



CELLulose lyocell FILaments as a scalable solution for circular textile production

ECOSYSTEX Insights Series #12

Jennet Orayeva,
CELLFIL Dissemination & Communication Manager, RTDS Group
31 January 2025



Co-funded by
the European Union

CELLFIL Overview:

Acronym:	CELLFIL
Title:	CELLulose lyocell FILaments as a scalable solution for circular textile production
Duration:	01.06.2024 – 31.05.2028
Topic:	HORIZON-CL6-2023-CircBio-02-2-two-stage - Novel, sustainable and circular bio-based textiles
Call:	HORIZON-CL6-2023-CIRCBIO-02
Funding:	HORIZON EUROPE and Innovation Action
Total Budget:	€ 8 838 209,17
GA Number:	101135042
Coordinator:	RTDS Group
Consortium:	15 partners
CORDIS:	CELLFIL Project Profile on CORDIS
Website:	www.cellfil.eu

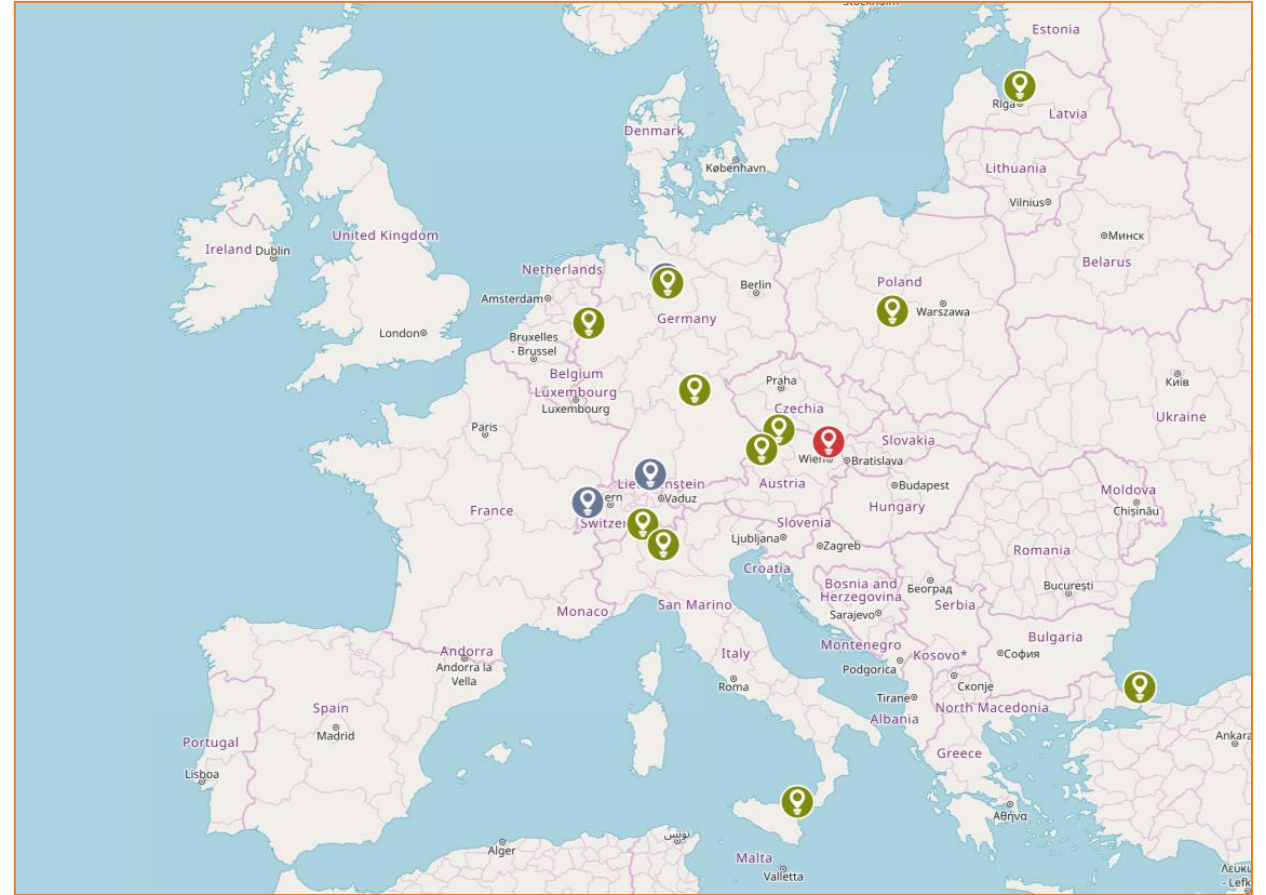


Project Nature

- The **European Research Executive Agency (REA)** supports EU Research and Innovation policy by funding knowledge-generating projects and promoting agricultural products.
- The goal is to start at **Technical Readiness Level 5** (pilot) with industry innovators to improve and test the novel cellulosic filaments across the value chain.

CELLFIL Partners

- 3 academic institutions
- 11 industry partners
- 1 public sector organisation



Project Objectives



Optimise Lyocell filament feedstock and yarn production

Shifting from 100% primary raw materials to recycled sources or alternative feedstocks



Enhance yarn functionalisation for diverse applications

Improving the versatility of Lyocell filament yarn by adding functionalities such as texturizing, effect yarns, and covered yarns, with a focus on bio-based materials for apparel and technical textiles.



Develop Lyocell filament fabric utilizing textile production routes

Optimizing machine settings to create segment-specific fabrics that improve circularity and recyclability, particularly in weaving, knitting, and finishing.



Develop and validate end-user textile applications for Lyocell filament

Developing and validating textile applications with optimized LF, prototyping nine products across three segments to demonstrate LF as a sustainable alternative to synthetic filaments.



Analyse and optimise conditions for market acceptance and large-scale production, supporting a circular textile industry in Europe

Conducting Life Cycle and 'Zero Waste' studies, market analysis, and Techno-Economic Assessments.

CELLFIL's Impact



ENVIRONMENTAL

Replaces harmful synthetic fibers with sustainable Lyocell filaments, reducing landfill waste and ocean pollution.



INDUSTRY OPTIMISATION

Enhances sustainability and functionality in various textile applications through a collaborative production framework.



ECONOMIC & SOCIAL

CELLFIL contributes to a sustainable and competitive European textile industry achieved through adoption of bio-based Lyocell filament production across the value chain.

Only **1% of materials in clothing** are recycled into new clothing

About **8% of European microplastics** released to oceans are from synthetic textiles



Project Methodology

- CELLFIL addresses the challenges of sustainable innovation in the fragmented textile industry by creating a unified platform across the value chain to advance Lyocell filament, the most sustainable cellulosic filament available at a pre-industrial scale.
- Lyocell filament was introduced in 2017 in the European cellulosic fiber market, but its acceptance has been slow due to industry hesitance and price sensitivity.
- By creating a collaborative framework, CELLFIL will optimize the entire textile production process, from raw material sourcing to final product development. The key stages of the project include:
 - Feedstock** – identifying & sourcing raw materials
 - Production** – developing efficient methods for manufacturing
 - Functionalization** – enhancing the filament properties
 - Product Development** – creating various textile prototypes
 - Testing & Validation** – ensuring quality & sustainability
 - Demand Assessment** – analysing the market
 - Life Cycle Assessment** – evaluating the environmental impact
 - Techno-Economic Analysis** – assessing the economic feasibility
 - Developing business models and plans for market uptake** – strategies for upscaling.

Sustainable innovation across the textile value chain



Orange peel pulp



Wood



Textile waste



Other 2G feedstock



Fiber



Yarn



END PRODUCTS

CELLFIL lyocell applications

Design and validation of nine Lyocell filament prototypes for three distinct market segments.



**Performance
apparel**

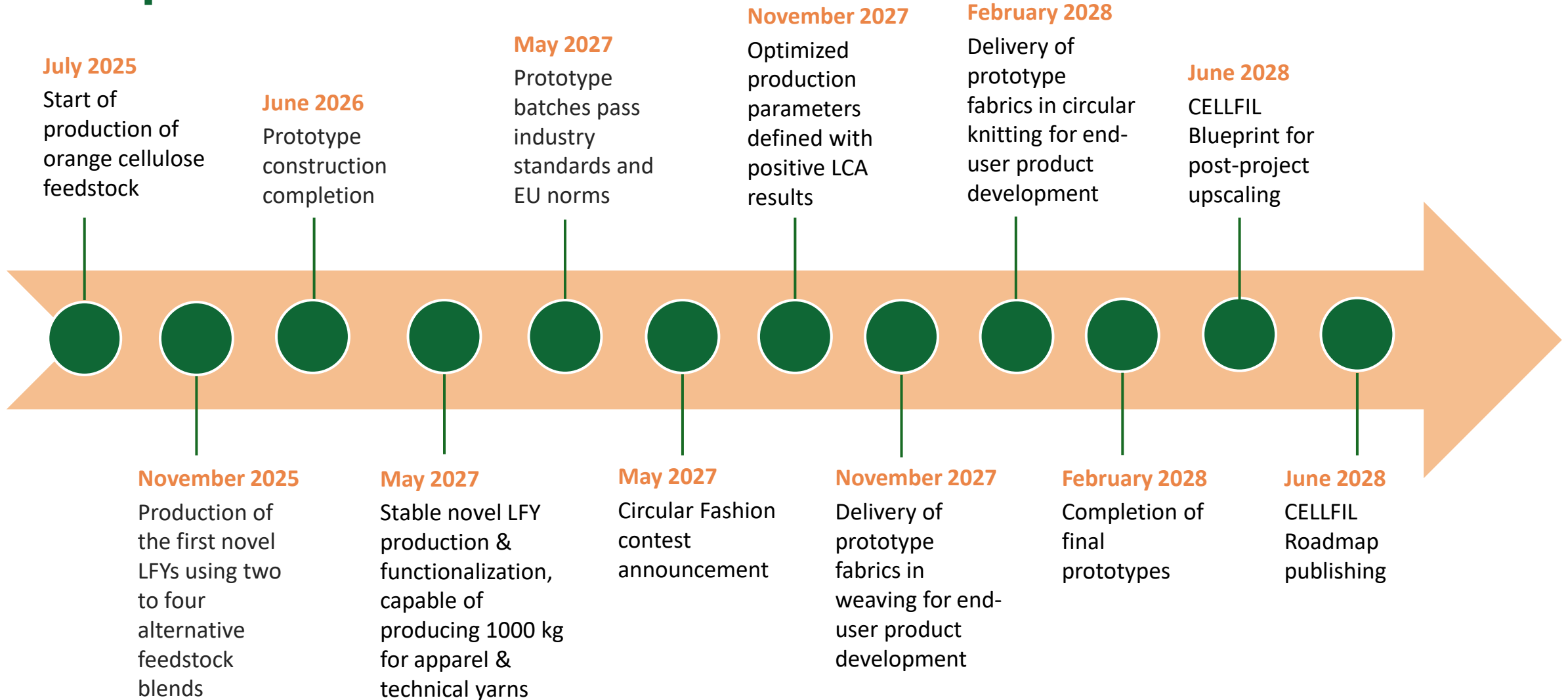


**Automotive textiles
& composites**



**Technical rubber
reinforcements**

Project Timeline



*Lyocell Filament Yarns (LFYs)

Contact us:



Project Manager

Francine Martin, RTDS Group, Vienna, Austria

E-mail: martin@rtds-group.com

Project Dissemination & Communication

Jennet Orayeva, RTDS Group, Vienna, Austria

E-mail: orayeva@rtds-group.com

Follow us on:



[@CELLFIL_EU](https://twitter.com/CELLFIL_EU)



[@CELLFIL_EU](https://www.youtube.com/@CELLFIL_EU)



[@CELLFIL_EU](https://www.linkedin.com/company/CELLFIL_EU)



WWW.CELLFIL.EU





THANK YOU!