



# Functionality ,first‘ – a plea for circular multilayer packaging

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# Global Aluminium Foil Roller Initiative



- **Representing about 50% of global aluminium foil markets**  
(47 members from 24 countries)
- **Support foil market growth globally**  
(market analysis, communication, innovation, recycling, sustainability)
- **Sharing best practice on recycling, sustainability, promotion,...**



**Göksal Güngör**  
(Middle East)  
**President**



**Simon Chan**  
(China)  
**Vice-President**



**Alexander Dörsel**  
(Europe)  
**Vice-President**



**Patrick Lawlor**  
(Americas)  
**Vice-President**



**Stefan Glimm**  
**Director General**

# Sustainable Development Goals

- **Goal: 12** Responsible consumption and production

- **Goal: 13** Climate Action

- **Circular Economy**

- **no SD goals**
- **a tool to achieve SD goals**



# Food waste – third largest generator of greenhouse gases



Dr Ren Wang,  
FAO (2014)

“Just imagine that global food loss and waste were a country. It would have a surface area larger than my own homeland, China. Its fields and meadows would be producing food that nobody would eat. It would be the largest user of water for irrigation and the third largest generator of greenhouse gases.”

# Which packaging is more resource efficient?

- A rigid pack (weight 70g) with 80% recycling rate?



→ Material loss is 14 g

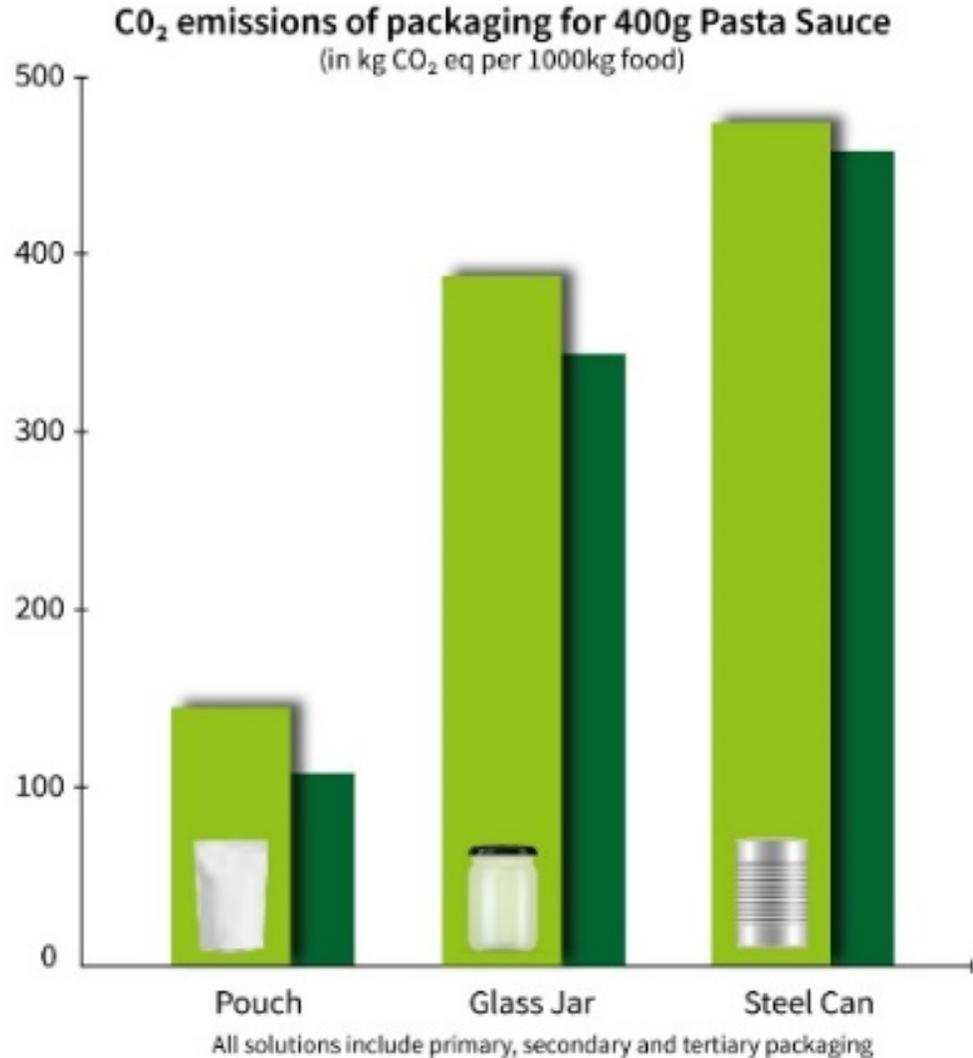
- Or a flexible pack (weight 10g) with 0% recycling rate?



→ Material loss is 10 g

It's about material losses leaving the circular rather than recycling rates only

# Packaging solutions and their impact on Climate Change



CO<sub>2</sub> emissions at current recycling rates

CO<sub>2</sub> emissions at 100% recycling rate

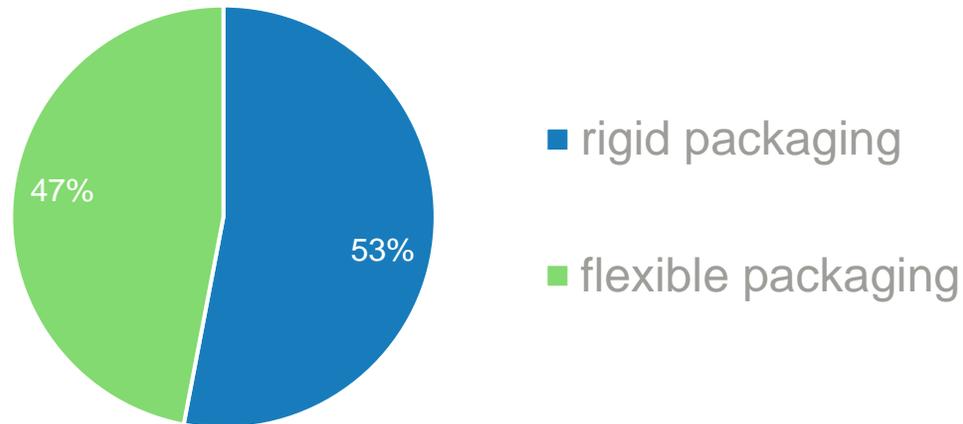
**Flexible packaging is generally performing significantly better than alternative solutions**

# FMCG Primary Packaging Markets in EU

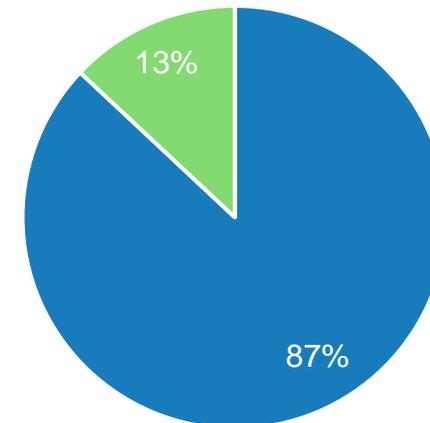
In EU, more 47% of all FMCG (excluding beverages) are packed in flexible packaging – this representing only 13% of the packaging material used



EU FMCG (excl. Beverages) primary packaging  
in UNITS

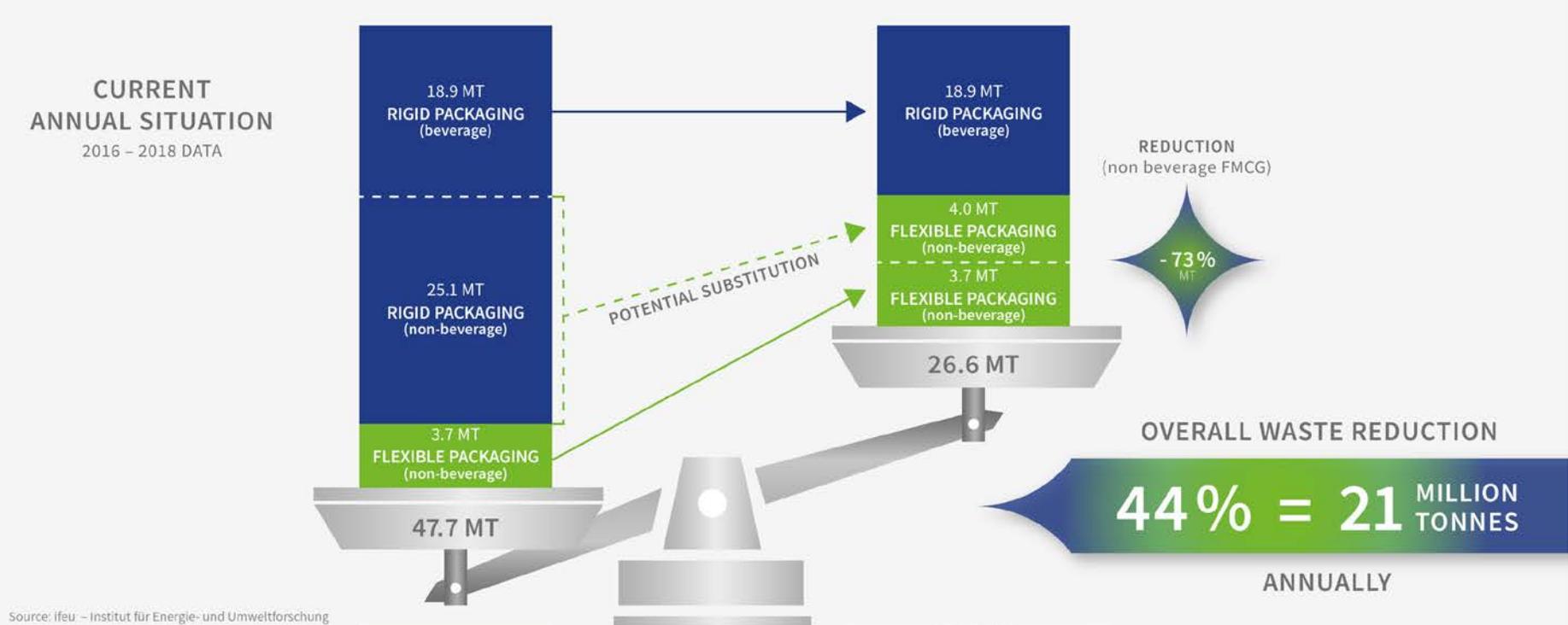


EU FMCG (excl. Beverages) primary packaging  
in TONNAGE



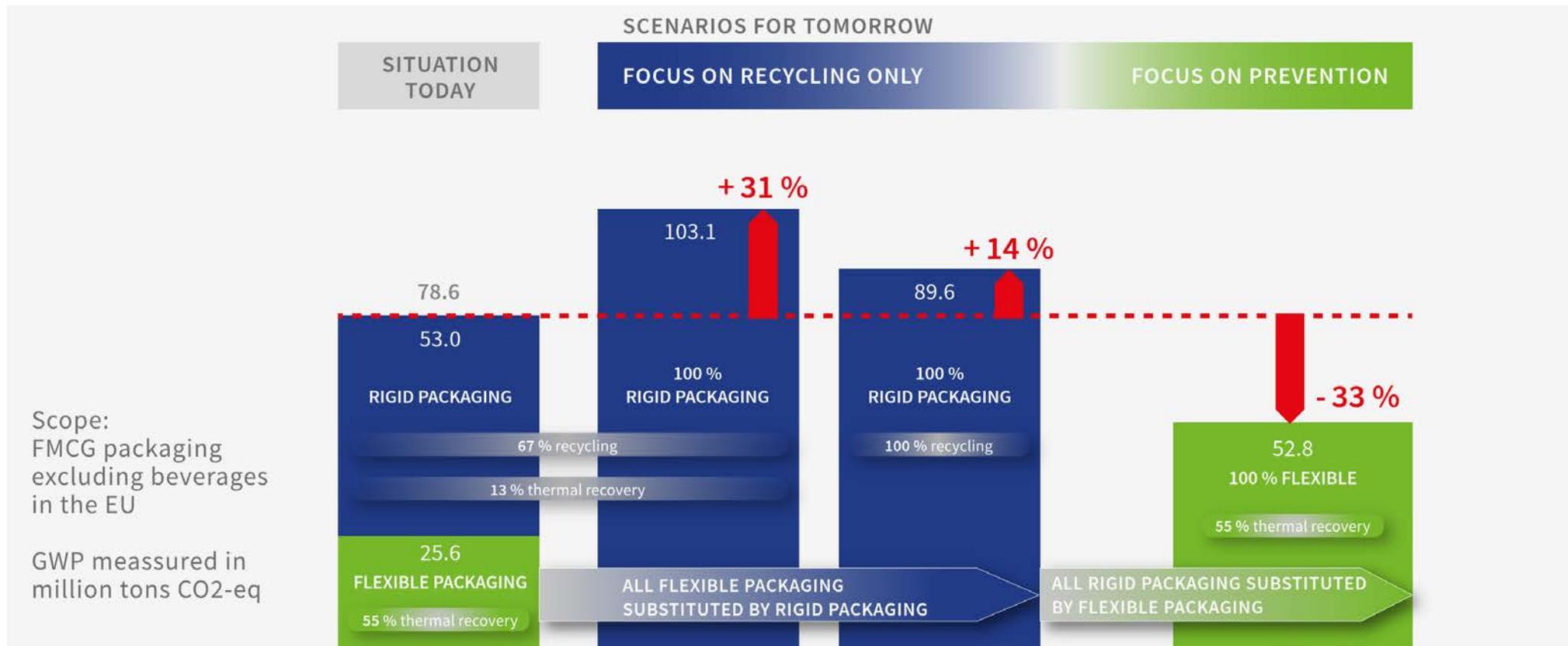
- What if all were packed in rigid packaging? → “focus on recycling” scenario
- What if all were packed in flexible packaging? → “focus on prevention” scenario

# EU waste reduction potential by using flexible packaging



Source: ifeu 2019, verified/reviewed by Carbotech 2019

# EU CO2-eq reduction potential scenario



# Interim Conclusion

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- Supporting SD 12 Responsible Consumption and Production and SD 13 Climate Action means
  - **No compromise on functionality and barrier properties to avoid food waste risk**
  - **More flexible light-weight packaging = reduction of greenhouse gas emissions**

# Climate relevance of flex pack material compositions

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- **Main relevance:**

**Reduction of food waste**

**Substitution of rigid packaging**

*(even independent from recycling)*

- **„Minor“ relevance:**

**Composition of flex pack**

**Recyclability of flex pack**

*(A better recyclability of flexible packaging will further improve their superiority on sustainability)*

# Closing the gap towards 2030: How to make flexible packaging more circular?

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- **Improve the packaging structures**
- **Improve recycling infrastructures**

# Improve the packaging structures

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- **Reduction of complexity**

- but acknowledge situations where alternatives may environmentally and/or commercially be not favourable, e.g.

- thicker materials
- less functionalities
- operational speed of existing equipment
- costs of material
- impact on profit margin at recycling stage
- availability of markets for recycled materials

- **Mono should be mono**

- e.g. coated papers

- “polymers are not fibre”
- when recycled similar challenge to recycle all material components

# Closing the gap towards 2030: How to make flexible packaging more circular?

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- Improve the packaging structures
- **Improve recycling infrastructures**

# German Environmental Agency: aluminium foil – state of art

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“In addition to aluminum cans and trays, etc., aluminium packaging also includes **composite packaging containing aluminium foil**, which due to its composition can actually be assigned to plastic or fiber-based composite packaging. **However, with the sorting technology currently used exclusively to generate the aluminium fraction, they are separated with almost as high an efficiency as cans, trays and closures made of aluminium, regardless of the proportion or material thickness of the aluminium foil.**”

Source: „Determining the practice of sorting and recovery in accordance with section 21 German Packaging Act” page 157 *(translated from German)*

<https://www.umweltbundesamt.de/publikationen/ermittlung-der-praxis-der-sortierung-verwertung-von>

# Sorting efficiency aluminium packaging



- A significant gain in the sorting for recycling rate is possible by applying state of the art eddy-current sorting (ECS) in the whole size range of Aluminium- and Al-composite packaging.
- The payback period by adding a second ECS in the dedicated streams is less than 2 years in residual waste sorting and less than 1 year in separately collected packaging waste. **MRF extraction rate up to 90%**
- Even the most ambitious recycling targets for Al-composite-packaging and other foil-based packaging can be met by applying advanced sorting technologies like Multi-sensor or Robot-sorting technologies. **Induction and robot sorting: additional 3% and 5%**
- The most sophisticated recycling solutions are commercially viable in high capacity MRFs for separately collected packaging waste streams with payback periods of 2 to 4 years. These technologies are commercially critical in sorting plants for residual mixed waste streams, with payback periods of up to 12 years.
- Generally, the technical and economical feasibility needs to be checked and assessed individually, namely by doing the engineering works and market research with a given MRF and region.

# Recycling today

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- Aluminium packaging recycling rates (incl. aluminium foil)
  - Germany: > 93% (2019)
  - Europe: approx. 65 % (est.)
- Main technology used for foil based packaging today:
  - Pyrolysis
    - Aluminium recycled
    - Organics used for energy

# Recycling tomorrow



- **Pyrolysis 2.0.**

- **Pyral:** *Prezero (Schwarz-Gruppe)*: aluminium and hydrogen
- **Enval:** UK, *USA Kraft and Sonoco*: aluminium and ‘oil’ for chemical recycling

- **Delamination** of multi-material composites incl. aluminium foil

- **Saperatec:** plant in D Q1 2022: aluminium, rePET, rePE
- **CreaSolv:** research Q2 2021: aluminium, rePE, rePP, others confirmed

***Q4 2021: further research expected to start upscaling and optimization of CreaSolv and possible benefits of combining CreaSolv and Saperatec***

- *Note: Chemical recycling of plastics - aluminium foil is not seen as disruptor*

# Conclusion from Alufoil perspective

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Saves more resources  
than it needs

Best in class on  
protection

Prevention of food  
waste

Light-weighting

Prevention of  
packaging materials

Minimizing material  
losses

No collection – no  
recycling

Sorting: technical and  
economical viable

Recycling technologies  
(pyrolysis, delamination)  
and markets available

# Overall conclusions

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- **Reduction of greenhouse gas emissions**
  - More collaborative focus on food waste reduction
  - No compromise on packaging's functionality
  - More light-weight flexible packaging
- **Dual approach to achieve circularity 2030:**
  - improvement of packaging structures
  - improvement of recycling infrastructures
- **Material vALUe and market availability for recyclats to be considered**

*Thank you!*

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