



Highlights of the Conference

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e-EUBCE 2020

28th European Biomass Conference & Exhibition

VIRTUAL | 6 – 9 July

*Bioeconomy's role in the
post-pandemic economy recovery*

**Under the High Patronage of
Mr Emmanuel MACRON,
President of the French Republic**



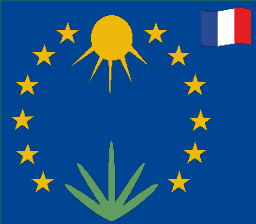
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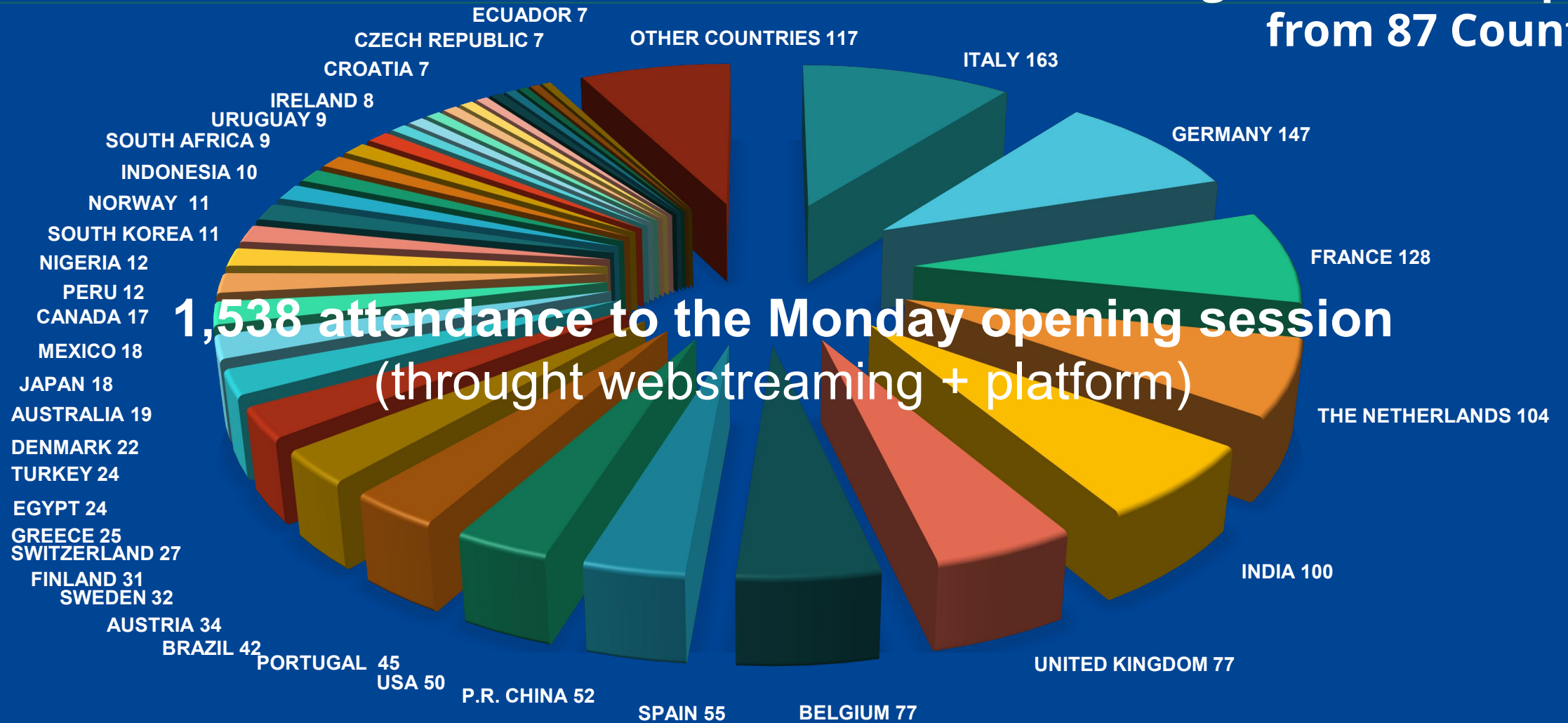


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**1,551 Registered Participants
from 87 Countries**



Other countries: AFGHANISTAN, ALBANIA, ANGOLA, ARGENTINA, ARMENIA, BAHAMAS, BAHRAIN, BANGLADESH, BENIN, BULGARIA, CAMEROON, CHILE, CYPRUS, COLOMBIA, COSTA RICA, CROATIA, DOMINICAN REPUBLIC, ECUADOR, ESTONIA, GEORGIA, HAITI, HONGKONG, HUNGARY, IRAN, ISRAEL, KENYA, LITHUANIA, LUXEMBOURG, MACEDONIA, MALAYSIA, MALTA, MAURITIUS, MOROCCO, NAMIBIA, NEW ZEALAND, OMAN, PAKISTAN, PALESTINE, PHILIPPINES, POLAND, ROMANIA, RUSSIAN FEDERATION, SERBIA, SINGAPORE, SLOVAK REPUBLIC, SLOVENIA REPUBLIC, SRI LANKA, SUDAN, SYRIA, TAIWAN, TUNISIA, UNITED ARAB EMIRATES, URUGUAY, VIETNAM.



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Bioeconomy and economic recovery

European Green Deal: toward low carbon economy by 2050

- set of measures that range from cutting emissions, to investing in R&I, to preserving natural environment and biodiversity.
- decarbonization and economic recovery are not competing but complementing each other

A circular bioeconomy society in 2050

- updated Bioeconomy Strategy plays a key role in a circular sustainable bioeconomy
- BBI JU - 3.7 bn € to support investments in biobased industries, demonstrating new technologies, and setting up flagship biorefinery plants
- bio-based products can be replacing up to 30% of petroleum based products, while reducing GHG emissions by 50%

Bioeconomy: an opportunity for rural communities and rural development

- bioeconomy potential to improve both the environment and the climate, while providing new business opportunities for farmers and rural areas
- voluntary CAP eco-schemes rewarding farmers for enhancing environmental and climate performances based on local needs and conditions;
- specific measures supporting renewable energy and the bio-economy to provide local bioenergy and local bio-based products

Multiple options are available, various scenarios are considering them all

- biomass: highly attractive mitigation, if sustainable biomass is available
- all sectors can contribute to carbon neutrality goals – agricultural biomass has a key role to bioenergy production

Biomass resources, availability and sustainability: key for bioeconomy

- sustainable intensification of biomass production, optimal use of available resources; close nutrient cycles, cascading concept; multiple products
- local dimension: biomass is a local resource, local solution, consider distributed production, small scale vs large scale refining
- Adaptation, Acceptability and Sustainability are key aspects for biomass deployment



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Bioenergy and the Green Deal

The EU Green Deal and the EU Recovery Plan: a great opportunity for bioenergy

- the EU Green Deal and Recovery Plan: a great opportunity to recognize a key role of bioenergy to achieving the climate targets and boost investment
- climate targets cannot be reached without biomass and bioenergy

Bioenergy: a critical role in energy transition to net zero carbon emission goals

- commitment toward decarbonisation from all actors.
- bioenergy plays an important role in particular in the sectors that are hard to electrify

Bioenergy: an opportunity for environment and climate

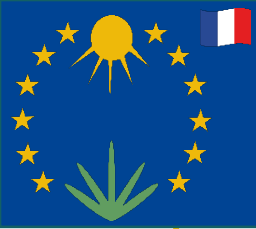
- biomass and bioenergy are linked to environmental and socio-economic benefits, in addition to job creation
- the role of biomass is not high on the political agendas

Achieving full potential of bioenergy

- various value chains are in development; renewable fuels & biofuels are key to decarbonization of transport with immediate effect, additional to (green) electrification, important developments in aviation fuels and advanced fuels.
- what role for bioenergy crops or BECCS? what is the real potential of degraded/ marginal
- greening the gas – huge potential (270 bcm) of renewable gas -one of the easiest ways to bring renewable energy to cities

How to move forward

- innovative solutions for financing/support with public acceptance: more ambitious targets, mandates/obligations, green certificates, lower capital (technology improvement, use existing assets...)
- long term policy stability to increase investments: both private and public investment is needed



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1. Sustainable resources for decarbonising the economy

Sustainable Biomass Potentials

- high-level modelling shows the impact of land-use, changes to diet, and improvements in agricultural productivity on biomass availability
- decision tools developed to accomplish local objectives well suited to fulfilling systems analysis of land use at global level.
- detailed analysis and mapping of residue availability in the EU for the setting up on sustainable biomass supply chains for biodiesel production

Biomass on marginal land

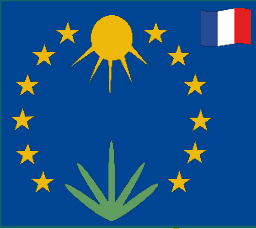
- marginal lands are a feasible solution, minimizing the effects of land use changes and competition with food crops for resources
- research is needed to identify suitable, resilient species to growing on limiting conditions
- significant accomplishments towards growing bioenergy crops in marginal lands while evaluating social-ecological aspects.

Water needs and biomass production

- the importance of matching and balancing crop water needs and biomass production

Valorization of waste and wastewater for materials and energy

- waste and waste water management is still an issue in large parts of the world, but interesting technologies offer today the potential for energy and material recovery.



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2. Biomass Technologies and Conversion for Bioenergy

Modelling, advanced testing and characterization in biomass combustion and gasification

- detailed investigation of K release during biomass combustion impacting particle emissions, fouling and corrosion
- basic research (TGA) was used to better understand biomass conversion processes and the role of alkali's
- decomposition kinetics of glycine in supercritical water, a novel approach applicable to e.g. the processing of microalgae

Progress towards high efficiency and low-emissions in biomass combustion

- large scale coal-fired powerplant switching to biomass fuel with applying steam explosion technology
- experimental and modelling tools to help the understanding of crucial issues, e.g. ash deposition, fouling at fuel-flexible combustion systems.
- innovative approaches for biomass use in small-to large scale combustion, addressing novel feedstock use, fuel flexibility, combustion performance
- modular technology for combustion optimization, a development step for optimizing combustion

Innovative integrated gasification systems and syngas production

- progress on the combination of bubbling fluidized bed gasification of biomass integrated with high temperature gas cleaning and SOFC
- innovative approach focused on the use of solar heat to drive biomass gasification
- flexible operation of a fixed bed gasifier to meet the requirements of fluctuating electricity demand

Improvements in biogas processes, biogas cleaning and methanation

- insights into efficiency and ways to improve control in anaerobic digestion plants, biogas production in decentralized local communities, biogas cleaning
- optimizing sewage sludge digestion in wastewater treatment plants
- investigations for biogas process improvement using difficult substrates and higher loads and ex-situ biotrickling filter methanation



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3. Biomass Technologies and Conversion to Intermediate Bioenergy Carriers and Bioproducts

New processes for bioproducts

- an overview of different biobased products and production concepts, scope for developing biobased chemicals to replace conventional materials
- insights into biotechnology to identify optimal routes into chemicals and materials from various feedstocks
- advances in organosolv processes and optimization to increase yields and fractionation as pretreatment for advanced ethanol production

Biorefineries Concepts and Assessments

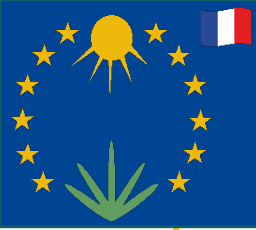
- various biorefinery technologies of different TRL are being developed for various biomass to a portfolio of bio-based products
- process optimization and circular approaches increase biomass conversion efficiency, minimize wastes and increase sustainability and feasibility
- novel pathways like seaweeds, improving cost-effectiveness needs further R&I support
- novel aspects: gas fermentation using bio-syngas and methanol production

Pyrolysis processes and analytics and upgrade of pyrolysis products

- progress in Thermo-Catalytic Reforming that combines intermediate pyrolysis and catalytic reforming and hydrogenation of TRC oil
- use of analytical (pyrolysis-gas chromatography/mass spectrometry) to get data and insights in feedstock modification for pyrolysis processes
- upgrade of the liquid pyrolysis products by fractional condensation and esterification for chemicals, materials, fuels and energy

Advancement in Hydrothermal Processing

- advancement in the hydrothermal process, continuous processing, addressing the challenges associated with this paradigm shift
- remarkable advances in making HTL a core platform for energy and chemicals production
- progress in developing HTL systems through modeling and to upgrade HTL liquids



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4. Sustainability, Impacts and Policies

Biomass strategies toward circular economy

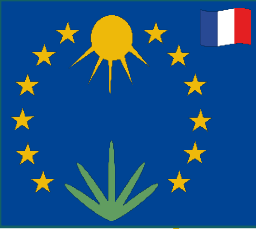
- bioeconomy and efficient use of resources should be embedded in circular economy strategies, with due account of carbon fluxes and social acceptance
- emphasis on sustainability assessment and circular economy in different projects, regions and feedstocks
- key highlights on agricultural and forestry systems, social issues well as reducing food waste
- combined value chain analysis to provide guidance for the development of optimised biomass strategies in bioeconomy

Fostering sustainability

- need for a holistic approach to sustainability assessments, including food security, in the context of the globalization of the bioeconomy
- sustainability schemes should be compulsory and participatory governance could be effective to tackle the socio-economic impacts of bioeconomy
- social standards are indispensable, as is landscape governance

Environmental assessments of biomass systems

- perspectives to extend existing sustainability criteria for biofuels
- results for different biorefineries and for different feedstocks shows trade-offs between climate mitigation and other environmental impacts
- understanding of environmental impacts is important to maximise the benefits of bioenergy of and beyond GHG emissions - with the variety of bioenergy options and applications in different regions and context



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5. Bioenergy Integration

Integrating bioenergy in the energy system

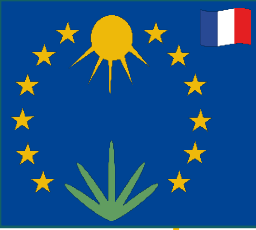
- analysis of often negative image of bioenergy and the many ways which can be exploited to reach out to positive communication
- tremendous progress and capabilities of biomass modeling, as well as the combination with other renewables (Power & Biomass to X)
- insights into markets and market uptake of advanced biofuels and renewable fuels from non-biological origin or bio-based products

Technological options and assessments for energy integration

- various biomass applications (hydrogen , advanced biofuels, and even storage) can play an important role for energy integration and ensuring that even negative emissions can play an important role in our future power system
- storage of energy (what: raw biomass, intermediates: gas/liquids, bio-electricity, and how: with/without coupling with solar/wind energy) is the key issue for an effective biomass integration in the energy system

Alternative renewable fuels

- a session covered both technology and policy aspects of alternative fuels
- updates on novel and alternative fuels and GHG methodology is expected early next year



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6. Industry Sessions

Strategies and Initiatives

- biomass logistics concepts integrated in existing traditional agro-industrial facilities were developed at demo scale to valorize residues from traditional crops (olive oil, cereals and fodder) into bio-commodities and intermediate bio-products for energy and material use
- innovative raw materials, processes and products, such as micro algae, bio-methanation, cellulosic ethanol and bio-plastics, and also about tools, analytic and digital
- industry is responding to the challenge of bioenergy development with comprehensive solutions: innovative raw materials; cooperation with the oil industry via coprocessing, strong analytics to improve the performance of the bio-industry

Power, heat and renewable fuels: the industry perspective

- demonstration of efficient combustion of Fast Pyrolysis Bio-Oil in adapted burner for heating usage
- UPM's approach to scaling up sustainable biofuels production by considering both feedstock and technologies, and particularly use of "break" crops that complement existing agricultural practices
- BioTfuel - Impressive demonstration project combining Torrefaction-Gasification-Fischer Tropsch has started operation
- Ingelia linking two major industries (pulp & steel) by introduction hydrothermal carbonisation



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Key messages

The European Green Deal and the Recovery Plan represent a great opportunity to recognize a key role to sustainable bioenergy as an essential contributor to achieving the climate targets.

Bioenergy has a great potential to play an important role for achieving the goals of the European Green Deal while ensuring the economic recovery after the Covid-19 pandemic.

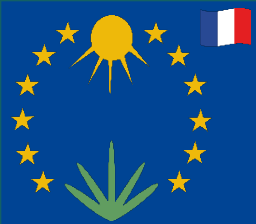
Long term policy stability to boost investments: both private and public investments are needed.

Thank you

JRC Science Hub
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PLEASE REMEMBER THAT

**EUBCE WILL CONTINUE AFTER THE “CLOSING” SESSION
WITH 4 PARALLEL EVENTS**



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Events on Thursday 9, afternoon

- **Biofit Industry Forum – H2020 Project on Bioenergy Retrofits for Europe's Industry**

13:00 – 15:00

- **Bioenergy – The Overlooked Contributor to the 1.5°C Climate Objective,**

14:00 – 15:30

- **Flexible biomass-to-DME process: the H2020 FLEDGED project**

14:00 – 15:30

- **Fostering bioeconomy in central, East and South-East Europe. The experience of CELEBio project in the Czech Republic, Slovakia, Hungary, Slovenia, Croatia and Bulgaria.**

14:00 – 15:30

- **Sustainable biomass supply chains**

14:00 – 15:40