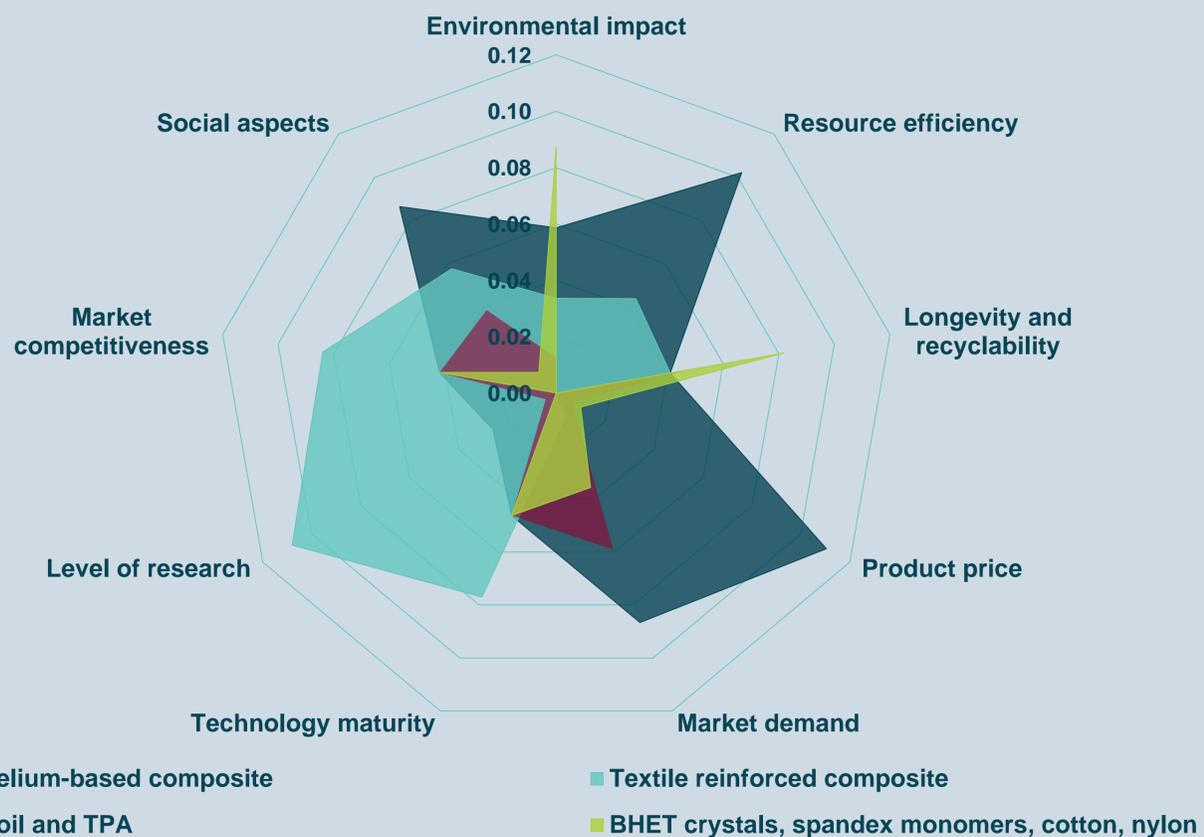


MCDA showed that mycelium-based material produced from mixed post-consumer textiles has the highest potential for further development.



Introduction

European Union is moving towards a circular economy in textiles, but there are several obstacles in the way.

Currently, there are **no commercially viable technologies to recycle mixed textiles** back into textiles or high value-added products.

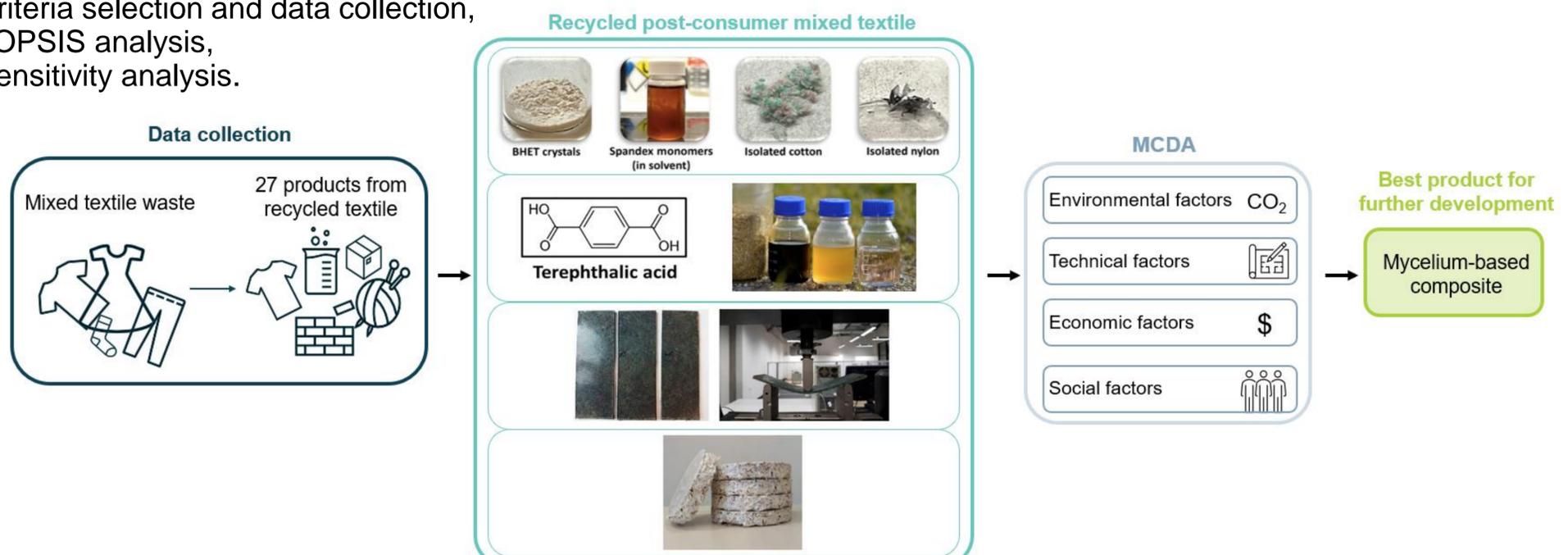
Therefore, the aim of this study was to determine if there are products in the research process that could be obtained from **post-consumer mixed textile waste** and, if so, to assess which is the most suitable for further development.

Methodology

Two methods were applied: literature review and multi-criteria decision analysis (MCDA).

MCDA followed four steps:

1. Product identification,
2. Criteria selection and data collection,
3. TOPSIS analysis,
4. Sensitivity analysis.



Results

The literature analysis identified **27 studies** on textile recycling. Only four of these studies met the requirements - input textiles are mixed and post-consumer.

The products obtained in the selected studies were (1) bio-oil and terephthalic acid (TPA), (2) textile-reinforced composite for building applications, (3) mycelium-based composite for thermal insulation and (4) textile fibers (cotton and nylon), spandex monomers and bis(2-hydroxyethyl) terephthalate (BHET).

MCDA showed that **mycelium-based material** has the highest potential for further development as it is relatively well studied, has a simple production process, high economic viability and significant environmental benefits.