Plastics – the Facts 2020

An analysis of European plastics production, demand and waste data
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) provided input on the production and 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.

This current report mainly focuses on 2019 figures for the plastics industry. Only pages 60 and 61 take into consideration 2020 trends and therefore show estimation of the COVID-19 pandemic effect on the European plastics industry.
The plastics industry is vital for Europe’s economy and its recovery plan. Together, the plastic raw materials producers, plastics converters, plastics recyclers, and machinery manufacturers, represent a value-chain that employs over 1.5 million people in Europe, through more than 55,000 companies, most of them SMEs, operating in all European countries. In 2019, these companies created a turnover of over 350 billion euros and contributed to more than 30 billion euros to European public finances.

Over the last century, plastics have offered innovative solutions to society’s permanent evolving needs and challenges. Versatile, durable, and incredibly adaptable, plastics are a family of remarkable materials with science and innovation in their DNA.

Nowadays, they allow us to meet a myriad of functional and aesthetic demands, from drinking clean water, playing sport, staying connected, enjoying the comfort of home and the efficiency of clean mobility, or helping us to live longer and healthier lives.

**Plastics define the way we live today.** They improve the quality of life for millions of people across the globe by making our lives easier, safer and more enjoyable, while they are key to accelerate the
European transition to a low-carbon circular economy where resources and energy are utilised in the most effective way.

Plastics will continue to shape our present and our future, however, we will not be able to achieve the full potential of these extraordinary materials if we do not address the global challenges linked to their negative impact when they end-up in the environment.

**Plastic waste is unacceptable in any habitat** and this is PlasticsEurope’s and the plastics industry’s top priority at all times. Global issues demand global approaches and global solutions. Strong partnerships between an interconnected plastics value chain and all stakeholders, be they local, national or global, are needed to solve this problem and to develop innovative, sustainable solutions. By working hand in hand with all relevant parties, we can create a framework to boost the circular economy for plastics and develop a collective blueprint to accelerate our transformation to a more sustainable future.

Our commitment as an industry is to relentlessly focus on ensuring that plastics continue to deliver societal benefits while having a positive impact on the environment.
THE CIRCULARITY OF PLASTICS

In order to increase circularity, it is important to analyse the life cycle of plastics, from production to recycling and closing the loop. The use-phase is critical to understand its life cycle.
Today, 60% of plastic products and parts have a use phase between 1 and 50 years, or even more. This lapse of time determines when they will potentially become waste. This is why, in a single year, the quantity of collected plastic waste does not match the quantity of production or consumption.
PLASTICS: INNOVATION DRIVEN MATERIALS

Plastics are an immense family of unique and versatile materials. Science and innovation are in the DNA of these materials who were designed to offer alternative and sustainable solutions to society’s needs and challenges.

The very first plastic material was invented in the middle of the 19th century and since then, based on their illimited innovative potential, plastics have shaped the world and continue to offer sustainable solutions to our fast-changing needs.

Today, the plastics family is composed by a myriad of fit for purpose and resource efficient materials that allow society to have access to clean water and effective sewage systems, safe food, energy efficient homes, green transport, global connectivity, renewable energies or affordable and hygienic healthcare, just to mention a few.

Still today, most plastic materials are fossil based and are produced from oil or gas. However, in the long term, plastics production should decouple from fossil feedstock. Which means that, in the future, the vast majority of plastics will be produced from alternative feedstocks, such as recycled oils or secondary plastics, responsibly sourced biomass, or even CO2.
**Thermoplastics**

Family of plastics that can be melted when heated and hardened when cooled. These characteristics, which lend the material its name, are reversible. That is, it can be reheated, reshaped and frozen repeatedly.

- Polyethylene (PE)
- Polypropylene (PP)
- Polyvinyl-chloride (PVC)
- Polyethylene Terephthalate (PET)
- Polystyrene (PS)
- Expanded polystyrene (EPS)
- ABS
- SAN
- Polyamides (PA)
- Polycarbonate (PC)
- Poly methyl methacrylate (PMMA)
- Thermoplastic elastomers (TPE)
- Polyarylsulfone (PSU)
- Fluoropolymers
- PEEK
- POM
- PBT
- EVOH
- Etc.

**Thermosets**

Family of plastics that undergo a chemical change when heated, creating a three dimensional network. After they are heated and formed these plastics cannot be re-melted and reformed.

- Polyurethane (PUR)
- Unsaturated polyesters
- Epoxy resins
- Melamine resins
- Vinyl esters
- Silicone
- Phenol - formaldehyde resins
- Urea - formaldehyde resins
- Phenolic resins
- Acrylic resins
- Etc.
Contribution 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.

**JOBS**
Over 1.5 million people
The plastics industry gives direct employment to more than 1.56 million people in Europe

**COMPANIES**
55,000 companies
An industry with over 55,000 companies, most of them SME’s

**TURNOVER**
More than 350 billion euros
The European plastics industry had a turnover of more than 350 billion euros in 2019

**TRADE BALANCE**
13 billion euros
The European plastics industry has a positive trade balance of 13.1 billion euros in 2019

* Data including only plastics raw materials producers and plastics converters
Close to 30 billion euros
The European plastics industry contributed to 28.5 billion euros to public finances and welfare in 2019

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, 2013

PUBLIC FINANCES

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

MULTIPLIER EFFECT

9.4 million tonnes
In 2018, 9.4 million tonnes of plastic post-consumer waste were collected in Europe to be recycled (inside and outside the EU)

RECYCLING

INDUSTRIAL VALUE ADDED

PUBLIC FINANCES

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MULTIPLIER EFFECT

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RECYCLING

INDUSTRIAL VALUE ADDED
Plastics: production and trade
WORLD AND EU PLASTICS PRODUCTION DATA

En 2019, global plastics production almost reached 370 million tonnes. In Europe, plastics production almost reached 58 million tonnes.

<table>
<thead>
<tr>
<th>Year</th>
<th>World</th>
<th>2018</th>
<th>359</th>
<th>2019</th>
<th>368</th>
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<tr>
<td></td>
<td></td>
<td>million tonnes</td>
<td></td>
<td>million tonnes</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Europe (EU28+NO/CH)</th>
<th>2018</th>
<th>61.8</th>
<th>2019</th>
<th>57.9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>million tonnes</td>
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<td>million tonnes</td>
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</tbody>
</table>

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

Includes Thermoplastics, polyurethanes, thermosets, elastomers, adhesives, coatings and sealants and PP-fibers.
Not included: PET-fibers, PA-fibers and Polyacryl-fibers
In 2019 China reached 31% of world’s plastics production. World plastics* production: 368 million tonnes.

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

* Includes Thermoplastics, polyurethanes, thermosets, elastomers, adhesives, coatings and sealants and PP-fibers. Not included: PET-fibers, PA-fibers and Polyacryl-fibers
In 2019, the industry reached a positive trade balance of more than 13 billion euros.
In 2019, the USA was the most important trade partner of the European plastics industry.

**2019 Extra EU IMPORTS**

- USA: 23.9%
- China: 14.9%
- Switzerland: 11.7%
- Turkey: 11.4%
- Japan: 6.0%

**2019 Extra EU EXPORTS**

- USA: 25.3%
- Switzerland: 13.5%
- China: 13.0%
- Turkey: 12.5%
- Russia: 6.7%

**Plastics processing**

- USA: 17.0%
- Switzerland: 9.6%
- China: 9.0%
- Russia: 8.1%
- Turkey: 5.5%

**Plastics manufacturing**

- USA: 13.5%
- China: 13.0%
- Turkey: 12.5%
- Russia: 6.7%
- Switzerland: 6.2%

*Source: Eurostat*
#3 Plastics: market demand
PLASTICS DEMAND BY COUNTRY 2018 AND 2019

Distribution of European (EU28+NO/CH) plastics converters demand by countries in 2018 and 2019.

Germany: 24.2 %
Italy: 13.8 %
France: 9.5 %
Spain: 7.8 %
United Kingdom: 7.1 %
Poland: 7 %
Belgium / Lux.: 50.7 Million tonnes
Netherlands:
Czech Republic:
Austria:
Portugal:
Sweden:
Hungary:
Romania:
Switzerland:
Greece:
Finland:
Denmark:
Slovakia:
Bulgaria:
Ireland:
Norway:
Slovenia:
Lithuania:
Croatia:
Latvia:
Estonia:
Cyprus / Malta:

more than 3 million tonnes
less than 0.5 million tonnes
PLASTICS DEMAND BY SEGMENT 2019

Distribution of European (EU28+NO/CH) plastics converters demand by segment in 2019. Packaging and building & construction by far represent the largest end-use markets. The third biggest end-use market is the automotive industry.

- **Packaging**: 39.6%
- **Building & Construction**: 20.4%
- **Automotive**: 9.6%
- **Electrical & Electronic**: 6.2%
- **Household, Leisure & Sports**: 4.1%
- **Agriculture**: 3.4%
- **Others**: 16.7%

**Total European plastics converters demand**: 50.7 million tonnes

Others include appliances, mechanical engineering, furniture, medical, etc.
SOURCE: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH

PLASTICS DEMAND BY RESIN TYPE 2019

Distribution of European (EU28+NO/CH) plastics converters demand by resin type in 2019. Leading polymers are the polyolefins (PE & PP).
PLASTICS DEMAND DISTRIBUTION BY RESIN TYPE 2019

Data for EU28+NO/CH.

Hub caps (ABS); optical fibers (PBT); eyeglasses lenses, roofing sheets (PC); touch screens (PMMA); cable coating in telecommunications (PTFE); and many others in aerospace, medical implants, surgical devices, membranes, valves & seals, protective coatings, etc.

Food packaging (dairy, fishery), building insulation, electrical & electronic equipment, inner liner for fridges, eyeglasses frames, etc.

Includes other thermosets such as phenolic resins, epoxide resins, melamine resins, urea resins and others

Bottles for water, soft drinks, juices, cleaners, etc.

Building insulation, pillows and mattresses, insulating foams for fridges, etc.

Window frames, profiles, floor and wall covering, pipes, cable insulation, garden hoses, inflatable pools, etc.

PVC 10 %

PE-HD / PE-MD 17.4 %
Reusable bags, trays and containers, agricultural film, food packaging film, etc.

PE-LD / PE-LLD 19.4 %
Food packaging, sweet and snack wrappers, hinged caps, microwave containers, pipes, automotive parts, bank notes, etc.

PS + EPS 7.9 %

PP 12.4 %
Toys, milk bottles, shampoo bottles, pipes, houseware, etc.

OTHER THERMOPLASTICS 11.3 %

OTHERS 6.2 %

Includes other thermosets such as phenolic resins, epoxide resins, melamine resins, urea resins and others

Food packaging (dairy, fishery), building insulation, electrical & electronic equipment, inner liner for fridges, eyeglasses frames, etc.

PP
PLASTICS DEMAND BY SEGMENT AND POLYMER TYPE IN 2019

Data for EU28+NO/CH.

Total 50.7 Million tonnes

Packaging: 39.6%
Building & Construction: 20.4%
Automotive: 9.6%
Electrical & Electronic: 6.2%
Agriculture: 3.4%
Household, Leisure & Sports: 4.1%
Others: 16.7%

SOURCE: PlasticsEurope Market Research Group (PEMRG) and Conversio Market & Strategy GmbH
Plastics: end-of-life management
In 2018, 29.1 million tonnes of plastic waste were collected in the EU28+NO/CH in order to be treated. Plastic waste exports outside the EU have decreased by 39% from 2016 to 2018.
SINCE 2006, THE AMOUNT OF PLASTIC WASTE SENT TO RECYCLING HAS DOUBLED

However, 25% of plastic post-consumer waste was still sent to landfill in 2018.

2006-2018 evolution of plastic post-consumer waste treatment (EU28+NO/CH)

- **+100% RECYCLING**
- **+77% ENERGY RECOVERY**
- **-44% LANDFILL**

**+19% COLLECTED PLASTIC POST-CONSUMER WASTE 2006-2018**

- CAGR* development 2018 vs. 2016
  - 4.8%
  - 5.7%
  - -1.1%

- Total waste collected: 29.1 M t
- Total waste collected: 24.5 M t

*Source: Conversio Market & Strategy GmbH
*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time.
ZERO LANDFILLING IS NEEDED TO ACHIEVE THE CIRCULAR ECONOMY OF PLASTICS

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

Plastic post-consumer waste rates of recycling, energy recovery and landfill per country in 2018
RECYCLING IS THE FIRST OPTION FOR PLASTIC PACKAGING WASTE

In 2018, 17.8 million tonnes of plastic post-consumer packaging waste were collected in order to be treated.

Plastic PACKAGING* waste treatment in 2018 (EU28+NO/CH)

- **17.8 Mt** Collected plastic post-consumer packaging waste
- **42%** Recycling
- **39.5%** Energy Recovery
- **18.5%** Landfill

*From household, industrial and commercial packaging*
SINCE 2006, THE QUANTITY OF PLASTIC POST-CONSUMER PACKAGING WASTE SENT TO RECYCLING HAS INCREASED BY 92%

2018 data show a positive trend for recycling, however more than 18% of the waste is still sent to landfill.

2006-2018 evolution of plastic PACKAGING* waste treatment (EU28+NO/CH)

<table>
<thead>
<tr>
<th></th>
<th>+92% RECYCLING</th>
<th>+84% ENERGY RECOVERY</th>
<th>-54% LANDFILL</th>
<th>+19% COLLECTED PLASTIC POST-CONSUMER WASTE 2006-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million tonnes</td>
<td>7.2</td>
<td>3.9</td>
<td>3.8</td>
<td>7.5</td>
</tr>
</tbody>
</table>

SOURCE: Conversio Market & Strategy GmbH

*From household, industrial and commercial packaging
**CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time
PLASTIC PACKAGING RECYCLING

The new Directive (EU) 2019/852 on Packaging and Packaging Waste sets higher recycling targets per material (50% for plastic packaging by 2025 and 55% by 2030), together with a new calculation method of recycling performances. This new method will start to be applicable for data of the year 2020.

Recycling rates of plastic packaging waste in Europe range between 26% and 52%. This wide range can be explained by differences in collection schemes, available infrastructure and consumer behaviour. On average, the 42% recycling of plastic packaging represent an increase of 1.2 points versus 2016, in particular thanks to improved waste collection.

* From household, industrial and commercial packaging

** According to the current calculation methods established in Directive 94/62/EC
Plastics: end-of-life management in selected countries
PLASTIC WASTE TREATMENT IN GERMANY

In 2018, 5.3 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by 80%, energy recovery increased by 73% and landfill decreased by 80%.

Plastic post-consumer waste treatment in 2018

- **38.6%** RECYCLING
  - Incl. chemical recycling: 0.2%

- **60.7%** ENERGY RECOVERY

- **0.6%** LANDFILL

Total waste collected

- **3,599 kt** in 2006
- **5,322 kt** in 2018

2006-2018 evolution of plastic post-consumer waste treatment

- **3,233 kt** in 2018
- **1,873 kt** in 2006

CAGR* development 2018 vs. 2016

- **+2.4%**  
- **+2.5%**
- **-7.6%**

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time.
In 2018, 3.1 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by 75%, energy recovery increased by 75% and landfill decreased by 95%.

**From household, industrial and commercial packaging

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time

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3,145 kt
2018

2,132 kt
2006

Total waste collected
PLASTIC WASTE TREATMENT IN UK

In 2018, close to 4 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by x2.4, energy recovery increased by x6.8 and landfill decreased by 66%.

### 2006-2018 evolution of plastic post-consumer waste treatment

- **Recycling**: +2.1% CAGR
- **Energy Recovery**: +11.8%
- **Landfill**: -11.1%

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time*
In 2018, 2.3 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by x2.2, energy recovery increased by x6.2 and landfill decreased by 77%.

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time

**From household, industrial and commercial packaging
PLASTIC WASTE TREATMENT IN ITALY

In 2018, 3.6 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by 68%, energy recovery increased by 57% and landfill decreased by 48%.

2006-2018 evolution of plastic post-consumer waste treatment

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time.
In 2018, 2.3 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by 62%, energy recovery increased by 53% and landfill decreased by 67%.

**From household, industrial and commercial packaging

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time

Plastic packaging waste treatment in 2018

2006-2018 evolution of plastic PACKAGING** waste treatment

<table>
<thead>
<tr>
<th>Year</th>
<th>Recycling (kilo tonnes)</th>
<th>Energy Recovery (kilo tonnes)</th>
<th>Landfill (kilo tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>883</td>
<td>632</td>
<td>2,297</td>
</tr>
<tr>
<td>2007</td>
<td>654</td>
<td>500</td>
<td>2,160</td>
</tr>
<tr>
<td>2008</td>
<td>645</td>
<td>480</td>
<td>2,024</td>
</tr>
<tr>
<td>2009</td>
<td>632</td>
<td>450</td>
<td>1,890</td>
</tr>
<tr>
<td>2010</td>
<td>619</td>
<td>420</td>
<td>1,760</td>
</tr>
<tr>
<td>2011</td>
<td>606</td>
<td>390</td>
<td>1,627</td>
</tr>
<tr>
<td>2012</td>
<td>593</td>
<td>360</td>
<td>1,496</td>
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<td>2013</td>
<td>580</td>
<td>330</td>
<td>1,365</td>
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<td>2014</td>
<td>567</td>
<td>300</td>
<td>1,234</td>
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<tr>
<td>2015</td>
<td>554</td>
<td>270</td>
<td>1,104</td>
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<tr>
<td>2016</td>
<td>541</td>
<td>240</td>
<td>986</td>
</tr>
<tr>
<td>2017</td>
<td>528</td>
<td>210</td>
<td>287</td>
</tr>
<tr>
<td>2018</td>
<td>515</td>
<td>180</td>
<td>0</td>
</tr>
</tbody>
</table>
PLASTIC WASTE TREATMENT IN FRANCE

In 2018, 3.6 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by 79%, energy recovery increased by 35% and landfill decreased by 18%.

2006-2018 evolution of plastic post-consumer waste treatment

- **RECYCLING**: +6.8% CAGR* development 2018 vs. 2016
- **ENERGY RECOVERY**: +2.5%
- **LANDFILL**: +3.4%

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time

Total waste collected

- **2006**: 3,128 kt
- **2018**: 3,663 kt

2006-2018:
- **2006**: 3,128 kt
- **2007**: 3,663 kt
- **2008**: 495 kt
- **2009**: 1,178 kt
- **2010**: 1,455 kt
- **2011**: 1,189 kt
- **2012**: 1,189 kt
- **2013**: 1,189 kt
- **2014**: 1,587 kt
- **2015**: 1,587 kt
- **2016**: 1,587 kt
- **2017**: 1,587 kt
- **2018**: 1,587 kt

- **2014**: 1,189 kt
- **2015**: 1,189 kt
- **2016**: 1,189 kt
- **2017**: 1,189 kt
- **2018**: 1,189 kt

- **2014**: 887 kt
- **2015**: 887 kt
- **2016**: 887 kt
- **2017**: 887 kt
- **2018**: 887 kt

- **2006**: 24.2%
- **2007**: 32.5%
- **2008**: 43.3%
- **2009**: 43.3%
- **2010**: 43.3%
- **2011**: 43.3%
- **2012**: 43.3%
- **2013**: 43.3%
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- **2016**: 43.3%
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- **2018**: 43.3%

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- **2007**: 3,128 kt
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- **2009**: 32.5%
- **2010**: 43.3%
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- **2015**: 43.3%
- **2016**: 43.3%
- **2017**: 43.3%
- **2018**: 43.3%
In 2018, 2.3 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by 41%, energy recovery increased by 28% and landfill decreased by 9%.

**From household, industrial and commercial packaging

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time
In 2018, 2.5 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by x2.3, energy recovery increased by 59% and landfill decreased by 41%.

**2006-2018 evolution of plastic post-consumer waste treatment**

- **Recycling**: +13% CAGR from 2016 to 2018
- **Energy Recovery**: +12.2% CAGR from 2016 to 2018
- **Landfill**: -3.6% CAGR from 2016 to 2018

Total waste collected:
- 2,476 kt in 2006
- 2,569 kt in 2018

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time*
In 2018, 1.6 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by 80%, energy recovery increased by 10% and landfill decreased by 46%.
PLASTIC WASTE TREATMENT IN POLAND

In 2018, 1.9 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by x2.7, energy recovery increased by x115 and landfill decreased by 21%.
In 2018, 1 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic PACKAGING waste collected for recycling increased by x2.1, energy recovery increased by x70 and landfill decreased by 37%.
PLASTIC WASTE TREATMENT IN NETHERLANDS

In 2017, 0.9 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by 79%, energy recovery increased by 15% and landfill decreased by 97%.

**2006-2018 evolution of plastic post-consumer waste treatment**

- **RECYCLING**: +5.4% (851 kt to 1,000 kt, +5.4%)
- **ENERGY RECOVERY**: +2.9% (177 kt to 200 kt, +2.9%)
- **LANDFILL**: -24.4% (937 kt to 537 kt, -24.4%)

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time*
In 2017, 0.5 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2017, the volume of plastic PACKAGING waste collected for recycling increased by 74%, energy recovery decreased by 19% and landfill decreased by 100%.

**From household, industrial and commercial packaging

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time
In 2018, 0.6 million tonnes of plastic post-consumer waste were collected through official schemes in order to be treated. From 2006 to 2018, the volumes for recycling increased by 56.7%, energy recovery increased by 36.7% and landfill decreased by 83.6%. 

Plastic post-consumer waste treatment in 2018

CAGR* development 2018 vs. 2016

2006-2018 evolution of plastic post-consumer waste treatment

* CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time.
In 2018, 0.3 million tonnes of plastic post-consumer packaging** waste were collected through official schemes in order to be treated. From 2006 to 2018, the volume of plastic packaging waste collected for recycling increased by 38%, energy recovery increased by 45% and landfill decreased by 100%.

*CAGR: Compound Annual Growth Rate is the mean annual growth rate over a specific period of time

**From household, industrial and commercial packaging
Plastics: turning waste into new resources
PLASTICS: MECHANICAL RECYCLING PROCESS

In 2018, close to 5 million tonnes of plastic recyclates were produced in European recycling facilities.

**END-OF-LIFE PRODUCTS**

1. **COLLECTION**
   Collection of end-of-life plastic products from separate and mix waste streams

2. **FIRST SORTING**
   Separation of waste by type of material (plastics, aluminium, tinplate, cardboard, paper, etc.) and then by type of polymer

**RECYCLED POLYMERS ALSO CALLED RECYCLATES**

3. **SHREDDING**
   Plastics are ground into smaller pieces

4. **WASHING**
   Shredded plastics are washed to remove dust and dirt

5. **SECOND SORTING AND CONTROL**
   Plastics are sorted again and controlled before sent to extrusion

6. **EXTRUSION**
   Plastics flakes are finally converted into homogenous pellets ready to use in the manufacture of new products
In 2018, from the 5 million tonnes of plastic recyclates produced in Europe, 80% re-entered the European economy in order to manufacture new products. The rest was exported outside Europe to re-enter other regions of the world's economies.

Plastic recyclates used in new products in Europe

- Packaging: 24%
- Agriculture: 11%
- Building & Construction: 13%
- Electrical & Electronic: 11%
- Automotive: 3%
- Others: 2%
- Houseware, Leisure, Sports: 46%

SOURCE: Conversio Market & Strategy GmbH
SINCE 2018, WE CAN OBSERVE A DECLINE OF THE EUROPEAN PLASTICS INDUSTRY PRODUCTION

The COVID-19 pandemic has clearly intensified this decline.

Plastics industry production in EU27
(index 2015=100, seasonally adjusted data)
After a sharp drop in production due to COVID-19 in the first half of the year 2020, production has started to recover again in the second half of the year.

Production of plastics in primary forms in the EU27 started to recover in June 2020. The recovery will continue in the last quarter of 2020 and in 2021. However the speed of recovery depends on the impact of the COVID-19 and on the demand for plastics from important customer industries like automotive or building and construction sectors.

The production level before the COVID-19 pandemic will not be reached before 2022.

**Estimated growth rate**

2020: **-8.5%**

Index 2015=100, on a quarterly basis; seasonally and working day adjusted.

**Graph:**
- **Production primary plastics**
- **Average annual index; estimate for 2020**

**Source:** Eurostat
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Acrylonitrile butadiene styrene resin</td>
</tr>
<tr>
<td>ASA</td>
<td>Acrylonitrile styrene acrylate resin</td>
</tr>
<tr>
<td>bn</td>
<td>Billion</td>
</tr>
<tr>
<td>CH</td>
<td>Switzerland</td>
</tr>
<tr>
<td>CIS</td>
<td>Commonwealth of Independent States</td>
</tr>
<tr>
<td>Conversio</td>
<td>Conversio Market &amp; Strategy GmbH</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EPRO</td>
<td>European Association of Plastics Recycling and Recovery Organisations</td>
</tr>
<tr>
<td>EPS</td>
<td>Expandable polystyrene</td>
</tr>
<tr>
<td>ETP</td>
<td>Engineering Thermoplastics</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>kt</td>
<td>Kilo tonnes</td>
</tr>
<tr>
<td>M t</td>
<td>Million tonnes</td>
</tr>
<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
</tr>
<tr>
<td>NO</td>
<td>Norway</td>
</tr>
<tr>
<td>Other plastics</td>
<td>Thermosets, adhesives, coatings and sealants</td>
</tr>
<tr>
<td>PA</td>
<td>Polyamides</td>
</tr>
<tr>
<td>PBT</td>
<td>Polybutylene terephthalate</td>
</tr>
<tr>
<td>PC</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>PE</td>
<td>Polyethylene</td>
</tr>
<tr>
<td>PEEK</td>
<td>Polyetheretherketone</td>
</tr>
<tr>
<td>PE-HD</td>
<td>Polyethylene, high density</td>
</tr>
<tr>
<td>PE-LD</td>
<td>Polyethylene, low density</td>
</tr>
<tr>
<td>PE-LLD</td>
<td>Polyethylene, linear low density</td>
</tr>
<tr>
<td>PE-MD</td>
<td>Polyethylene, medium density</td>
</tr>
<tr>
<td>PEMRG</td>
<td>PlasticsEurope Market Research Group</td>
</tr>
<tr>
<td>PET</td>
<td>Polyethylene terephthalate</td>
</tr>
<tr>
<td>Plastic materials</td>
<td>Thermoplastics + Polyurethanes</td>
</tr>
<tr>
<td>PMMA</td>
<td>Polymethyl methacrylate</td>
</tr>
<tr>
<td>POM</td>
<td>Polyoxymethylene</td>
</tr>
<tr>
<td>PP</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>PS</td>
<td>Polystyrene</td>
</tr>
<tr>
<td>PTFE</td>
<td>Polytetrafluoroethylene</td>
</tr>
<tr>
<td>PUR</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>PVC</td>
<td>Polyvinyl chloride</td>
</tr>
<tr>
<td>SAN</td>
<td>Styrene-acrylonitrile copolymer</td>
</tr>
<tr>
<td>Thermoplastics</td>
<td>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)</td>
</tr>
<tr>
<td>Thermosets</td>
<td>Urea-formaldehyde foam, melamine resin, polyester resins, epoxy resins, etc.</td>
</tr>
</tbody>
</table>
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 EU27 Member States plus Norway, Switzerland, Turkey and UK. 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 1.5 million people are working in more than 55,000 companies (mainly small and medium sized companies in the converting sector) to create a turnover around 350 bn euros 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