



Catch up on plastic packaging waste

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Plastics' role for a sustainable and competitive Europe

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Plastic packaging enables highly resource-efficient solutions

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Catch up on plastic packaging waste

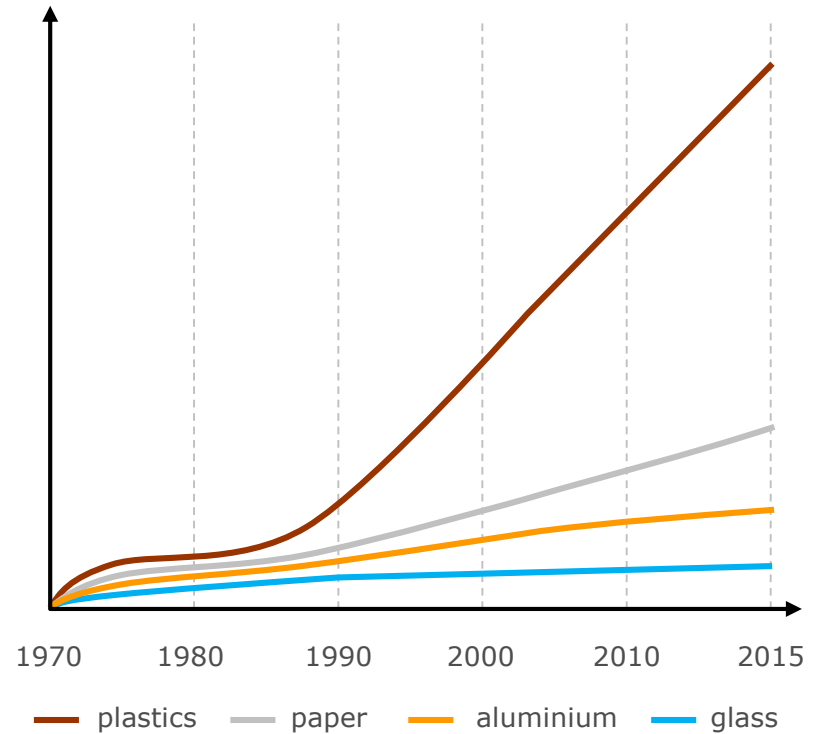


European plastic market: highlights

Plastic market in Europe

- 62,000 companies
- more than 1.4 mln employees
- over 350 bln €/year turnover
- 18 bn € positive trade balance
- Multiplier effect of the plastic industry: 2.4 in GDP and almost 3 in jobs

Raw materials consumption (*growth index*)



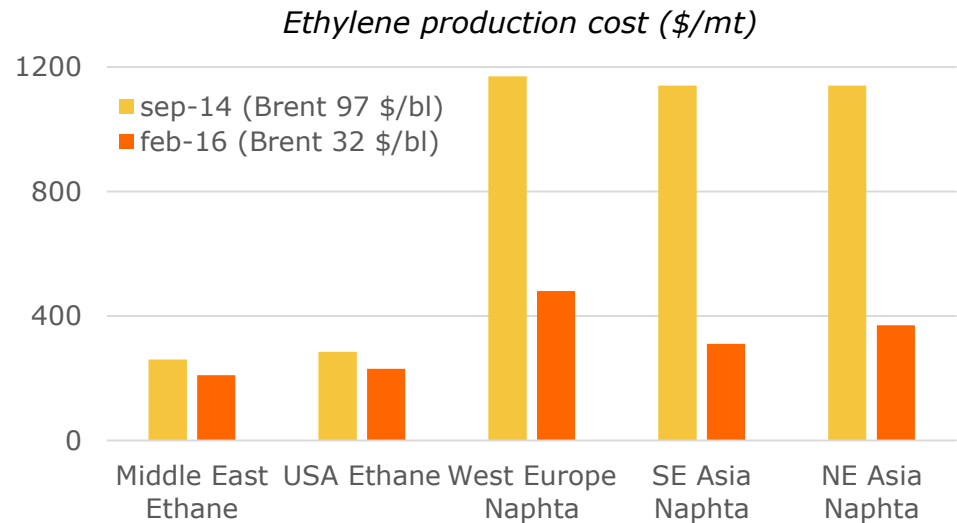
Source: PlasticsEurope Market Research



European competitive landscape: how plastics can contribute ?

European disadvantages remain even with oil price drop

- Gap in energy cost compared to USA and Middle East
- Raw materials availability and cost
- Weak growth in demand
- Lack of uniformity in climate policies



Source: Global Polyolefins Outlook Platts, March 2016

The specialization of plastics offers higher added value products and a price dynamic more independent from raw materials



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Plastics: sustainable and resource-efficient solutions

Packaging



40%

50% of goods in Europe are packed in plastic materials, weighing 4 times less than alternative materials

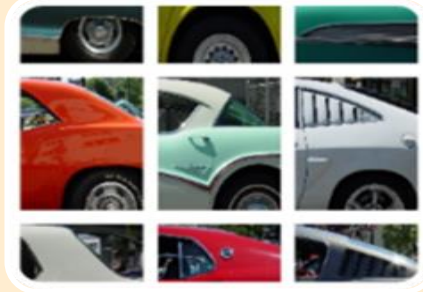
Building



20%

Building accounts for 40% of EU energy consumption, and plastics enable cost-effective and durable solutions for renovation

Automotive



9%

Thanks to plastics lightness, a mid-range car weighs over 100 Kgs less and saves 15% of fuel over the lifespan

EU demand share



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Plastic packaging has the smallest environmental footprint

1 PLASTICS SCENARIO

2 PLASTIC PACKAGING

3 WASTE MANAGEMENT



The positive impact

- Protects foods during shipment
- Slows spoilage
- Saves transportation costs due to lighter weight



Without plastics, retailers' fleets would make 50% more journeys

Packaging becomes more and more light for same content



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Plastic packaging saves food



The challenge

In developing countries, 40% of food losses occur at post-harvest and processing levels. This is partly due to the lack of appropriate packaging solutions

Source: FAO report "Global food losses and food waste"

Examples



egg breakage is reduced by 80% when using plastic packs instead of alternative materials



modern packaging (seven layers of different plastics) increases Parmigiano shelf life from 20 to 50+ days



1,5g of plastic wrapping keeps cucumber fresh for 14 days

Source: Uk Advisory Committee on Packaging

In Europe, only 3% of all products delivered to customers are spoilt between production and transport, thanks to packaging


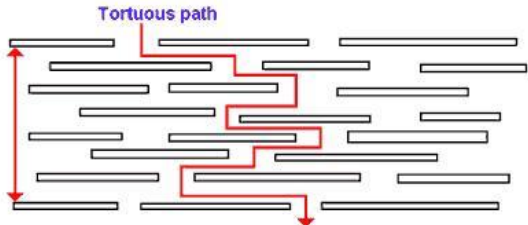


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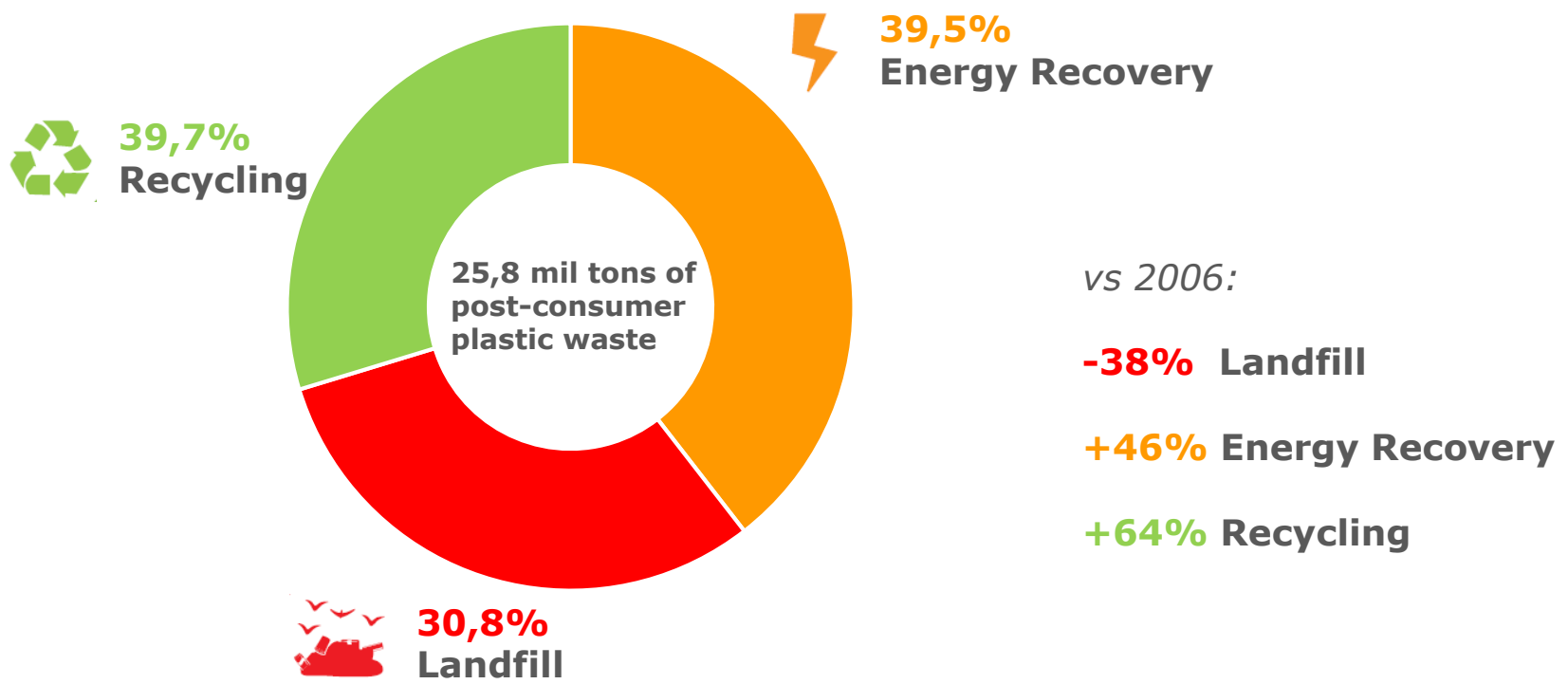
Innovation to keep food fresh for longer

<h2>Smart packaging</h2>		<h2>Nanofillers</h2>
<p>Interaction & monitoring in food preservation</p> <p>Active packaging:</p> <ul style="list-style-type: none"> ▪ Oxygen ▪ Moisture <p>Intelligent packaging:</p> <ul style="list-style-type: none"> ▪ Temperature ▪ Microbiological status 		<p>Nanoparticles to improve barrier properties, enhancing also mechanical, optical, thermal or electrical properties.</p> 

High-performance plastic packaging can extend food shelf life and minimize spoilage



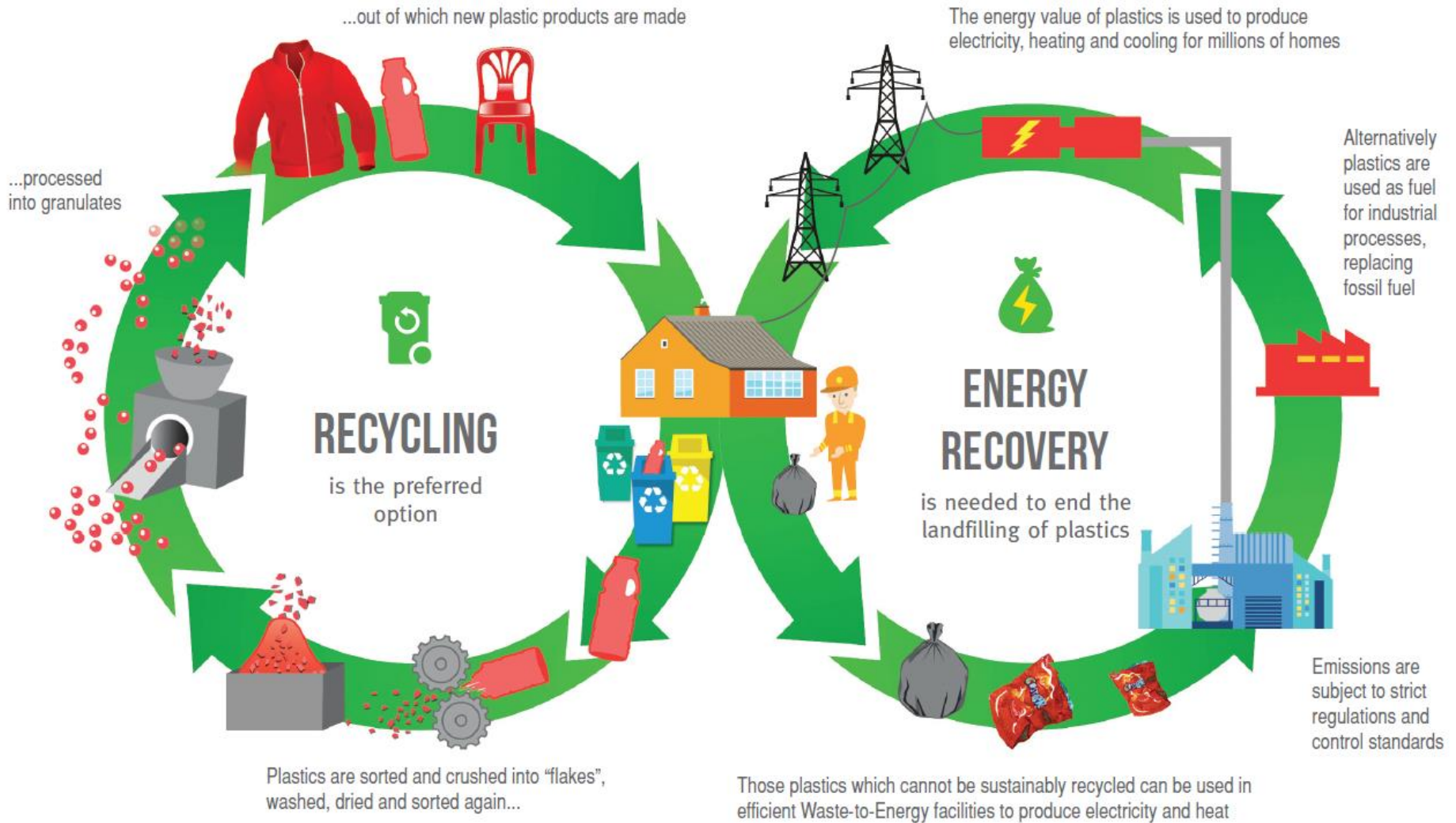
Plastics: EU waste management data



Highlights on plastic packaging waste

- **40% recycling rate for packaging**, higher than plastics in general
- **packaging at 62% of plastic waste collected**, due to the short life time

Plastics recycling is the preferred option

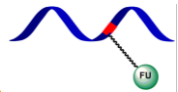


R&D @work to improve the end-of-life of plastics

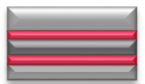
Innovation in plastic packaging is looking for solutions to reduce the environmental footprint of the end-of-life, while keeping performances



'single polymer' materials to replace multilayer packaging for certain applications



simplified film structure - reducing additives or incorporating them within the polymeric chains



multi-material packaging that enables the separation of different materials after use



Plastic waste and the environment

Environmental pollution is a behavioral problem and a problem of bad waste management



Waste collection systems working badly



People behavior



Improper use of landfills

Plastics are too Valuable to be wasted!



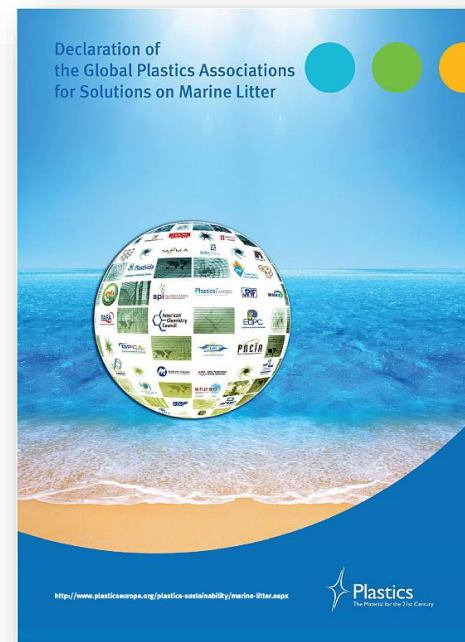
Plastics industry is committed to fight marine litter

Marine litter is a global challenge that requires a coordinated engagement of all the stakeholders, from the production phase (design, transformation, transport) till the end-use and waste management with consumers and authorities

Global Action Plan of the plastics industry committed to around 185 projects targeting mainly at

1. **Education** to prevent Marine Litter
2. **Waste Management** improvement
3. **Research** for solutions
4. **Plastic pellet containment**

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Catch up on plastic packaging waste: conclusions



eco-design of products

improvement in sorting technologies (optical, image recognition)



proper waste collection



consumers awareness and conscious behaviour

enhanced mechanical recycling for higher quality of secondary raw materials

eco-efficient EPR systems



innovation in chemical recycling (depolymerization, catalytic cracking, pyrolysis)

