

Critical challenges to move towards plastics circularity

Challenge 2: Enabling the recycling of flexible plastics through design and intermediate technologies

a. Overview / objective

To promote innovation in the design of flexible plastic packaging and products that enable their recycling, prioritizing approaches such as monomateriality, the elimination of non-recyclable components (adhesives, inks, labels) and the use of technologies that facilitate their recovery, classification and processing.

b. Context or Critical Challenge to Be Solved

Many flexible packaging is not recyclable in practice due to multilayer designs or components incompatible with local recycling technologies. In addition, current infrastructure faces barriers to identifying, collecting, and processing these materials. It is necessary to advance in design solutions, such as monomaterials, that demonstrate their effective recyclability in real conditions, including their collection, classification and processing.

c. Priority Areas of Focus

- Mono-material packaging alternatives to facilitate recycling, including sachets, doypacks, bags and films.
- Labels, inks, adhesives, or other components that do not interfere with recycling streams or facilitate processes.
- Replacement of plastic barriers that are not recyclable in practice such as nylon or EVOH in bags and films.

d. Other areas of interest

- Circular solutions for face-to-face events and food courts, incorporating recyclable materials or those that facilitate recyclability.
- Traceability solutions for flexible packaging.
- Logistics solutions for the effective collection of these materials (especially small formats), including return mapping and reverse logistics.

- Sorting technologies that improve the identification and separation of flexible plastics (colour, density, infrared, etc.), reducing time and errors in the process.
- Smart coatings that improve product preservation and facilitate recycling (easy to remove, soluble, etc.).

e. General considerations for solutions

They should consider local recycling infrastructure, avoid difficult-to-separate mixed components, and facilitate material traceability. **Priority is given to solutions that already have functional or pilot tests in comparable contexts, as well as those that integrate eco-design and cost-effectiveness criteria from their conception.**