



# TexMaTer - Novel cellulosic fibres and bioformulations for textiles' finishing using macroalgae.

TEXtile solutions from MARine and TERrestrial biomass

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## Introduction

The textile and clothing industry (T&CI) is one of the most concerning industrial sectors due to the intensive use of resources (e.g., raw materials, electricity, fuel, water, and chemical products), GHGs emissions, and large volumes of wastewaters (2.6% of the global freshwater<sup>1</sup> for cotton only). To reduce the environmental impact of textile, several companies already incorporate seaweeds in their textile solutions. The best-known algae-based textile material in the market is Seacell™,<sup>2</sup> produced by blending algae with wood-based cellulose, following the lyocell/modal process.<sup>3</sup> Similarly, Algaeing created threads produced through the addition of algae into wood cellulose, maintaining the algal inherent colours.<sup>4</sup> Keel.Labs (former Algiknit) developed Kelsun™, a seaweed-based yarn produced using alginate and proprietary formulation.<sup>5</sup> Although there are several products incorporating algae in wet-spinning processes, the majority rely on the use of wood cellulose.

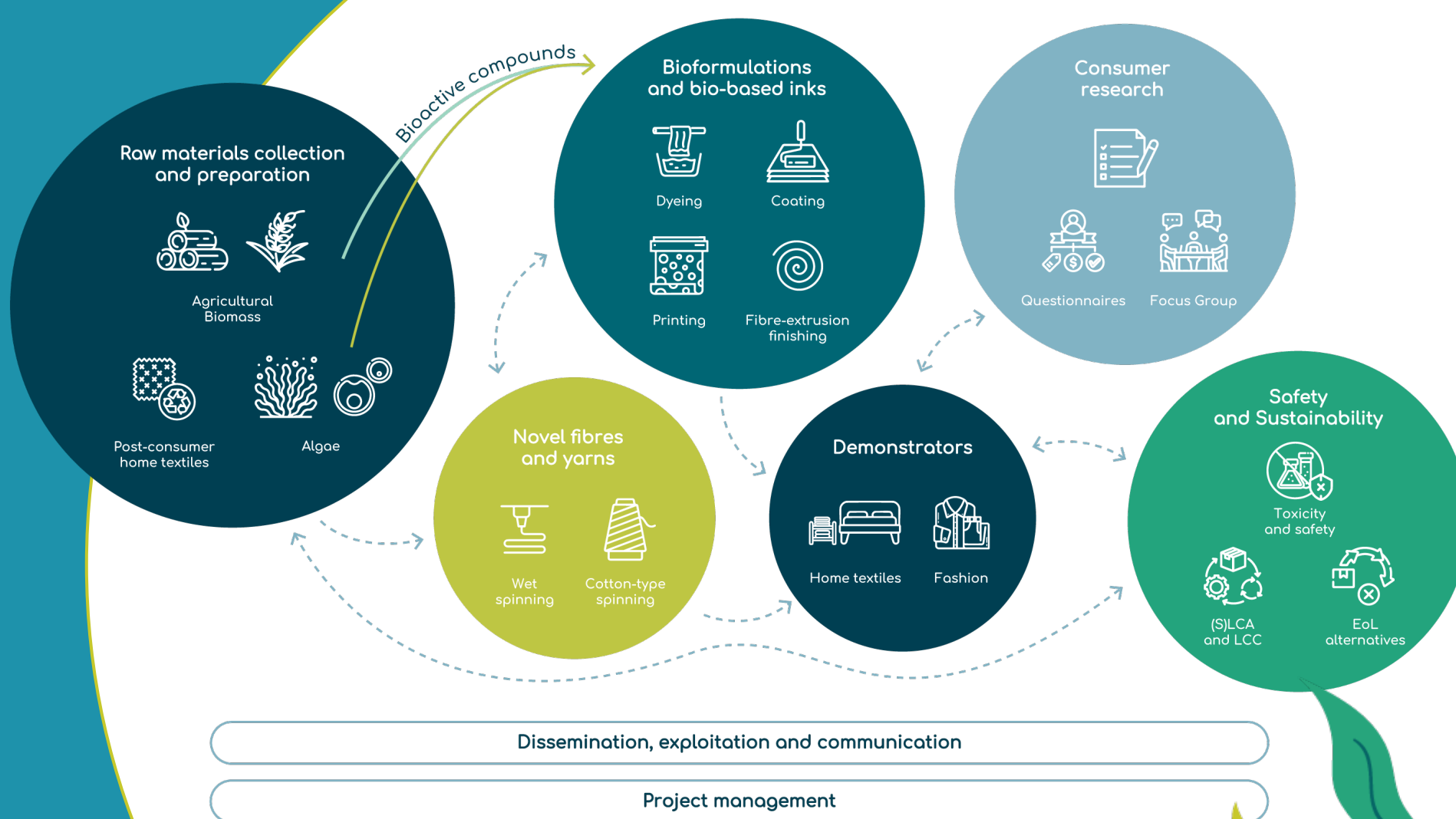
## Methodology

The project covers all steps required to produce novel cellulosic fibres and functional textiles from the obtention and transformation of raw materials for application in textile production processes, to fibres/yarns production and bioformulations development (at laboratory, pilot and industrial scales), ending with eco-design and prototypes manufacture considering promising End-of-Life (EoL) alternatives. Functionality, safety, environmental sustainability and social and economic benefits for consumers. Consumer behaviour studies and raising-awareness actions are also planned, thus increasing consumers' acceptance for the developed products.

## Expected Results

Algal biomass in textiles  
Beyond the State of the Art: In TEXMATER, macroalgae are currently being explored as a source of cellulose and combined with other cellulose feedstocks for novel fibres production, reducing the dependence on wood cellulose. Simultaneously, functional ingredients from algae will be incorporated in cellulose pulp to improve the fibres' properties and decrease microfibres release during washing. TRL 3→TRL 6

### Work package structure | Partners



## References

- 1- <https://tinyurl.com/52hr5749>
- 2- <https://tinyurl.com/4tkhhzbn>
- 3- <https://tinyurl.com/5xe6yhp2>
- 4- <https://tinyurl.com/yzmvp5u9>
- 5- <https://tinyurl.com/5n6j85eb>

