



Plastics – the Facts 2017

An analysis of European plastics production, demand and waste data

PlasticsEurope
Association of Plastics Manufacturers

Plastics – the Facts is an analysis of the data related to the production, demand and waste management of plastic materials. It provides the latest business information on production and demand, trade, recovery as well as employment and turnover in the plastics industry. In short, this report gives an insight into the industry's contribution to European economic growth and prosperity throughout the life cycle of the material.



The data presented in this report was collected by PlasticsEurope (the Association of Plastics Manufacturers in Europe) and EPRO (the European Association of Plastics Recycling and Recovery Organisations). PlasticsEurope's Market Research and Statistics Group (PEMRG) on the production and the demand of plastic raw materials. Conversio Market & Strategy GmbH helped assess waste collection and recovery data. Official statistics from European or national authorities and waste management organisations have been used for recovery and trade data, where available. Research or expertise from consultants completed gaps.

Figures cannot always be directly compared with those of previous years due to changes in estimates. Some estimates from previous years have been revised in order to track progress, e.g. for use and recovery of plastics across Europe over the past decade.

All figures and graphs in this report show data for EU-28 plus Norway and Switzerland, which is referred to as Europe for the purposes of abbreviation – other country groups are explicitly listed.

Contribution to Circular Economy

In a world facing global challenges such as fast-growing population, food security and climate change, our societies need to choose and rely on the most efficient solutions in order to guarantee a sustainable development.

Europe has initiated a transition from a linear towards a circular and resource efficient society and the unique characteristics of plastics allow them to make a great contribution towards this societal transformation.

Thanks to their versatility and their high resource efficiency, plastics have become key materials in strategic sectors such as packaging, building & construction, transportation, renewable energy, medical devices or even sports, to mention but a few.

Moreover, plastics have enabled innovation in many other sectors allowing the development of products and solutions that could not exist today without these materials.



Plastics materials and plastic products are extremely resource efficient along their service life, helping us to avoid food waste, to save energy and to decrease CO₂ emissions.

At the end of their use life they can be repaired or re-used, but ultimately, they will become waste, and this waste is actually a new resource that needs to be placed back in the life cycle of plastics, closing thus the loop of Circular Economy.

However, to benefit from the full potential of plastics at the end of their first life, we need to push for the most sustainable option of waste management, fostering recycling, using energy recovery as a complementary option and restricting the landfill deposit of any recoverable plastic waste.

Improving Europe's competitiveness and resource efficiency should be what we are striving for.

Plastics materials and the plastics industry can definitively make a significant contribution in this overarching goal.



Plastics save resources at each single step

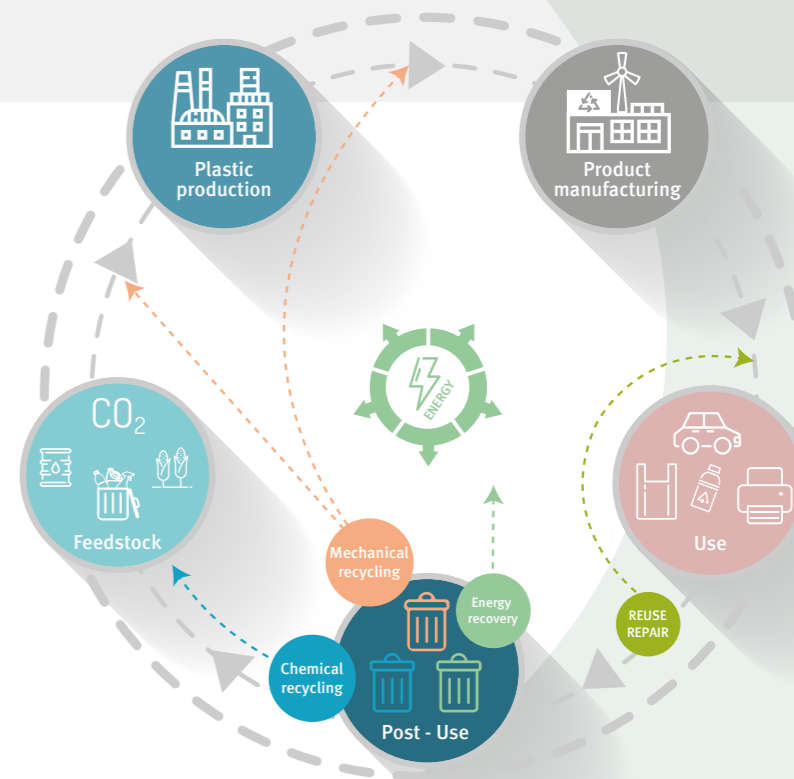
Plastic materials are key for the transition towards a more resource efficient and circular economy as they can help us to preserve resources in every single step of a product.

For every product, solutions need to have a general overview of the different stages over the life cycle of that specific product and innovations need to be tailor-made based on that general overview. That is where “Full Life Cycle Thinking” turns out to be “Smart Thinking”.

In the production phase, resources are saved through the diversification of feedstocks and process optimisations. During the use phase, plastics offer the biggest resource savings. For example, plastic insulation saves 250 times the energy used for its production; thanks to plastic parts, cars have 4 times lower environmental impact and plastic packaging extends significantly the shelf life of food reducing spoilage and waste.

Full life cycle thinking is smart thinking

At the end of their life, plastics are still very valuable resources that can be transformed into new feedstock or into energy.

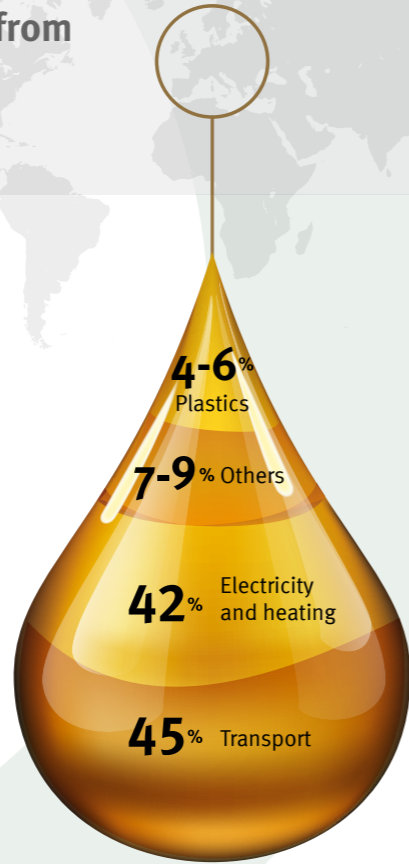


What are plastics, where do they come from

Plastics aren't just one material. Plastics are a family of hundreds of different materials with a wide variety of properties. They are designed to meet the needs of each single application in the most efficient manner.

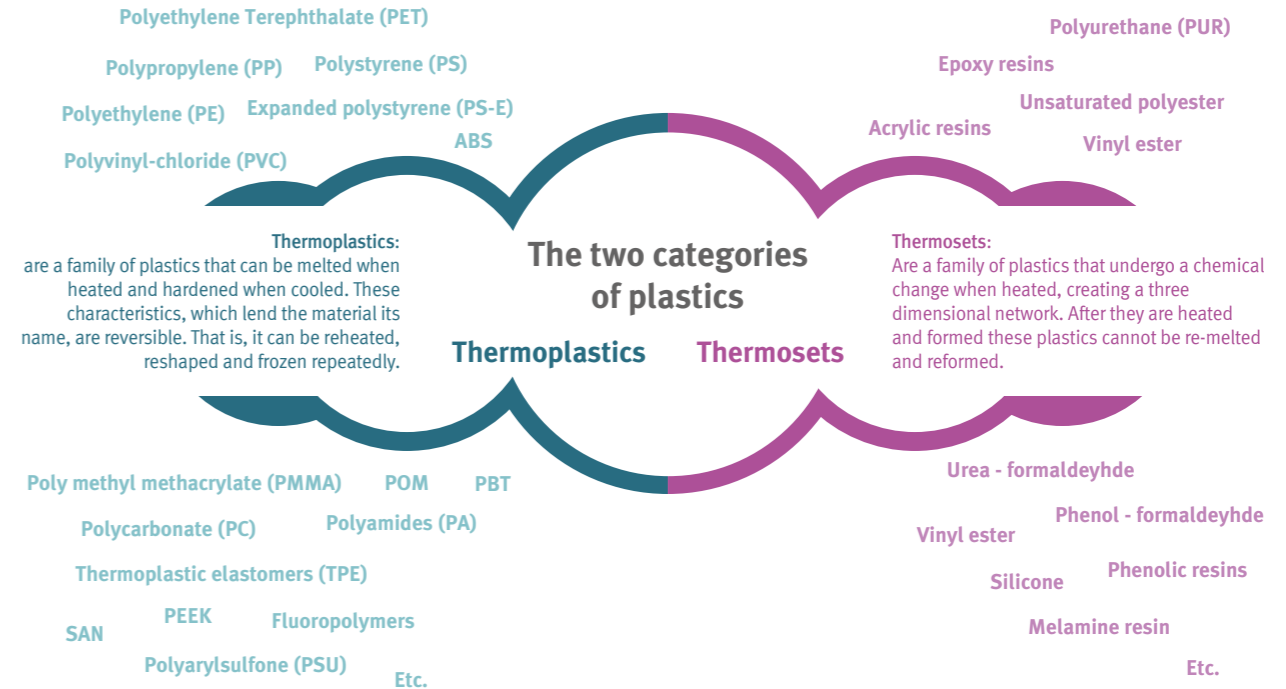
Plastics materials are organic materials that can be either fossil fuel based or bio based. Both types of plastic materials are recyclable and it is possible to produce bio-degradable plastics with both types of feedstocks.

Currently, most plastics materials are derived from fossil feedstocks such as natural gas, oil or coal. However, it is important to stress that **only 4 to 6% of all the oil and gas used in Europe is employed in the production of plastic materials.**



Discovering the wide family of plastics

The plastics' family is composed of a great variety of materials designed to meet the very different needs of thousands of end products.



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A key contributor
to European society

Key figures of the European plastics industry

The European plastics industry includes plastics raw materials producers, plastics converters, plastics recyclers and plastics machinery manufacturers in the EU28 Member States.



JOB

Over **1.5 million**

The plastics industry gives direct employment to over 1.5 million people in Europe



COMPANIES

Close to **60,000 companies**

An industry in which close to 60,000 companies operate, most of them SME's



TURNOVER

Close to **350 billion euros**

The European plastics industry had a turnover close to 350 billion euros in 2016



TRADE BALANCE

Close to **15 billion euros**

The European plastics industry had a trade balance of close 15 billion euros in 2016*

* Data including only plastics raw materials producers and plastics converters



PUBLIC FINANCES

Close to **30 billion euros**

The European plastics industry contributed close to 30 billion euros to public finances and welfare in 2016



MULTIPLIER EFFECT

x2.4 in GDP and almost **x3 in jobs**

The European plastics industry has a multiplier effect of 2.4 in GDP and almost 3 in jobs*

* The European House Ambrosetti study, data for Italy, 2013 and plastics converters



INDUSTRIAL VALUE ADDED

7th in Europe

The European plastics industry ranks 7th in Europe in industrial value added contribution. At the same level as the pharmaceutical industry* and very close to the chemical industry

* Measured by gross value added at factor prices, 2012



RECYCLING

Over **8.4 million tonnes**

In 2016, more than 8.4 million tonnes of plastic waste were collected in order to be recycled inside and outside the EU

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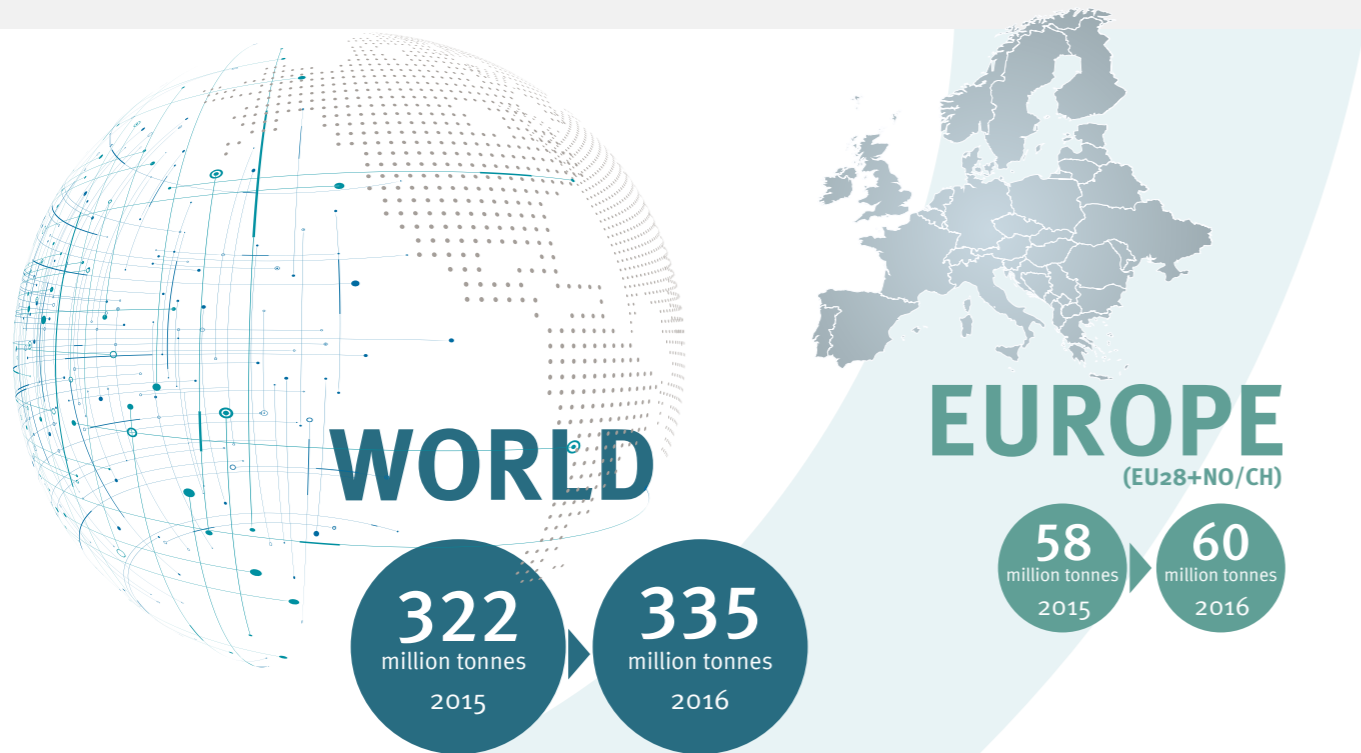
Market data



World and EU plastics production data

Includes plastic materials (thermoplastics and polyurethanes) and other plastics (thermosets, adhesives, coatings and sealants). Does not include: PET fibers, PA fibers, PP fibers and polyacryls-fibers.

Source: PlasticsEurope (PEMRG) / Conversio Market & Strategy GmbH

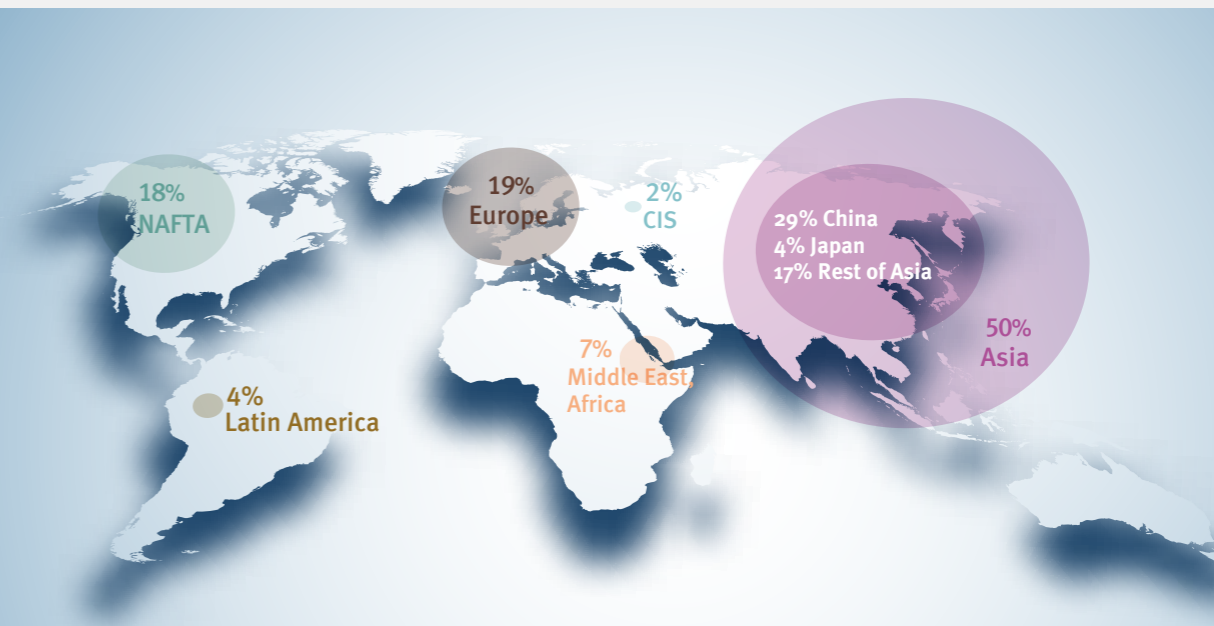


Distribution of global plastic materials production

China is the largest producer of plastic materials*, followed by Europe and NAFTA.

World production of plastic materials in 2016: 280 million tonnes.

Source: PlasticsEurope Market Research Group (PEMRG) / Conversio Market & Strategy GmbH



* Plastic materials: only thermoplastics and polyurethanes

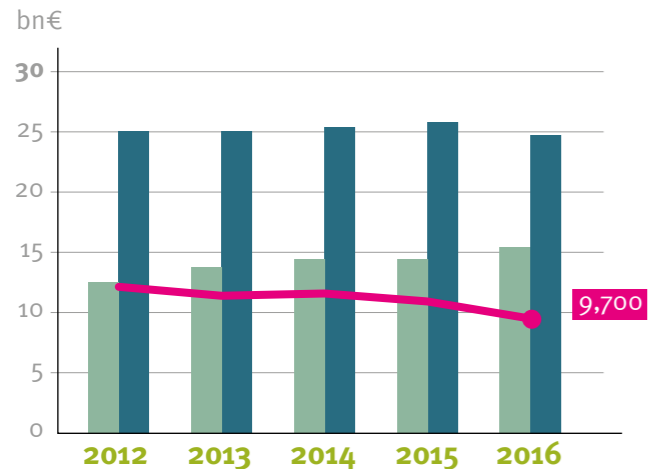
Trade balance

A positive trade balance of around 15 billion euros in 2016.

Source: Eurostat

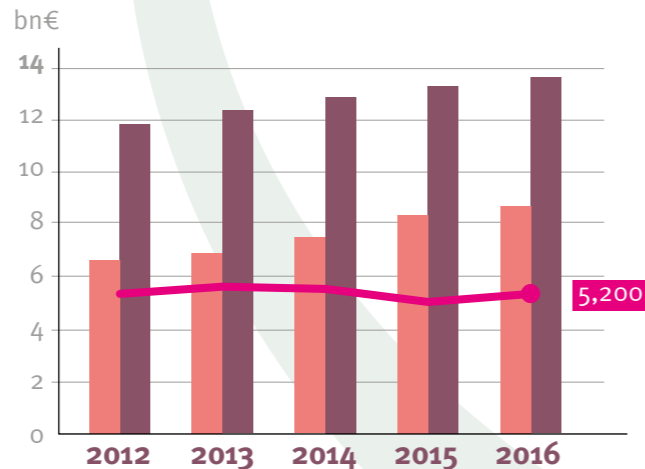
Plastics manufacturing extra EU28

- Extra-EU trade balance
- Extra-EU exports
- Extra-EU imports



Plastics processing extra EU28

- Extra-EU trade balance
- Extra-EU exports
- Extra-EU imports



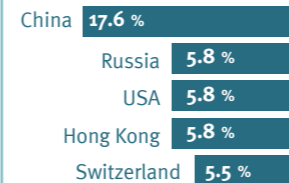
Top extra EU trade partners in value

The European plastics industry has good and long-standing trading relationship with many countries.

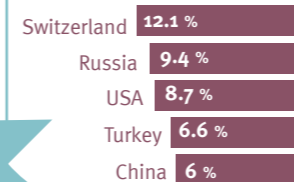
Source: Eurostat

2016 Extra EU Exports

Plastics manufacturing

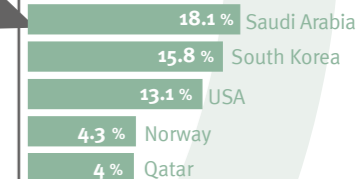


Plastics processing

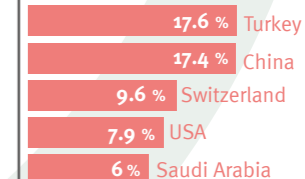


2016 Extra EU Imports

Plastics manufacturing



Plastics processing

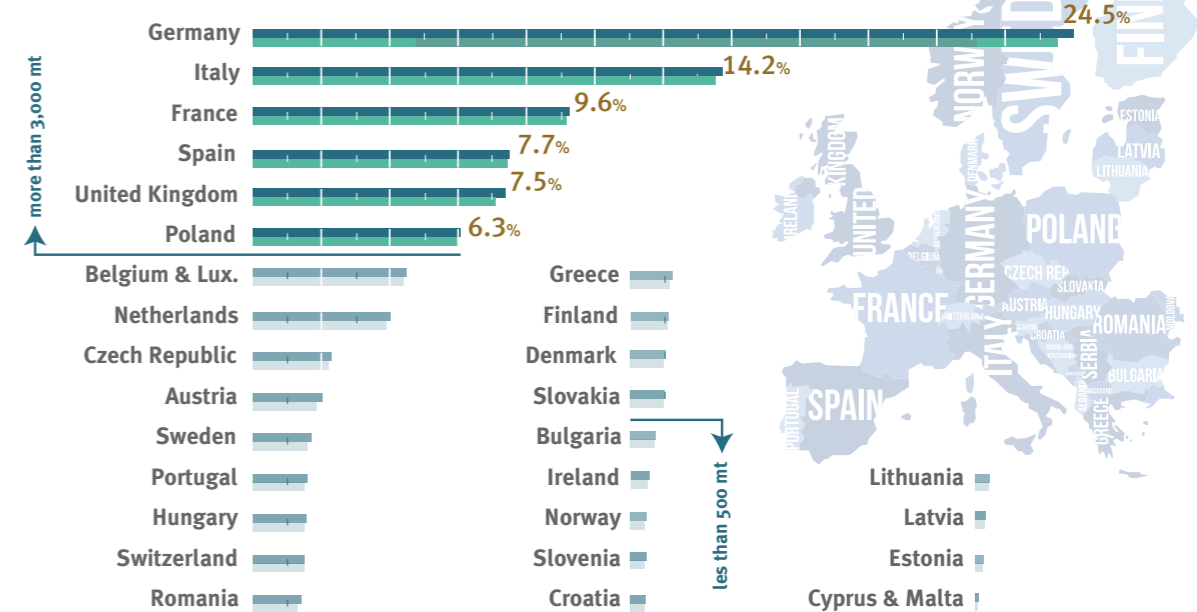




Plastics EU converter demand per country

European plastic converter demand includes plastic materials (thermoplastics and polyurethanes) and other plastics (thermosets, adhesives, coatings and sealants). Does not include: PET fibers, PA fibers, PP fibers and polyacryls-fibers.

Source: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH (Consultic GmbH for 2015 data)



49.9
m t

The six larger European countries and the Benelux cover almost 80% of the European demand in 2016

2016
2015

Plastics converter demand main market sectors

Distribution of European (EU28+NO/CH) plastics converter demand by segment in 2016.

Source: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH

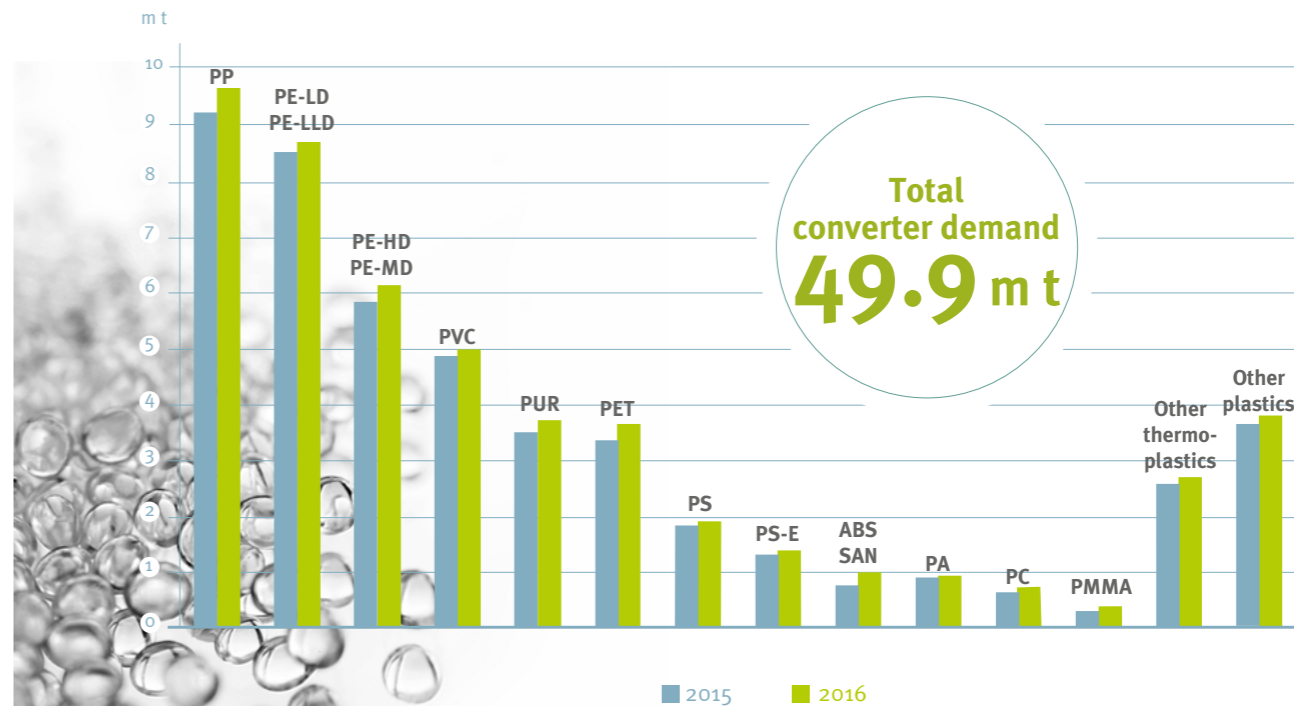
Total
converter demand
49.9 m t



Plastics converter demand by resin type

Distribution of European (EU28+NO/CH) plastics converter demand by resin type in 2016.

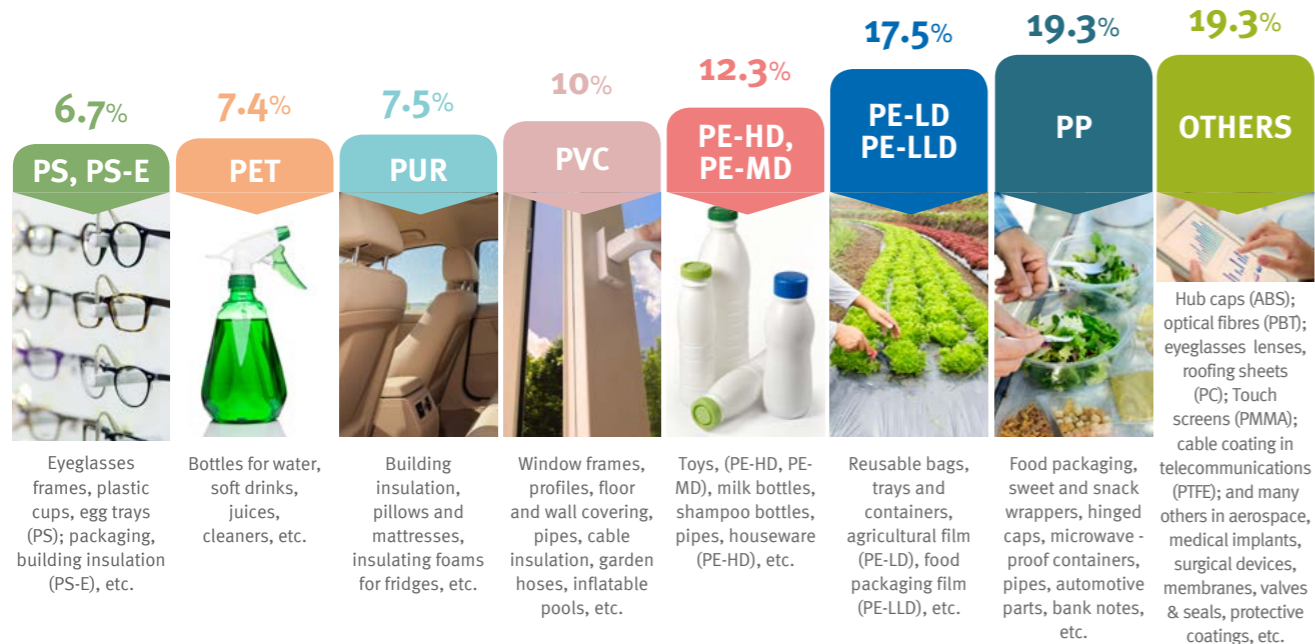
Source: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH (Consultic GmbH for 2015 data)



European plastics converter demand by polymer types in 2016

Data for EU28+NO/CH

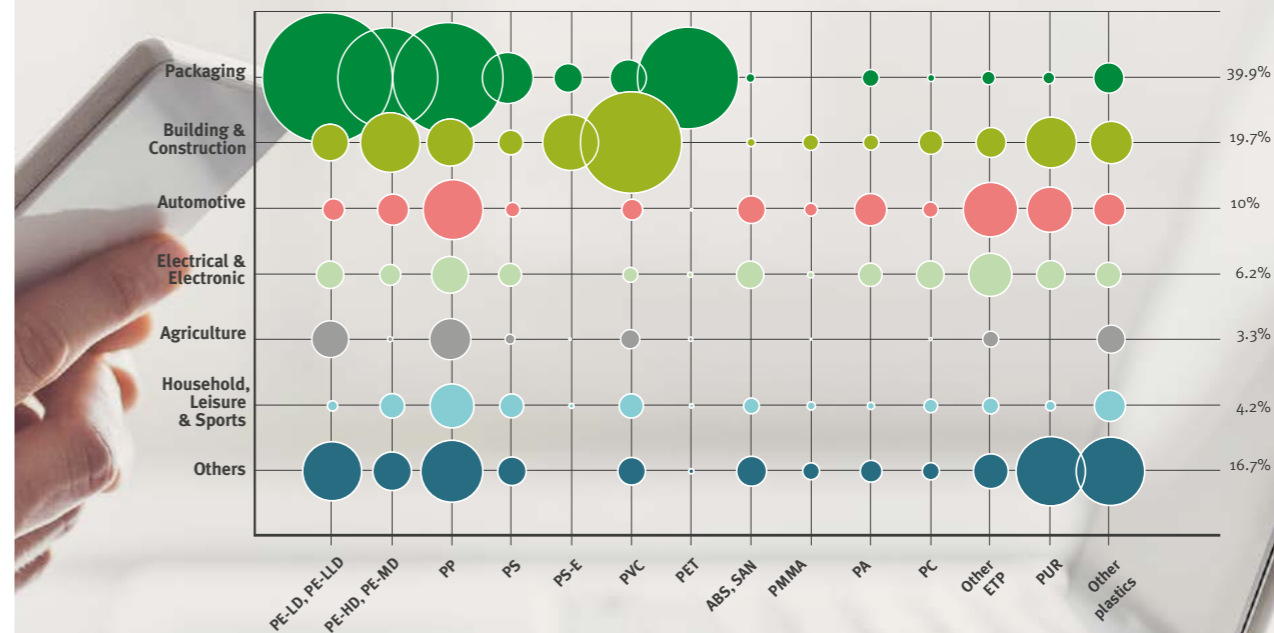
Source: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH



European plastics converter demand by segments and polymer types in 2016

Data for EU28+NO/CH

Source: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH



DIAS



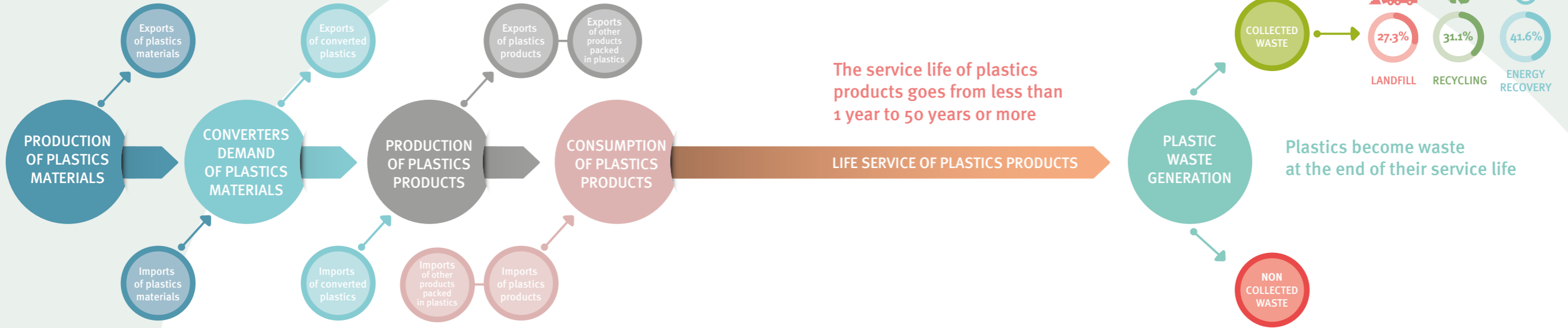
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From waste to resource

Understanding the life cycle of plastics products

In order to understand the life cycle of plastics products it is important to understand that not all plastics products are the same and not all have the same service life. Some plastic products have a shelf life of less than one year, some others of more than 15 years and some have a lifespan of 50 years or even more.

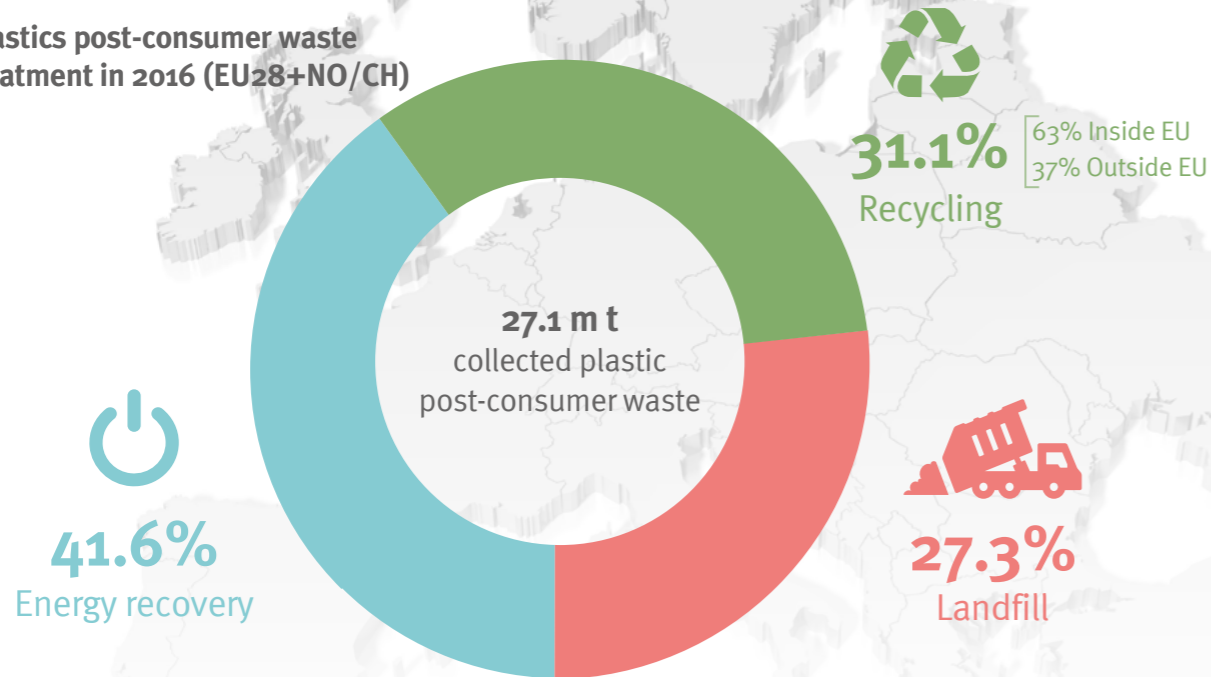
Thus, from production to waste, different plastic products have different life cycles and this is why the volume of collected waste cannot match, in a single year, the volume of production or consumption.



In 2016, for the first time, recycling overcame landfill

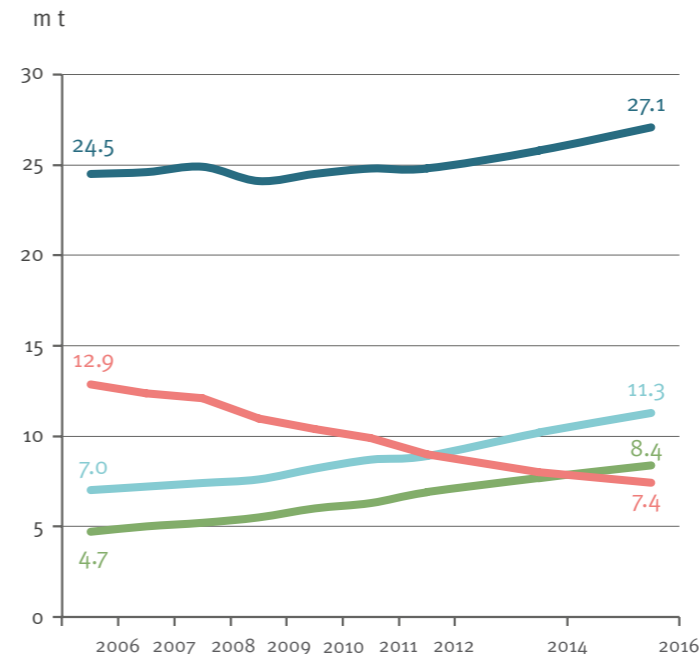
In 2016, 27.1 million tonnes of plastic waste were collected through official schemes in the EU28+NO/CH in order to be treated. And for the first time, more plastic waste was recycled than landfilled.

Plastics post-consumer waste treatment in 2016 (EU28+NO/CH)

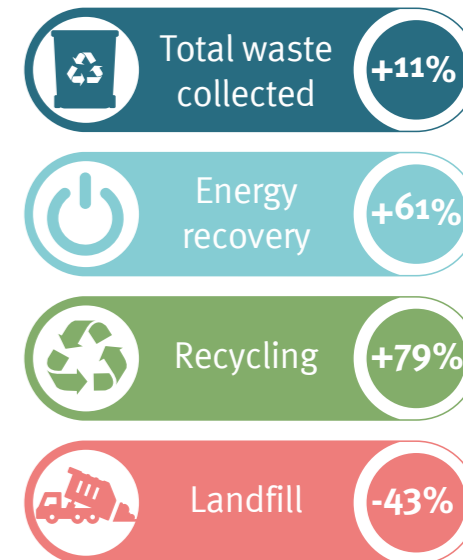


In ten years, plastic waste recycling has increased by almost 80%

From 2006 to 2016 the volumes of plastic waste collected for recycling increased by 79%, energy recovery increased by 61% and landfill decreased by 43%.



2006-2016 evolution of plastics waste treatment (EU28+NO/CH)



Plastic waste recovery is still very uneven in Europe

Although the total EU situation is improving, in many countries, landfill is still the first or second option of treatment for plastic post-consumer waste.

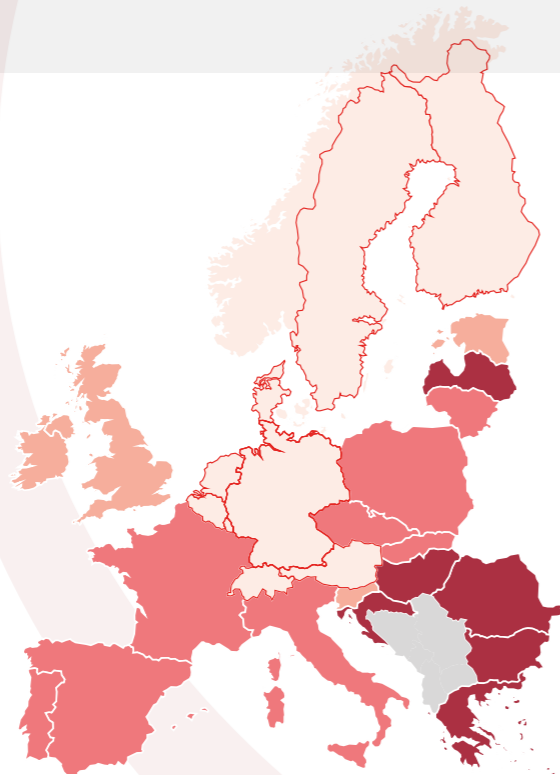
Source: Conversio Market & Strategy GmbH

Plastics post-consumer waste landfill rate across Europe

- 10% or less
- up to 30%
- up to 50%
- more than 50%
- Countries with landfill restrictions implemented



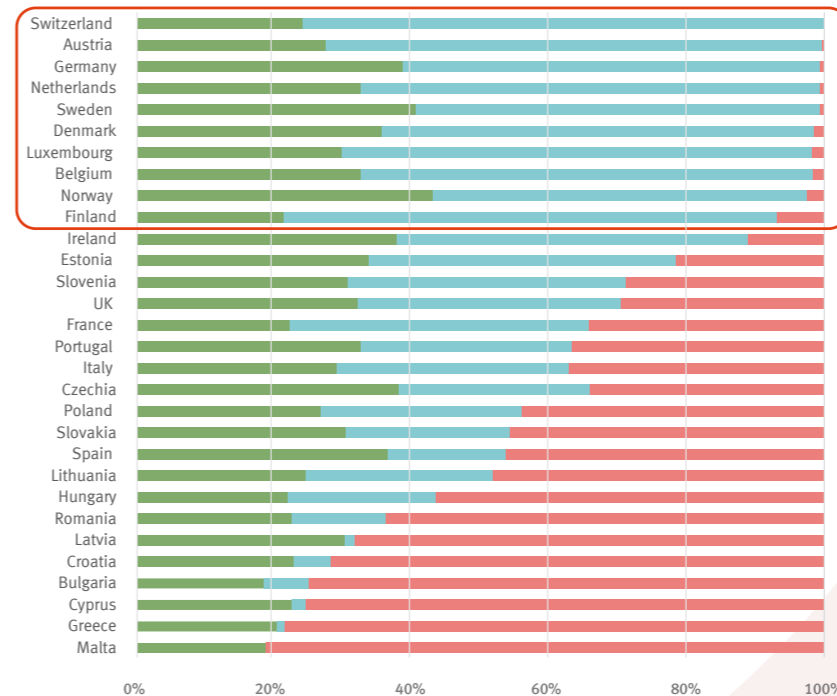
Plastics waste going to landfill in 2016



Landfill bans foster higher recycling rates

Countries with landfill restrictions of recyclable and recoverable waste have, on average, higher recycling rates of plastic post-consumer waste.

Source: Conversio Market & Strategy GmbH



Plastic post-consumer waste rates of recycling, energy recovery and landfill per country in 2016

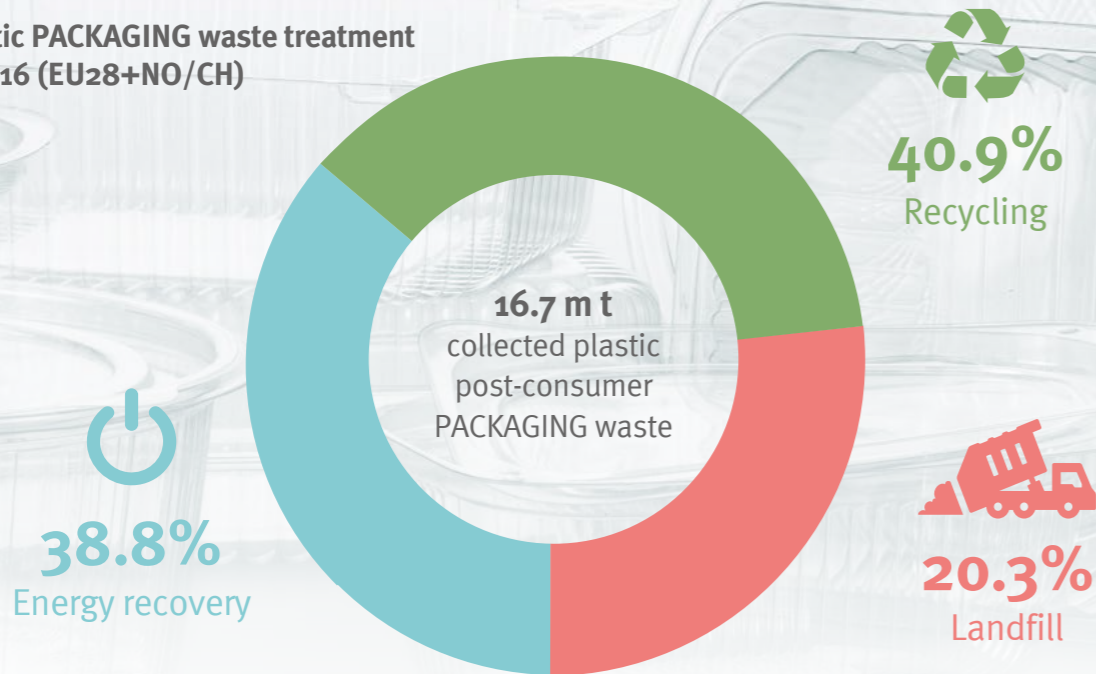
- Recycling
- Energy Recovery
- Landfill
- Countries with landfill restriction implemented

Recycling is the first option for plastic PACKAGING waste

In 2016, 16.7 million tonnes of plastic **packaging** waste were collected through official schemes in order to be treated.

Source: Conversio Market & Strategy GmbH

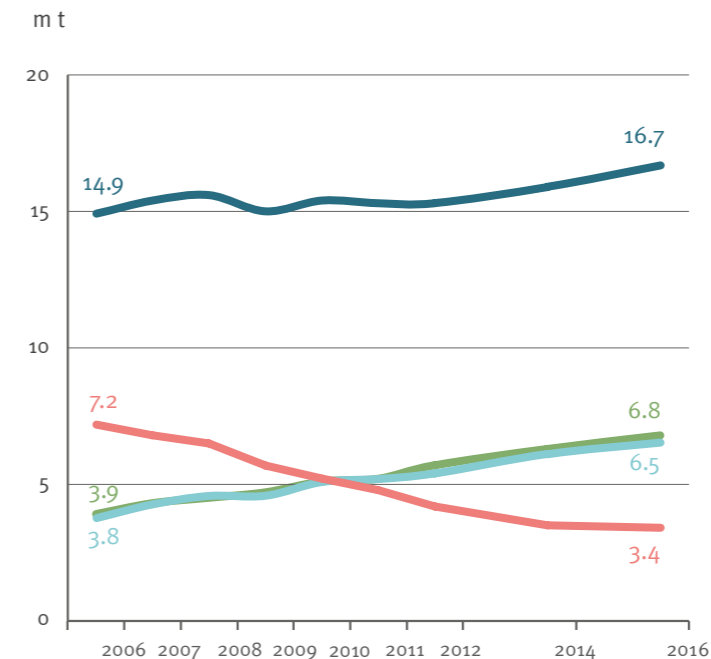
Plastic PACKAGING waste treatment in 2016 (EU28+NO/CH)



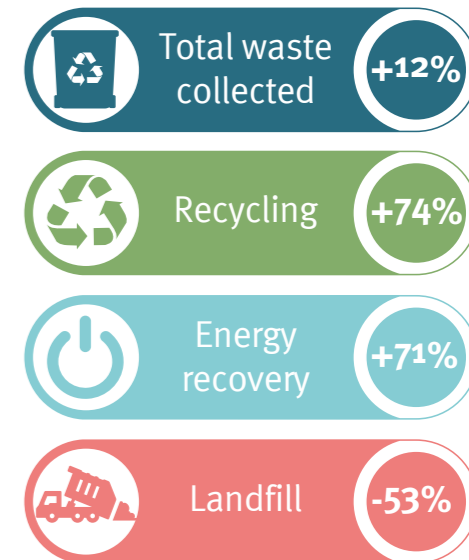
In ten years, plastic PACKAGING recycling has increased by almost 75%

From 2006 to 2016, the volume of plastic packaging waste collected for recycling increased by 74%, energy recovery increased 71% and landfill decrease by 53%.

Source: Conversio Market & Strategy GmbH



2006-2016 evolution of plastics PACKAGING waste treatment (EU28+NO/CH)



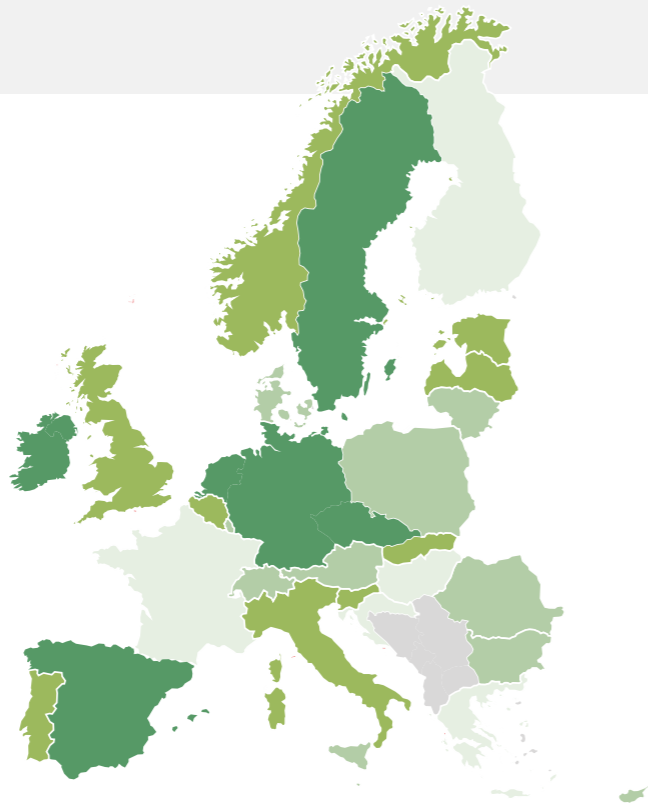
Most countries have plastic PACKAGING recycling rates above 35%

In 2016, 19 countries had plastic **packaging** recycling rates higher than 35%. Only two countries achieved a recycling rate between 50 and 52% (Germany and Czechia).

- more than 45%
- from 40 to 45%
- from 30% to 40%
- less than 30%

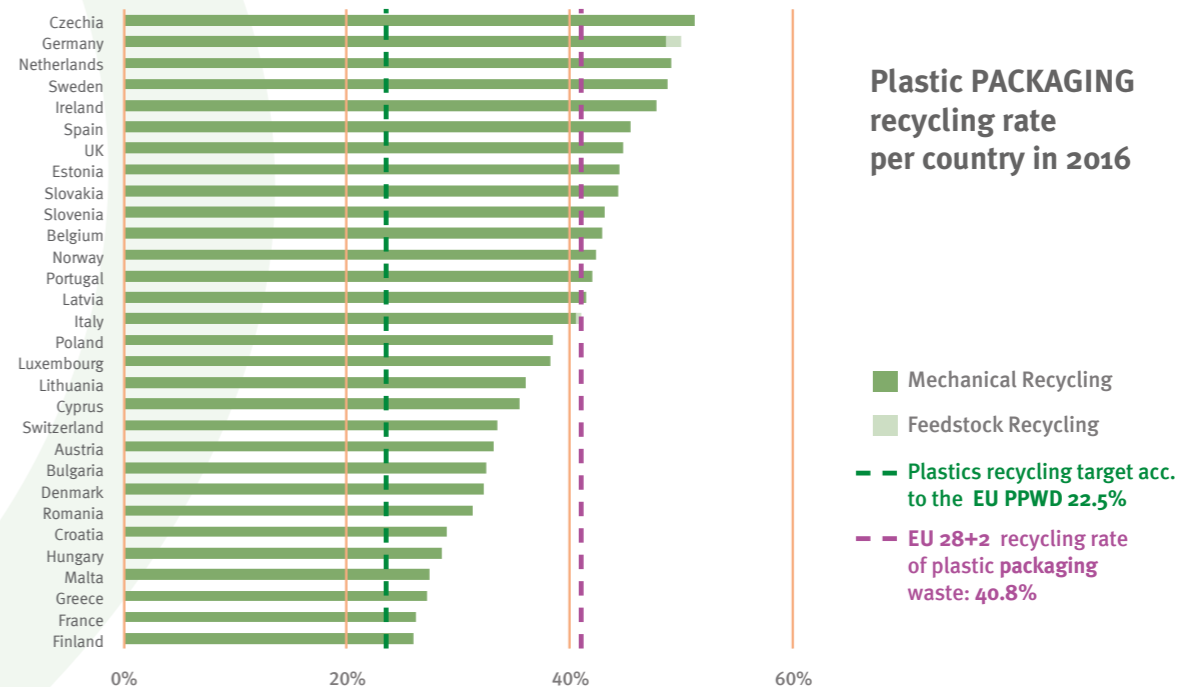


Plastic **PACKAGING** recycling rates across Europe



EU plastic PACKAGING recycling rate is close to 41%

In 2016, the total EU recycling rate for plastic **packaging** waste was 40.8%, well above the requested 22.5% of the EU Packaging Waste Directive.



Plastic **PACKAGING** recycling rate per country in 2016

- Mechanical Recycling
- Feedstock Recycling
- - Plastics recycling target acc. to the EU PPWD 22.5%
- - EU 28+2 recycling rate of plastic packaging waste: 40.8%

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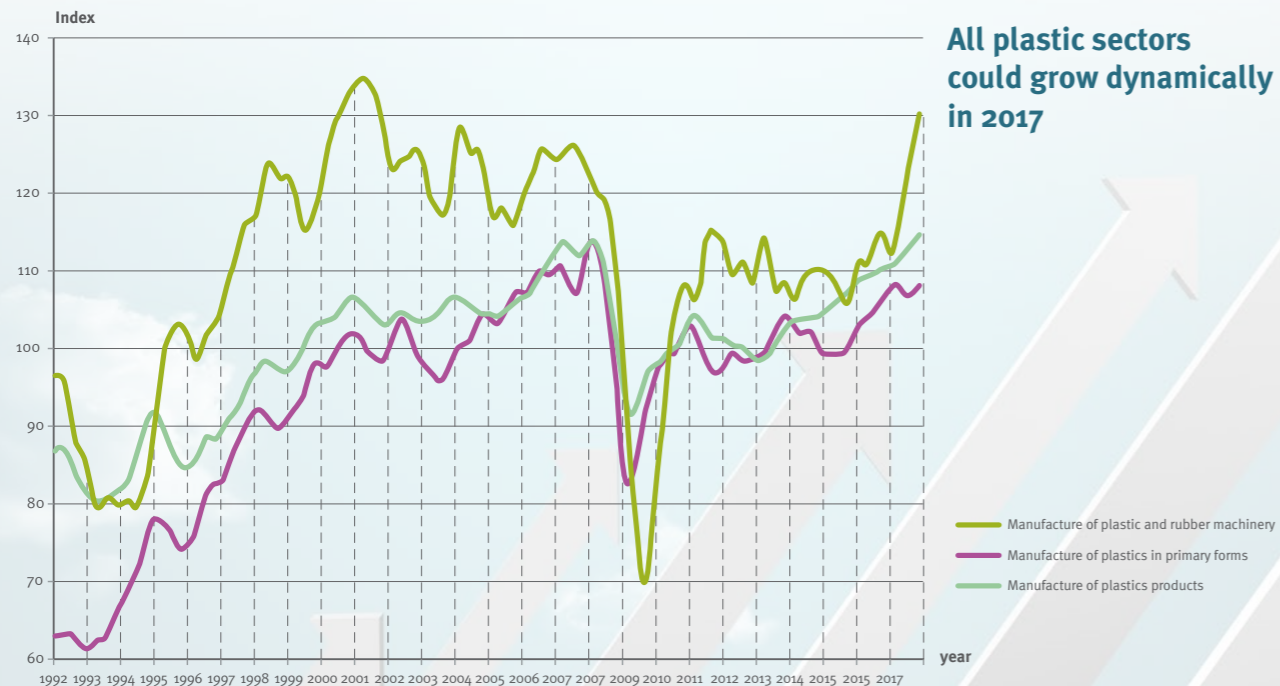


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Snapshot
and outlooks

In 2017, all the sectors of the plastic value chain grew dynamically

Plastics industry production in EU28 index (2010=100, trend cycle & seasonally adjusted data).

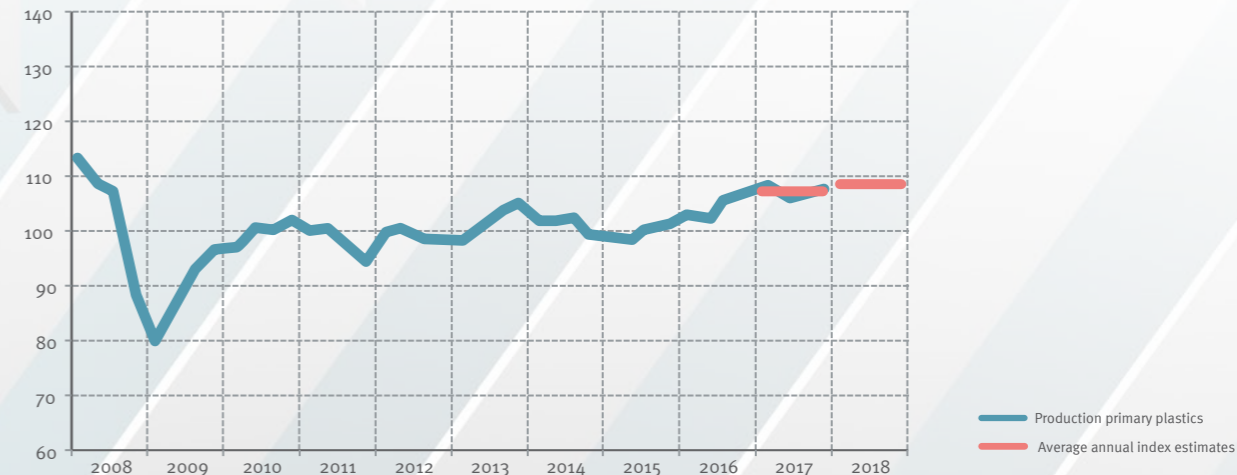


Forecast: in 2018, the production growth will slightly slow down compared to the strong year 2017

Production of primary plastics, EU28.

Index 2010 = 100 on a quarterly basis; seasonally and working day adjusted; annual average.

In 2018, the production growth will slightly slow down compared to the strong year 2017



However, a moderate upward trend is still expected for 2018.

Estimate 2017: +2.5%

Estimate 2018: +1.5%

Glossary of terms

ABS	Acrylonitrile butadiene styrene resin	PE-LD	Polyethylene, low density
ASA	Acrylonitrile styrene acrylate resin	PE-LLD	Polyethylene, linear low density
bn	billion	PE-MD	Polyethylene, medium density
CH	Switzerland	PEMRG	PlasticsEurope Market Research Group
CIS	Commonwealth of Independent States	PET	Polyethylene terephthalate
Conversio	Conversio Market & Strategy GmbH	Plastic materials	Thermoplastics + Polyurethanes
EU	European Union	PMMA	Polymethyl methacrylate
EPRO	European Association of Plastics Recycling and Recovery Organisations	POM	Polyoxymethylene
ETP	Engineering Thermoplastics	PP	Polypropylene
GDP	Gross domestic product	PS	Polystyrene
m t	Million tonnes	PS-E	Polystyrene, expandable
NAFTA	North American Free Trade Agreement	PTFE	Polytetrafluoroethylene
NO	Norway	PUR	Polyurethane
Other plastics	Thermosets, adhesives, coatings and sealants	PVC	Polyvinyl chloride
PA	Polyamides	SAN	Styrene-acrylonitrile copolymer
PBT	Polybutylene terephthalate	Thermoplastics	Standard plastics (PE, PP, PVC, PS, EPS, PET (bottle grade)) + Engineering plastics (ABS, SAN, PA, PC, PBT, POM, PMMA, Blends, and others including High Performance Polymers)
PC	Polycarbonate	Thermosets	Urea-formaldehyde foam, melamine resin, polyester resins, epoxy resins, etc.
PE	Polyethylene		
PEEK	Polyetheretherketone		
PE-HD	Polyethylene, high density		

PlasticsEurope

PlasticsEurope is one of the leading European trade associations with centres in Brussels, Frankfurt, London, Madrid, Milan and Paris. We are networking with European and national plastics associations and have more than 100 member companies, producing over 90% of all polymers across the EU28 member states plus Norway, Switzerland and Turkey. The European plastics industry makes a significant contribution to the welfare in Europe by enabling innovation, creating quality of life to citizens and facilitating resource efficiency and climate protection. More than 1.45 million people are working in more than 60,000 companies (mainly small and medium sized companies in the converting sector) to create a turnover around 350 bn EUR per year.

www.plasticseurope.org

EPRO (European Association of Plastics Recycling and Recovery Organisations)

EPRO is a pan-European partnership of specialist organisations that are able to develop and deliver efficient solutions for the sustainable management of plastic waste, now and for the future. EPRO members are working to optimise national effectiveness through international co-operation: by studying successful approaches, evaluating different solutions and examining obstacles to progress. By working together EPRO members can achieve synergies that will increase efficient plastics recycling and recovery. Currently 19 organisations in 14 European countries, South Africa and Canada are represented in EPRO.

www.epro-plasticsrecycling.org

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The Material for the 21st Century