

# Building a sustainable European biofuels industry



4-6 November 2019, Gothenburg, Sweden

A joint conference between

**BIO4  
FUELS**

Supergen



THE SWEDISH KNOWLEDGE CENTRE  
FOR RENEWABLE TRANSPORTATION FUELS



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## Welcome!

Sustainable bioenergy development relies on a combination of sustainable resource procurement, production and use of low carbon fuels and chemicals, as well as a joined-up approach to research and policy that looks at the whole energy system.

This conference will focus on the key objective of sustainable biofuel implementation prospects in Norway, Sweden and the UK. It brings together researchers, industry specialists and policymakers to review the status of bioenergy deployment, analyze the future of sustainable biofuel production and use in Europe, and connect sectorial expertise with a view to supporting sustainable biofuel production and greenhouse gas mitigation.

It is important to recognize that industry, policy and research co-align along common interests and objectives. The conference wishes to facilitate networking and bridge gaps between different research and business areas, parts of the biofuel production value chain, and also, of course, country borders.

We hope you enjoy the conference!



Duncan Akporiaye  
Director Bio4Fuels



Ingrid Nohlgren  
director f3 Swedish Knowledge Centre for Renewable Transportation Fuels and office director for the collaborative research program Renewable transportation fuels and systems



Patricia Thorley  
Director Supergen Bioenergy Hub

## Organizers

### Bio4fuels (NO)

A Centre for Environment-friendly Energy Research (FME) based at the Norwegian University of Life Sciences and lead by SINTEF. The Centre aims to develop innovative technology and support industries to realize economic and sustainable conversion of lignocellulosic biomass and organic residues to transportation fuels, along with added value chemicals, heat and power.

### Supergen Bioenergy (UK)

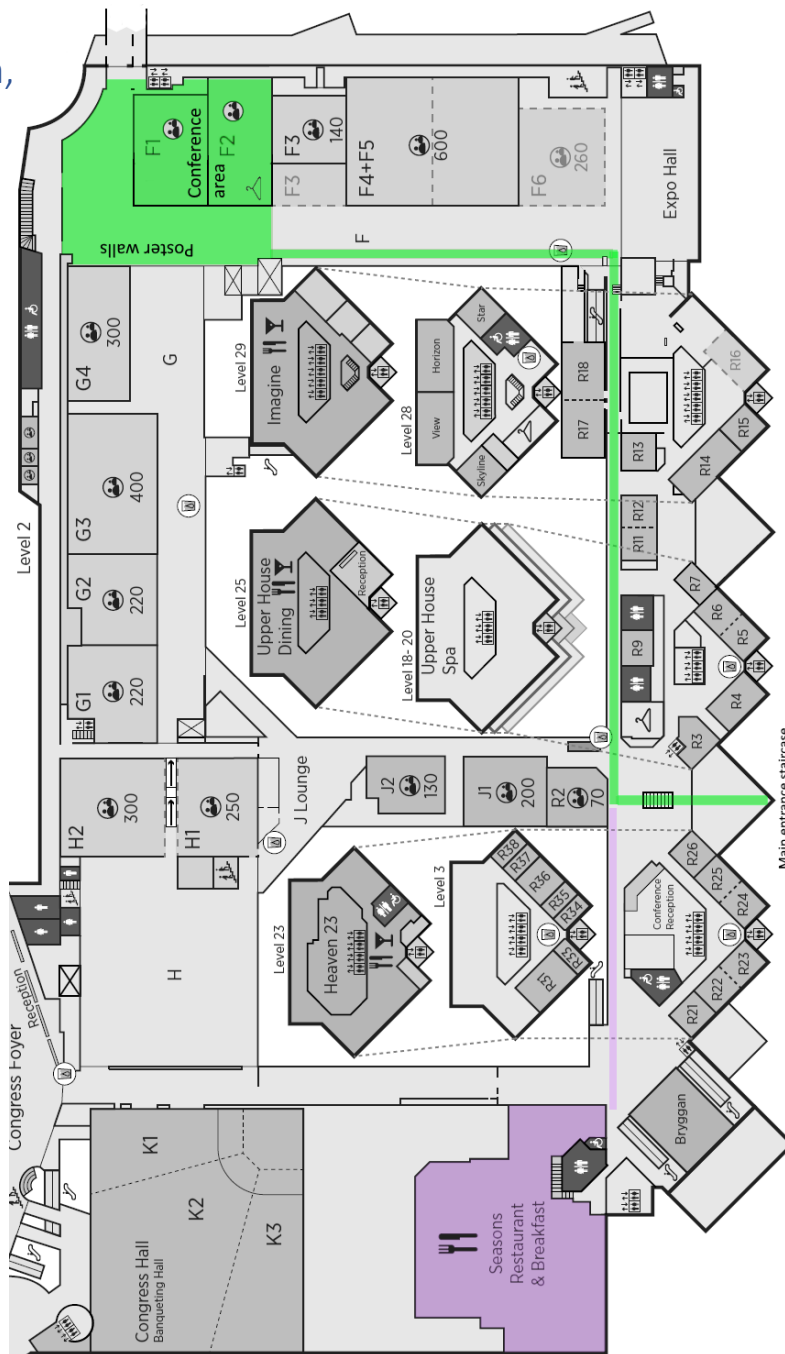
The Supergen Bioenergy Hub works with academia, industry, government and societal stakeholders to develop sustainable bioenergy systems that support the UK's transition to an affordable, resilient, low-carbon energy future.

### Renewable Transportation Fuels and Systems (SE)

A collaborative research programme between the Swedish Energy Agency and f3 The Swedish Knowledge Centre for Renewable Transportation Fuels. f3 focuses its activities on increasing the knowledge about how a future transport system could be provided with renewable and sustainable transportation fuels, based on scientifically based systems analysis.

# Floor plan, Gothia Towers level 2

Conference area  
highlighted in  
green. Lunch  
restaurant and  
wayfinding in  
purple.



## Pre-conference programme

4 November



### *Early Career Researchers Forum, Chalmers University of Technology*

The program includes networking activities, research pitches and presentations, and Q&A session with guest speakers from conference program on careers in the bioenergy/biofuels field.



### *Site visit at Volvo Tuve Plant*

Guided tour with the Tuve train and presentation on demands for meeting future sustainable transports.

# Programme at Gothia Towers

5 November

## Moderator, Plenary sessions

Anders Ådahl, Co-director Energy Area of Advance, Chalmers University of Technology

09.00	<b>WELCOME AND INTRODUCTIONS, Room F1</b> <i>Ingrid Nohlgren, director f3 Swedish Knowledge Centre for Renewable Transportation Fuels and office director for the collaborative research program Renewable transportation fuels and systems</i> <i>Duncan Akporiaye, director Bio4Fuels</i> <i>Patricia Thornley, director Supergen Bioenergy Hub</i> <b>Opening speaker</b> <i>Robert Andrén, Director General of the Swedish Energy Agency</i>
09.50	<b>PLENARY SESSIONS, Room F1</b> <b>FOCUS: POLICY</b> <b>UK transport policy and the Renewable Transport Fuel Obligation</b> <i>Aysha Ahmed, Head of Advanced Biofuels Programme, Department for Transport</i> <b>Biofuel Policy in Norway</b> <i>Peter Nordrum, Senior Advisor, Climate Department, Norwegian Environment Agency</i>
10.40	COFFEE BREAK
11.10	<b>FOCUS: INDUSTRY</b> <b>Sustainable Advanced Biofuels and more – St1 Biorefinery</b> <i>Patrick Pitkänen, Director Advanced fuels, St1 Oy</i> <b>Biogas futures in transport</b> <i>Keith Simons, Principal Scientist, SHV Energy</i> <b>Brazil – The country of competitive and sustainable biofuel</b> <i>Jens Ulltveit-Moe, Founder and CEO, Umoe</i> <b>The quest for green profitability</b> <i>Håvard Wollan, CEO, Biokraft AS</i>
12.30	LUNCH BREAK, RESTAURANT SEASONS, GOTHIA TOWERS
13.30	<b>FOCUS: SUSTAINABILITY</b> <b>Biofuels in the future fossil-free energy system: The Nordic perspective</b> <i>Torjus Bolkesjø, Professor, Faculty of Environmental Sciences and Natural Resource Management, Norwegian University of Life Sciences (NMBU)</i> <b>Sustainability challenges for biofuels from an UK perspective</b> <i>Patricia Thornley, Professor, School of Engineering and Applied Science, Aston University</i> <b>Land, climate and global development pathways: implications for biofuels and the bioeconomy</b> <i>Francis X. Johnson, Senior Research Fellow, Stockholm Environment Institute</i>
14.30	COFFEE BREAK

## 5 November, continued.

15.00	<b>PARALLEL SESSIONS</b>
<b>Room F1:</b> <b>SUSTAINABLE BIOMASS RESOURCES</b> <b>Session chair</b> Pål Börjesson, Professor, Environmental and Energy Systems Studies, Lund university  <b>Industry presentation:</b> <b>Forest-based biofuels - potentials for a new business to grow</b> <i>Henrik Brodin, Business Development Manager, SÖDRA</i>  <b>Research presentations:</b> <b>Drop-in fuels from black liquor – combining increased pulp capacity with production of sustainable biofuels</b> <i>Elisabeth Wetterlund, Associate Professor, Dept. of Engineering Sciences and Mathematics, Luleå University of Technology</i>  <b>The impact of bioenergy systems on soil carbon</b> <i>Rebecca Rowe, Ecologist, The Centre for Ecology &amp; Hydrology</i>  <b>Potential for HVO production from Swedish raw materials</b> <i>Hanna Karlsson, Postdoctor, Dept. of Energy and Technology, Swedish University of Agricultural Sciences</i>	<b>Room F2:</b> <b>CONVERSION TECHNOLOGIES FROM BIOMASS TO SUSTAINABLE BIOFUELS</b> <b>Session Chair</b> Judit Sandquist, Research Scientist, SINTEF Energy Research  <b>Industry Presentation:</b> <b>Roll-out of pyrolysis technology in Europe</b> <i>Gerhard Muggen, Managing Director, BTG Bioliquids</i>  <b>Research presentations:</b> <b>Well-to-wheel cost for forest-based biofuels</b> <i>Karin Pettersson, Researcher, RISE Research Institutes of Sweden</i>  <b>Hybrid process of distillation and gas permeation for production of dehydrated ethanol</b> <i>Olaf Trygve Berghlin, Research Scientist, Process Technology Dept., SINTEF</i>  <b>Model-based fast screening of electrochemical reaction pathways for the integrated biofuels synthesis and CO<sub>2</sub> reduction</b> <i>Jin Xuan, Professor, Dept. of Chemical Engineering, Loughborough University</i>  <b>Fast pyrolysis lignin with catalytic vapor upgrading for the production of alkyl-phenols and aromatics</b> <i>Dumitrita Spinu, PhD candidate, Dept. of Chemical Engineering, Norwegian University of Science and Technology (NTNU)</i>
16.50	<b>RECEPTION BREAK and</b> <b>DROP-IN SESSION FOR BIOMASS AND BIOENERGY JOURNAL SUBMISSIONS</b> <b>Hallway area outside F1 and F2</b>
17.15	<b>POSTER SESSION COMBINED WITH BUFFET DINNER AND NETWORKING</b> <b>Hallway area outside F1 and F2. Drinks at own expence.</b>
19.30	<b>CLOSE</b>

## 6 November

### Moderator, Plenary sessions

Anders Ådahl, Co-director Energy Area of Advance, Chalmers University of Technology (SE)

09.00	<b>WELCOME!</b>
09.05	<b>PLENARY SESSION, Room F1</b>
	<b>FOCUS: INDUSTRY AND END USE</b>  <b>Fossil free domestic aviation in Sweden</b> <i>Anna Soltorp, Sustainability &amp; Political Affairs, BRA Flyg</i>  <b>Net zero emissions by 2050 - a maritime approach to renewable energy transition</b> <i>Anne Sophie Vinther Hansen, Senior Innovation Project Manager, A.P. Møller - Mærsk A/S</i>  <b>Driving the shift to a sustainable transport system – here and now!</b> <i>Henrik Dahlsson, Senior Advisor Sustainable Transports, Scania</i>
10.15	<b>COFFEE BREAK</b>

## 6 November, continued

10.45	<b>PARALLEL SESSIONS</b>	
	<b>Room F1:</b> <b>POTENTIAL FOR BIOCHEMICAL AND BIOMATERIAL BYPRODUCTS/ALTERNATIVES</b> <b>Session chair</b> Aniko Varnai, Researcher, Faculty of Chemistry, Norwegian University of Life Sciences (NMBU) <u><b>Industry presentation:</b></u> <b>Potentials for biochemical and biomaterial products in a sugar platform biorefinery setting</b> Gudbrand Rødsrud, Technology Director, Business Development, Borregaard <u><b>Research presentations:</b></u> <b>How can alcohols contribute to a fossil-independent non-road machinery fleet?</b> Gunnar Larsson, Researcher, Swedish University of Agricultural Sciences <b>Co-production of Lipids and Biopolymers in a single fermentation process – a way to improve sustainability of Microbial Lipid-based Biofuels</b> Volha Shapaval, Associate Professor, Faculty of Science and Technology, Norwegian University of Life Sciences (NMBU) <b>Understanding sustainability within a net zero emission target. Synergies between environment, economy and society</b> Mirjam Roeder, Senior Research Fellow, Energy and Bioproducts Research Institute, Aston University	<b>Room F2:</b> <b>ENVIRONMENTAL AND SOCIAL IMPACTS OF EUROPEAN BIOFUEL DEPLOYMENT</b> <b>Session Chair</b> Robert Holland, Senior Research Fellow, University of Southampton <u><b>Industry presentation:</b></u> <b>The role of the European Technology and Innovation Platform for Bioenergy</b> Patrik Klintbom, Senior Researcher, RISE Research Institutes of Sweden, Chair ETIP Bioenergy <u><b>Research presentations:</b></u> <b>Biogas development – public procurement, networks, and policy instruments</b> Julia Hansson, Senior Scientist, IVL Swedish Environmental Research Institute <b>Forecasting Impact: A case study of bioenergy systems</b> Samuel Cooper, Research Associate, University of Bath <b>Can the Nordics become CO2 negative by 2040? The role of biomass</b> Kenneth Karlsson, Senior Project Manager, IVL Swedish Environmental Research Institute
12.00	<b>CLOSING REMARKS, PLENARY</b> Room F1	
12.30	<b>LUNCH BREAK, RESTAURANT SEASONS, GOTHIA TOWERS</b>	

## Back-to-back workshop 6 November

### ADDITIONAL WORKSHOP ARRANGED BY



**Nordic Energy  
Research**

**BIOFUELS STRATEGY FOR THE COMING DECADE - THE NORDIC REGION AT THE FOREFRONT OF TECHNOLOGY AND SUSTAINABILITY!**

#### ROOM F1

The workshop is arranged in cooperation with NER, Nordic Energy Research, an intergovernmental organization within the framework of the Nordic Council of Ministers.

Come join us in a strategic discussion spanning over the coming decade. We identify some hot spots and discuss solutions.

13.30	<b>INTRODUCTION:</b> Nordic Energy Research (Speaker TBD)
13.45	<p><b>GROUP DISCUSSION:</b> The way forward</p> <p><b>PANEL DEBATE</b></p> <p>Moderator Jakob Lagercrantz, founder of the 2030 Secretariat</p> <p>Panelists:</p> <ul style="list-style-type: none"> <li>• Patrick Pitkänen, St1 Oy, biofuel producing industry perspective</li> <li>• Anne Sophie Vinther Hansen, A.P. Møller - Mærsk A/S, transport industry perspective</li> <li>• Mirjam Roeder, European Bioenergy Research Institute, sustainable biomass research perspective</li> </ul> <p>Julia Hansson or Kenneth Karlsson, IVL: transport research perspective</p>
15.30	CLOSE

## Poster titles and presenters

No.	Title	Presenter
1	Using seawater and marine yeast to improve the productivity and reduce the water footprint of bioethanol	Abdelrahman Zaky, University of Edinburgh
2	The Rise in Focus of Bioenergy Transport Research: Comparisons & Potential Lessons from the UK & Nordic Countries	Andrew Welfle, University of Manchester
3	Combined production of hydrogen and CO <sub>2</sub> from biogas via sorption-enhanced reforming	Antonio Geraldo de Paula Oliveira, Institute For Energy Technology – IFE
4	Policy mixes for domestic biofuel industry value chains: a comparative analysis of the innovation effects of biofuel policies in Sweden and Finland	Barbara Hedeler, Chalmers University of Technology
5	Public attitude towards aviation biofuels: A pilot study findings	Bing Xu, Heriot-Watt University
6	Chemical-looping gasification for the production of biofuel	Carl Johan Linderholm, Chalmers University of Technology
7	Green solvents from Municipal Solid Waste: A Review	Daniel Chernik, University of Leeds
8	Air-steam gasification of poultry litter in a bubbling fluidised bed reactor	Daya Shankar Pandey, Anglia Ruskin University
9	Biofuels for transport: Does it contribute in achieving Sustainable Development Goals (SDGs) in Sweden and UK?	Dilip Khatiwada, KTH Royal Institute of Technology
10	Fast Pyrolysis Lignin with Catalytic Vapor Upgrading for the Production of Alkyl-Phenols and Aromatics	Dumitrita Spinu, Norwegian University of Science and Technology
11	Withdrawn	
12	Withdrawn	
13	Optimizing process conditions for industrial lignocellulose degradation using a novel fungal enzyme cocktail	Heidi Østby, Norwegian University of Life Sciences (NMBU)
14	Rapid simulation of alternative processes	Heinz A Preisig, Norwegian University of Science and Technology
15	Sustainability of second-generation biofuel production in Indonesia for transport sector in EU: Energy Analysis	Jagruti Thakur, KTH Royal Institute of Technology, Sweden
16	Withdrawn	
17	Manganese-based solid sorbents for H <sub>2</sub> S capture: Molybdenum promotion	Jianyu Ma, Norwegian University of Science and Technology
18	Manganese-based solid sorbents for H <sub>2</sub> S capture: Theoretical and kinetic study	Jianyu Ma, Norwegian University of Science and Technology
19	Withdrawn	

20	Catalytic hydrothermal reactions of n-hexadecanoic acid as a model compound of vegetable oils for aviation fuel production	Jude Onwudili, Aston University
21	Preliminary results from catalytic hydrothermal reforming of butyric acid to propane	Jude Onwudili, Aston University
22	CONVERGE: Carbon Valorisation in Energy-efficient Green Fuels	Luca di Felice (Julien Meyer), Institute for Energy Technology
23	Hydrothermal Liquefaction Modeling of Lignin Using A Modified Shrinking-Core Model	K.G.R.M. Jayathilake, University of Agder
24	Optical Measurements of in-flame soot in compression ignition flames	David Emberson (K.O.P. Bjørgen), Norwegian University of Science and Technology
25	Kinetic modelling and validation of entrained flow biomass gasifier for syngas production for FT-synthesis	Koteswara Rao Putta, Norwegian University of Science and Technology
26	H <sub>2</sub> production for biorefinery by catalytic sorption enhanced steam reforming of biomass derived bio-oil	Kumar R. Rout, SINTEF Industry
27	Multifunctional catalyst induced cascade reaction of simulated bio-oil to high yield jet fuel range aromatic production	Kumar R. Rout, SINTEF Industry
28	Enhancing saccharification of Norway spruce by optimizing LPMO activity in enzyme cocktails	Line Degn Hansen, Norwegian University of Life Sciences (NMBU)
29	Modeling Fischer-Tropsch kinetics for reactor design	Ljubiša Gavrilović, Norwegian University of Science and Technology
30	Numerical investigation of emissions from combustion of diesel fuels with glycerol addition using Stochastic Reactor Model	M.T. Lewandowski, Norwegian University of Science and Technology
31	Forecasting Impact: a case study of bioenergy systems	Samuel Cooper (Marcelle McManus), University of Bath
32	"Enhancing enzymatic saccharification of Norwegian spruce by 2-naphthol impregnation"	Martin Østensen, Norwegian University of Science and Technology
33	Stable Cu/C catalysts for selective hydrogenation of hydroxyacetone to 1,2-propanediol	Martina Cazzolaro, Norwegian University of Science and Technology
34	Evaluation of organosolv pre-treatment for effective fractionation of Norway spruce in a novel reactor	Mihaela Tanase-Opedal and Øyvind Eriksen, RISE PFI
35	Hybrid process of distillation and gas permeation for production of dehydrated ethanol	Olaf Trygve Berglihn, SINTEF Industry

36	Greening of fossil-fuel infrastructures from biomass: The case of liquid biofuels	Paraskevi Karka, Chalmers University of Technology
37	Withdrawn	
38	Influence of oxygenated biofuels on the exhaust emissions and toxicity of PAH	Paul Hellier, University College London
39	Energy from Brewery Waste	Poppy Cooney, University of Leeds
40	Evaluation of H-factor on the delignification of Norway Spruce by organosolv pretreatment	Prajin Joseph
41	Biogas upgrading via hydrogenotrophic methanogenesis	Radziah Wahid, Norwegian University of Life Sciences (NMBU)
42	CPFD simulations of air-blown biomass gasifier reactor	Ramesh Timsina, University of South-Eastern Norway
43	Systematic Modelling of the Production and Purification of Monomeric C5 Sugars from Wood Hydrolysates	Robert Pujan, Norwegian University of Science and Technology
44	Coal liquefaction technologies for the hydrotreatment of crude bio oils	Roman Tschentscher, SINTEF AS
45	Co-Production of Ethanol and 1,2-Propanediol via Glycerol Hydrogenolysis Using Ni/Ce–Mg Catalysts	Russel Menchavez, University of Nottingham
46	Foam flotation of Nannochloropsis Oculata	Salihu Musa, Newcastle University
47	Integrated framework for a comprehensive feasibility assessment of biofuel production technologies and their connections to the SDGs	Samira Garcia Freites, University of Manchester
48	LCA-based comparison of bio-based aviation fuel options	Samuel Cooper, University of Bath
49	Thermal Conversion of Inedible Vegetable Oils to Aromatics	Sarah Louise Asplin, Aston University
50	Impact of blending high and low ash content feedstocks on the properties of fast pyrolysis bio-oil	Scott William Banks, Aston University
51	Biodiesel, biopetrol and ethanol from ley grass – a life cycle assessment study with input data from pilot trials.	Serina Ahlgren, RISE Research Institutes of Sweden
52	Optimization of lignocellulose-based substrates for sustainable production of lipids by oleaginous filamentous fungi	Simona Dzurendová, Norwegian University of Life Sciences (NMBU)
53	Process analysis of chemical looping gasification of biomass for FT-crude production with net negative CO <sub>2</sub> emissions	Tharun Roshan Kumar, Chalmers University of Technology
54	St1 Cellunolix® lignin applications and commercialization	Tom Granström, St1 Oy

55	Optimization of advanced biofuel production via Fischer-Tropsch synthesis	Umesh Pandey, Norwegian University of Science and Technology
56	Algae-based biomethane fuel purification and carbon sequestration	Uttam Roy, Loughborough University
57	Withdrawn	

## Biomass & Bioenergy special issue

The conference will also be supported by a special issue of the journal Biomass & Bioenergy. For more information, contact [supergen-bioenergy@aston.ac.uk](mailto:supergen-bioenergy@aston.ac.uk).

## Conference participants list

\*moderator, speaker, chair

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Akershus County Council	Gerd Jacobsen
Anglia Ruskin University, UK	Daya Pandey
Aston University	Emma Wylde
Aston University	Jude Onwudili
Aston University	Katie Chong
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Aston University	Sarah Asplin
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Aston University - EBRI	Costanza Cucuzzella
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Ecopar	Hans Jansson
Energifabriken	Karin Varverud
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Equinor ASA	Per Aksel Skjølsvik
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f3 Centre	Ingrid Nohlgren*
f3 Centre / CIT IE	Ingrid Nyström
Free lance	Maryam Jama
Heriot-Watt University	Bing Xu
Hitachi Zosen Inova AG	Nils Lannerfors
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Lund University	Ola Wallberg
Lund University	Pål Börjesson*
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Lynk & Co	Xiaoyue Liu
Miljöfordon Sverige	Daniel Hagberg
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Neste	Lars Peter Lindfors
Neste	Teemu Sarjovaara

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Newcastle University	Salihu Musa
Norske Skog Saugbrugs	Gudmund Jenssen
Norske Skog Saugbrugs	Håvard Jellestad
Norwegian Bedrock	Inger-Mette Stenseth
Norwegian Environment Agency	Mats Nordum*
Norwegian Forest Owners' Federation	Erlend Krogstad
Norwegian University of Life Sciences (NMBU)	Martin Østensen
Norwegian University of Life Sciences (NMBU)	Radziah Wahid
Norwegian University of Life Sciences (NMBU)	Rubakan Thurupan
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Norwegian University of Science and Technology (NTNU)	Heinz A Preisig
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Norwegian University of Science and Technology (NTNU)	Martina Cazzolaro
Norwegian University of Science and Technology (NTNU)	Mehdi Mahmoodinia
Norwegian University of Science and Technology (NTNU)	Prajin Joseph
Norwegian University of Science and Technology (NTNU)	Robert Pujan
Norwegian University of Science and Technology (NTNU)	Størker Moe
Norwegian University of Science and Technology (NTNU)	Umesh Pandey
Norwegian University of Science and Technology (NTNU)	Ljubisa Gavrilovic
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Statkraft	Ingo Machenbach
Stockholm Environment Institute	Francis X. Johnson*
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Swedish Energy Agency	Klara Helstad
Swedish Energy Agency	Robert Andrén*
Swedish Energy Agency	Svante Söderholm
Swedish Energy Agency	Ulf Jonson
Swedish Society for Nature Conservation	Peter Hallberg
Swedish Transport Administration	Håkan Johansson
Swedish University of Agricultural Sciences	Feng Chen
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Swedish University of Agricultural Sciences (SLU)	Mats Sandgren
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Technical University of Vienna	Arash Aghaalikhani
Teesside University	Ruth Konamah Asare
The Fridtjof Nansens Institute	Jon Birger Skjærseth

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University of Agder	Souman Rudra
University of Algarve	Raja Rathinam
University of Bath	Marcelle McManus
University of Bath	Samuel Cooper*
University of Birmingham	Muhammad Saghir
University of Gothenburg	Ecem Yavuz
University of Leeds	Daniel Chernick
University of Leeds	Poppy Cooney
University of Manchester	Andrew Welfle
University of Manchester	Gina Kuippers
University of Manchester	Samira Garcia Freites
University of Nottingham	Russel Menchavez
University of Sheffield	Deepak Sethi
University of Southampton	Robert Holland*
University of South-Eastern Norway	Ramesh Timsina
University of South-Eastern Norway	Marianne Sørflaten Eikeland
Volvo	Lauriane Zmokly
Volvo	Monica Johansson
Volvo Car Corporation	Per Hanarp
VOLVO GROUP	Carole Muguet
Volvo GTT	Ingemar Magnusson
VTI, Swedish National Road and Transport Research Institute	Kristina Holmgren



THANK YOU FOR TAKING PART!

Keep yourself updated on follow-ups from the conference, and other activities within the three organizers' hubs:

#### **Bio4fuels**

Web: <https://www.nmbu.no/en/services/centers/bio4fuels>

Facebook: <https://www.facebook.com/bio4fuels/>

#### **Renewable transportation fuels and systems (f3 Centre and Swedish Energy Agency)**

Web: <https://f3centre.se/en/renewable-transportation-fuels-and-systems/>

Twitter: [https://twitter.com/f3\\_centre](https://twitter.com/f3_centre) and [https://twitter.com/Energi\\_mynd](https://twitter.com/Energi_mynd)

LinkedIn: <https://www.linkedin.com/company/f3-centre/>

#### **Supergen Bioenergy Hub**

Web: <https://www.supergen-bioenergy.net/>

Twitter: <https://twitter.com/SupergenBioHub>

LinkedIn: <https://www.linkedin.com/company/supergen-bioenergy-hub/>