COCPIT

Circular production of microalgae-based fuels for shipping and aviation

The aviation and maritime transport sectors are responsible for 28% of total transport emissions in the European Union.
To address this impact, the EU has established binding targets through the ReFuelEU Aviation and FuelEU Maritime regulations, which mandate the rapid adoption of sustainable fuels.

The Commission's report "**Mobilizing Industrial Capacity Building for Advanced Biofuels**" emphasizes that the large-scale deployment of advanced biofuels still faces several challenges. These include high production costs compared to fossil fuels, the limited availability of sustainable feedstocks, and the need to develop integrated industrial value chains linking biomass suppliers, technology developers, and fuel producers. To overcome these obstacles, the Commission emphasizes the importance of coordinated demonstration research projects and investments in new production pathways.

By 2030, Europe must significantly increase its advanced biofuel production capacity.

A single technology cannot supply the required volumes.
A portfolio of technologies and raw materials will be needed.

Developing complete industrial value chains, from raw material procurement to fuel production.

CRITICAL DATA IN THE REPORT

Need for investments

To achieve the 2030 targets, Europe must mobilize between €3.8 and €7.5 billion per year in industrial capacity. The lack of **bankability** and skilled developers is a primary obstacle. A project is defined as "bankable" when its risk profile is low enough to attract private investors. Currently, advanced biofuels struggle to meet these criteria due to:
Upfront costs and risks. High capital (CAPEX) and operating (OPEX) costs compared to fossil fuels discourage the investment of high-risk capital.

COCPIT's "**Test-before-Invest**" tool allows you to assess the economic and environmental sustainability of a supply chain in advance, reducing risks before investing. By simulating the entire value chain, from production to distribution, it helps verify the robustness of each phase and makes projects more transparent and reliable.

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Diversification of raw materials

The report highlights that no single technology or feedstock can meet future demand. The report identifies them as a **primary production of aquatic biomass** and a potential feedstock for several key technological pathways, including lipid hydrotreatment (HEFA/HVO), hydrothermal liquefaction (HTL), and anaerobic digestion.

COCPIT, by focusing on **Parachlorella kessleri**, allows for the expansion of renewable fuel production without competing with the food sector. At the same time, it combines technologies such as HEFA and HTL, creating a flexible supply chain that integrates proven and future-proof solutions.

Creation of integrated industrial supply chains

The report highlights the need to create integrated value chains that depend not only on technology, but on the integration of raw materials, processes, and final products. To truly function, it must coordinate biomass producers, aggregators who manage logistics and certifications, industries that transform resources, and distributors who deliver products to the transportation sectors.
For this reason, the report proposes the formulation of "Collective Plans" for financing that do not limit themselves to supporting a single node in the chain, but act in a coordinated manner.

The project implements this model by connecting algal biomass production directly to conversion processes and final distribution, while optimizing waste management through circularity.
This approach reduces logistics costs and improves greenhouse gas (GHG) savings, a key requirement for RED III compliance.

COCPIT translates the strategic recommendations of the "Mobilization Report" into practical solutions. Through the use of specific microalgae, the flexibility of HEFA/HTL processes, and the de-risking tool for investors, the project provides the industrial model needed to overcome high production costs and raw material scarcity, acting as a key enabler for the European climate targets of 2030 and beyond.

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement No. 101122101. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union.