



CEFLEX

A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

26th March 2019



CEFLEX is the collaborative initiative of a European consortium of companies and associations representing the entire value chain of flexible packaging to further enhance the performance of flexible packaging in the circular economy by designing & advancing better system solutions.

The Stakeholders



MATERIAL PRODUCERS (26)



The Stakeholders



FILM PRODUCERS / FLEXIBLE PACKAGING CONVERTERS (30)



The Stakeholders



FILM PRODUCERS / FLEXIBLE PACKAGING CONVERTERS (23)



The Stakeholders



BRAND OWNERS AND RETAILERS (15)



COLLECTORS, SORTERS AND RECYCLERS (11)



SUPPLIERS, END USERS AND OTHERS (18)



CEFLEX at a glance



The CEFLEX Stakeholders represent:

- >120 companies and associations
- Representing the WHOLE flexible packaging value chain
- Combined global turnover of > 800 Bn €
- 4 of the top 6 PO producers globally
- A significant proportion of the additive and printing ink manufacturers
- > 80% of the film producers/converters of flexible packaging in Europe
- 4 of the top 5 Global Consumer Goods companies (2018)
- Many of the world leading packaging waste management companies

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



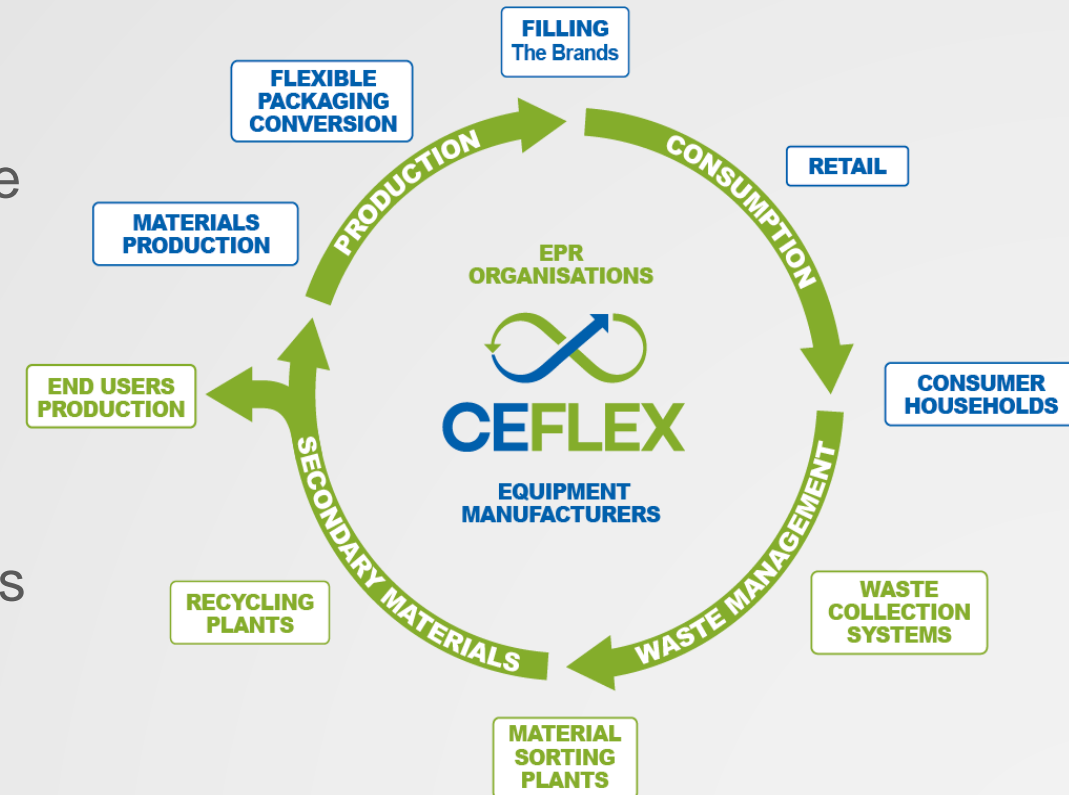
- **2020:** Flexible packaging will be recycled in an increasing number of European countries, facilitated by the CEFLEX initiative through:
 - The development and application of robust **Design for A Circular Economy Guidelines** for both flexible packaging and the “End of Cycle” infrastructure to collect, 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:** The 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”



What is the Circular Economy?

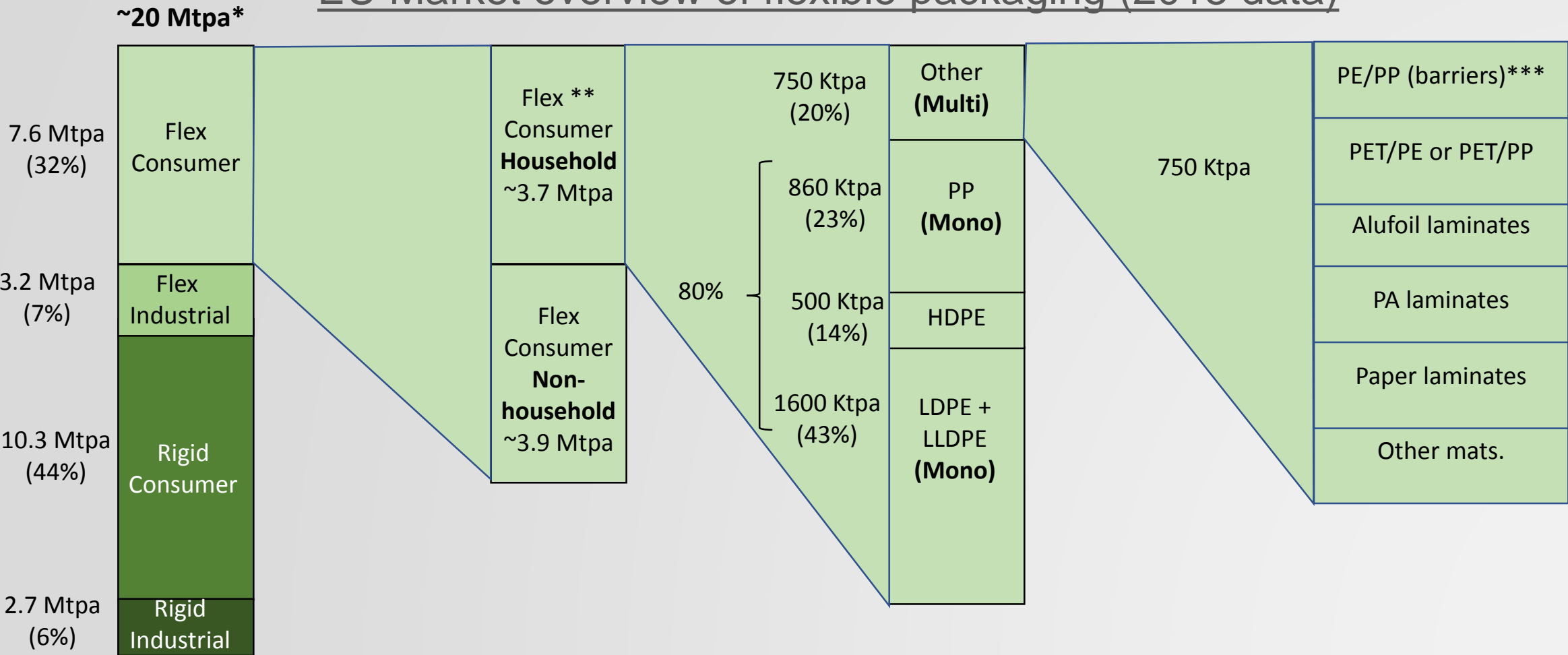
CEFLEX interpretation of the CE for flexible packaging:

- All packaging is designed so that after use it can be collected, sorted, recycled.
- There are sustainable end markets for recycled materials from flexible packaging (incl packaging).
- **Target (2025): 100% collection, >80%** of materials returned to the economy where **it is used to replace virgin (or recycled) materials.**



What quantities are involved?

EU Market overview of flexible packaging (2015 data)



* Source: AMI European Polymer Demand report 2016 – 2015 data. ** In the CEFLEX definition of flexible packaging included in CEFLEX

*** Some of this fraction may be counted as mono PO!

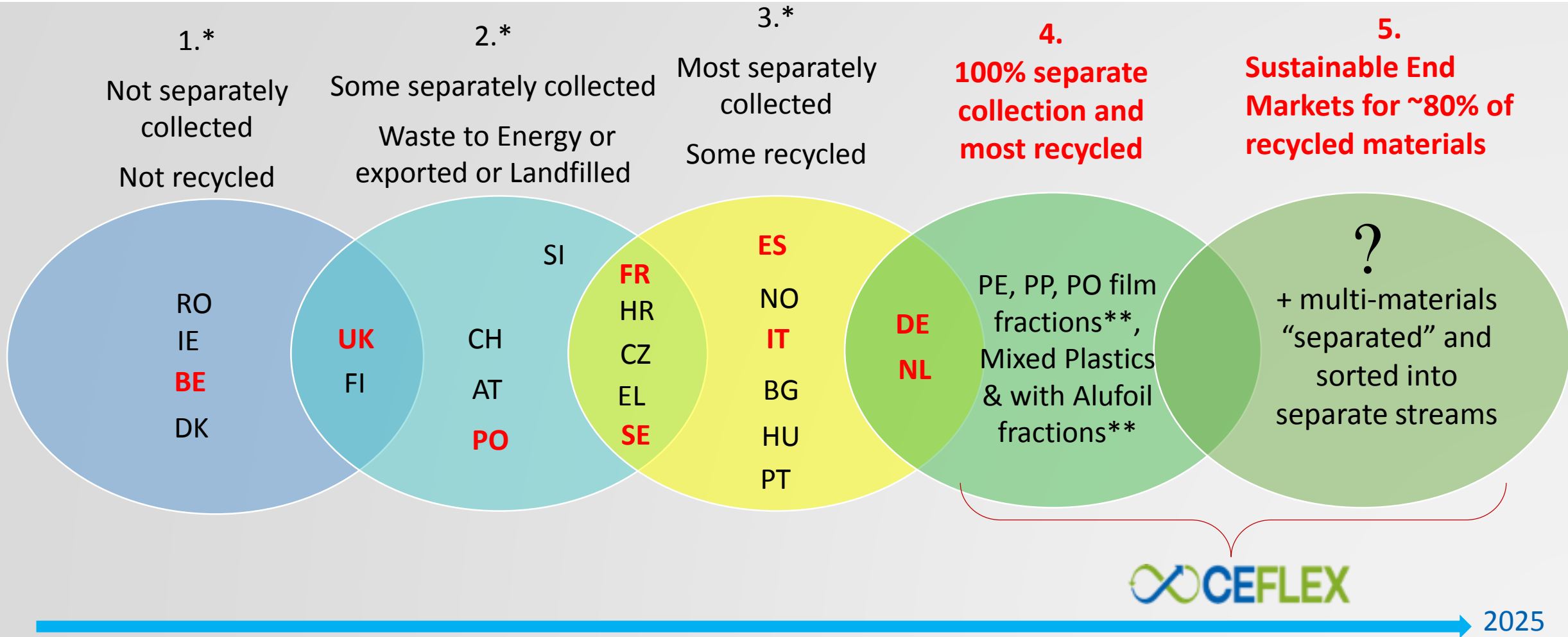
4 Steps to build the CE4FP



1. **Collect ALL (flexible) packaging separately** for sorting/recycling; including “On the go” packaging
2. **Sort out the Mono-Materials** into clean streams for recycling: ~80%
3. Where possible **redesign Multi-Material FP to Mono-Materials** offering the same/acceptable functionality. **Develop capability to sort/recycle** the remaining **multi-material fractions**
4. Identify, demonstrate and prove new and existing **sustainable End Market applications for all recycled (flexible) packaging materials**

Note: **Separate Collection** means either as a separate fraction or with the other non glass recyclables eg the PMD or Yellow Bag i.e. not with the residual waste stream.

Some sorting & recycling of the mono-materials is already happening in ~2/3rds of EU



* Need to further validate country practices with EXPRA

** Actual fractions will be confirmed in W3

4 Steps to build the CE4FP

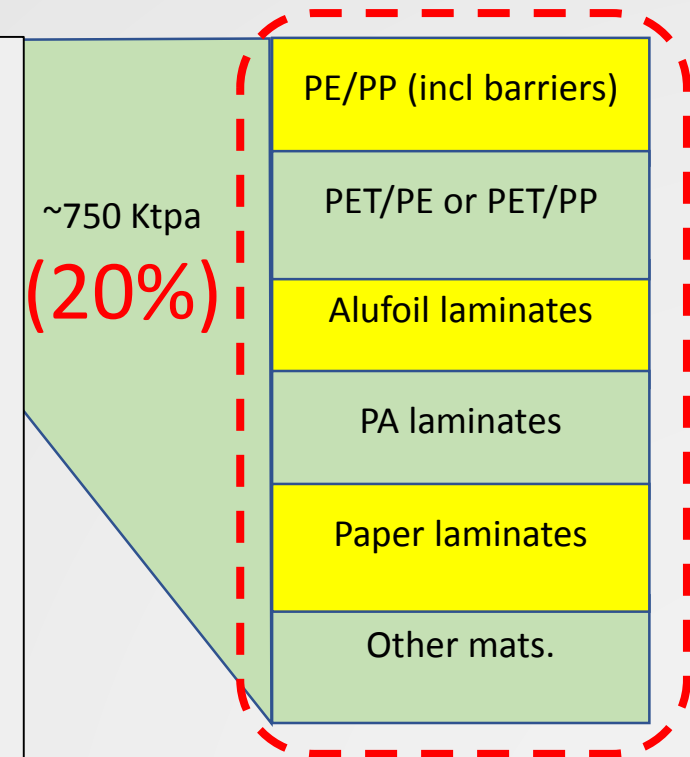


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Step 3: Develop capability to sort/recycle the multi-material fractions

- Sorting and Recycling solutions already commercial in several EU countries for a significant proportion of the multi-material fraction
 - ~750 Ktpa of **multi-materials** in EU means <75 Ktpa in even the big 6 countries. Where is it sensible to develop the sorting and recycling capabilities for these materials?
 - Need to develop “circular strategies” for **each** of these multi-material formats.



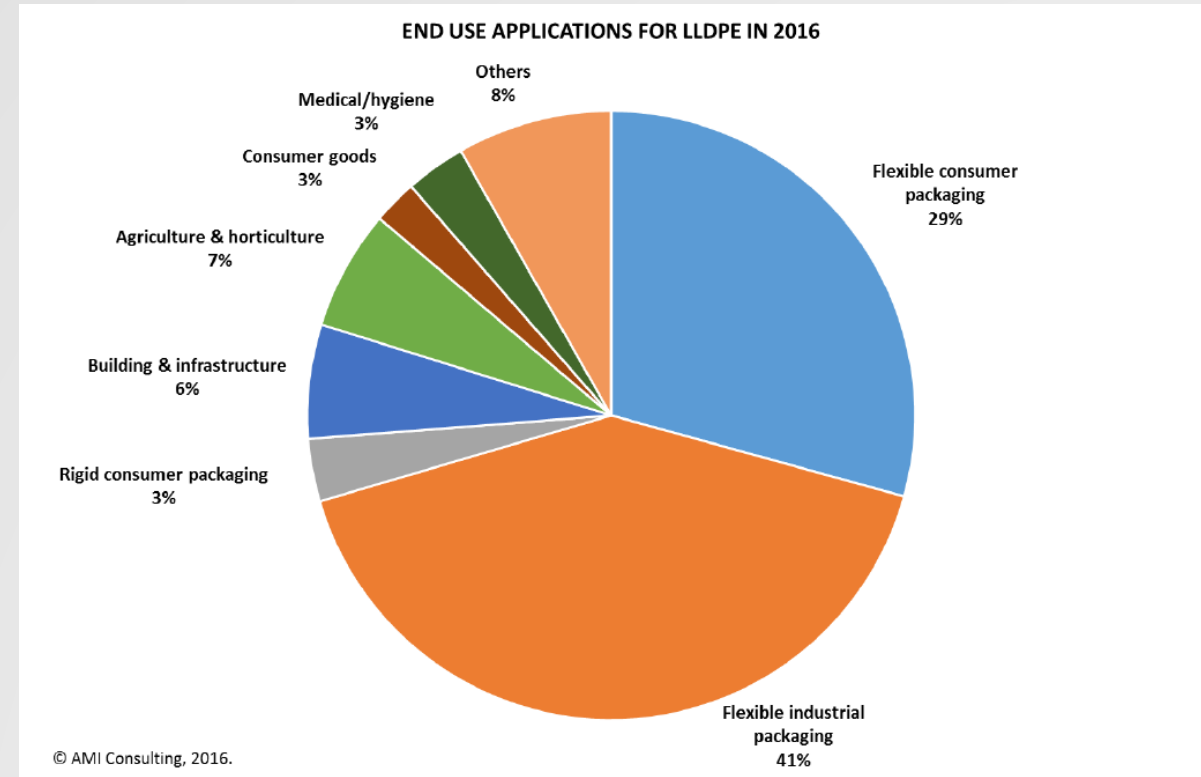
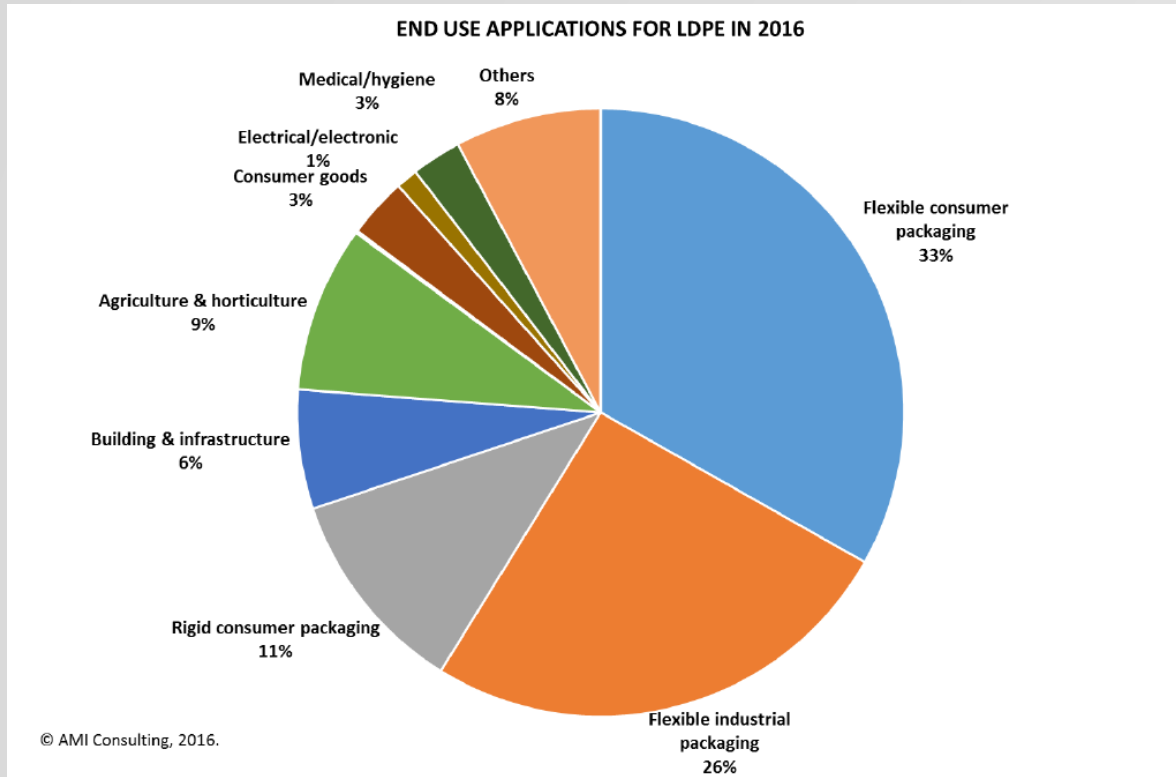
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Time to acknowledge mechanical recycling limits for PO's (today)



Insights from this graphic/data (9.5 M tpa)

- FP = 60-70% of market – not possible for the other categories to use all the recycled LL/LDPE
- Have to be able to go back into FP applications and, likely in food contact applications



Time to acknowledge mechanical recycling limits for PO's (today)



Realities:

- 60-70% of LL/LDPE markets are related to food.
 - Post consumer rPE and rPP plastics unlikely to get direct or indirect food contact approval in the near future
- In a Circular Economy the residuals from Sorting (>40%) and Mechanical Recycling (>30%) will need to be recycled as well.
- Neither PE nor PP can (currently) be recycled mechanically indefinitely!
 - due to the accumulation of inks/additives/adhesives and degradation of the chemical chains during recycling.

Conclusion: In a Circular Economy we will need to periodically RE-MAKE the plastic.

The Missing Piece of the Puzzle

Collection

Sorting

Mechanical
Recycling

Chemical
Recycling



We need both **Mechanical and Chemical Recycling** to realise a Circular Economy for (flexible) plastic packaging to meet end markets' quality requirements

Short term: End Markets for rFP materials

(To be progressed in parallel with Steps 1, 2 & 3)



End Markets for rFP materials (1)

Identifying potential End Markets for materials from recycled FP and what they will require to make them sustainable in the long term.

- **Short term: Priorities**

1. Film based opportunities for materials from mechanical recycling processes (non food contact) (tbc by W3)
2. rPP End Markets outside of packaging (tbc by W3)
3. Wood Plastic Composites

Med-long term: End Markets for rFP materials

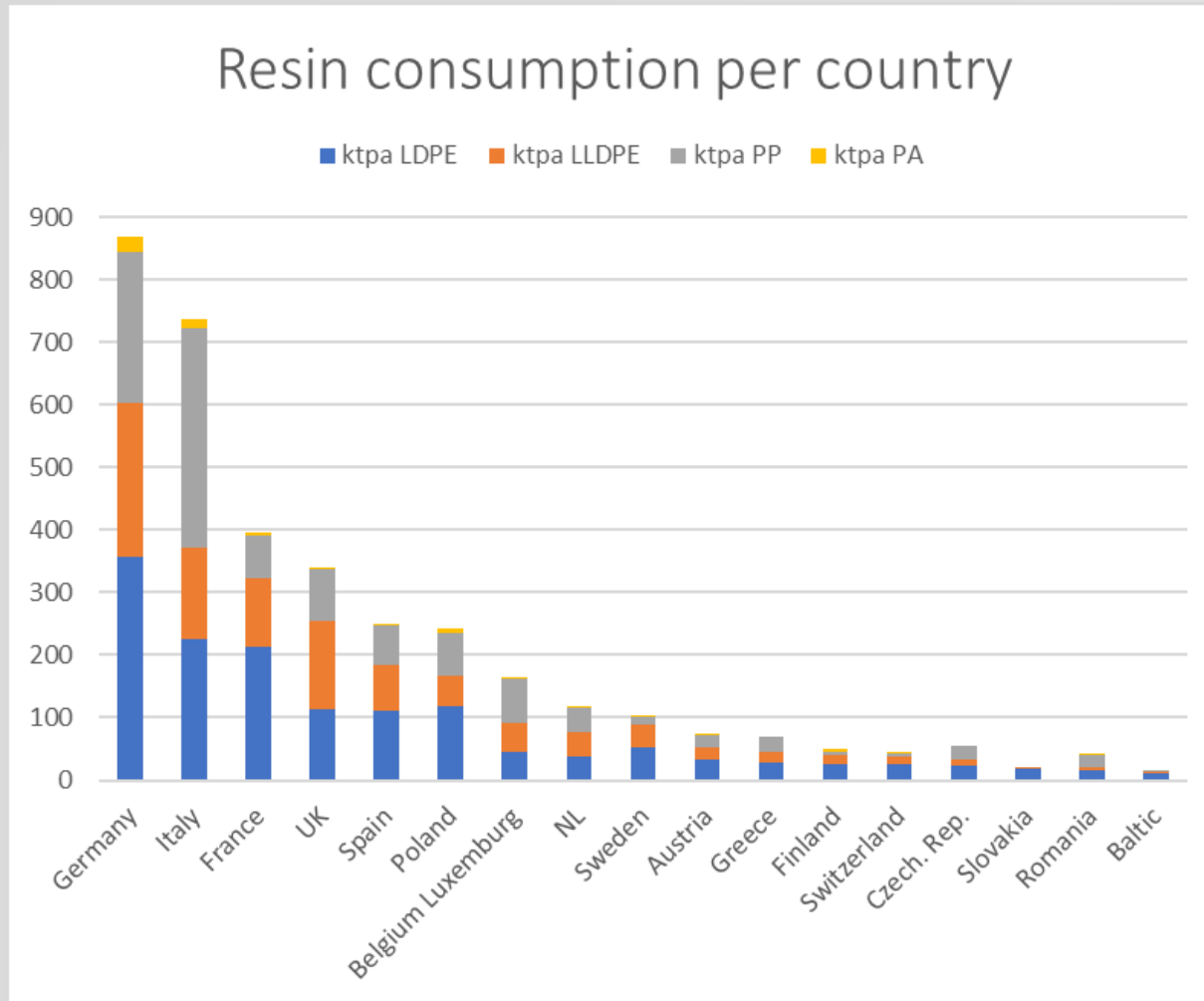
(To be progressed in parallel with Steps 1, 2 & 3)



Med-long term:

- **In addition to the short term End Markets** map out End Market solutions and technologies that address:
 - The degradation of these materials through repeated recycling and recognizing the need to renew the polymer's properties
 - The latent need to open up food contact packaging opportunities for “recycled” LL/LDPE from FP.
- Recognize that all (packaging) materials will become increasingly “circular”.

Focus our initial efforts on the Top 9 Countries



Insight: Top 6 countries = 76%

Note: The top 9 countries (>80%) also include those already most advanced in the sorting and recycling of plastics



Summary



1. Identify, demonstrate and prove new and existing sustainable End Market applications for all recycled (flexible) packaging materials
2. Collect ALL (flexible) packaging for sorting/recycling; including “On the go” packaging!
3. Sort out the Mono-Materials into clean streams for recycling: ~80%
4. Where possible redesign Multi-Material FP to Mono-Materials offering the same/acceptable functionality: ~5%?
5. Realise mechanical and chemical recycling solutions for all flexible packaging materials that can produce new materials that have sustainable End markets
6. Start in the “Big 9”.

If you would like to get involved in CEFLEX or wish to learn more about the initiative, please contact us at

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