

The 9th World Sustainability Forum – WSF2021 Application of Session Stream

Session Stream Abstract

Sustainable use of Bioresources

Bioresources, are widely available in many locations from agricultural and forestry areas to urban and aquatic environments. These materials have a tremendous potential to contribute to the sustainable production of energy. Furthermore, their role as carbon-sinks, especially when used as feedstock for the production of chemicals and materials is still not totally untapped. In fact, their sustainable use is a non-dismissible tool to achieve the desired carbon-neutrality in the short-term, and also for the future carbon-negative society. This section stream aims to bring together the most innovative developments that demonstrate these bioresources applications.

Section 1 will showcase the innovations on the production and use of bioenergy in different geographical and socio-economic contexts. Section 2 will highlight the industrial use of biomass for the production of marketable products besides biofuels. In Section 1, *Bioenergy production and utilization in the urban context* will be presented by professor Michael Bongards from the faculty of Computer Science and Engineering at Cologne University of Applied Sciences (TH Köln, DE). Many different methodologies for Bioenergy production and utilization in order to increase plant efficiency and sustainable long-term energy production will be addressed. Moreover, Mr. Markku Huhtinen in the department of Environmental Engineering at Savonia University (Savonia UAS, FI) will present *Improved Solid Biofuels for Africa*. He has made significant advancements in research for applying biochars for water management (e.g. stormwater treatment, mine water treatment, industrial water treatment). The efficiency of charcoal production and utilization of bio side streams and develop extracts' production for energy, agricultural and water treatment in Africa will be introduced. At the end of section 1, *Potential Applications of Lignin* will be presented by professor Marlene Kienberger from the institute of Chemical Engineering and Environmental Technology at Graz University of Technology (TU GRAZ-CEET, AT). Finding sustainable alternatives for different materials and energy sources is important. Plant biomass, especially wood, is the most important renewable material. Therefore, she will introduce the utilization of today's and potential tomorrow's application of lignin, which makes up 18-30% of vascular plants.

In Section 2, Mr. Fabio Maria Montagnino, who is the head of Innovation and Entrepreneurship at The Cyprus Institute (CYI, CY), will present *An overview of Bioresources as materials for energy applications*. Cellulose nanomaterials for energy application (ex. solar cells, triboelectric nanogenerators, lithium-ion batteries), biomass derived carbons for hydrogen storage, insulation materials, carbon captures, solar fuels, solar still desalination, and 3D printed structures will be addressed. Next presenter is Professor Bozidar Santek from the department of Biochemical Engineering in the University of Zagreb (UNIZG-PBF, HR). He will present *Balancing of Bioresources and Energy Production* by addressing bioresource value chain, biorefinery concept and its processes, smart systems and smart energy planning, and the biobased economy. Furthermore, Dr. Luis C. Duarte from the Portuguese National Laboratory for Energy and Geology (LNEG, PT) will present *Biomass fractionation: The search for an industrial process standard*, where the most recent advances on the pre-treatment processes required to effectively upgrade lignocellulosic materials in the biorefinery framework will be discussed in relation to their current TRL and economic constraints.

Lastly, Mr. Sandor Bartha from BIO-C- ECOIPAR LTD will provide the state-of-the-art information regarding seaweed chemical and physical composition and currently used technologies for their disposal and/or valorisation.

Session Stream: Sustainable Use of Bioresources

Title	Sustainable Use of Bioresources
Session 1	Sustainable use of Bioresources I: Sustainable Bioenergy
Presenter 1	Title: Innovations and potential of bioenergy production and utilization in the urban context
	Name : Michael Bongards
	Affiliation : Cologne University of Applied Sciences (TH Cologne), DE
	Phone Number : +49 2261 8196 6419
	Email address : michael.bongards@th-koeln.de
Presenter 2	Title: Improved Solid Biofuels for Africa
	Name : Markku Huhtinen
	Affiliation : Savonia University of Applied Sciences (Savonia UAS), FI
	Phone Number : +35 844 785 6763
	Email address : markku.huhtinen@savonia.fi
Presenter 3	Title: Potential Applications of Lignin
	Name : Marlene Kienberger
	Affiliation : Graz University of Technology (TU Graz), FI
	Phone Number : +43 316 873 7484
	Email address : marlene.kienberger@tugraz.at
Session 2	Sustainable use of Bioresources II: Beyond Bioenergy
Presenter 1	Title : Bioresources as materials for energy applications: An overview
	Name : Fabio Maria Montagnino
	Affiliation : The Cyprus Institute, CY
	Phone Number : +357 22 208 646
	Email address : f.montagnino@cyi.ac.cy
Presenter 2	Title : Balancing of Bioresources and Energy Production

	Name : Bozidar Santek
	Affiliation : University of Zagreb, Department of Biochemical Engineering (PBF), HR
	Phone Number : + 385 1 4605 290
	Email address : bsantek@pbf.hr
Presenter 3	Title : Biomass fractionation: The search for an industrial process standard
	Name : Luis C. Duarte
	Affiliation : National Laboratory of Energy and Geology (LNEG), PT
	Phone Number : . +351 210924713
	Email address : luis.duarte@lneg.pt
Presenter 4	Title: Sustainable biorefinery model based on Black Sea seaweeds from Romanian costal area
	Name : Sandor Bartha
	Affiliation : BIO-C- ECOIPAR LTD, RO
	Phone Number : +40 722 250 725
	Email address : sbarthacv@yahoo.ro

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■ **eseia Session date/time: 15 Sep 2021, 16:00-18:00**

■ **Session access link:**

<https://us02web.zoom.us/j/89852656541?pwd=U3FNOG5taZzVMDBSb3kxMytnYVlFQ09>

ID: 898 5265 6541

password: 820580

■ **Session Schedule**

Sustainable use of Bioresources

Session no.	Time	Title	Speaker
Session 1	Sustainable use of Bioresources I: Sustainable Bioenergy (Chair: Luis D. Duarte)		
Session 1-1	16:00-16:15	Innovations and potential of bioenergy production and utilization in the urban context	Michael Bongards
Session 1-2	16:15-16:30	Improved Solid Biofuels for Africa	Markku Huhtinen
Session 1-3	16:30-16:45	Potential Applications of Lignin	Marlene Kienberger
	16:45-17:00	Q & A	
Session 2	Sustainable use of Bioresources II: Beyond Bioenergy (Chair: Michael Bongards)		
Session 2-1	17:00-17:10	Bioresources as materials for energy applications: An overview	Fabio Maria Montagnino
Session 2-2	17:10-17:20	Balancing of Bioresources and Energy Production	Bozidar Santek
Session 2-3	17:20-17:30	Biomass fractionation: The search for an industrial process standard	Luis C. Duarte
Session 2-4	17:30-17:45	Sustainable biorefinery model based on Black Sea seaweeds from Romanian coastal area	Sandor Bartha
	17:45-18:00	Q & A	