

## European Biofuels Technology Platform: 7th Stakeholder Plenary Meeting

### Speakers: CVs & Abstracts

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#### Welcome

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#### **Tomas Kåberger,**

Chair of EBTP Steering Committee, Chalmers University of Technology



Currently, Tomas Kåberger serves as Professor of Industrial Energy Policy at Chalmers University of Technology where he is also responsible for the collaboration between the university and energy companies, including research on sustainable renewable biofuels with the Preem refinery and collaboration on biomass gasification with Göteborg Energy on the GoBiGas project producing methane. He is a member of the board of directors of Vattenfall and the Swedish Forestry Agency. He is also a visiting expert on biofuels at the College of Mechanical and Energy Engineering at Zhejiang University, 2008-2013 extended until 2018. As executive board chairman of the Japan Renewable Energy Institute, Mr Kåberger also spends 25% of his time in Japan. From 2008-2011, he was Director General of the National Swedish Energy Agency responsible for implementing policies as well as funding energy related research, development and demonstration.

**10 years of EBTP 2006 - 2016**

#### Keynote

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#### **Piotr Tulej,**

European Commission, DG Research and Innovation



Piotr Tulej is Head of Unit 'Renewable Energy Sources' in the Directorate-General for Research and Innovation of the European Commission. In this capacity he formulates policies and contributes to the European Research Area in the field of new and renewable energy sources. He is responsible for research strategy for renewable energy technologies. Previously, in the European Commission, he headed implementation of the European Emission Trading System and the Effort Sharing Decision. He oversaw the Directive for Carbon Capture and Storage and the NER300 Programme for co-financing demonstration of innovative energy projects.

Earlier, he was Head of Renewable Energy Unit of the International Energy Agency (IEA), worked as programme manager at the Netherlands Agency for Innovation and Sustainable Development (SenterNovem) and the International Institute for Energy Conservation and Johnson Controls Inc. He began his professional career in research and development.

He authored or co-authored a number of publications on energy technologies and policies.

**Towards an Integrated SET-Plan – The role of bioenergy/biofuels in accelerating the European energy system transformation**

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## SESSION ONE: Decarbonising transport

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**Moderator: Tomas Kåberger**

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**Speakers:**

**Jérôme Sabathier,**

IFP



Jerome Sabathier is currently Head of the Economics and Environment Evaluation Department at IFP Energies Nouvelles. Jerome is an engineer of the Ecole des Mines and IFP School in France and holds a Master of Sciences in Energy Management & Policy from University of Pennsylvania, USA. As an energy economist, he has been working on various energy related projects for government agencies and private business, mainly in charge of financial analysis of investment projects and analysis of oil and gas pricing and fiscal systems. He joined IFP Energies Nouvelles in 2005 where he is now in charge of the Economics Department which carries out research, technical and economic studies and policy analysis in the field of energy and the environment.

### **Current Changes and Outlook in Global Oil Market**

The 2014 sharp fall in oil price and its recent partial recovery are dividing the views of analysts regarding the oil market outlook: Are we entering into a new oil order with “low” oil price for an extended time period or are we at the beginning of new upwards cycle. These two views, “softer for longer” or “higher sooner” needs to be addressed looking at oil market fundamentals not forgetting economic, financial, monetary and geopolitical factors.

- The context: the 2014 oil price shock – what are the main causes of the sharp drop
- Developments in supply and demand
- 2016 Looking ahead: Global oil market and price outlook

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**Marc Londo,**

EBTP Working Group Chair ‘Policy and sustainability’, ECN



Marc Londo is a senior researcher at ECN Policy Studies, coordinating the unit's activities on renewables in the EU and beyond. He has vast experience in managing and executing energy scenario and road mapping projects, particularly in biofuels for transport, in techno-economic assessments and policy evaluations (ex ante and ex post). He coordinated ECN's technical support activities to the negotiations for the National Energy Agreement, and also recently led two innovative strategy consulting projects for private clients of ECN. He is an experienced leader of EU projects, within Intelligent Energy Europe and in several impact assessments for the European Commission. Earlier, he worked as a project manager in sustainable energy and integrated rural development. He holds a PhD in biomass and land use and an MSc in environmental chemistry, both obtained at Utrecht University, to which he is currently liaised as a guest researcher.

**The EBTP Transport Vision Group**

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## Nils-Olof Nylund,

EBTP Working Group Chair 'End use and distribution', VTT



Nils-Olof Nylund has a Doctor of Technology degree in mechanical engineering (internal combustion engines) from Helsinki University of Technology. He is currently Research Professor for Energy Use in Transport and Engine Technology at VTT Technical Research Centre of Finland Ltd. He is manager of the Finnish research programme TransSmart on smart and sustainable mobility. He has been working with alternative fuels since 1979, and has been the Finnish delegate to IEA Advanced Motor Fuels (AMF) since 1990. Since 1998, he has been either Chairman or Vice Chairman of AMF. In addition, he also was the IEA EUWP Vice Chairman for Transport from 2007 to 2016.

### The role of advanced biofuels in future transport options

Greenhouse gas emissions from transport will have to be reduced by 30 – 40 % by 2030 and by 60 – 80 % by 2050. Deep decarbonisation will require a wide range of measures, and it is obvious that one single energy carrier cannot meet all needs. Measures to reduce GHG emissions from transport include improvements on energy efficiency on the vehicle as well as on the transport system level, smarter operations throughout the whole system and introduction of renewable/low carbon fuel, including advanced biofuels. Liquid biofuels are among the most versatile alternatives. Electrification is best suited for light-duty vehicles and urban services, whereas long haul heavy-duty trucks, ships and commercial airplanes will have to rely on biofuels for decarbonisation. In addition to be able to serve all modes of transport, the best of biofuels are fully compatible with existing and future vehicles and infrastructure and can offer a fast track to transport decarbonisation. Mandates can effectively bring biofuels to the market. Several heavy-duty vehicle manufacturers have now certified Euro VI vehicles for 100 % paraffinic renewable diesel. Finland, with its huge biomass resources, has set up an ambitious target of 40 % renewable fuels in transport by 2030. In the case of Finland it has been concluded that from a national economy point of view, advanced biofuels are the most cost effective way to decrease GHG emissions from transport. A recent international study confirms that in the 2030 timeframe, improvements of energy efficiency and biofuels are more cost effective measures for GHG reductions than electric vehicles. However, in road transport, in the long run we will need electric vehicles as well as biofuels, electricity with a focus on urban services and biofuels with a focus on long haul operations.

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## PANEL: Decarbonising transport

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## Ingvar Landälv,

Vice Chair of EBTP Steering Committee; Lulea University of Technology



Ingvar Landälv, since 2013, has worked as senior project manager at Lulea University of Technology. Between 1997 and 2012 he was engaged in the development and commercialization of Chemrec's black liquor gasification technology, serving as Chief Technology Officer. In this capacity he took the initiative to convert the pulp mills to biorefineries thus making them producers of syngas-based fuels / chemicals in addition to the base product, paper pulp. He graduated in 1975 with a MSc in Physics & Chemistry. He has more than 35 years' experience of process R&D, design, engineering, construction and operation of gasification based process plants based on oil, coal and biomass as feedstock. He holds a number of patents in the area of energy integration in gasification based processes. Within the EBTP he is Vice-Chair of the Steering Committee and Co-Chair of Working Group 2 on 'Conversion processes'.

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## **Kyriakos Maniatis**

DG Energy



Kyriakos Maniatis is Principal Administrator in the Directorate General for Energy, European Commission. He is responsible for technical issues related to biofuels and bioenergy and manages the DG ENER demonstration component on advanced biofuels in the European Commission's 7<sup>th</sup> Framework Programme. He contributes accordingly to the legislative actions of the EC and to the European Industrial Bioenergy Initiative of the SET Plan and he is involved in the CEN standardisation work on liquid and gaseous biofuels. In June 2011 he initiated the Biofuels FlightPath for Aviation in close coordination with the aviation and biofuels sectors. Kyriakos also represents the European Commission in the Executive Committee of IEA Bioenergy Implementing Agreement and served as the ExCo Chairman in 2002, 2005-2007. He regularly organizes workshops and conferences on these subjects.

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## **Inmaculada Gómez,**

Environmental Expert, SENASA



Inmaculada Gomez is the Project Coordinator of ITAKA. She has a PhD in Environmental Sciences with over 10 years' experience, and has been an environmental expert at the Observatory of Sustainability in Aviation of SENASA, since its creation in 2007. She was involved in the creation of the Spanish Initiative for aviation biofuels (Bioqueroseno.es), is member of the working group for alternative fuels of ACARE and the CAEP Alternative Fuels Task Force. Before working at SENASA she was professor of environmental economics and landscape planning, and worked on several research projects.

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## **Patrik Klintbom,**

Director Environment and Energy, Volvo Group



Mr Klintbom acts as expert at the Volvo Group Headquarters in Gothenburg Sweden. His areas of expertise are energy resources, alternative/renewable fuels and environment in general. His responsibility is to analyse and give guidance when it comes to issues related to energy supply and environmental issues in order to set the foundation for the Volvo Group Strategy and Positions within the area. Mr Klintbom has been with Volvo Group since 2001. He holds a bachelor's degree in Energy and Environment from Mälardalen University, Sweden.

Mr Klintbom is since 2011 the Chairman of the Swedish Energy Agency Development Platform for Transport (UP-Transport).

Mr Klintbom is a member of the European Commission Sub-Group on "Advanced Biofuels" giving recommendations on how to accelerate the introduction of such fuels in EU.

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## **William Todts,**

*Transport&Environment*

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## **SESSION TWO: Biofuels and the latest research developments**

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### **Moderator:**

#### **Markku Karlsson,**

Vice Chair of EBTP Steering Committee and Vice-Chair of Working Group 1 – 'Biomass availability and supply', Finnish Forestry Industries Federation



Before retirement, Markku Karlsson was Senior Vice President, Technology at UPM-Kymmene Corporation in Finland. From 1999-2004 he was Senior Vice President in Corporate Technology at Metso Corporation. From 2004 until 2006 he was Vice Chairman of the Academy of Finland, and a member of the board from 2000 until 2003. He has been also a member of the board of the Finnish Forest Research Institute (Metla), a member of the Steering Committee of the European Biofuels Technology Platform, the Advisory Committee for the Forest Based Sector Technology Platform, and the CTO Committee of the Agenda 2020 Technology Alliance. He received a D.Sc. (Chem.Eng.) from Åbo Akademi University, Turku, Finland in 1987.

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### **Speakers:**

#### **Britta Müller**

Secretariat EBTP, Agency for Renewable Resources



Britta Müller is Project Manager at the Agency for Renewable Resources in Germany. Since 2013 she supports the coordination and management of the FP7 project European Biofuels Technology Platform- Supporting Advanced Biofuels Stakeholders (EBTP-SABS) and is responsible for all day-to-day administration of the project and the EBTP Steering Committee. She is also responsible for the management of project meetings and events as well as coordination of EBTP stakeholders and Working Groups. She has an academic background in agricultural sciences with a specialisation in agricultural economics.

### **Results from the EBTP Strategic Research Innovation Agenda Update**

In light of new legislation and an ongoing debate on the availability and sustainability of feedstocks, as well as the acceleration of novel feedstocks, advanced conversion technologies, and emerging markets (e.g. aviation, shipping) the current Strategic Research and Innovation Agenda has been produced by the EBTP Working Groups. The aim of this update is to present the most significant recent evolutions of relevance to biofuels and to highlight corresponding R&D&D priorities.

## Calliope Panoutsou,

Chair of EBTP Working Group 1 – ‘Biomass availability and supply’  
Imperial College London



Dr Calliope Panoutsou is a member of the Bioenergy Group within the Centre for Environmental Policy (Imperial College London) and is the Chair of the EBTP Working Group on ‘Biomass availability and supply’ within the European Biofuels Technology Platform. Her work assignments focus on supply, logistics & economic analyses of biomass value chains, market & policy analyses and assessment of sustainability for bioenergy systems. She has coordinated several EU projects involving multi-disciplinary research on bioenergy. She also acts as expert in EU bioenergy, biofuels and agriculture committees. She holds a PhD from Aston University.

### Sustainable and resource efficient biomass

Transition towards bio-economy and increasing resource efficiency is an important part of the European policy agenda. Research work in the last years has been much focused on evaluation of biomass availability and supply, driven by the demand in the bioenergy and biofuels sectors. However, the evolving bio-based economy covers a wider range of markets and end products. Therefore, it is important to examine synergies, conflicts and interdependencies among the different feedstocks. Moreover, there is a need for coherent indicators to evaluate quantity, quality and cost associated with the production of feedstock.

This gap has been addressed by EU FP7 funded project **S2Biom** ([www.s2biom.eu](http://www.s2biom.eu)). The project aims to support sustainable delivery of non-food biomass feedstock at local, regional and pan-European level (EU28, Western Balkans, Moldova, Turkey and Ukraine) through developing strategies and roadmaps, supplied by a computerized and easy to use toolset.

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## René van Ree,

Theme Leader Biofuels & Bioenergy, Wageningen UR – Food and Biobased Research (DLO), Coordinator IEA Bioenergy Task42 Biorefining



René has been working in the energy sector for about 25 years, with a current main focus on circular economy, bioeconomy, biorefining, bioenergy, advanced biofuels & biobased products. He is currently employed at Wageningen UR in the Netherlands @ the research institute Food and Biobased Research (part of the DLO Foundation). Before he has worked at the Energy Research Centre of the Netherlands for about 15 years within the fields of clean fossil fuel use for energy purposes and thermal conversion & refinery of biomass for both energy and non-energetic applications. The development and deployment of sustainable biobased value chains as part of a circular economy in which biomass is optimally and synergistically used for food and non-food applications is his major driver. His main responsibilities are: set-up of large bilateral and private-public projects at national, European and global scale; RTD strategy development; national and European policy support; project management; Dutch/Wageningen UR representative in various (inter)national platforms. His related positions are: Coordinator IEA Bioenergy Task42 Biorefining, Member Steering Committee European Biofuel Technology Platform (EBTP), Member European Energy Research Alliance (EERA) Bioenergy, Member Energy Advisory Group Dutch Ministry of Economic Affairs.

### Integration of advanced biofuels in bioeconomy

- Circular economy
  - Bioeconomy
  - Biofuel based biorefineries
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## **SESSION THREE: Biofuels technology-The road so far - lessons learnt from different biofuel plants**

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### **Moderator:**

#### **Pierre Porot,**

Co-Chair EBTP Working Group 2 – ‘Conversion processes’; IFP



As Deputy Director of the IFP Energies Nouvelles Process Business Unit in charge of the Biofuels program, Hydrogen program and GtL program, he works on the IFPEN Biomass conversion strategy and projects follow-up: ligno-cellulose conversion to fuels through different paths (biological with the FUTUROL project, thermochemical with the BioTfuel project,...), resources availability, co-products management. In 2008, he became vice-chair of the WG2 of the European Biofuels Technology Platform. From 2001 until 2004, he was working as process engineer in the Process Department. He dealt with petroleum heavy ends conversion processes. At the same time, he also managed a project, which aimed to build linear programming refinery models. These simulators are designed for refining economic studies.

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### **Speakers:**

#### **Nicolaus Dahmen,**

Karlsruhe Institute for Technology (KIT)



Prof. Nicolaus Dahmen studied chemistry at the University of Bochum, finishing his PhD in 1992. He worked on application of high pressure to chemical reactions and separation processes as a group leader and, since 2000, as head of the High Pressure Process Technology division at the Research Centre Karlsruhe (today Karlsruhe Institute of Technology (KIT)). In 2005, he joined the bioliq project management to build up a pilot plant to convert residual biomass into synthetic fuels and chemicals. Also, he took over the Thermochemical Biomass Refining division in the Institute for Catalysis Research and Technology (IKFT) at KIT. After habilitation in 2010 at Heidelberg University, he now is professor at the Faculty of Chemical Engineering at KIT. In the bioliq project he is responsible for R&D coordination.

#### **Status and Outlook for bioliq-Project – Syngas Platform for High Performance Fuels**

The bioliq process is being developed to convert lignocellulosic, residual biomass into synthetic fuels and chemicals. After erection of the pilot plant first operation along the full process chain from fast pyrolysis for de-centralized energy densification, high pressure entrained flow gasification for clean syngas production, hot gas cleaning, and gasoline synthesis via methanol and dimethyl ether as intermediates was achieved in 2014. The focus is now on optimization of the individual process steps and the overall process chain as well as on the further development in regard to commercialization.

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## Timo Huhtisaari,

North European Oil Trade Oy



Timo Huhtisaari is the Sustainability and Biofuels Expert at North European Oil Trade Oy, a Finnish fuel procurement company which is operating in Nordic countries. Through his Bachelor in Environmental Engineering and later on Masters of Corporate Environmental Management he developed a deeper interest in environmental topics, renewable energy and specifically biofuels. Currently at NEOT in his position for 3,5 years, Timo focuses on the regulatory affairs on Finnish and European level. Also he looks after advanced biofuels production projects at NEOT and how these fuels could be brought to market in fuels that go beyond blend wall.

### The Etanolix® unit in Gothenburg

Advanced biofuels technologies are essential in increasing the sustainable biofuels volumes. Waste-to-biofuel are great way to utilize raw-materials that do not have real use. These concepts can create business ecosystems that create win-win-situations both for business as well as climate. Etanolix ® waste-to-ethanol is a concept where food industry wastes are collected with “bread-circles” and used to create advanced ethanol and animal feed as a by-product. This is possible through collaboration with food retailers, bakeries and waste collecting companies. The feedstock is used in refinery integrated ethanol production facility at the St1 Gothenburg refinery. This gives a variety of benefits in shared utilities, personnel as well as with blending infrastructure to ready fuels. Ethanol production technologies are not the main issue, there are a variety of technologies available around the world. However, the focus should be in how to increase the biofuels usage that truly replaces crude oil refining. The consumption pattern in Europe seems to be trending towards dieselization of fleet. In order to supply the amount diesel needed, the refineries will also need to produce petrol and other fractions as well. Therefore, it is essential to keep energy consumption balanced and replace all refinery process fractions with renewable ones. Waste based ethanol can be a substitute for the diesel used in fleets through ED95, pure ethanol added with ignition improver. This is especially good fuel to replace diesel used in distribution trucks and municipal buses. The most sustainable solutions are created when local production is combined with local consumption. This increases energy independence and truly reduces the crude oil consumption.

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## Eric Zinn,

Göteborg Energi AB



Eric Zinn has been involved in Göteborg Energi's ambitious investments in biomethane for transportation since 2007, which have transformed the company from one of Sweden's largest suppliers of natural gas to Sweden's leading biomethane developer. He has been responsible for project development (including Europe's first functioning plant for liquefied biomethane), biomethane logistics and business coordination. He is currently involved in business development at the GoBiGas plant and an active contributor to the Swedish Knowledge Centre for Renewable Fuels. Previously, Mr. Zinn has worked as a consultant in waste management and international development (primarily South Africa).

### GoBiGas: Technical successes and economic challenges

The GoBiGas plant has the potential of producing one of the most efficient and inexpensive biofuels possible from woody biomass. The state supported demonstration facility was constructed in 2013 and was recently announced to be in full operation. Several initial difficulties have been overcome with the assistance of the growing knowledge base at nearby Chalmers University of Technology, but the economic outlook for the plant has never been bleaker. Will Sweden continue to lead the way for biomethane for transportation?

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## **Rob Vierhout,**

Enerkem



A graduate in Political Science and European Law, for 14 years Rob was the voice of European ethanol producers providing political and strategic insight to the membership of the various associations he led. He first was the principal advisor to AFTA (Association for Fair Trade in Alcohol) then the Secretary- General of eBIO (European Bioethanol Fuel Association) later to be appointed the first Secretary-General of ePURE (European Renewable Ethanol Association) in 2010. He stepped down from this position in September 2014. Since early 2015 he is Enerkem's principal adviser on EU affairs.

Rob began his professional career as an academic researcher followed by 8 years in the European Parliament. He then moved on to private industry and became a public affairs consultant at Deloitte & Touche. Before Rob started working for the ethanol sector he was the managing director of the consulting firm European Affairs Management (EAM), which he founded, now called team. Since the end of 2014, Rob is providing consultancy services to a number of companies, inside and outside Europe, operating in the bioenergy sector. He is member of the European Commission's advisory group on Advanced Biofuels.

### ***Experiences made in Canada with the processing of municipal solid waste***

Enerkem's first commercial facility in Alberta, Edmonton, Canada, is the world's first major collaboration between a large city and a waste-to-biofuels producer to address waste disposal challenges and turn municipal solid waste into clean fuels and renewable chemicals, such as ethanol and methanol. This facility can become a model for communities around the world that are looking for a sustainable way to manage waste and produce advanced biofuels. The speaker will discuss the Edmonton experience and address the challenges faced by Enerkem along the way.

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## **Ingvar Landälv,**

Lulea University of Technology

For CV please see Session 1

### **Efficient integration of fuel generation with pulp mills**

Pulp mills are large consumers of renewable raw materials when converting wood to pulp. More than 50% of the energy in the feedstock ends up in an energy rich liquid by product, black liquor (BL). In today's pulping process this stream is burnt in the so called recovery boiler to generate heat and power to run the overall process and to recover the cooking chemicals used to separate the wood fibers from the rest of the feedstock material. The company Chemrec has developed a process in which the BL is gasified to produce a high quality synthesis gas which can be further converted to fuels and chemicals. To compensate the pulp mill for taking its energy supply to other usage the concept also contains an efficient biomass fed boiler which generates the necessary steam and power to run the new pulp mill bio refinery. Since the mid 1990-ies Chemrec has operated its BL gasifiers for about 75 000 hours. The pressurized oxygen-blown gasifier in Piteå, Sweden has run more than 27 000h and the downstream located BioDME plant for more than 10 000 h. The operations result 2005 to 2016 will be summarized under the following key topics:

- Overall concept
- Availability consideration and Syngas quality
- Increasing syngas generation via addition of pyrolysis liquid to the BL flow
- Increasing syngas generation via utilizing renewable power
- Potential for renewable fuels generation from pulp mills in Europe