

ALGAESOL

PROJECT AMBITION

Develop **cost-effective, sustainable and renewable aviation and shipping fuels** based on game-changing **microalgae and direct solar fuel production and purification technologies** in order to accelerate the replacement of fossil-based energy technologies.

PROJECT DESCRIPTION

Climate change imposes challenges to energy security due to, between other reasons, resource depletion. Thus, the need for alternative energy sources is rising and ALGAESOL focus on **improving the conversion efficiency of solar energy, carbon dioxide (CO₂) and organic wastes into renewable methanol (CH₃OH), methane (CH₄) and biooils**. The project will significantly contribute to the current state-of-the-art in several aspects, such as:

Direct solar conversion bioelectrochemical system (BES) technology

- by developing and improving cutting-edge BES using a zero-waste approach;

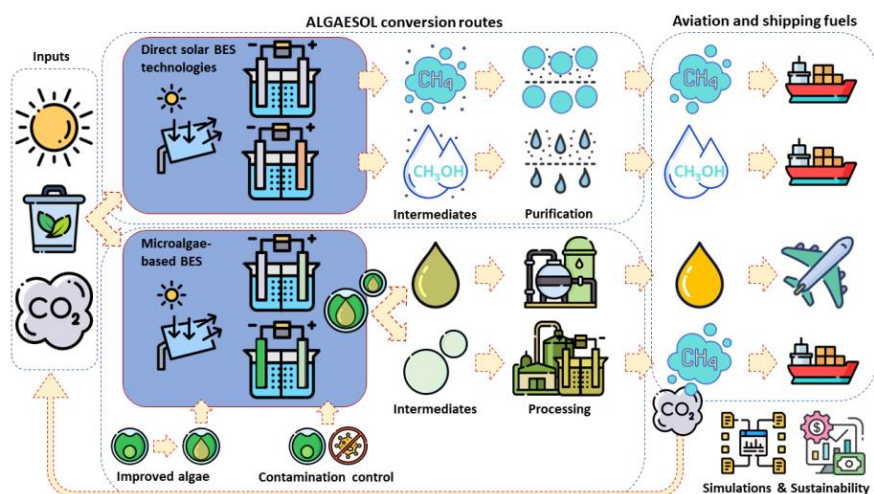


Figure 1 Schematic overview of the ALGAESOL project concept.

Sustainable aviation and shipping fuels from microalgae and direct solar BES technologies

PROJECT FACTS

Start date: 01/05/2024

End date: 30/04/2027

Duration: 36 months

Project budget: € 3.9 M

HORIZON Research and Innovation Action (RIA)

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Microalgae-based renewable fuel technologies

- increasing **biooil (microalgal lipids)** production through improvements in microalgal pathways or photosynthetic bioconversion (bioelectrochemical technology, improved algal strains, cultivation protocols, harvesting and lipid extraction);

Purification and fuel development

- by **improving purification yield** and quality of biofuels from algal lipids;

Simulations, sustainability and scale-up strategies

- employing novel simulation approaches and sustainability assessments to **ensure enhanced sustainability** (environmental, economic, social) of the developed fuels and market penetration.

EXPECTED IMPACT

- **Reduce aviation and shipping biofuel production costs up to 25%** and accelerate the replacement of fossil-based energy technologies.
- Enhanced sustainability of the developed fuels by using **waste streams**, as about 80% of residual biomass generated in the value chain will be reused as input in the conversion process.
- **Reduction of the environmental impact** of biofuel production **by up to 20%** compared to current state-of-the-art (SotA) processes.

CONSORTIUM

NORCE	NO
LEITAT	ES
UdG	ES
DTI	DK
SIMTECH	AT
SOCAR	TR
AMI	CZ

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