

Plastics – the Facts 2022

OCTOBER 2022

Plastics - the Facts is an analysis of the latest data related to plastics production, demand, conversion and waste management in Europe. It also provides information on key figures of the European plastics industry. In short, this report gives an insight into the industry's contribution to European society.





Table of content

Contribution to European society	10
World plastics data	14
European plastics data	24
End-of-life management in EU27+3	43
End-of-life management in selected countries	57
Outlook	75
List of acronyms	79

Foreword

Welcome to the 2022 edition of Plastics - the Facts.

This year's data confirms that after a turbulent period, global plastics manufacturing is bouncing back. In 2021 global production rose 4% to more than 390 million tonnes demonstrating the strong and continuing demand for plastics.

However, in Europe in particular, there are challenges ahead. Our latest data show that China's share of global plastics production continues to grow (reaching 32% in 2021) while Europe's share – which reached 57.2 million tonnes in 2021 – continues to decline (hitting 15%). This confirms **a loss of competitiveness that could be exacerbated further** by energy and logistics crises resulting from the war in Ukraine and the ongoing Covid pandemic.



Virginia Janssens, Managing Director Plastics Europe

The European plastics manufacturing industry is in transition. Every week I witness our member companies investing huge amounts of capex, time, energy, imagination, and expertise **to meet our 2050 net zero and circularity targets sustainably.** Our members are undertaking huge investments and a far-reaching reorganisation of their production and technology base. In so doing they are seeking ways to solve issues like plastics waste and climate change, while continuing to offer its various value chains, consumers and society the many benefits that plastics offer.

At Plastics Europe we are evolving too. Every day, we strive to be the catalyst for the industry to contribute to the goals of international climate agreements such as the COP and the EU's Green Deal.

To support this effort, an independent report, commissioned by Plastics Europe and called **"ReShaping Plastics: pathways to a circular, climate neutral plastics system in Europe"**, was published in April this year. A living roadmap is now also being developed by Plastics Europe and its members, setting out concrete milestones,

actions and KPIs to track progress on our transformation journey, also enhancing value chain collaboration.

To help monitor progress we need more reliable and comprehensive data. In this edition of "Plastics – the Facts" we have therefore included production and demand data for biobased, bio-attributed and post-consumer recycled plastics for the first time.

Plastics Europe recognises that to transition to net zero by 2050, **faster systemic change and more intense and effective collaboration** between all parts of the European plastics' system and policy makers **are essential.** We also need a new and enabling policy framework that better incentivises investment and innovation by fostering a climate of creative competition in a circular economy for plastics.

I am very proud of the progress that we have made as an industry over the past year and look forward to deepen collaboration with all stakeholders to keep the European industry globally competitive as the EU transitions to net zero and circularity.

Notice to the reader

The Plastics – the Facts 2022 edition presents 2021 data for plastics production, demand, conversion and some 2020 European and national end-of-life management figures.

A more exhaustive analysis of plastics progress towards circularity in Europe is available in the [“The Circular Economy for Plastics – A European Overview”](#).

The data presented in this report was collected by Plastics Europe (the pan-European association of plastics manufacturers) and EPRO (the European Association of Plastics Recycling and Recovery Organisations). Plastics Europe’s members, gathered in the Plastics Europe’s Market Research Group (PEMRG), provided input on the plastics demand by converters. Conversio Market & Strategy GmbH helped assess plastics production and conversion, waste collection and treatment data. Official statistics from European or national authorities and waste management organisations have been used, 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.

All figures and graphs in this report show data for EU27 plus Norway, Switzerland and the United Kingdom, which is referred to as Europe for the purposes of abbreviation – other country groups are explicitly listed.

Data presented in this report cover thermoplastics and thermosets.

Data presented in this report are rounded estimations (except Eurostat data).

New data and definitions

With the view of generating data that can help to address today's sustainability challenges, and to ensure comparability and coherence with other reports and studies, Plastics Europe has reviewed some concepts' definitions and the scope of its datasets.

For this edition of Plastics – the Facts, new figures and graphs were developed for the global and European plastics production*. As from 2021 data, production figures will be shown by type of feedstock : i.e., fossil-based, post-consumer recycled or bio-based/bio-attributed plastics production.

For 2021, data on post-consumer recycled plastics use by converters has also been added.

Polymers that are not used in the conversion of

plastics parts and products (i.e., quantities used for adhesives, sealants, coatings, paints, varnishes, textiles waterproofing, or within the production of cosmetics, medicines or chemical processes) are now excluded from the scope of the production, demand, conversion and end-of-life management data. PVC-, PO- and PU-fibers are included, whereas PA-fibers, PET-, PBT-, or acrylic polyesters are not included.

Those changes explain data differences with the previous editions of Plastics – the Facts.

For a more exhaustive analysis of plastics progress towards circularity, please consult Plastics Europe's report

[The Circular Economy for Plastics – A European Overview.](#)

*Including plastics production from polymerisation and production of mechanically recycled plastics

The circularity of plastics

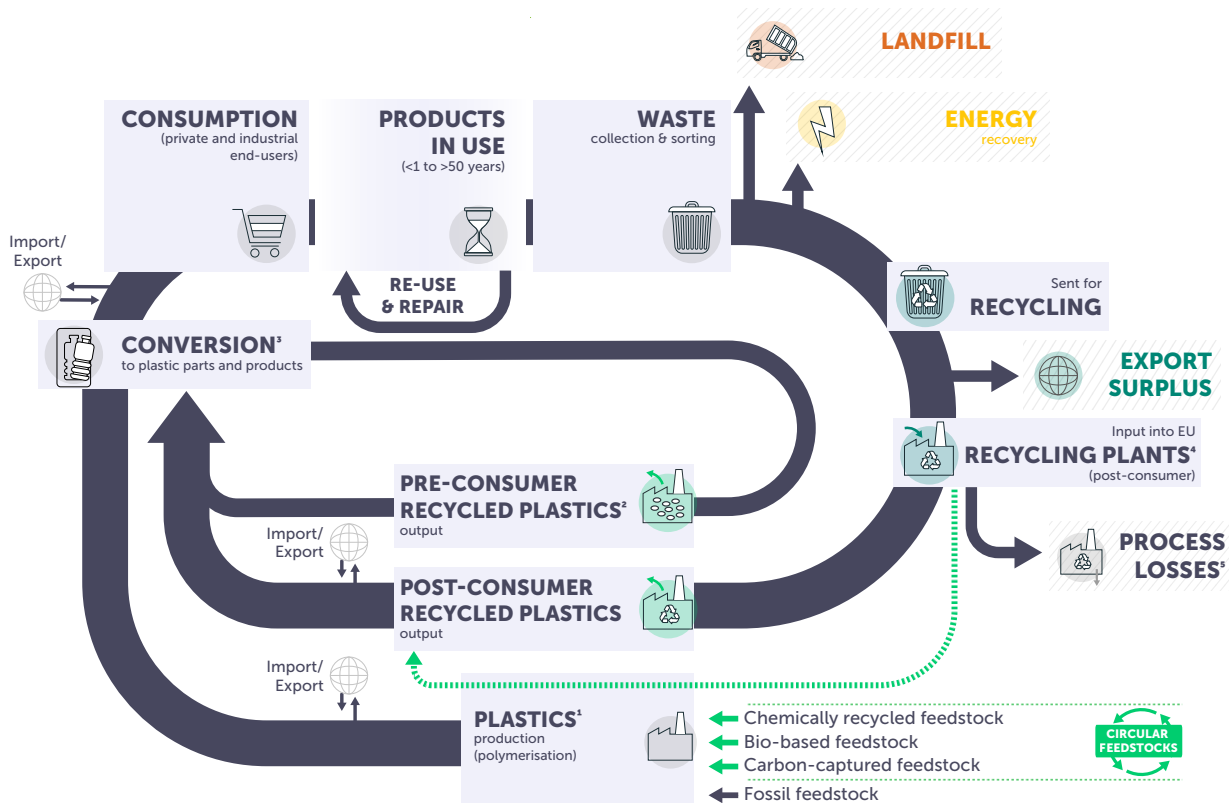
The circular and climate neutral plastics economy is a system in which plastics are produced, converted, used and managed in a sustainable way.

5.5 Mt

post-consumer recycled plastics were used in new products and parts in the EU27+3 in 2021, representing about **10% recycled content** rate in plastics conversion, and an increase of about 20% compared to 2020.



Today, most plastics are still produced from fossil-based feedstock. Transitioning to a circular, climate neutral economy demands investment and innovation from the plastics value chain to develop new business models for reuse, produce more recycled plastics and new feedstocks that are less dependent on fossil-based oil and gas. Plastics Europe continues working towards improving knowledge and data on plastics circularity.



1. Does not include elastomers, adhesives, coatings and sealants. 2. Pre-consumer plastics waste is mainly originating from the plastics conversion and from plastics production (polymerisation) to a lesser extent. 3. Compounding of recycled plastics and plastics from polymerisation may occur prior conversion. 4. Includes chemical recycling. 5. Process losses are usually sent to energy recovery or landfill. Parts of plastics residues could be a potential future source of chemical recycling.



Contribution to European society



“An industry employing more than 1.5 million people across the European Union”.

The European plastics industry: key figures

The European plastics industry includes plastics manufacturers, converters, recyclers and machinery manufacturers.

> **1.5** million
employment*



In 2021, the plastics industry gave direct employment to more than 1.5 million people in the European Union, a small increase compared to 2020.

52,000
companies*



An industry with over 52,000 companies, most of them SME's, distributed across the European Union.

> **400** billion €
turnover*



The European plastics industry (EU27) had a turnover of approximately 405 billion euros in 2021.

*2021 Plastics Europe estimations – Eurostat official data only available until 2019.

14.4 billion € trade balance



The European plastics industry (EU27) had a positive trade balance of 14.4 billion euros in 2021.

8th ranking value-added



The European plastics industry (EU27) ranks 8th in Europe in industrial value-added contribution**, positioned after the manufacturing of electrical equipment.

* 2021 Plastics Europe estimations – Eurostat official data only available until 2019.

** Measured by value added at factor cost, 2019.

>10 Mt sent to recycling



More than 10 million tonnes of post-consumer plastics waste were sent to recycling in 2020 in the EU27+3.


~5.5 Mt post-consumer recycled plastics



In 2021, about 5.5 million tonnes of post-consumer recycled plastics were reintroduced in the EU27+3 economy, an increase of about 20% compared to 2020.



World plastics data

A large, solid orange shape that starts as a curve at the top left and tapers to a point at the bottom right, occupying the left side of the page.

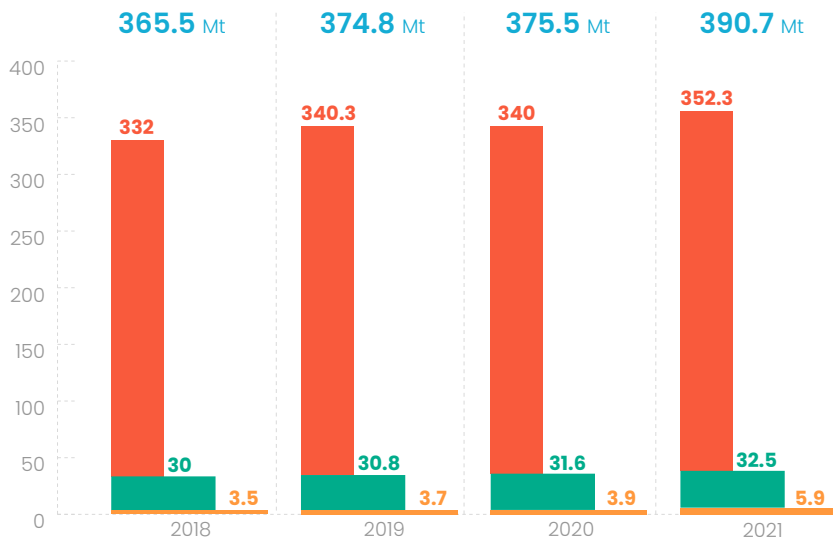
“Global plastics production bouncing back in 2021 after a turbulent period”.

World plastics production* evolution

After a stagnation in 2020 due to the Covid-19 pandemic, the global plastics production increased to 390.7 million tonnes in 2021.

in million tonnes

- Fossil-based plastics¹
- Post-consumer recycled plastics²
- Bio-based plastics (including bio-attributed plastics in 2021 data)³



Sources: Conversio Market & Strategy GmbH and nova-institute

The above data are rounded estimations.

*Including plastics production from polymerisation and production of mechanically recycled plastics

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included

1. Includes fossil-based thermoplastics, thermosets and PUR

2. Data on post-consumer recycled plastics had been developed in 2018, data for other years are estimations

3. Including bio-attributed plastics in 2021 data. Source: nova-institute 2022; data for bio-based structural polymers, preliminary estimations for 2021

390.7 Mt

world plastics production*

For the first time, Plastics – the Facts presents World plastics production data excluding polymers that are not used in the conversion of plastic parts and products (i.e., for adhesives, sealants, coatings, paints, varnishes, or within the production of cosmetics, medicines or chemical processes). Post-consumer recycled and bio-based/bio-attributed plastics production quantities are included for the first time.

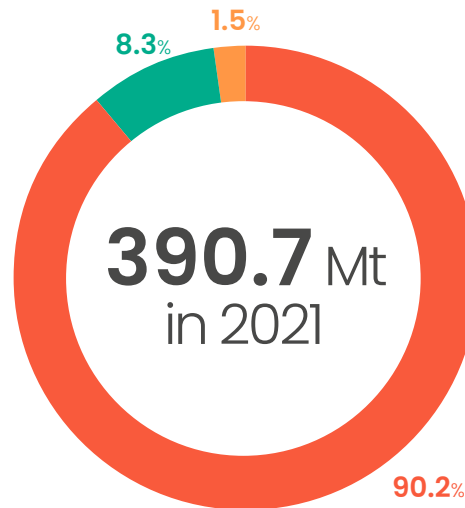
As in previous editions, quantities used for textiles or textiles waterproofing, are excluded. The scope includes thermoplastics and thermosets.


*Including plastics production from polymerisation and production of mechanically recycled plastics



World plastics production* in 2021

In 2021, 90.2% of the world plastics production was fossil-based. Post-consumer recycled plastics and bio-based/bio-attributed plastics respectively accounted for 8.3% and 1.5% of the world plastics production.



 Fossil-based plastics

 Post-consumer recycled plastics

 Bio-based/bio-attributed plastics¹

Sources: Conversio Market & Strategy GmbH and nova-Institute

The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

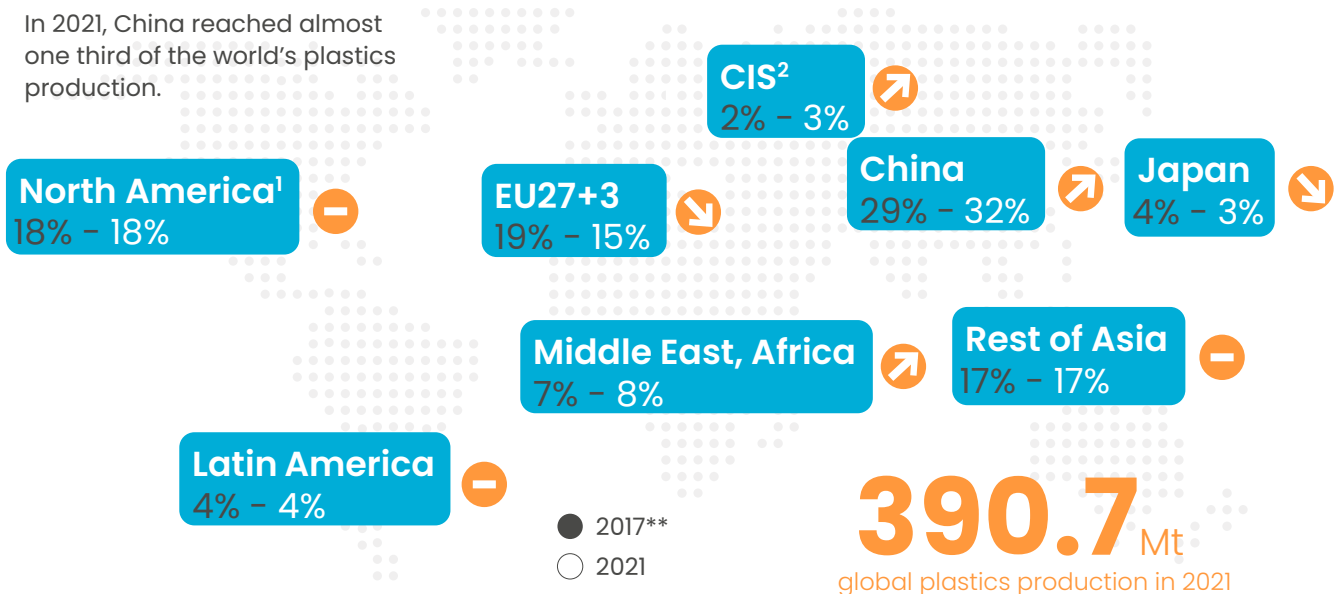
*Including plastics production from polymerisation and production of mechanically recycled plastics

1. nova-Institute 2022; data for bio-based structural polymers, preliminary estimations for 2021



Distribution of the global plastics production*

In 2021, China reached almost one third of the world's plastics production.



Sources: Conversio Market & Strategy GmbH and nova-Institute
The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

*Including plastics production from polymerisation and production of mechanically recycled plastics

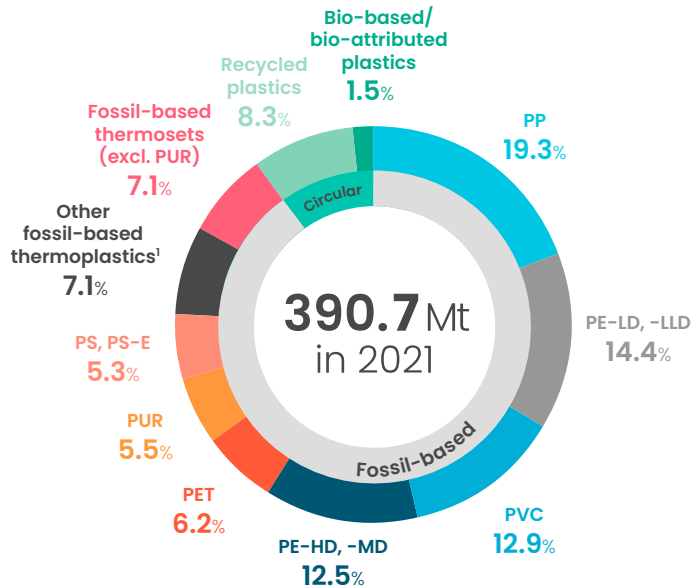
**Only thermoplastics and PUR

1. Canada, Mexico and the United States

2. Commonwealth of Independent States: Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine

Distribution of the global plastics production* by type

In 2021, circular plastics represented about 9.8% of the world plastics production.



Sources: Conversio Market & Strategy GmbH and nova-institute
The above data are rounded estimations.

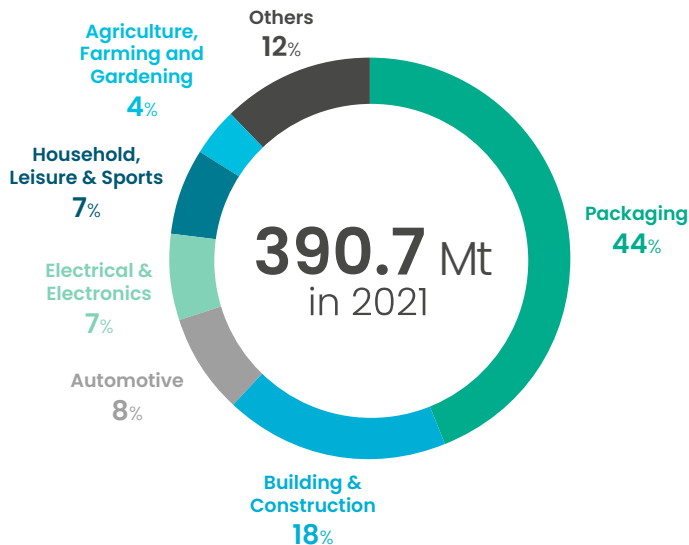
Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

*Including plastics production from polymerisation and production of mechanically recycled plastics

1. Includes PBT, PEEK, PEI, POM, PPA, PSU/PES/PPSU, PTFE, PVDF and other thermoplastics not listed separately

Distribution of the global plastics use by application

In 2021, packaging and building & construction applications were the two largest world plastics markets.



Sources: Conversio Market & Strategy GmbH

The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.





European plastics data

A large teal shape on the left side of the page, consisting of a curved top edge and a diagonal line extending from the top left towards the bottom right.

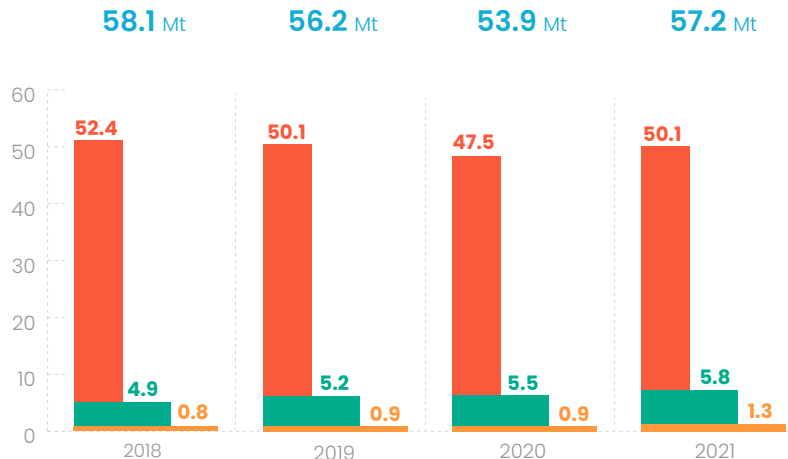
“The European plastics industry is in transition to meet its 2050 net zero and circularity targets”.

European plastics production* evolution

After a decrease in 2020 due to the Covid-19 pandemic, the European production increased to 57.2 million tonnes in 2021.

in million tonnes

- Fossil-based plastics¹
- Post-consumer recycled plastics²
- Bio-based plastics (including bio-attributed plastics in 2021 data)³



Sources: Conversio Market & Strategy GmbH, nova-Institute, Polyglobe database by Kunststoff Information Verlagsgesellschaft mbH, Eurostat (European Statistical Office)
2018-2020 production quantities have been calculated based on the development of Eurostat production indices

The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

*Including plastics production from polymerisation and production of mechanically recycled plastics

1. Includes fossil-based thermoplastics, thermosets and PUR used for plastic parts and products

2. Data on recycled plastics in the EU27+ 3 had been developed in 2018 and 2020, data for other years are estimations

3. Including bio-attributed plastics in 2021 data. Source: nova-Institute 2022; data for bio-based structural polymers, preliminary estimations

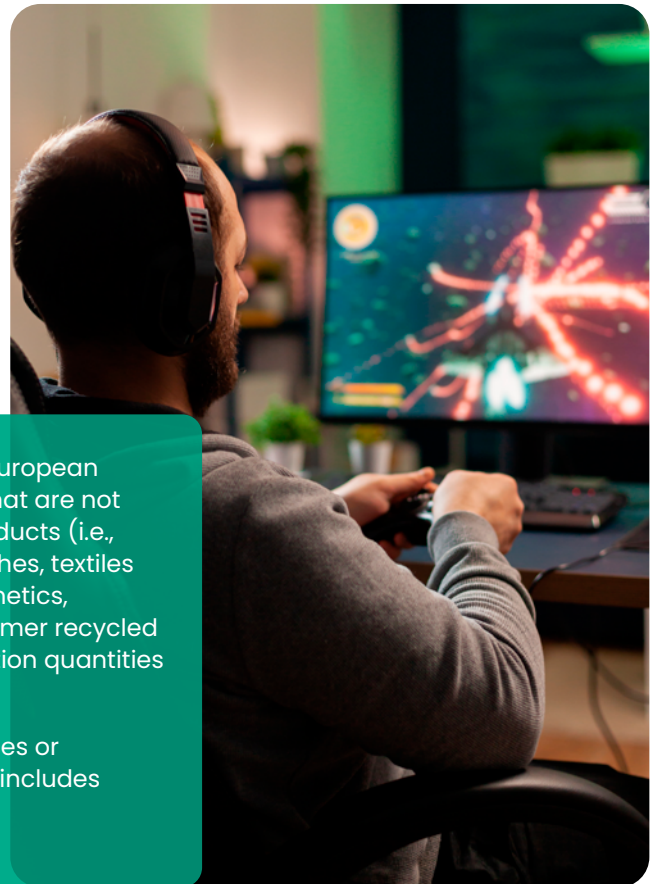
57.2Mt

European plastics production*

For the first time, Plastics – the Facts presents European plastics production data excluding polymers that are not used in the conversion of plastic parts and products (i.e., for adhesives, sealants, coatings, paints, varnishes, textiles waterproofing, or within the production of cosmetics, medicines or chemical processes). Post-consumer recycled and bio-based/bio-attributed plastics production quantities are included for the first time.

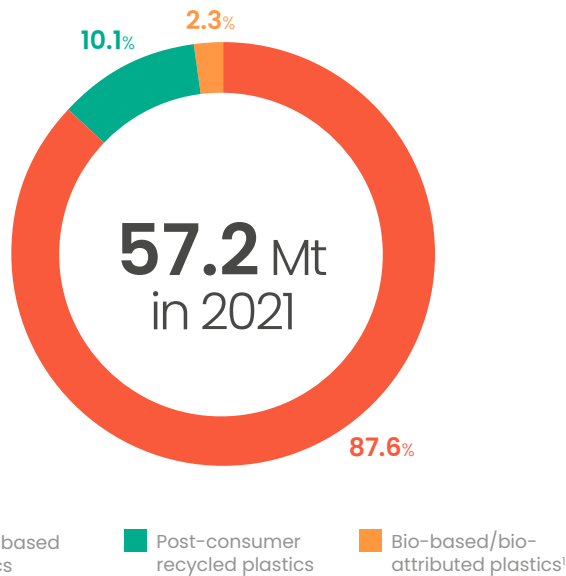
As in previous editions, quantities used for textiles or textiles waterproofing are excluded. The scope includes thermoplastics and thermosets.

*Including plastics production from polymerisation and mechanical recycling output



European plastics production* in 2021

In 2021, European plastics production reached 57.2 Mt. Post-consumer recycled plastics and bio-based/bio-attributed plastics respectively accounted for 10.1% and 2.3% of the European plastics production.



Sources: Conversio Market & Strategy GmbH and nova-Institute

The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

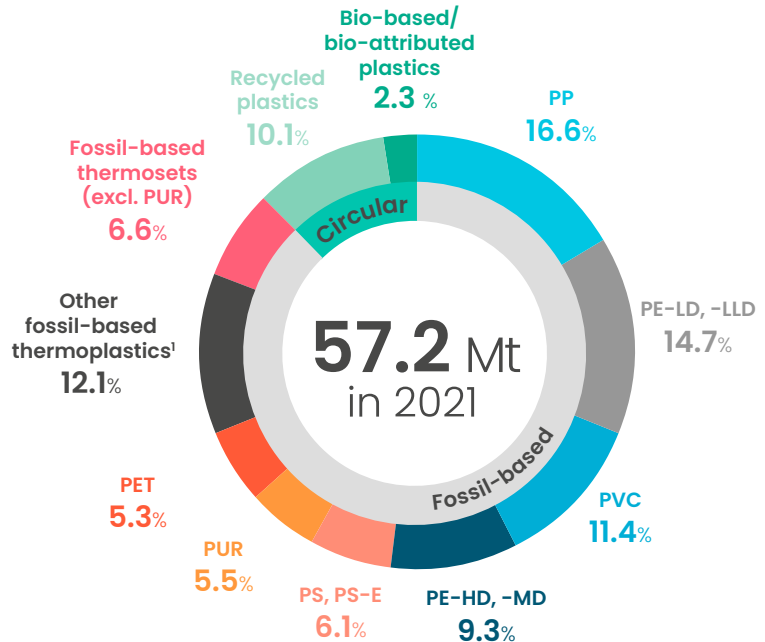
*Including plastics production from polymerisation and production of mechanically recycled plastics

1. nova-Institute 2022; data for bio-based structural polymers, preliminary estimations for 2021

European plastics production* by type

In 2021, circular plastics represented about 12.4% of the European plastics production.

57.2Mt
European plastics
production*
in 2021



Sources: Conversio Market & Strategy GmbH, nova-Institute, Polyglobe database by Kunststoff Information Verlagsgesellschaft mbH, Eurostat (European Statistical Office)
The above data are rounded estimations.

Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

*Including plastics production from polymerisation and production of mechanically recycled plastics

1. Includes PBT, PEEK, PEI, POM, PPA, PSU/PES/PSPSU, PTFE, PVDF and other thermoplastics not listed separately

50.3 Mt

European plastics converters' demand

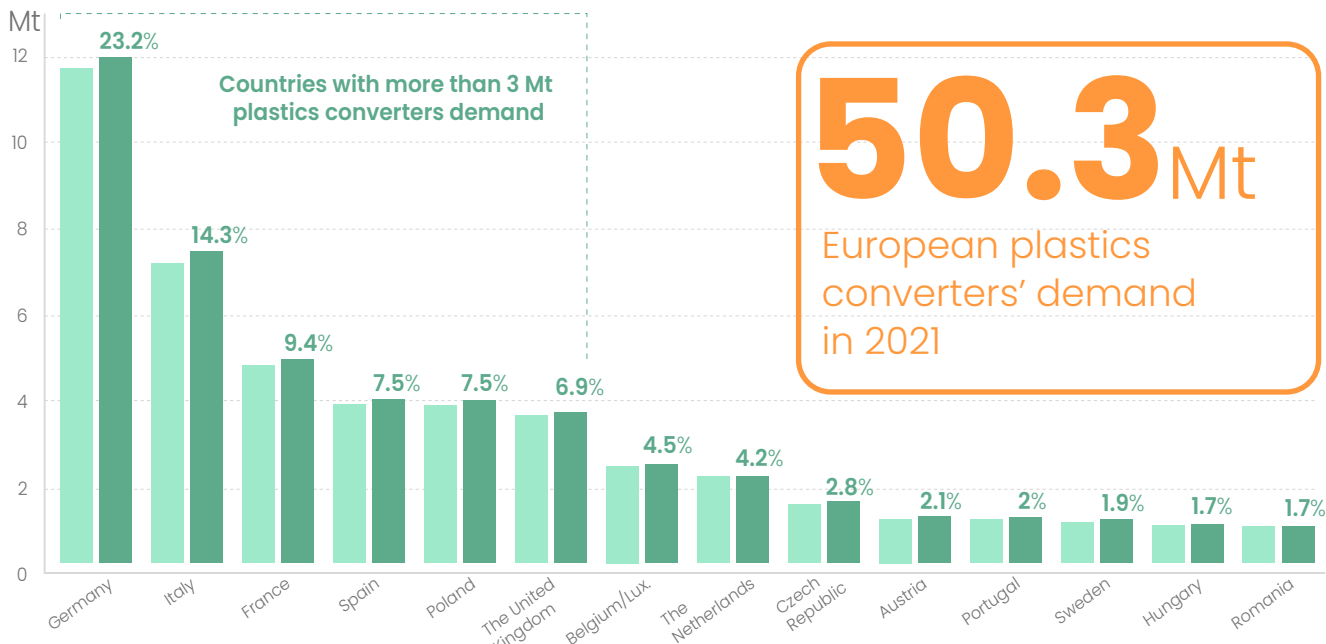
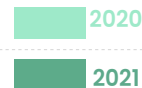
European plastics converters' demand data as published in *Plastics – the Facts* excludes polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, paints, varnishes, textiles waterproofing, or within the production of cosmetics, medicines or chemical processes). European converters demand data in *Plastics – the Facts* do not include recycled and bio-based/bio-attributed plastics due to limited data availability. The scope includes thermoplastics and thermosets.

Demand data are built on estimations of quantities bought by European converters, including imports.

Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)
The above data are rounded estimations.



European plastics converters' demand by countries



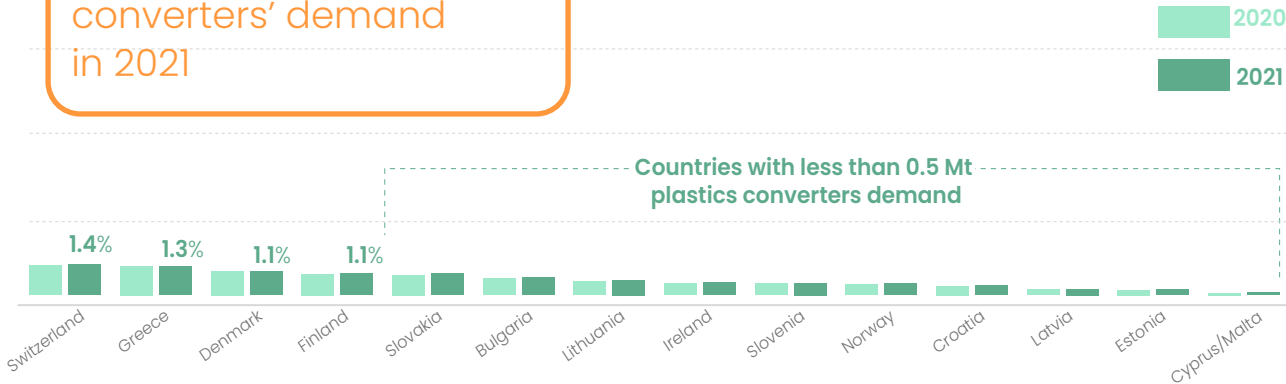
Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

The above data are rounded estimations.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

European plastics converters' demand by countries

50.3Mt
European plastics converters' demand in 2021



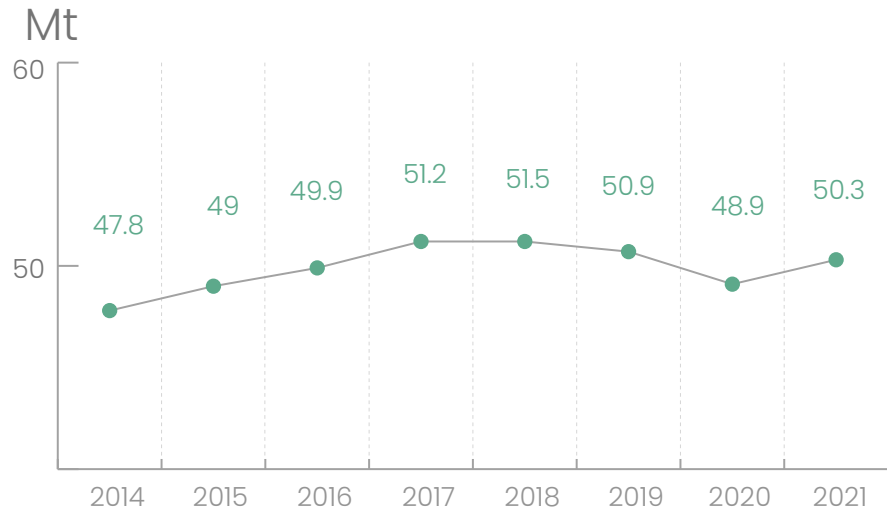
Source: Converso Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

The above data are rounded estimations.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

Evolution of the plastics converters' demand (EU27+3)

In 2021, converters plastics demand increased for the first time after two years of decrease.



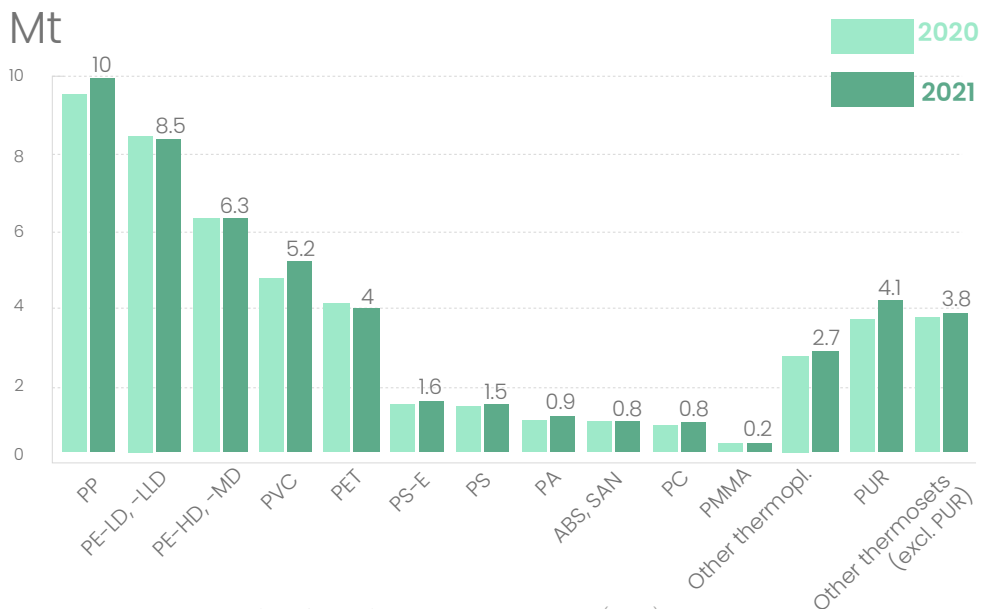
Source: Conversio Market & Strategy GmbH based on interviews with converters

The above data are rounded estimations.

Demand data are built on estimations of quantities bought by European converters, including imports.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

European plastics converters' demand by polymer type



Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

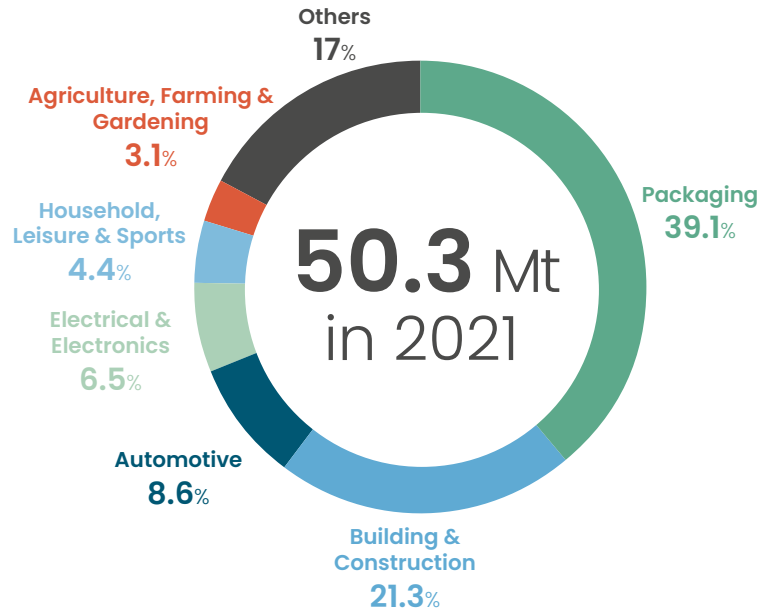
The above data are rounded estimations.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included.

Plastics – the Facts figures on PA only cover PA6 and PA66.

European plastics converters' demand by applications

In 2021, packaging and building & construction by far represented the largest end-use markets for plastics in the EU27+3. The third biggest end-use market is the automotive sector.



Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

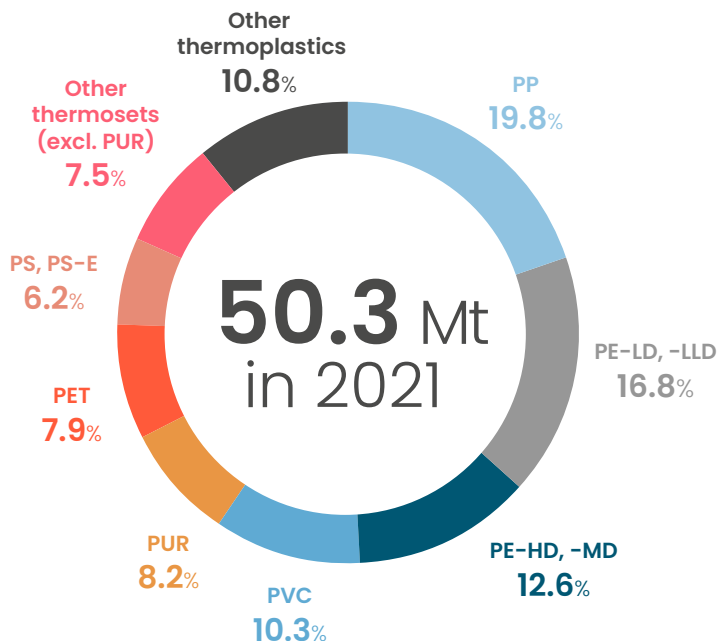
The above data are rounded estimations.

Demand data are built on estimations of quantities bought by European converters, including imports.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

European plastics converters' demand by type

In 2021, almost half of the European plastics converters' demand was represented by polyolefins.



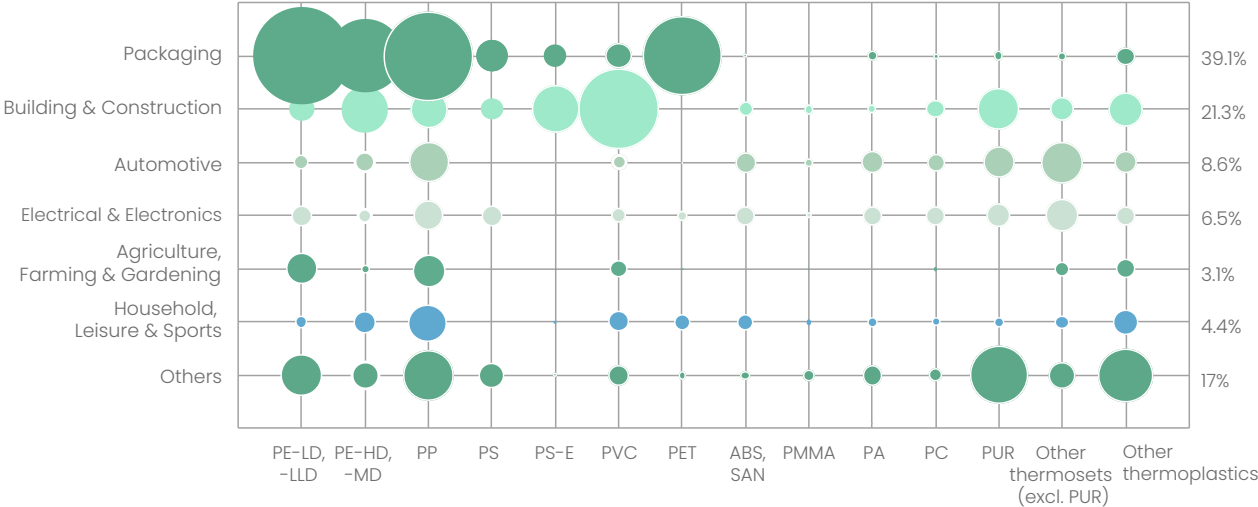
Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

The above data are rounded estimations.

Demand data are built on estimations of quantities bought by European converters, including imports.

Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

European plastics converters' demand by application and type



Source: Conversio Market & Strategy GmbH based on the input of the Plastics Europe Market Research Group (PEMRG)

The above data are rounded estimations.

Demand data are built on estimations of quantities bought by European converters, including imports.

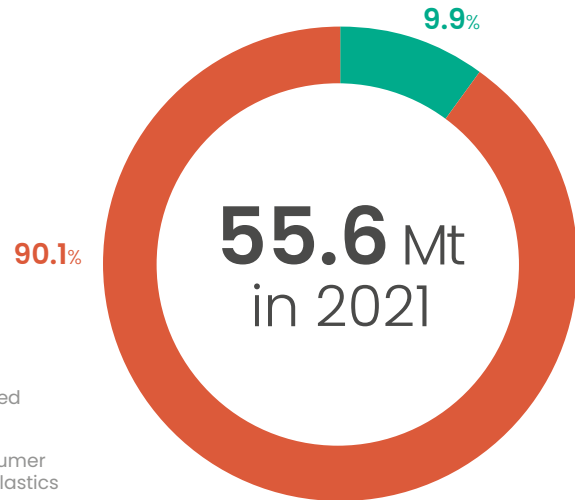
Demand for recycled plastics and bio-based/bio-attributed plastics is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

Numbers behind this graph are available upon request.

Plastics - the Facts figures on PA only cover PA6 and PA66.

European post-consumer recycled plastics use reached 9.9 % in 2021

In 2021, the use of post-consumer recycled plastics by European converters reached 5.5 Mt, representing a 9.9% recycled content. This represents an increase of about 20% compared to 2020.



Source: Conversio Market & Strategy GmbH based on interviews with European plastics converters

The above data are rounded estimations.

Data on the use of bio-based/bio-attributed plastics by European converters is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

Data on the use of the plastics by European converters differs from the plastics converters demand data. This is explained by different scopes (recycled plastics excluded in the demand figures). Process loss in conversion were also taken into account in the use of fossil-based plastics by converters.

Post-consumer recycled content in 2021

RECYCLED CONTENT IN NEW PRODUCTS

7.2% (4 Mt)



8.5% (4.6 Mt)

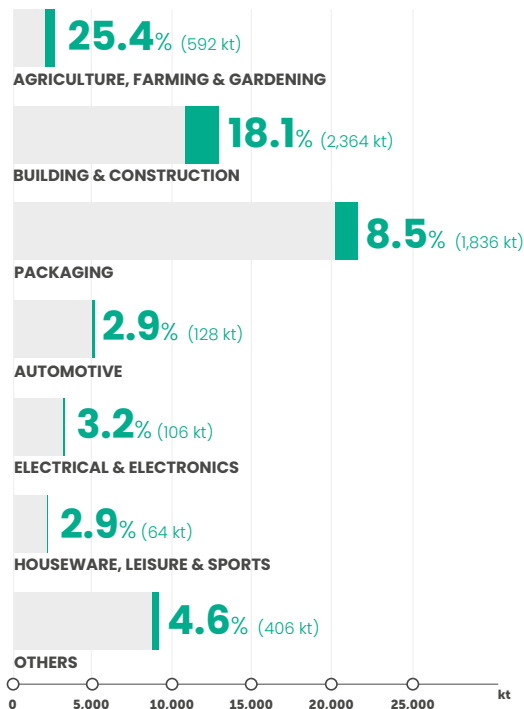


9.9% (5.5 Mt)



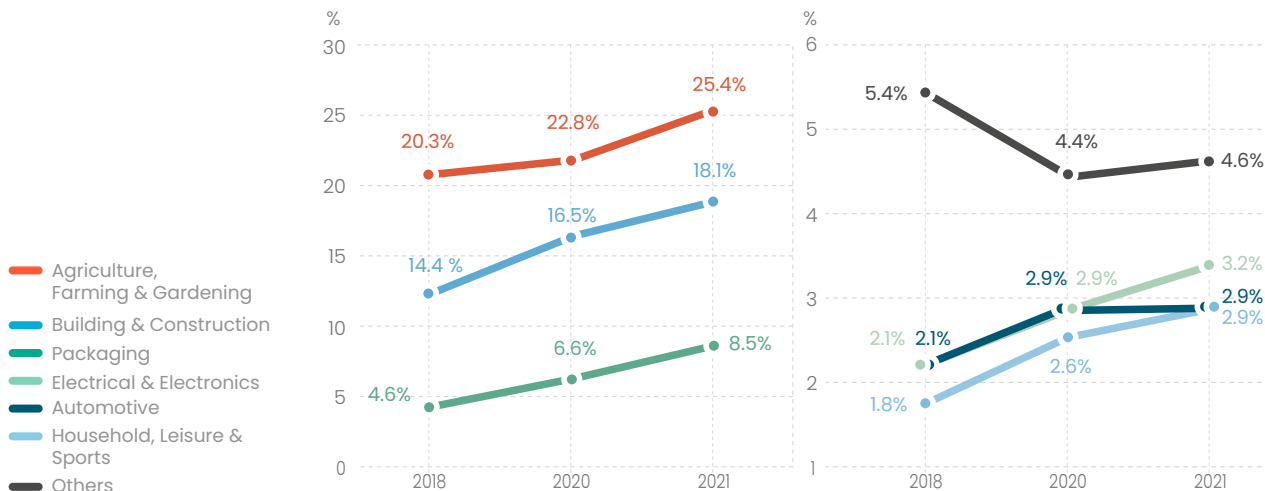
 Post-consumer recycled plastics

Source: Conversio Market & Strategy GmbH based on interviews with European plastics converters
 The above data are rounded estimations.
 Data on the use of bio-based/bio-attributed plastics by European converters is not included.
 Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.



Post-consumer recycled content evolution per applications

In 2021, post-consumer recycled content continued to grow in the agriculture, building & construction and packaging sectors.



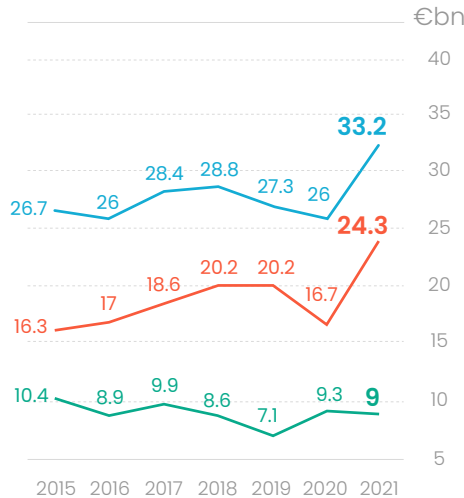
Source: Conversio Market & Strategy GmbH based on interviews with European plastics converters. The above data are rounded estimations. Data on the use of bio-based/bio-attributed plastics by European converters is not included. Polymers that are not used in the conversion of plastic parts and products (i.e., for textiles, adhesives, sealants, coatings, etc.) are not included.

European trade balance

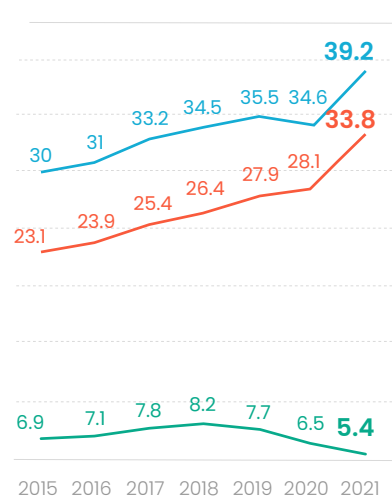
In 2021, the European plastics industry achieved a positive trade balance of 14.4 billion euros.

14.4
billion €
trade balance

Plastics production EXTRA EU27*



Plastics conversion EXTRA EU27**



■ Export ■ Import ■ Export surplus

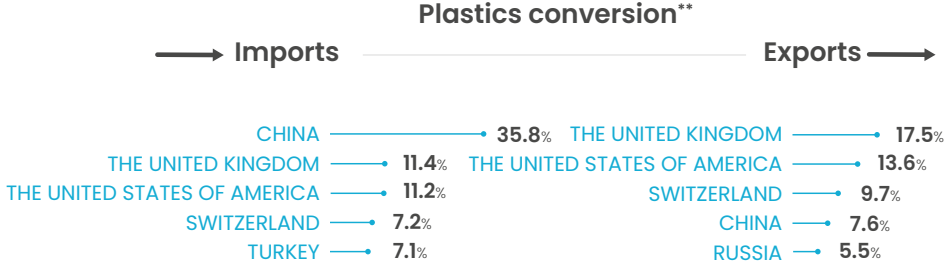
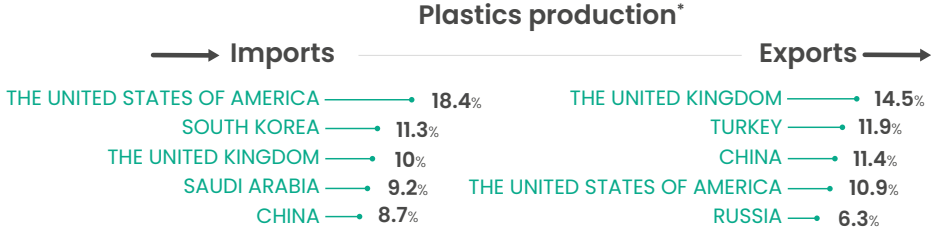
Source: Eurostat

* Official Eurostat denomination: Manufacture of plastics in primary forms

** Official Eurostat denomination: Manufacture of plastic products

Top extra EU trade partners (in value)

In 2021, the United States of America, the United Kingdom and China were the top trade partners of the EU27 plastics industry.



Source: Eurostat
 * Official Eurostat denomination: Manufacture of plastics in primary forms
 ** Official Eurostat denomination: Manufacture of plastic products



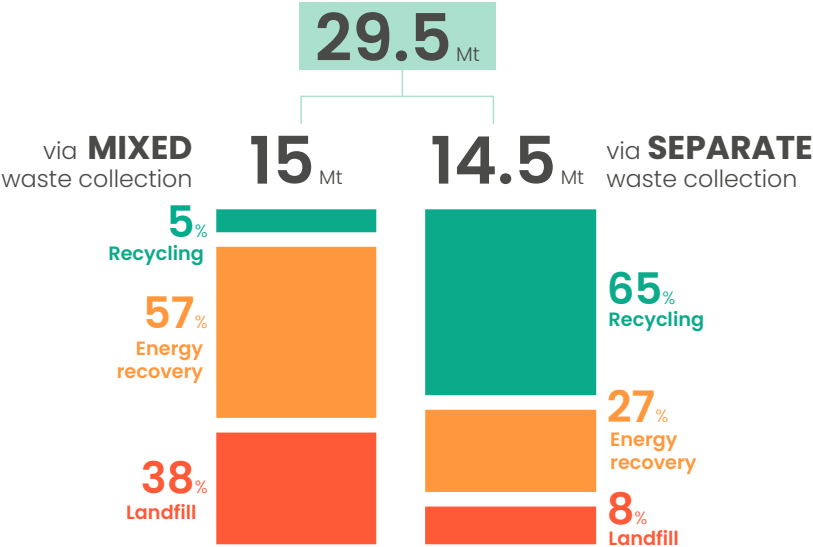
End-of-life management in EU27+3



“Plastics waste recycling rates are 13x higher when collected separately”.

Mixed and separate post-consumer plastics waste collection in 2020

In 2020, 29.5 million tonnes of post-consumer plastics waste were collected in the EU27+3. Plastics waste recycling rates are 13x higher when collected separately compared to mixed waste collection schemes.



Source: Conversio Market & Strategy GmbH

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Mixed waste collection: waste collection system in which end-users do not sort the different types of waste (e.g., household residual waste and municipal waste).

Separate waste collection: waste collection system in which end-users sort the different types of waste on a product level (e.g., household lightweight packaging, WEEE collection, container parks).

Between 2006–2020
plastics waste
exports outside the
EU27+UK
**have been
reduced by**
50%

Source: Conversio Market & Strategy GmbH
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.



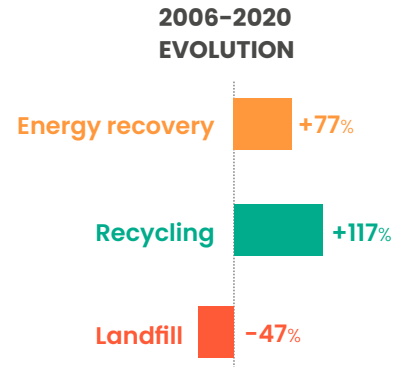
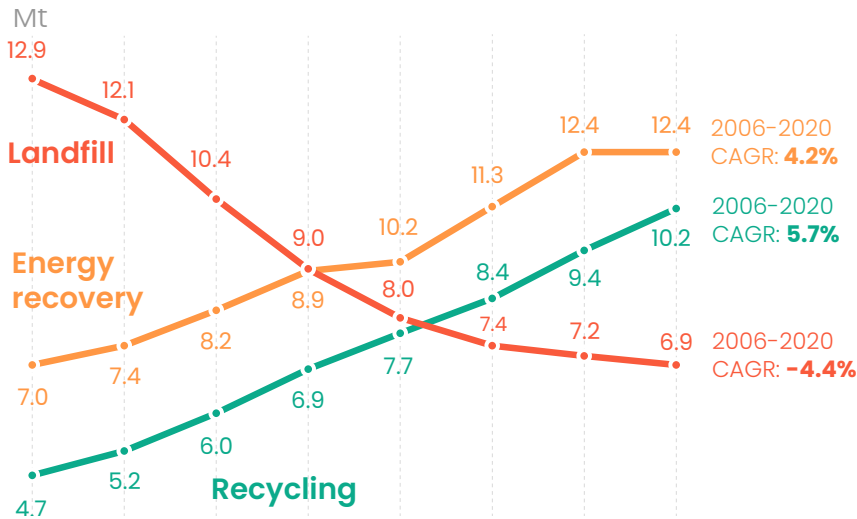
Plastics waste
recycling
rates are

13x

higher
when collected
separately

compared to mixed
collection schemes

Evolution of post-consumer plastics waste treatment (EU27+3)



Source: Conversio Market & Strategy GmbH

CAGR: Compound Annual Growth Rate

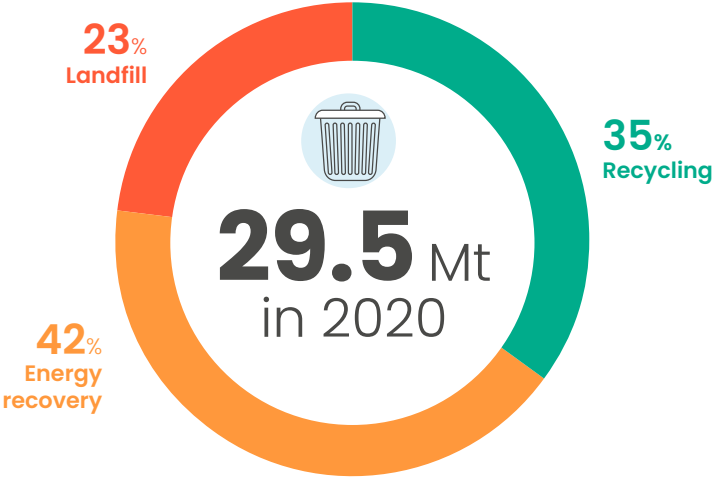
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling calculation methodology.

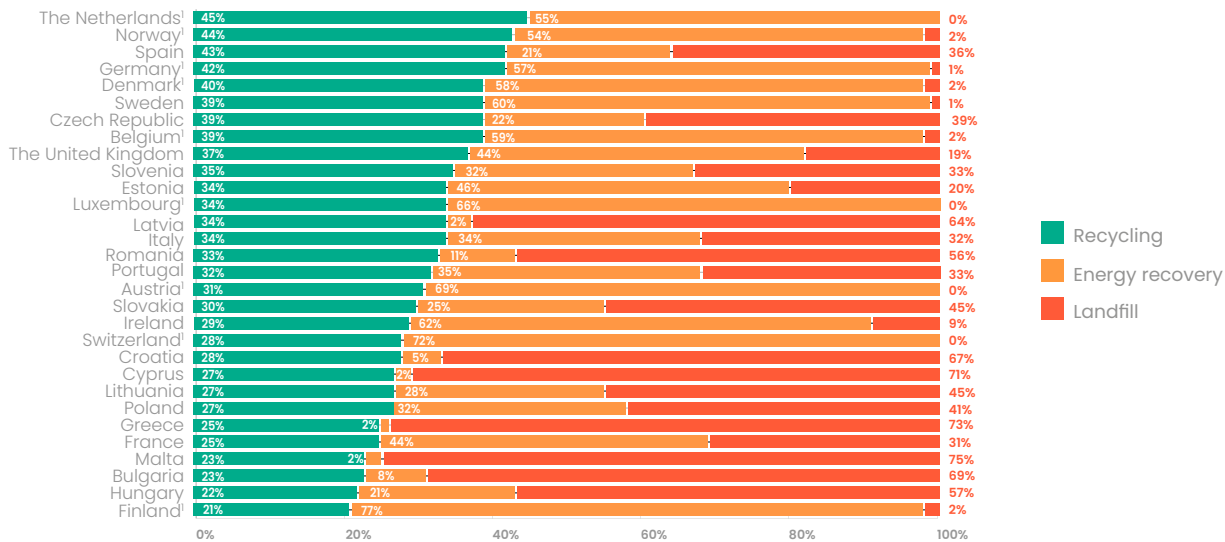
Post-consumer plastics waste management in 2020 (EU27+3)

In 2020, 35% of post-consumer plastics waste were sent to recycling.



Source: Conversio Market & Strategy GmbH
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.
Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling calculation methodology.

Post-consumer plastics waste treatment per country in 2020



Source: Conversio Market & Strategy GmbH

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

1. Countries with landfill restrictions

Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling calculation methodology.

2020 Dutch plastics recycling included some quantities of plastics packaging waste collected in 2019, due to a fire in a local recycling facility in 2019.

Four countries have recycling rates above 40%



THE NETHERLANDS

NORWAY

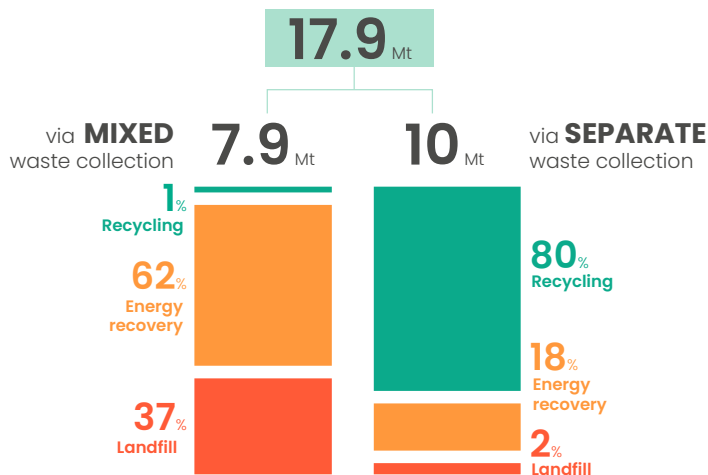
SPAIN

GERMANY

Mixed and separate post-consumer plastics **PACKAGING** waste collection in 2020

In 2020, 17.9 million tonnes of post-consumer plastics packaging waste were collected in the EU27+3.

Plastics packaging waste recycling rates are 80x higher when collected separately compared to mixed waste collection schemes.



Source: Conversio Market & Strategy GmbH

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling methodology. The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Mixed waste collection: waste collection system in which end-users do not sort the different types of waste (e.g., household residual waste and municipal waste).

Separate waste collection: waste collection system in which end-users sort the different types of waste on a product level (e.g., household lightweight packaging, WEEE collection, container parks).

Separate waste collection streams do not contain 100% plastics, since they may be mixed with other materials (e.g., a computer is composed of different types of materials).

Plastics
PACKAGING
waste recycling
rates are

80x
higher
when collected
separately

compared to mixed
collection schemes

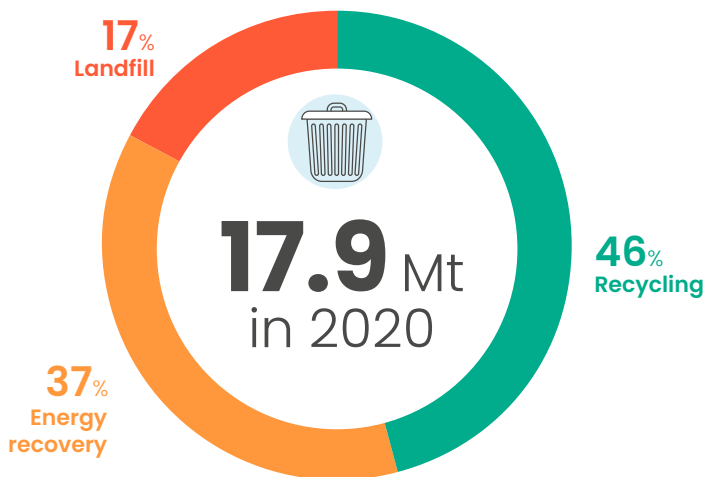


Source: Conversio Market & Strategy GmbH

Post-consumer plastics **PACKAGING** waste management in 2020 (EU27+3)

In 2020, the overall European recycling rate for post-consumer plastics packaging reached 46% (under the former Packaging and Packaging Waste Directive (PPWD) calculation methodology), compared to 42% in 2018 – an increase of about 9.5%.

9.5%
increase
of plastics packaging
recycling rate since 2018



Source: Conversio Market & Strategy GmbH

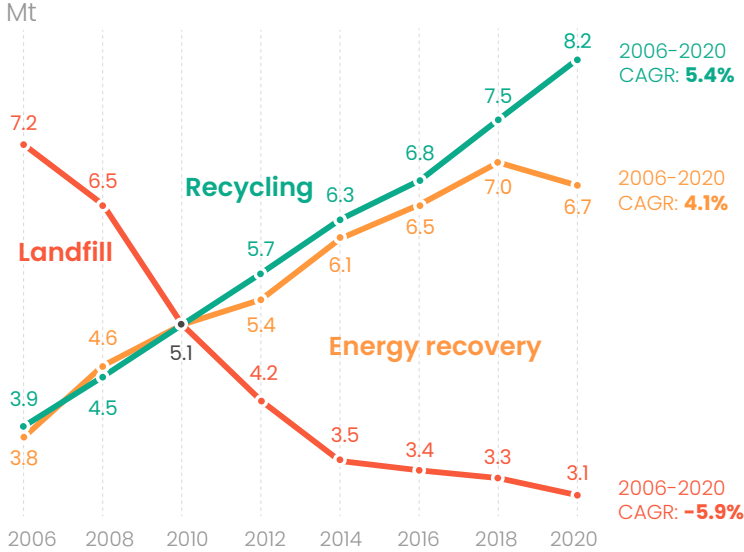
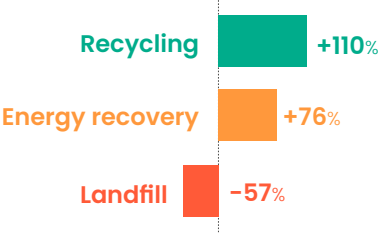
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling methodology. The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Since 2006, post-consumer plastics **PACKAGING*** waste recycling has more than doubled

The 2006-2020 plastics packaging waste recycling evolution in the EU27+3 showed a Compound Annual Growth Rate of 5.4%.

2006-2020 EVOLUTION



CAGR: Compound Annual Growth Rate
Source: Conversio Market & Strategy GmbH

*From household, industrial and commercial packaging
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling methodology. The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Post-consumer plastics **PACKAGING** waste treatment per country in 2020 (EU27+3)

The current 46% recycling rate would potentially equal 32% under the new plastics packaging recycling calculation methodology foreseen by the Packaging and Packaging Waste Directive (PPWD) (Directive (EU) 2018/852).

Source: Conversio Market & Strategy GmbH

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

1. Under the former point of calculation: Materials sent for recycling - Directive (EU) 94/62/EC

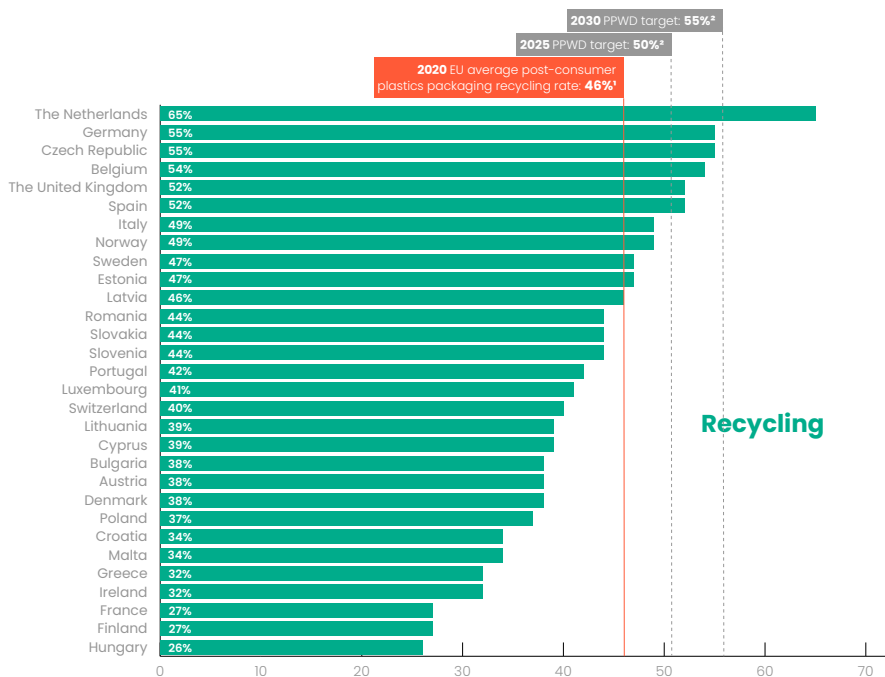
2. Under the new point of calculation: Materials entering pelletisation, extrusion and moulding processes - Directive (EU) 2018/852

The plastics packaging waste data used for the above graph were extrapolated based on 2019 available figures.

The above data were rounded.

Recycling rates for plastics packaging waste are shown under the old plastics packaging recycling calculation methodology.


2020 Dutch plastics recycling included some quantities of plastics packaging waste collected in 2019, due to a fire in a local recycling facility in 2019.







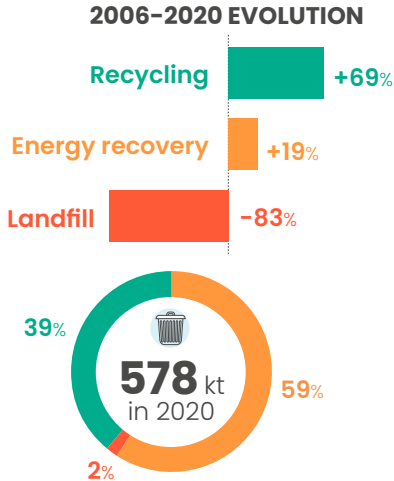
End-of-life management in selected countries



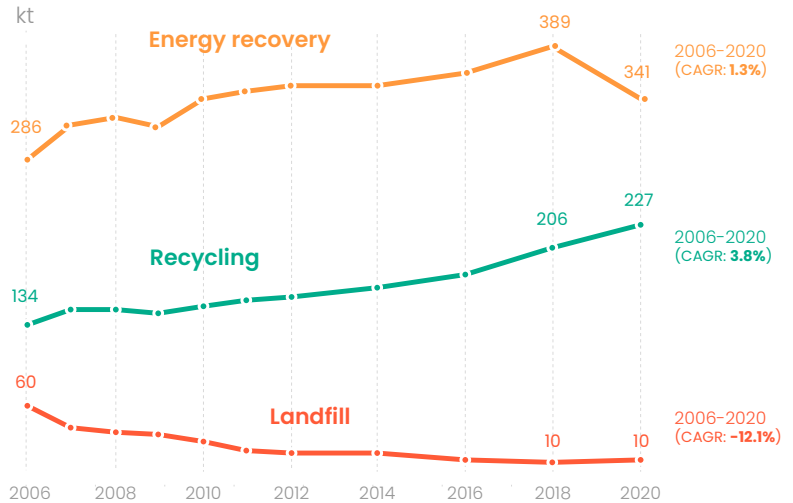
**“In 2020, four countries
had plastics recycling
rates above 40%”.**

Belgium · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 69%, energy recovery increased by 19% and landfill decreased by 83%.



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

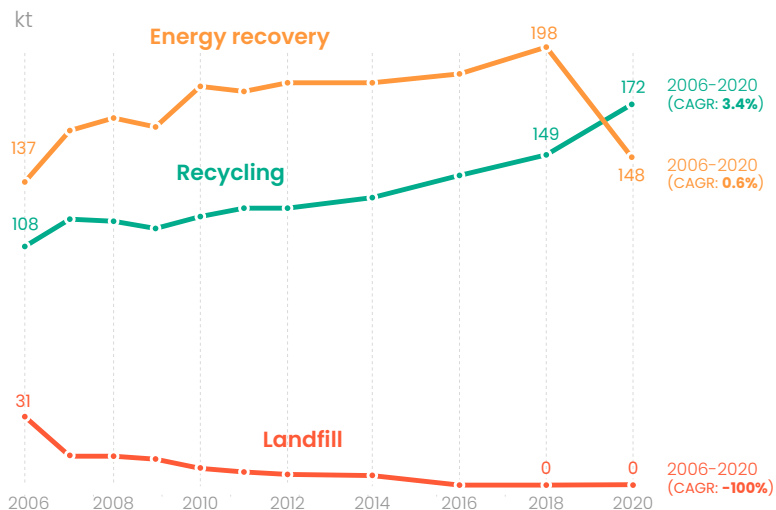
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

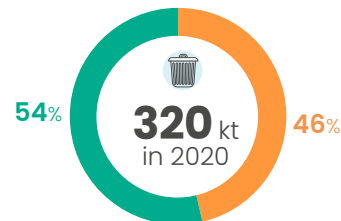
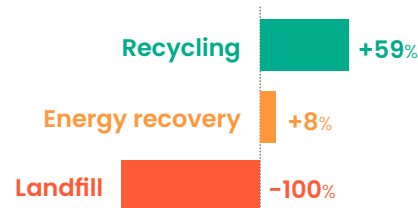
Belgium · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 59%, energy recovery increased by 8% and landfill decreased by 100%.

2006-2020 EVOLUTION



CAGR: Compound Annual Growth Rate

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

* From household, industrial and commercial packaging

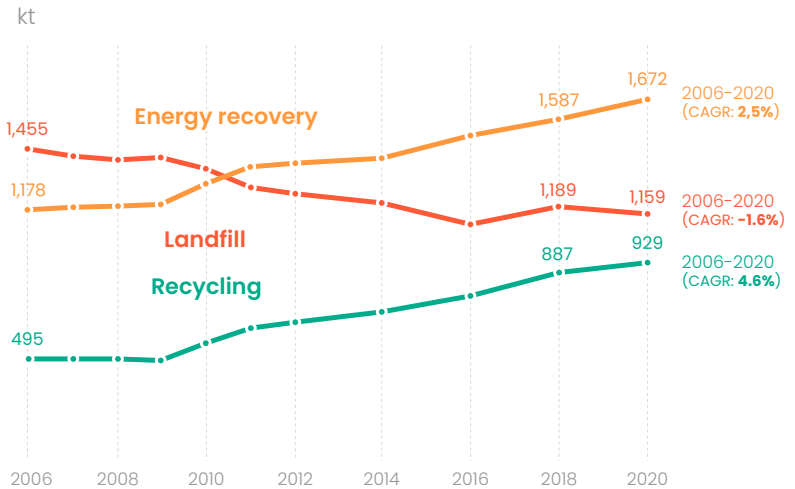
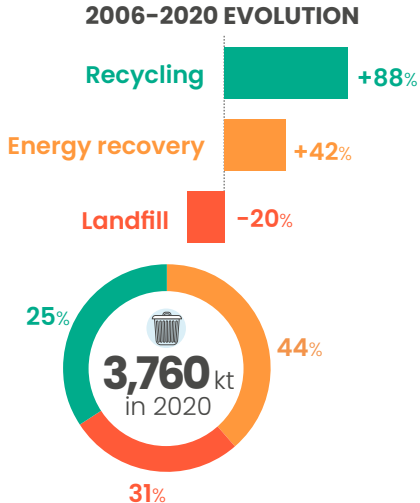
Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

France · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 88%, energy recovery increased by 42% and landfill decreased by 20%.

Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

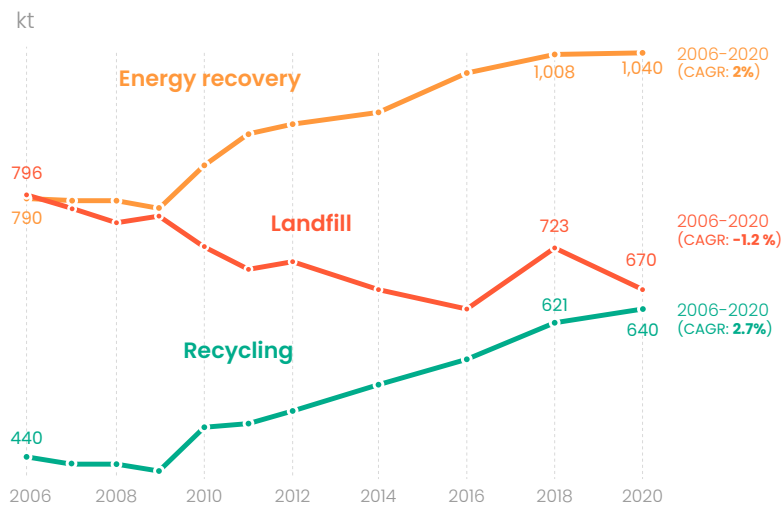
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

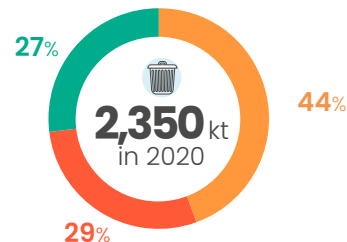
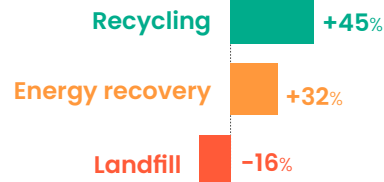
France · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 45%, energy recovery increased by 32% and landfill decreased by 16%.

2006-2020 EVOLUTION

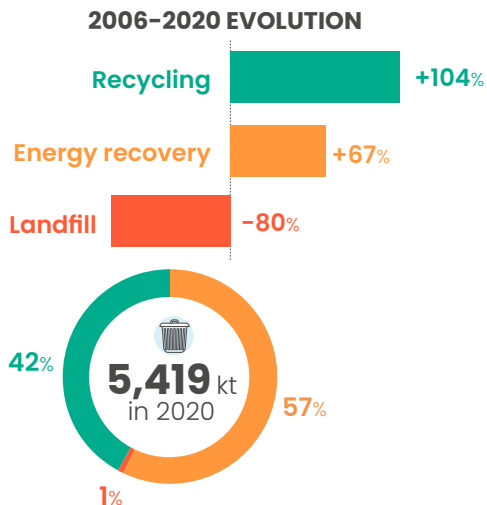


CAGR: Compound Annual Growth Rate
 Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
 *From household, industrial and commercial packaging
 Source: Conversio Market & Strategy GmbH

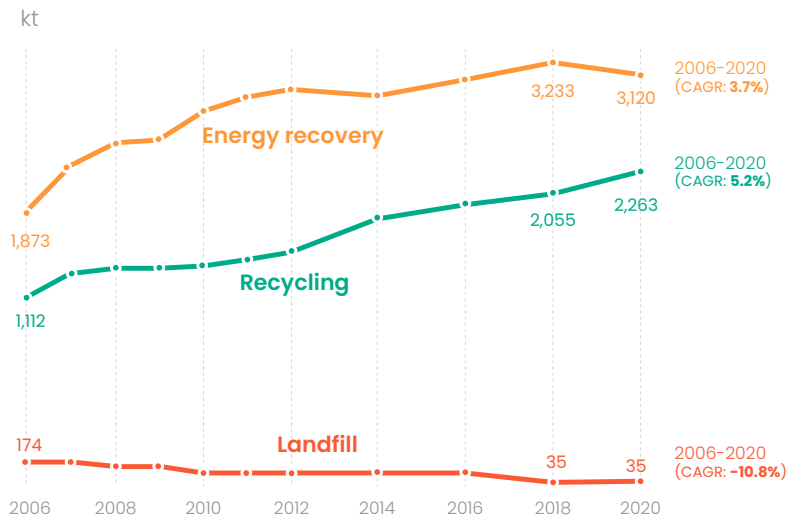
The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Germany · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 104%, energy recovery increased by 67% and landfill decreased by 80%.



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

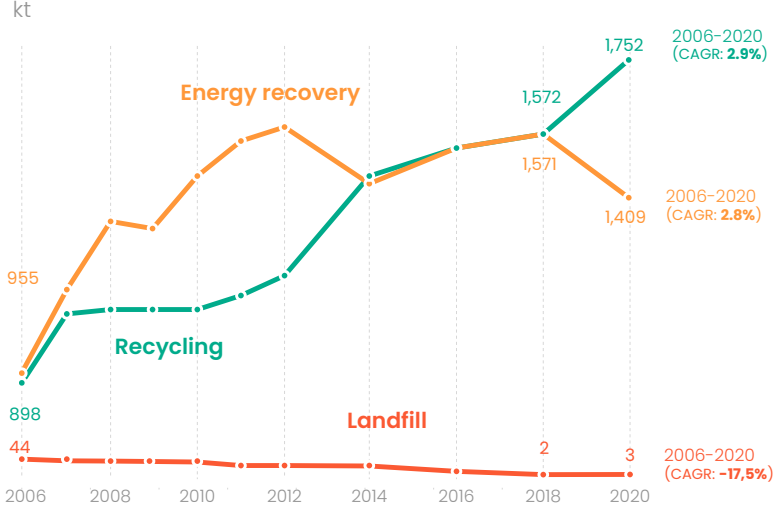
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Germany · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)

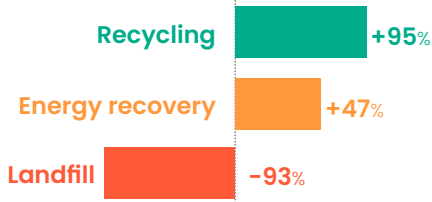


CAGR: Compound Annual Growth Rate
 Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
 *From household, industrial and commercial packaging
 Source: Converso Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

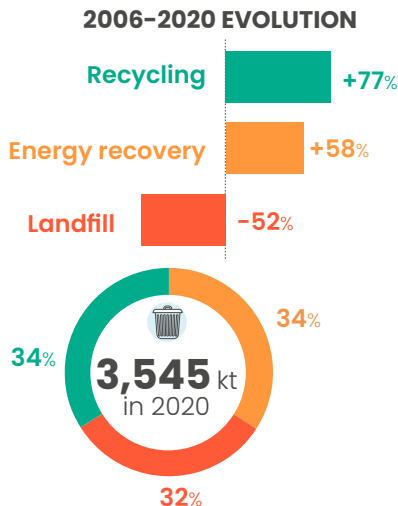
From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 95%, energy recovery increased by 47% and landfill decreased by 93%.

2006-2020 EVOLUTION

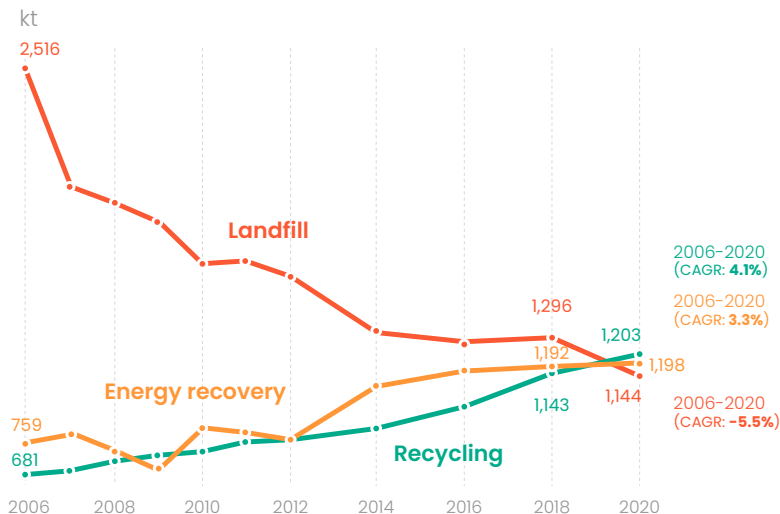


Italy · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 77%, energy recovery increased by 58% and landfill decreased by 52%.



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

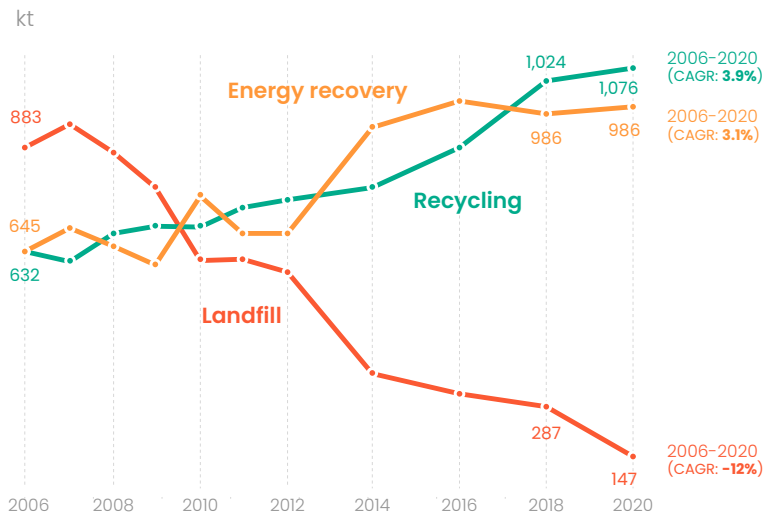
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Converso Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

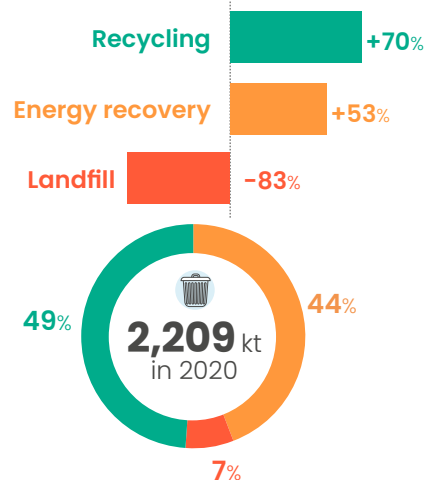
Italy · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 70%, energy recovery increased by 53% and landfill decreased by 83%.

2006-2020 EVOLUTION



CAGR: Compound Annual Growth Rate

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

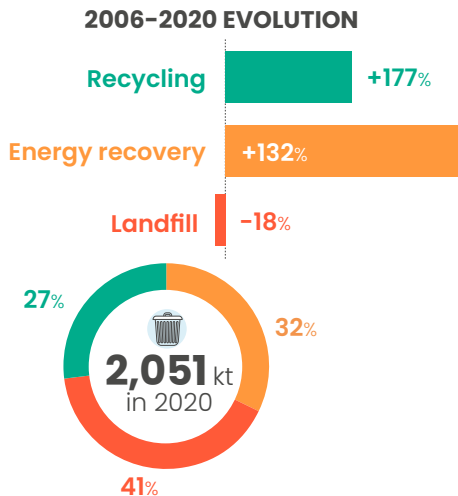
*From household, industrial and commercial packaging

Source: Conversio Market & Strategy GmbH

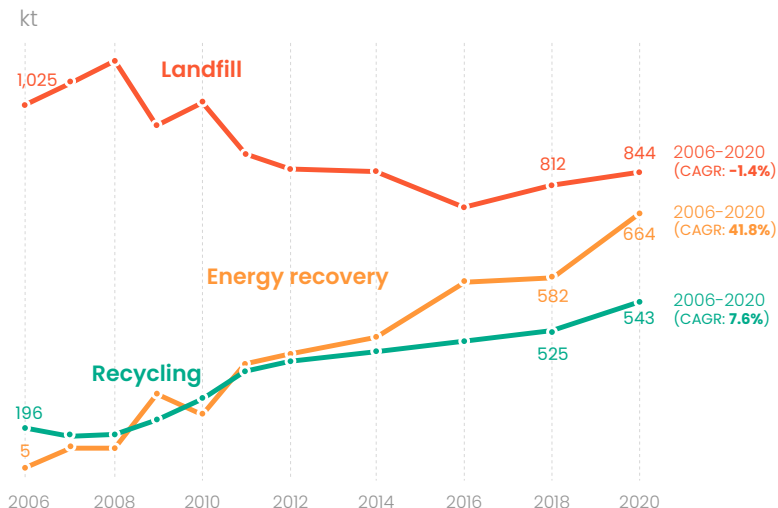
The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Poland · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 177%, energy recovery increased by 132% and landfill decreased by 18%.



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

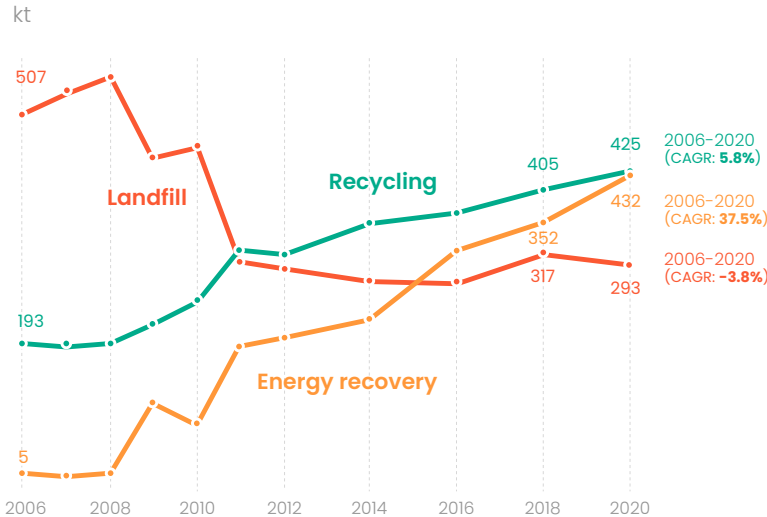
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Poland · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

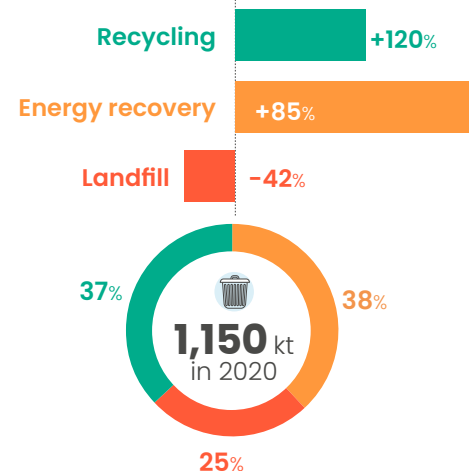
*From household, industrial and commercial packaging

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 120%, energy recovery increased by 85% and landfill decreased by 42%.

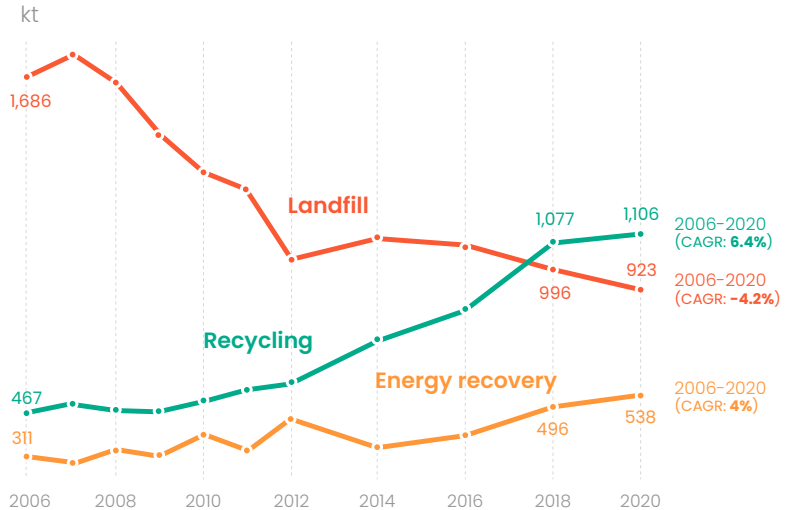
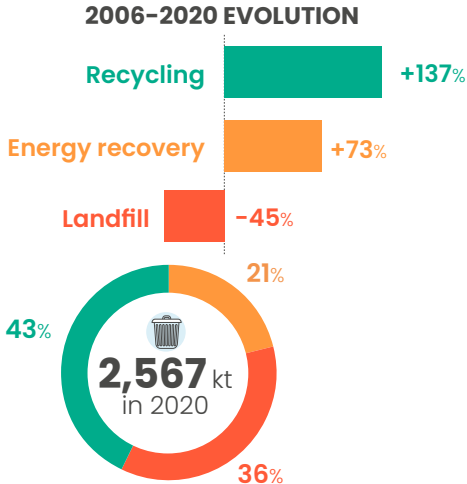
2006-2020 EVOLUTION



Spain · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 137%, energy recovery increased by 73% and landfill decreased by 45%.

Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

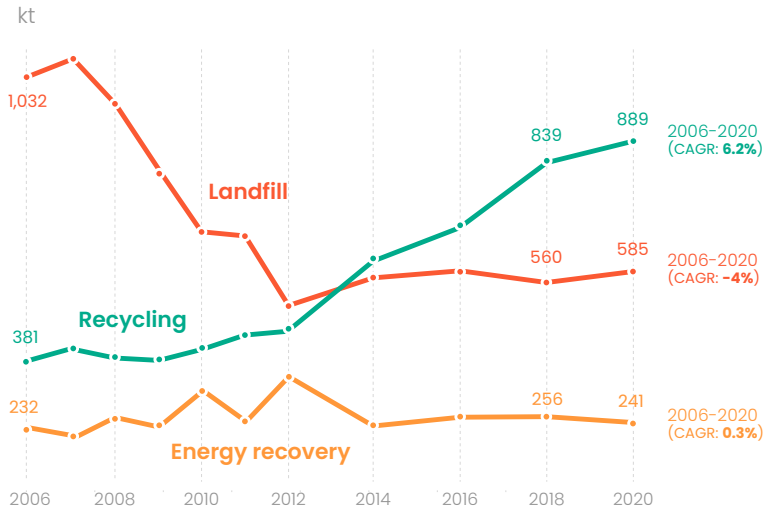
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

Spain · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

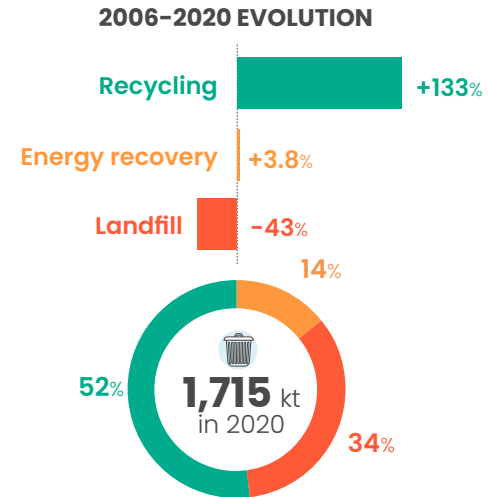
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

*From household, industrial and commercial packaging

Source: Conversio Market & Strategy GmbH

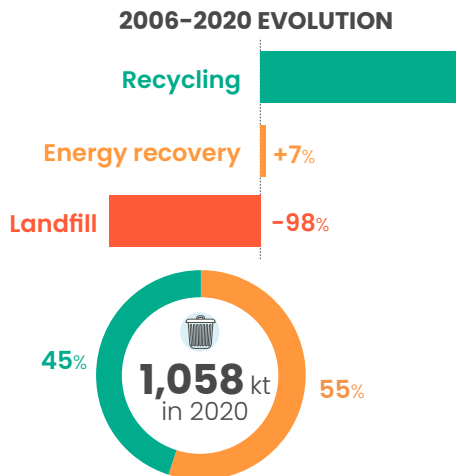
The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 133%, energy recovery increased by 3.8% and landfill decreased by 43%.

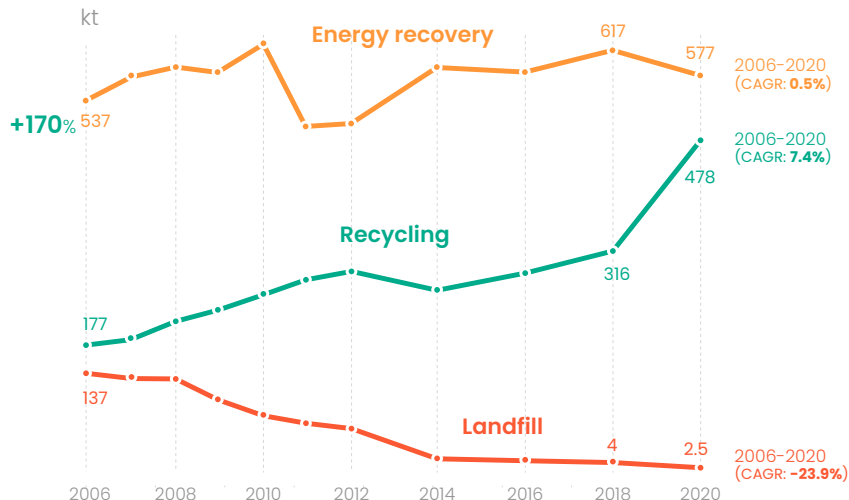


The Netherlands · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 170%, energy recovery increased by 7% and landfill decreased by 98%.



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

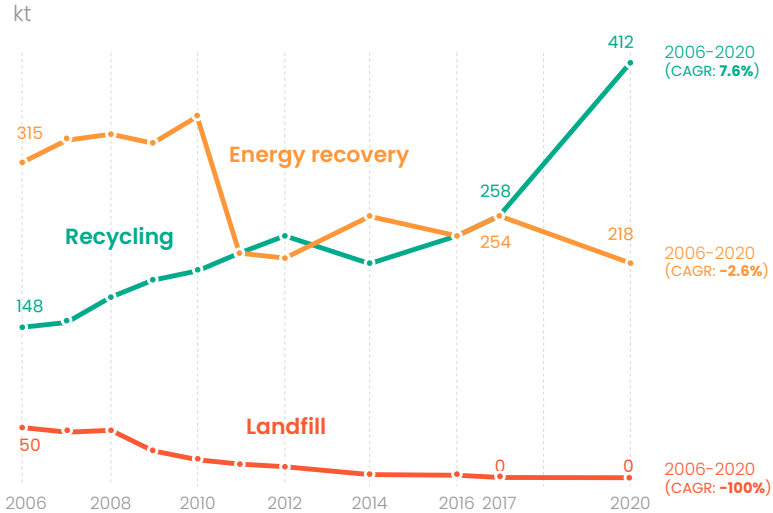
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

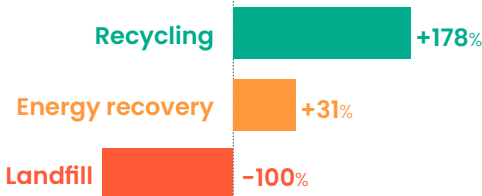
The Netherlands · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006-2020 (in kt)



From 2006 to 2020, the quantities of plastics post-consumer packaging waste sent to recycling increased by 178%, energy recovery increased by 31% and landfill decreased by 100%.

2006-2020 EVOLUTION



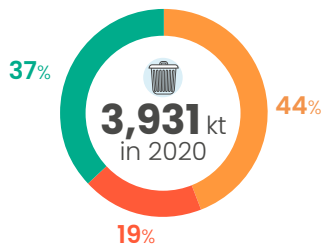
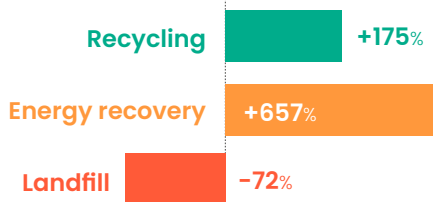
CAGR: Compound Annual Growth Rate
 Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
 *From household, industrial and commercial packaging

Source: Conversio Market & Strategy GmbH
 The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

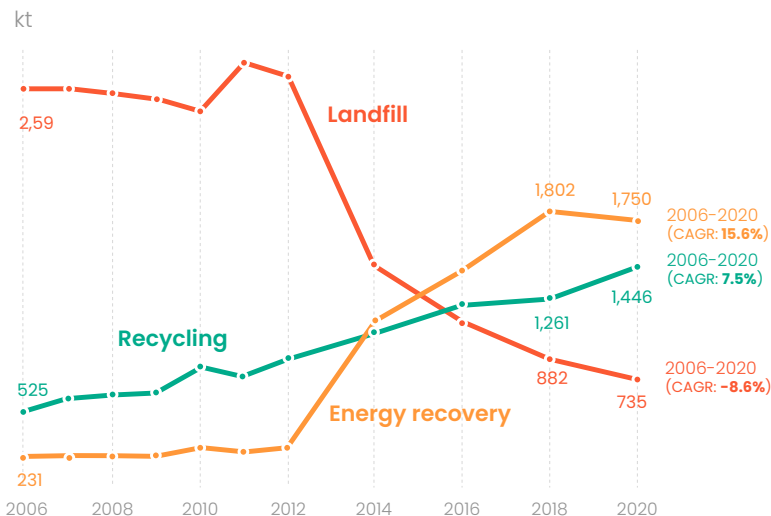
The United Kingdom · All plastics

From 2006 to 2020, the quantities sent to recycling increased by 175%, energy recovery increased by 657% and landfill decreased by 72%.

2006-2020 EVOLUTION



Post-consumer plastics waste treatment evolution 2006-2020 (in kt)



CAGR: Compound Annual Growth Rate

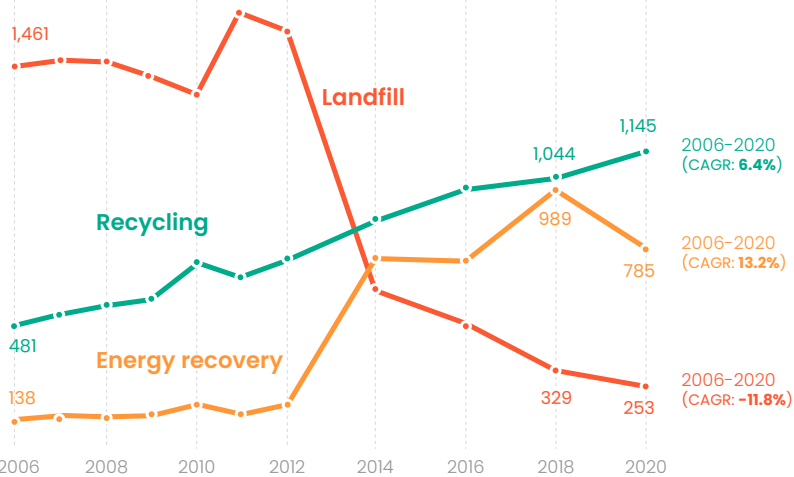
Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.

Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

The United Kingdom · Plastics PACKAGING*

Post-consumer plastics PACKAGING* waste treatment evolution 2006–2020 (in kt)
kt

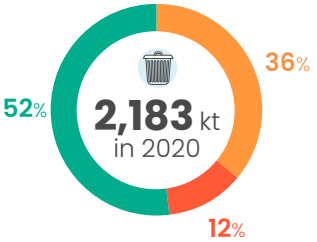
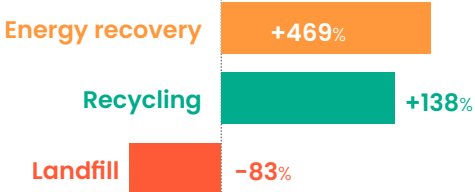


CAGR: Compound Annual Growth Rate
 Non-plastics waste (i.e., textiles, adhesives, sealants, coatings, etc.) is not included.
 *From household, industrial and commercial packaging
 Source: Conversio Market & Strategy GmbH

The plastics packaging consumption and waste data used for the above graph were extrapolated based on 2019 available figures. The above data were rounded.

From 2006 to 2020, the quantities of post-consumer plastics packaging waste sent to recycling increased by 138%, energy recovery increased by 469% and landfill decreased by 83%.

2006–2020 EVOLUTION





Outlooks



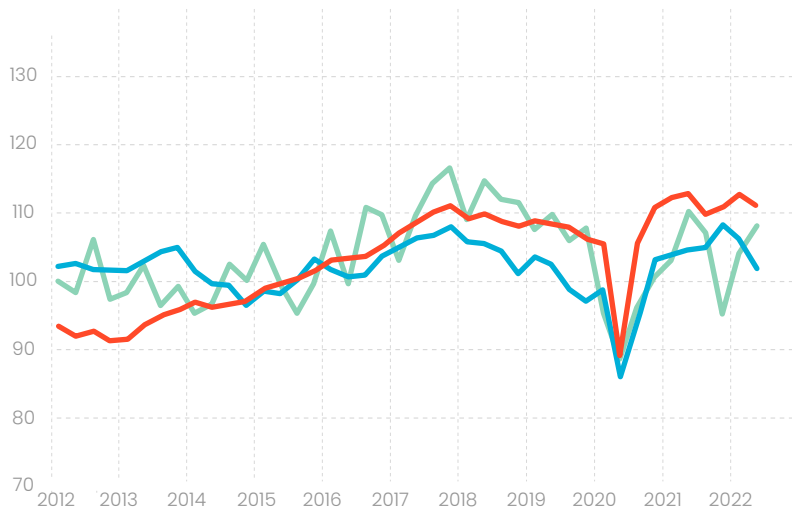
“Energy and logistics crises leading to uncertainties and challenges for the European plastics industry”.

Plastics industry production in EU27

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

In 2022, the war in Ukraine reinforced the already existing problems in the supply chains and the high prices for feedstock and energy. High prices, especially in Europe, weakened economic growth and led to a lower demand for plastics.

- Plastics and rubber machinery
- Plastics in primary forms
- Plastics products



Source: Eurostat, September 2022

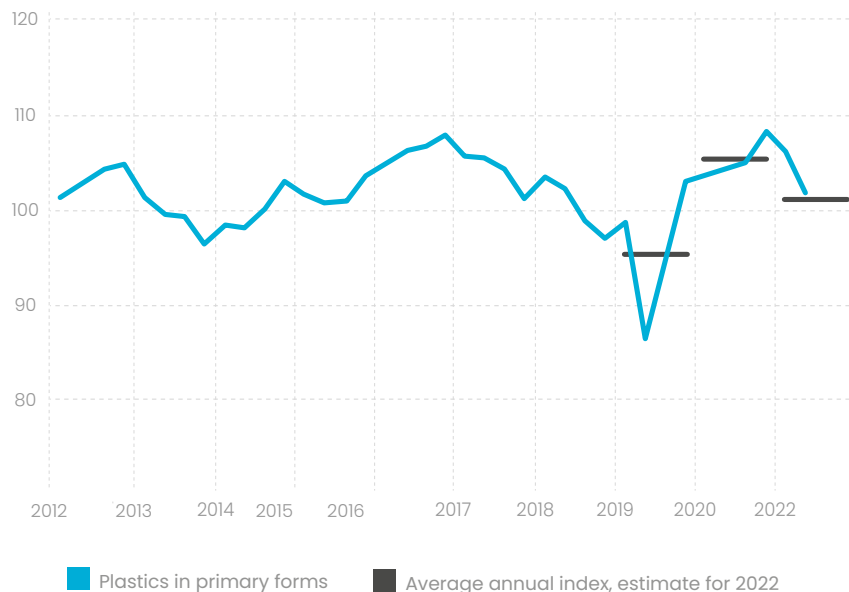
Production of plastics in primary forms in EU27

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

The sharp decline in the European plastics production caused by the Covid-19 pandemic in the first half of 2020 was followed by an even stronger recovery in 2021. However, significant uncertainties remain for end 2022 and 2023 due to the current energy and logistics crises.

Growth rate:

- 2020: **-5%**
- 2021: **10.5%**
- 2022: **-4%** (prediction with the assumption of no gas shortage in Europe)



Due to geopolitical uncertainties, it is not possible to present a prediction for 2023.
Index 2015 = 100; on a quarterly basis, seasonally and working day adjusted
Source: Eurostat, September 2022

List of acronyms

ABS: Acrylonitrile butadiene styrene resin

ASA: Acrylonitrile styrene acrylate

bn: billion

CAGR: Compound Annual Growth Rate

CIS: Commonwealth of Independent States

EU: European Union

EU27+3: EU Member States, Norway, Switzerland and the United Kingdom

EU27+UK: EU Member States and the United Kingdom

EPRO: European Association of Plastics Recycling and Recovery Organisations

kt: kilo tonnes

Mt: million tonnes

PA: Polyamides. Plastics - the Facts figures on PA only cover PA6 and PA66

PBT: Polybutylene terephthalate

PC: Polycarbonate

PE: Polyethylene

PEEK: Polyetheretherketone

PE-HD: Polyethylene, high density

PEI: Polyetherimide

PE-LD: Polyethylene, low density

PE-LLD: Polyethylene, linear low density

PE-MD: Polyethylene, medium density

PEMRG: Plastics Europe Market Research Group

PET: Polyethylene terephthalate

PMMA: Polymethyl methacrylate

POM: Polyoxymethylene

PP: Polypropylene

PPA : Polyphthalamide

PS: Polystyrene

PS-E: Expandable polystyrene

PTFE: Polytetrafluoroethylene

PSU/PES/PPSU: polysulfone/polyethersulfone/
polyphenylsulfone

PUR: Polyurethane

PVC: Polyvinyl chloride

PVDF: Polyvinylidene fluoride

SAN: Styrene-acrylonitrile copolymer

Plastics Europe

Plastics Europe is the pan-European association of plastics manufacturers with offices across Europe. For over 100 years, science and innovation has been the DNA that cuts across our industry. With close to 100 members producing over 90% of all polymers across Europe, we are the catalyst for the industry with a responsibility to openly engage with stakeholders and deliver solutions which are safe, circular and sustainable. We are committed to implementing long-lasting positive change.

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

 @PlasticsEurope

 PlasticsEurope

 **PLASTICS
EUROPE**
Enabling a sustainable future

Plastics Europe AISBL

Rue Belliard 40 • Box 16
1040 Brussels • Belgium

☎ +32 (0)2 792 30 99

connect@plasticseurope.org

plasticseurope.org

 **eprO**
European Association Of Plastics Recycling
& Recovery Organisations

EPRO

Konigin Astridlaan 58 • Bus 5
1780 Wemmel • Belgium

☎ +32 (0)2 456 84 49

info@epro-plasticsrecycling.org

www.eupro-plasticsrecycling.org