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# tExtended

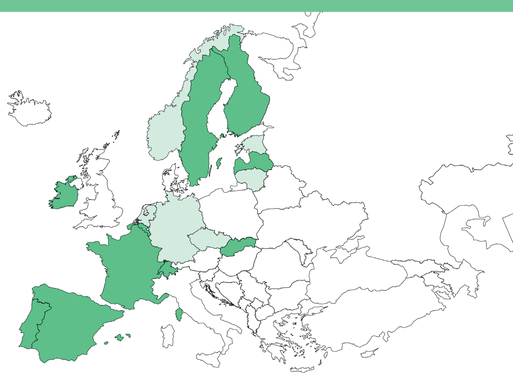
## Knowledge Based Framework for Extended Textile Circulation

## INTRODUCTION

- **Separate collection** of **textile waste** will be started by EU member states by 2025. Currently the textile sorting is done mainly by hand, which isn't accurate enough for high-value end uses: technologies and know-how are needed for the **identification**, **collection**, and automated **sorting** as well as for the recycling of the collected and sorted waste.
- Even though most textile materials are made of **blended fibres**, the current technologies lack the necessary processing options.
- The current activities mainly focus on down-cycling the waste to low value applications, and the current textile fibres aren't **sustainable**: they are oil-based, and the cultivation of the cotton needed to produce them require lots of water and chemicals.
- To support an efficient material flow, circular economy processes and the Industrial-Urban Symbiosis, also **data sharing** readiness needs to be increased. The circular textile system also needs the contribution of textile users, who need to be **motivated to participate**.

## EXPECTED RESULTS

- The overall objective of the tExtended project is to develop a knowledge-based **Blueprint**, i.e., a masterplan for a sustainable textile ecosystem.
- The basis of the Blueprint is a **Conceptual Framework** determining the optimized utilization of textile flows, aiming for retention of value of materials in a safe and sustainable way.
- Based on the Blueprint, we will implement a **Real Scale Demonstrator**, verifying its replicability and potential to reduce textile waste by 80%.



## EXPECTED OUTCOMES AND TARGET GROUPS

### Pathways

1. Knowledge based and digitally enabled circular textile ecosystem
2. Efficient textile recovery
3. Waste valorisation and recycling
4. Systemic, sustainable and safe circularity for textiles

### Target groups

1. Re-use and waste management actors
2. Recyclers
3. Textile producers & brands
4. Automatization & machine building & process development experts

## IMPACT

- **Scientific:** Production of new fundamental and applied knowledge for industries and scientific communities, produced on circular economy of textiles.
- **Economic/Technological:** Acceleration of the twin green and digital transition in European textile industry by generating new business, strengthening competitiveness and resilience through sustainability, and digitalization.
- **Societal:** Prevention of waste, sustainable consumption models via re-use, creation of jobs.
- **Environmental:** More sustainable textile industry, less emissions, potential to reduce textile waste by 80%.

## APPROACH

**Circular textile ecosystem:**
- Provides an overview on value chains, shared data and symbiotic interactions in future circular textile ecosystem. Social Innovation Spin- Off.

**Digital tools and technologies for textile recovery:**
- Develops data-driven solutions for optimisation of textile recovery (data sharing, identification, sorting, and development of pre-processing for valorisation).

**Textile recycling technologies:**
- Develops textile recycling processes (mechanical, thermo-mechanical and chemical processes); and adjusts textile manufacturing to extended use of secondary raw materials.

**Data-driven framework for textile circulation:**
- Builds a textile classification system, collects textile life-time data and develops the Conceptual Framework for determination of an optimised – safe and sustainable – utilization route for different types of textile flows.

**Demonstrators:**
- Introduces the Blueprint – implementation plan for the Conceptual Framework; A real scale demonstrator by joined resources of the tExtended consortium; Replication potential study in different regions.

**Benefits to sustainability and circularity:**
- Evaluates sustainability, circularity potential and technological and non-technological barriers.

## PROJECT PARTNERS

VTT, CENTEXBEL, citeve, AIMPLAS, CARR COMMUNICATIONS, LOUNAIS-SUOMEN JÄTEHUOLTO, GreenWay Logistics, TW, purfi, utexbel, ERT, RESTER, MTEX NS, Green Liberty, INESCTEC, NARA SK, almeida, SOPREMA, kringloop winkel

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