



**Blueprint for plastics packaging waste:
Quality sorting & recycling**

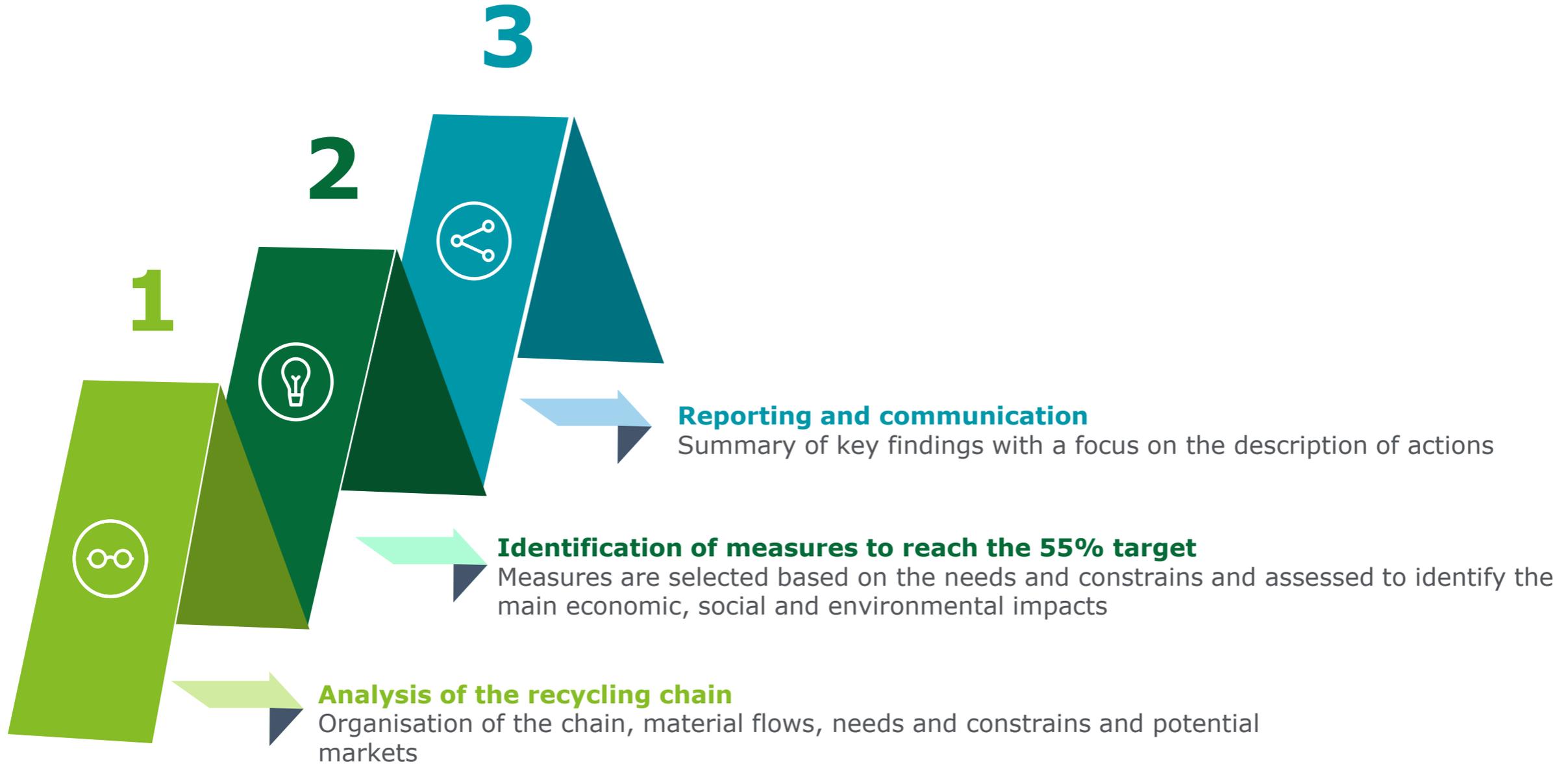
Plastics Recyclers Europe Annual Meeting 2017

15 June 2017

1/ Objectives and scope of the project

Objectives ^(1/2)

Three main phases



Objectives ^(2/2)

Interaction of the 2 studies

2015 study on the increased EU Plastics recycling targets

Starting point: collection of plastic waste.

Scope: All types of packaging waste.

Focus: Improving the performance of the value chain until recycling.

Output: Environmental, economic and social impact assessment.

Holistic
understanding
of the sector

Ongoing study on the development of a blueprint

Starting point: The needs of end users.

Scope: Packaging waste but all types of end users.

Focus: Improving the performance through out the whole value chain.

Output: A set of measures and an updated impact assessment.

Scope

All possible uses from plastic packaging waste

Waste flows and streams

- Packaging waste
- Household, industrial & commercial waste

Resins

- Main resins used in the packaging sector
- Focus on: PET, PP, HDPE, LDPE

Recycling targets and timescale

- A 55% recycling target is considered to be achieved by 2025

Geographical scope

- Detailed analysis for the 6 main countries (Germany, Italy, France, Spain, UK, Poland) that correspond to 70% of the EU demand
- Extrapolation at the EU level

Indicators

- Technical: needed number and capacity of plants to achieve the target
- Economic: required investments and potential revenues
- Environmental: GHG emissions
- Social: direct jobs

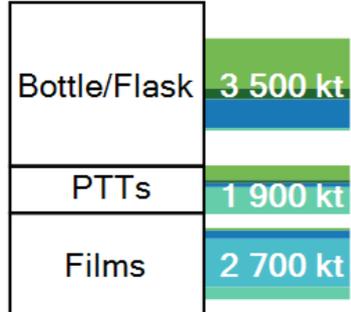
2/ Current situation

Flows of plastics in the EU

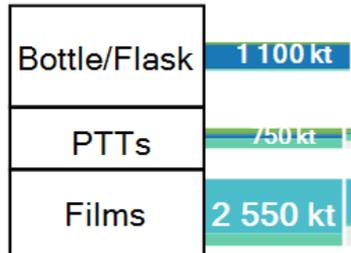
2014 Europe Plastics Streams

- PET Clear
- PET Dark
- HDPE
- LDPE
- PP

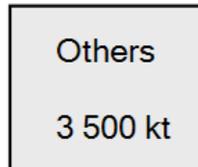
Household Waste



Industrial Waste



Polyolefins: 12 500 kt



Total: 16 000 kt

2014
Collection rate: 42%
2014 Polyolefins collection rate: 55%

Net Exports
Out EU
1 350 kt

Sorting
6 800 kt

700 kt

2014
Recycling rate in Europe: 28%
2014 Recycling rate: 34%

Recycling
4 900 kt

380 kt

EU
650 kt

Packaging

950 kt

3 300 kt

555 kt

13 300 kt

990 kt

3 300 kt

360 kt

2 200 kt

180 kt

1 300 kt

450 kt

2 kt

Others

1 030 kt

4 200 kt

C O N V E R T E R S
D E M A N D

Incineration
6 000 kt

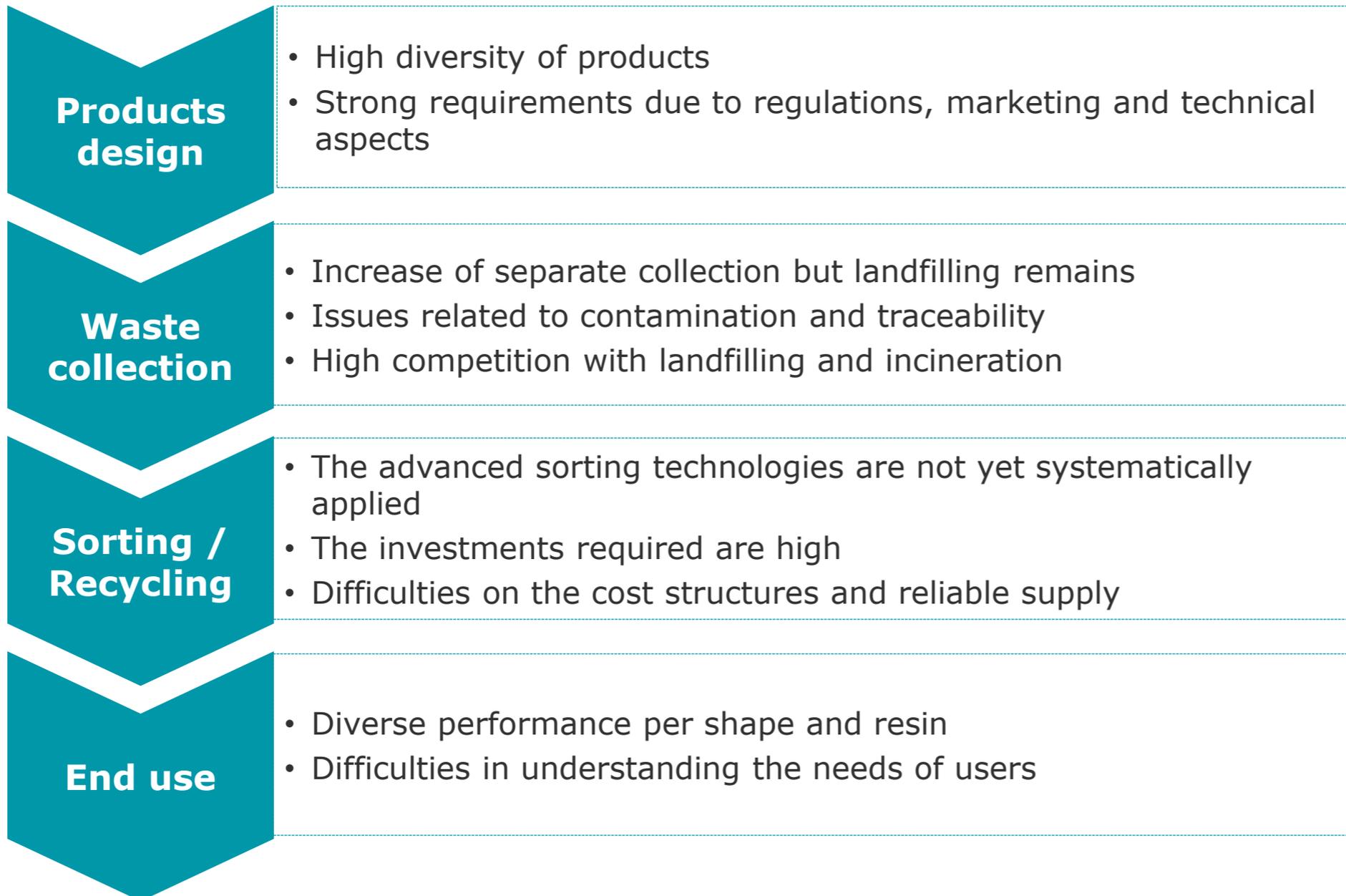
Landfill
4 400 kt

**Approximately 28 %
of packaging plastic
waste recycled in EU
facilities**

Sources: Plastics Recyclers Europe,
Plastics Europe, Eurostat, Deloitte.

Overview of the situation in the EU

A large gap to be covered



Lack of communication



Strong challenges but significant opportunities

Challenges

- Products and packaging are becoming increasingly complex
- Raising awareness on health and image issues
- Landfilling and incineration are the cheapest options
- Exportation in non-EU countries, with low labour costs, is also competitive
- Fluctuations of quantities and quality of the supplies, both for recyclers and for end-users.
- Lack of homogenous practices to evaluate the real performance of the recycling value chain

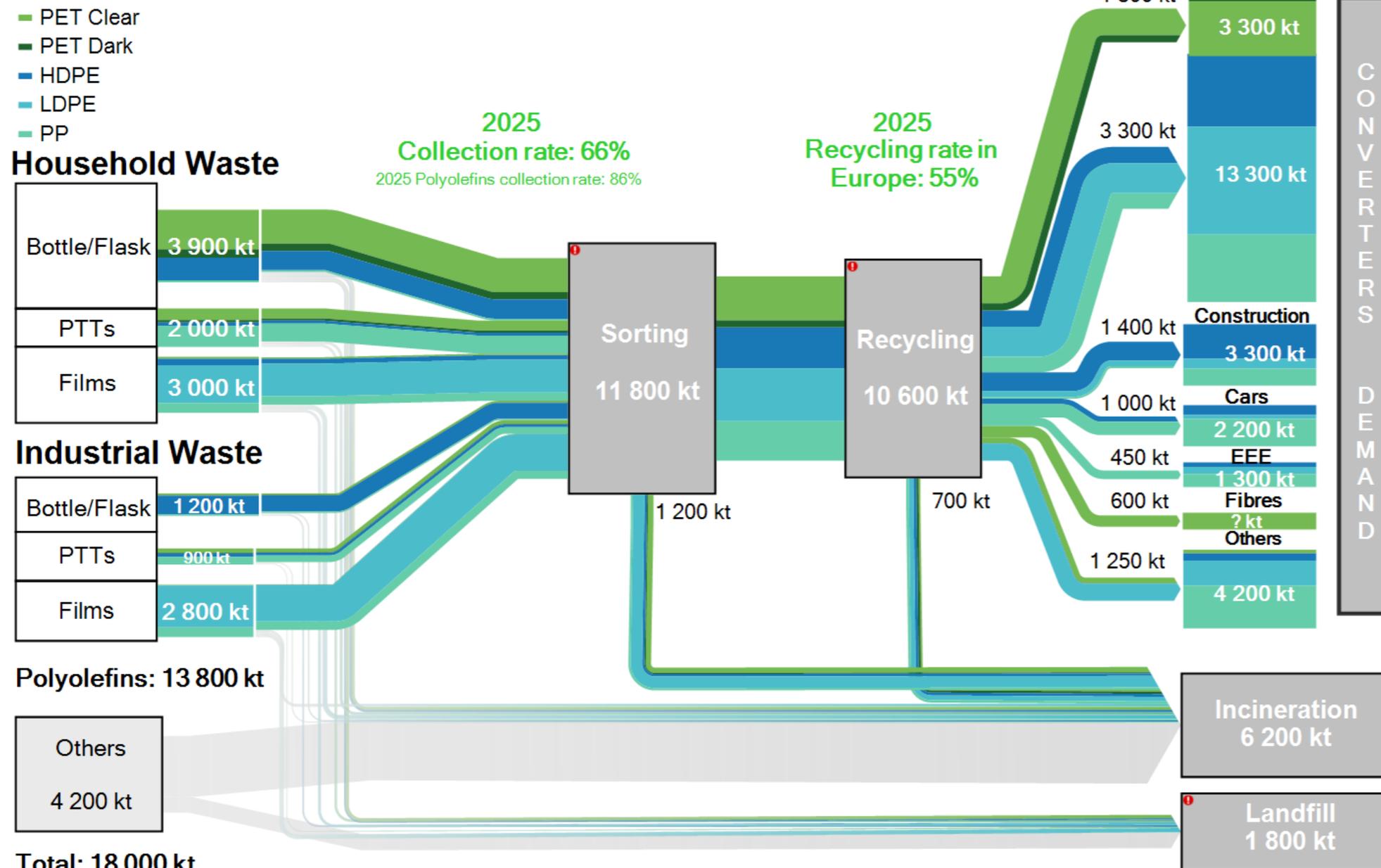
Opportunities

- General increase of awareness of consumers
- Increased willingness of the industry to increase performance
- Marketing strategies and CSR policies point towards an increased use of recycled materials
- Higher implementation of separate collection schemes
- Increasing knowledge of the streams
- Efficient sorting and recycling technologies, do exist
- Existence of standards to demonstrate compliance

3/ Solutions to achieve the expected targets

Flows of plastics in the EU

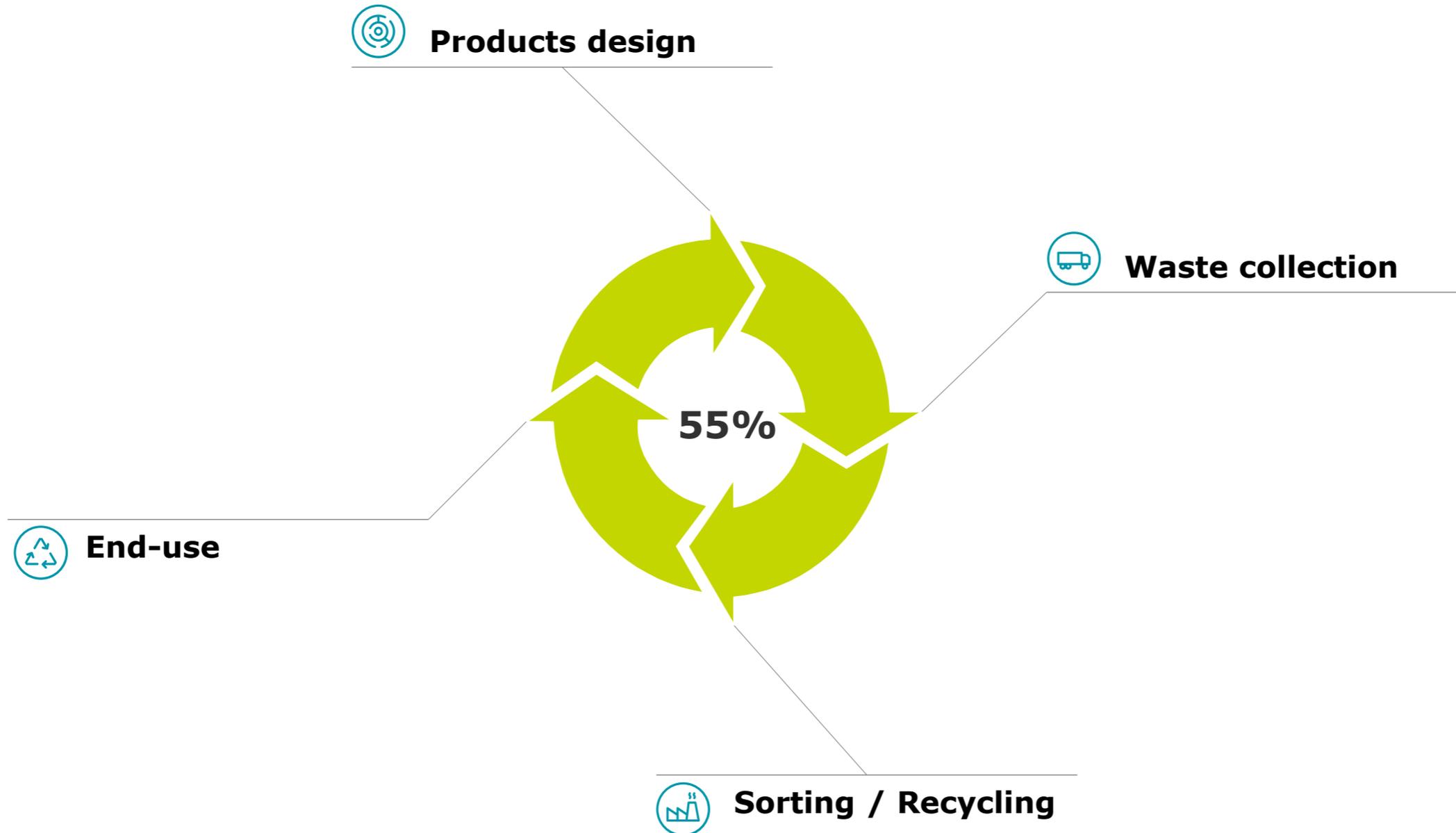
2025 Europe Plastics Streams



55% of packaging plastic waste recycled in EU facilities

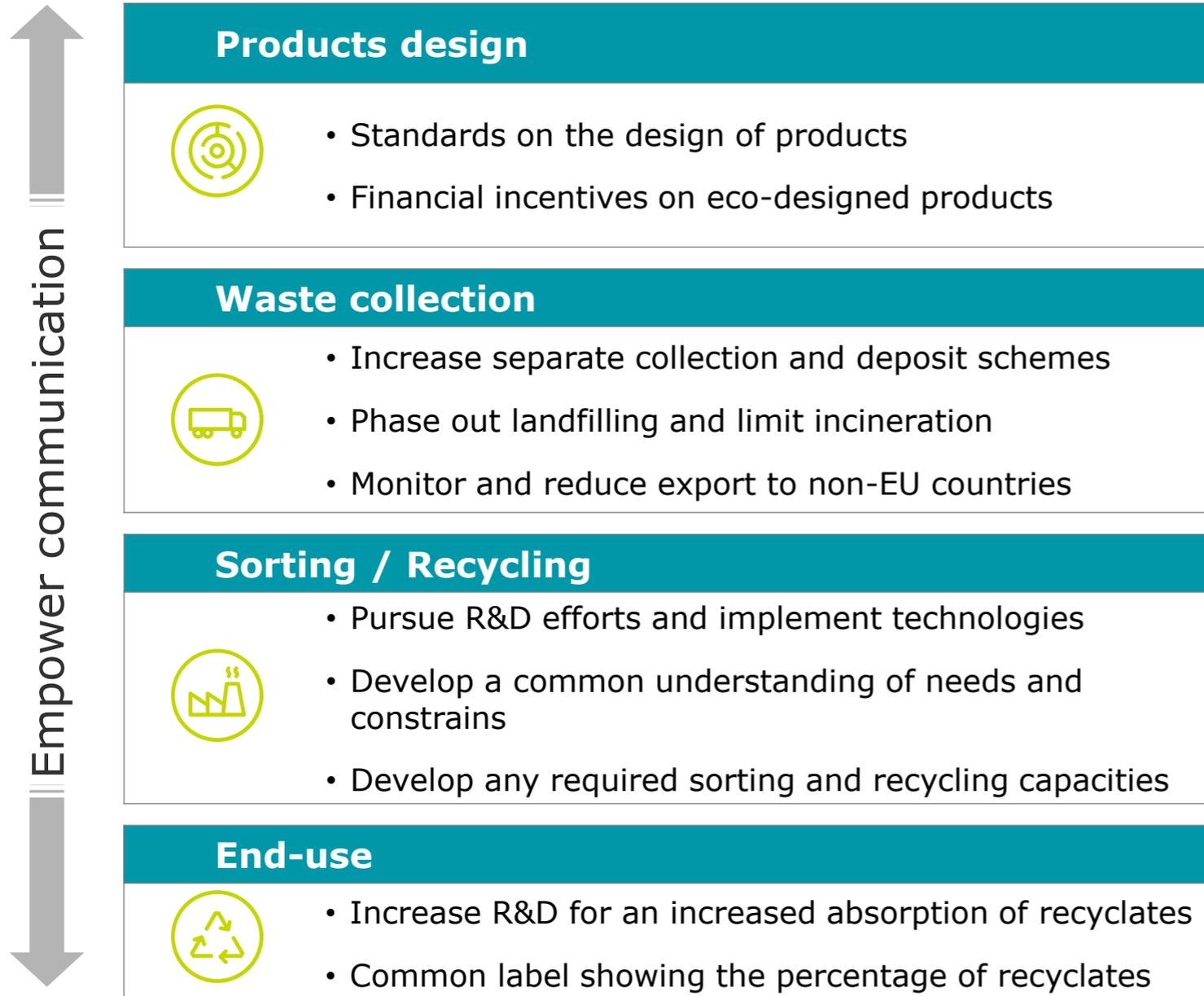
The way forward

A diverse approach is required



The way forward

A diverse approach is required



The whole value chain needs to be involved:

- **European Commission** to develop recyclability standards/criteria, promote separate collection and fund research.
- **EU producers** to implement packaging recyclability.
- **Retailers** to promote recyclability through acquisition standards.
- **Dedicated organisations** for verification and validation of standards.
- **EPR schemes and local authorities** to implement separate collection and detailed monitoring.
- **Recyclers** to develop a communication platform and continue R&D efforts to increase quality.
- **Public authorities, the industry, NGOs** to raise awareness on standards and safety of recyclates.
- **End-users** to invest in recyclates and develop a label.



Focus on the products design

Examples of eco-design measures and issues in the recycling schemes

Eco-designed packaging

- Monomaterial products or easily separable parts
- Use of resins with different properties compared to the main resins (e.g. sealing)
- Light and small labels to ease optical sorting
- Separable labels and caps
- Clear or light plastics
- Coatings for barrier technologies
- Use of recycled resins
- Lighter packaging



Disruptive packaging

- Complex packaging, with several resins and materials (e.g. multilayers)
- Metal caps
- High coloured, dark or opaque plastics
- Blend barrier technologies
- Shrink sleeves labels, especially made in PVC
- Sealing systems with disruptive materials



Sorting and recycling

Constantly increasing R&D to improve the quality



Sorting technologies	<ul style="list-style-type: none">• Increase of existing efficient technologies (e.g. TSA²).• Emerging technologies for dark or opaque resins (e.g. XRT, fluorescence).• R&D for mid- to long-term horizons: far infrared, induction sorting, etc.
Recycling technologies	<ul style="list-style-type: none">• Reactive extrusion processes to remove pollutants efficiently.• Dedicated laboratories of waste management operators to improve the quality of recycled plastics (e.g. PlastLab of Suez).• Compounding and formulation to produce high performance granules from rPlastics and vPlastics (e.g. Circular Compound of Total)



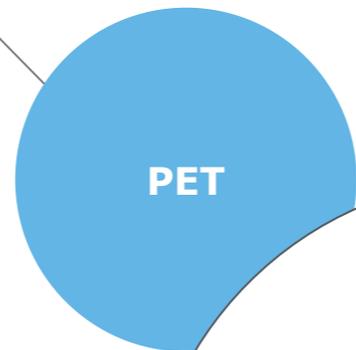
Prospective end-uses

New opportunities are arising



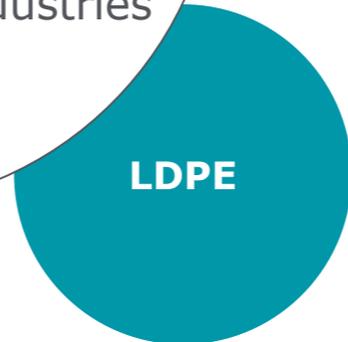
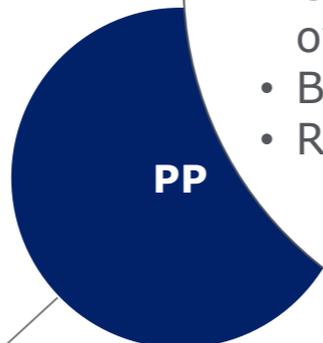
Mature schemes to diversify

- Potentially new applications in fibers and in the textile industry.
- Increasing demand for dark PET in packaging.



Overall opportunities

- Keep the collected plastics in the EU
- Close the loop of the overall value chain
- Boost innovation
- Reinforce local industries



Promising for construction

- High quality recycling processes in development for packaging, especially food-compliant.
- Significant options in the construction sector.



Technical demand in perspective

- Demand in EEE and automotive markets
- Higher uses in the commercial and industrial sectors.



Great potential for closed-loop

- New technologies can increase the use of recyclates from films
- Opportunity to keep large exported amounts in the EU



Thank you !