Sustainable Packaging Production, Origins, Activities And Goals

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Origins

- Population and consumption growth
- Increasing amount of packaging waste
- Problems with landfill
- Pressure from legislations, rate of recovery and recycling packaging waste target in the EU

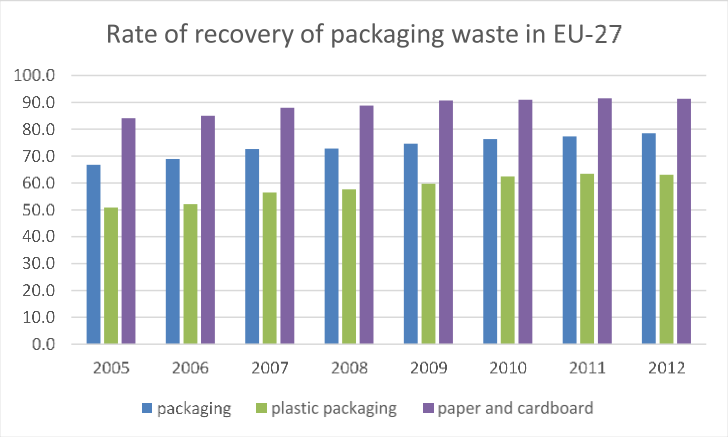


Figure 1. Rate of recovery of packaging waste in EU-27. Data source: Eurostat (Eurostat 2014)

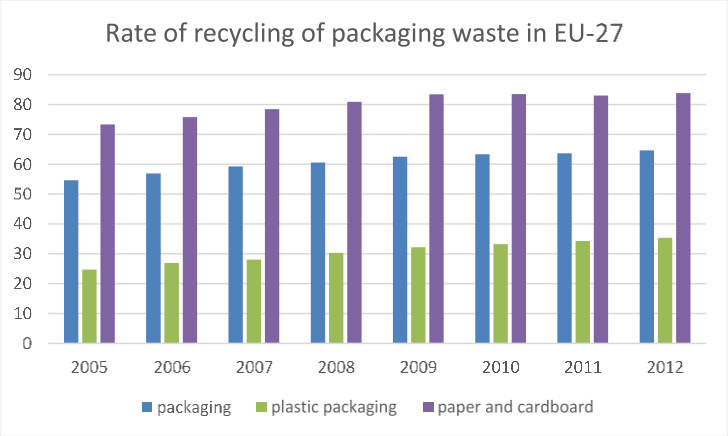
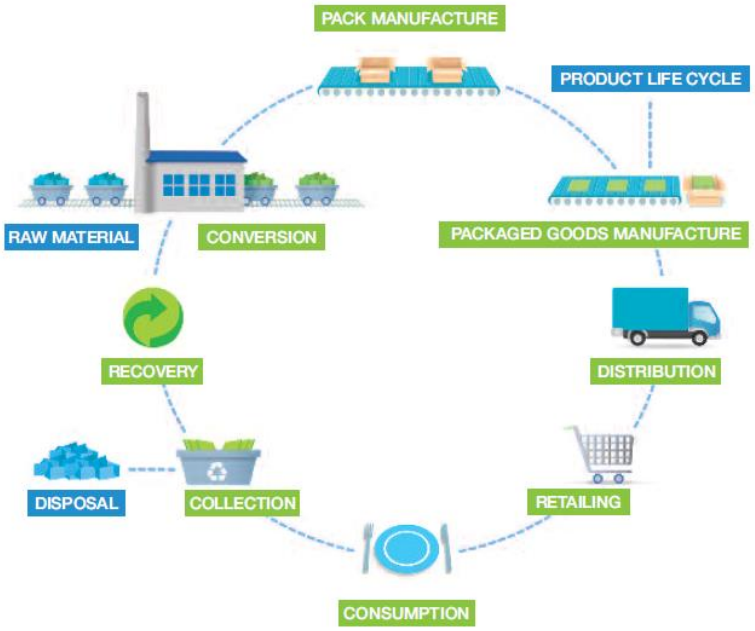


Figure 2. Rate of recycling of packaging waste in EU-27. Data source: Eurostat (Eurostat 2014).

Main initiatives for packaging waste prevention and sustainability improvement



Packaging life cycle

Packaging improvements (a)

- Reduce the amount of material
- Substitute novel material:
  - Biodegradable
  - Lightweight
- Extent shelf life:
  - Active packaging
  - MAP systems
- Reduce looses:
  - Intelligent packaging
- MAP system
- Reuse

Adverse impact(b)

- Eco-friendly material
- Biodegradable material
- LCA assessment
- Energy efficiency
- Minimum losses

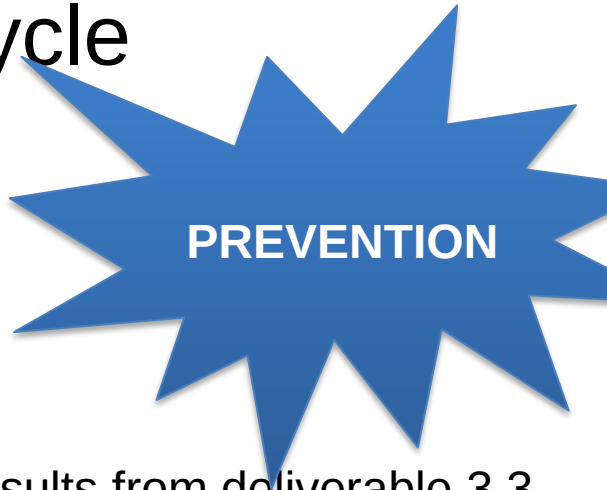
Dangerous substances (c)

- Authorised additives
- EFSA
- REACH
- Specific legislations

Results from Deliverable 3.4

Practices in pursuing sustainability

1. Material & energy efficiency
2. Green chemistry: green solvent & solvent free system
3. Quantifying and tracking packaging sustainability with LCA (life cycle assessment)



Results from deliverable 3.3

1. Material efficiency

- Nanocomposite (WP1), using nanoclay to enhance biopolymer's barrier properties, enables lightweight packaging application
- Better dispersed nanomaterials in host polymer material, enables using less nanomaterials (WP2)

*Jon Trífol. 7th Newgenpack workhop

1. Energy efficiency

- Understanding of coating colour rheology properties (WP1)
- MFC* treatment: pulp refining, enzymatic treatment, post treatment (WP2)
- Drying with new techniques, e.g. infrared and microwave

*Microfibrillated cellulose

2. Green solvent & solvent free

- Replacing solvents in MFC grafting (WP2)
- Solvent-free method (chromatogeny) to graft fatty acid chloride on cellulose's surface (hydrophobicity)
- Dry extraction of essential oil from the natural herbs

3. Evaluating environmental impacts with LCA

- Considering packaging and packaged product as a whole system
- Active packaging and food shelf life extension (WP2)
- Verified by LCA calculation (WP3)

Example:
in LCA, by considering food and active packaging as a whole system, the trade-off relationship between active packaging and the its ability in food loss saving can be justified.

End-of-life of packaging

- Recyclability of fibre based packaging
- Fate of nanomaterials in paper recycling line (WP2 & WP3)
- Risk assessment and management

Thank you for your attention!

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