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Four Horizon 2020 proposals successfully submitted beginning September

### **BBI4Europe - BBI Education for Europe**

To cope with an increasing global population, rapid depletion of natural resources, increasing environmental pressures and climate change, Europe is preparing to concentrate on more sustainable and responsible use of biological resources. The bio-based industry has the potential to address interconnected societal challenges such as food security, natural resource scarcity, fossil resource dependence and climate change, while also achieving sustainable economic growth. Developing the bio-based industry and the circular economy is impossible without substantial support by universities and research institutions providing well-educated and skilled specialists and the scientific base to create new technologies. Bio-based industries is a rapidly developing sector, so there is a constant need to ensure that the skills and education provided to the sector are fit for purpose, take into account future skills needs, and are adaptable to change, requiring alignment and commitment from HEIs and vocational training organisations. The EU has a world-leading academic sector, however, academia is often slow to react to specific skills needs of industry, and such inertia can lead to mismatches in the skills taught compared to those needed by industry. Facilitating the timely and effective collaboration between industry and academia for skills development will be the key to maintaining European competitiveness. Establishing education centres that collaborate with industry in design and delivery of training programs can be a fast and cost-effective way for countries and industries to create much-needed specialists. Establishing such centres can help drive rapid, targeted improvements in the quality of training. In these centres governments, employers and training providers need to work together to address these critical skills gaps.

Coordinator: eseia

eseia members participating: Tu Graz, EASTmk, LNEG, UZagreb, BAV, UAS Savonia, Bio-C, UTBv, Green Tech Styria, TU Vienna, TH Cologne

Budget: € 1,5 Mio of which eseia € 225,000

### **FullFrac - FULL CONVERSION OF LIGNOCELLULOSE INTO HIGH-VALUE PRODUCTS BY INNOVATIVE FRACTIONATION**

In classical industrial pulp and paper industries, the main focus is the production of high quality cellulose fibres. All other components of wood and bark are used only for energy production/reagents recycling. This leads to a high exergy loss and missing a chance for a higher economic benefit. The FullFrac approach is based on an innovative biorefinery concept that uses a sequential biomass pre-treatment strategy— continuous hot water extraction (HWE) followed by a continuous ethanol organosolv extraction (EOE) for wood and a sequence of EOE / HWE / EOE for bark. This sequential extraction strategy enables the selective separation of all biomass components: extractives, hemicellulose, and lignin, keeping the high quality of cellulose for existing production chains. Within this approach, the targeted economical value of the products will increase from 700 €/tonne biomass for cellulose only, to about 1500 to 5000 €/tonne biomass. In this 4 year project the partner consortium, constituted by 26 European partners from industry, research and non-profit organisations, will develop the processes and equipment required for continuous operation up to TRL 4-5 as well as validate 6 innovative value chain products and their respective business cases.

Coordinator of 26 partner Consortium: TU Vienna, Prof. Anton Friedl

eseia members participating: TH Cologne, LNEG, TU Graz, UAS Savonia

eseia in a partner role

Budget: € 5 Mio of which eseia € 148,000

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## **NEXTMET - Next Generation Cleaner Methanol Production from Emitted CO<sub>2</sub>**

NEXTMET proposes a ground breaking photoelectrochemical (PEC) technology to produce methanol from emitted CO<sub>2</sub> and water powered by direct sunlight. It addresses a global market of alcohols in excess of \$75 billion. NEXTMET methanol, as a flexible energy storage vector will allow the decarbonisation of energy and transport system. To turn PEC technology into a viable technology, a prototype will be designed and constructed targeting a solar-to-methanol efficiency of 10 %. This technology will overcome the problem of intermittency of solar energy by integrating proprietary technology from one of the partners that allows harvesting UV radiation during the night allowing continuous 24 hours operation, seven days a week. Proof of concept of NEXTMET technology will be undertaken and validation of this technology will be carried out at lab scale. To achieve these targets breakthroughs will be sought at several levels: -First of the kind active and at least 1000 h stable photocatalysts, electrocatalysts and catalysts will be developed supported by in situ mechanistic studies. -Customization of membranes for CO<sub>2</sub> electrochemical reduction and development of advanced electrolytes. - Proof of concept of novel reactors. Configurations will include tandem (photocathode - photoanode) and (cathode - photoanode) set-ups. -Two promising process routes will be investigated. Methanol will be produced electrochemically in one step and via electrolytic syngas followed by chemically conversion into methanol through an innovative process. For both routes a membrane purification process with very low energy requirements will be developed. This high level of innovation will be attained by pooling the expertise of partners from six European countries, two academic partners from China and two academic partners from USA. Industry is well represented in the consortium by the two SMEs APRIA Systems, NOVIS and by the Associate partner bse.Methanol GmbH.

Coordinator of 12 partner Consortium: Ana Machade, NOVA ID FCT - ASSOCIACAO PARA A INOVACAO E DESENVOLVIMENTO DA FCT, PT  
eseia members participating: LNEG, TU Vienna  
eseia in a partner role  
Budget: € 4 Mio. of which eseia € 350,000

## **PEACE - Promote Energy transition through public Authorities Capacity building and Energy communities**

Public Authorities can drive large public and private investments in renewable energies by implementing the new features on energy communities and sharing introduced in art 21 and 22 of the RED II directive. On the basis of best practices in existing energy communities and on the new legal framework, PEACE proposal will develop an organization model where Public and citizens can invest together in renewable sources and the energy of private plants can be shared. The presence of a PA as a member of the energy community can influence decisions on re-investment of benefits generated towards activities foreseen in the Sustainable Energy and Climate Action Plan (SECAP) and finally promote the setup of new energy community. To take advantage of this opportunity, PAs need to improve the skills of officers and to have an effective organization model for energy communities. In this frame, PEACE project will implement a capacity building program on these topics specifically tailored for PAs and will produce a practical example of energy community.

Coordinator: AZZERO CO<sub>2</sub> SRL, Italy  
eseia in a partner role together with Consiglio Nazionale delle Ricerche, IT, Fundacion CIRCE, ES, Centro de Investigacion de Recursos y Consumes Energeticos, ES, White Research SPRL, BE, TU Delft, NL  
Budget: € 1,5 Mio. of which eseia € 260,000