



# Introduction to the FUELPHORIA project

Kostis Atsonios, CERTH

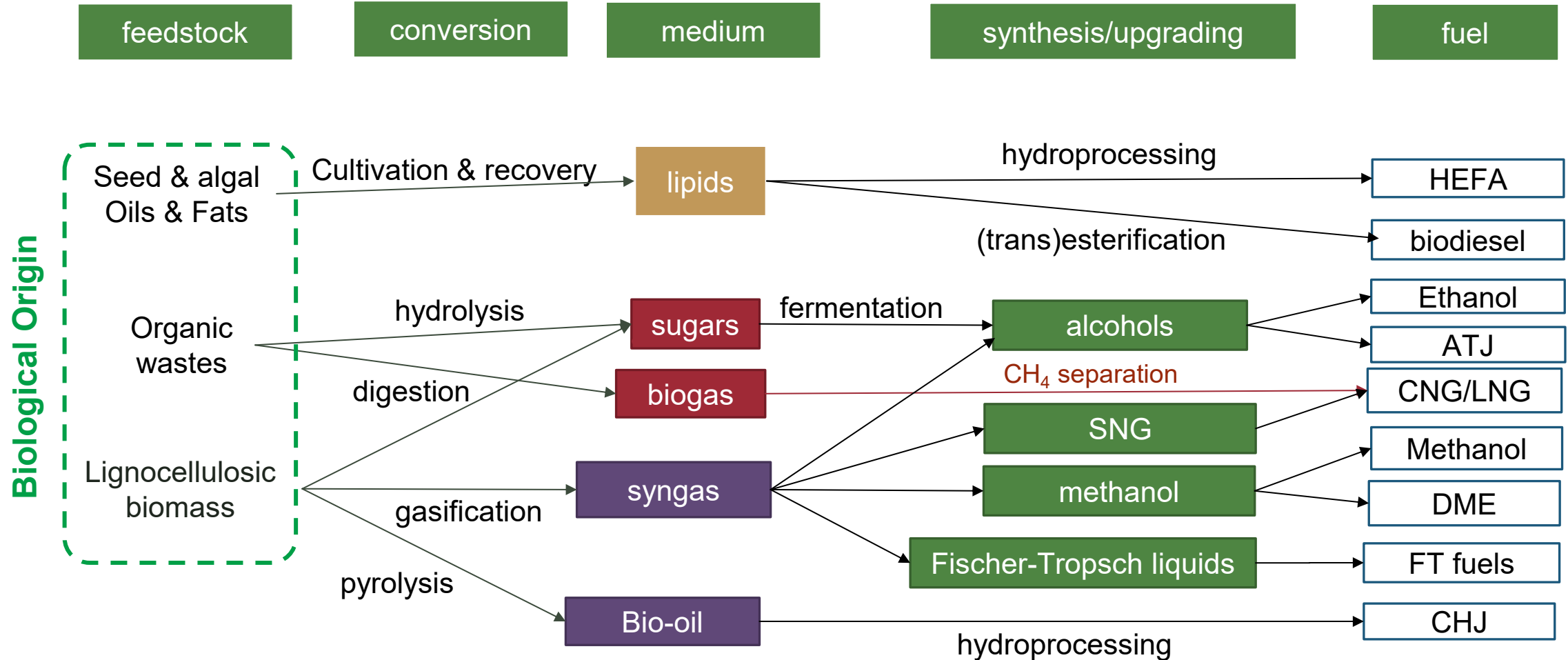
FUELPHORIA 2<sup>nd</sup> Webinar - 4 December 2025



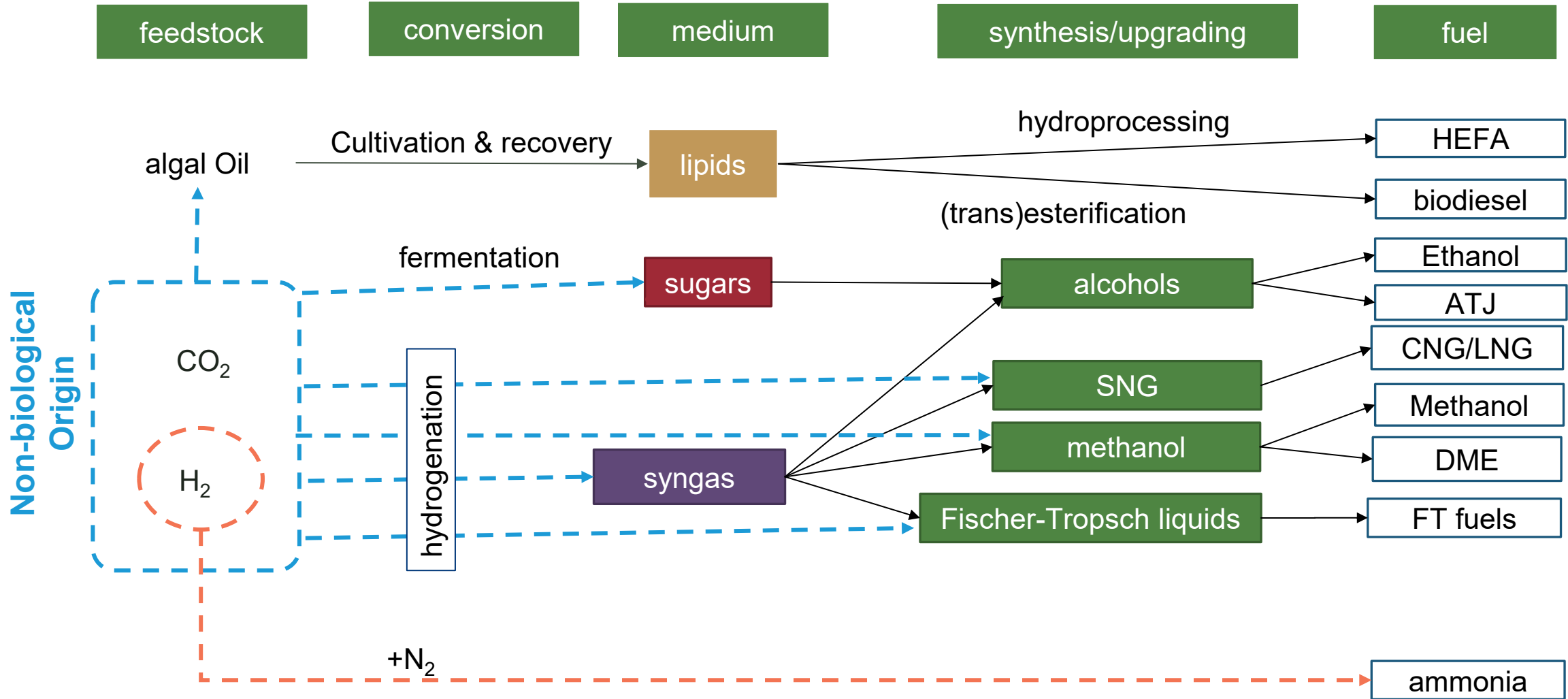
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# Advanced biofuels production pathways



# Renewable synthetic fuels production pathways



# FUELPHORIA project at a glance



- Duration: 1/10/2023 – 30/09/2027 (48 Months)



- Budget/ EU contribution: €11,144,321.30/ €9,678,598.55



- Coordinator:



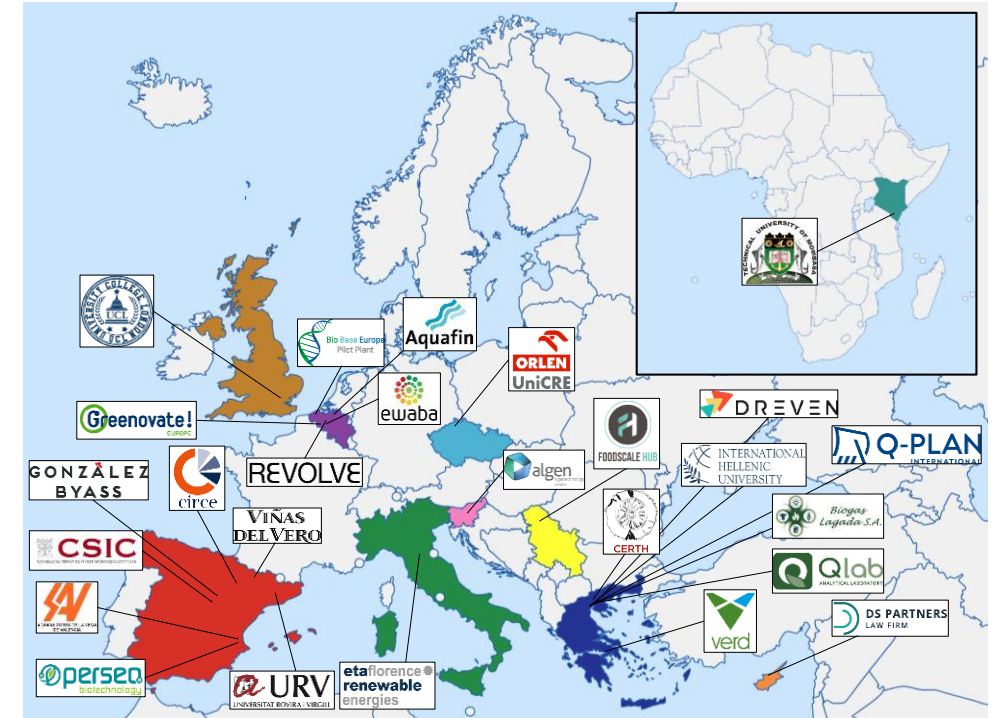
**CERTH**  
CENTRE FOR  
RESEARCH & TECHNOLOGY  
HELLAS



- Beneficiaries: 22, Affiliated Entities: 3, Associated Partners: 1



- <https://fuelphoria.eu/>



## OBJECTIVES



- Demonstrate robust and cost-effective technological solutions for the production of advanced biofuels & RFNBOs
- Build a portfolio of sustainable, secure & complete Value Chains for advanced biofuels and RFNBOs from feedstock to end use
- Promote the exploitation of advanced biofuels and RFNBOs
  - by identifying barriers in value chains at EU level and in Africa
  - through policy recommendations at EU level
  - through new business and marketing concepts in Europe and Africa

# Concept – main pillars

## Sustainable Feedstock

Residues & wastes, biogenic CO<sub>2</sub>, and renewable H<sub>2</sub>.

## Competitive state-of-the-art technologies

Test and evaluate state-of-the-art pathways which are **biochemical**, **thermochemical**, **biological**, **chemical**, **photobiological**, **electrochemical** or a combination of them.

## High quality-end products

Fuels that meet quality specifications as defined for use in the **transport** sector and in the **power** production sector.

## Foster Exploitation

To constitute a building block of EU actions

- in achieving improved **citizens' perception on waste** as a local resource
- and enable sustainable choices and **acceptance of advanced biofuels**.

Key  
interventions

4 demos

Life Cycle Assessment

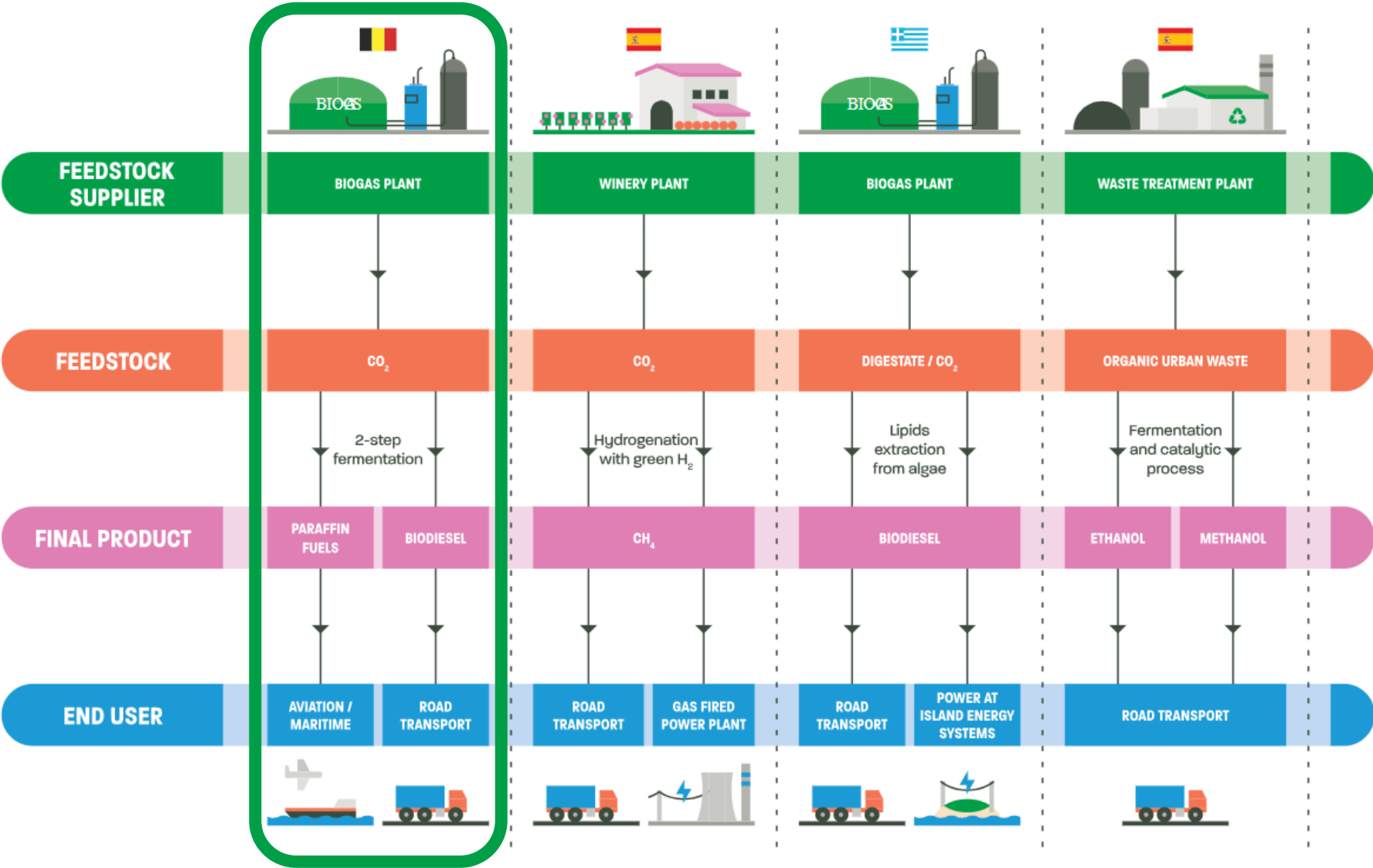
Value Chain approach

New business & marketing concepts

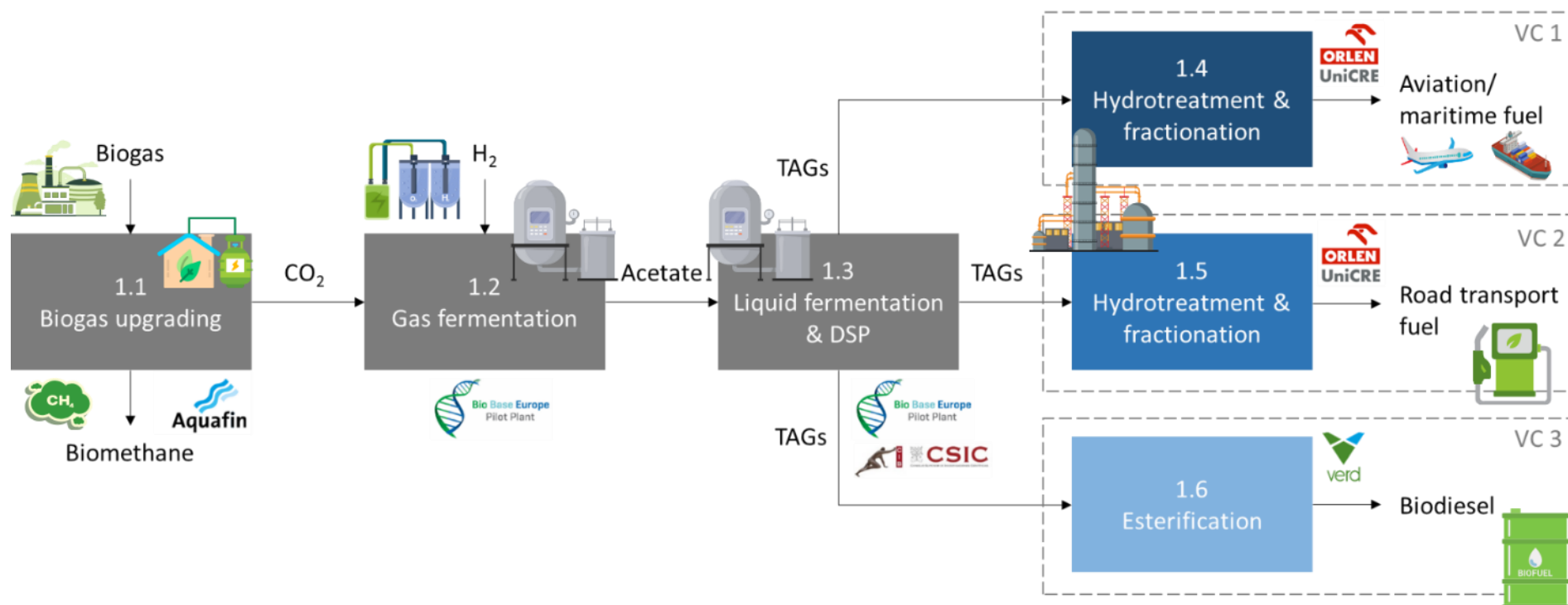
Policy transformation

EU – Africa liaison

# Demos overview



# DEMO 1



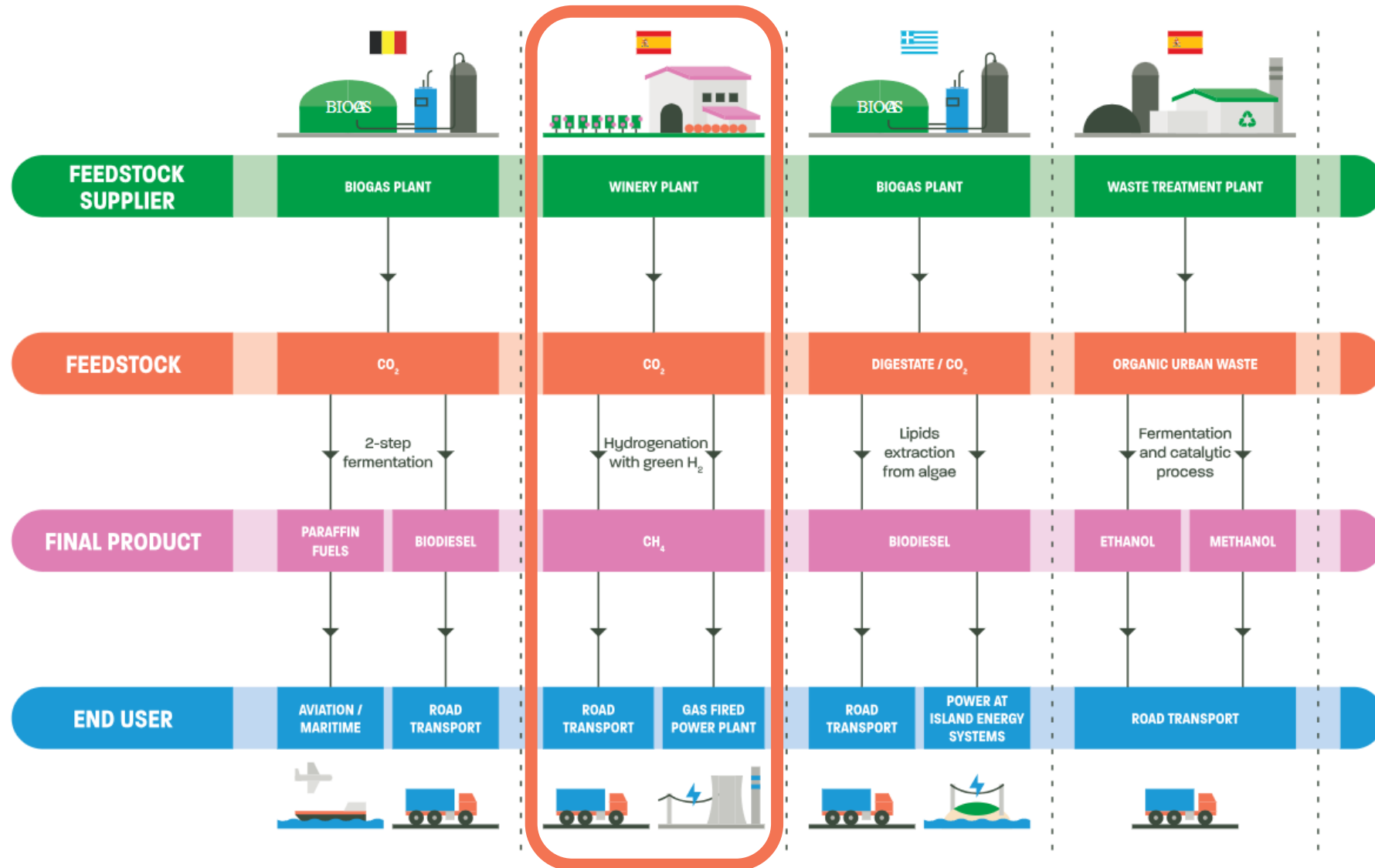
**Location:**  
Aquafin's WWTP  
(Antwerp, Belgium)



**Key technology:**  
Mobile gas  
fermentation unit

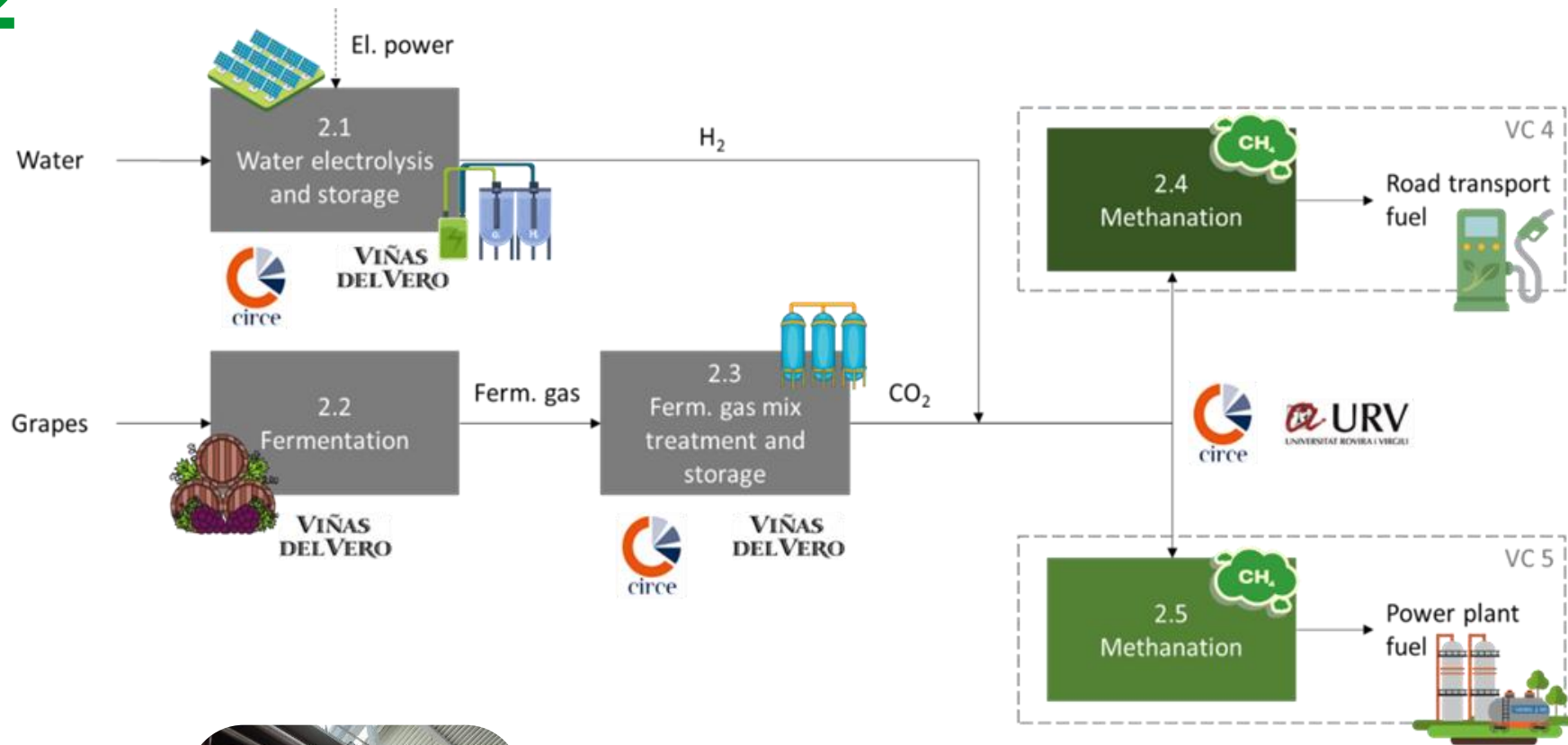


# Demos overview





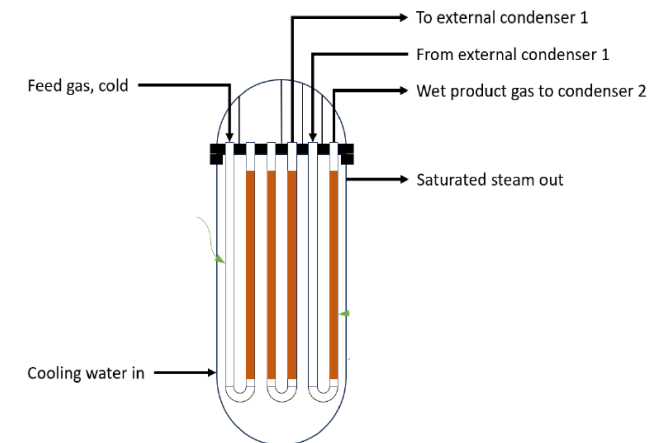
# DEMO 2



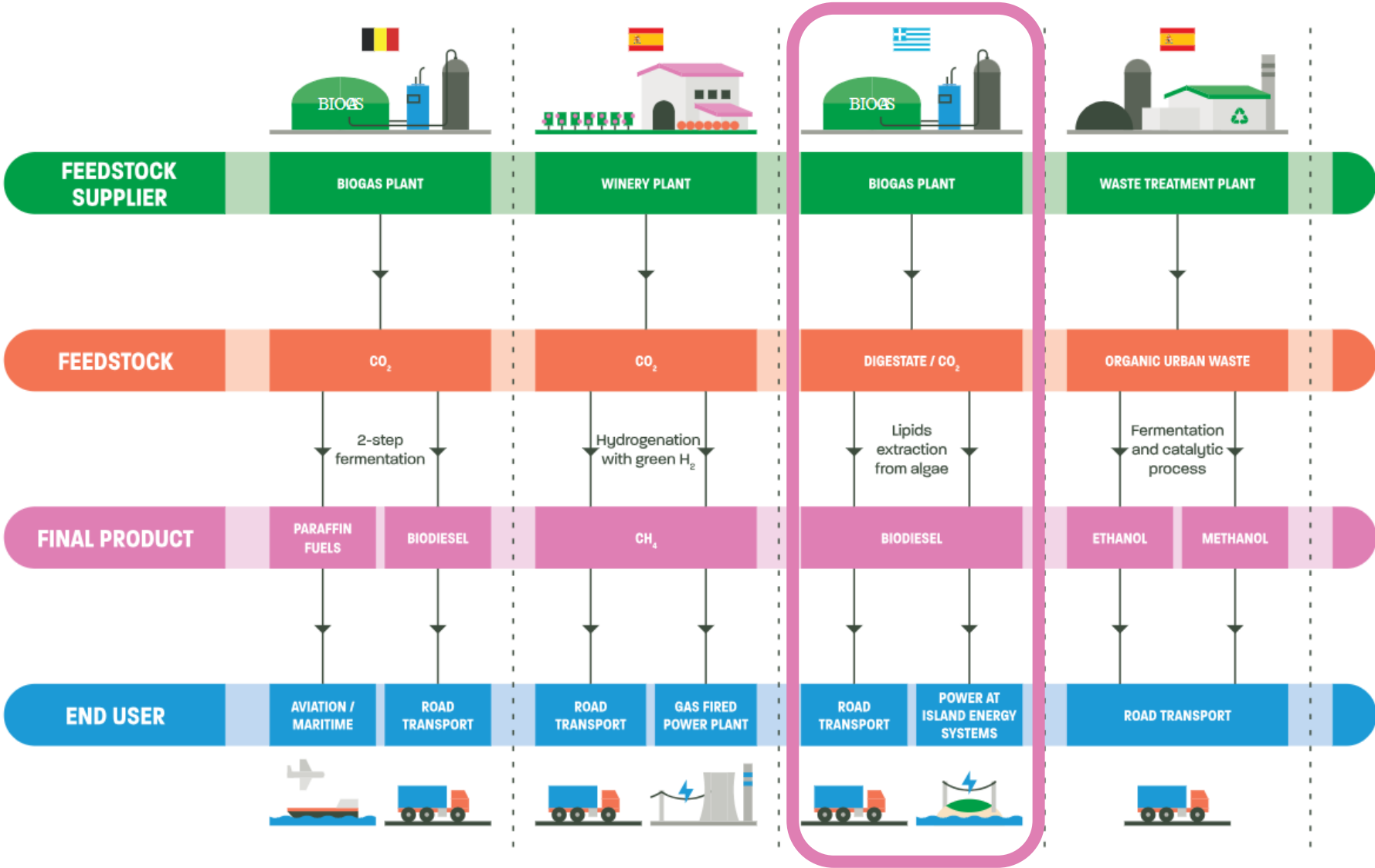
**Location:**  
Vinas del Vero winery  
(Somontano, Spain)



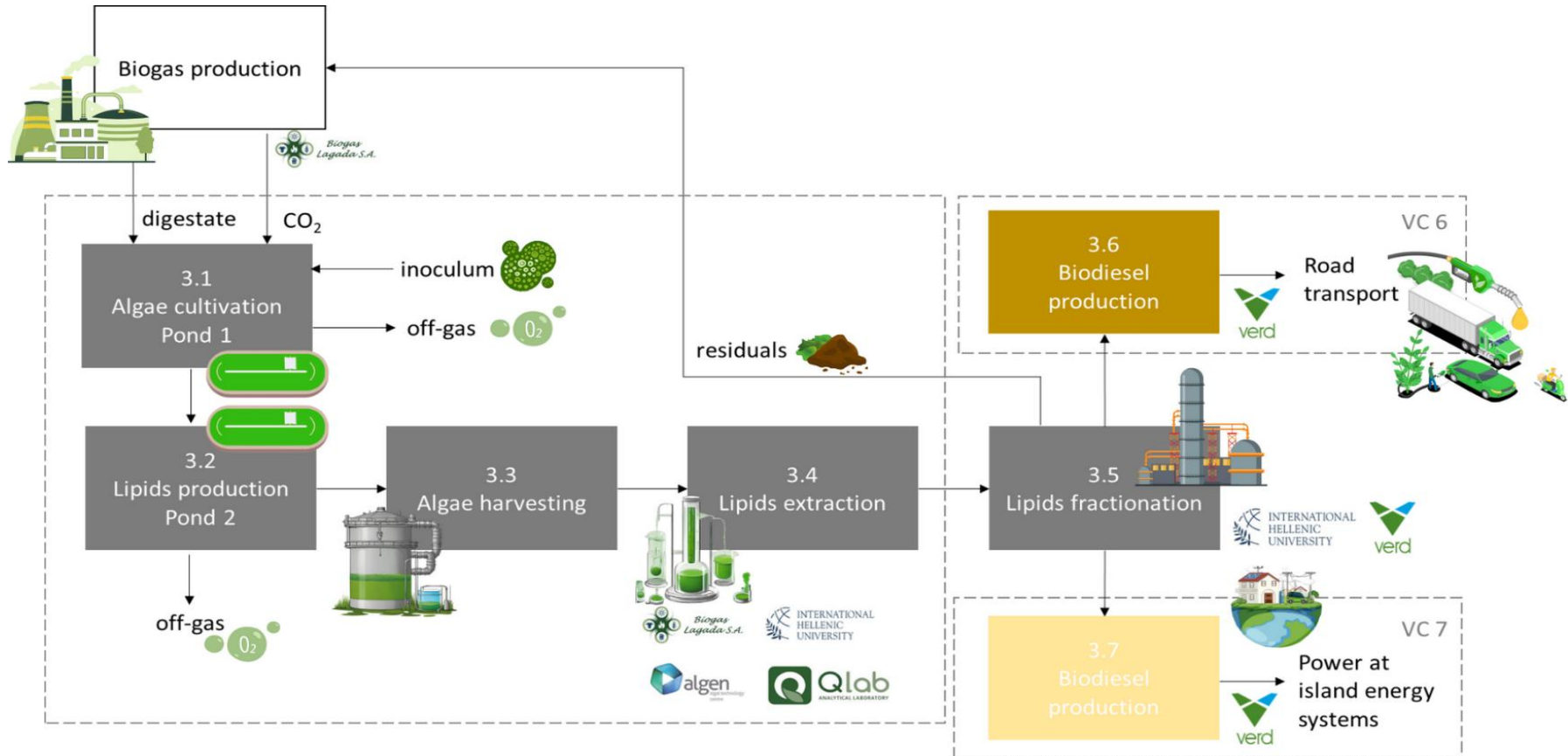
**Key technology:**  
Catalytic  $CO_2$   
methanation unit



# Demos overview



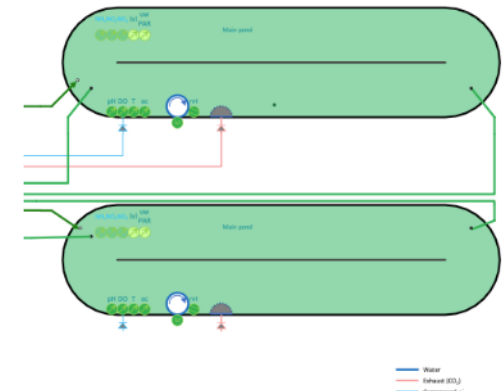
# DEMO 3



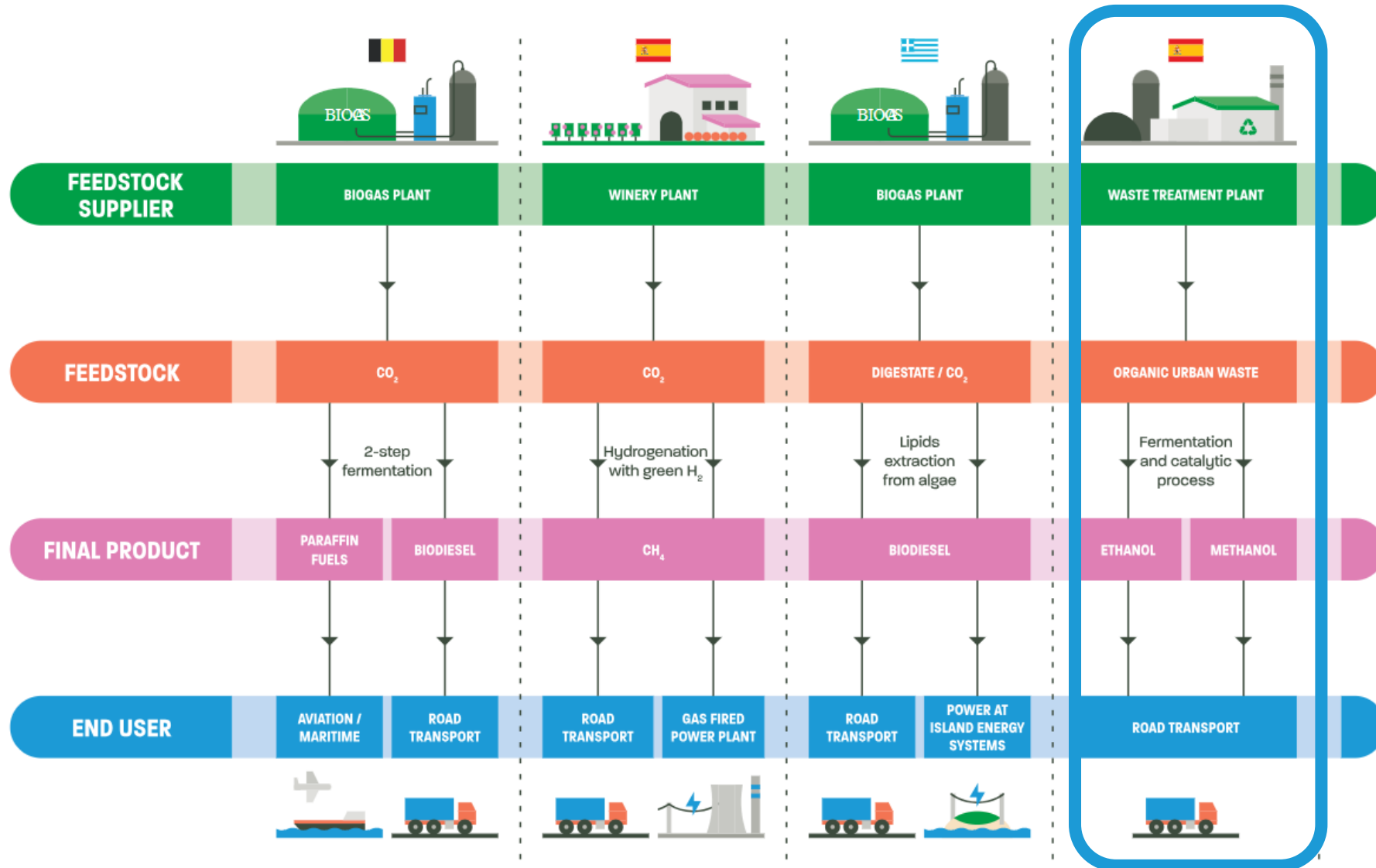
**Location:**  
Biogas Lagada  
(Thessaloniki, Greece)



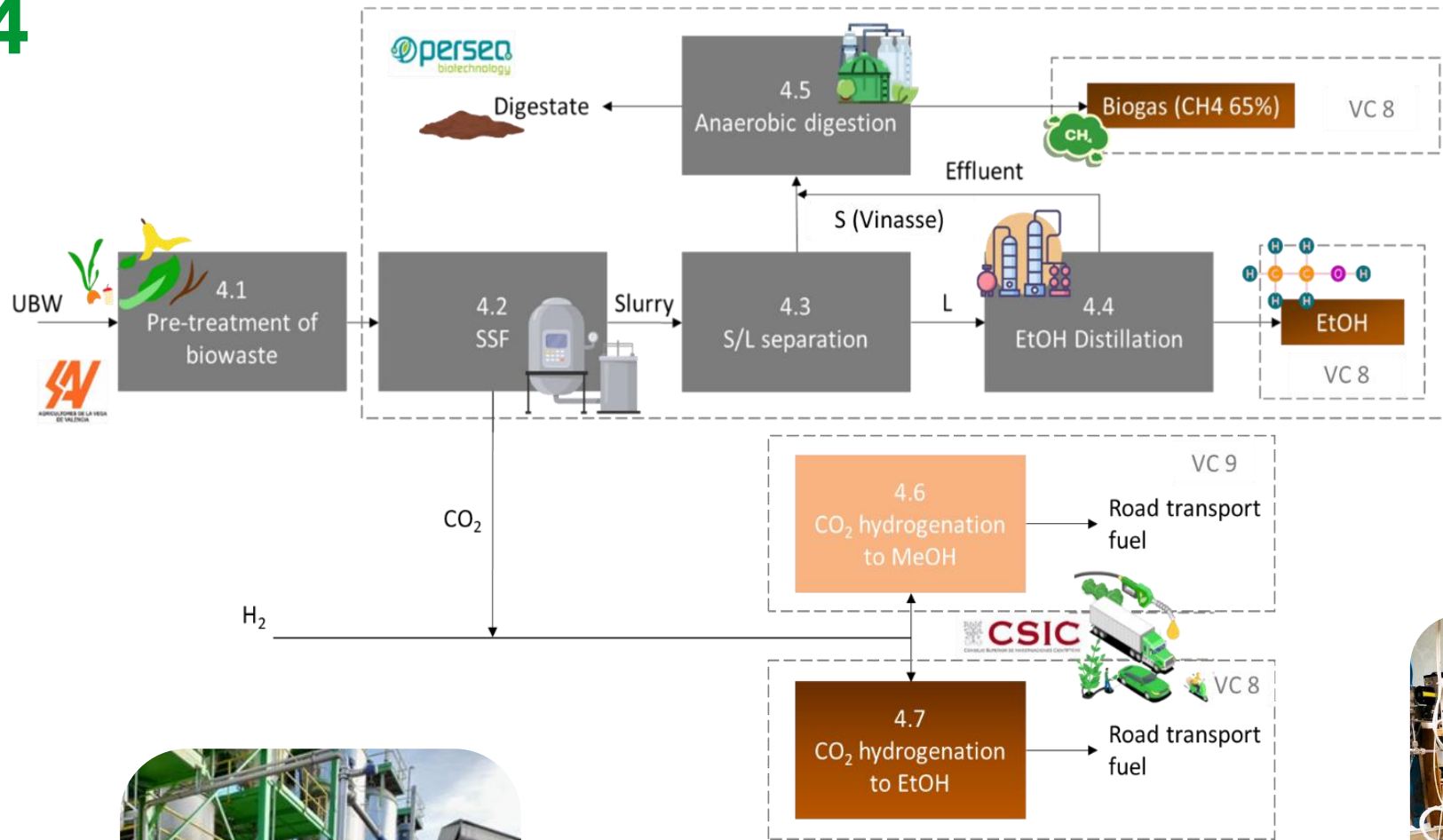
**Key technology:**  
High-Rate ponds for  
microalgae cultivation



# Concept – demos overview



# DEMO 4



**Location:**  
PERSEO & CSIC  
facilities (L' Alcudia  
and Madrid, Spain)



## Key technologies:

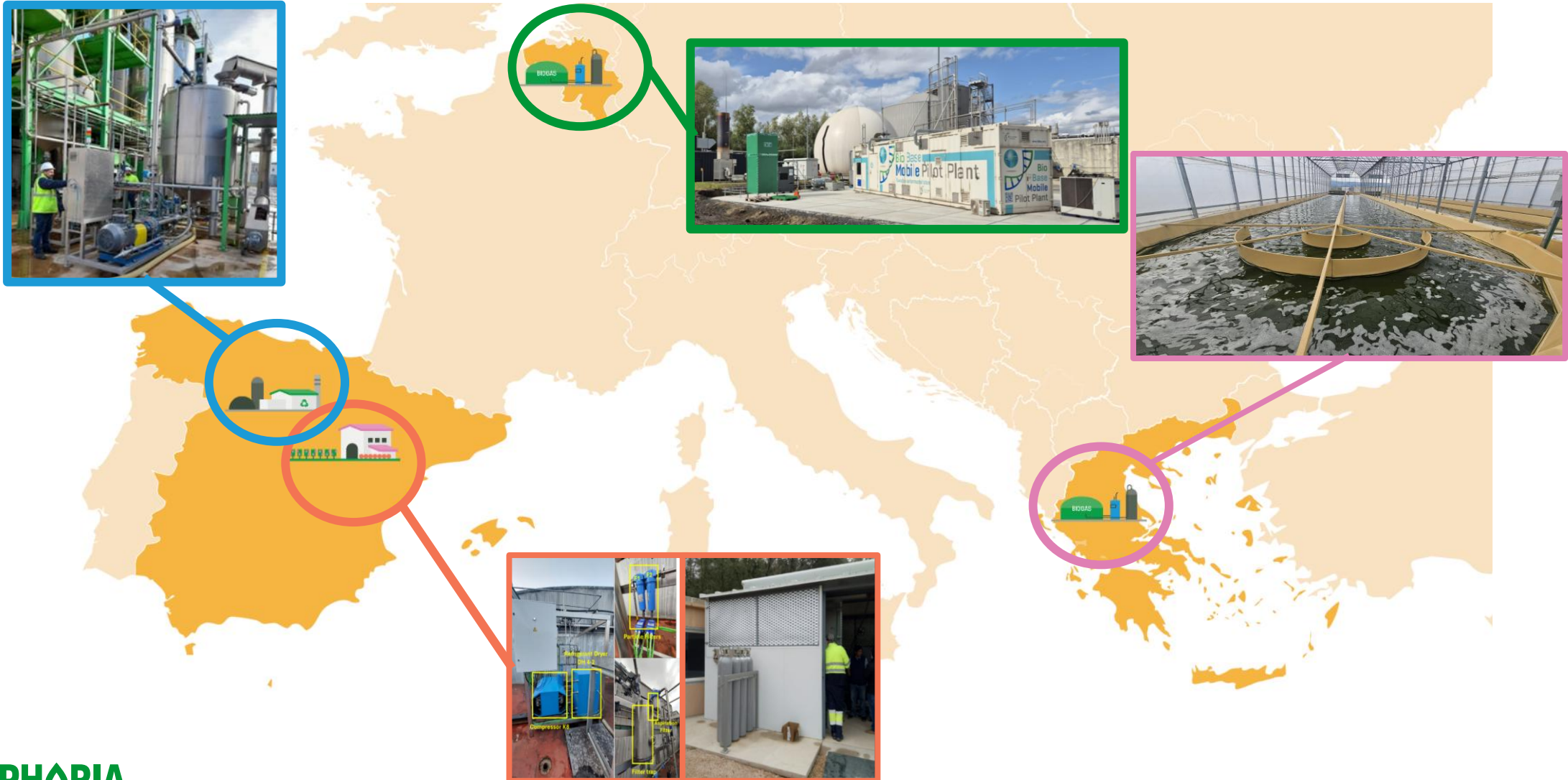
- bioethanol fermenter
- e-methanol/e-ethanol synthesis unit





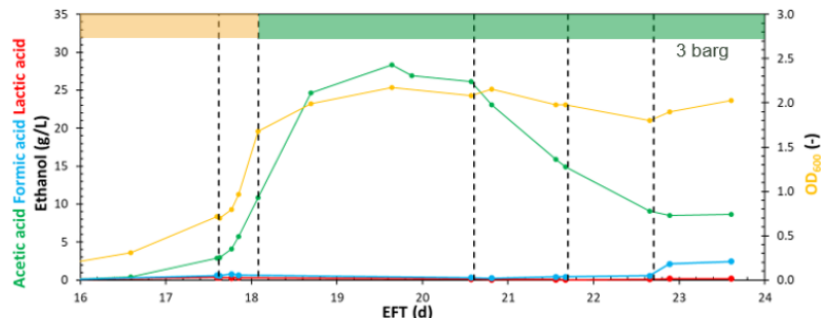
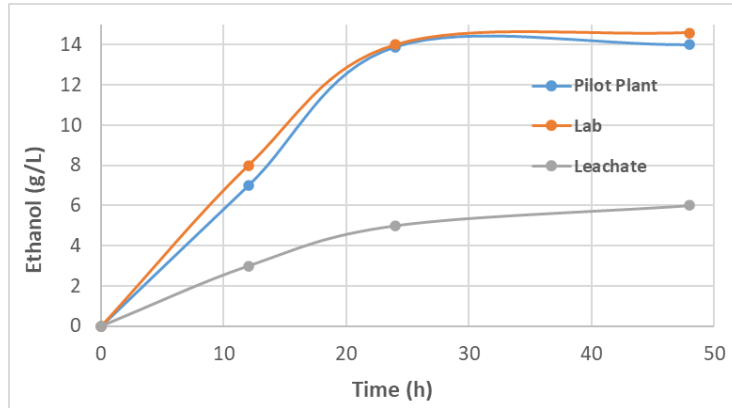
# Key achievements so far

Pilot preparatory activities completed – all demos are currently operational



# Key achievements so far

Lab scale optimization tests for key technologies



**FUELPHORIA**  
portfolio of  
competitive state-of-  
the-art technologies

Biochemical

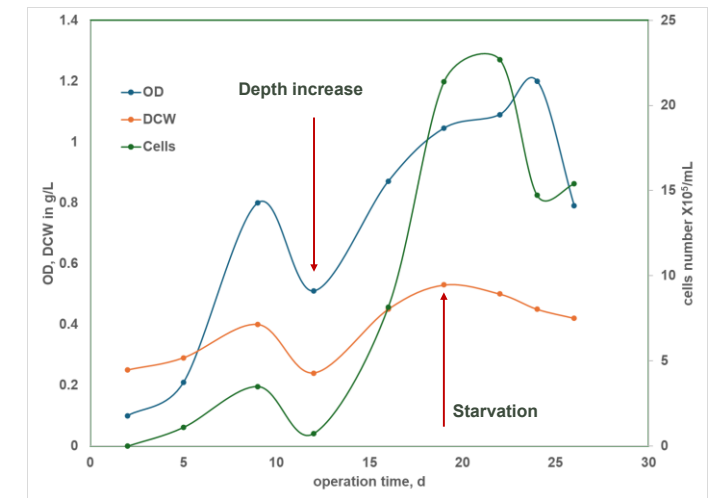
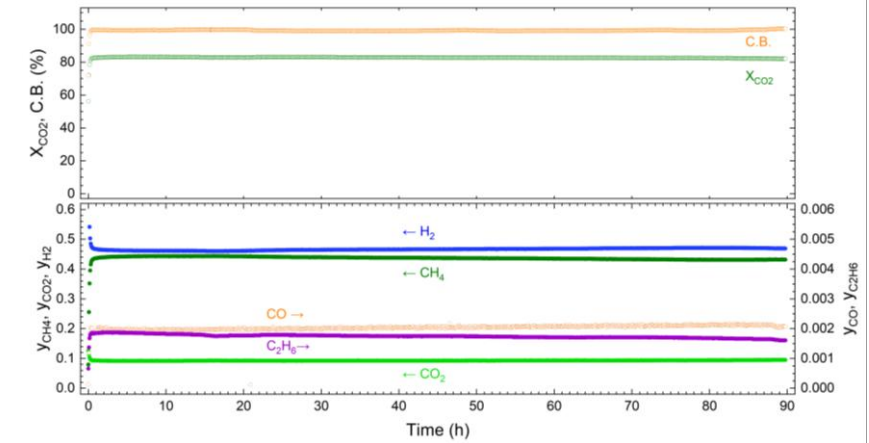
Thermochemical

Biological

Chemical

Photobiological

Electrochemical



## About FUELPHORIA

FUELPHORIA is an EU-funded Innovation Action project working to establish sustainable, competitive, and secure value chains for advanced biofuels and renewable fuels of non-biological origin.

Coordinated by CERTH, the project will set up and test a portfolio of 9 complete value chains in Belgium, Greece, and Spain.

Project partners will also evaluate the environmental performance of the FUELPHORIA renewable fuels, design innovative business models to prepare their market entry, and explore their export potential through collaboration with Africa

## Get in touch

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# Thank you for your attention



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