

# BARBARA

Biopolymers with advanced functionalities for building and automotive parts processed through additive manufacturing

## Summary

The BARBARA project aims to convert the side-stream fractions and residues from agro-food production into novel polysaccharides and functional additives that can be valorised. These compounds will be selected to provide additional capabilities to polymers. These will be mixed with other compounds to create engineering bioplastics adapted for Fused Filament Fabrication (FFF) processes (3D printing).

BARBARA will develop novel bio-based engineering bio-plastic materials that will be validated using functional prototypes in the building and automotive sectors. This will ultimately allow development of improved mechanical, thermal and aesthetic properties of novel bio-based engineering polymers as well as demonstrators of final parts for the automotive sector and moulds and tools for hybrid manufacturing in advanced building applications.

<http://www.barbaraproject.eu/>

**Type of Action:**

Research & Innovation Action

**Value Chain:** VC4 – organic waste

**Start date:** 01 May 2017

**End date:** 30 April 2020

**BBI JU contribution:** € 2,603,861.25

## Objectives

The main objectives of BARBARA are to:

- Develop four new BARBARA materials, in the form of engineering optimised biopolymers, reinforced with bio-additives, designed to achieve customised physical-chemical properties
- Validate BARBARA materials through additive manufacturing FFF processing in two key European sectors, namely automotive and building
- Contribute to establishing two new bio-based value chains

In addition, it has specific objectives on:

- Extracting biomolecules and biopolymers from agro-food by-products
- Developing functionalized bioadditives, bioplastic matrices and engineering composites

## Achievements & milestones

- Prototyping technologies and validation

**How BBI JU is helping businesses to repurpose waste to drive new circular economic models**

17 October 2019

As a conversation piece, the circular economy is on everyone's lips. It's not just a buzzword. With the

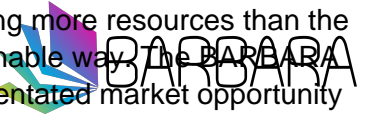
## Expected impacts

BARBARA intends to make the following impacts:

- Improving sustainability through using natural biomolecules valorised from agricultural residues
- Developing a new bio-based, compostable polyester matrix with suitable properties for use in FFF technology.
- Developing a new, partially bio-based, polyamide matrix, with a 25% target of retaining the same properties as fully oil-based types.
- Processing BARBARA's materials to obtain biopolymeric compounds, both extruding compounds and manufacturing the products using FFF).



Global population predicted to approach 9 billion people by 2030, we are using more resources than the planet can provide. Our future depends on reusing what we have in a sustainable way. The BARBARA project is turning a lab-scale research concept into a feasible and growth-orientated market opportunity to use food waste in 3D printing and automotive industries. [Read more](#)



## Project coordination

- Fundación AITIIP (Spain)
- Universidad de Alicante (Spain)
- Kungliga Tekniska Högskolan (Sweden)
- Federación de Cooperativas Agrarias de Murcia (Spain)
- CELABOR scrl (Belgium)
- Università degli Studi di Perugia (Italy)
- Nuevas Tecnologías para el Desarrollo de Packaging y Productos Agroalimentarios con Componente Plástica Sociedad Limitada Tecnopackaging (Spain)
- Nurel SA (Spain)
- Centro Ricerche FIAT SCpA (Italy)
- ACCIONA Construcción SA (Spain)

**Organisation name:** Fundación AITIIP (Spain)

### Former members

- Cargill Deutschland GMBH (Germany)