Press release
November 7, 2025

EUROPEAN UPWEARS PROJECT UPDATE AFTER ONE YEAR OF WORK

BIOECONOMY | RESEARCH & INNOVATION | UPWEARS PROJECT

UPWEARS celebrates one year of progress towards sustainable and intelligent textiles, a successful first year marked by collaboration, innovation, and a strong European network.

Reinventing the textile industry through bio-based and biomimetic innovation

One year after the project launch, the 15 partners of the European project UPWEARS gathered in Cambridge (UK), at the University of Cambridge, to review their first results and define the next steps towards more sustainable, bio-based, and intelligent textiles for the sportswear industry.

The UPWEARS project, coordinated by INRAE (France) and funded by Horizon Europe aims to build an innovative and replicable value chain from the valorisation of flax, hemp, cork, and paper industry by-products to develop bioinspired e-textiles for high-performance sports applications.

By combining biobased materials, advanced manufacturing, artificial intelligence, and embedded electronics, UPWEARS strives to make the European textile industry more circular, competitive, and resource-efficient.

Collaborative momentum in Cambridge: a week of science, synergies and sustainable textiles

One year after its launch, the UPWEARS project took a decisive step forward in its mission to reinvent the textile industry through bio-based and biomimetic innovation.

From 15 to 19 September 2025, the University of Cambridge became the beating heart of this European collaboration, hosting both the 3rd European Summer School on Bio-Based Composites (ESBBC-3) and the 3rd UPWEARS Consortium Meeting.

For a full week, the project's 15 partners, along with more than a hundred researchers, students, and innovators from across Europe, gathered to exchange ideas, challenge assumptions, and shape the next generation of sustainable e-textiles.

Co-funded by the European Union

Bridging knowledge and creativity

Over three days, the Summer School showcased the latest advances in bio-based composites and sustainable materials through lectures, workshops, and discussions connecting academia, research, and industry.

UPWEARS partners actively contributed to the programme, reflecting the project's multidisciplinary expertise. Marc Rouchon (INRAE PhD student) was awarded the Best Student Presentation Prize for his work on Deep Eutectic Solvents (DES) for sustainable fibre processing.

Their interventions highlighted how natural fibres, biomimetic design, and data-driven tools can converge to create smarter, circular materials, perfectly aligned with UPWEARS' vision.

The event gathered 72 participants (50% PhD/Master's students, 35% academics, 14% postdocs) and achieved near gender balance (47% female participation), reinforcing UPWEARS' visibility and commitment to inclusivity in sustainable innovation.

A collective pulse: the UPWEARS Consortium Meeting

Immediately following the Summer School, the consortium's third General Assembly gathered partners at Churchill College, just a few steps away.

Over two days, the energy of the Summer School carried over into a deep, constructive dialogue between scientists, engineers and industrial partners.

Sessions ranged from biobased fibre development and green processing, to digital manufacturing tools, circular design, and social impact assessment.

Under the guidance of Dr Sofiane Guessasma (INRAE) and Dr Darshil Shah (University of Cambridge), participants reviewed progress, shared new results, and aligned priorities for the year ahead.

The meeting also welcomed representatives from the European Commission's HADEA and the External Advisory Board, who encouraged partners to keep strengthening collaboration and data-sharing between work packages, an essential step as UPWEARS moves toward its demonstrator phase.

Interactive group sessions allowed PhD students and work package leaders to jointly reflect on project trends, identify synergies, and design shared experiments

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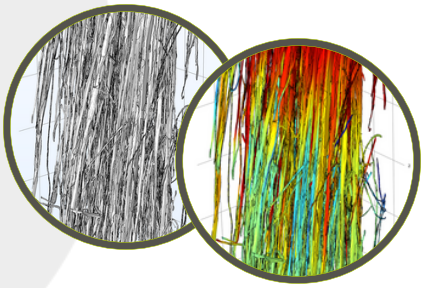
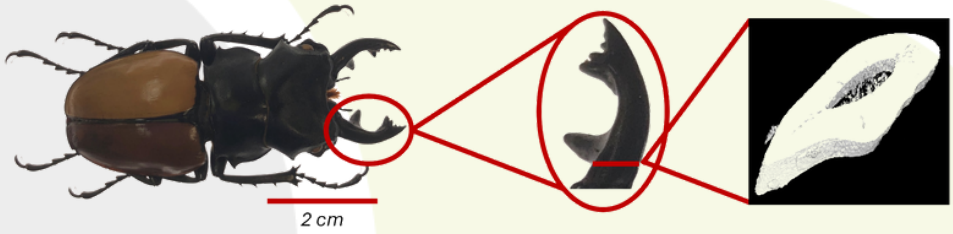
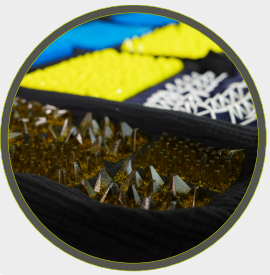
Main achievements of year 1

During its first year, the UPWEARS project has made solid progress across all work packages, combining strong scientific advances with an exemplary collaborative dynamic.



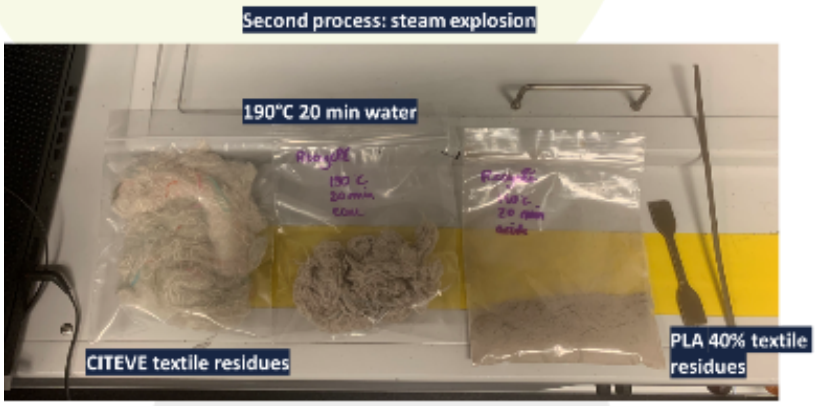
- Research on bio-based fibres and functionalisation techniques is progressing well, supported by early tests on sustainable solvents and surface treatments. Partners have also made notable advances in digital modelling and simulation tools, paving the way for process optimisation and AI-assisted design.
- The consortium has begun defining biomimetic principles and nature-inspired approaches for new e-textile concepts, connecting biological models to textile structures and manufacturing methods. This work was carried out in close collaboration with students from ENSCI–Les Ateliers (Paris), whose creative insights helped translate natural mechanisms into tangible design ideas for sustainable and functional textiles.





- Bio-inspired shock absorbers were printed at CITEVE by Luke Malone and Caroline Houriet in May. These were surprisingly promising at absorbing energy overall, and gave useful input for the researchers on which geometry was the most successful at passing the European motorcyclist protection standard! Good news for our future demonstrator!

- Early experimental trials on textile waste recycling and 3D printing have shown promising results, demonstrating the feasibility of producing new composite materials with recycled fibres.



- The project has developed its first hotspot analysis and launched a consumer perception survey, providing valuable input for aligning research with market expectations and sustainability goals.

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Looking ahead

With the Cambridge meeting as a turning point, UPWEARS now enters its second year with renewed momentum.

The consortium will focus on developing its bioinspired cross-country biking suit, advancing embedded sensing functionalities, and organising co-creation workshops to engage both industrial partners and consumers.

About UPWEARS

Duration: 48 months (September 2024 - August 2028)
Total budget: €7.8M
Horizon Europe contribution: €7M
15 partners from 7 European countries

Learn more: www.upwears.eu
Follow the project on LinkedIn

By valorising flax, hemp, cork and by-products of the paper industry, UPWEARS is building an innovative and replicable value chain for the production of bioinspired technical textiles.
The project integrates green chemistry, artificial-intelligence-driven automation, and biomimetic design to create multi-functional fabrics featuring functionalised fibres and yarns, embedded sensors, and pollution-sensing capabilities, while reducing waste and chemical use through enzymatic and eutectic green-solvent processes.
UPWEARS will demonstrate its innovations through a smart, protective and sustainable cross-country biking suit, designed to be abrasion-resistant, waterproof, stretchable, breathable and recyclable — an emblematic example of the next generation of European sportswear.

This project has received funding from the Circular Bio-based Europe Joint Undertaking (CBE JU) under the European Union's Horizon Europe research and innovation programme under grant agreement No. 10115751
Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union, the Horizon Europe or the HADEA. Neither the European Union nor the granting authority can be held responsible for them.

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Co-funded by the European Union