SUSTAINABILITY OF FOOD PACKAGING

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Frucom Sustainability Working Group

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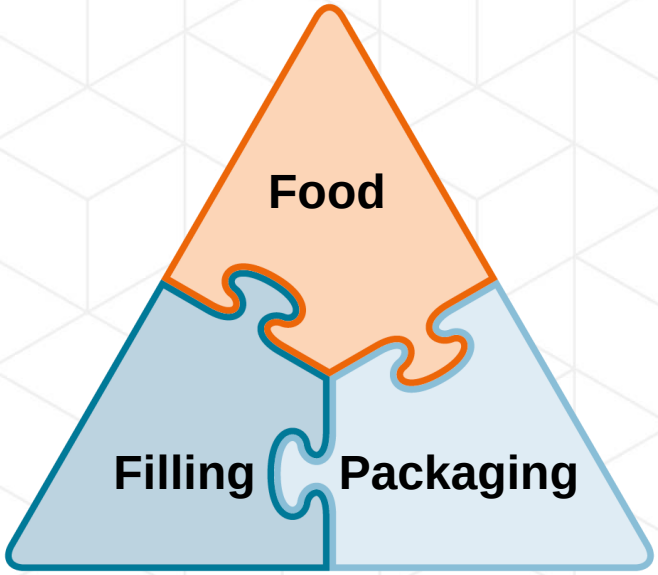
BRINGING TOGETHER RESEARCH AND INDUSTRY

INDUSTRY

RESEARCH INSTITUTES



WWW.PACK4FOOD.BE

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MEMBERS

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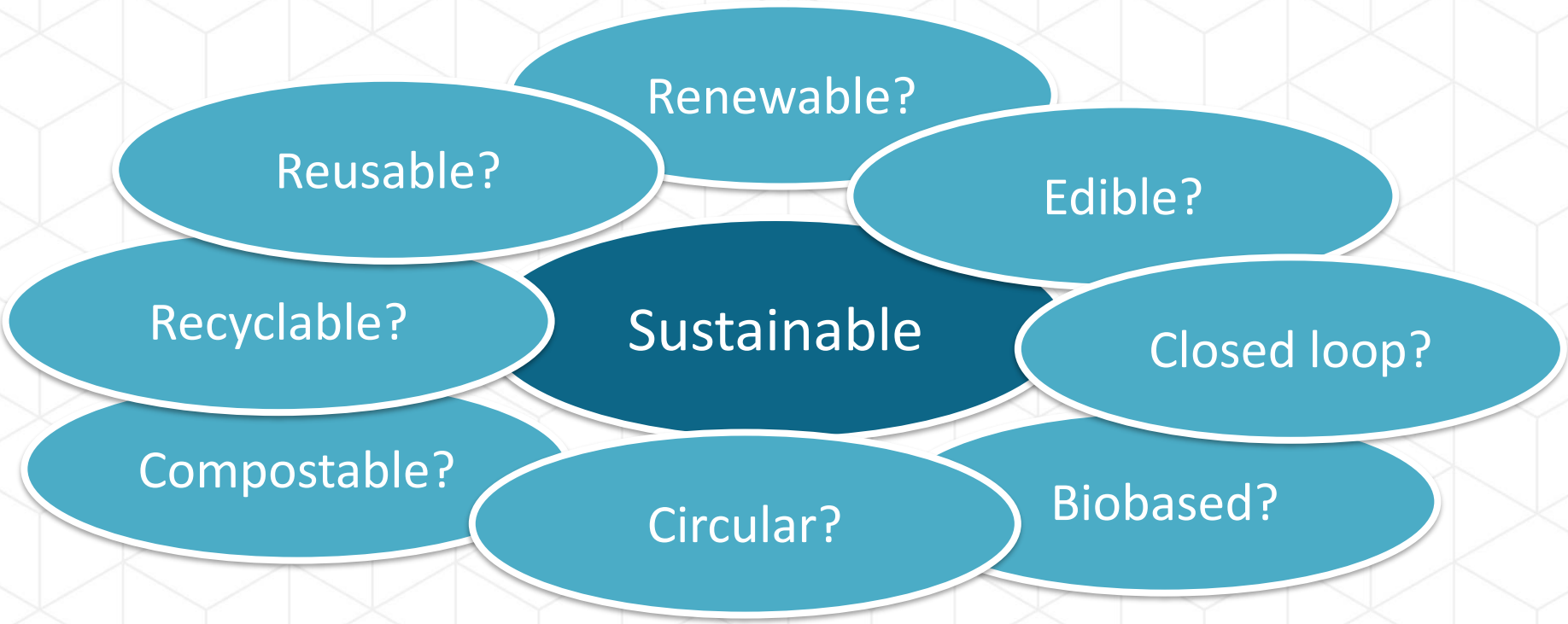
WHAT IS SUSTAINABLE PACKAGING?



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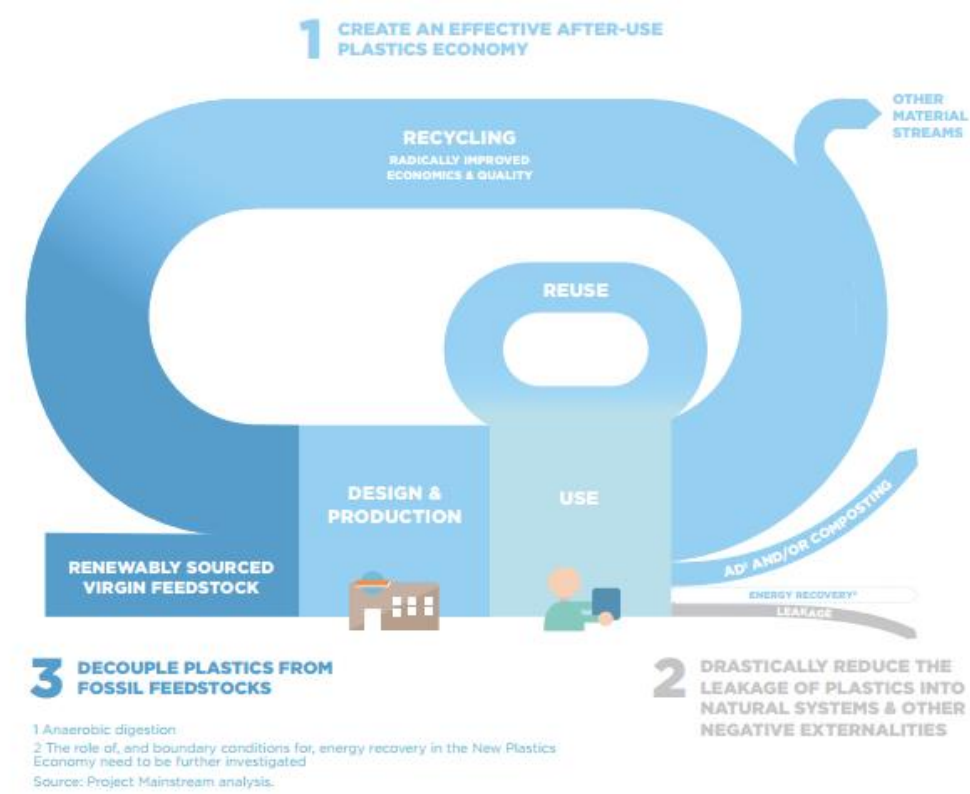
CIRCULAR ECONOMY



Source: World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, The New Plastics Economy — Rethinking the future of plastics (2016, http://www.ellenmacarthurfoundation.org/publications)

- Improving the economics and quality of plastics recycling
- Curbing plastic waste and littering
- Driving innovation and investment towards circular solutions
- Harnessing global action

http://ec.europa.eu/environment/waste/plastic_waste.htm

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CIRCULAR ECONOMY

- Single-use plastics: new EU directive to reduce marine litter (EU 2019/904) based on products, constituting 80-85% of all marine litter items
  - **Single-use plastics** & fishing gear

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CIRCULAR ECONOMY

- Recyclability
  - All plastic packaging should be recyclable or reusable by 2030
- Recycling targets
  - 55% recycling of plastic packaging waste by 2030 (in 2015: this was 40%)
- Recycled content
  - 30% recycled content in all plastic bottles by 2030 (cfr. SUP legislation)

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PACKAGING - SUSTAINABILITY

- Key message 1: always consider the packaged product:

  i.e. product + package

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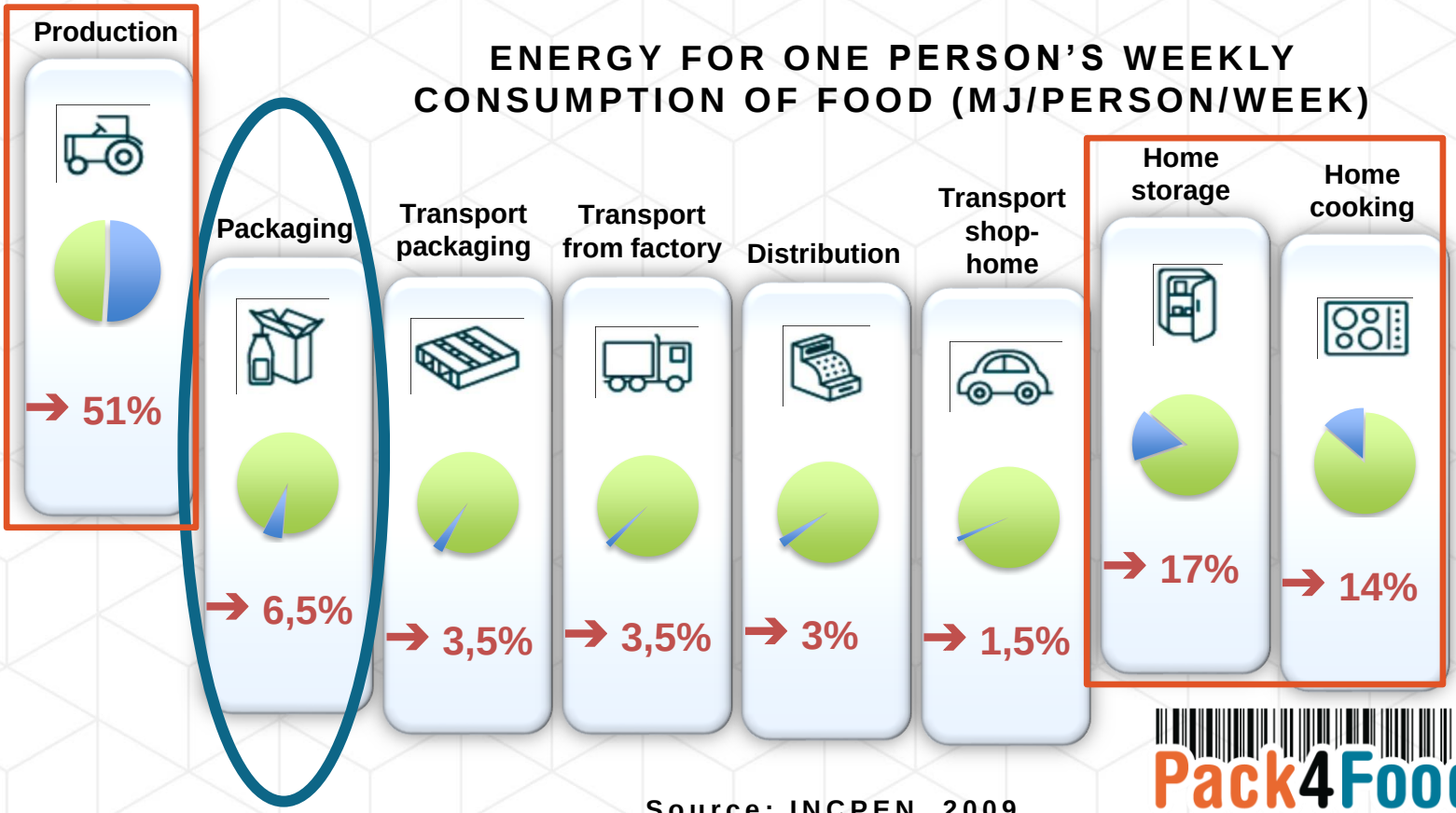

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PACKAGING - SUSTAINABILITY

- Key message 1: always consider the packaged product
  i.e. product + package

- Key message 2: aim for packaging optimization
  - Responsibility for all stakeholders in packaging chain

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PACKAGING - SUSTAINABILITY

HOW TO BE SUSTAINABLE IN PACKAGING?

Ecodesign

Remove	• Remove ‘unnecessary’ packaging components
Reduce	• Reduce thickness • Foamed structures
Re-use	• Re-use of bags, jars, trays,…
Recycle	• Use recyclable materials • Use recycled content
Renewable	• Bioplastics • Fibre-based (including cardboard, bagasse,…)

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PACKAGING - SUSTAINABILITY

BIOPLASTICS

Coca-cola

Be_Natural

Tetra Pak

Ecovio® (BASF)

Resources	End-of-life	
Biobased	Compostable	Bioplastic?
✓	✓	✓
✗	✓	✓
✓	✗	✓
✗	✗	✗

Bastin Pack

E.G. PLA, STARCH,PHB, CELLO-PHANE, PBAT, BIO-PE, BIO-PET

2.1 MILLION TONNES OF BIOPLASTICS

E.G. PE, PP, PET, PA, EVOH,...

350 MILLION TONNES

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PACKAGING - SUSTAINABILITY

- Bioplastics is a too broad term.
- Preferable to use:
  - **Bio-based plastic** if it is a plastic derived from biomass
  - **Biodegradable plastic** if it biodegrades
  - Cfr. glossary of European Commission

https://ec.europa.eu/knowledge4policy/glossary/bioplastic_en

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PACKAGING - SUSTAINABILITY

- Key message 1: always consider the packaged product
  i.e. product + package

- Key message 2: aim for packaging optimization
  - Responsibility for all stakeholders in packaging chain
    - Focus on monomaterial solutions: examples
      - Cardboard box
      - Metal can
      - Monolayer plastic bag (PE for deepfreeze applications; PP for nuts;…)
      - Glass jar
    - Avoid combinations of different materials (e.g. plastic + paper)

Eco-design

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PACKAGING - SUSTAINABILITY

- Key message 1: always consider the packaged product
  i.e. product + package

- Key message 2: aim for packaging optimization
  - Responsibility for all stakeholders in packaging chain
    - Focus on monomaterial solutions
    - In case of plastics: focus on PE, PP and PET
      - Either in single layer
      - Or as coated material: e.g. PP/SiOx/PP ; PET/AlOx/PET
      - Or with a maximum of conventional barrier materials
        (e.g. 5% EVOH in a structure PP/EVOH/PP?)

Eco-design

RecyClass™

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PACKAGING - SUSTAINABILITY

- Key message 1: always consider the packaged product
  i.e. product + package

- Key message 2: aim for packaging optimization
  - Responsibility for all stakeholders in packaging chain

- Key message 3: explore different collection, sorting and recycling strategies

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PACKAGING - SUSTAINABILITY

SORTING AND RECYCLING STRATEGIES

- Efficient collection systems
  - Worldwide approach needed: role of policy!
  - Important role of consumers (e.g. responsibility towards waste in the environment)

- Performance sorting equipment: currently research on implementation of
  - Broader range of sorting techniques
  - Integration of unique code in packaging materials:
    e.g. digital watermarks for molds or for prints

CFR. DIGITAL WATERMARKS INITIATIVE "HOLYGRAIL 2.0"

http://www.aim.be/priorities/digital-watermarks/

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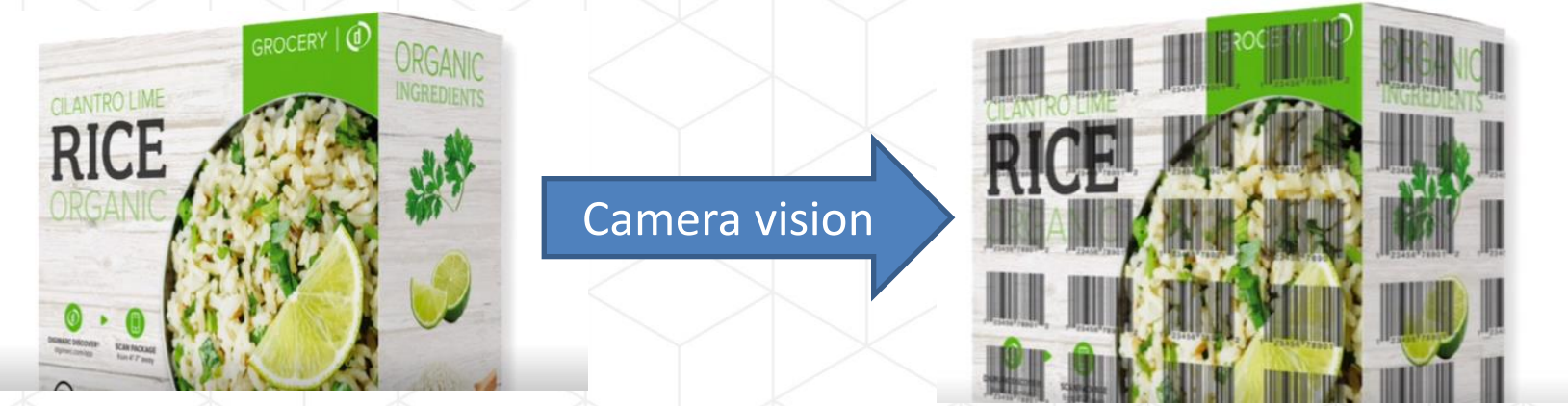
EXAMPLE DIGITAL WATERMARK



Source: https://www.bbc.com/news/av/business-50335737/could-invisible-barcodes-revolutionise-recycling

- also applicable in other parts of the food packaging chain:
  e.g. authenticity, convenience to consumers,…

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PACKAGING - SUSTAINABILITY

SORTING AND RECYCLING STRATEGIES

- Efficient collection systems
  - Worldwide approach needed: role of policy!
  - Important role of consumers (e.g. responsibility towards waste in the environment)
- Performance sorting equipment
- Quality recycling processes:
  - Avoid non-recyclable or difficult-to-recycle items
    - Depends on the type of material
    - Depends on volume on the market

CEFLEX
A CIRCULAR ECONOMY FOR FLEXIBLE PACKAGING

RecyClass™ EuCertPlast

PLASTICS RECYCLERS EUROPE

Important points:
- **Food safety of recycled materials!**
- **Environmental impact of different recycling strategies?**

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PACKAGING - SUSTAINABILITY

CHALLENGES IN ECO-DESIGN IN RELATION TO FOOD SAFETY

Ecodesign

- Remove
- Reduce
- Re-use

- Risk of removing/reducing necessary layers acting as a functional barrier

- Sorption and migration in case of re-using for different food products
- Hygienic factors

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PACKAGING - SUSTAINABILITY

CHALLENGES IN ECO-DESIGN IN RELATION TO FOOD SAFETY

- Remove
- Reduce
- Re-use
- Recycle
- Renewable

- Origin and contamination level of FCM?
  - PET vs polyolefines (PE & PP): polyolefines more susceptible to absorb components
  - Recycled cardboard and mineral oils

- Upgrading fibre-based packaging for barrier applications by applying
  - Coating formulations
  - Additives in the paper
- Bioplastics made from wastestreams

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THANK YOU FOR YOUR ATTENTION!

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Pack4Food helps companies to improve food packaging.

We bring together companies and research institutes to achieve large and small improvements in the packaging chain.

We initiate and coordinate research, build a network and offer training and advice.