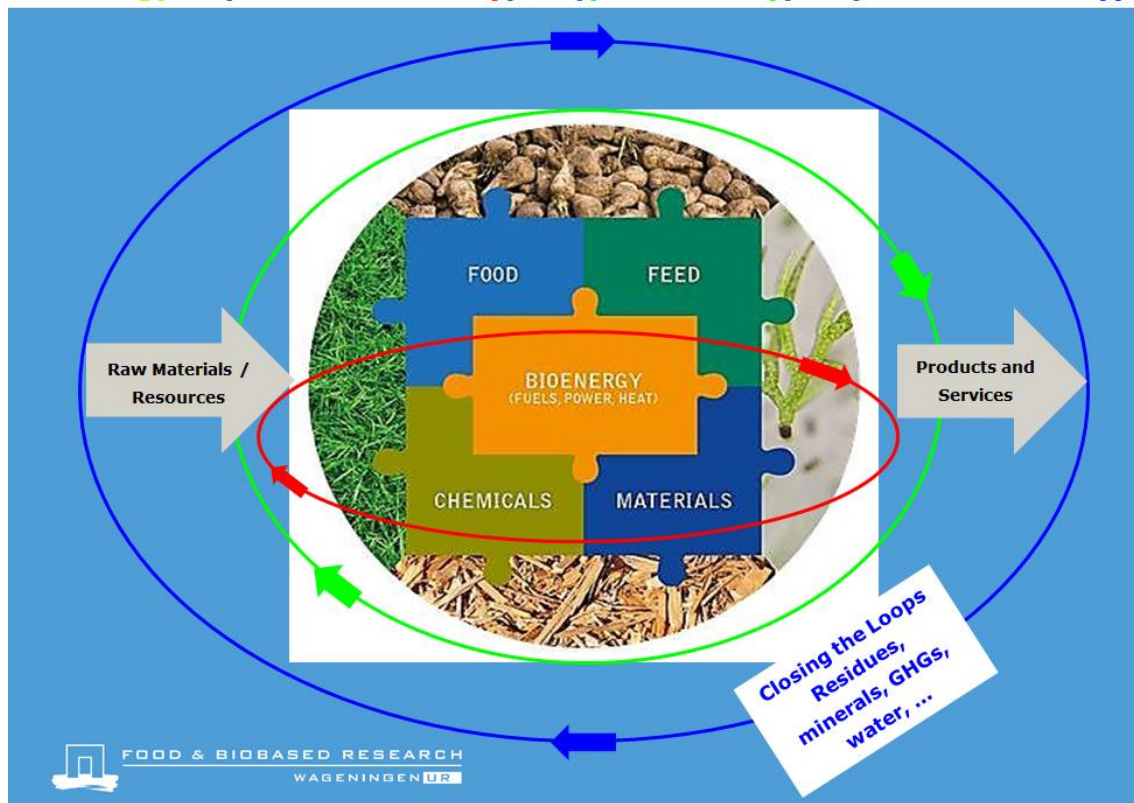
# Newsletter

Number 1., May 2016

## Introduction IEA Bioenergy Task42 "Biorefining in a Future BioEconomy" in new triennium (2016-2018)

In a future Bio Economy, sustainable production, conversion and upgrading of biomass to both food and non-food will be the key framework of an operation. Sustainably produced biomass (crops, trees, algae, residues) need to be used as efficiently as possible - using bio-cascading and biorefining approaches - to meet future demands of food, feed, biobased products (chemicals, materials) and bioenergy (fuels, power, heat).

$$\text{Bioenergy} = f(\text{Biobased Economy}) = f(\text{Bio Economy}) = f(\text{Circular Economy})$$



**Bioenergy** as part of the **Biobased Economy**, the **Bio Economy**, and the **Circular Economy** [Wageningen UR, IEA Bioenergy Task42]

In the short-term, bioenergy through fuels, power and heat are expected to drive the initial transition to a Biobased Economy. This is expected to be achieved by providing biomass mobilisation and certification expertise, facilities, infrastructure, and stakeholders that cover the entire value chain.



It are these stakeholders that potentially can be used to kick-start the biorefinery deployment. The aim of future biorefineries is to use the available biomass potential in a sustainable way through the coproduction of food and feed ingredients, biobased products (chemicals, materials) and energy (fuels, power, heat).

Over the mid to longer-term, bioenergy is expected to play a central role as part of an efficient bio-cascading/biorefining approach within the Bio(based) Economy. This will be achieved by:

- Providing sustainable biofuels, produced from non-food biomass sources, to sectors where they are the only alternative fuels to reduce their GHG-emissions, i.e. aviation, shipping and heavy duty transport – **a biofuel-driven biorefinery approach**.
- The upgrading of primary (agro), secondary (process) and tertiary (post-consumer) chain residues to produce both products and energy (power and heat). The co-generated energy can be used to meet internal energy demand for the processing or for external use. This may also include the production of sustainable biofuels to cover (part of) the logistical energy demand for biomass sourcing and product delivery purposes – **a product-driven biorefinery approach**.
- Upgrading of biomass residues and non-food biomass sources to generate power and heat in high-efficient co-firing and stand-alone conversion facilities. These conversion facilities will generate upstream value-added products through the extraction and/or processing of process residues – **an energy-driven biorefinery approach**.

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

Biorefineries have already been applied for some considerable time in the food industry and the pulp & paper sector. Large-scale implementation of biorefineries for non-food (incl. bioenergy) applications, however, is still lacking. The major reasons for this are:

- Readiness of technology: Some of the key technologies (e.g. fractionation & product separation, downstream processing etc.), which are part of integrated biorefinery plants, are still not mature enough for commercial market implementation.
- Uncertain economic feasibility: Due to limited pilot and demonstration plants there is a shortage of sound biorefinery business cases to prove the feasibility for broad deployment. The current low crude-oil price has created significant economic pressures with respect to biorefineries leading to a limited pull from the market.
- There is still no level-playing-field for sustainable biomass use for food and non-food applications. By way of example, the global mineral hydrocarbon industry still receives significant tax and subsidy advantages over biorefineries utilising sustainable biomass, selling into a similar market.



- Lack of co-operation: Market sectors that should co-operate from a biorefinery perspective, such as: food, feed, agro, chemistry, energy, fuels, logistics, etc., to develop and commercialize full sustainable biomass value chains, including highly-efficient biorefinery processes, are often still not working together, and
- Missing knowledge/expertise: There is still a lack of knowledge/expertise on the advantages of biorefinery processes for optimal sustainable biomass use at industrial, SME and (regional) governmental level.

### Challenges to be tackled

- Develop industry legitimacy, including social acceptance, and a level-playing field for sustainable biomass use.
- Multi-sectorial stakeholder involvement in the deployment of sustainable value chains.
- Technology development and biorefinery scale-up using best practices.
- Generate and communicate validated information and evidence on biorefineries and how specific actors and society can benefit from the implementation of biorefineries.
- Unlock available expertise and industrial infrastructure energy/fuel, agro/food, material and chemical manufacturing sectors.
- Develop the necessary human capital by training students and other stakeholders to become the biorefinery experts of tomorrow.

The **aim of Task42** is to facilitate the commercialisation and market deployment of environmentally sound, socially acceptable, and cost-competitive biorefinery systems and technologies. It is also expected to advise policy and industrial decision makers accordingly. Task42 provides an international platform for collaboration and information exchange between industry, SMEs, GOs, NGOs, 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. Task42 also provides support and advice to policy makers, encourages the involvement of industry along with the membership of countries with a strong biorefinery infrastructure and appropriate policies. Gaps and barriers to deployment are addressed to successfully promote sustainable biorefinery systems market implementation.

### 20<sup>th</sup> Task42 Progress Meeting, Dublin, Ireland

On 18 and 19 April 2016 Task42 came together in Dublin, Ireland, for its 20<sup>th</sup> Progress Meeting. The major goals for this meeting were to inform the participants on biorefining developments within their respective countries, to contribute to an Irish Stakeholder Meeting concerning Irish BioEconomy strategy development, and to come-up with a consolidated Work Programme for this 2016 – 2018 triennium. In a roundtable session the most important biorefining developments in the participating countries were presented. The major issues per country, including links to the slides of the presentations, are given on the next page. Also, the links to the slides of the lectures given at the Irish Stakeholder Meeting are presented at the next page.





### Roundtable country updates and Irish Stakeholder Meeting

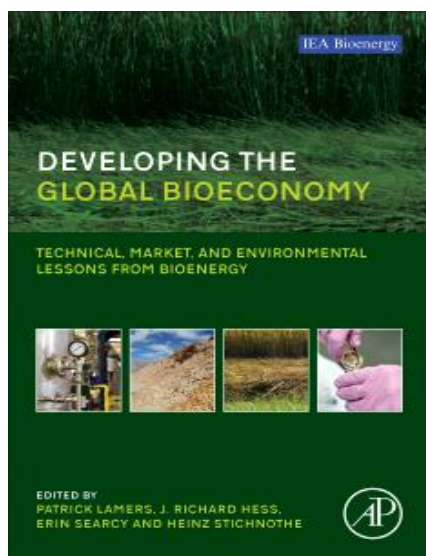
Country updates	Stakeholder meeting
<ul style="list-style-type: none"> <li><a href="#">Austria</a></li> <li><a href="#">Australia</a></li> <li><a href="#">Canada</a></li> <li><a href="#">Denmark</a></li> <li><a href="#">Germany</a></li> <li><a href="#">Ireland</a></li> <li><a href="#">Italy</a></li> <li><a href="#">The Netherlands</a></li> <li>US: -</li> </ul> <p>To download the country updates (ppt-formats), please click on the country links.</p>	<ul style="list-style-type: none"> <li><a href="#">The role of biorefining in the BioEconomy – Summary IEA Bioenergy Task42 (NL)</a></li> <li><a href="#">2<sup>nd</sup> Generation biorefineries – implications for Australia (AUS)</a></li> <li><a href="#">Biorefinery R&amp;D in Denmark (DK)</a></li> <li><a href="#">Green Biorefineries (AT)</a></li> <li><a href="#">Irish BioEire-project (IL)</a></li> </ul> <p>To download the lectures given at the Irish Stakeholder Meeting, please use the links below for downloading.</p>

### Task42 Consolidated work Programme 2016 - 2018

Activity	Time schedule			Deliverables
	2016	2017	2018	
<b>AA1. Biorefinery Systems (coordination: AT)</b>				
A1.1 BR expert system development				D1: Report (M18 and M36)
A1.2 Biorefinery Factsheets (incl. microalgae-based)				D2: Max 3/country (M36)
A1.3 Upgrading industrial infrastructures to integrated BRs				D3: Report and part of D2 (M36)
<b>AA2. Product Quality (coordination: GER)</b>				
A2.1 International developments standardisation/certification BM-use				D4: Annual report (M12/24/36)
A2.2) JTP Role Bioenergy in a Circular Economy				D5: T42 Report for ExCo (M11)
A2.3) JTP MG&GS for Sustainable Supply Chains				D6: Reports/ workshops T40
<b>AA3. Evolving BioEconomy (coordination: IT)</b>				
A3.1) BioEconomy strategies/drivers, focus biofuels/bioenergy				D7: Report (M24)
A3.2) JTP Bioenergy Success Stories				D8: Contributing to SF-project
<b>AA4. Communication, Dissemination and Training (coordination: NL)</b>				
A4.1) Biorefining Country Reporting (potential link to ExCo database)				D9: 1/country with updates (M36)
A4.2) Reports on Added-value Biobased Products				
Biobased Chemicals				D10: Glossy Report (M33)
Proteins for Food/Feed and Industrial Applications				D11: Glossy Report (M9)
Biobased Fibrous Materials				D12: Glossy Report (M21)
A4.3) Glossy Task42 Brochure				D13: Glossy Brochure (M12)
A4.4) Task42 Flyer, poster, banner				D14: Flyer, poster, banner (M12)
A4.5) Up-to-date Task42 Website				D15: Website (M0)
A4.6) Task Progress Meetings + international knowledge exchange				D16: Bi-annual meetings/events
A4.7) Task42 Newsletters				D17: Minimally 2 a year
A4.8) Contributing to BR training activities				D18: Maximally 1 a year
A4.9) Paper lectures @ international events				D19: Part of ExCo reporting
A4.10) Thematic Stakeholder Workshops (IEA-IETS, FAO, OECD, EBA)				D20: 3, incl. reporting (M36)



### Book published: Developing the Global BioEconomy



The book "Developing the Global BioEconomy" brings together expertise from three IEA Bioenergy Tasks - Task 30 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/>

### List of events

Date	Name	Venue	Short description, info & registration
6-9 June 2016	EUBCE 2016	Amsterdam, NL	This broad conference also contains a side event on the 7 <sup>th</sup> of June called 'The world needs more land use change' organized by IEA <a href="http://www.eubce.com/parallel-events/workshops/the-world-needs-more-land-use-change.html">http://www.eubce.com/parallel-events/workshops/the-world-needs-more-land-use-change.html</a>
8-15 July 2016	Microalgae Process Design	Wageningen, NL	This course provides the essential skills for designing optimal microalgae-based production processes, for both research and commercial purposes <a href="http://www.vlaggraduateschool.nl/courses/algae-design.htm">http://www.vlaggraduateschool.nl/courses/algae-design.htm</a>
18-20 July 2016	Microalgae Biorefinery	Wageningen, NL	This course provides the essential skills for designing optimal microalgae-based biorefineries <a href="http://www.vlaggraduateschool.nl/courses/algae-biorefinery.htm">http://www.vlaggraduateschool.nl/courses/algae-biorefinery.htm</a>
29-31 August 2016	IBBESS	Wageningen, NL	International BioBased Economy Student SymbioSUM <a href="http://www.ibbess.org">www.ibbess.org</a>
20-21 September 2016	Conference: the future of food waste	Wageningen, NL	Challenges and opportunities for valorisation in Europe. Info: <a href="http://hoteldewageningscheberg.nl/en/">http://hoteldewageningscheberg.nl/en/</a> Registration: <a href="http://svy.mk/1Q8uYTk">http://svy.mk/1Q8uYTk</a>
14-15 November 2016	Conference: Bioenergy Australia	TBC	This is the annual Australia bioenergy conference that looks at the whole area of bioenergy. Current information at: <a href="http://www.bioenergyaustralia.org/pages/bioenergy-australia-conference-2016.html">http://www.bioenergyaustralia.org/pages/bioenergy-australia-conference-2016.html</a>
15-17 November 2016	Symposium lytic polysaccharide monoxygenases	Copenhagen, Denmark	Symposium on the chemistry, biology and application of lytic polysaccharide monoxygenases. <a href="http://ign.ku.dk/english/outreach-publications/conferences-seminars/lpmo-symposium/">http://ign.ku.dk/english/outreach-publications/conferences-seminars/lpmo-symposium/</a>
12-13 October 2016	Nordic Seaweed Conference 2016	Grenaa, Denmark	Sixth Nordic Seaweed Conference in Denmark. The theme of this year's conference is: Biorefinery - processes and products <a href="http://www.alqecenterdanmark.dk/conferences/nordic-seaweed-conference-2016.aspx">http://www.alqecenterdanmark.dk/conferences/nordic-seaweed-conference-2016.aspx</a>



The International BioBased Economy Student SymbioSUM (IBBESS) was founded by students at Wageningen University and aims to create a platform to connect students, companies and academia towards a biobased economy. It is our vision to catalyze growth in the biobased economy by inviting young and innovative students to join this summer for the SymbioSUM (29<sup>th</sup> to 31<sup>st</sup> of August 2016). This is a unique combination of a one-day Conference and a two-days Thinktank with real life business challenges. Students will develop consultancy skills, expand their network (to mind-like people and companies) and find inspiration. Visit our website for more information and application [www.ibbess.org](http://www.ibbess.org)

**What?** IBBESS SymbioSUM

**When?** From 29<sup>th</sup> to 31<sup>st</sup> of August 2016

**Where?** Wageningen University, Netherlands

Apply now, only limited spots are available!

Join us for a biobased future and **Rethink Your Oil-Based Day!**

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## IEA Bioenergy

[www.ieabioenergy.com](http://www.ieabioenergy.com)

