PROJECT DURATION

48 months

September 2024 to August 2028

€ 6,7M

From the Circular Bio-based Europe Joint Undertaking

€ 8,7M

TOTAL BUDGET

17 partners from 6 European countries

5 ACADEMIC PARTNERS

KU Leuven (Belgium),
TU Delft (Netherlands),
Université de Bourgogne Franche-Comté UBFC *(with affiliated UFC and ENSMM)* (France),
Danmarks Tekniske Universitet DTU (Denmark),
Université de Technologie Tarbes Occitanie Pyrénées (UTTOP) (France).

2 RESEARCH CENTERS:

CETIM (France),
Materia Nova (Belgium).

7 SMES:

Eco-Technilin (France),
Hemp-Act (France),
Woodoo (France),
NPSP (Netherlands),
Olsen Wings (Denmark),
Bitrez (United Kingdom),
Terre de Lin (France).

2 LARGE COMPANIES:

Arkema (France),
Linificio (Italy).

1 CLUSTER:

Bioeconomy For Change (France).

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Circular Bio-based Europe Joint Undertaking | Bio-based Industries Consortium | Co-funded by the European Union

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CIRCULAR BIO-BASED COMPOSITES

FROM **HEMP FIELDS** AND **BIO-BASED** RESIN PRECURSORS TO **FULLY BIO-BASED COMPOSITES** AND **BEYOND!**

CONTEXT & APPROACH

In recent years, plant fibres have gained renewed interest due to their environmental benefits and potential for various applications.

These fibres offer advantages in ecology, economy, and technical properties. Beyond traditional uses like, textiles and paper, research has opened new opportunities in engineering. Europe has seen a significant increase in plant fibre usage, and hemp is a promising natural fibre for high-performance composites. Thanks to outstanding research efforts, hemp fibre has become amongst others, an attractive material for structural applications.

SSUCHY-Next will lead to the extension of the range of applications to sectors such as: wind energy, building applications. To do so, the project will go beyond its predecessor, **SSUCHY,** which developed the hemp fibre supply chain and bio-based epoxy resin.

The consortium will scale up hemp fibre production and develop new bio-based resins (bio-based acrylic polymer Elium® with very high bio-content, fully bio-based benzoxazine, and fully bio-based epoxy) for sustainable composite materials. These bio-based composites will serve as basis for demonstrators to be developed at TRL7 in the framework of the project, including wind turbine blades, structural load-bearing elements, façade panels.

OBJECTIVES

- **Developing the hemp fibre supply chain** to produce fibre across regions with diverse climates.
- **Advancing the development** of 3 bio-based and circular matrices
- **Evaluating and improving the newly developed hemp fibre preforms and bio-resins** at the composites level. Improve fibre-matrix compatibility, moisture durability coupled with mechanical ageing.
- **Optimising** structural damping, **understanding** non-linear material behaviour, and **enhancing** the fire, smoke and toxicity performance of bio-composites for various applications.
- **Producing 95% bio-based composite materials** and aiming for at least 90% bio-based resin.
- **Developing wood-based composites** to replace glass-based materials and metal in the construction sector.
- **Demonstrating large-scale building and construction applications** of circular bio-based composites, optimising manufacturing processes and reducing the environmental footprint.
- **Proving improved life cycle assessment** (LCA) and circularity of the bio-based composites.

EXPECTED IMPACTS

ENVIRONMENTAL

- Ensure environmental sustainability of the feedstock.
- Improved life cycle environmental performance of bio-based products.

ECONOMIC

- Readiness for a market uptake of bio-based products.
- Reinforcing the integration of bio-based research and innovation throughout industrial supply chains.

SOCIAL

- Support new jobs, growth and investment.
- Raise public awareness and acceptance of bio-based solutions.

A MULTI-STAKEHOLDERS PROJECT

KU LEUVEN
Université de Technologie Tarbes Occitanie Pyrénées
Linificio & Canapificio Nazionale 1873
Terre de Lin
EcoTechnilin
HEMP - ACT
MATERIA NOVA
TU Delft
UBFC Université Bourgogne Franche-Comté
WOODOO AUGMENTED WOOD
BIOECONOMY FOR CHANGE
CETIM
Olsen Wings
Bitrez
npsp
ARKEMA
DTU

CONTRIBUTION TO SUSTAINABLE DEVELOPMENT GOALS

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
12 RESPONSIBLE CONSUMPTION AND PRODUCTION