Project Overview

Final Symposium, Ghent, 14th June 2022

Montse Bosch, LEITAT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 761042 (BIOCON-CO_2). This output reflects the views only of the author(s), and the European Commission cannot be held responsible for any use which may be made of the information contained therein.

At a glance

Transforming raw CO_2 waste from the iron, steel, cement and electric power industries into value-added chemicals and plastics

Programme: EU Horizon 2020 – (BIOTEC-05-2017) Microbial platforms for CO_2 re-use processes in the low-carbon economy

Duration: January 2018 – June 2022 (54 months)

Consortium: 18 partners in 8 countries

Budget: €6.9 million

Coordinator: Acondicionamiento Tarrasense Asociación (LEITAT), Spain

Focus: Reduce greenhouse gas emissions and avoid overexploitation of natural resources

Impact: Convert CO_2 from fossil fuel burning into valuable commodities and support the EU as a global leader in CO_2 re-use technologies

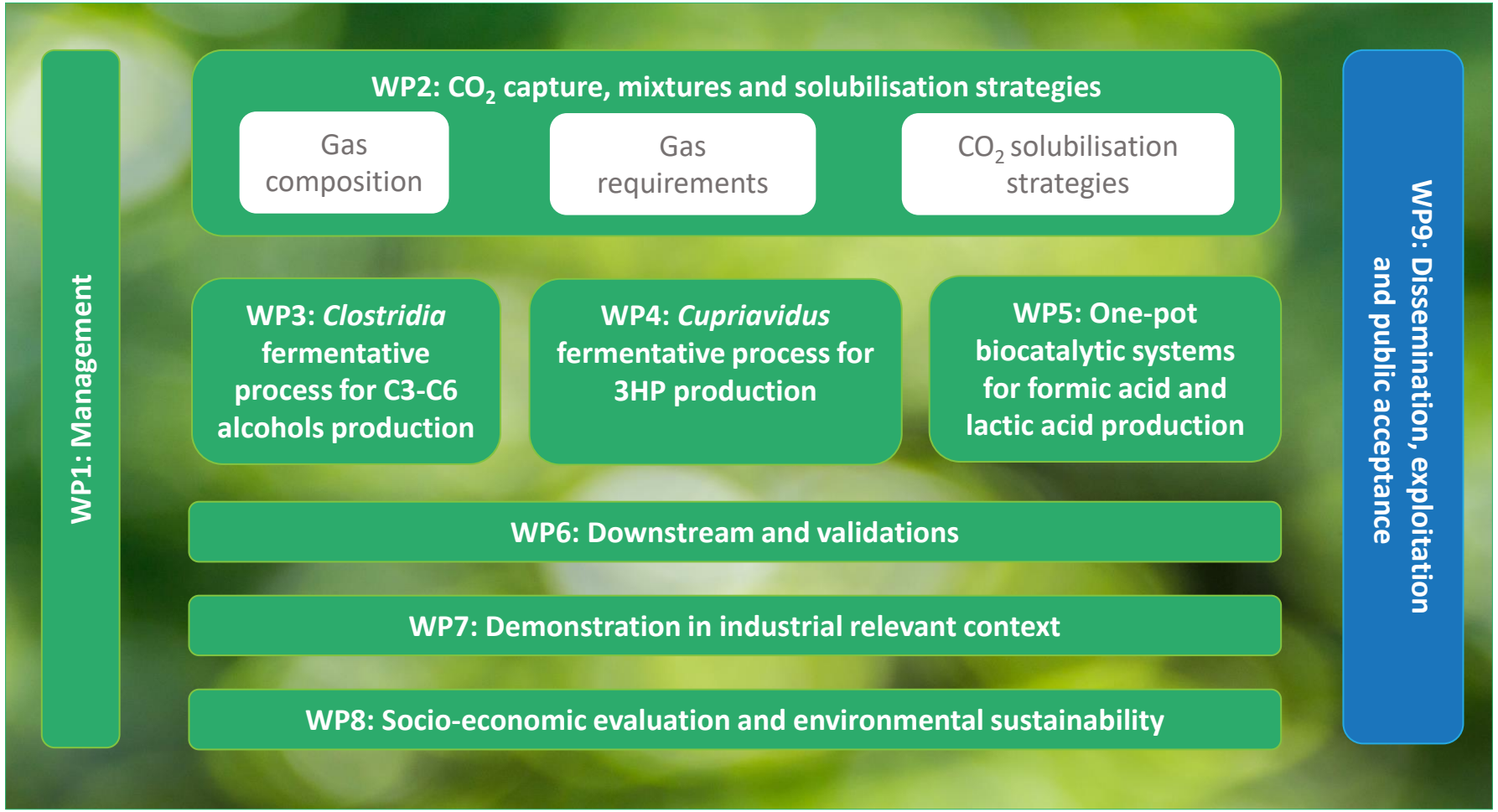
Core activities: Develop and validate, in an industrially relevant environment, a flexible strategy to biologically transform CO_2 into value-added chemicals and plastics

Project Objectives

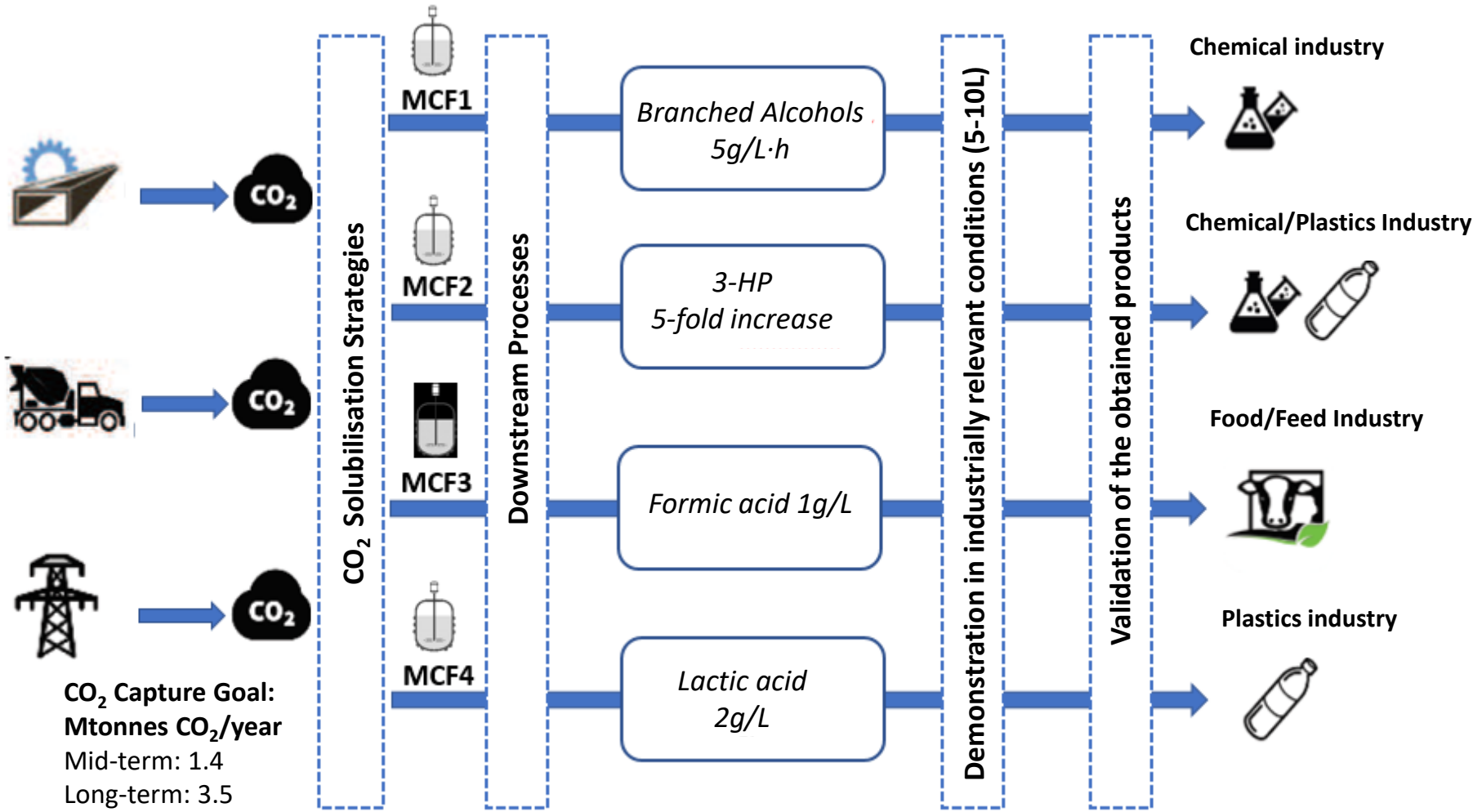
- **Develop and validate** a platform of flexible and versatile techniques capable of using biological processes to transform raw CO_2 waste from the iron, steel, cement and electric power industries into value-added chemicals and plastics
- **Generate new knowledge** to develop commercially viable strategies for reducing Europe's dependency on fossil fuel resources
- **Increase sustainability** of the chemical industry, providing support for European leadership in CO_2 re-use technologies

Project Structure

BIOCON-CO_2



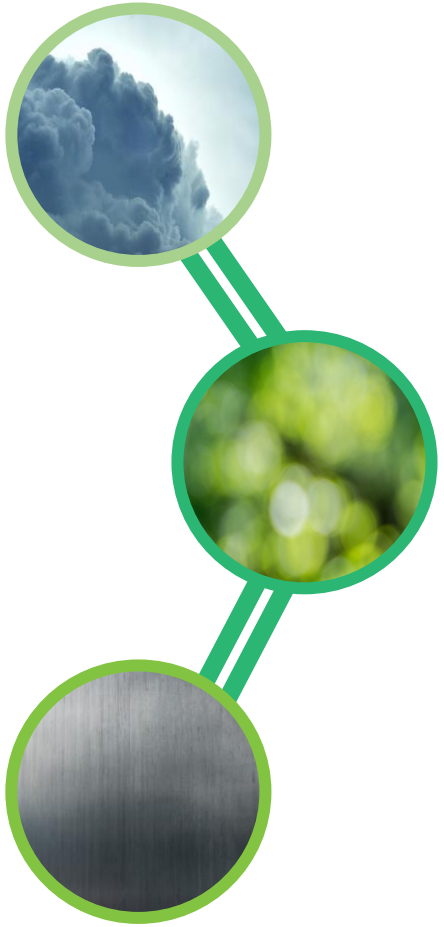
Project Work Plan



Expected Results

BIOCON-CO_2

- Assessment and validation of **three low-energy microbial processing systems** capable of converting CO_2 emissions from the iron and steel industry into valuable industrial products
- Production of **four chemical building blocks** produced using CO_2 re-use technologies that have application in the food/feed, chemical (acrylates, polymers, surfactants) and plastic industries
- **Pilot installation** in an industrial setting upon project completion which demonstrates and validates the effectiveness of four chemical building blocks produced using CO_2 re-use technologies
- **Improved public perception** of CO_2 re-use technologies through transparent and responsible communication, knowledge transfer and exploitation of project outcomes



Target Audience

Industry CO_2 Suppliers

Positive environmental gains

Regulators /Policy Makers

Policy framework to implement CO_2 transformation technologies efficiently

Scientific Community

Continuous research and uptake of BIOCON-CO_2 results

Biotech Industry

Cost-efficiency & environmental impacts of using BIOCON-CO_2 technologies

Public and Private Investors

Continuous development & future industrial exploitation of BIOCON-CO_2 technologies

Related H2020 Initiatives

Collaboration with other ongoing projects in the same field

Chemical/ Food & Feed/ Plastic Industries

Main end-users of target products, key for market uptake

Local Authorities /Decision Makers

Implementation of a CO_2 capture plant and pilot/industrial installation for BIOCON-CO_2 implementation

General Public

Impacts of BIOCON-CO_2 technologies on the economy & environment

Consortium

BIOCON-CO_2 has a consortium of recognised industry experts and leading academic organisations, comprised of 18 partners based in 8 countries (five SMEs, five large industries, four research and technology organisations, and four universities)

1. Acondicionamiento Tarrasense Associación (LEITAT), Spain
2. ArcelorMittal Belgium NV (ARCELORMITTAL), Belgium
3. Arkema France (ARKEMA), France
4. Fraunhofer-IME (FRAUNHOFER), Germany
5. National Technical University of Athens (NTUA), Greece
6. Pervatech B.V. (PTECH), Netherlands
7. Rheinisch-Westfälische Technische Hochschule Aachen (AVT.BioVT), Germany
8. Stichting Wageningen Research (WFBR), Netherlands
9. ARTTIC (ARTTIC), France
10. AquaTT UETP CLG (AQUATT), Ireland
11. Nutrition Sciences N.V. (NS), Belgium
12. Nesher Israel Cement Enterprises Ltd (NESHER), Israel
13. Universitat Autònoma de Barcelona (UAB), Spain
14. Belgisch Laboratorium van de Elektriciteitsindustrie (ENGIE Laborelec), Belgium
15. Bio Base Europe Pilot Plant VZW (BBEPP), Belgium
16. Rijksuniversiteit Groningen (RUG), Netherlands
17. Fundación Tecnalia Research & Innovation (TECNALIA), Spain
18. Artificial Nature, S.L. (DAN*NA), Spain

Final Agenda – Day 1

Day 1 – 14th June 2022 (9:00-17:00 CET)

09:00-09:30 **Welcome Tea & Coffee**

09:30-09:40 **Coordinator's Welcome**
Montse Bosch (LEITAT)

Session 1: Industry (9:30-12:50 CET)

This session will focus on key project results which are directly applicable to and ready to be taken up by industry stakeholders. A series of presentations and an expert panel discussion will address a range of topics including next steps for validated project results and future perspectives for bio-based carbon capture and utilisation applications.

09:40-10:10 **Mobile bioreactor skid for on-site CCU of industrial off-gas**
Koen Quataert (BBEU)

10:10-10:40 **Economics of CO2 conversion to PolyHydroxyAlkanoate (PHA)**
Jean-Luc Dubois (Arkema)

10:40-11:10 **Coffee Break**

11:10-11:40 **Industrial perspective on how CO2 emissions can be valorised**
Jim Gripekoven (Engie)

11:40-12:30 **Panel Discussion – Moderated by Xavier Ponte-Font (LEITAT)**
Panellists: Daniele Molognoni (LEITAT), Karel de Winter (BBEU), Jim Gripekoven (Engie), Geert Bruggeman (Nutrition Sciences)

12:30-14:00 **Lunch & Networking**

Final Agenda – Day 1

Session 2: Science (14:00-17:00)

This session will explore the technologies and tools developed during the course of the project. With an emphasis on application, the session will focus on how these tools can be used by stakeholders to accelerate the valorisation of captured carbon.

14:00-14:30	**Microbial cell factories and progress toward producing target products** *Gabriele Phillips (Fraunhofer) with input from Marina Guillen (UAB), Tom Ewing (WUR) & LEITAT*
14:30-15:00	**Strategies to increase CO2 solubility** *Aline Hüser (RWTH Aachen University)*
15:00-15:30	**Technologies & tools for downstream processing** *Tomás Roncal (Tecnalia), with input from Ilse Lammerink (Pervatech) and Carlos Andecochea (Leitat)*
15:30-15:50	**Coffee Break**
15:50-16:20	**Presentation from H2020 BioRECO$_2$VER Project** *Heleen De Wever (VITO)*
16:20-16:50	**Panel Discussion – Moderated by Ana López-Contreras (WUR)** *Panellists: Albert Guisasola (VIVALDI Project), Heleen De Wever (BioRECO$_2$VER Project), Konstantinos Atsonios (BIOSFERA Project), Ignacio Herráez Chamorro (BACTOFUEL Project)*
16:50-17:00	**Wrap up & Coordinator Conclusions**

Final Agenda – Day 2

Day 2 – 15th June 2022 (9:00-16:00 CET)

09:00-09:30 **Welcome Tea & Coffee**

Session 3: Policy (9:30-12:30)

This session on policy will expand on how project results contribute to policy in this sector and to wider European objectives around sustainability and net zero objectives.

09:30-09:45 **Introduction & Welcome**
Session Moderator (LEITAT)

09:45-10:10 **CCU and Bio-CCU technologies: social and economic sustainability**
Despina Magiri-Skouloudi, NTUA

10:10-10:30 **Environmental aspects & Life cycle analysis of CCU and Bio-CCU systems**
Despina Magiri-Skouloudi, NTUA

10:30-11:00 **Coffee Break**

11:00-11:45 **Panel Discussion – Moderated by Despina Magiri-Skouloudi (NTUA)**
Panellists: Mar Pérez-Fortes (TU Delft)(EB Member), Bertus van den Burg (IMEnz), Joanna Tsiganou (EKKE)(EB Member)

11:45 -12:15 **Wrap-up & Conclusions**
Montse Bosch (LEITAT)

12:15-13:00 **End session & Networking for in-person participants**
In-person participants will have free time to network before departing venue for site visit

BIOCON-CO_2

Thank you

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