



GRETE

OVERCOMING THE BOTTLENECKS OF THE
WOOD-TO-TEXTILE VALUE CHAIN



GRETE project has received funding from the Bio-Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No. 837527



Horizon 2020
European Union Funding
for Research & Innovation



PROJECT

GRETE - GREEN CHEMICALS AND TECHNOLOGIES FOR THE WOOD-TO-TEXTILE VALUE CHAIN

Project lead

VTT Technical Research Center of Finland

BBI JU contribution

€ 2,555,243.75

Duration

01.05.2019 – 30.04.2023

Type of action

Research & Innovation Action

Feedstock origin

Forest-based

Feedstock type

Lignin & wood residues



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GRETE

Green chemicals and technologies for the wood-to-textile value chain

Summary

The GRETE project aims to develop new and better technologies for wood pulp modification, cellulose dissolution and fibre quality generation complying sustainability requirements and market needs.

Currently the raw material base to produce man-made cellulose fibres is limited, as only dissolving grade wood pulps are used commonly. The project will tackle this by widening the sustainable raw material basis for man-made cellulose fibres by including paper grade pulps. In addition, the solvent systems used to produce commercial man-made cellulose fibres are based on toxic and explosive chemicals; the GRETE processing technologies will increase safety, sustainability and feasibility of man-made cellulose fibre manufacturing.

The issues addressed by the project play a significant role in developing sustainable and green technologies for the European industry. The partners of the project are strongly committed to face the challenge and achieve the ambitious results, supported by a dedicated stakeholder group with the aim to foster strategic decision-making.

Objectives

Impacts

GRETE

Web site
<https://www.greteproject.eu/>

Results

Project's achievements on the EU research results portal

Project details

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Feedstock origin:	Forest-based
Feedstock type:	Lignin & wood residues
Start date:	01 May 2019
End date:	30 April 2023
BBI JU contribution:	€ 2,555,243.75



AMBITION

OVERCOMING THE BOTTLENECKS OF THE WOOD-TO-TEXTILE VALUE CHAIN

Tackle the challenges of **sustainable production of cellulose-based man-made fibres** by developing innovative technologies for wood pulp modification, cellulose dissolution and fibre generation, thus radically improving the wood-to-textile value chain.



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CONSORTIUM

EXCELLENCE CONNECTING
EUROPE'S NORTH TO THE SOUTH

The GRETE project is implemented by a consortium of a total of **eight partners**, connecting **four countries** from Europe's North to the South: Finland, Austria, Italy, Spain and Portugal, bringing together institutions from **Research, Consultancy and Industry**.

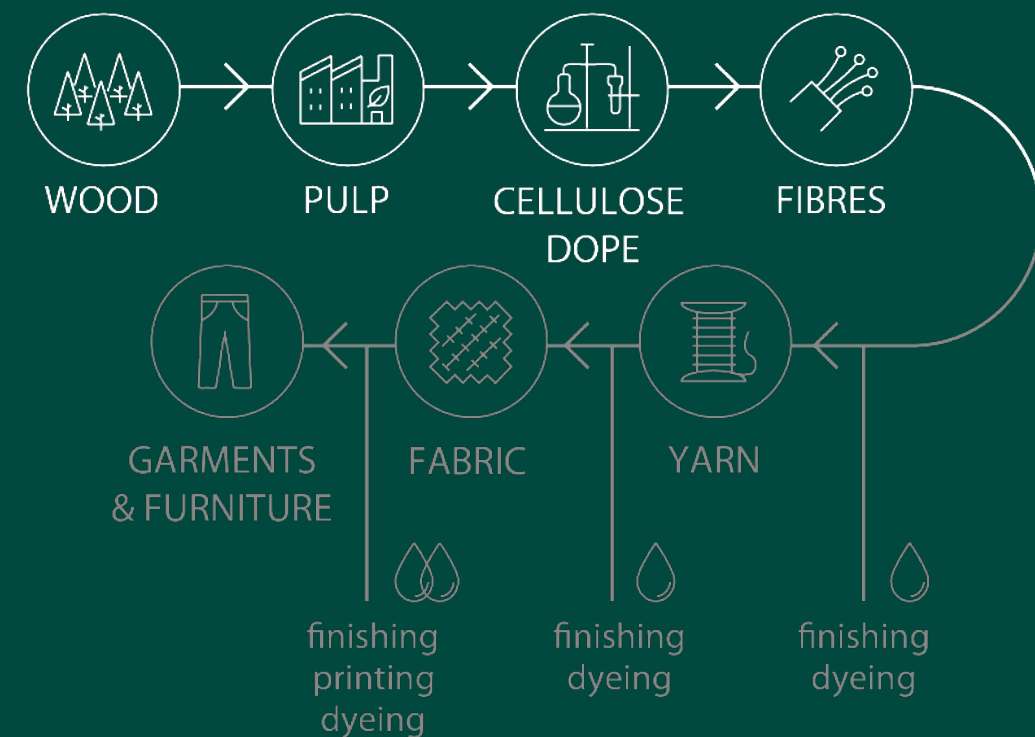


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IMPROVING THE EXISTING TEXTILE VALUE CHAIN THROUGH TECHNOLOGICAL INNOVATION

Using a **new raw material** based on European paper grade pulps, implementing **novel solvent systems** based on ionic liquids, and feasible and sustainable modification procedures for **cellulose** dissolution and **regeneration**.



GRETE will radically improve the wood-to-textile value chain by developing sustainable technologies for production of high-quality cellulose-based textile fibres

Broader raw material base by using paper-grade pulp

- Resource efficiency
- Reduction of chemical consumption
- Positive economical impact

Developing enzymatic and chemical pulp modifications and novel solvents based on ionic liquids

- Offers possibility to use European paper-grade pulps
- Current solvents are either environmentally hazardous or explosive

Developing sustainable fibre modification processes

- durable high-quality fibres
- targeted and water-scarce finishing treatments and dyeing



Reducing the carbon footprint of a finished textile garment product by approximately 40% and develop water and chemical scarce finishing processes

Developing **sustainable and competitive bio-based industries** in Europe

Improving technological performance of existing biorefining operations and **reducing biorefineries' capital and operating costs**

Societal impact also outside the EU: release of land for food production (now used for cotton farming), reduction of water and pesticide consumption (both being environmental detriments of cotton production)



LOCAL IMPACTS

Create **new jobs** and offer working opportunities in **less populated rural areas** of the EU

Forest-based industries **provides income to around 16 million forest owners** in the EU and help maintain employment and wealth generation in rural areas

Possibility to use **forest-based raw materials free from herbicides and insecticides**



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CONTRIBUTION TO EU POLICY

Support **growth and re-industrialization** in Europe

Strengthen the **links between science and policy-makers** removing unnecessary regulatory barriers.

Assist industry to further explore promising technologies to **broaden and strengthen the bio-based industries** in Europe simultaneously reducing the environmental footprint of the total value chain.

Help to answer grand challenges established in the **European Bioeconomy 2030** including sustainable management of natural resources, sustainable production, improving public health, mitigating climate change, integrating and balancing social developments, and sustainable development.



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R&D WORK ON TRACK

Several thesis workers are documenting the research work carried out within GRETE, such as the paper grade Kraft **pulp modifications**, the analysis of **solvent recovery** concepts and the spinning of the first batch of **GRETE fibres**, which are now tested.



NOVEL RAW
MATERIAL BASE FOR
THE TEXTILE
INDUSTRY



NOVEL SOLVENTS
FOR CELLULOSE
DISSOLUTION &
REGENERATION



HIGH QUALITY
FIBRES WITH
TAILORED
PROPERTIES

Download the GRETE related scientific publications [here](#).



Thank you!

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