



The art of recycling plastic packaging

From waste to resource

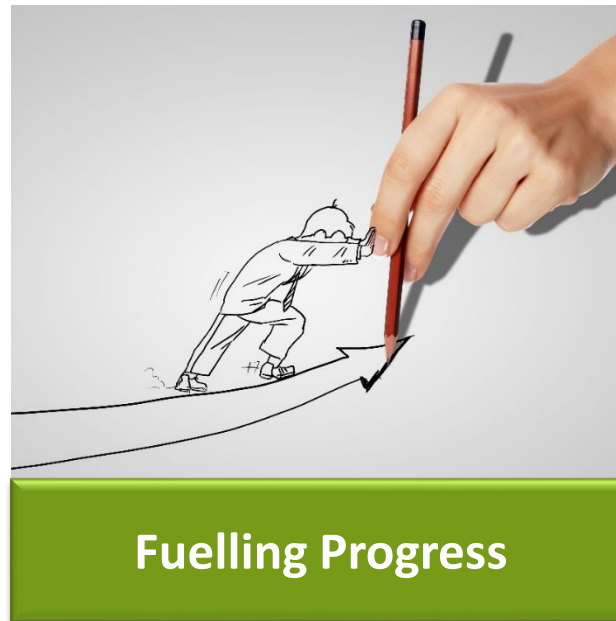
10 October 2023

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Part I: Introduction

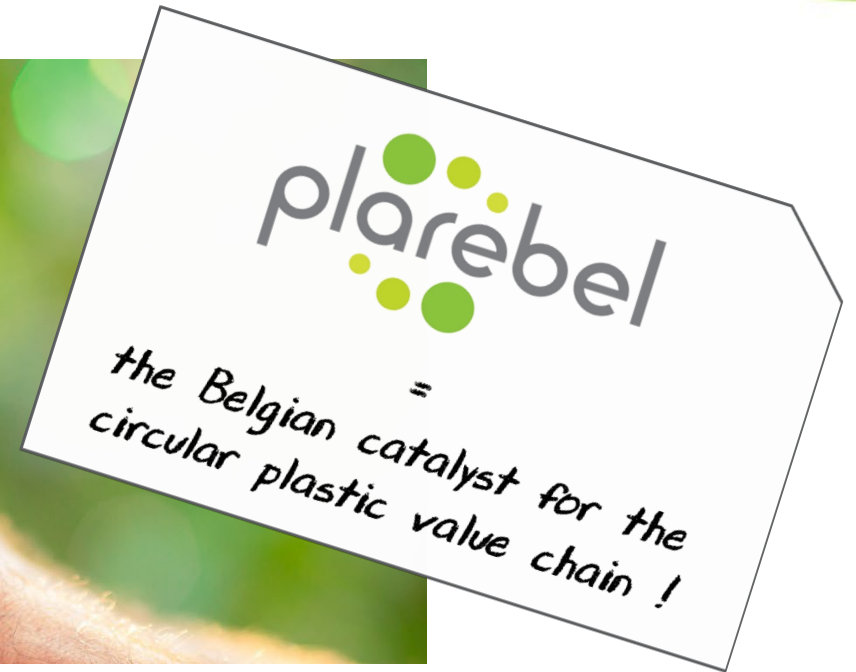
What is PLAREBEL

PLAREBEL is a non-profit organisation, created in 1999, that is the reference in Belgium for anyone looking for information, advice and guidance on all aspects of circular plastics, including circular design and effective recycling.



Our mission (cfr. 3/07/2018)

To work in collaboration with all stakeholders to promote, develop, stimulate and increase the levels of plastics recycling in Belgium to ensure the transition towards circular economy



Our members



Fevia

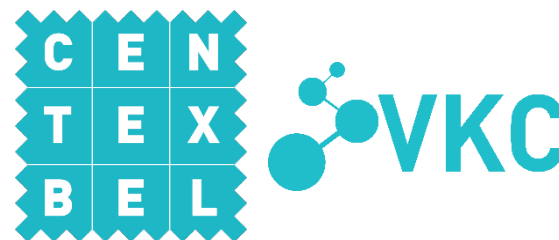
FIEB VIWF



VZW
Part of **essenscia**



Plastipak



Associated members



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Plarebel, partner of Fost Plus

- PLAREBEL is a partner of Fost Plus (ie. Belgian Green Dot organisation), acting as a centre of expertise with regard to the organisation of the collection and sorting, the recycling of household plastic packaging waste in Belgium; thus contributing to an efficient implementation of the recycling activities in Belgium.
 - **Competence centre.** Plarebel accumulates and develops knowledge and expertise on the collection, sorting, and recycling of plastic packaging and packaging waste. They monitor technological developments in packaging and recycling, maintain contacts with existing and potential recyclers, and study the recyclability of new packaging.
 - **Monitoring.** Plarebel carries out administrative and operational checks in the field. They visit sorting centres and recyclers to ensure the recycling quality that Fost Plus guarantees. In case of complaints about quality, they provide Fost Plus with expert advice.



Plarebel, an active member of EPRO

- EPRO and its working groups provide a **unique forum for the leading specialists in plastics waste management** in Europe to exchange information on technological projects, new technologies, improving quality, etc. about plastic recycling throughout Europe.
- **Aim:** To exchange experiences and thus optimise national effectiveness through international co-operation.
- Working groups - Plarebel in charge of Household plastics topics :
 - Sorting specifications
 - Recycled content
 - Design for recycling
 - ...



Part II: Challenges

Shocking Video Shows Dead Whale Found With 80 Plastic Bags in His Stomach



Green turtle becomes latest victim of plastic rubbish epidemic



Microplastics in our mussels: the sea is feeding human garbage back to us



Our Planet Is Tangled In Plastic

Med tourists leave 'toxic legacy' of plastic pollution



It's Official, Plastic Pollution Has Now Reached Our Last Unspoiled Wilderness



Our plastic pollution crisis is too big for recycling to fix



EU rules on plastic packaging (waste)

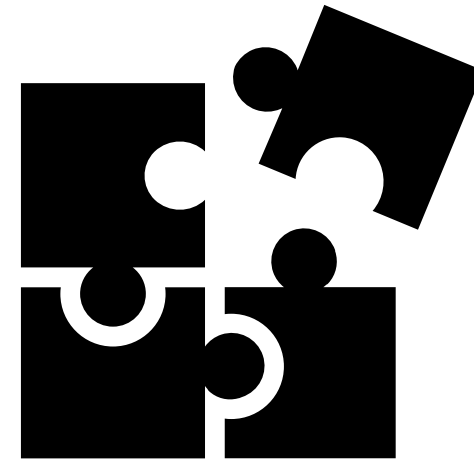
(https://ec.europa.eu/environment/topics/waste-and-recycling/packaging-waste_en)

- **Examples of specific legislation :**
 - 2008/98/EC Waste Framework Directive
 - 94/62/EC Packaging and Packaging Waste Directive (proposal for Regulation)
 - (EU) No 10/2011 Regulation on plastic materials and articles intended to come into contact with food
 - (EU) 2022/1616 Regulation on recycled plastic materials and articles intended to come into contact with foods
 - (EU) 2019/904 Single-use plastics Directive
- **EU targets:**
 - Collection rates
 - Recycling rates
 - Recyclability
 - Recycled content

Packaging complexity

Packaging functions:

- **Protect/preserve content**
- Provide information
- Allow transport/handling
- Group units
- Marketing/promotion
- ...



Plastics diversity

- Polymers
 - Formats
 - Applications
 - Characteristics (e.g. physical, chemical)
- Many possibilities
- But also complexity!





Part III: Recycling and recyclability

Recycling challenge

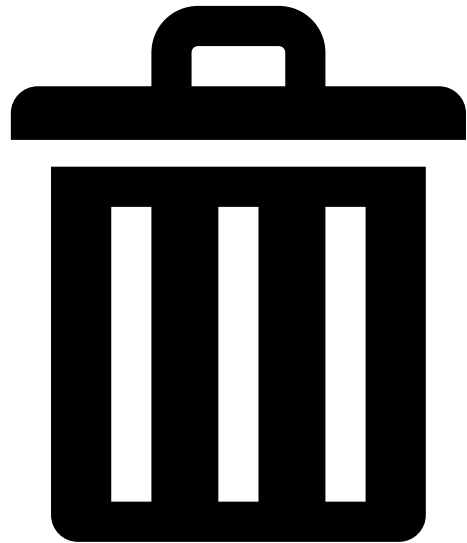


- 1 Participating in a collection system
(engaging consumer, local authorities, EPR...)
- 2 Sorted in high quality stream
(infrastructure, technology,...)
- 3 Technically recycled in commercial plant
(infrastructure, process, quality,...)
- 4 Recyclate is used to produce new product
(end market, quality, volume, price,...)

Strong value-chain cooperation needed...



Participating in a collection system



For household waste:

- The new blue PMD bag



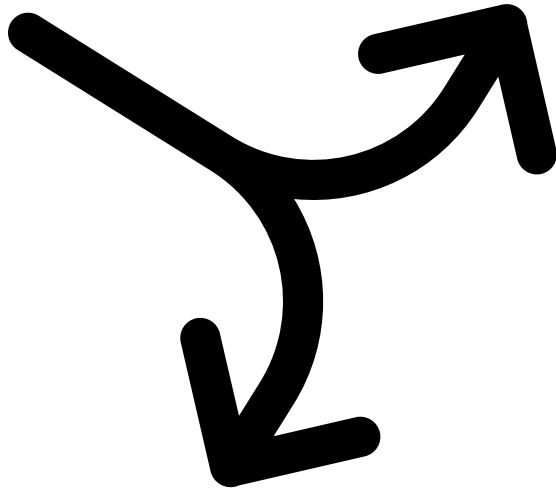
For commercial & industrial waste:

- Affiliated collectors via Valipac

Sorted in high-quality streams

Main steps in PMD sorting centres:

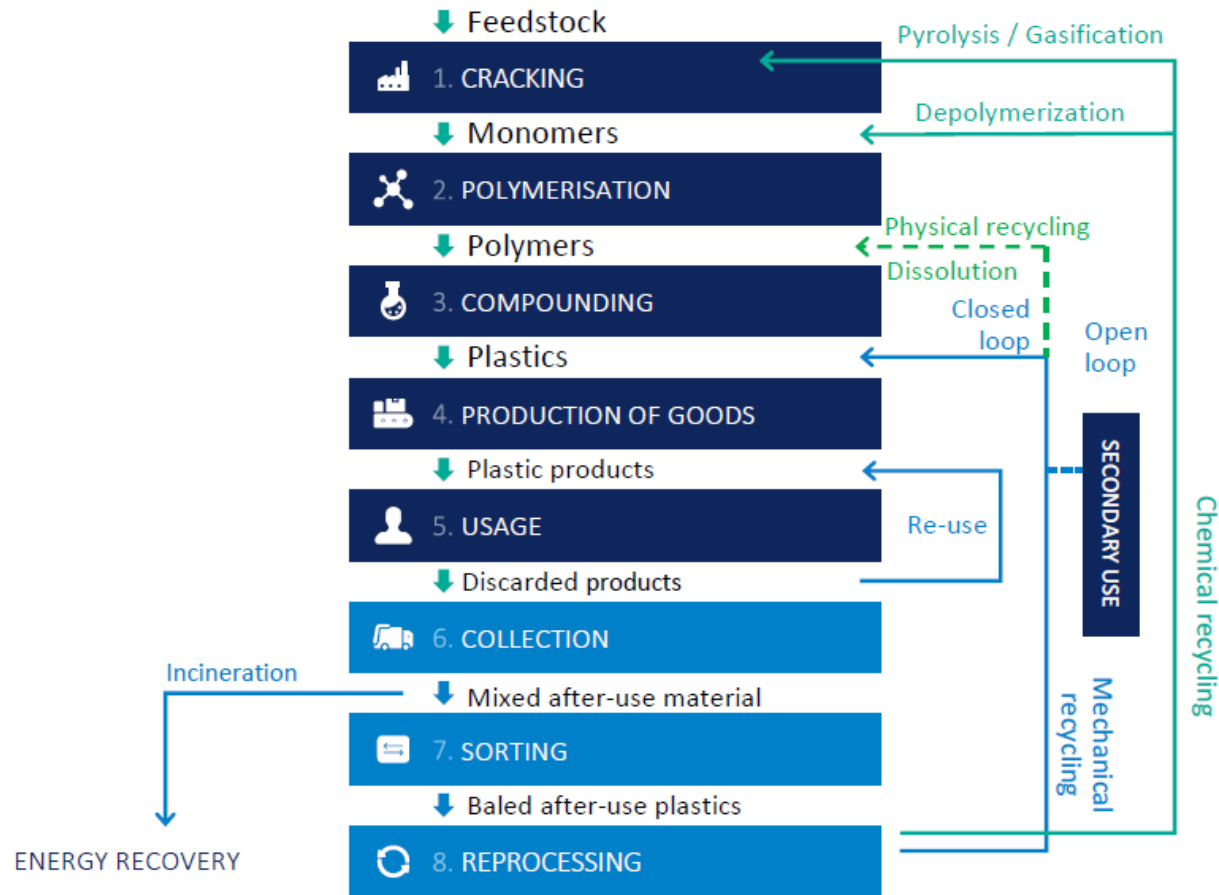
- Material detection
 - e.g. metals, drink cartons
- Polymer detection (NIR)
 - e.g. PET, PS
- Colour detection
 - e.g. PET blue transparent, PET clear transparent
- "Shape" sorting
 - e.g. flexibles, rigid packaging
- Manual oversorting
 - visual correction by manual sorters



Sorted in high-quality streams

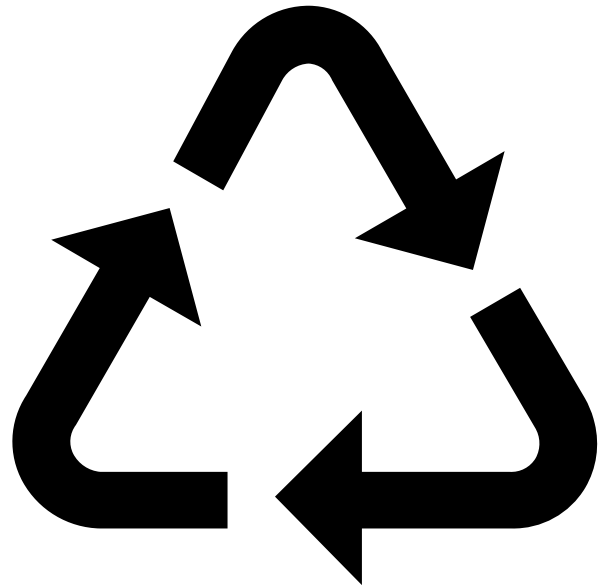


Technically recycled in commercial plant



Technically recycled in commercial plant

Main steps in mechanical recycling plants:

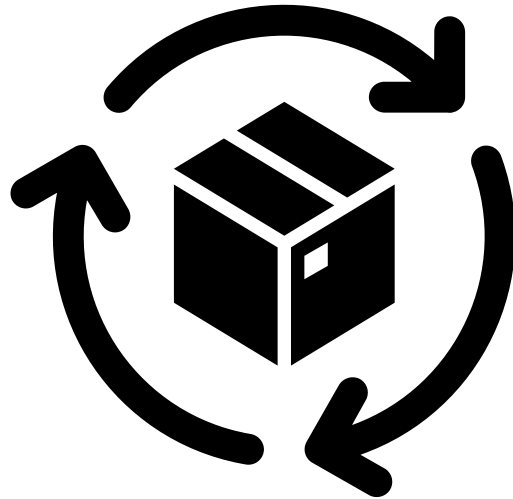


- Detection at packaging level
 - similar to PMD sorting centres
- Washing & shredding
 - specific conditions for each stream
 - e.g. remove labels, glues, residues
- Separation by density
 - e.g. sink-float
- Detection at flakes level
 - residual contaminants

Technically recycled in commercial plant



Recyclate is used to produce new product



Quality requirements:

- Physico-chemical properties of plastic recyclate
- Visual properties (e.g. colour)
- Range of end-market applications

Design – different dimensions

Bio-based material

Design for recycling

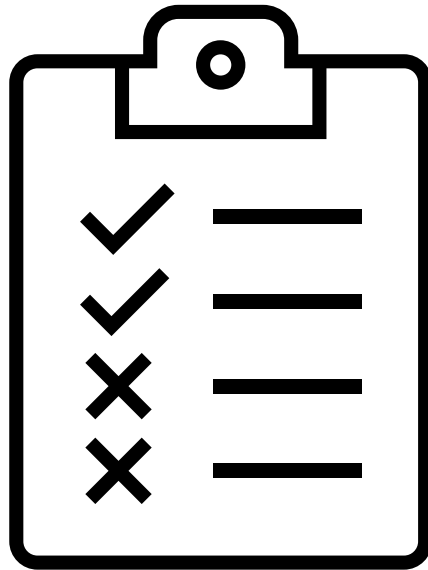
Ecodesign

Quantities of resources

Design from recycling



European design guidelines



Examples of European initiatives:

- RecyClass
 - rigid & flexible packaging
 - Traffic-lights system
- Ceflex
 - flexible packaging
 - guide with principles and best practices
- The consumer good forum
 - rigid & flexible packaging
 - golden rules

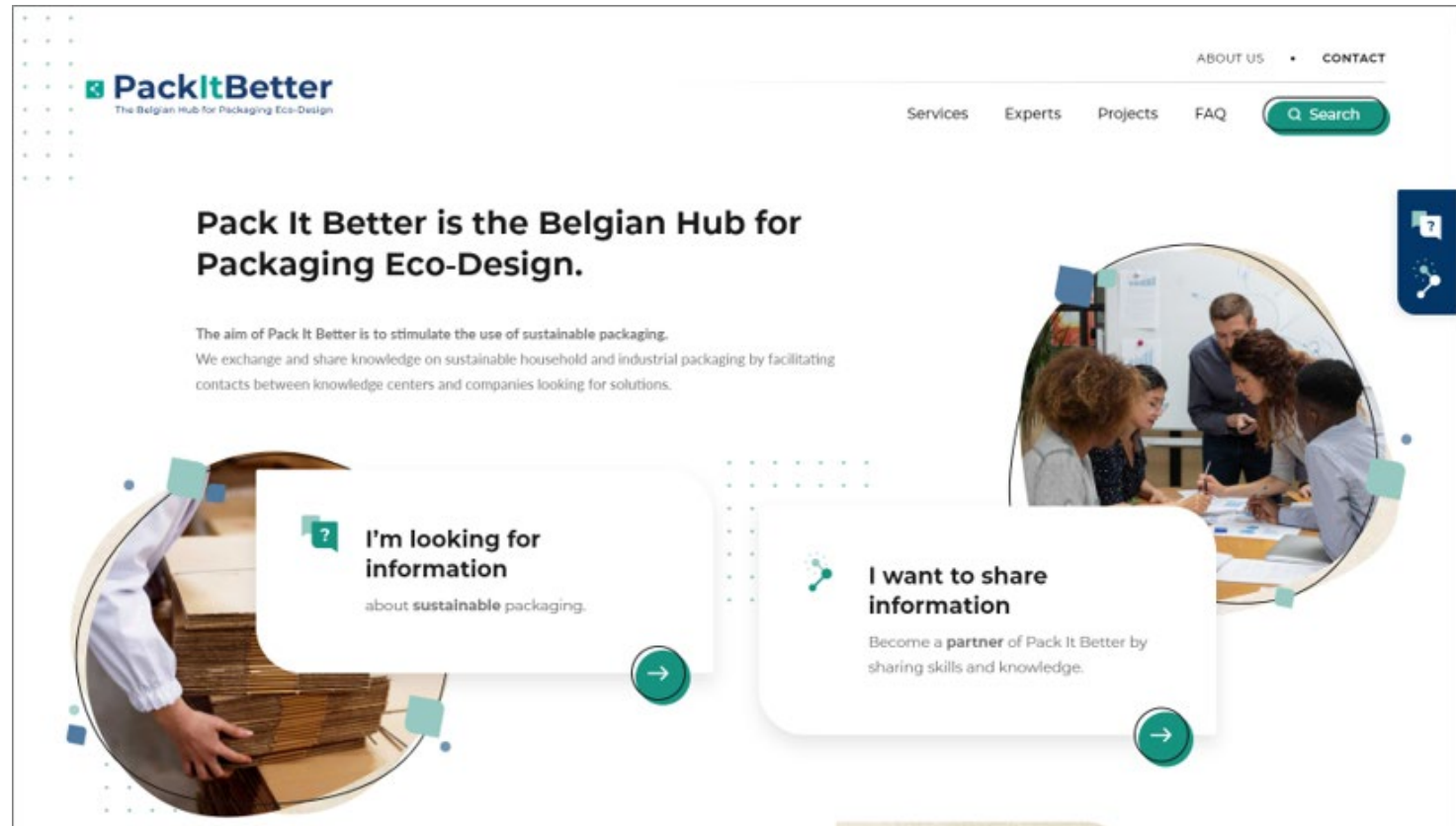
Recyclability



- European D4R guidelines provide a good basis BUT local infrastructures must be taken into account
- Collection/sorting/recycling processes evolve with time and depend on geographical area
- Specific national D4R guidelines are available (cf. Fost Plus and Valipac in Belgium)

Circularity & eco-modulation

- Plarebel is registered as expert on the PackItBetter platform



Contact



*the Belgian catalyst for the
circular plastic value chain !*

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