



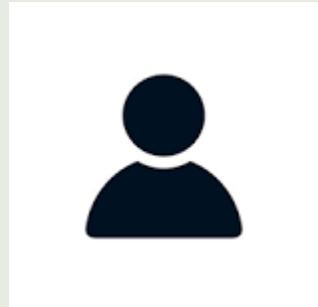
Teamwork and discussion panel

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**3 groups of 3
people
+
1 teams group**



**1 leader per group
To present 2 slides
with the main
conclusions**



**Sent the slides
to
coza@unican.es**

GROUP 1

**Biomass
processing**

GROUP 2

**Biofuels
Bio-based
chemicals
Biopolymers**

GROUP 3

**Nanomaterials
Nanofibers**

GROUP 4

**Simulation
optimization
decision-making
IA, CIT,
engineering &
design**



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Slide 1

Project idea	Project Consortium	Funding program / call	Call deadline
i.e. Group 1 “Biomass processing” idea 1	Institutions involved	Horizon Europe call Circular Economy HORIZON-CL6-2024	1ST stage 22th February 2nd stage 17th September

Slide 2

Project objectives	Project Working packages	Project Main tasks	Conclusions / Future work
Project objectives 1 of idea 1			



Group 4: Slide 1

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Team group Nº and topic	Team group members	Project idea	Project consortium	Funding program/call	deadline	Issues/Que
4. Simulation optimization decision-making IA, CIT, engineering & design	Prof Fernando Colmenares (UCC, Col.) Fernando Macho (Quantum AI, Esp) Dr Kim Stansfield (VoCATE, UK)	Techno-economic analysis, Systems LifeCycle Analysis(SLCA) and digital twins of the (Small Biorefining Pilot) technologies and supporting business models:	UCC, Quantum AI, VoCATE Ltd, ++	Small Scale Biorefining for Rural Areas Horizon JU CBE 2023-IA-01 Circular Economy and Bioeconomy Sectors (Horizon CL6-2024-CIRCBIO-02)	20/09/2023 17/09/2024	Funding for SME Comme organization

01/08/2023

Event/Activity

Nº



Group 4: Slide 2

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Team group Nº and topic	Team group members	Project objectives	Project working packages	Project main tasks	Conclusions / Future work
4. Simulation optimization decision-making IA, CIT, engineering & design	Prof Fernando Colmenares (UCC, Col.) Fernando Macho (Quantum AI, Esp) Dr Kim Stansfield (VoCATE, UK)	Develop a biorefining technology on a pre-commercial, pilot scale for a bioproduct from agricultural waste. Supporting Objectives to: a. Simulate and develop digital Twins of alternative technology and business model b. Identify most appropriate biorefining solution for different rural communities c. Create whole system lifecycle and road map of selected biorefining solution d. Develop training and educational models for stakeholders in the value delivery chain.	In this work package, simulations of the alternative system technologies chosen technology process for biorrefineries will be carried out from the results from the lab or/and pilot, which allows analysing the viability of the technology at an industrial level, as well as its environmental impact through the life cycle assessment. As results of the simulation, the analysis of OPEX and CAPEX will be done.	This project aims to perform the simulation of the biorefinery technology using the ASPEN PLUS software, with the purpose of estimating the bioproduct production using the experimental data collected in the pilot plant project, in the same process, the Virtual Technology Validator will be used for the creation and validation of the digital twin of the technology designed in the program. The availability of biomass in South America and Europe will be considered to carry out said estimation. The simulation will allow to have the results of the mass and energy balances and, in turn, to be able to optimise the operating conditions on a laboratory scale. In addition, the operating costs (OPEX) and construction costs (CAPEX) will be evaluated, related to aspects such as the consumption of raw materials, energy consumption, infrastructure and the necessary equipment. Relevant economic and financial parameters will be taken into account, such as IRR and recovery period. Regarding the environmental evaluation of the process, the Life Cycle Analysis (LCA) methodology will be used. The results of this analysis will serve as the basis for making informed and strategic decisions on the implementation of this technology in an industrial environment, as well as testing the technology in	Environmental impact: What is developed within the framework of this project includes activities related to the evaluation of the life cycle of the biomass conversion technology, in order to ensure the minimum environmental impact throughout the different lifecycle stages stages of the program. All activities have a technological and virtual approach that, beyond all the technical benefits described in the development of this document, also represents a low or null negative impact on the environment, since we use virtual means to validate and explore processes and situations that otherwise may have a negative impact on the environment. Impacts of the outcomes: The execution of the project intends to have an impact at the level of knowledge in the field of study in relation to digital twins, simulation, data processing and life cycle analysis and technoeconomic factors associated with biomass conversion technology. It is expected to improve the efficiency in the management of the processes presented. It is also planned to contribute to the fulfillment of some Sustainable Development Goals (SDG) with



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CELISE Mid-Term Meeting

Workshop about future collaborations and possibilities

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