

RePETitive Packaging: making plastic food packaging 100% recyclable

BACKGROUND

Most plastic items - especially packaging materials - are used only once before being discarded, losing its potential economic value, and often ending up polluting the environment. If nothing changes, by 2050, there will be more plastic in the ocean than fish. Moreover, many of today's food packaging, such as crisp packets, drink pouches and food wrappers are made of layers of different materials fused together which makes the packaging difficult to recycle.

AIM

RePETitive Packaging aims is to make all plastic food packaging recyclable, in line with the EU Strategy for plastics in a Circular Economy. It provides a **material and systems solution** to the complex multi-material plastic packaging products. These are referred to as “recycling disasters”, for which no viable alternative exist today. The proposed solution is to design these plastic packages solely based on polyesters, with intrinsic recycling/re-processing abilities.



OBJECTIVES

1. **Develop plastic packaging materials** in the food industry with intrinsic recycling properties by design;
2. **Apply** the innovative mixture of mostly existing materials and its processing **to innovative designs for a number of food packaging applications** that are currently known as 'recycling disasters', like pouches, yoghurt cups and liddings;
3. Develop a **roadmap involving systemic change** for this new packaging solution through which the new packaging products can be recycled back to feedstock, and consequently be used as raw materials to build identical packaging designs in a repetitive way (i.e. collecting, sorting, cleaning, shredding, depolymerisation, polymerisation);
4. **Prepare to roll out** this new packaging standard in the food industry.

TECHNOLOGICAL INNOVATIONS

- ✓ Fully recyclable, polyester-based food packaging material and designs for at least 5 'recycling disasters';
- ✓ Further development of manufacturing process, including advancement of sealing technologies;
- ✓ Further development of separation and recycling technologies, including the removal of non-polyester plastics, organics, contaminants, and other solid contents;
- ✓ Optimization of a (combination of mechanical and) chemical recycling route to yield the right monomers for optimal separation, in such a way that these monomers can be polymerized again to pure polyester polymers;
- ✓ Recycling roadmap, making use of mechanical and chemical recycling infrastructures.

CONSORTIUM

The "RePETitive packaging consortium" is comprised of research and business leaders from across the full food packaging value chain, collectively sharing a vision of making all plastic packaging recyclable. It is eager and well equipped to help operationalize EU's Strategy on Plastics in a circular economy, and has significant EU representation, including partnerships in Belgium, France, Germany, The Netherlands, UK & Switzerland.

Consortium members: Amcor, Brightlands Materials Center, CeDo, DSM, Dufor, Eunomia, Ioniga, Mitsubishi Polyester Film, Mondi, Morssinkhof Plastics, Plastic Recyclers Europe, Plymouth University, Stenden Hogeschool/GreenPAC, Sanders Machinebouw, Searious Business, TNO. Involved brand owners: Arla Foods, Coca Cola, Danone, Marks & Spencer, Nestlé, PepsiCo.

Supporting Partners: Dutch Ministry of Environment, Ellen MacArthur Foundation, Technical University of Delft, Technical University of Eindhoven, Wageningen University.

DURATION

March 2018 - December 2021

PROJECT COORDINATION

Project Coordination: Searious Business

