

## Plastic, Packaging

Strategies to solve the problem of hardly recyclable Packaging Materials



## Bio-Waste

Extracting valuable compounds from different Bio-waste streams



## Water

Water Symbiosis Strategies in Industry, Agriculture, and Urban contexts



# Demonstrator 7

## Mechanical recycling of mPET

VALENCIAN COMMUNITY, SPAIN (CCRI FELLOW)



Circular  
Cities & Regions  
Initiative



UK Research  
and Innovation



Funded by  
the European Union



Start 2024



36 mo



€ 10.24 M



32 partners



9 pilots /  
8 regions



## About CircSyst

Resource extraction is responsible for nearly half of global greenhouse gas emissions and the vast majority of biodiversity loss. With 90% of world economy still linear, plastics, water and bio waste are treated as single use commodities rather than valuable resources. The CircSyst project addresses this challenge by developing Circular Systemic Solutions (CSS) that drive sustainable, circular economic models.

Over 36 months, 32 partners led by AIJU will run nine large-scale pilot systems spread across eight European regions, targeting three priority value chains from the EU Circular Economy Action Plan: water management, bio-waste valorisation, and plastics & packaging. The pilots exchange by-products and know-how so that, for example, a plastic fraction recovered in Greece can feed a recycling line in Spain. In this way, CircSyst forms an industrial-symbiosis network that supports the EU's Circular Cities and Regions Initiative (CCRI) and provides replicable and scalable solutions.

# Turning multi-layered PET into Opportunity



DEMO 7 of the CircSyst project is developing an innovative **mechanical recycling strategy** to transform complex multi-layered PET (mPET) into valuable new materials. The process combines **homogenisation, separation, and compounding** with eco-efficient compatibilisers to produce a **polymeric formulation** that behaves like a polyolefin. Through the optimisation of **extrusion and injection moulding**, this pilot demonstrates that even the most challenging plastics can be reintroduced into the production cycle—closing the loop on materials once considered unrecyclable.

## Exploring the potential of circular formulations

Early results reveal a **promising pathway** for converting mPET waste into functional compounds for packaging and consumer products. The ongoing pilot will assess both the **technical and economic feasibility** of scaling the process up to **15 tons of recycled formulation**. By **giving value to waste**, DEMO 7 aims to enhance collection systems, inspire collaboration among recyclers and manufacturers, and pave the way toward a **new generation of environmentally friendly, mPET-based materials**.

## Who is involved?

As DEMO 7 and project coordinator, **AIJU** leads the design and validation of the mechanical recycling strategy for multi-layered PET, ensuring scientific quality and industrial applicability.

The **UPV** team contributes its expertise in polymer engineering, improving the formulation's mechanical properties and advancing knowledge on mPET as a polyolefin-like material.

**CABKA** validates the mPET-based formulations in pallet manufacturing, assessing mechanical resistance and performance under real industrial conditions.

**PLASTIMODUL** tests the recycled material in kitchen furniture components, demonstrating how circular plastics can meet functional and aesthetic standards.

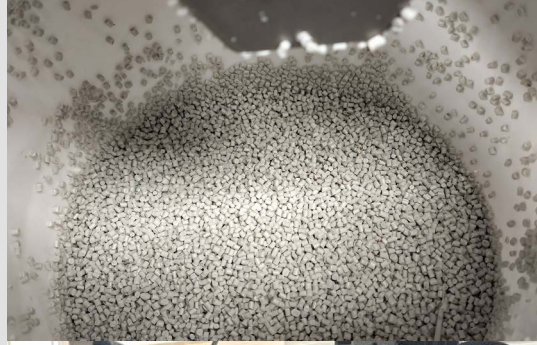


**Giving value to multi-layered  
PET waste**

**From non-recyclable complex  
packaging to circular materials**

**Mechanical recycling unlocking  
new polymeric solutions**

**Towards systemic circularity  
in plastic value chains**



## PARTNERS



[www.circsyst.eu](http://www.circsyst.eu)

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