CEFLEX

A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

Introduction & Progress Update

Q1 2020

Who We Are

CEFLEX

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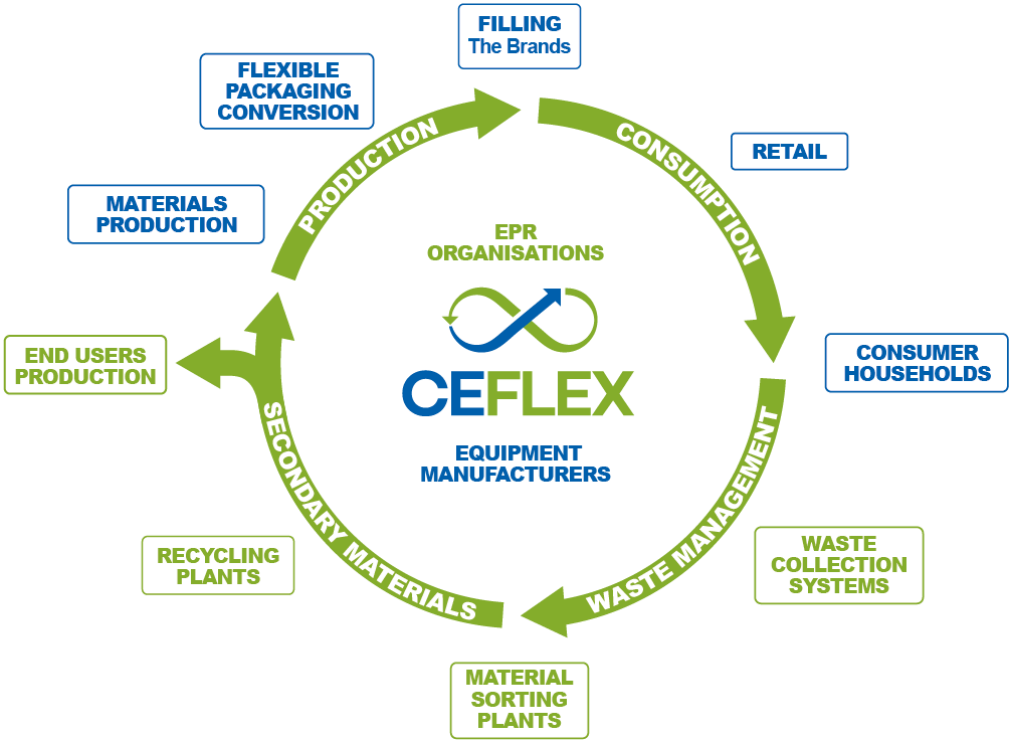
A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

CEFLEX is a collaborative initiative of a European consortium of companies and associations representing the entire value chain of flexible packaging to enhance the performance of flexible packaging in the circular economy.

The Value Chain



The Stakeholders

MATERIAL PRODUCERS

The Stakeholders

FILM PRODUCERS / FLEXIBLE PACKAGING CONVERTERS

The Stakeholders

FILM PRODUCERS / FLEXIBLE PACKAGING CONVERTERS

The Stakeholders

CEFLEX

BRAND OWNERS AND RETAILERS

COLLECTORS, SORTERS AND RECYCLERS

SUPPLIERS, END USERS AND OTHERS

Our Vision for the Circular Economy

CEFLEX will further enhance the performance of flexible packaging in the circular economy by designing & advancing better system solutions identified through the collaboration of companies representing the entire value chain

- **CEFLEX Vision**

2020 we will have a comprehensive sustainability and circular economy roadmap for flexible packaging, including widely recognised design guidelines and a robust approach to measure, demonstrate and communicate the significant value flexible packaging adds to the circular economy.
The roadmap will address:

- resource efficiency
- waste prevention benefits
- sustainably returning recycled FP materials to supply identified end markets
- eliminating leakage through better collection

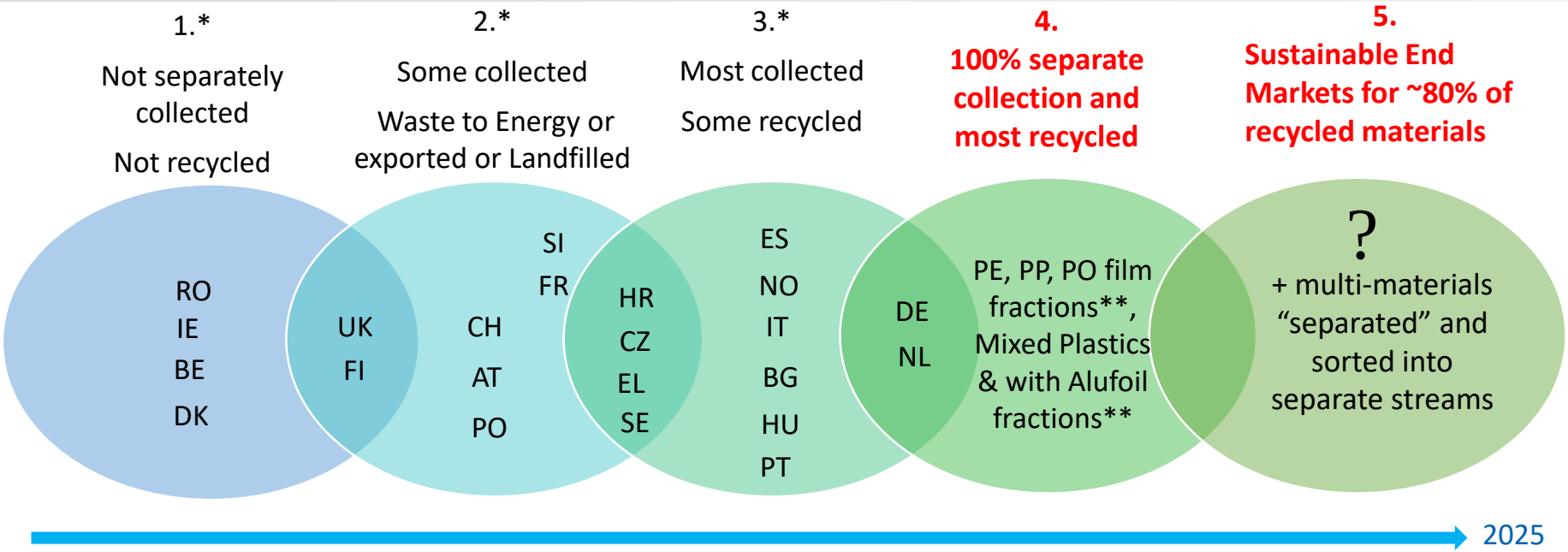
2025 there will be an established collection, sorting and reprocessing infrastructure/economy across Europe for flexible packaging based on end of life technologies and processes which deliver the best economic and environmental outcome for a circular economy.

Project Goals & Deliverables

- **2020: F**lexible packaging will be recycled in an increasing number of European countries, facilitated by the CEFLEX initiative through:
  - The development and application of robust **Design for A Circular Economy Guidelines** for both flexible packaging and the “End of Cycle” infrastructure to collect, sort and recycle them
  - The identification and development of **sustainable end markets** for the secondary materials recycled from flexible packaging
  - Proposing **a sustainable business case** in which flexible packaging can be collected, sorted, recycled and returned to the economy in quantity and at a competitive quality/price for potential end market applications.

- **2025: T**he development of a collection, sorting and reprocessing infrastructure for post-consumer flexible packaging across Europe, facilitated by the CEFLEX initiative through:
  - Implementation of a robust **business case** that supports the development of the circular economy in which flexible packaging is seen as a relevant and responsible packaging choice.
  - Successful **pilot projects** to demonstrate “proof of principle”

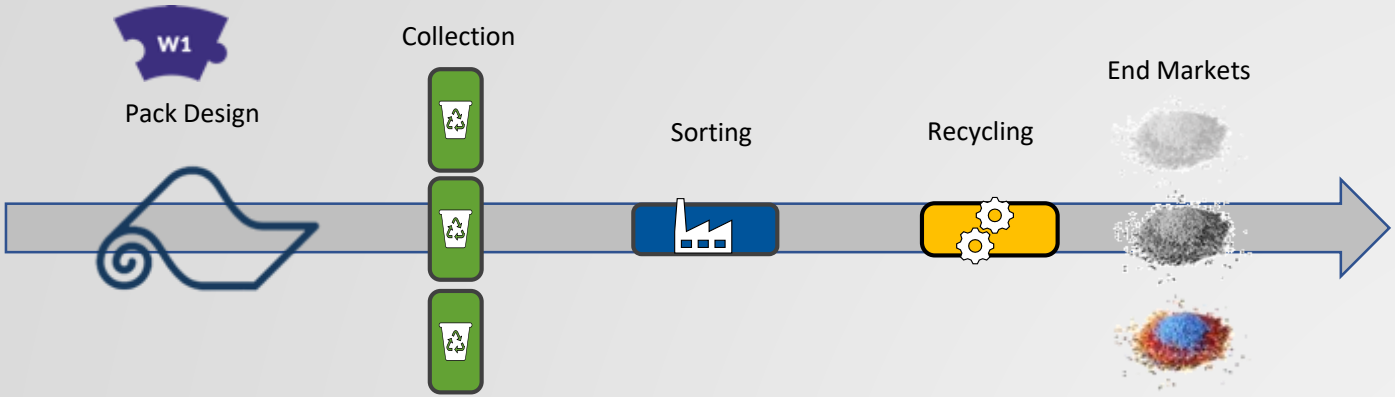
EU FP EOL Landscape & CEFLEX Ambition



* Need to further validate country practices with EXPRA ** Actual fractions still to be confirmed in W3

Source: FPE member survey (2015 based on 2014 practice – partially updated 2016)

Our 7 Interdependent Workstreams



Workstream 1: Designing flexible packaging for collection, sorting, recycling AND future end markets

Workstream 2: How much of each material enters the market (in tonnes)

Design for A Circular Economy (D4ACE) Guidelines for flexible packaging

D4ACE Guidelines

For packaging developers and the end of cycle value chain

D4ACE Pack Assessment Tool

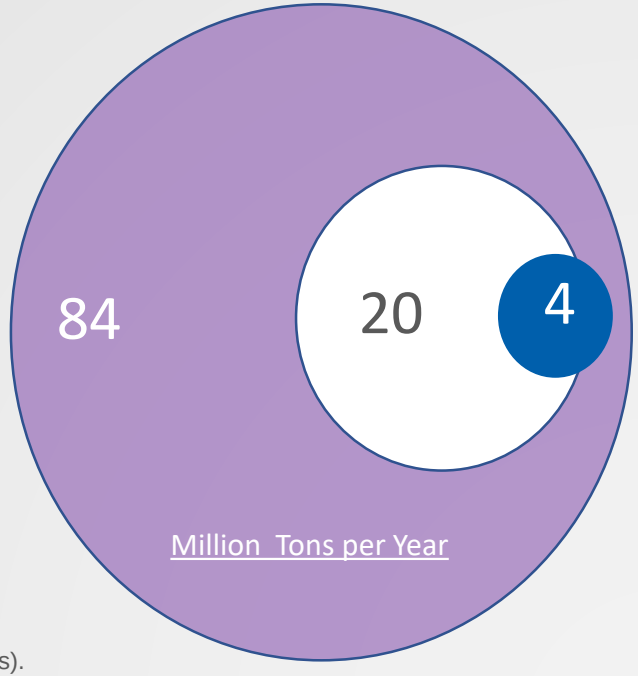
Future-proofing

Process to update the D4ACE Guidelines

Economic and Environmental impact in a Circular Economy

What does the European Packaging market look like?

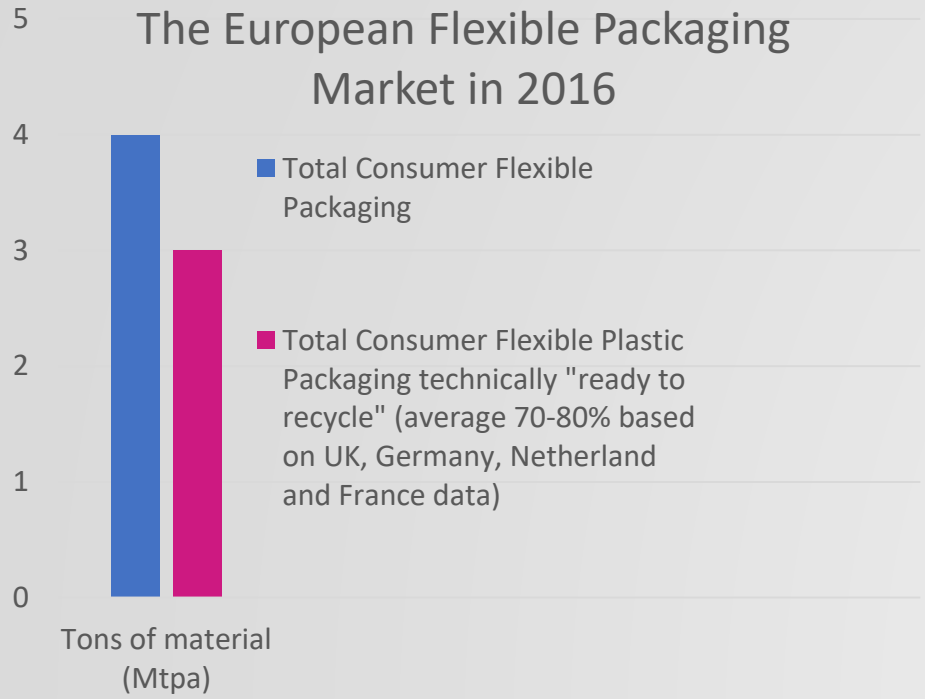
- Total EU packaging market: c.a. 84 M T*
- Total EU plastics packaging: c.a. 20 M T**
- Total EU consumer flexible packaging: 4 M T***
  - Not yet collected everywhere in Europe and majority is sent for energy recovery (or landfilled)
  - Sorting and recycling solutions developed in EU can be relevant globally



Eurostat 2015 data, ** 19.55 Mtpa. Plastics – The facts 2016 -2015 data, *** 2016 data. 3.987 Mtpa (incl. exports).

Calculated by CEFLEX, based on Plastics – The facts 2016 and FPE Market Report Summary 2016

CEFLEX Insights



- Approximately 3 M T of consumer flexible packaging is mono PE or PP material or a PE/PP mix, and it is technically “recycling ready” if it can be sorted into PE or PP film fractions or a mixed PE/PP fraction
- Flexible packaging with aluminium as the dominant material can be sorted into the aluminium fraction and recycled

*Calculated by CEFLEX, based on Plastics – The facts 2016 and FPE Market Report Summary 2016

CEFLEX Insights

Multi-material flexible packaging (incl. PE, PP, PA, PET, Alu, paper, etc) represents 0.8 – 1 M T

Today

- Predominantly sent for Recovery as SRF (cement kiln) or RDF (Waste to Energy)
- When Aluminium present, can be sorted recycled using pyrolysis

Future

- Recycle structures with compatible polymers : ex PE/PP and PE or PP /selected barrier with or without a compatibiliser
- Recycle with chemical recycling and other new/existing recycling technologies: eg solvent separation, pyrolysis etc that have been/are being developed and rolled out
- Re-design the packaging, where possible, to be recycled with existing recycled fractions

*Calculated by CEFLEX, based on Plastics – The facts 2016 and FPE Market Report Summary 2016

** these items are sorted out according to DKR 420 for Alu recovery via pyrolysis

CEFLEX Preliminary Conclusions

1. Collection of flexible packaging is essential to recycling

   If it is not collected, it cannot be sorted for recycling.

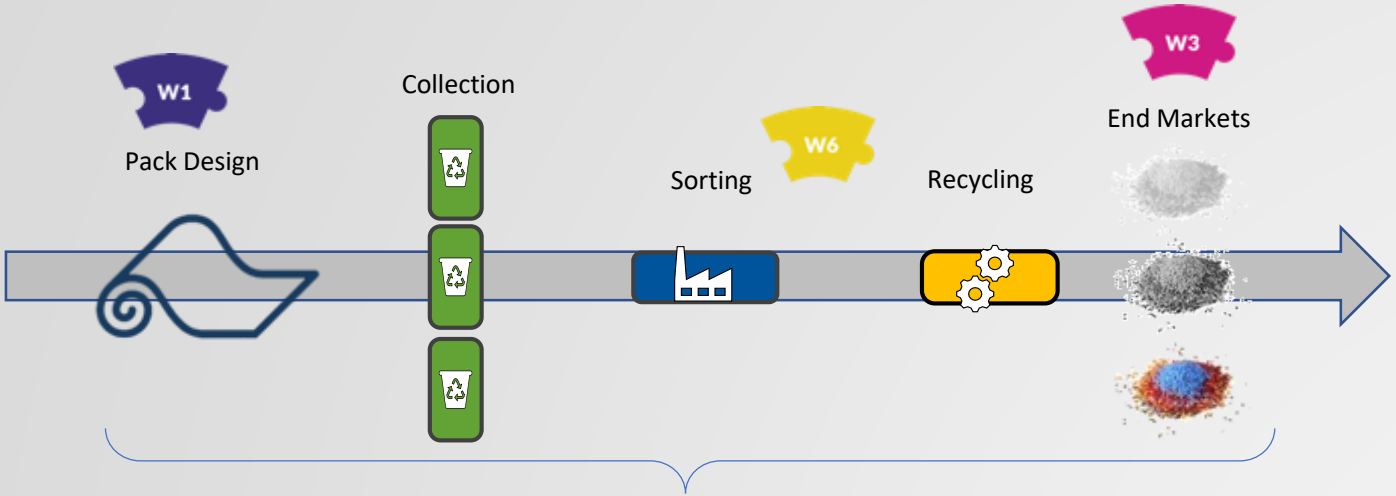
2. Sorting needs re-design to include post-consumer flexible packaging

   ~70% is mono PE or PP which, once sorted, can be recycled.

3. Improved design, collection, sorting & recycling solutions* need to be developed/more widely available for the ~30% of flexible packaging which is multi-material/multi-layer with barrier properties.

*This relatively small quantity of multi-material/multi-layer flexible packaging can prevent countries from collecting all flexible packaging.

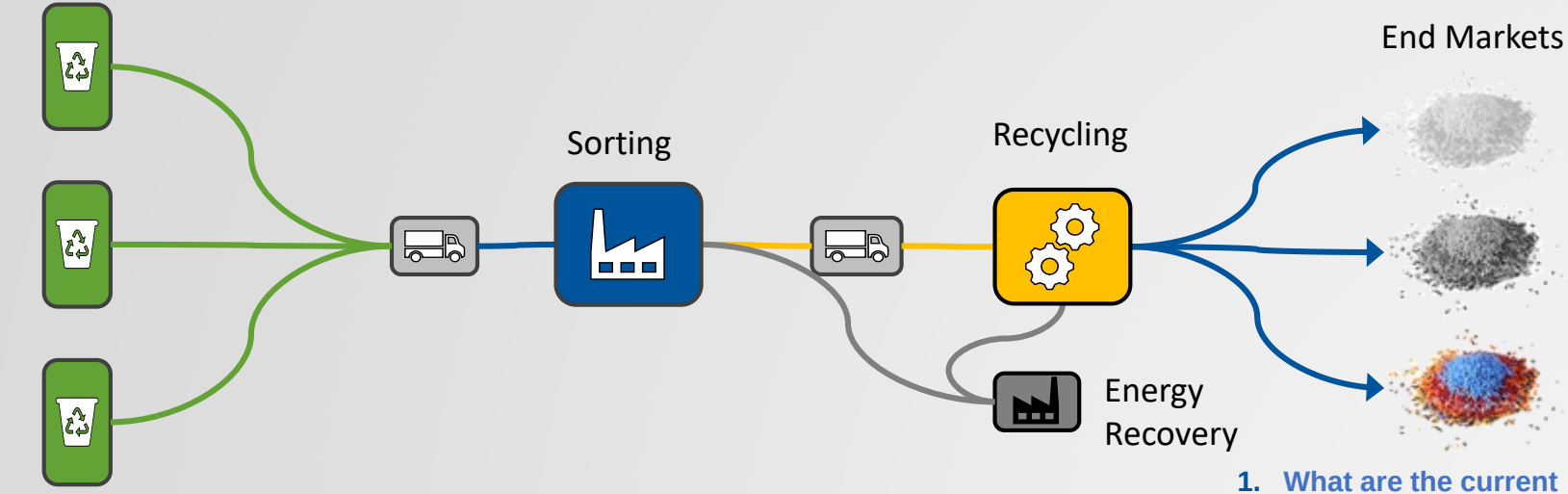
Our 7 Interdependent Workstreams



Workstreams 3 & 6: Determining which end markets can/will use materials from recycled FP, what their quality needs are and what quantities they can consume AND what new technologies can help deliver these.

Are there sustainable end markets?

3. Can new, emerging technologies to deliver new sorting and recycling specifications help to overcome these barriers?



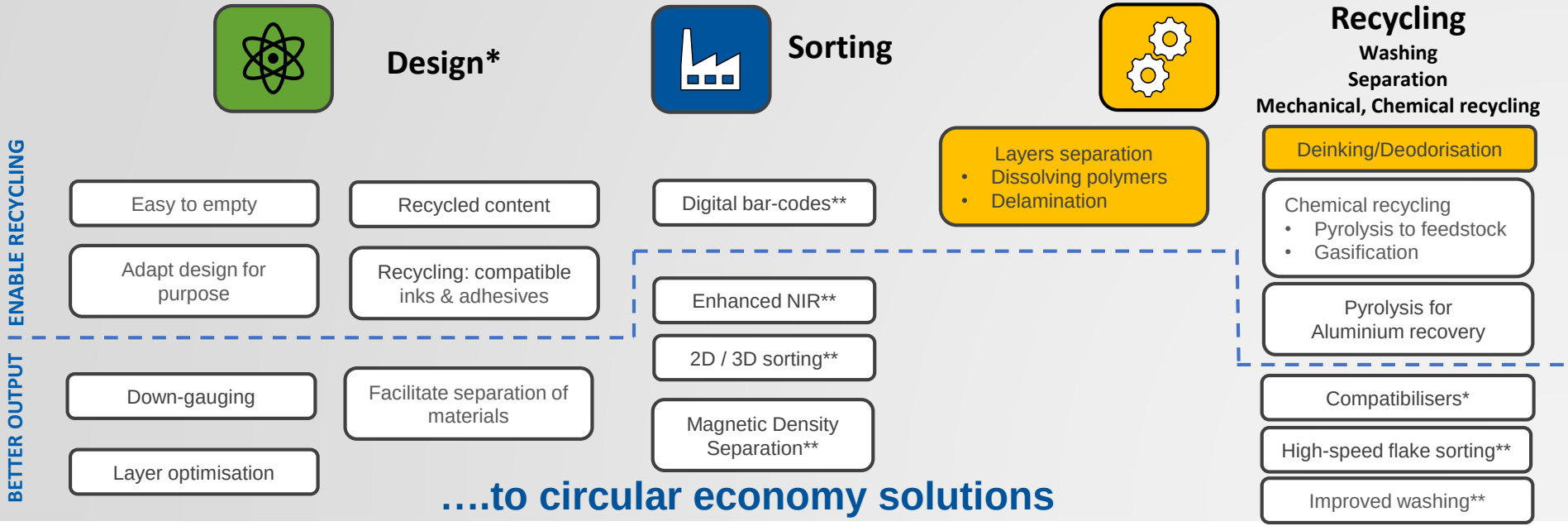
1. What are the current applications for recycled materials from post-consumer flexible packaging?

2. What are the technical constraints or limitations to increase the demand from current/new applications?

4. What technical barriers can only be overcame by new design of flexible packaging structures?

Facilitating Technologies

Identify, communicate and support the rollout of technologies which contribute …

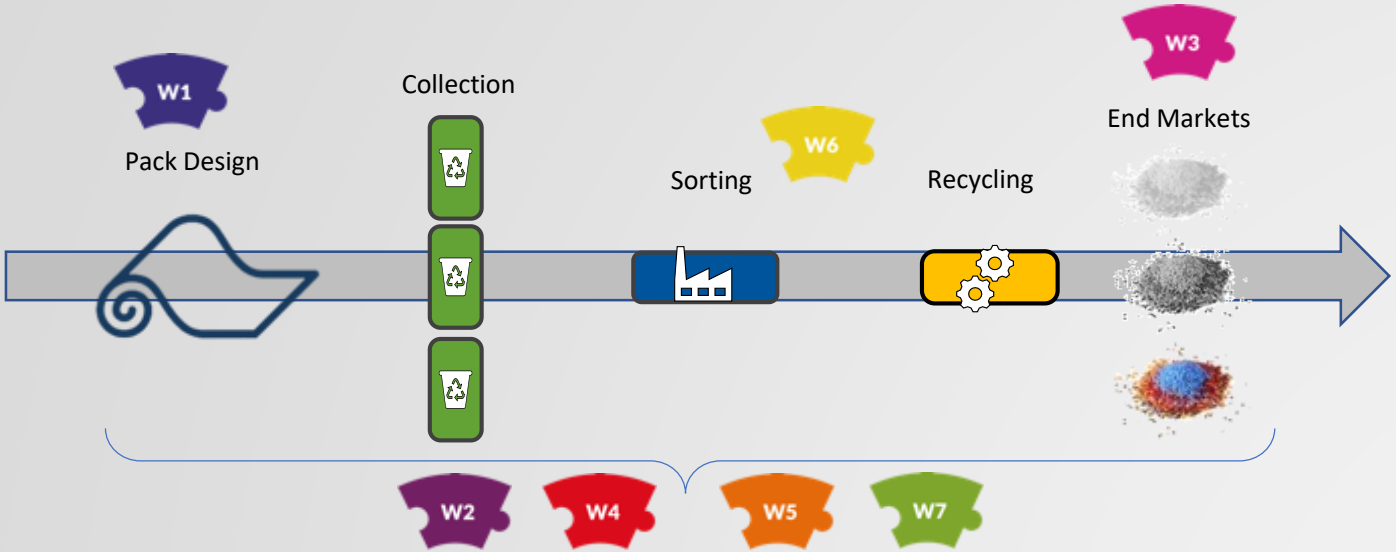


….to circular economy solutions

* Specified for testing/optimization in W1

* *Specified for testing/optimization in W3

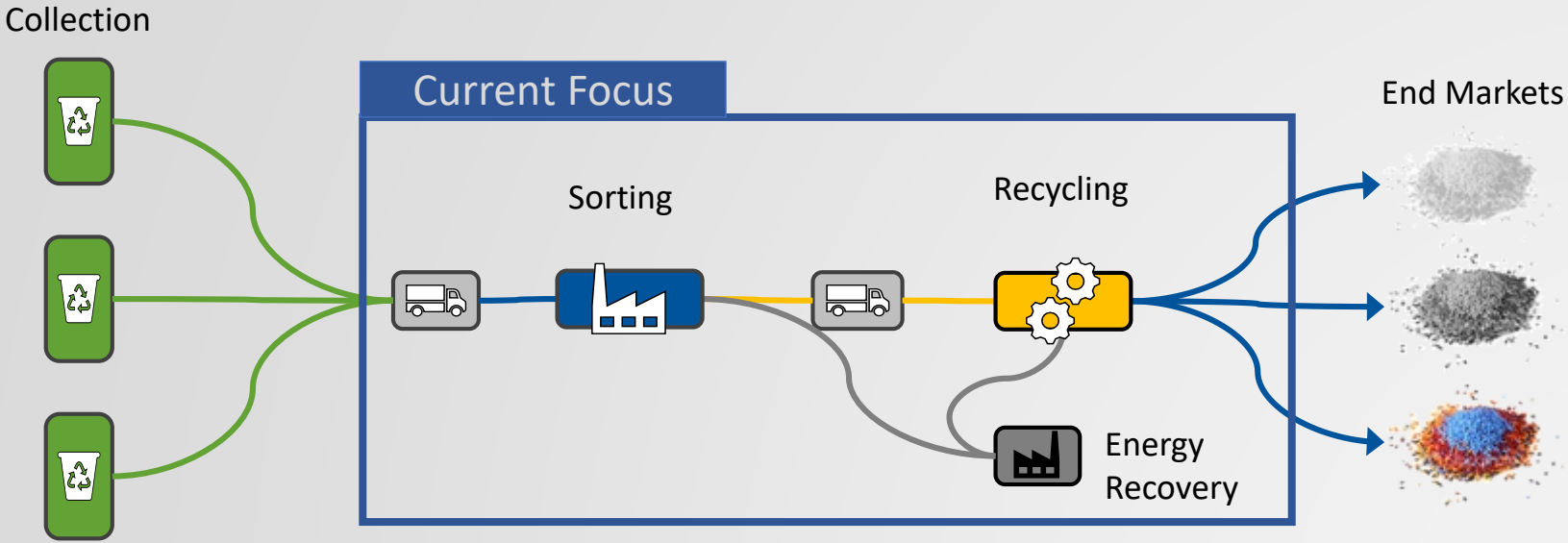
Our 7 Interdependent Workstreams



Workstream 4: What does a sustainable Business case look like?
Workstream 5: Showing proof of principle for W4 through regional pilots
Workstream 7: Getting the message out to all parts of the FP Value chain

Business Case

Understanding the best ”End of Cycle” options for flexible packaging



in terms of Economic and Environmental impact

Show “Proof of Principle” in pilot plant/region/country

- Pilot wide collection of flexible packaging and increase recycling of flexible packaging in a lead region/country by 2021
- Provide “proof of principle” for identified best practice and possible business models developed as part of W4

On-hold pending external funding:

- Clarifying W1 and W6 testing and pilot requirements
- Identifying specific stakeholder pilots

Communication: Stay in touch!

…….more to come!

Our changing world

Polyolefins
Circular
Economy
Platform

CEFLEX actively monitors and where appropriate collaborates with all the European high-level initiatives to ensure alignment and compatibility of the work developing the D4ACE Guidelines and “end of cycle” systems and infrastructure.

For more information

www.CEFLEX.eu

If you want to become part of the CEFLEX consortium or wish to learn more about the project, contact

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