

## Incubation Forum for Circular Economy in European Defence (IF CEED)

### Project idea

# Military (smart) Textile Waste Recycling and Valorisation: Advanced Textiles for Defence



### Context

The textile industry is one of the most important economic sectors, but also one of those responsible for the largest generation of waste. In the military sector there is the additional problem that military uniforms cannot be reused by civilians. Considering that the military clothing are very technical products, the embedded value of materials is very high, making them an attractive business case for circularity.

There is an increasing concern about what to do with the huge amounts of military textile waste. Therefore, it is imperative to develop new strategies to overcome this problem using the most sustainable technologies and processes to foster a circular approach for military clothes and valorise the materials obtained from recycling.

This requires addressing the whole technological chain from sorting to the final product manufactured with secondary materials.

### Objectives

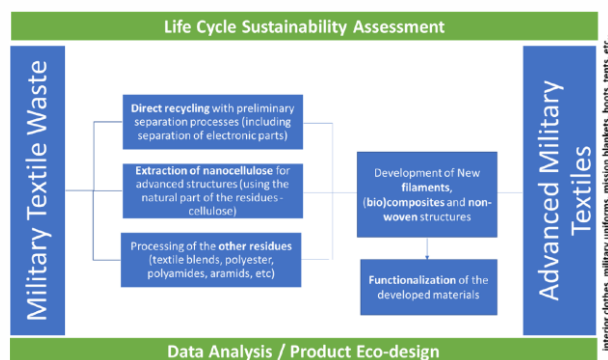
This project idea aims at a full transformation of military textile waste into new military textile-based materials based on a A to Z approach.

**The specific objectives are** the following:

- Collect data on military textile volumes available for circular management.
- Develop technical steps for direct recycling of collected residues into new yarns for producing military textiles.

- Optimise extraction of the natural parts of the waste to synthesize nanocellulose and produce all-cellulose composites.
- Develop composites, biocomposites and non-woven textile structures.
- Functionalize the recycled structures for multifunctional properties
- Perform Life cycle sustainability assessments and establish rules for eco-design of the developed materials.
- Optimisation of separation processes and preliminary results about the first demonstration models (M20).
- Final reports, demonstration models and dissemination (M30).
- Potential of the solutions to the final purposes, tests campaign results (M36).

## Methodology



## Stakeholders

- Entities engaged in the IF CEED Project Circle "Circular Materials Textiles".
- Industry, Research-and-Technology Organisations, Universities.

## Timeline & Milestones

The foreseen project duration is 36 months.

- Identification of technical specifications and state of the art (M12).

## Expected Outcome

- Reports on:
  - Waste stream data.
  - Technical results for the different workstrands
  - Functionalisation of recycled structures.
  - Eco design and LCSA.
  - End users analysis.
- Demonstrators of the developed systems.
- Services.

## Operational benefits

- Reduction of waste and associated costs.
- Multifunctionality of textiles.
- Enhancing interoperability by setting up a common mindset through common standards.

## Budget & funding

Type of project: collaborative project

Budget: EUR 4 000 000.