



Circular Economy for Flexible Packaging



March 17, 2021
10:00 a.m. – 1:00 p.m. E.S.T.
Virtual Conference
REGISTER TODAY

CEFLEX – Driving the circular economy for flexible packaging

Dana Mosora



HAPPY ST. PATRICK'S DAY

Our Vision and 'Mission Circular'

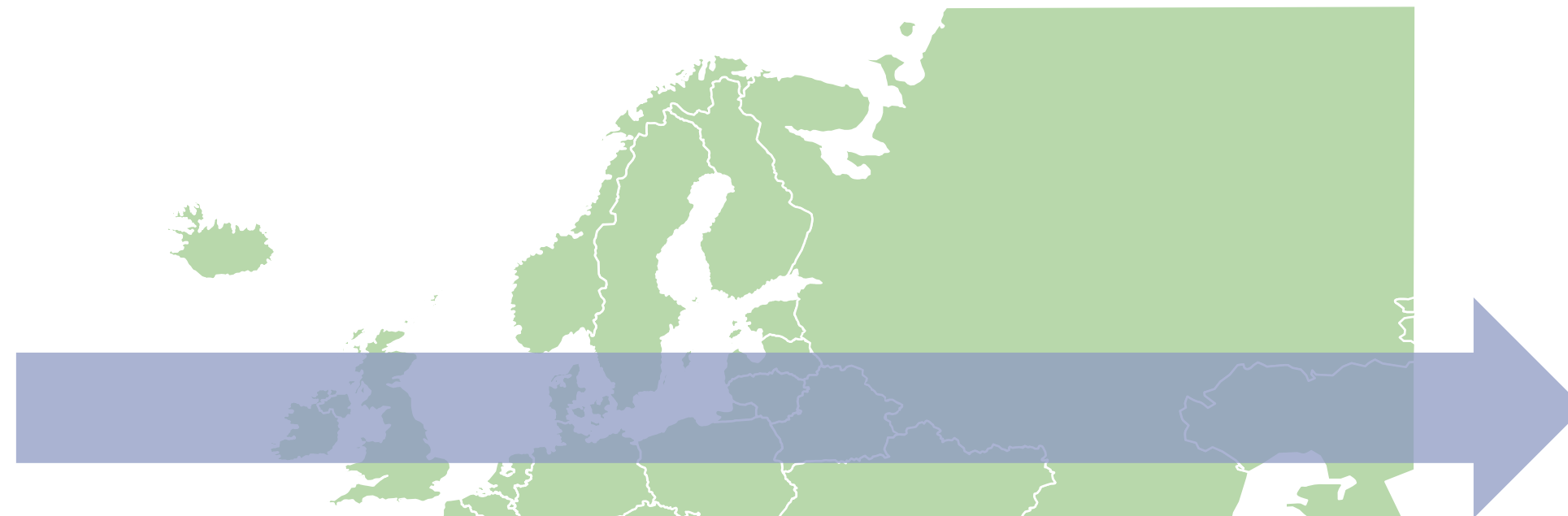


Collection of **all** flexible packaging

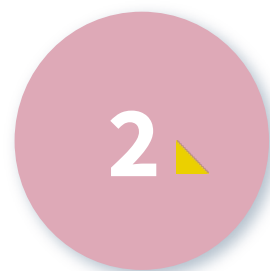
With over **80% of materials entering a recycling process** and be channelled into **valuable new markets and applications to substitute virgin materials.**

CEFLEX: a critical mass to make a circular economy for flexibles happen

Initiative began in December 2016 with **20** stakeholders



Material Producers



Film Producers and Packaging Converters



Brand Owners and Retailers



Waste Collectors, Sorters and Recyclers



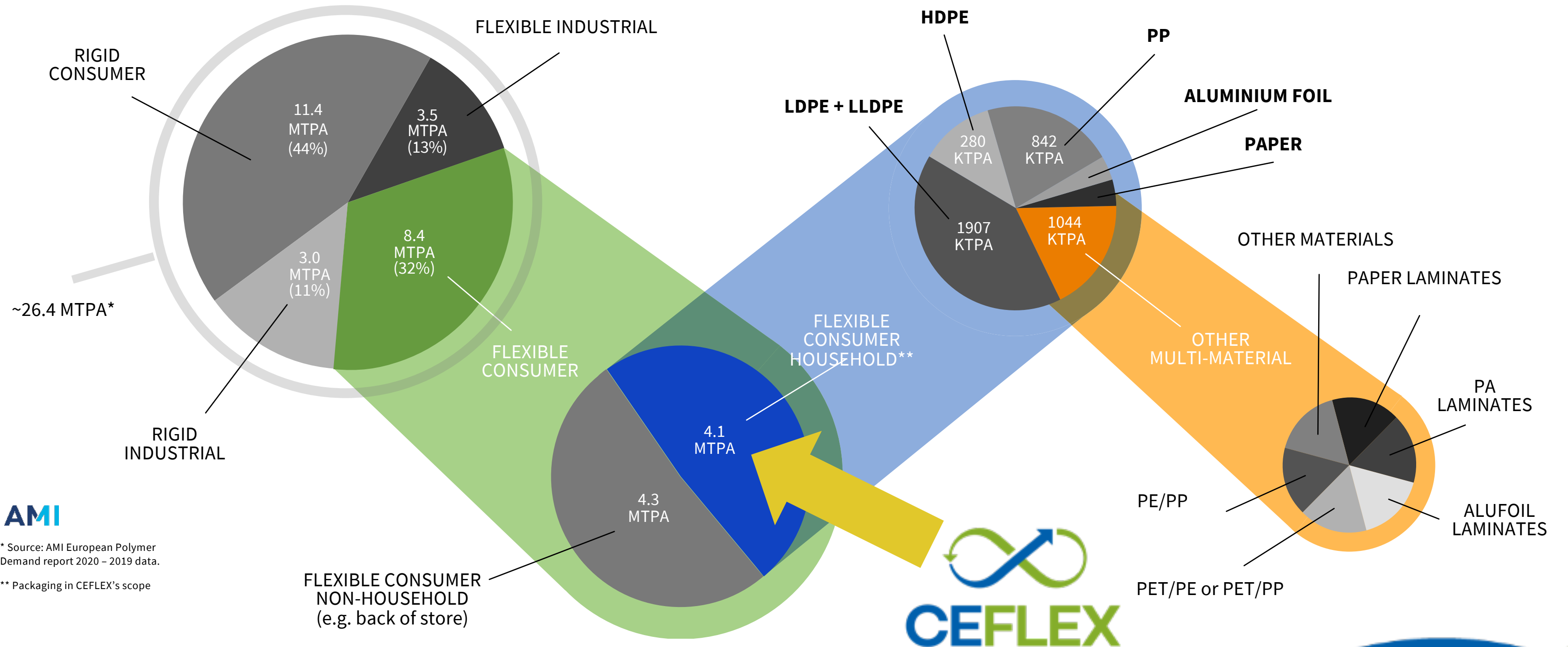
Flexible packaging ecosystem

Today

- **170+** stakeholders
- In Europe alone employ **500,000** people in **5,450** locations
At more than **1,800** production sites
- Combined global turnover of over **€1.3 Trillion**

The scope of CEFLEX

Based on EU market data (2019 data)

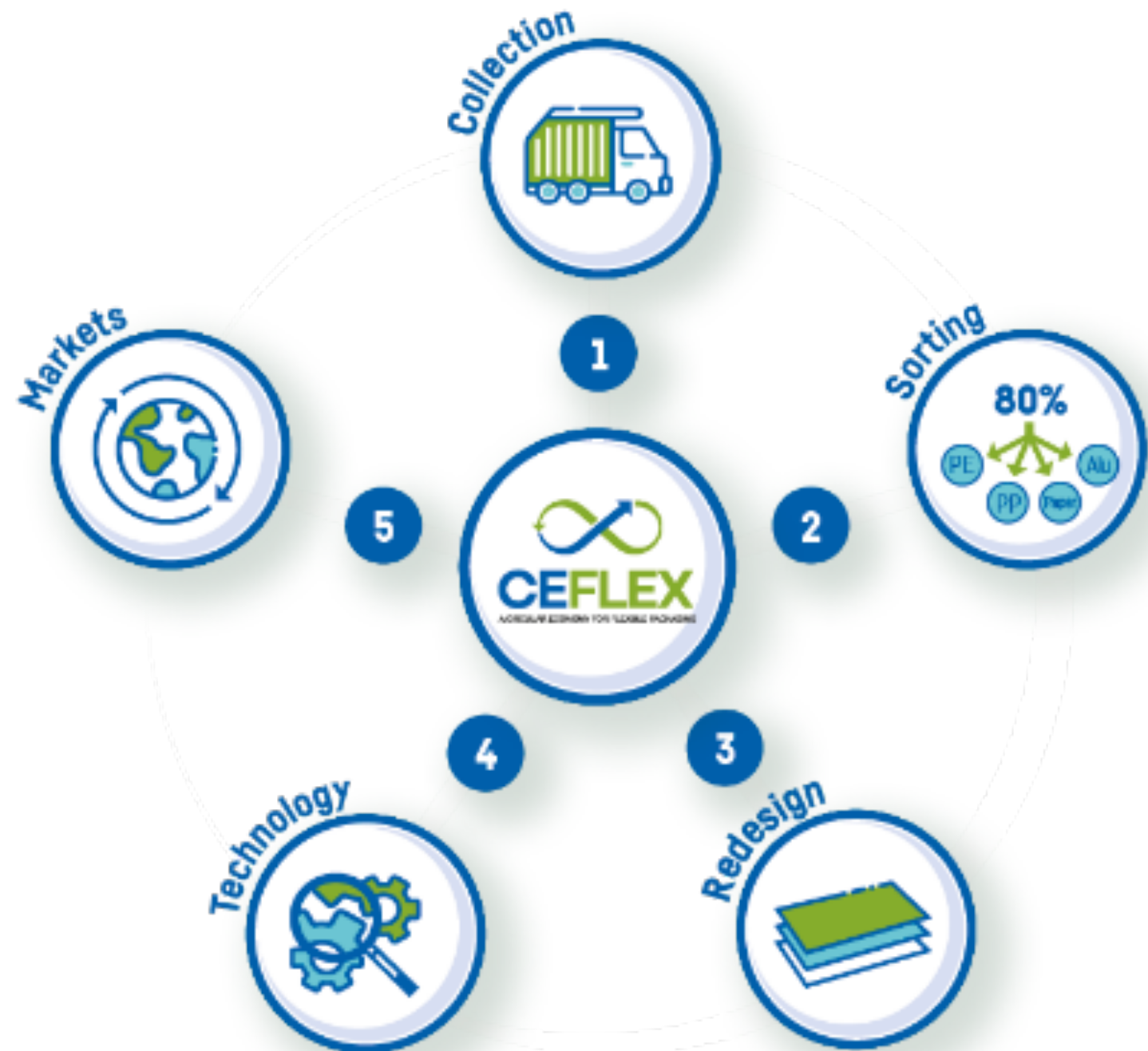


AMI


* Source: AMI European Polymer Demand report 2020 – 2019 data.

** Packaging in CEFLEX's scope

5 Steps to Build a Circular Economy for Flexible Packaging



- 1 **Drive collection** of ALL flexible packaging for sorting and recycling
- 2 **Sort and recycle** the suitable mono-material fractions
- 3 **Redesign** multi-material flexible packaging to mono-materials with existing recycling streams where possible
- 4 **Identify solutions** and develop capabilities to sort and recycle the remaining fractions
- 5 **End markets** for all recycled flexible packaging materials

 These 5 steps have been endorsed by the CEFLEX stakeholders together with a set of actions needed by each part of the flexible packaging value chain

The building blocks of a Sustainable Circular Economy

1 Flexible packaging must be designed to be recycled

2 Infrastructure/Systems available to collect, sort and recycle it back into usable materials

3 A sustainable Business Case for all all parts of the value chain incl. end markets

Designing for a Circular Economy Guidelines (D4ACE)*

Step 2

Step 3

Enabling Processes and Technologies

Step 1

Step 2

Step 4

Extended Producer Responsibility (EPR)

Step 5

*Available from ceflex.eu/guidelines

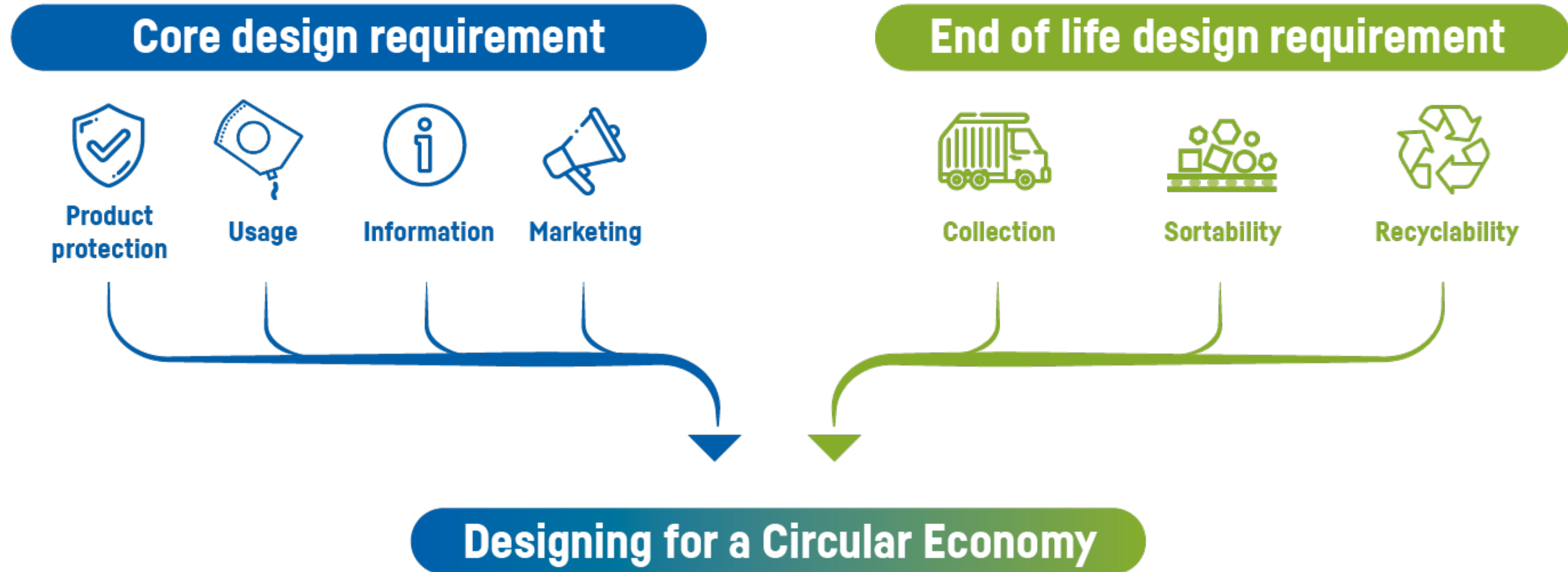
Redesign

To enable

- Sorting and recycling suitable mono-material fractions
- *Conversion from multi-material flexible packaging into mono-material structures compatible with existing recycling streams*



Designing for a circular economy



Aim of D4ACE guidelines



Give clarity to whole value to design flexible packaging for collection, sorting and recycling



Helping to increase levels of collection, sorting and recycling



Producing higher quality recycled materials, kept in economy and used in sustainable end markets

What do they hope to achieve?

- Act as a catalyst – facilitate and enable value chain to design recyclable packaging
- Provide waste management and recycling companies increased confidence to invest and develop infrastructure needed



Key elements of a flexible packaging structure



Preference for mono-material

- Preference for mono-PE and mono-PP
- Easier to recycle
- Contribute to improved quality of recycled materials
- Keep as much financial value in recycled materials as possible

Preference for plastic recycling streams from post-consumer polyolefin-based flexible packaging

**PE
PP**

Flexible mono-PE

Stream already exists in some European countries with some market applications established.

In future this stream may develop further to include sub-streams for example recycled PE film natural, recycled PE film coloured.

Flexible mono-PP

Stream is being either developed or under consideration in Europe.

Expectation that a range of viable non-food contact market applications, including film, will be developed.

PO

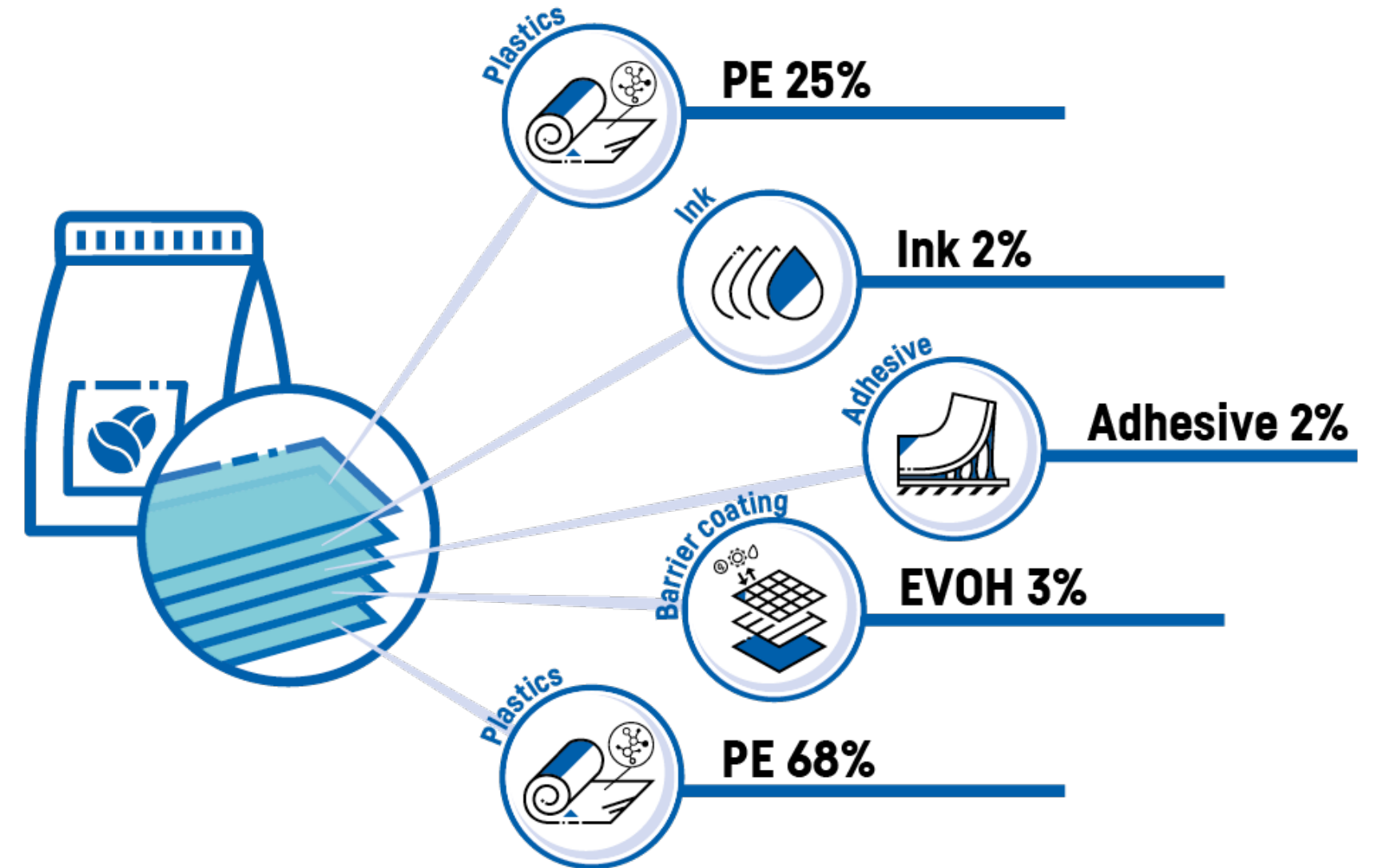
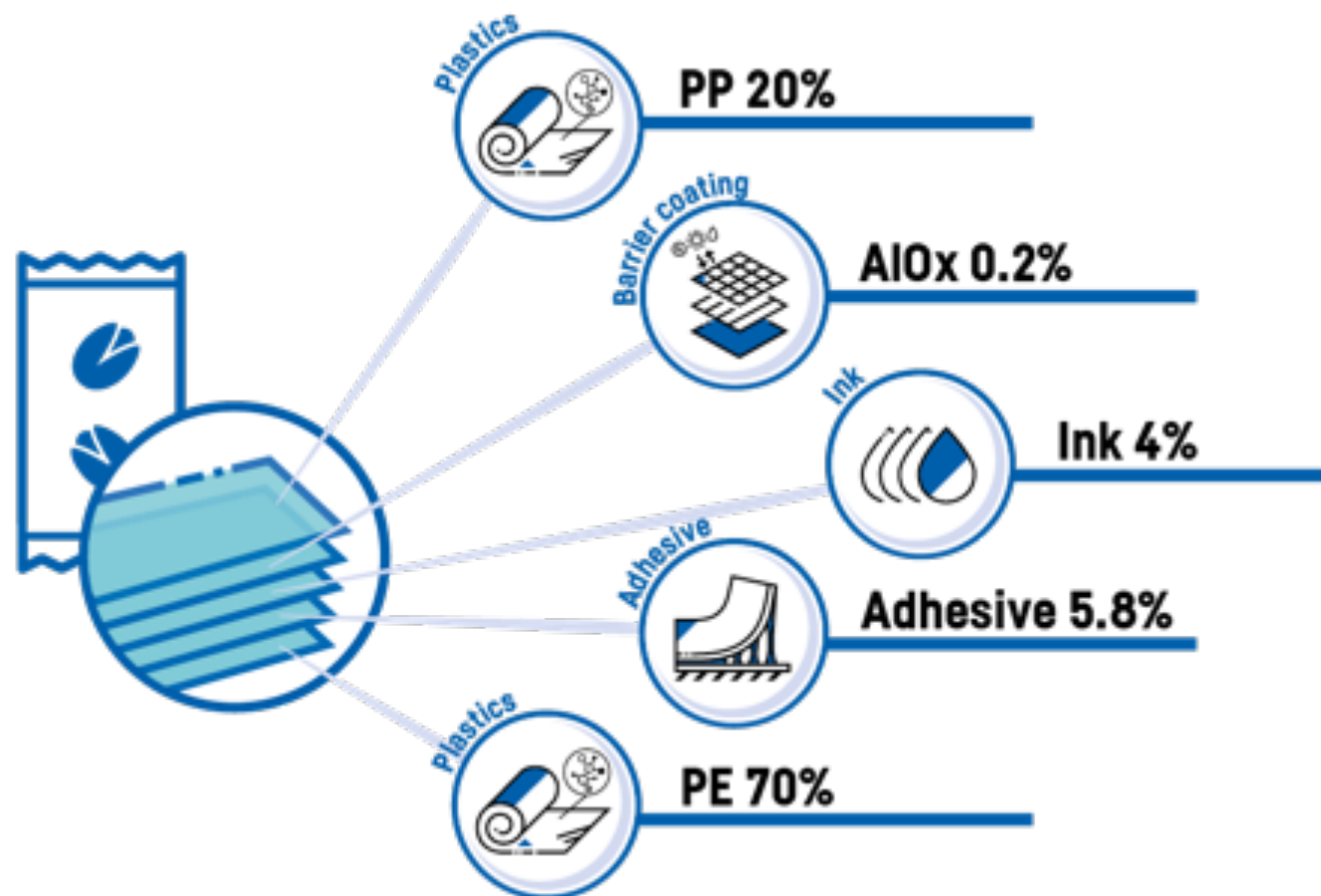
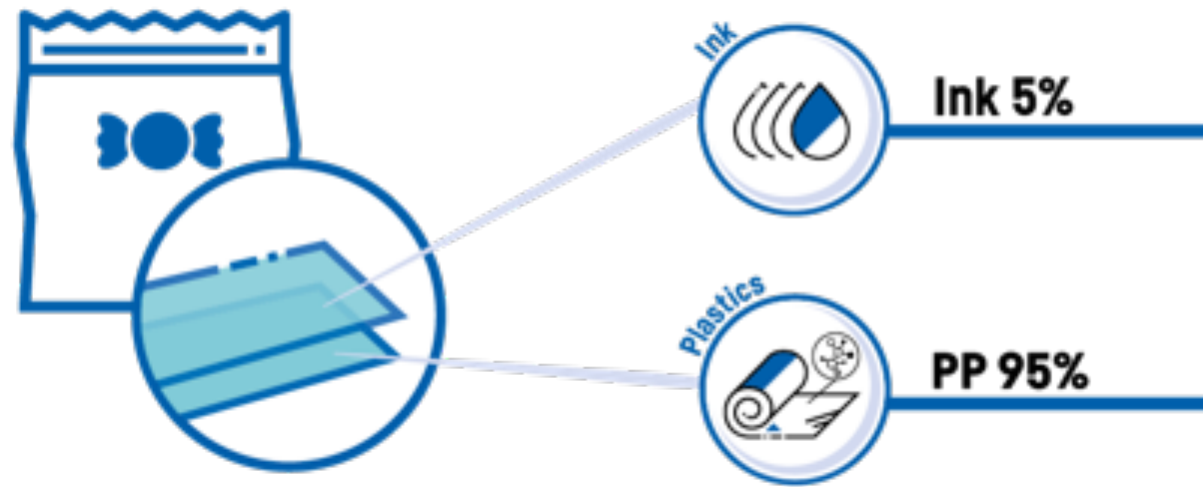
Flexible mixed PO

Stream already exists in some European countries with market applications established.

**Mixed
plastics**

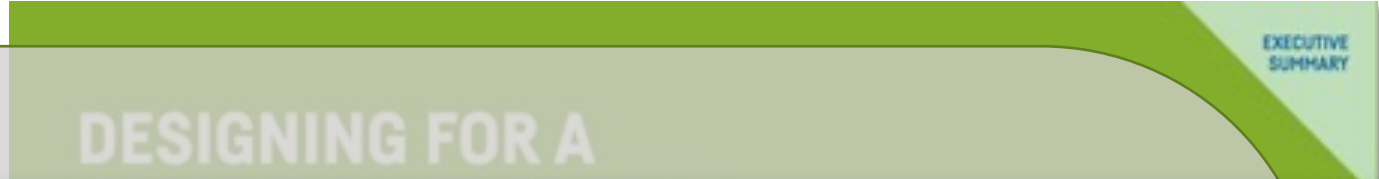
Mixed plastics including flexibles

This stream should only be produced where the above streams are not achievable and should be directed to highest value end market application available.



Step 3

D4ACE resources



1 Executive summary

- High level guide
- Aimed at sales and commercial

2 Technical report

- Full technical guide
- End-user

3 Guidelines summary table

- Within technical report and standalone document
- Key technical content

Narrative for the environmental and financial justification for CEFLEX recommendations



Available from ceflex.eu/guidelines



Boost value and keep materials in the economy

- Redesign Sorting and Recycling
- Mainstream implementation of existing technologies
- Valorise maximum of flexible packaging recycled into valuable end markets



Step 2

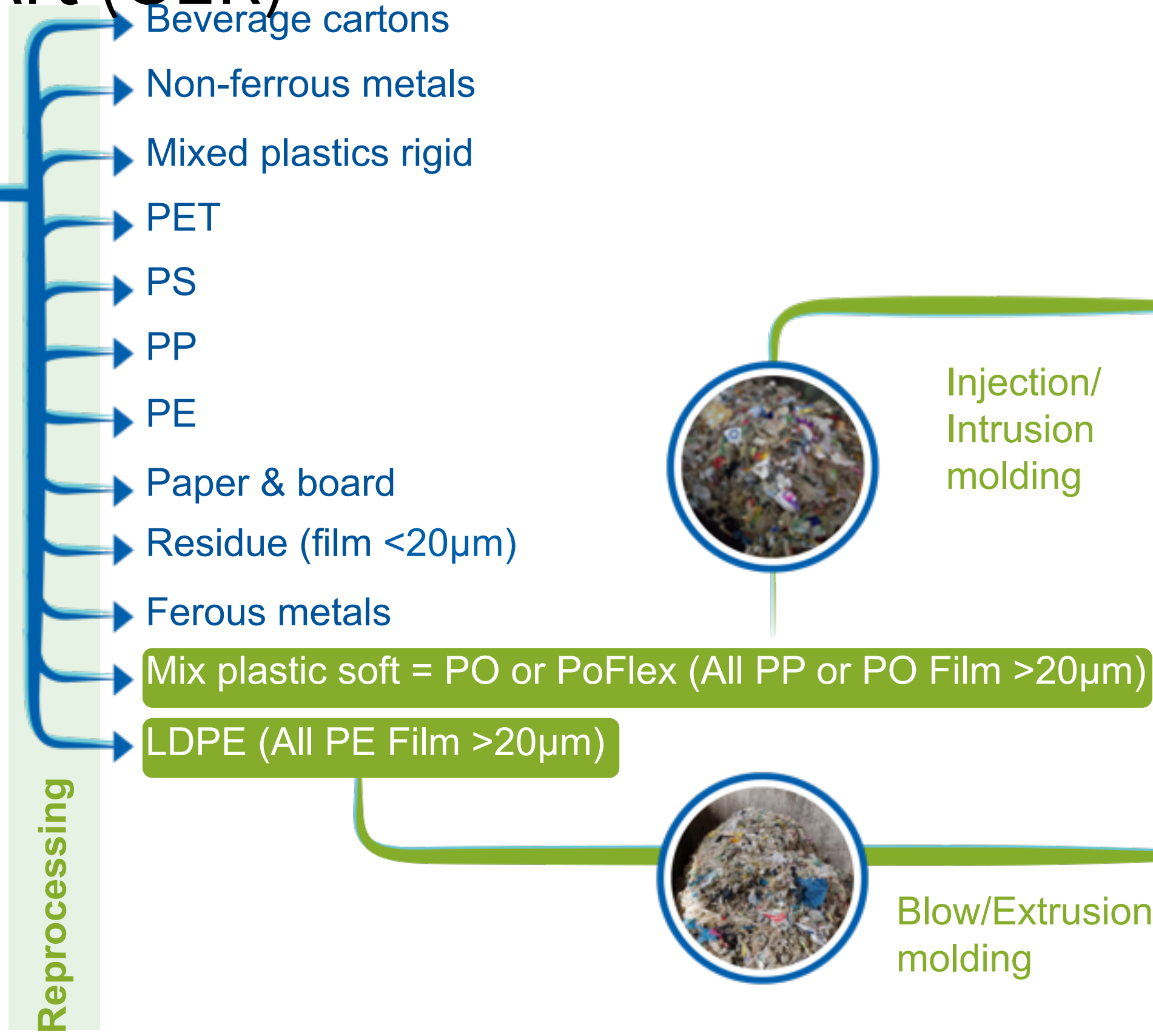
State of the Art (GER)



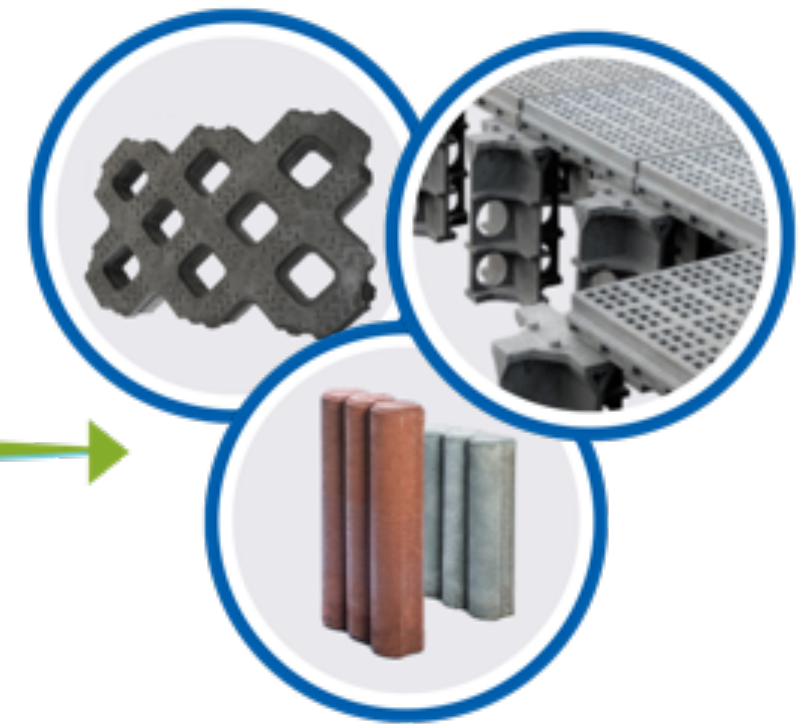
Yellow bin



Packaging sorting plant



Injection/
Intrusion
molding

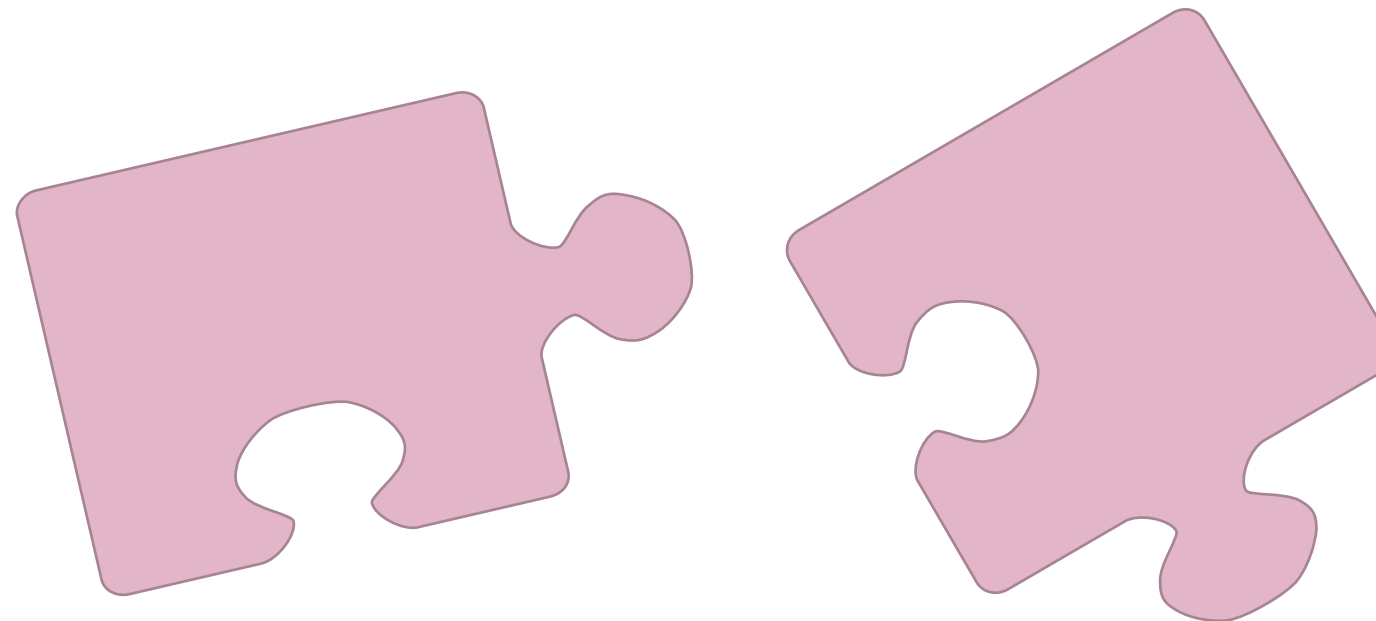


Blow/Extrusion
molding



Value Creation via Quality Recycling Process

DESIGN FOR



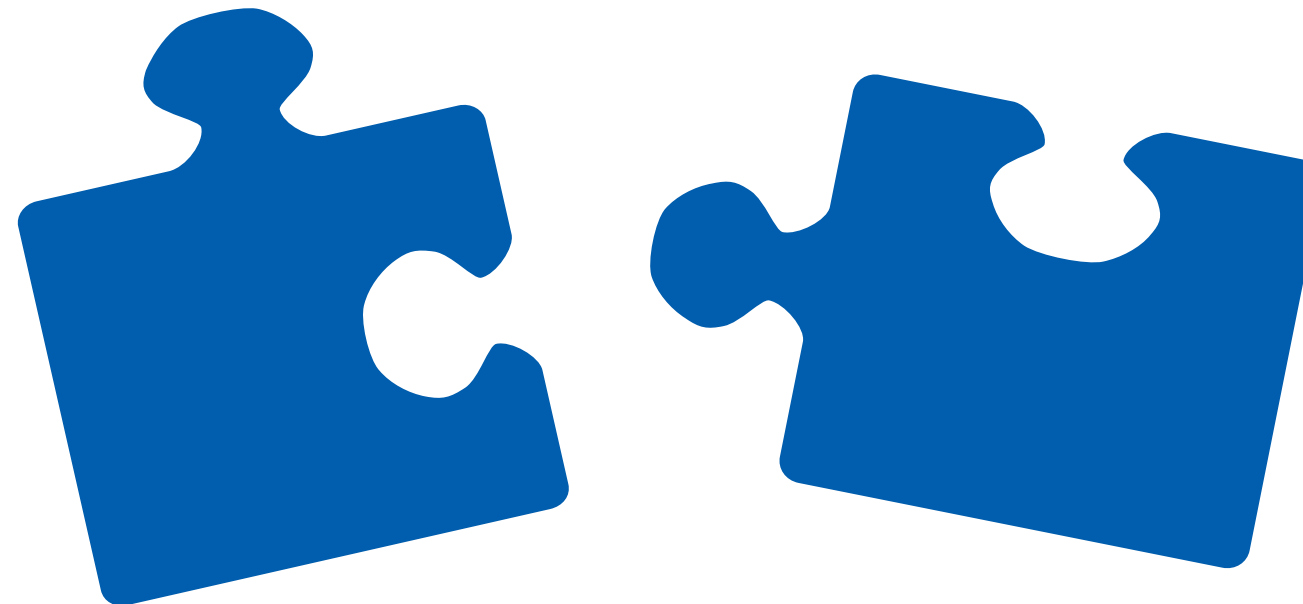
POLYMERS



RECYCLING



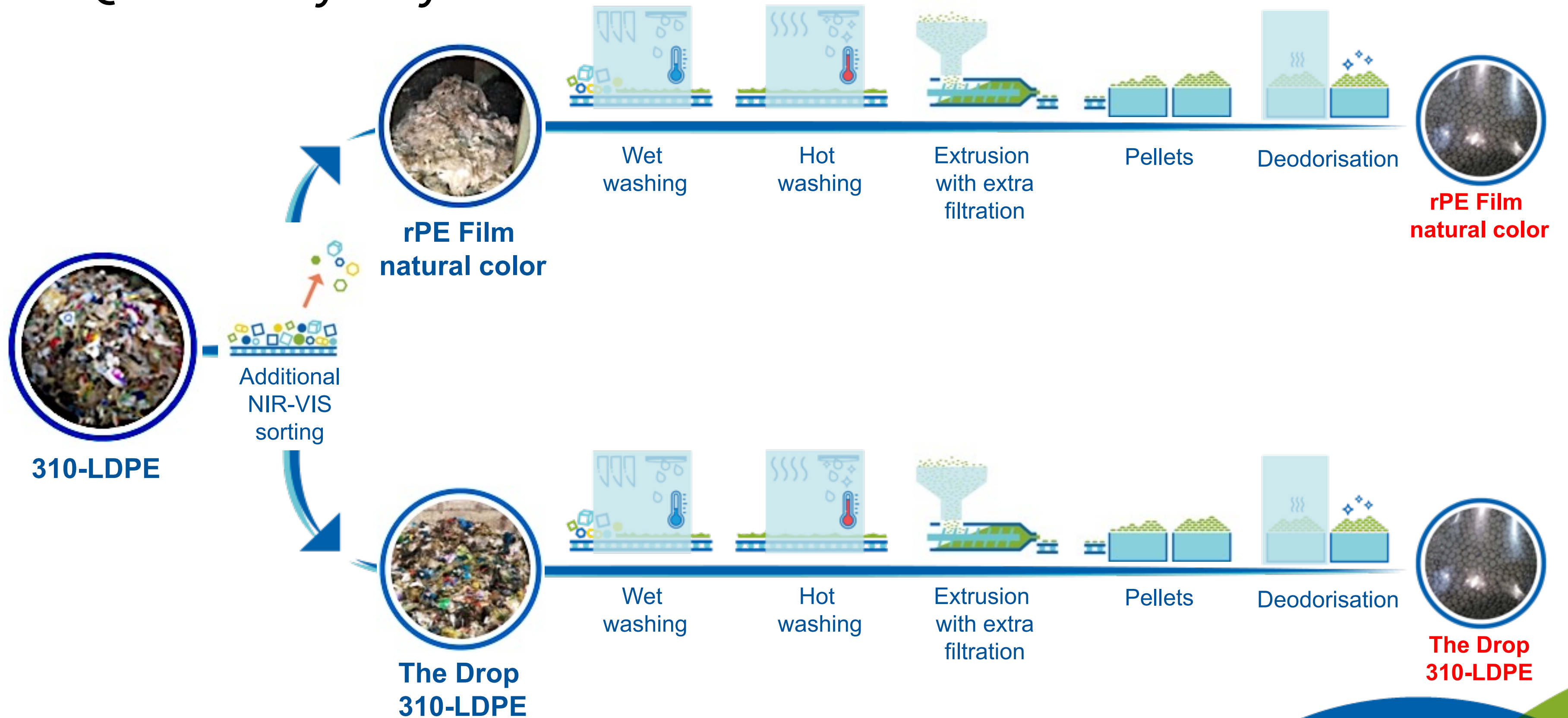
DESIGN FROM



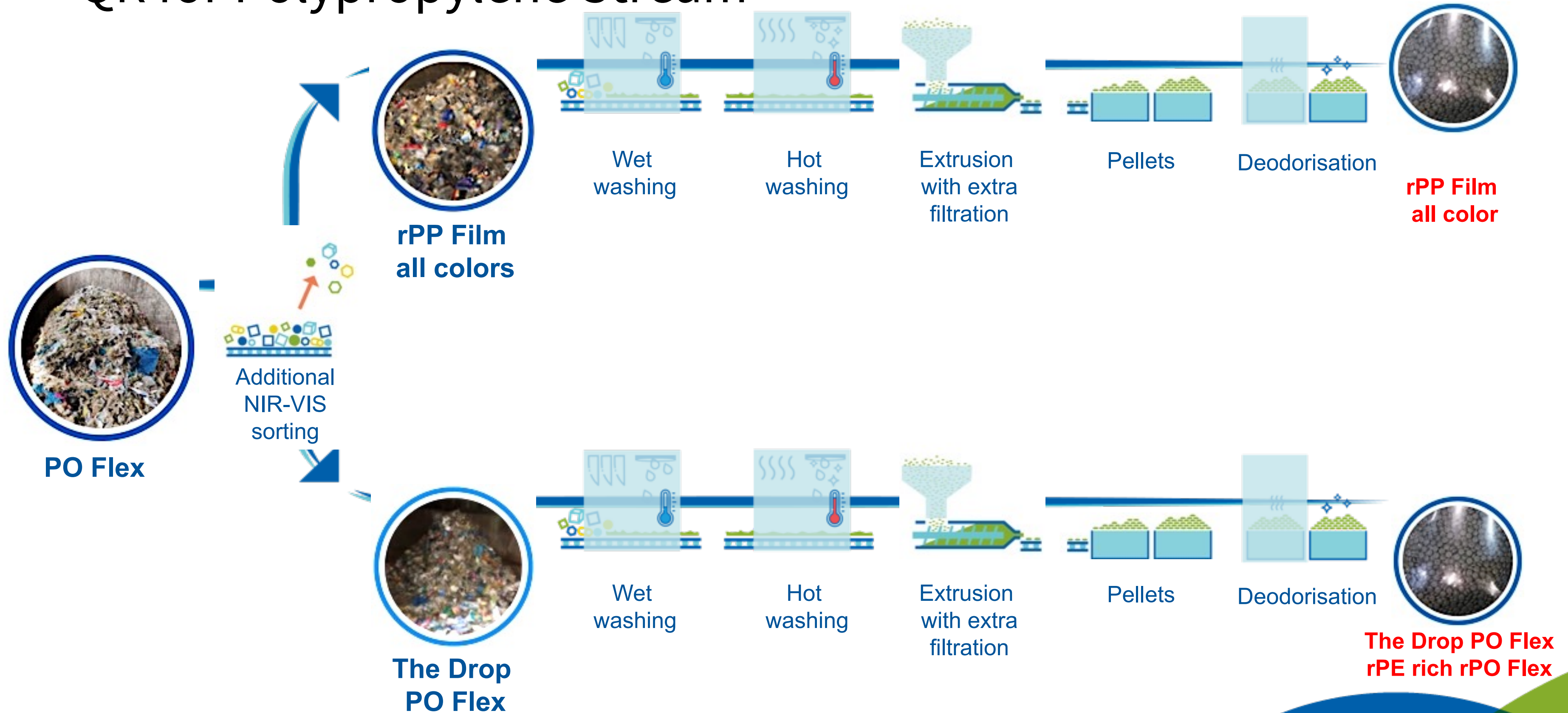
PRODUCTS



QR for Polyethylene Stream



QR for Polypropylene Stream



Step 5

New End Markets via QRP

Under development by CEFLEX

As seen at K-2019

We run the “Proof of Concept” which demonstrates that **Recycling is possible for Flexible Packaging back to Non-Food Flexible Packaging through Mechanical Recycling via the Quality Recycling Process**



BOPP by Taghleef Industries



Sample	Picture	Detail - Transmitted light
Trial PCR 0.0		
Trial PCR 1.0		
Trial PCR 2.0		
Trial PCR 2.1		
Trial PCR 2.2		



Stay Tuned for more



Step 4

Step 5

Quality Recycling Process Development

▶ Detailed modelling capability to assess, yields, costs and CO₂e of all relevant processes

TRIAL POTENTIAL
-Experimental scale trial
of existing technology



Enabling technologies

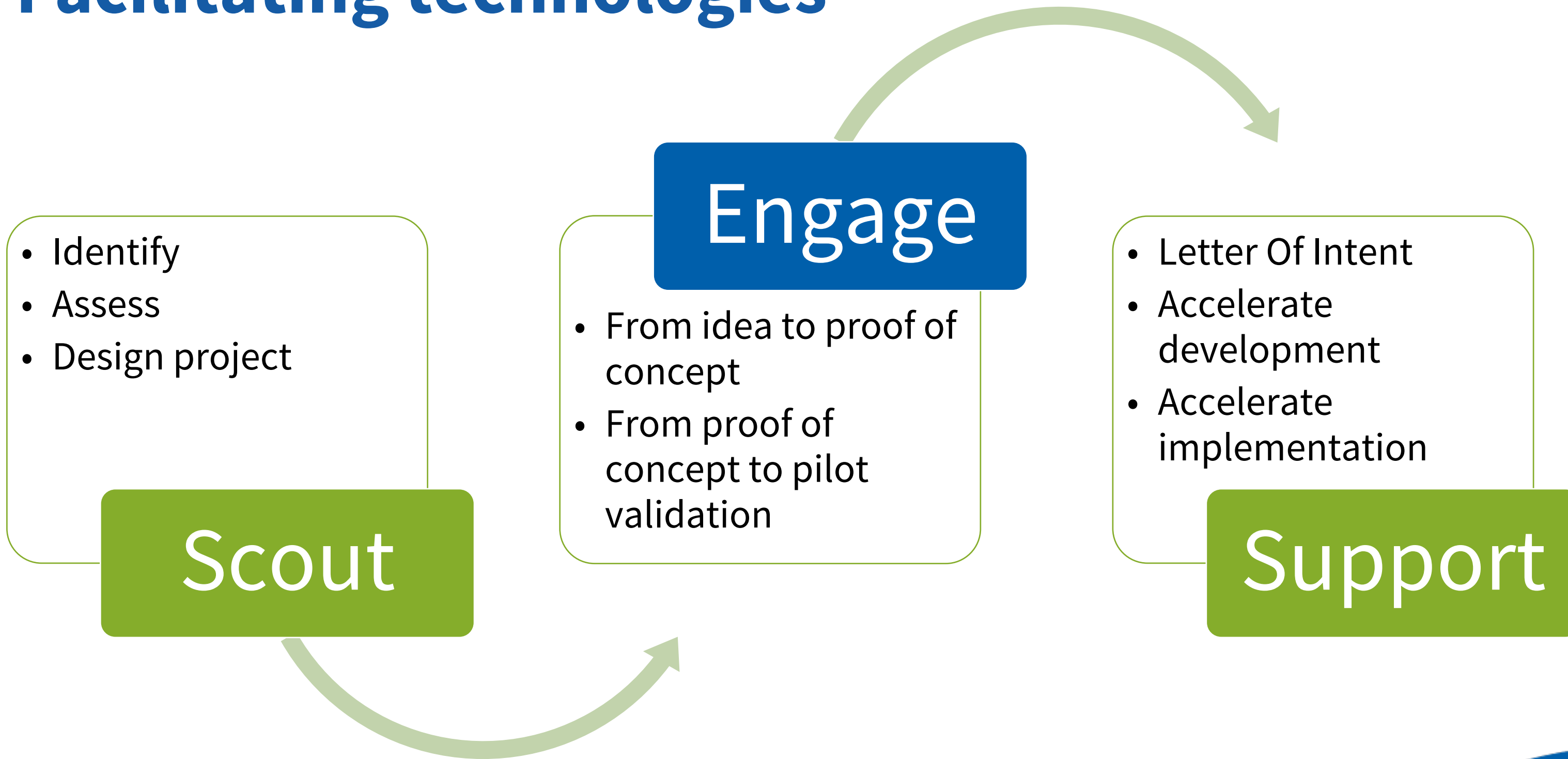
To recycle more and better

- Sorting of multi-materials
- Delamination and deinking
- Separation of layers
- Remaking of polymers



Step 4

Facilitating technologies



Facilitating technology

- Identify
- Assess
- Design project

Scout

Support

Technology

- ▶ **Detailed modelling capability to assess, yields, costs and CO₂e of all relevant processes**



Facilitating technologies

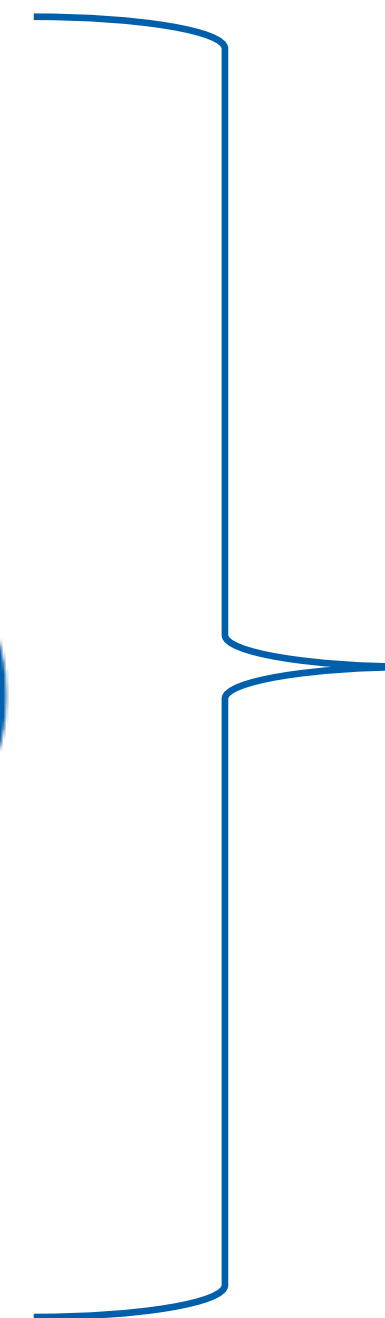
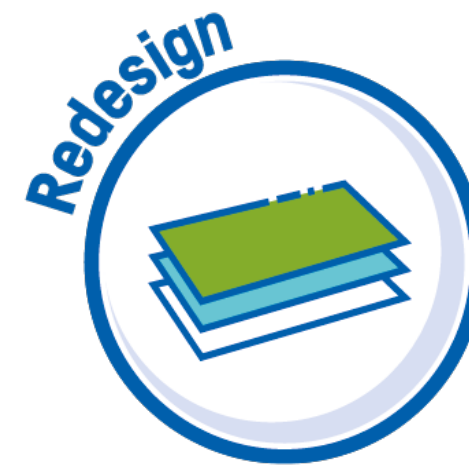


Stay Tuned for more



The Business Case for the Circular Economy

- Packaging & System Redesign (D4ACE)
- Boosting Quality and keeping materials in the economy (QRP)
- Enabling technologies



A sustainable Business Case enabled by EPR



1 Flexible packaging must be designed to be recycled

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3 A sustainable Business Case for all parts of the value chain incl. end markets

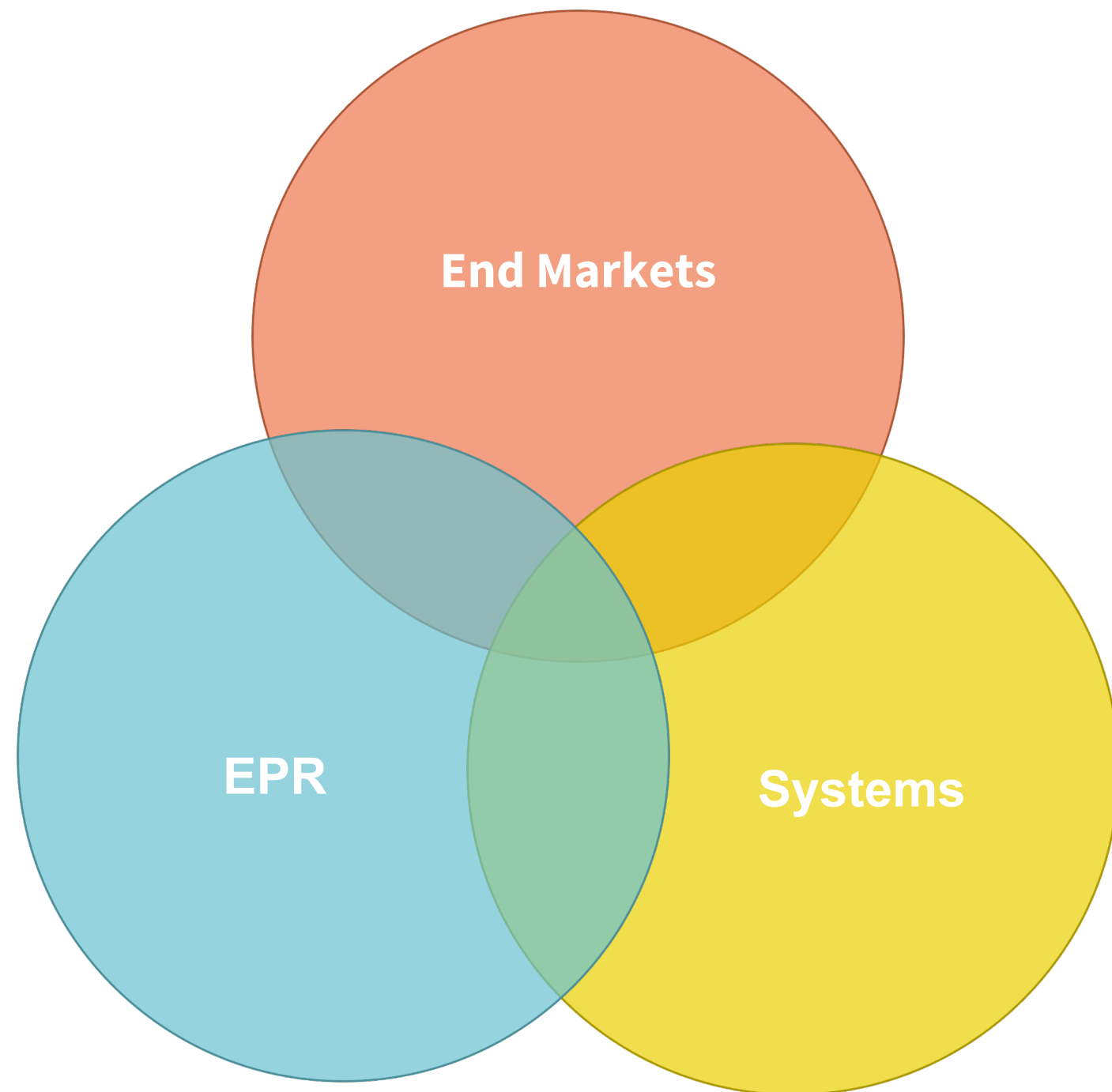
Design for Recycling: Industry can & is doing

- Bonus/malus based on D4ACE Guidelines to **support eco-modulation**

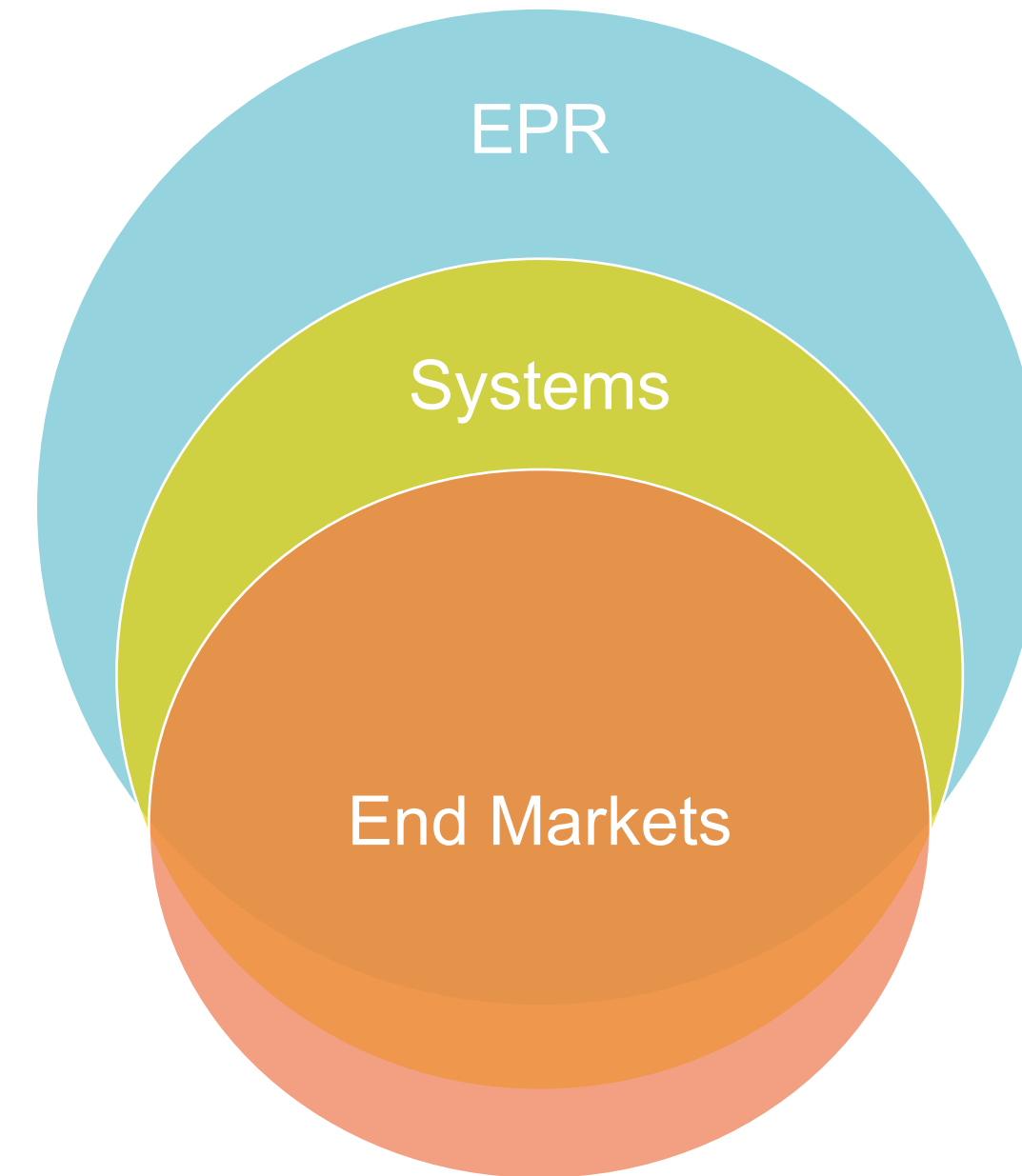
- **Need to develop required collection, sorting & plastic recycling infrastructure to “go circular”**
- **End Markets** capable and willing to use the recycled plastics
- For the system to also be **sustainable**

EPR enabling capacity for “Circularity”
A win-win area for further collaboration

Shared ground for circularity



Today



Tomorrow?

Developing EPR - Criteria for Circularity

Flexible packaging is collected, sorted and reprocessed to produce a recycled polymer suitable for use as a replacement for virgin polymer

Operational:

collection systems, sorting centre operation, recycling; end markets

Financial:

general principles, fees and eco-modulation.

Communication:

responsibilities and cost allocation of consumer education including those related to litter

Governance:

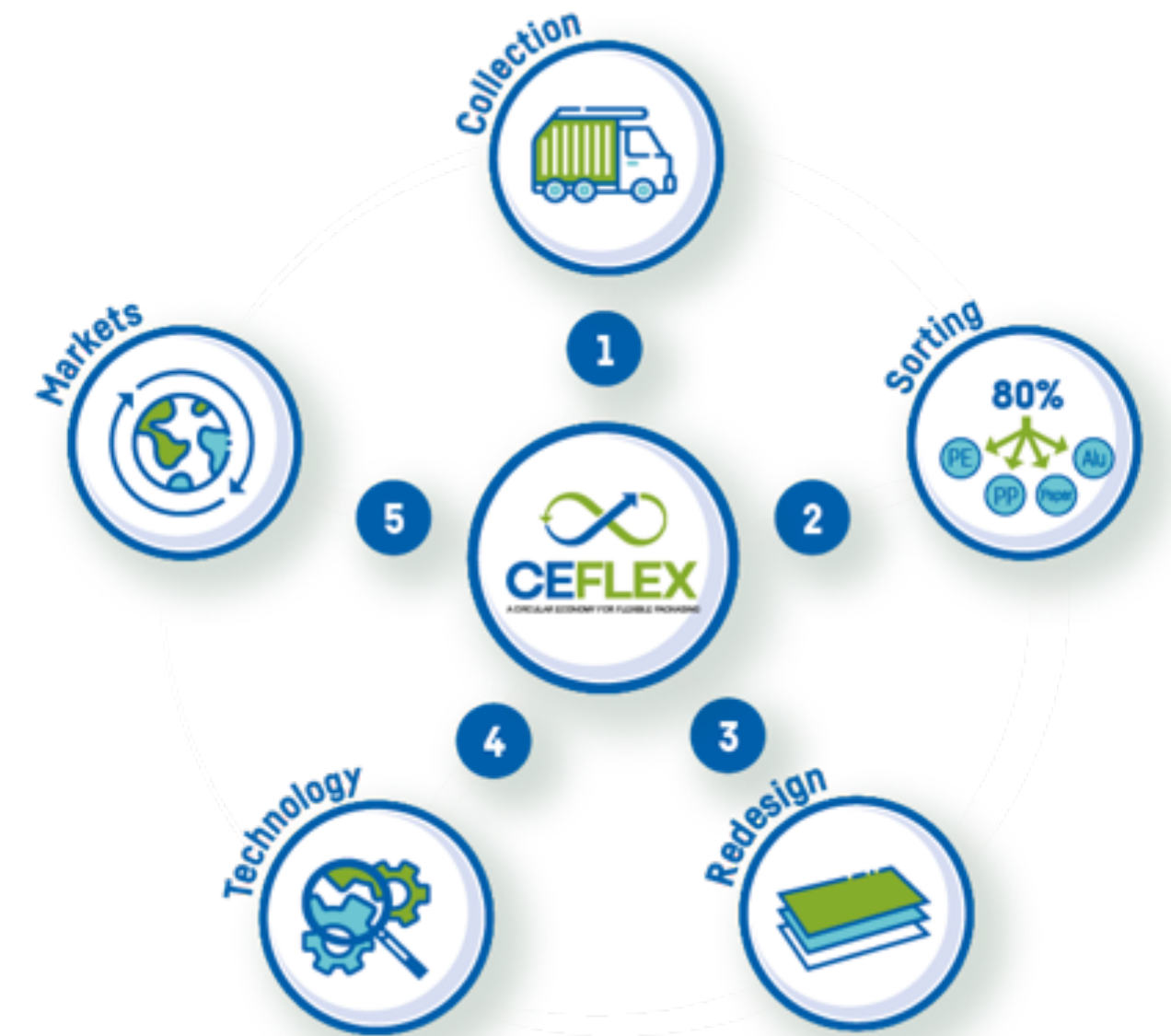
roles, responsibilities and principles needed to ensure that EPR systems are sustainable long term.

Our Mission is Circular

> Designing for a Circular Economy Guidelines (D4ACE)*

> Enabling Processes and Technologies

> Extended Producer Responsibility (EPR)





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 @MissionCircular



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