

UPWEARS PROJECT KICK-OFF

November 2024

BIOECONOMY | RESEARCH & INNOVATION | UPWEARS PROJECT

CONTEXT & OBJECTIVES

UPWEARS will build an innovative and replicable value chain from the valorisation of flax, cork, hemp and by-products of the paper industry towards an innovative, bioinspired, e-textile for application in sport industry.

In this context, UPWEARS aims to contribute to structural resource efficiency and a sustainable economy by unlocking the potential of a new generation of **biobased and hybrid fabrics for e-textile**. UPWEARS e-textile will feature high performance, cost-effective multi-functional fibres and yarns, biomimetic fabrics, imbedded electronics and pollution sensing. UPWEARS development will **minimise manufacturing waste** thanks to artificial intelligence automation and digital twin, while also **reducing chemical usage** by incorporating green bleaching processes.

The project is based on a multi-dimensional methodology, which allows addressing design challenges and solutions across multiple scales:

- **Dimension 1:** Targets optimal raw material transformation allowing both better intrinsic properties at microscale and upgraded performance within a larger scale.
- **Dimension 2:** Focuses on the processes in order to better handle the raw material variability, automate production processes and ensure circularity.
- **Dimension 3:** Integrates the two previous dimensions in a demonstrator of sustainable e-textile for technical textile application.

For this, UPWEARS will:

- Create an innovative & sustainable value chain from the native fibre to the functional device end-of-life;
- Switch from a traditional process towards a modern textile fabrication process supporting the textile industry's digital and sustainable transformation;
- Eco-design an e-textile for high added-value sportswear applications meeting European consumer's demand and contributing to EU competitiveness.

RESEARCH AND DEVELOPMENT

UPWEARS will present and demonstrate in real conditions an integrated solution (innovative e-textile and adapted manufacturing process): a **smart, functional, protective, and sustainable cross-country biking suit**. The goal is to develop a bioinspired final product with the following specifications: **abrasion resistant, waterproof and/or water repellent, stretchable, breathable and tear resistant**.



PROJECT KICK-OFF

The project partners came together on November 7th and 8th in Nantes for the official project Kick-Off meeting, hosted by the coordinating organization, INRAE.



This in-person gathering provided the perfect opportunity to connect, collaborate, and set the foundation for the months ahead. The event featured a mix of insightful presentations, strategic planning sessions, and productive discussions, ensuring a strong start for the project.

Participants also enjoyed enriching site visits, including the Textile and Fashion Museum in

Cholet, the Centrale Nantes engineering school, and the INRAE Pays de la Loire Centre, offering valuable perspectives on the project's context and potential.

A MULTI-STAKEHOLDERS PROJECT

Upwears is a collaborative project that unites expertise and innovation from across Europe, bringing together 15 partners from 7 countries under the coordination of INRAE (France):

- **3 Large industrials:** Linificio (Italy), Texteis Penedo (Portugal), PAFIL (Portugal)
- **3 RTOs:** RISE - Research Institute of Sweden (Sweden), CITEVE - Technology centre for the textile and clothing industries (Portugal), SCION - New Zealand Forest Research Institute (New Zealand),

- **7 Academics:** KUL - KU Leuven (Belgium), Synchrotron Soleil (France), UBS - Université de Bretagne Sud (France), UFC - Université de Franche-Comté (France), UBFC – Communauté d’Universités et Etablissements universitaire de Bourgogne France Comté (France), ENSMM – Ecole Nationale Supérieure de Mécanique et des Microtechniques (France), UCAM - University of Cambridge (United Kingdom)

- **1 innovative cluster:** Bioeconomy For Change (France)



KEY FIGURES

Duration: 48 months (from September 2024 to August 2028)

Total budget: €7.8M

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