PLASTICS EUROPE
Enabling a sustainable future

The Circular Economy for Plastics

A European Analysis

MAY 2026

About the report

The 2026 edition of this report is a contribution towards a better understanding of the circular economy for plastics in Europe, and its evolution over the years. It provides an overview of European plastics production, conversion into products and components, consumption, and waste management. It also addresses the different recycling technologies and plastics production from non-fossil-based resources, i.e. bio-based and bio-attributed and carbon-captured plastics.

For the first time, the report includes World pre-consumer recycled plastics production data, plastics trade data and estimates on the reuse of selected plastic packaging items.

The report shows 2024 estimated data.

About Plastics Europe

Plastics Europe is the pan-European association of plastics manufacturers with offices across Europe. For over 100 years, science and innovation have been the DNA that cuts across our industry. With members producing over 90% of all polymers across EU27+3 (Norway, Switzerland, UK) 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.

For more information, contact us at connect@plasticseurope.org or visit plasticseurope.org.

Reclaiming ownership of Europe's circular plastics future

The primary driver for circularity is no longer only environmental - it is now also economic, industrial and strategic.

In a world of increased geopolitical instability and supply chain disruptions, a circular European plastics system is no longer a 'nice to have'. It is fundamental to reducing dependence on imported fossil fuels, limiting exposure to feedstock price volatility, and strengthening industrial security and strategic autonomy. It will also ensure the security of supply for materials that remain critical to Europe's consumer and strategic industries – including automotive, health, electronics, net-zero technologies and defence.

The transition to a competitive, circular plastics system has never been more important to Europe's future.

"Fit for purpose" policymaking for the transition of the European plastics system

Europe is home to many of the world's most innovative and forward-thinking plastics manufacturers. 'The Plastics Transition' roadmap sets out our industry's net zero and circularity trajectory and is designed to guide system transformation across the plastics system. It is the north star for our industry.

The purpose of this report, 'The Circular Economy for Plastics – A European Analysis 2026', is to support our industry's transition by enabling evidence-based decision-making among our members, value chain partners, and policymakers.

Virginia Janssens, Managing Director Plastics Europe

Rapid slowdown in Europe's transition to a circular plastics economy

Painfully, the data confirm that the growth trend in circular plastics production has declined dramatically, including a drop in production from bio-based feedstock. This situation is mirrored by a slowdown in the growth of European converter demand for circular plastics, with a significant proportion of this demand being met through imports.

Although the quantity of waste recycled increased, over 70% is still sent to landfill and incineration. Meanwhile, exports of sorted plastics waste grew, and the quantity recycled abroad increased significantly. As the global transition accelerates, Europe's leadership in circular plastics risks being eclipsed by China and other Asian markets. On its current trajectory, Europe is undermining its climate ambitions and putting its economic future at risk.

Competitiveness crisis undermines transition

There are two fundamental reasons why Europe's transition is slowing down.

Firstly, high energy prices, rising emissions costs, and feedstock prices have weakened the industry's global competitiveness and undermined the investment case for circularity. The situation is compounded by the fact that European plastics manufacturers are particularly exposed to geopolitical risks due to their reliance on imported gas and oil as both feedstocks and energy sources, and the competitiveness challenges faced by the broader European plastics system, including recyclers and converters.

While plastics production continues to expand in other regions, Europe's global market share has fallen sharply - from 22% in 2006 to 12% in 2024 - and industry turnover declined from €457 billion in 2022 to €398 billion in 2024 alone.

As a result, Europe's plastics manufacturers are in survival mode. This means that existing European fossil-based plastics production, which is critical to financing the circularity transition, cannot generate the massive levels of investment required.

Secondly, while European policymakers have introduced important circularity initiatives and the European Commission has recognised the plastics sector as strategically important, the current policy and regulatory framework is not delivering. Despite some progress, measures to stimulate market demand and supply for circular plastics have lacked the ambition, scope and speed required to unlock the necessary investments. This is a massive source of frustration for our industry and the plastics system more broadly.

Reframing plastic waste as a strategic resource

To get the circular transition back on track, we need a competitive European plastics system. Bold and decisive leadership is required from all levels of government in Europe to achieve this.

We must address Europe's energy cost crisis and ensure a level playing field through fair and consistently enforced trade rules.

Fostering strong demand for circular plastics produced in Europe requires ambitious market pull measures and other robust enabling policies[1] to attract investment and strengthen the competitiveness of the European plastics system.

Europe has the potential to be a resource-rich and strategically autonomous continent, but only if we leverage the value of waste and biomass as future industrial feedstocks. We must stop incinerating and landfilling our recyclable plastic waste and make it economically attractive to keep and recycle it in Europe.

Policymakers must also support innovation through a technology-neutral approach, recognising that different solutions will be needed to achieve circularity across applications and materials, and that emerging technologies require time, scale and supportive conditions to become more cost-effective and reach maturity. All circular feedstocks, including waste for mechanical, physical and chemical recycling, bio-based and carbon-captured, need to be incentivised.

As the Draghi and Letta reports confirm, the single market is one of Europe's greatest assets, yet it is still failing to fully deliver on its intended purpose. By harmonising waste regulations and Extended Producer Responsibility schemes across Member States, for example, we can eliminate unnecessary fragmentation and unlock the economic power of a truly harmonised single market.

Restoring Europe's circularity leadership: From ambition to delivery

Achieving a circular economy requires the engagement of all value chain participants – converters, recyclers, waste collectors, brand owners and retailers. Coordinated action, ownership and a holistic policy approach across the entire value chain are essential to deliver this systemic change without delay.

At stake is a fundamental choice about the kind of Europe we want to build: one that leads in sustainable industry, innovation, talent and jobs, or one that increasingly depends on others.

Get this right, and Europe can create a thriving circular plastics system that underpins the next generation of industry in Europe and ensures its economic resilience and security.

Ultimately, this transition is not just about plastics, or scaling-up circularity to drive decarbonisation - it is about the kind of society we shape, the environment we protect, and Europe's industrial future and place in the world.

1. For more details on our policy recommendations, please see our Executive Summary or see our position on the Circular Economy Act.

Executive summary

Introduction

'The Circular Economy for Plastics – A European Analysis' provides the most up-to-date, comprehensive and transparent pan-European dataset on the circular plastics transition in Europe (EU27+3). It is made freely available to help policymakers, plastics manufacturers, converters, recyclers and other value chain partners track progress, identify gaps, and make informed decisions about the enabling conditions required to accelerate circularity.

Published every two years, it provides a data-driven overview of the European plastics system, covering conventional and circular production, use and end-of-life management. This 2026 edition analyses trends for the period 2022–2024 and, for the first time, examines new data including trade flows of fossil-based and circular plastics to provide a more complete picture of material flows in Europe.

The industry's vision is for Europe to produce, use and recirculate high-quality circular plastics within a competitive, sustainable and net-zero system by 2050. This will ensure that Europe can reduce its dependence on oil and gas imports, while continuing to supply materials critical to many consumer and strategic industrial applications.

'The Circular Economy for Plastics – A European Analysis' forms part of a broader set of initiatives by Plastics Europe, including 'The Plastics Transition' roadmap, to support this shift.

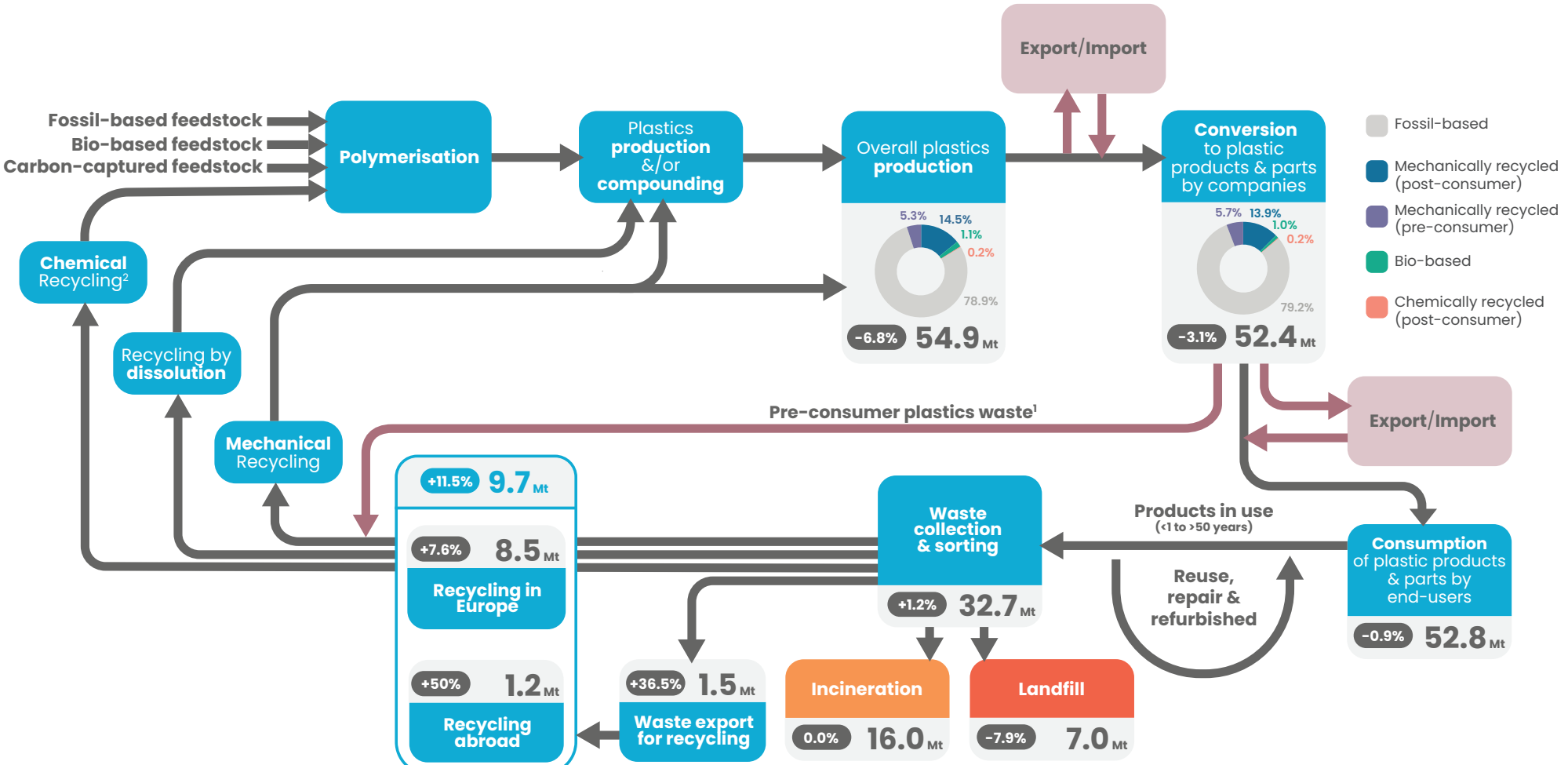
2022-2024 evolution

The 2022 – 2024 period was defined by the competitiveness crisis in Europe's industrial base following Russia's invasion of Ukraine. Total European plastics production declined sharply (-6.8%) alongside converters' demand (-3.1%) and end-users' consumption (-0.9%), mainly due to rising energy and feedstock costs.

Europe's circular production increased by 2.4%, and demand from converters rose by 8.2%. However, these gains mask a rapid and concerning slowdown in growth.

New data on trade flows show a significant dependence on non-European value chains. Almost a quarter of all plastics converted in the EU 27+3 were imported. Specifically, 19% of circular plastics, including 16% post-consumer recycled plastics, were imported.

Waste management trends remained uneven. Recycling of collected plastic waste increased (+11.5%), quantities of plastic waste landfilled decreased (-7.9%), and quantities incinerated remained unchanged. At the same time, exports of sorted plastic waste surged (+36.5%), with a growing share of EU waste being recycled outside Europe (12.4% in 2024).



The above data are rounded estimations.
1. Pre-consumer plastics waste is mainly originating from the plastics conversion activities, and production to a lesser extent.
2. Several steps are needed between the input of plastics waste into chemical recycling and the input into polymerisation, also depending on the chemical recycling technology. A more detailed diagram is available on pages 100-.101

Key report figures

Circular plastics production reached

8.7 Mt

but growth has **slowed significantly** since 2022.

For the first time, circular plastics content in new products is

above 15%

reaching **7.9 Mt** in 2024.

19%

of circular plastics used in Europe rely on imports. And **24%** of the total demand.

Export of sorted plastic waste increased by

+36.5%

since 2022, reaching 1.5 Mt.

29.6%

(9.7 Mt)

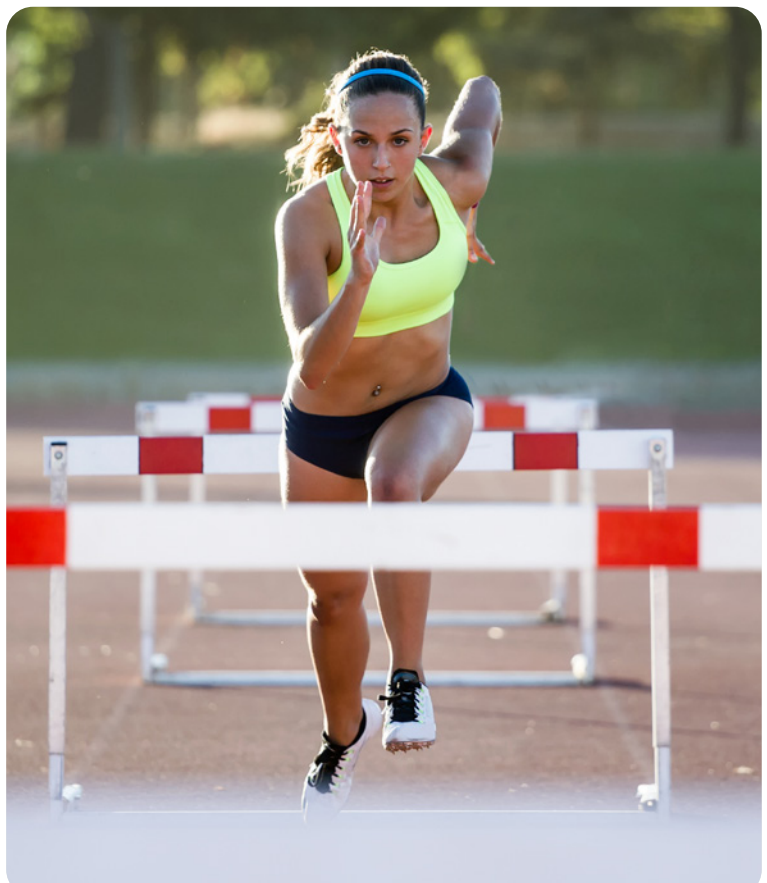
of plastic waste was recycled.

More than

70%

of plastic waste is still sent to incineration or landfill.

Key report findings



The report highlights a rapid slowdown in Europe's transition to a circular plastics system.

Although circular production increased by 2.4% and demand for circular plastics production by 8.2%, these figures mask a dramatic loss of momentum. The compound annual growth rate (CAGR) of circular plastics production declined from 13.6% between 2018 - 2022 to 1.2% from 2022 - 2024, while the equivalent figure for converter demand declined from 16.2% to 4% between the same two reporting periods.

Europe's plastics transition is slowing just as global competitors – particularly in China and the rest of Asia – **are accelerating output of circular plastics**. Postponed and cancelled investments in Europe's plastics recycling infrastructure resulted in over 70% of Europe's collected waste still being sent for incineration and landfill, and 12.2% of waste sorted for recycling being exported. Additionally, 19% (1.5 Mt.) of Europe's circular plastics demand relied on imports.

Urgent action is needed to strengthen policy frameworks, improve investment conditions and get the transition to a circular plastics system in Europe back on track.

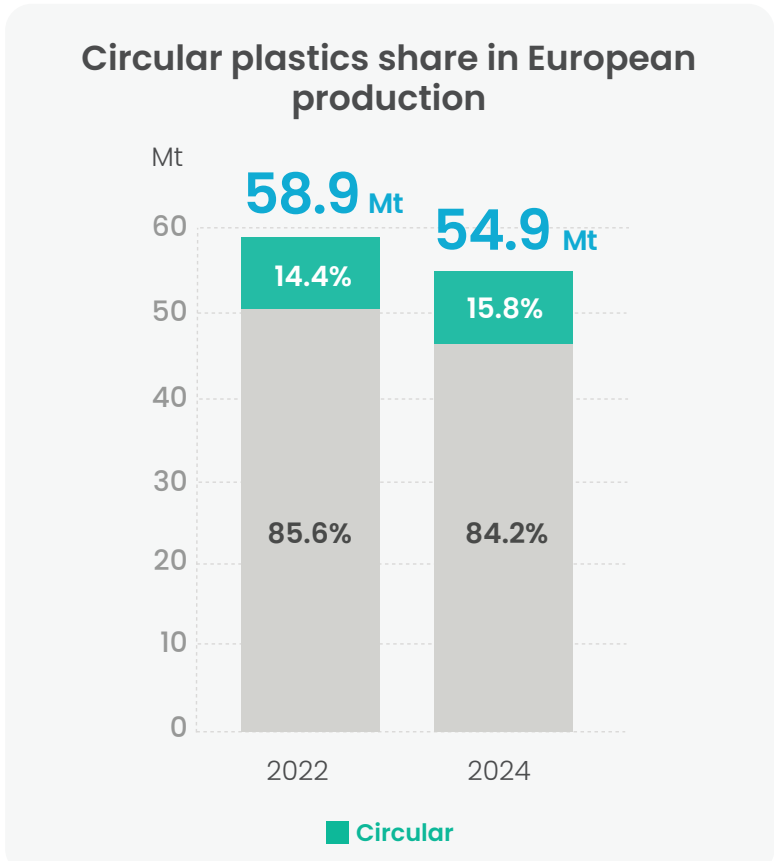
Circular plastics production

Circular plastics production – which includes mechanically, physically and chemically recycled plastics and plastics derived from bio-based feedstock – **represented 15.8% of total European plastics production in 2024**, an increase from 14.4% in 2022.

However, this increase does not reflect a meaningful expansion in circular output. Rather, it was primarily driven by a contraction in fossil-based plastics production, which fell by 8.3% to 43.3 Mt between 2022 and 2024. Over the same period, circular plastics production grew only marginally, rising by 2.4% to 8.7 Mt.

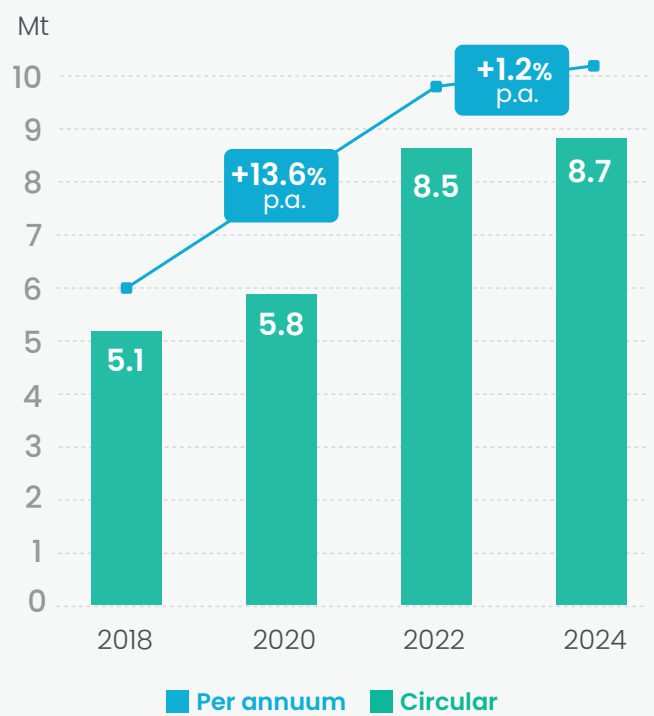
Growth in Europe's circular plastics sector has also slowed sharply compared to the previous period, even as global production accelerates. The CAGR[1] for European circular plastics production declined from 13.6% in 2018–2022 to 1.2% in 2022–2024. In contrast, global CAGR increased from 5.0% to 7.7% over the same periods, driving global circular plastics production to 44.2 Mt in 2024 (or 9.6% of total production[2]).

Europe currently maintains the highest share of circular output in its plastics production mix. However, accelerating global production – particularly in China and the rest of Asia – risks eroding this leadership and may increase Europe's dependence on circular plastics imports.



1. Compound annual growth rate
2. The scope of the global plastics production data in 'The Circular Economy for Plastics - A European Analysis 2026' report includes data on pre-consumer recycled plastics.

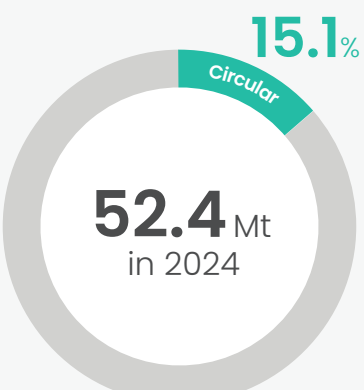
Circular plastics production evolution



Circularity in new plastic products

For the first time in 2024, circular plastics accounted for more than 15% (7.9 Mt.) of the total plastics converted into industrial and consumer products in Europe. **However, the market share and quantity of circular plastics converted** (rising from 7.3 to 7.9 Mt. between 2022 - 2024) **increased at a much slower rate than previously, dropping from a 16.2% CAGR[1] between 2018 - 2022 to 4% from 2022 – 2024.**

Plastics conversion

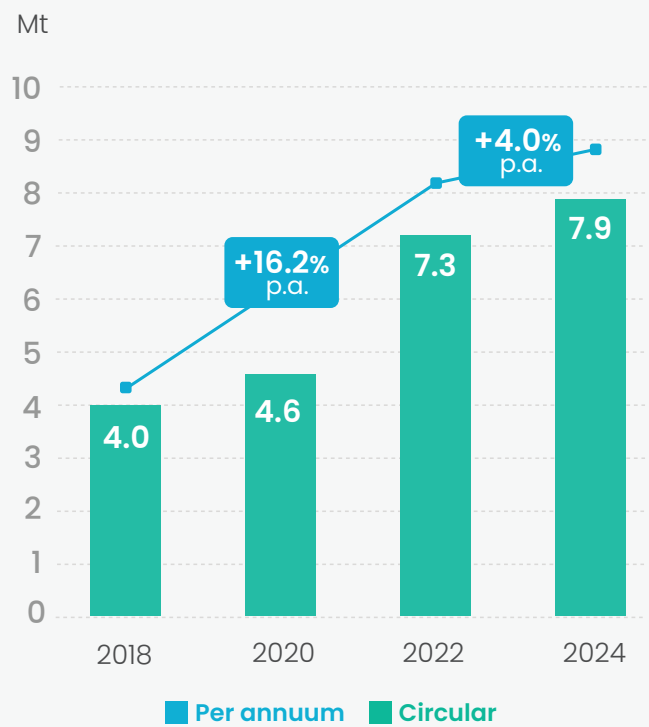


Additionally, amid bankruptcies, closures and delayed or cancelled investments in European recycling facilities, **1.5 Mt. (or 19%) of converters' demand for circular plastics was met through imports.**

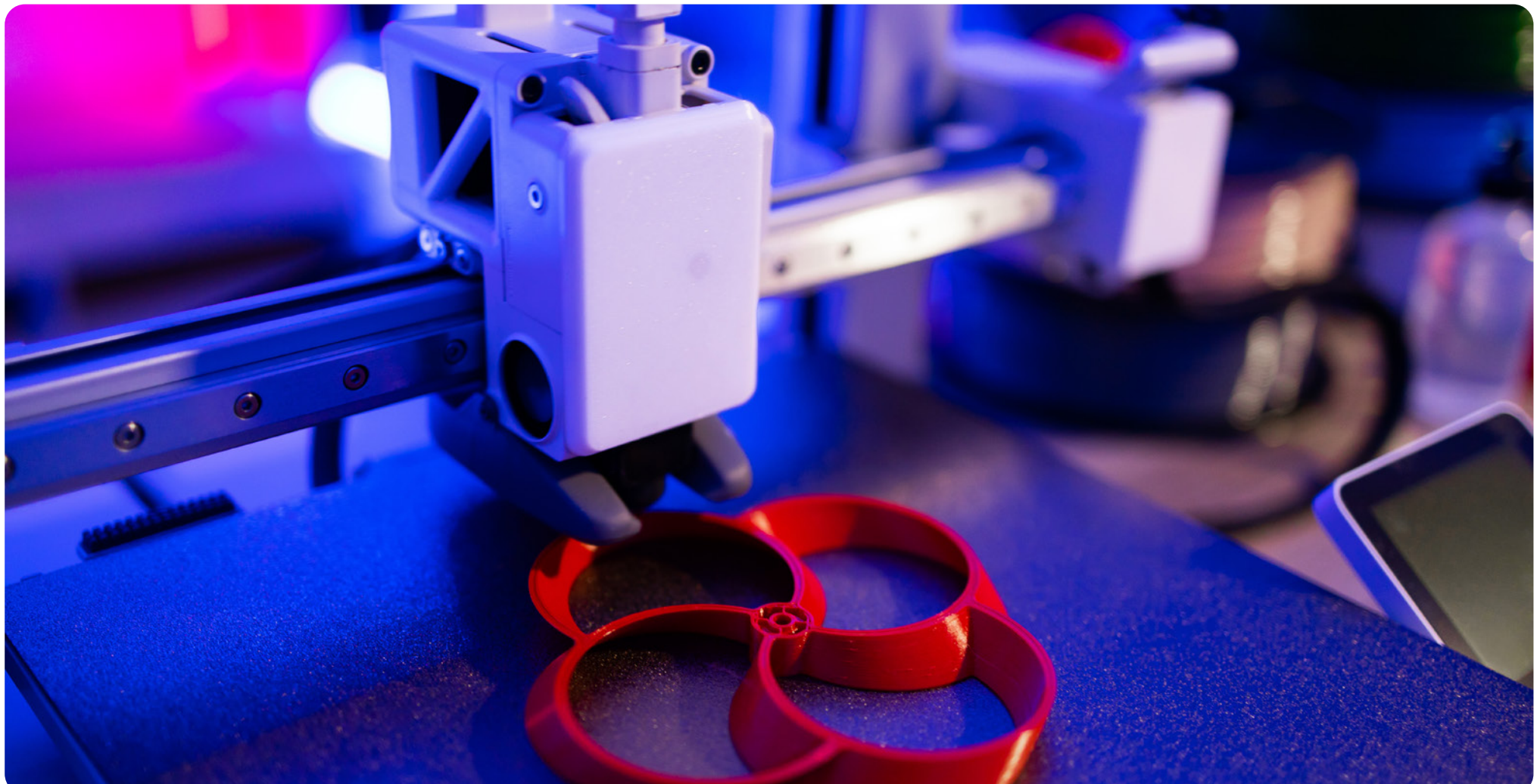
19% of the circular plastics used in Europe **rely on imports**.

This is mirrored in new data showing a broader and significant reliance by converters on imported plastics – both fossil-based and non-fossil – reaching 24% (13.4 Mt) of total demand in 2024.

Circular plastics conversion evolution

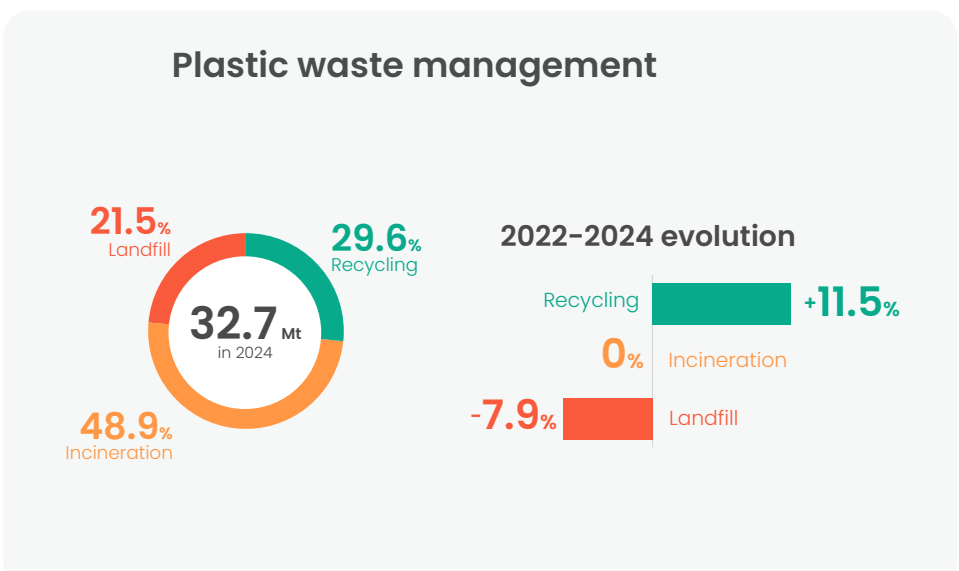


1. Compound annual growth rate



Plastic waste collection for recycling, incineration and landfill

Post-consumer waste collection rose, but at a much slower rate than in previous years. **A total of 32.7 Mt. was collected in 2024, with 12.3 Mt. (37.6%) sorted for recycling. Of the 9.7 Mt. that was of sufficient quality to be recycled (recorded at the 'point of calculation for recycling'), only 8.5 Mt. was domestically recycled in the EU 27+3, yielding 8.1 Mt. of recycled output.**



Additionally, **1.5 Mt. of sorted European plastic waste was exported for recycling abroad due to competitiveness issues (e.g. energy costs) and lacking EU recycling capacity, with 1.2 Mt. recorded at the point of calculation for recycling.** Due to the lack of data traceability, Plastics Europe cannot track the final recycling yield of exported sorted waste.

While waste collection and sorting has improved, the scale and complexity of the task facing policymakers and the European plastics system is illustrated by the fact that **70.4% of Europe's collected plastic waste – a valuable circular feedstock that could reduce the European economy's dependence on imported oil and gas – continued to be sent to incineration (16.0 Mt, 48.9%) and landfill (7.0 Mt, 21.5%) in 2024.**

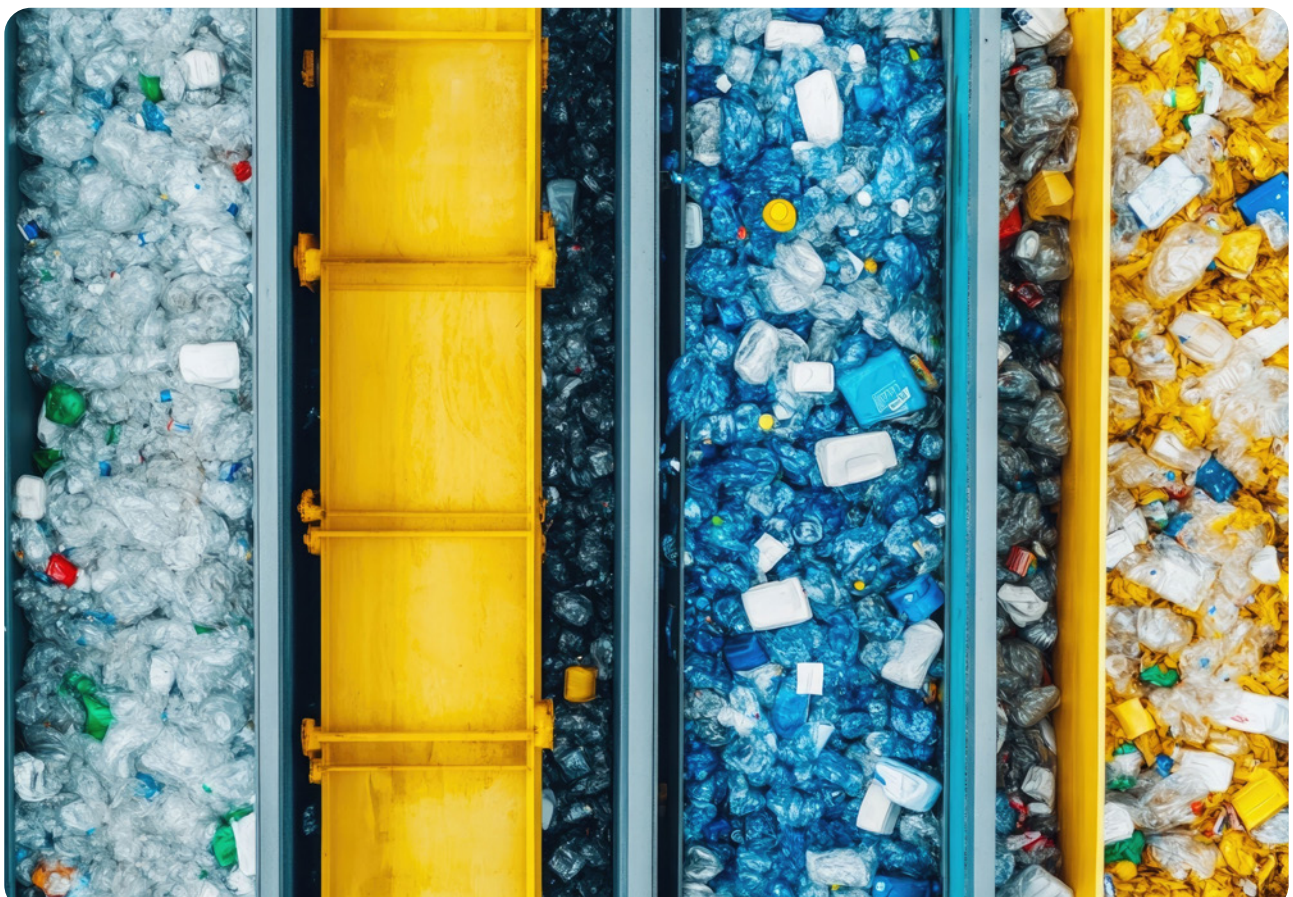
The EU's planned 2.5-year export ban on plastic waste to non-OECD countries, starting in November 2026, should increase the availability of plastic waste feedstock. However, ensuring adequate waste sorting and plastics recycling capacity in the EU27+3 will be essential to avoid spikes in landfill and incineration of collected waste, and export of sorted waste to other regions. Similarly, the EU's 2035 10% limit on municipal waste being sent to landfill should be used to maximise available feedstock for recycling.

It is concerning that, between 2022 and 2024, there was no reduction in the quantity of plastic waste incinerated, and the **share of sorted plastic waste exported rose sharply by 36.5% to 1.5 Mt.**

Export of sorted plastic waste increased by

+36.5%

since 2022, reaching 1.5 Mt.



Europe – a future secondary resource powerhouse

Europe's plastic waste is an underutilised resource that could reduce its fossil import dependence and strengthen its economic resilience. The 36.5% rise in exports of EU waste sorted for recycling between 2022 and 2024 is therefore concerning.

By transforming end-of-life plastics into a valuable commodity, for example, through ambitious market pull measures, the EU can stimulate private-sector investments in collection, sorting, reuse, and recycling at scale.

Expanded collection and sorting systems are essential to secure high-quality feedstocks. Separate collection delivers far higher recycling rates (53%). However, improved sorting of mixed waste in countries such as Germany, Poland, and Spain has increased recycling rates for this waste stream (from 3.8% to 5.6%).

Despite progress in sorting of mixed waste streams, separate collection remains significantly more effective. The gap is clearest in packaging: 2% of waste is recycled from mixed streams versus 62% recycling from separate collection.

Circular technology neutrality – the key to full transition

EU policy is currently heavily focused towards supporting the development of mechanical recycling. While it is a critical enabler of plastics circularity, mechanical recycling cannot address all waste streams or meet future demand for high-quality recycled material. **No single technology can deliver the transition alone.**

Achieving full circularity and climate neutrality requires a complementary portfolio of technologies, including chemical recycling to process mixed and contaminated waste, alongside alternative technologies such as bio-based materials and carbon capture and utilisation (CCU). Scaling these solutions in parallel will be essential to reduce reliance on fossil resources and close the remaining circularity gap.

A key finding from interviews conducted for this report is that the demand for financially attractive high quality recyclates currently appears to be higher than the production of these materials in Europe.

Policy recommendations for a competitive and circular European plastics system

A circular plastics system is essential to Europe's strategic autonomy, industrial resilience and sustainability transition. It will not, however, be possible to unlock the market drivers and investments required to build this system without a competitive European plastics industry. Significant advances in circularity cannot be achieved without restoring the competitiveness of European plastics manufacturers.

Competitiveness focused policy measures must be complemented by a more ambitious circularity agenda that is broader in scope and delivered with greater urgency. It should be focused on promoting circular plastics production and strengthening the business case for investing in circular technologies and infrastructure in Europe. Close engagement between policymakers and the plastics value chain is vital.

Creating a more competitive plastics industry

EU and national policymakers must urgently address Europe's higher energy and carbon costs, ensure a level playing field with international competitors, and capitalise on the potential of the EU single market to drive competitiveness. Trade rules and market transparency should be fair and consistently enforced to protect against global overcapacity and dumping.

Addressing the competitive issues facing the broader European plastics system, including converters and recyclers, is also crucial.

Strengthening demand for circular plastics

Ambitious market pull measures should be rapidly introduced to stimulate demand, and public procurement and Extended Producer Responsibility (EPR) bonuses should be used to reward producers that use circular plastics.

Securing availability of all circular feedstocks in Europe

Replacing fossil-based inputs with circular alternatives requires a secure and predictable supply of plastic waste. Too much collected plastic waste is still directed to landfills and incineration, and exported for recycling abroad. Landfilling and incineration of recyclable plastics must be banned, and municipal waste incineration included in the EU's Emission Trading Scheme (ETS). All circular feedstocks, including recycled, bio-based and carbon-captured, need to be supported, and the import and export of plastic waste closely monitored.

Promoting technology neutrality and innovation

Real world implementation of circular technologies at scale will drive innovation, efficiencies and productivity. Resisting the temptation to favour or dismiss solutions before they reach technological maturity and recognising that innovations need room to grow is critical.

More integrated circular plastics systems

Europe needs to support the development of integrated circularity hubs that combine mechanical and chemical recycling and bio-based production facilities. Waste streams unsuitable for mechanical recycling – such as mixed or complex plastics – need to be redirected to complementary recycling technologies to maximise overall resource utilisation.

Mobilising circular transition finance

Revenues from mechanisms like the EU plastics levy[1] should be reinvested into circularity solutions, and a dedicated circularity fund established within the Competitiveness Fund. In parallel, EPR schemes can be used to unleash investments in recycling infrastructure, promote the use of EU-sourced feedstock, and encourage the use of circular materials in products.

Breaking down barriers to a circular single market

The scale of the single market is a key advantage for circularity - but fragmentation and unnecessary complexity undermine its potential. Greater harmonisation of rules on end-of-waste, waste shipment, recycling processes, and EPR governance is essential to reducing administrative burdens, increasing investment incentives, enabling efficient cross-border flows and unlocking scale.

For more information on Plastics Europe's circular economy policy recommendations, please see here.

1. The EU plastics levy, introduced in 2021, requires each member state to pay a fee based on the amount of non-recycled plastic packaging waste it generates.

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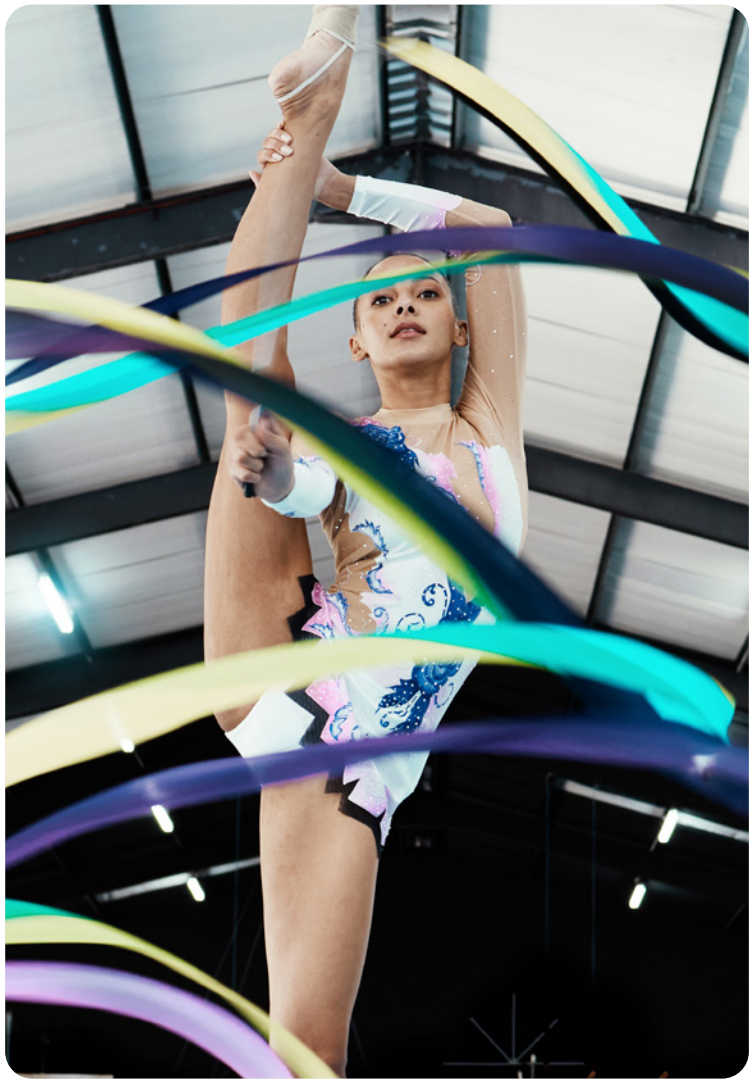
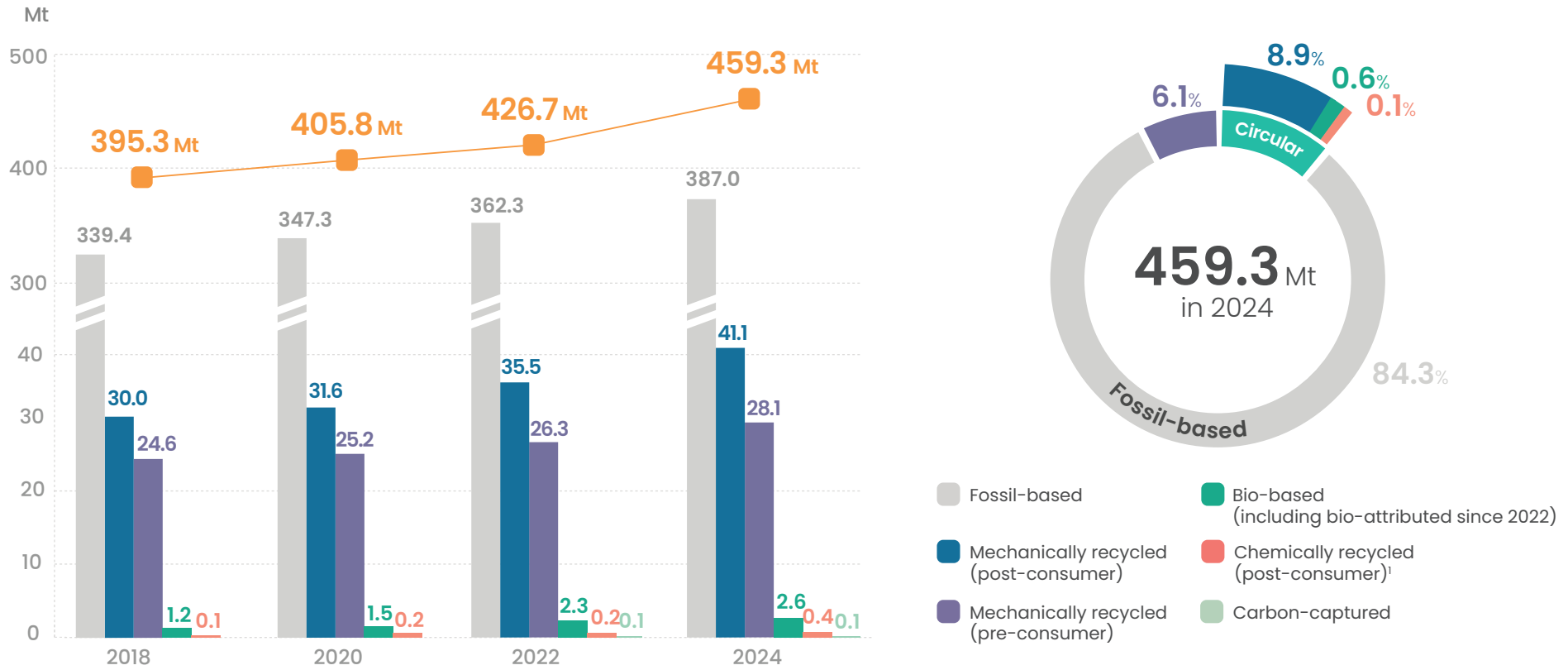


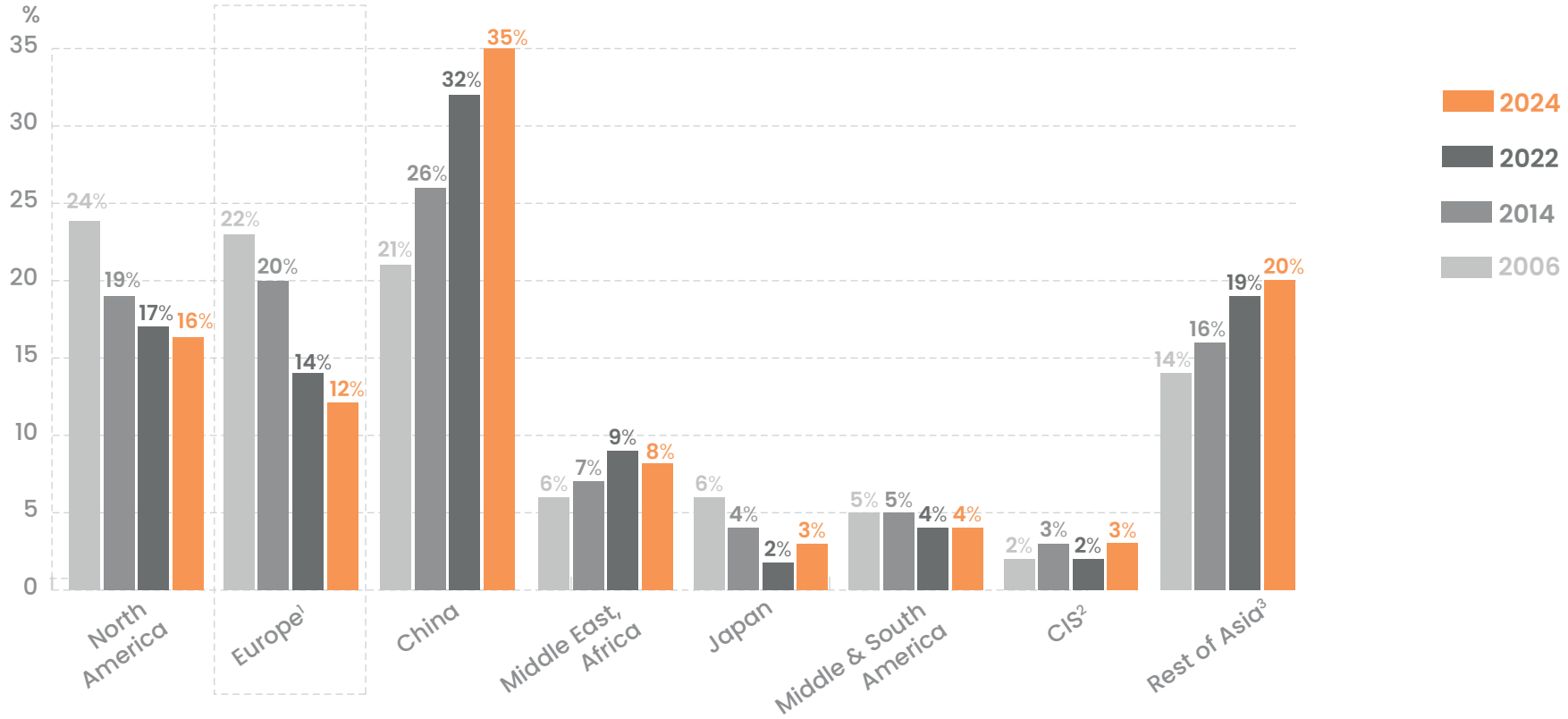

Plastics
production

World plastics production evolution



The above data are rounded estimations.
1. Chemically recycled plastics production is estimated at 0.37 Mt, based on available data, with the fuel-use exempt mass balance attribution rule. This method includes secondary chemicals which can be used for the production of plastics and other materials.

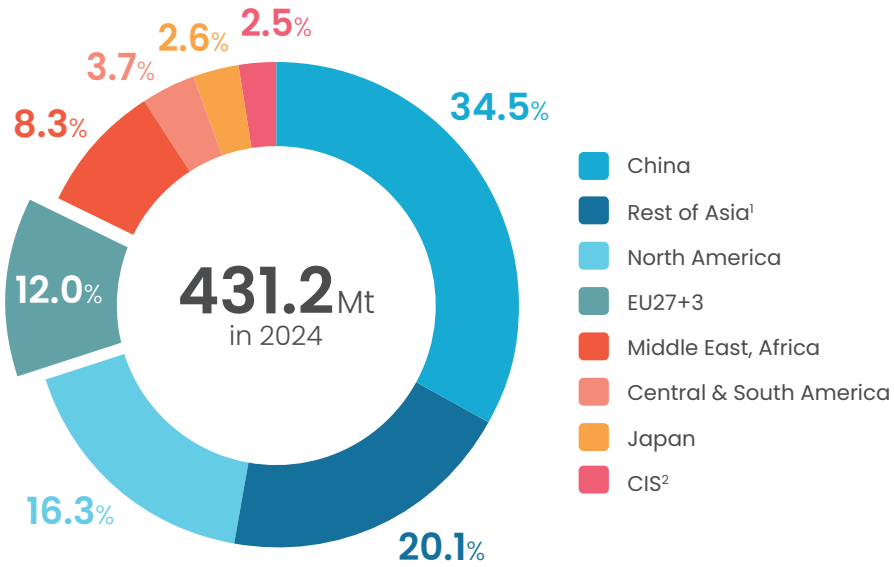
World plastics production evolution



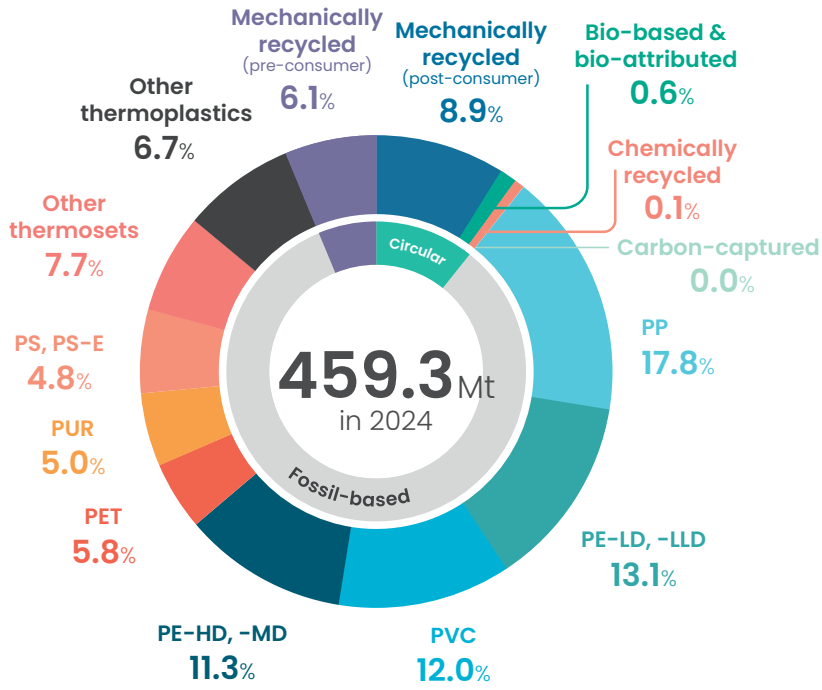
The above data are rounded estimations.
1. EU25+2 in 2006, EU28+2 in 2014, EU27+3 as of 2022.
2. Commonwealth of Independent States : Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan.
3. Includes Asian countries (except China & Japan), Oceania, Turkey and Ukraine.

World plastics production

Global plastics production by region[3]



Global plastics production by polymer



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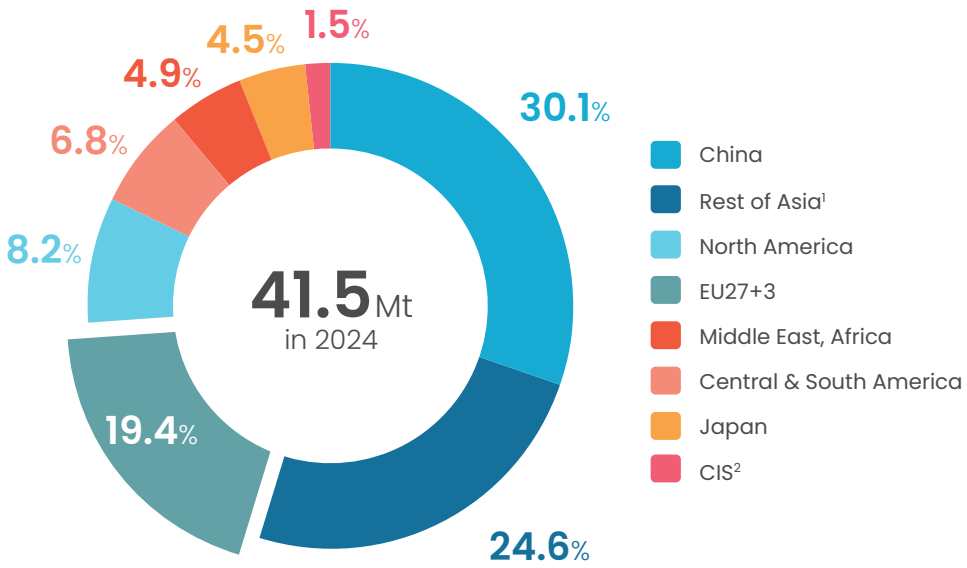
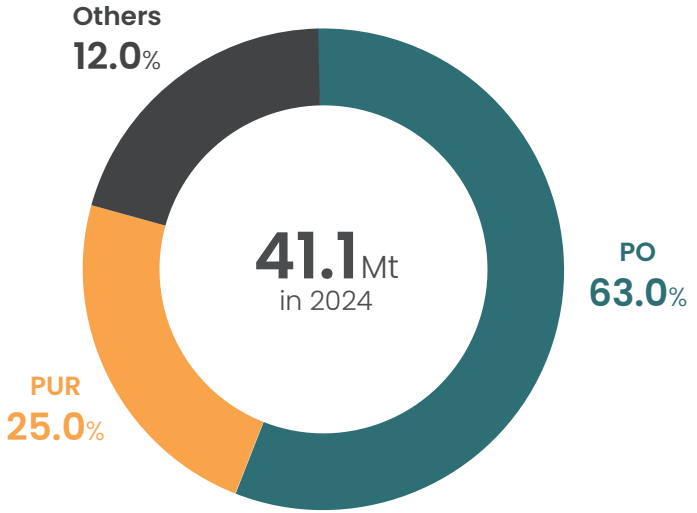
3. For data availability reasons, mechanically recycled (pre-consumer) plastics production is excluded.

World post-consumer recycled plastics production

Global mechanically & chemically recycled (post-consumer) plastics production by region



Global mechanically recycled (post-consumer) plastics production by polymer[3]



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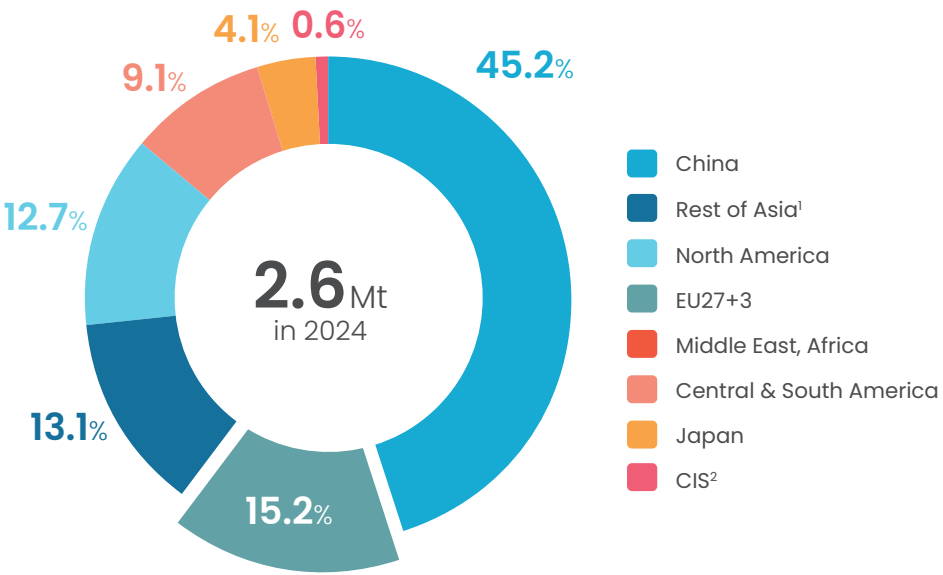
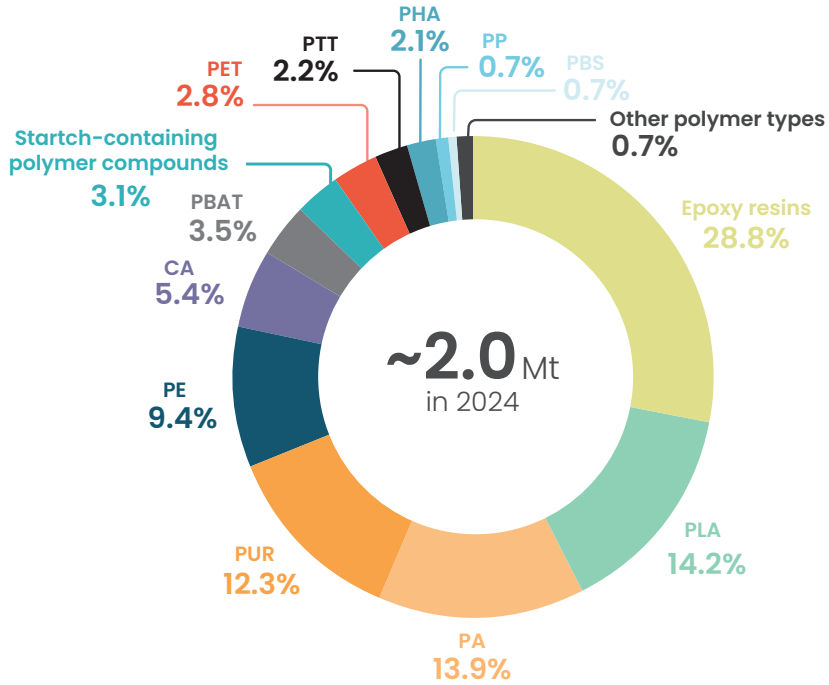
3. For data availability reasons, mechanically recycled (pre-consumer) plastics production is excluded.

World plastics production from bio-based feedstock

Global bio-based plastics production by region



Global bio-based plastics production by polymer



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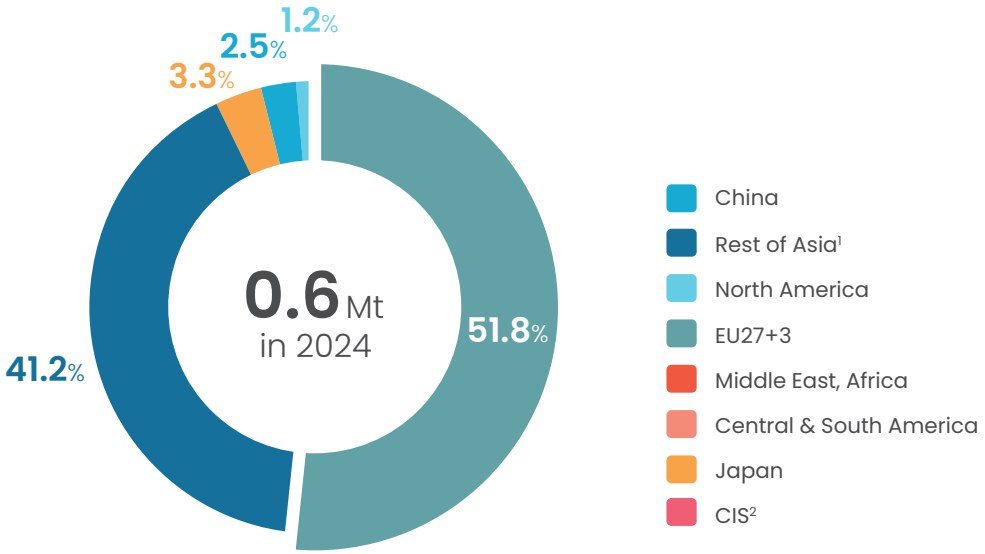
2. Commonwealth of Independent States : Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan.

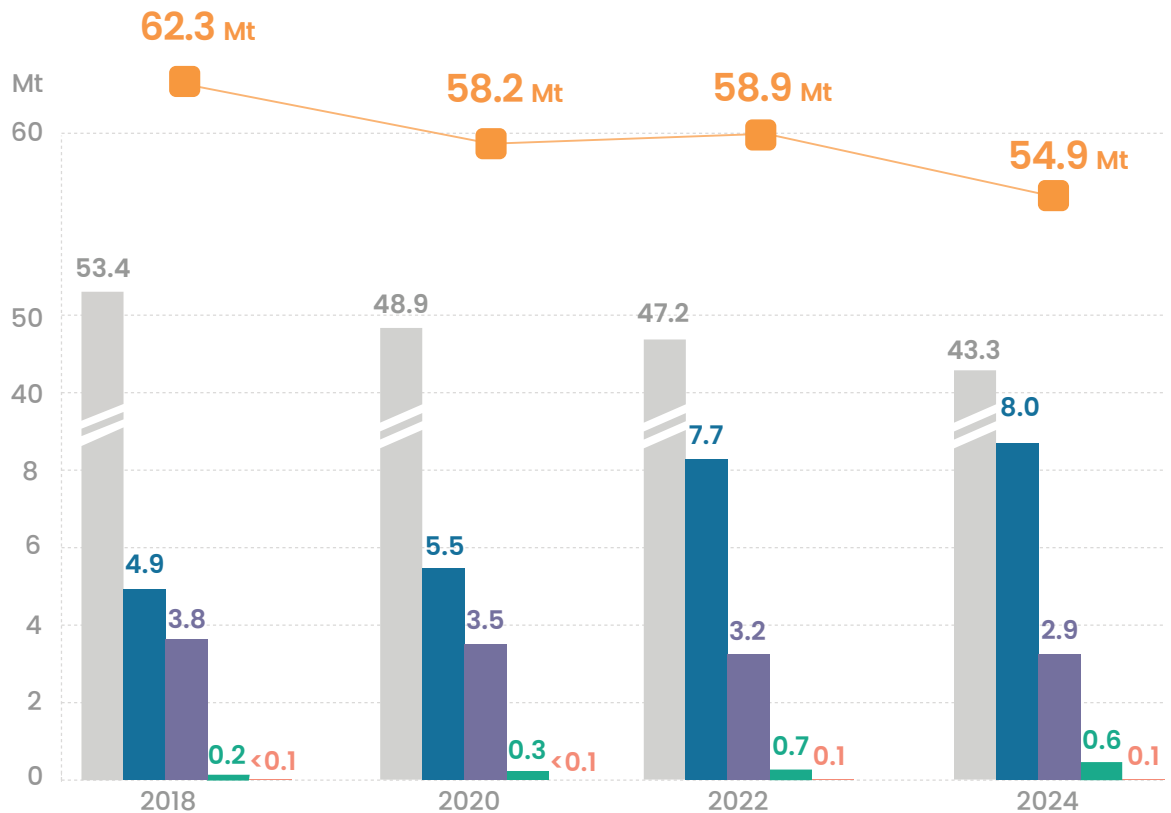
World plastics production from bio-based feedstock

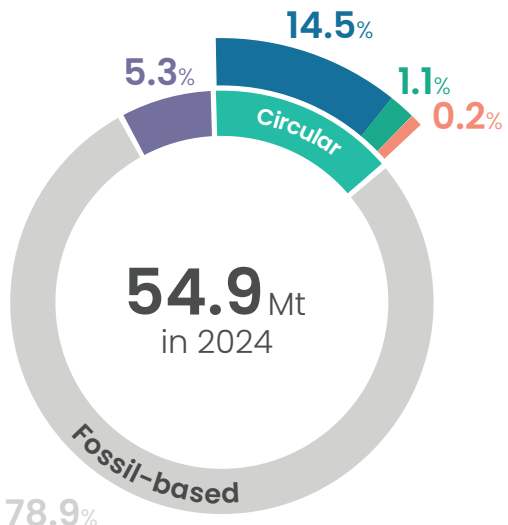
Global bio-attributed plastics production by region



The above data are rounded estimations.
For data availability reasons, bio-attributed plastics are not included at polymer level.
1. Includes Asian countries (except China & Japan), Oceania, Turkey and Ukraine.
2. Commonwealth of Independent States : Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan and Uzbekistan.

European plastics production evolution



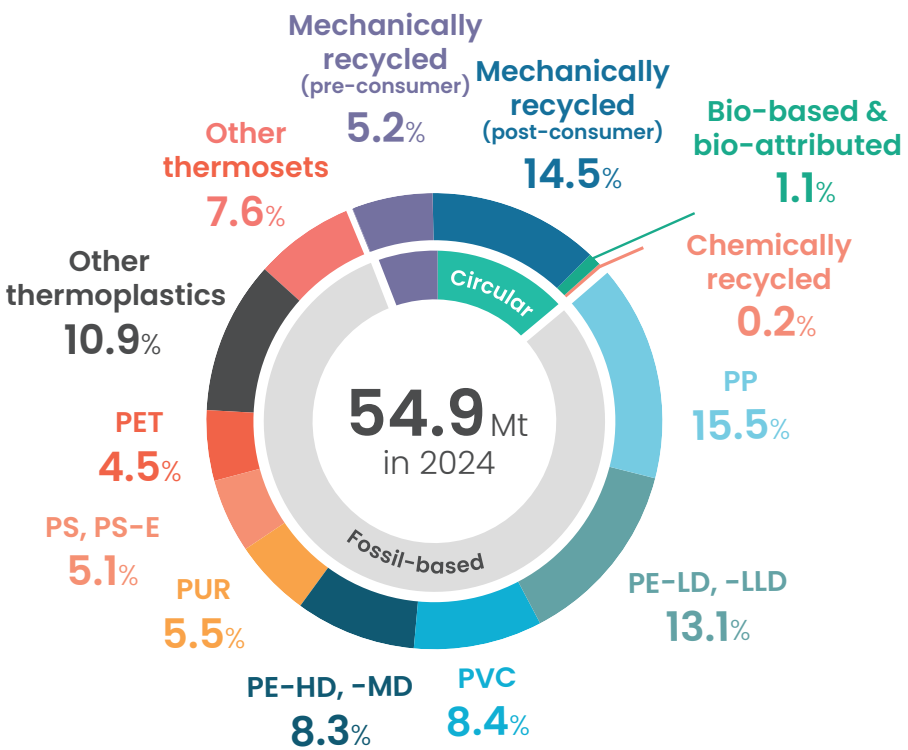


Fossil-based
Mechanically recycled (post-consumer)
Mechanically recycled (pre-consumer)
Bio-based (including bio-attributed since 2022)
Chemically recycled (post-consumer)[1]

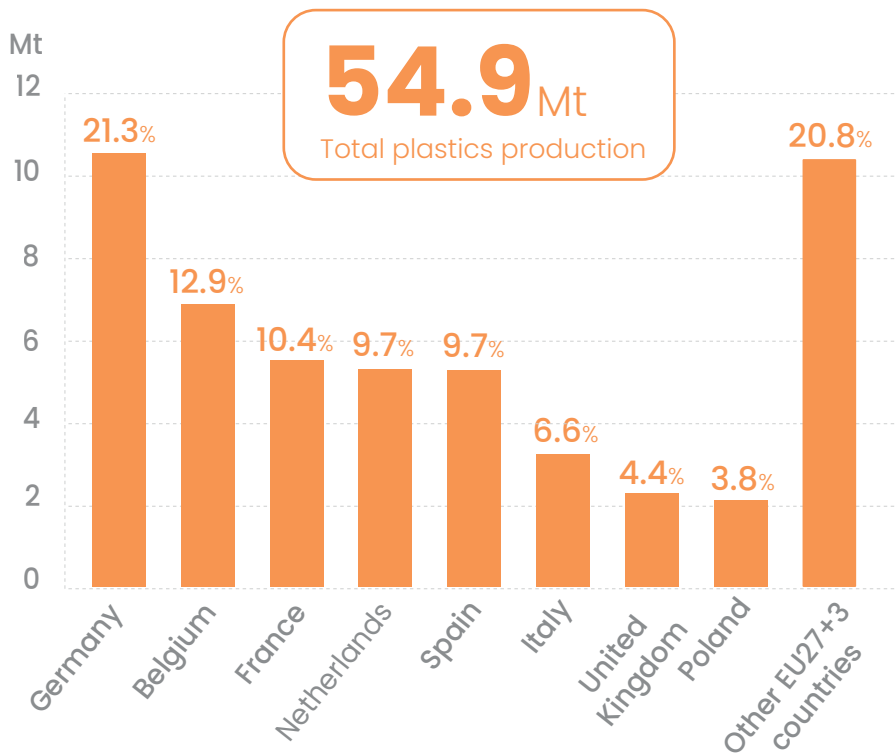
The above data are rounded estimations.
1. Chemically recycled plastics production is estimated at ~0.11 Mt, based on available data, with the fuel-use exempt mass balance attribution rule. This method includes secondary chemicals which can be used for the production of plastics and other materials.

European plastics production

Plastics production by polymer

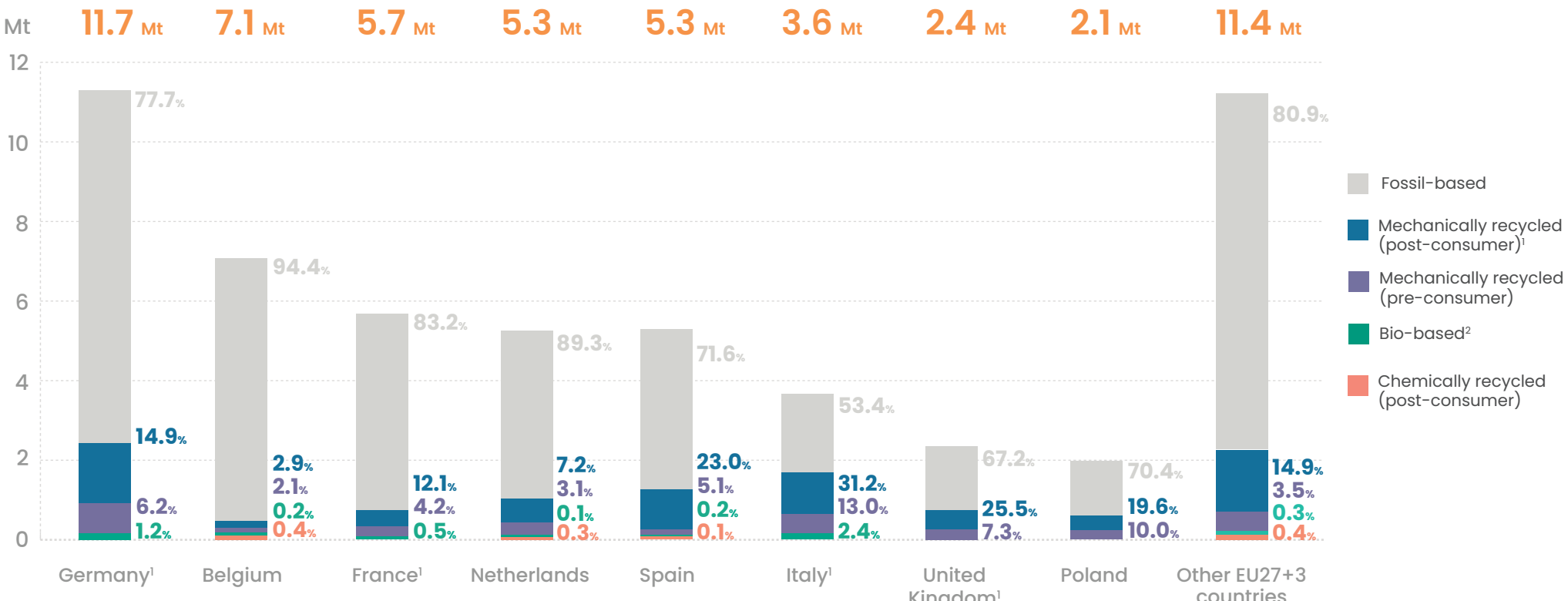


Plastics production by country[1]



The above data are rounded estimations.
1. 54.6Mt including 0.3Mt of bio-attributed plastics (which represents ~ 0.5%) that cannot be shown at country level for data availailty reasons

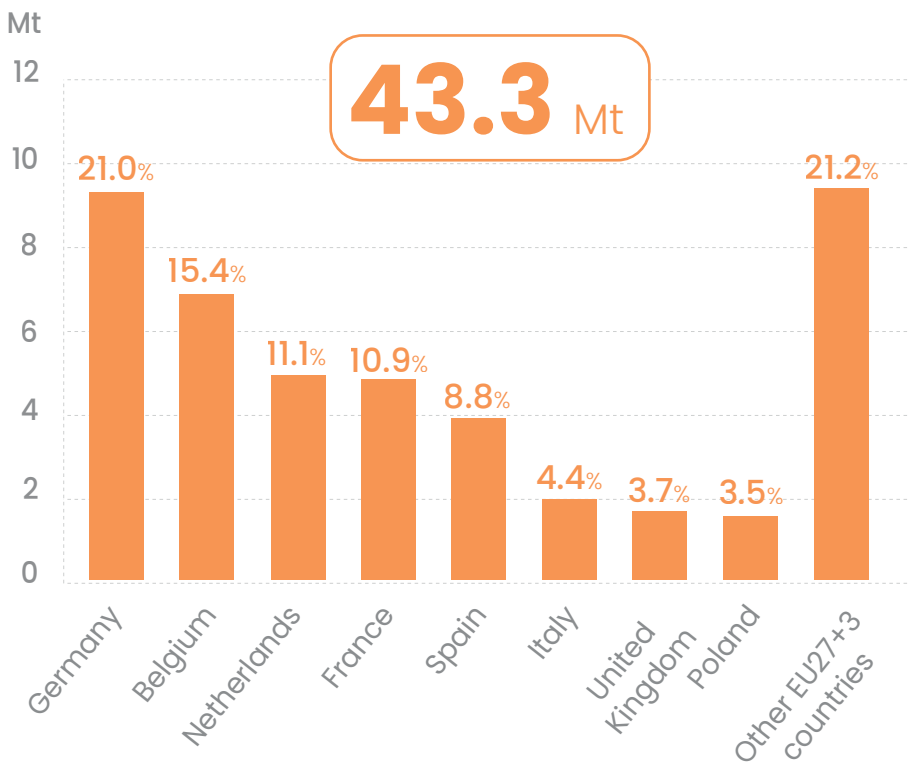
European plastics production by country



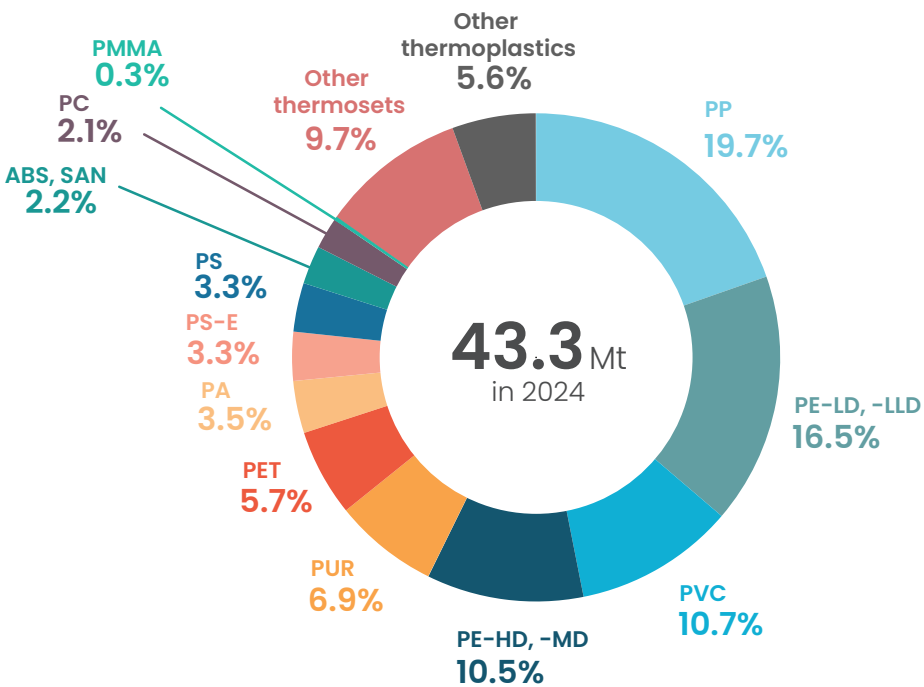
The above data are rounded estimations.
1. For design reasons, the chemically recycled plastics production data here not shown.
2. For data availability reasons, bio-attributed plastics are not included in the country data.

European fossil-based plastics production

Fossil-based plastics production by country



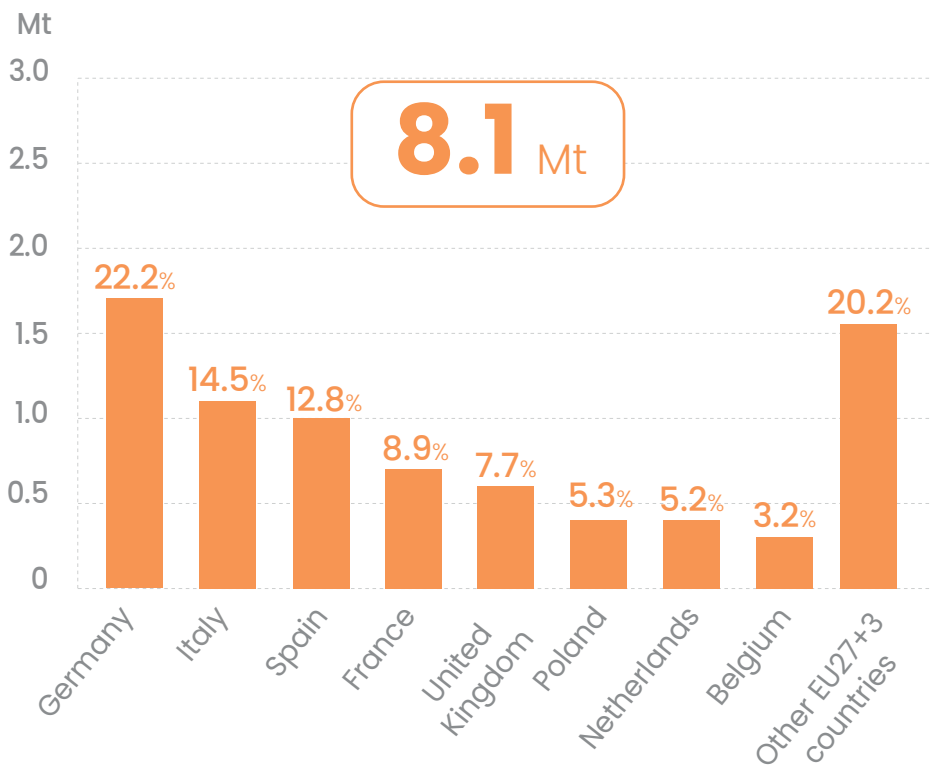
Fossil-based plastics production by polymer



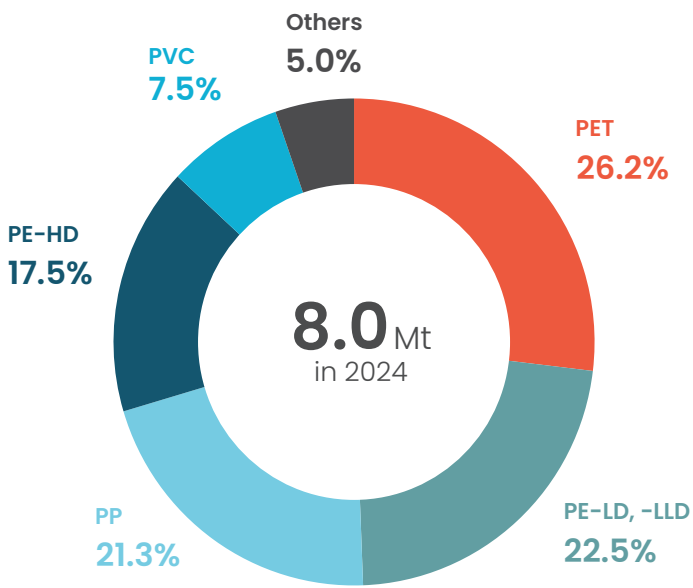
The above data are rounded estimations.

European post-consumer recycled plastics production

Mechanically & chemically recycled (post-consumer) plastics production by country



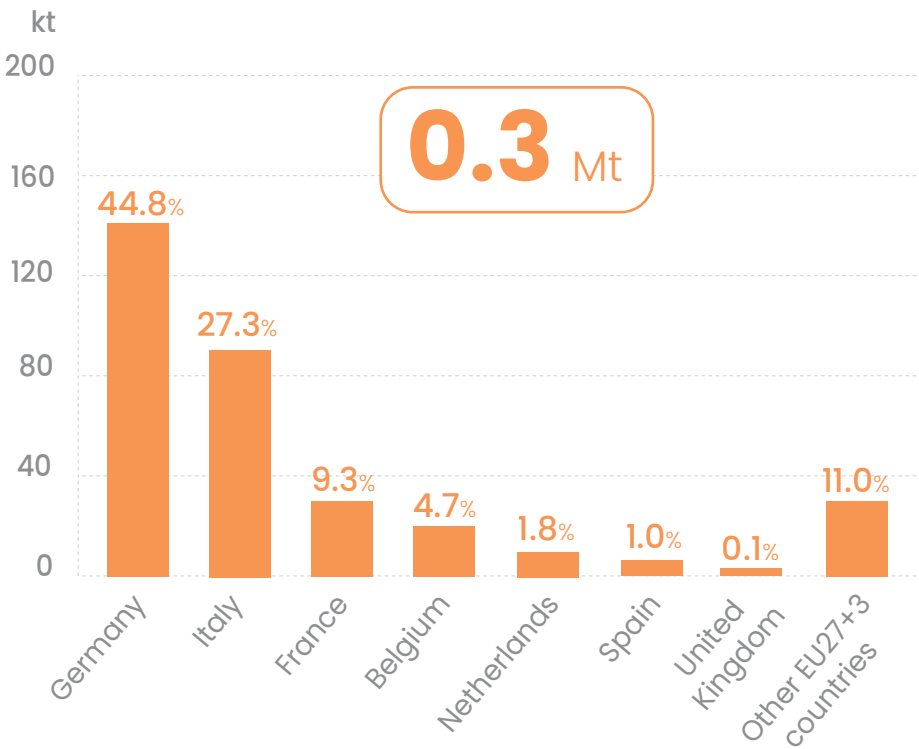
Mechanically recycled plastics production (post-consumer) by polymer[1]



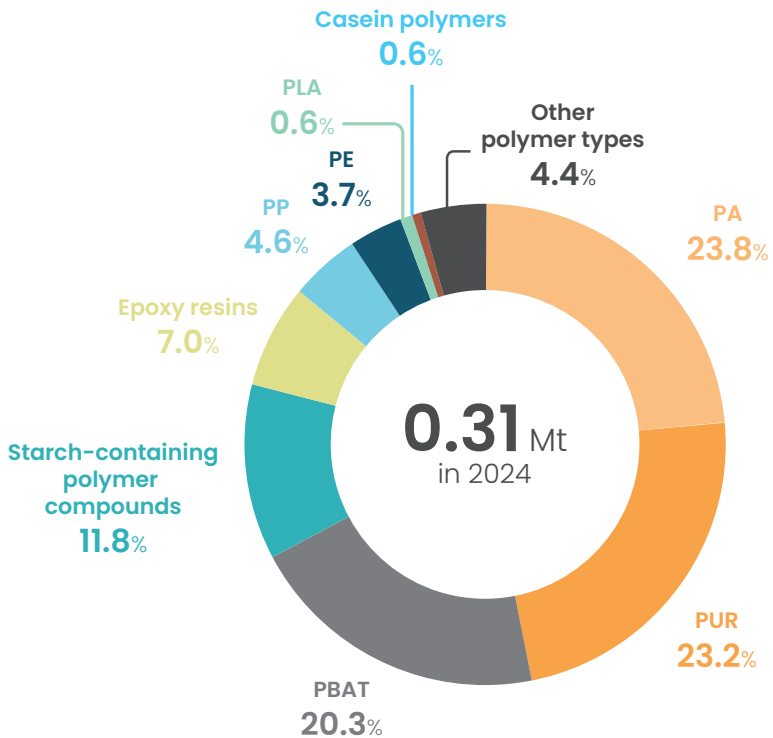
The above data are rounded estimations.
1. For data availability reasons, chemically recycled plastics are not included in post-consumer recycled plastics data per polymer.

European bio-based plastics production

Bio-based plastics production by country

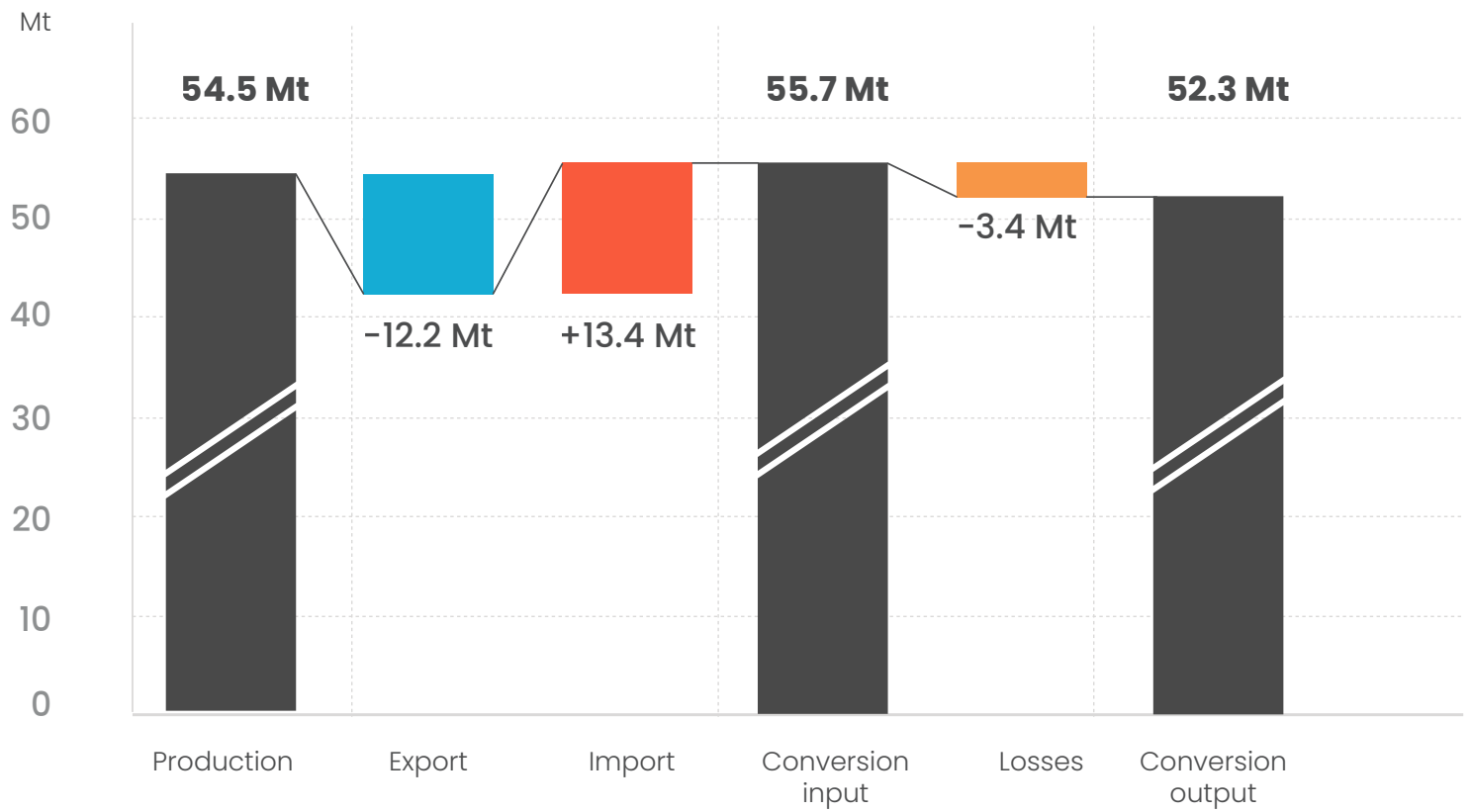


Bio-based plastics production by polymer



The above data are rounded estimations.
For data availability reasons, bio-attributed plastics are not included at country and polymer level.

European plastics import and export

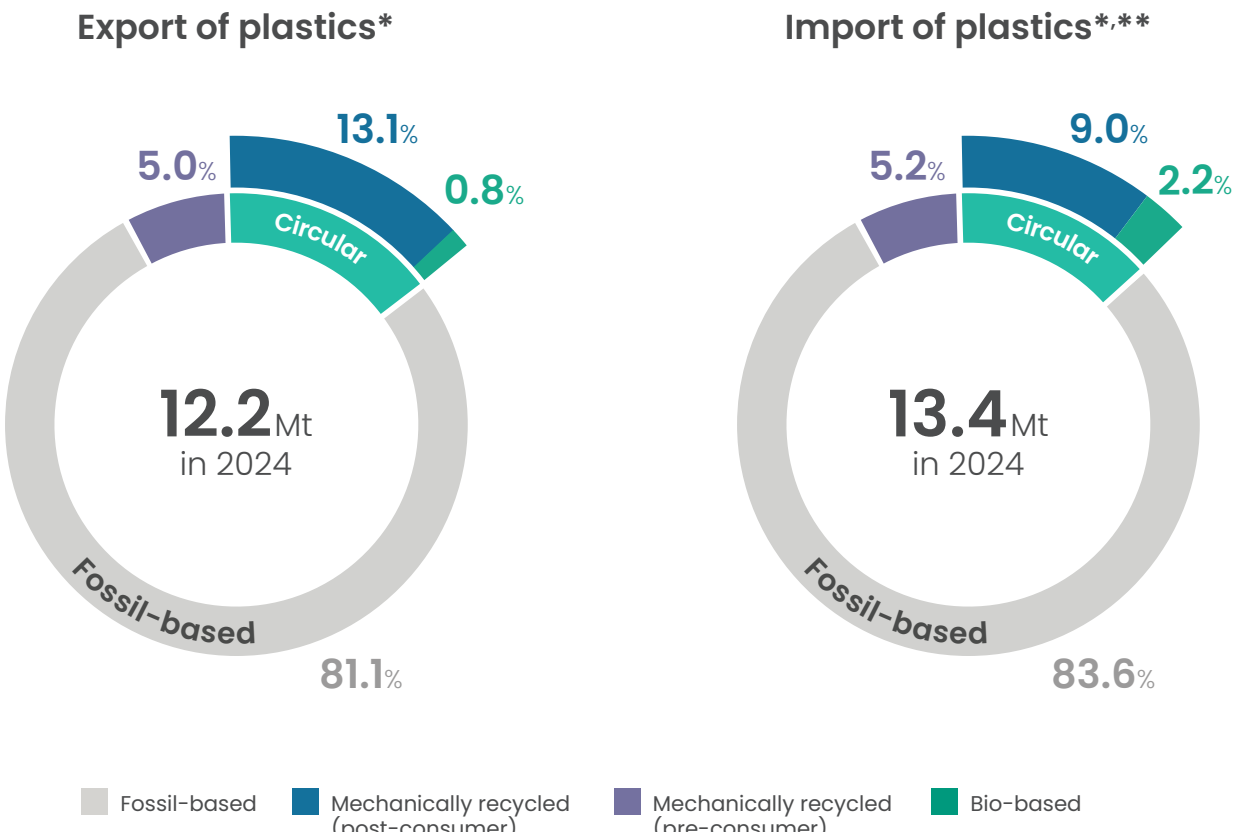


The above data are rounded estimations.
For data availability reasons, bio-attributed and chemically recycled (post-consumer) recycled plastics are excluded from the trade data.

European plastics import and export

13.4 Mt of plastics were imported in 2024, which represents **24%** of the conversion input

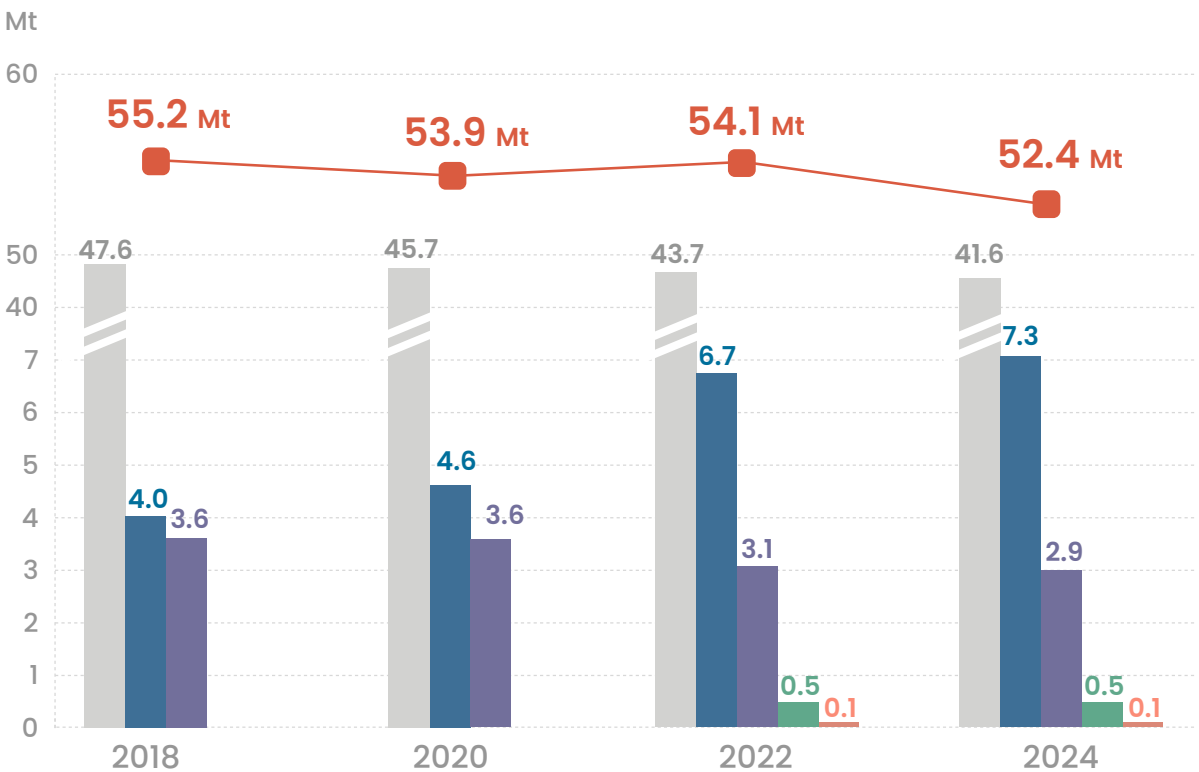
1.5 Mt of circular plastics were imported in 2024, which represents 19% of the circular plastics conversion input

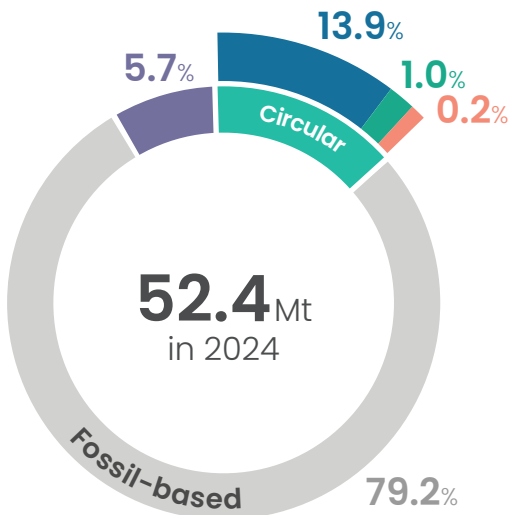


*Trade data exclude bio-attributed and chemically recycled plastics, for data availability reasons.
** Trade data consider plastics conversion input, and thus include the conversion process loss quantities.


Plastics
conversion

European plastics conversion evolution

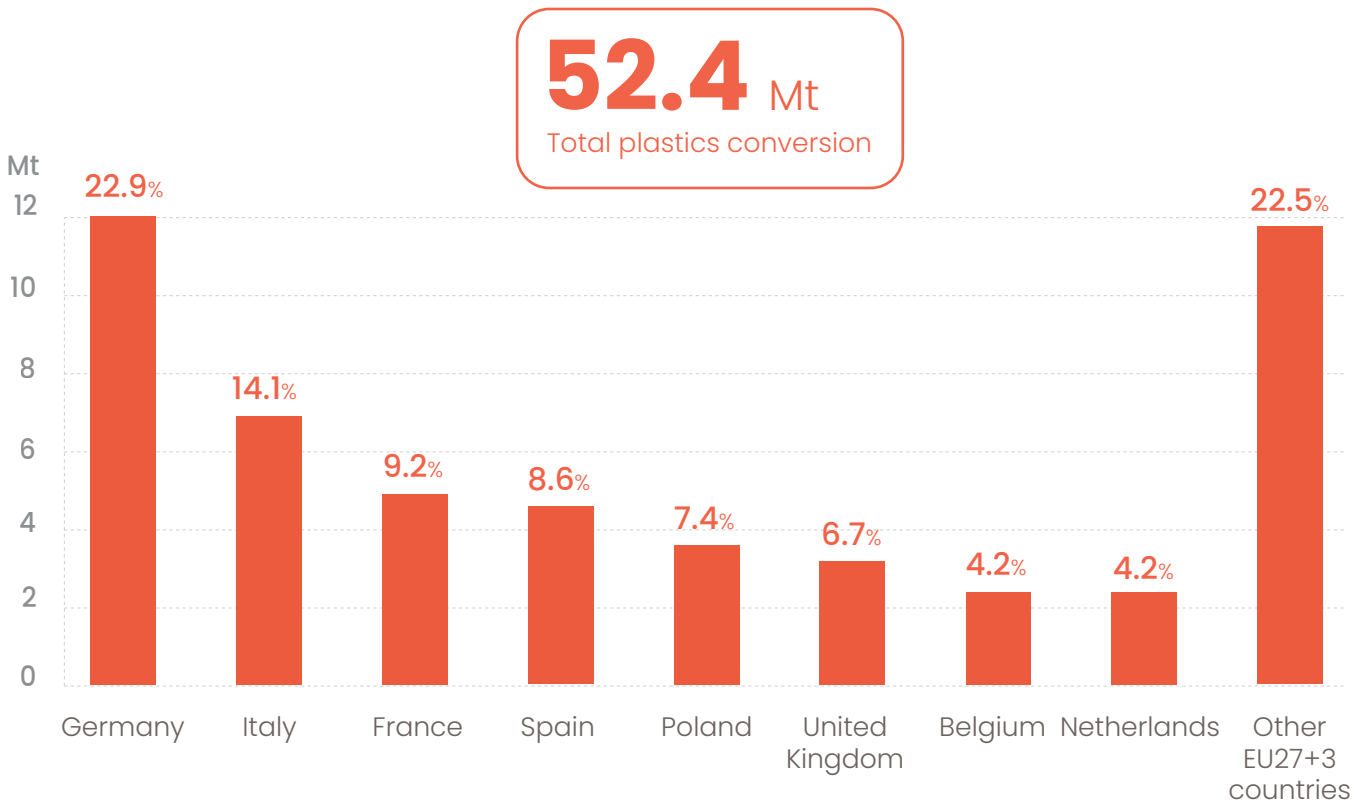




Fossil-based
Mechanically recycled (post-consumer)
Mechanically recycled (pre-consumer)
Bio-based (including bio-attributed since 2022)[1]
Chemically recycled (post-consumer)

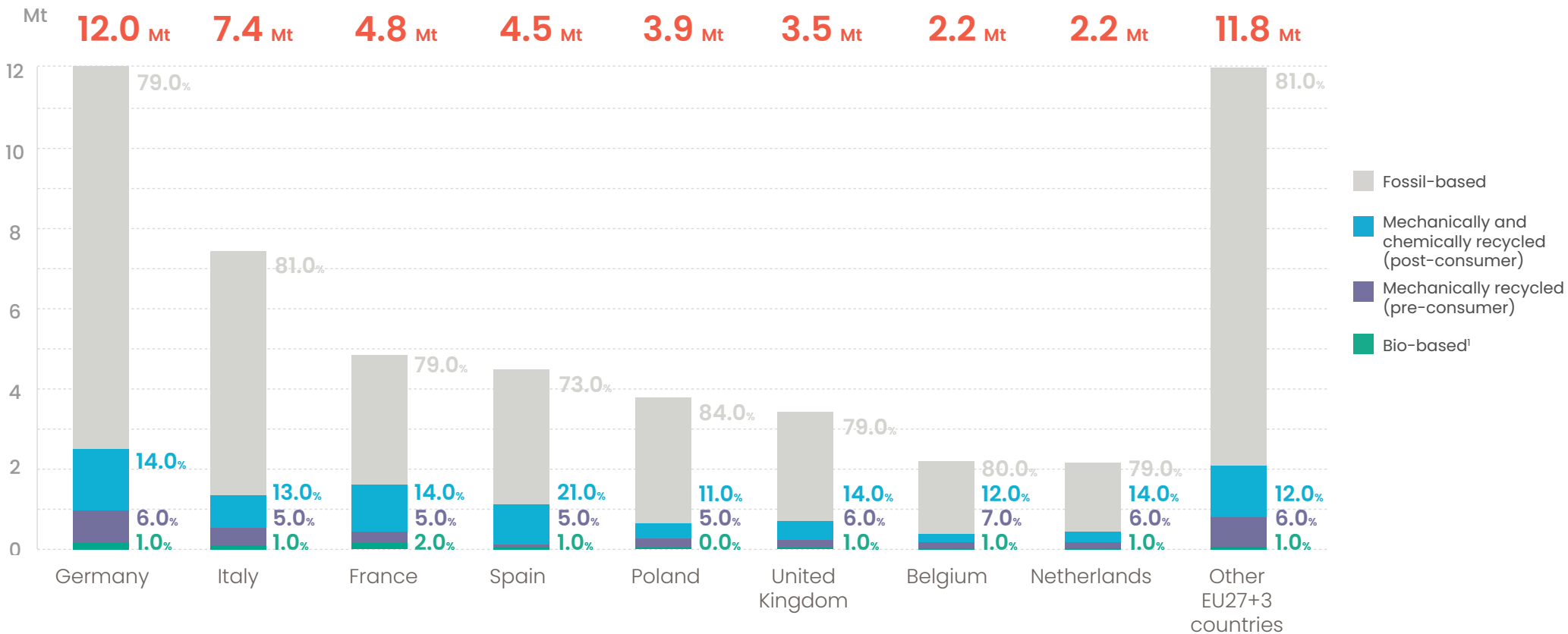
The above data are rounded estimations.
1. For data availability reasons, bio-attributed and chemically recycled (post-consumer) plastics are included in conversion data as of 2022 only.

European plastics conversion by country



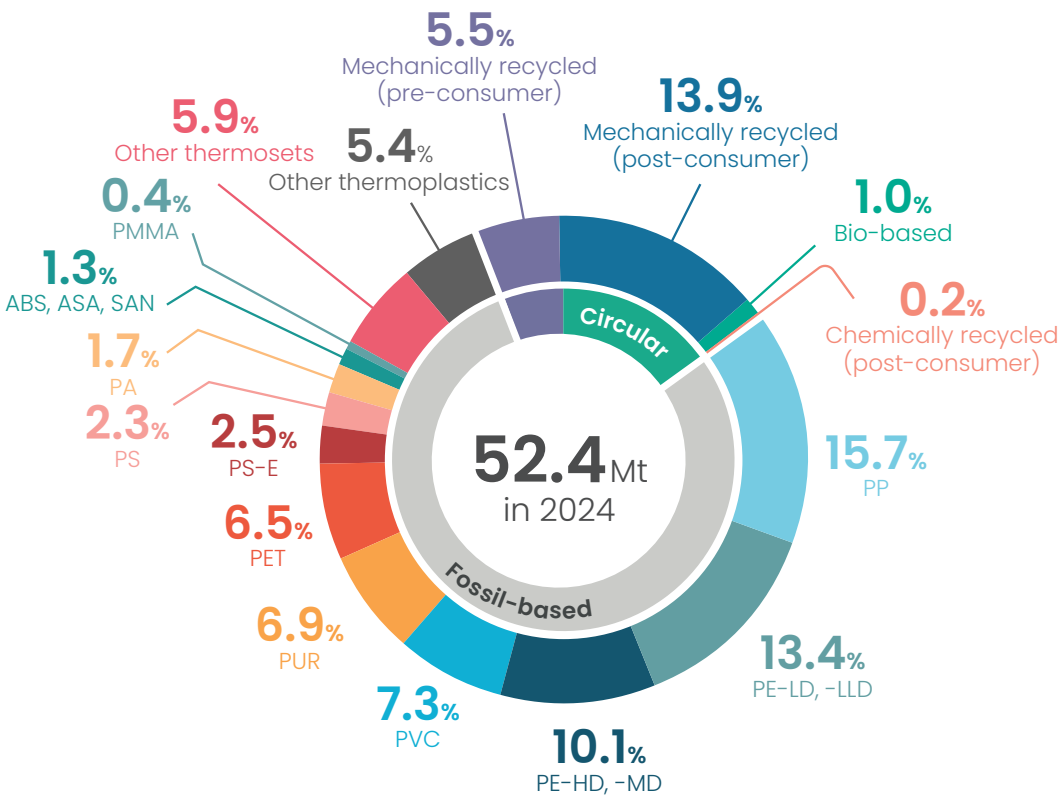
The above data are rounded estimations.
For data availability reasons, chemically recycled (post-consumer) plastics cannot be shown at country level in the conversion data. The total chemically (post-consumer) recycled plastics in conversion is ~0.1 Mt and represents ~0.2% of the European conversion.

European plastics conversion by country



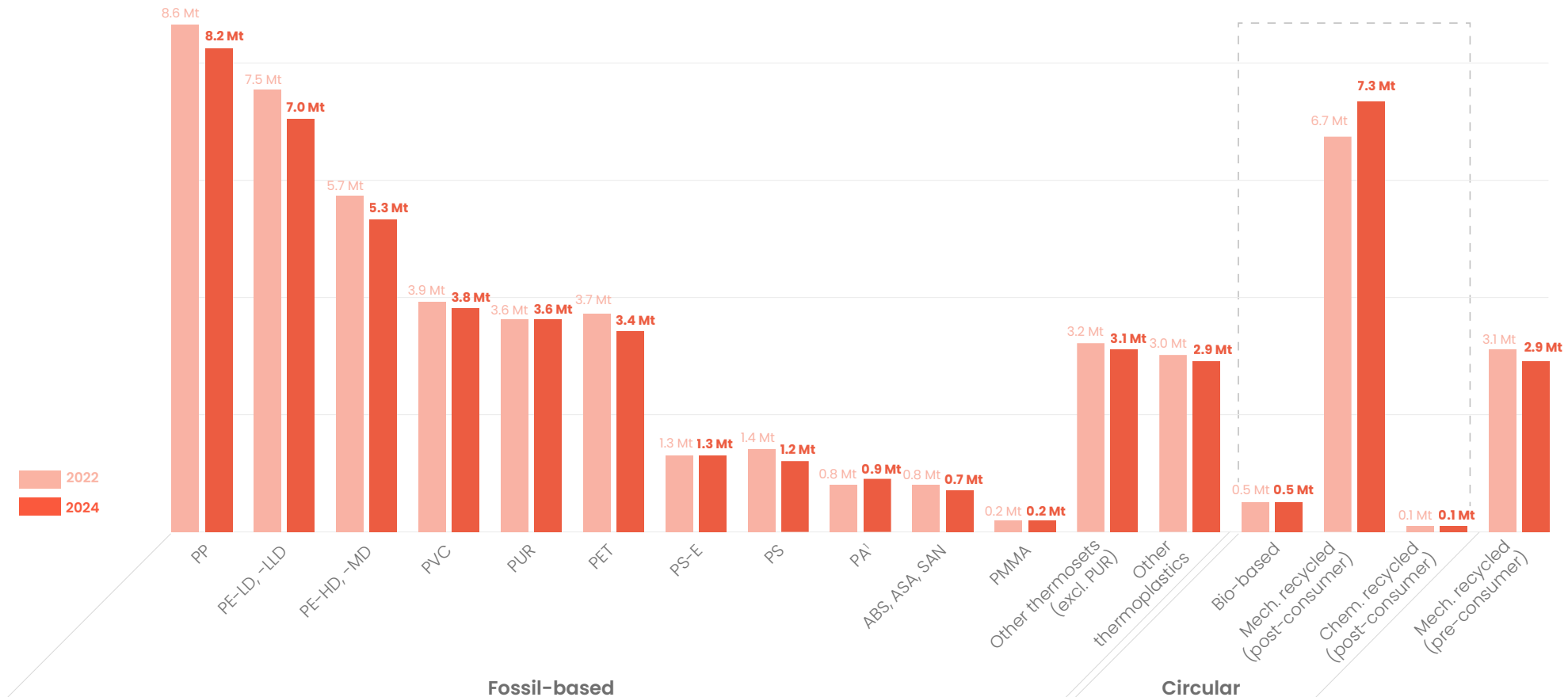
The above data are rounded estimations.
1. For data availability reasons, bio-attributed plastics are not included in conversion data.

European plastics conversion by polymer



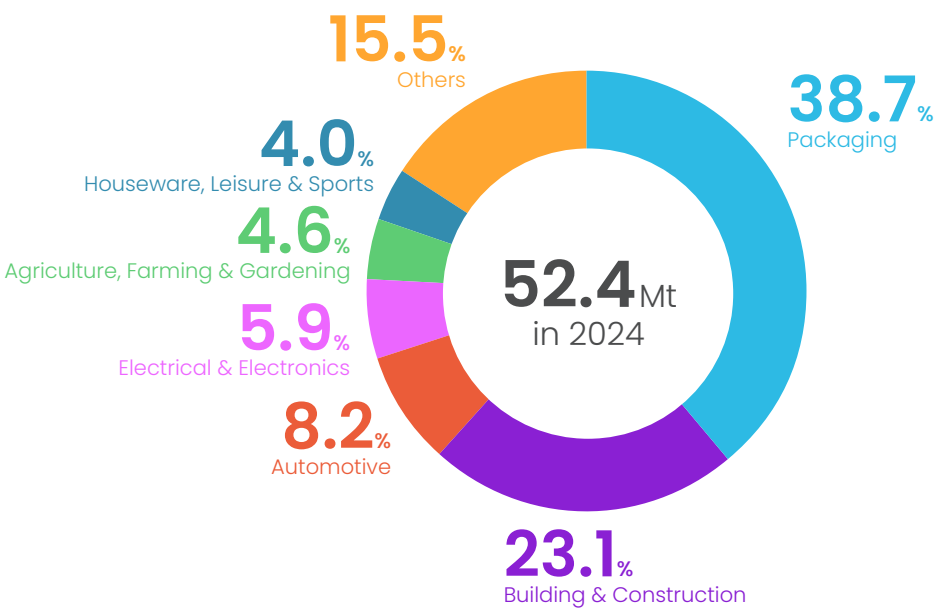
The above data are rounded estimations.
For data availability reasons, the polymer breakdown for circular plastics cannot be shown.
For data availability reasons, bio-attributed plastics are not included in conversion data.

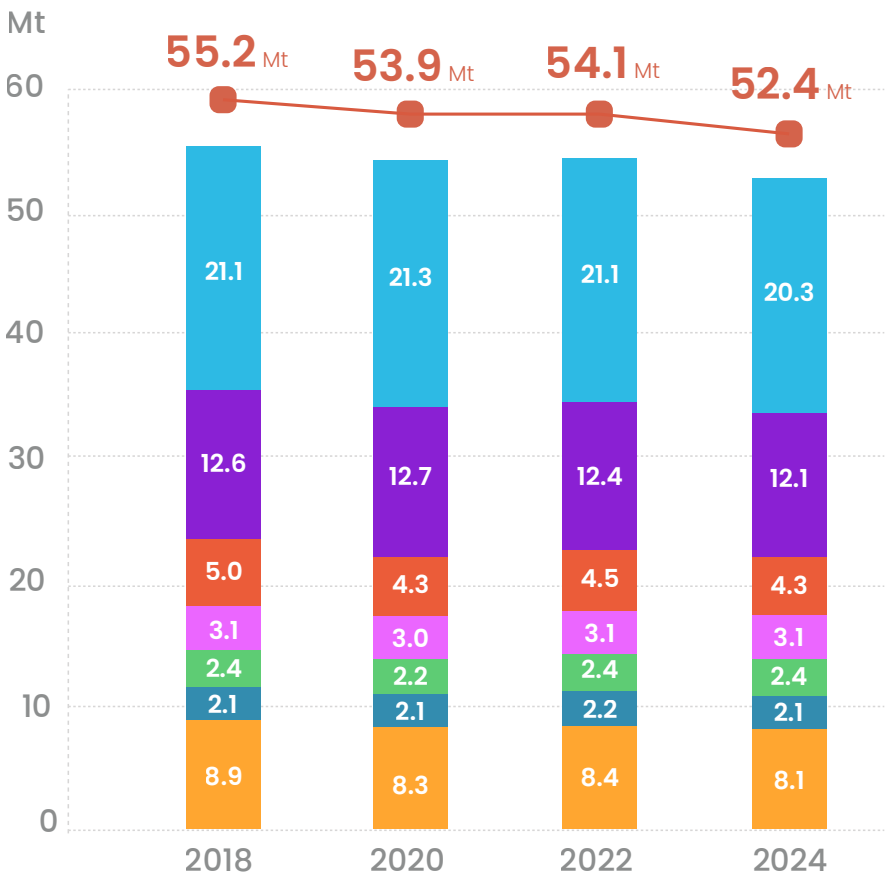
Evolution of plastics conversion evolution by polymer



The above data are rounded estimations.
For data availability reasons, bio-attributed plastics are not included in the conversion data.
1. PA only covers PA6 and PA66

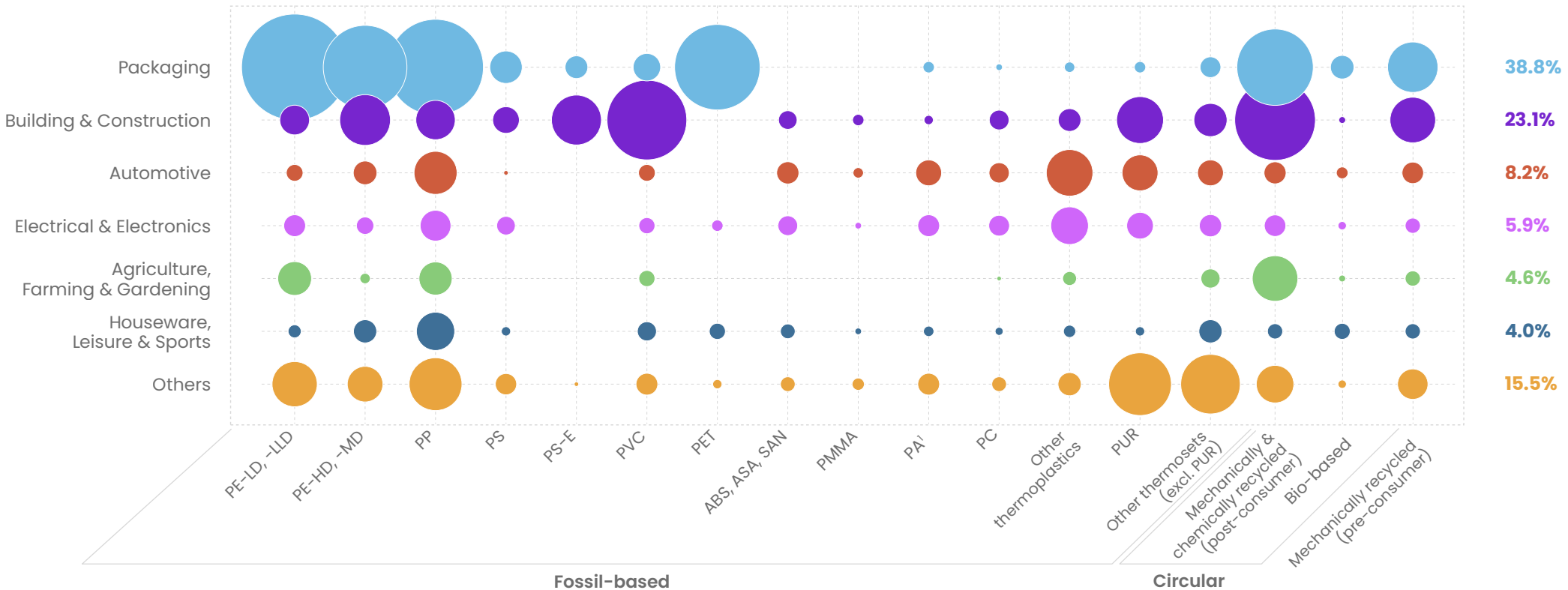
European plastics conversion by application





The above data are rounded estimations.

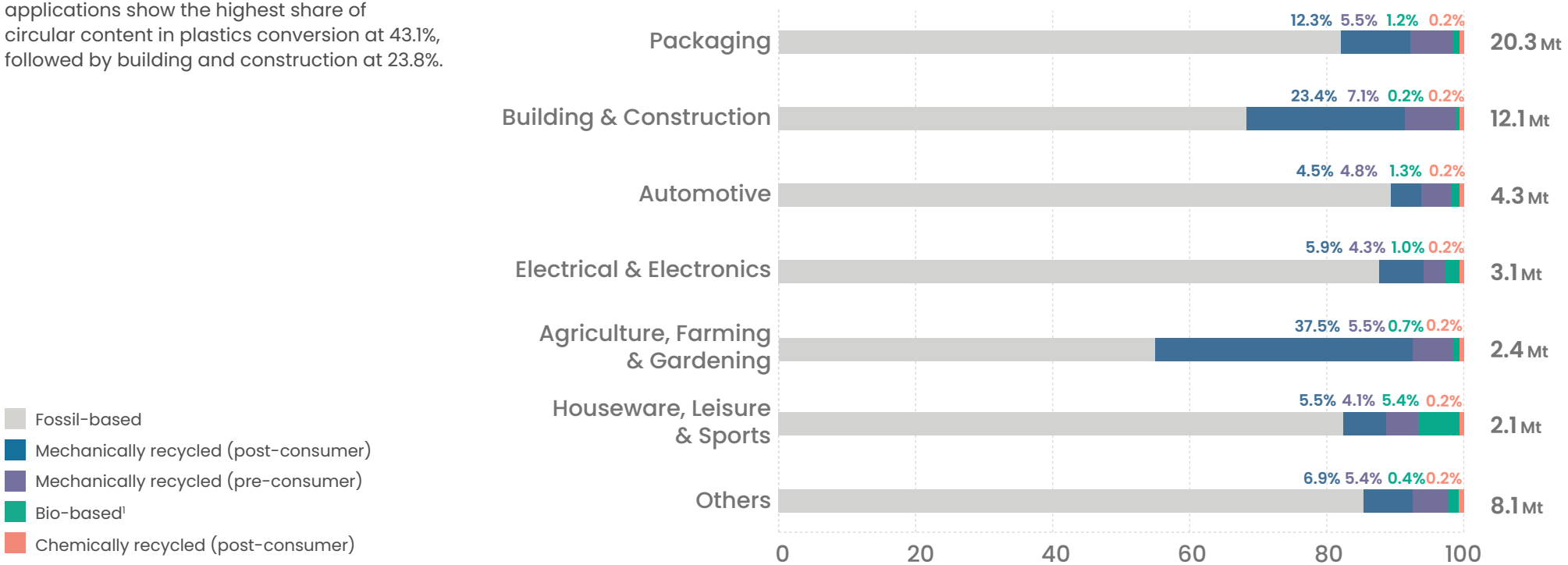
European plastics conversion matrix



The above data are rounded estimations.
For data availability reasons, bio-attributed plastics are not included in the conversion data.
For design reasons, mechanically and chemically recycled plastics data (post-consumer) are here shown together. Chemically recycled (post-consumer) plastics represent a small share of the total post-consumer recycled plastics.
Numbers behind this graph are available upon request. More information regarding the methodology used for the development of the graph is available in the appendix.
1. PA only covers PA6 and PA66

Circular plastics in conversion

Agriculture, farming and gardening applications show the highest share of circular content in plastics conversion at 43.1%, followed by building and construction at 23.8%.

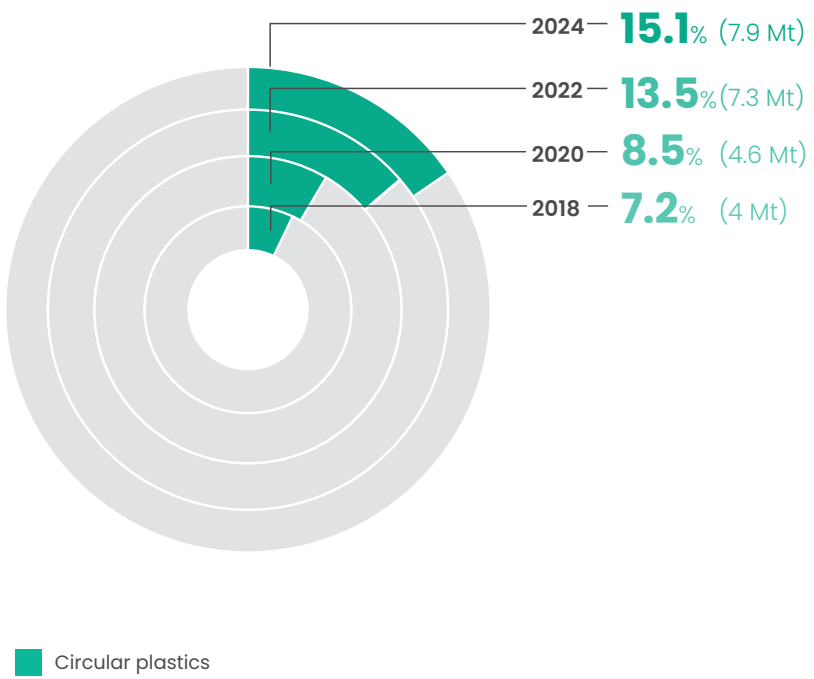


The above data are rounded estimations.
1. For data availability reasons, bio-attributed plastics are not included in the conversion data.

Evolution of circular plastics in conversion

European plastics converters used 7.9 Mt of circular plastics in 2024, making up 15.1% of all plastics processed. This is an 8.2% increase compared with 2022, but 19% of the circular plastics used still come from imports.

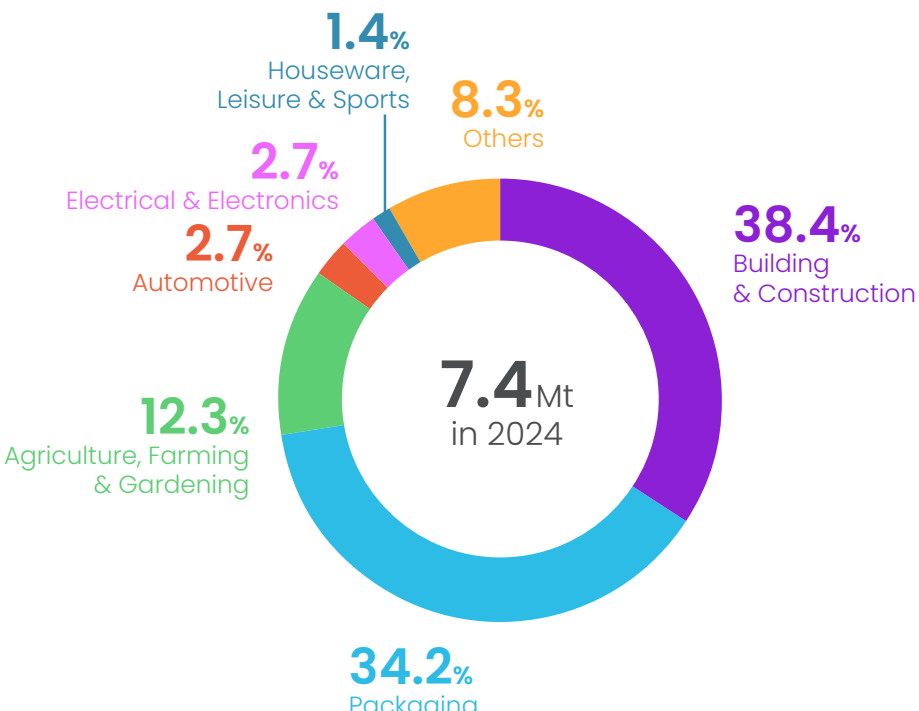
For the first time, circular plastics content in new products is above **15%** reaching 7.9 Mt in 2024.



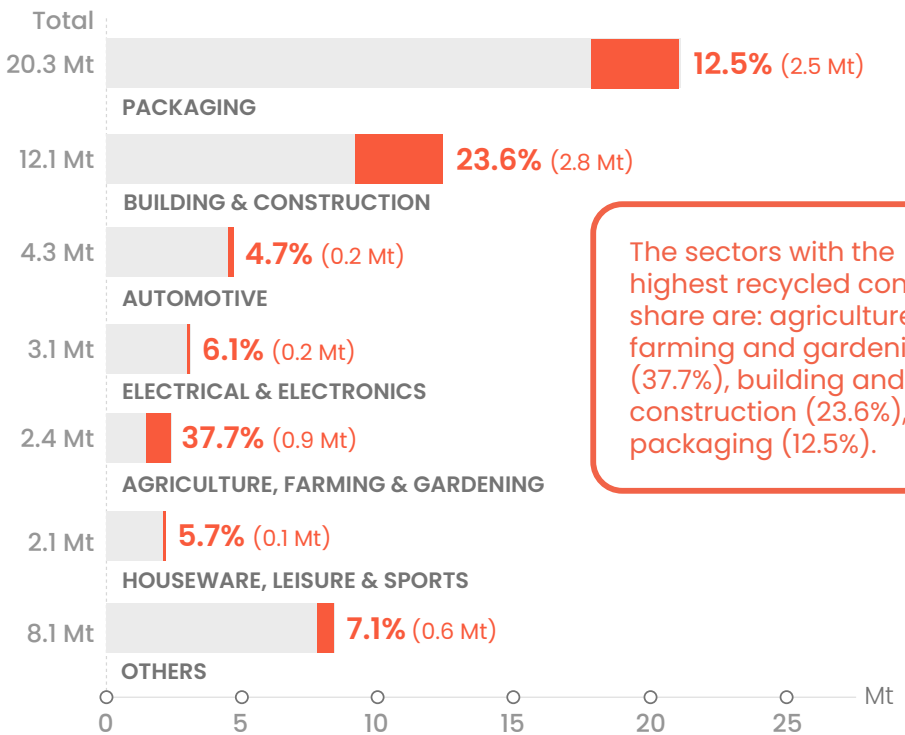
The above data are rounded estimations.
Mechanically and chemically recycled plastics data (post-consumer) are here shown together. Chemically recycled (post-consumer) plastics represent a small share of the total post-consumer recycled plastics.

Post-consumer recycled plastics in conversion

Post-consumer recycled plastics by application



Share of post-consumer recycled plastics in conversion by application



The sectors with the highest recycled content share are: agriculture, farming and gardening (37.7%), building and construction (23.6%), and packaging (12.5%).

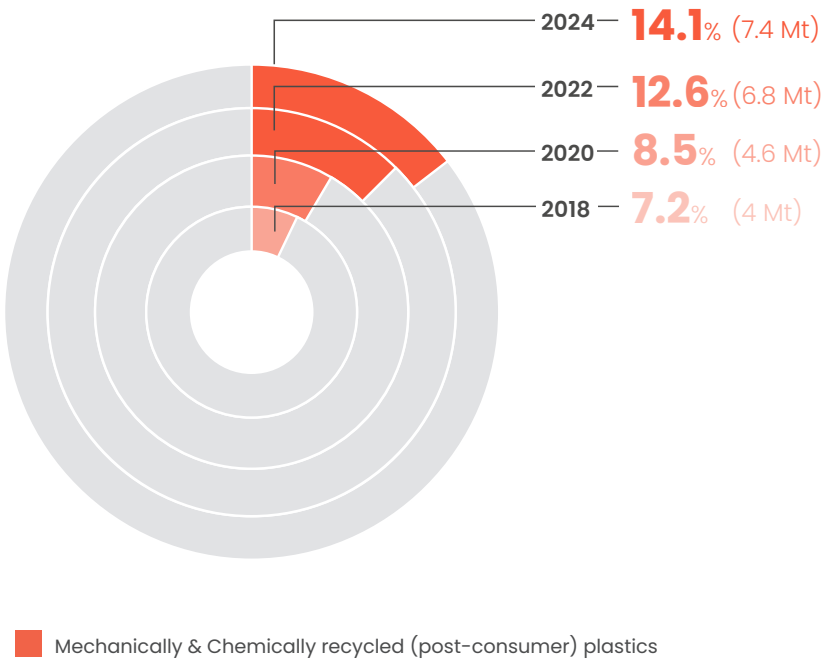
The above data are rounded estimations.
Mechanically and chemically recycled plastics data (post-consumer) are here shown together. Chemically recycled plastics represent a small share of the total post-consumer recycled plastics.

Evolution of post-consumer recycled plastics in conversion

In 2024, European converters used 7.4 Mt of post-consumer recycled plastics, accounting for 14.1% of all plastics transformed into new products and components.

This represents an 8.8% increase compared with 2022. However, around 16% of the recycled plastics used in Europe still depend on imports.

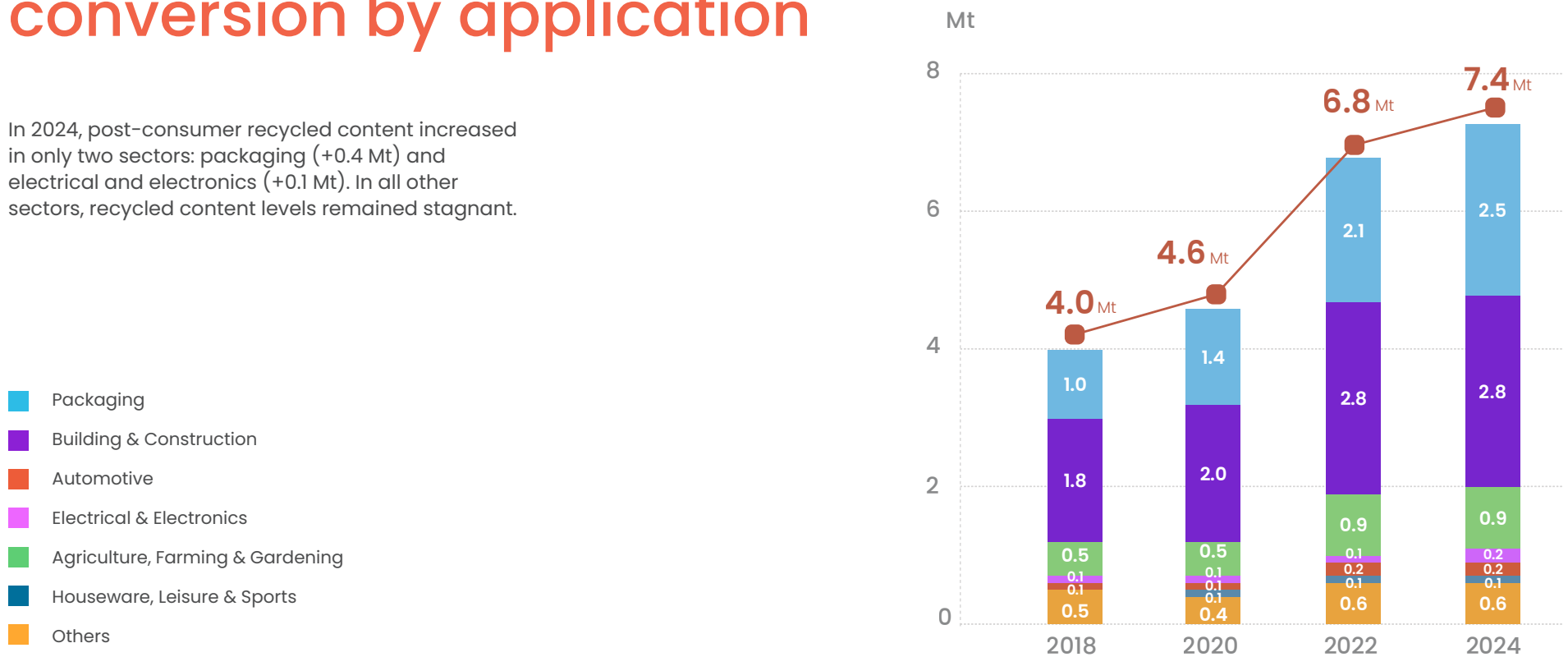
+8.9%
increase of post-consumer recycled content compared to 2022.



The above data are rounded estimations.
Mechanically and chemically recycled plastics data (post-consumer) are here shown together. Chemically recycled (post-consumer) plastics represent a small share of the total post-consumer recycled plastics.

Evolution of post-consumer recycled plastics in conversion by application

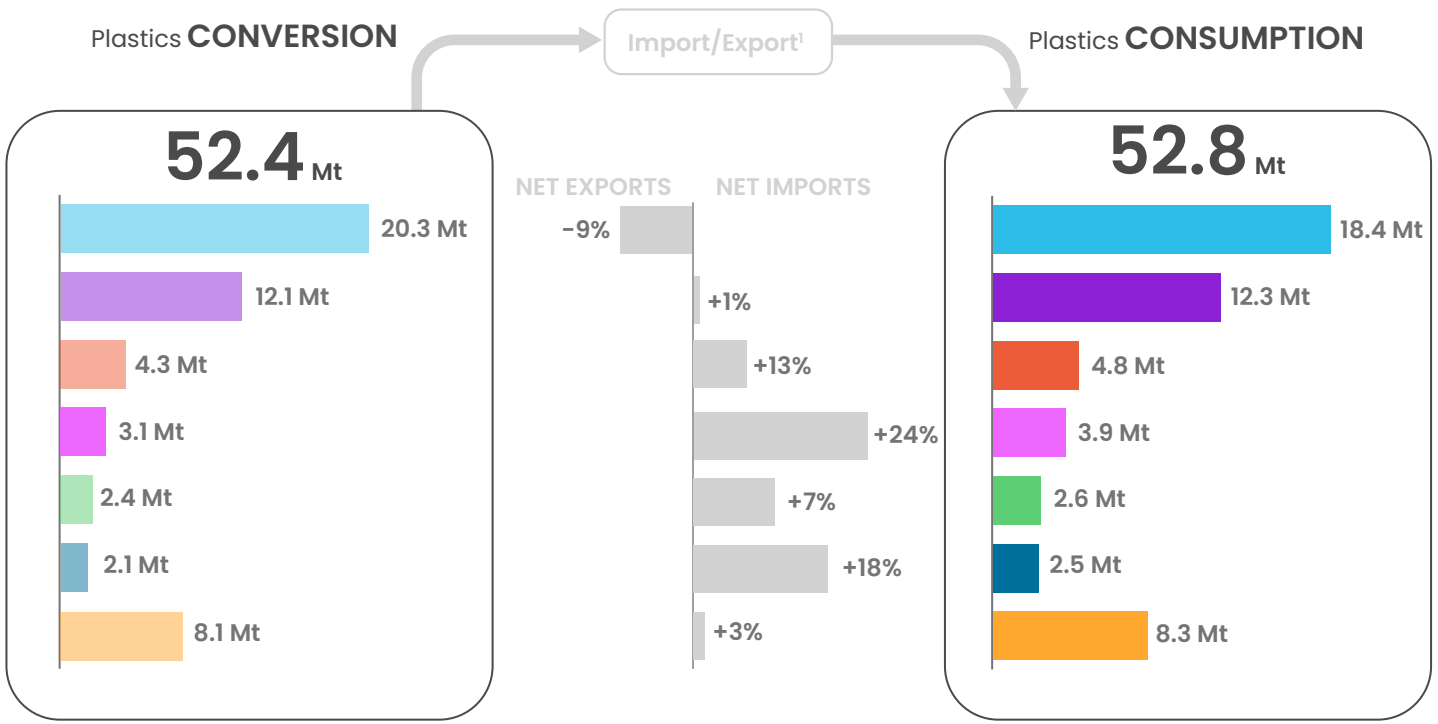
In 2024, post-consumer recycled content increased in only two sectors: packaging (+0.4 Mt) and electrical and electronics (+0.1 Mt). In all other sectors, recycled content levels remained stagnant.



Chemically recycled plastics (post-consumer) are here shown together. Chemically recycled plastics represent a small share of the total post-consumer recycled plastics.

Plastics consumption and reuse

Plastics consumption in Europe



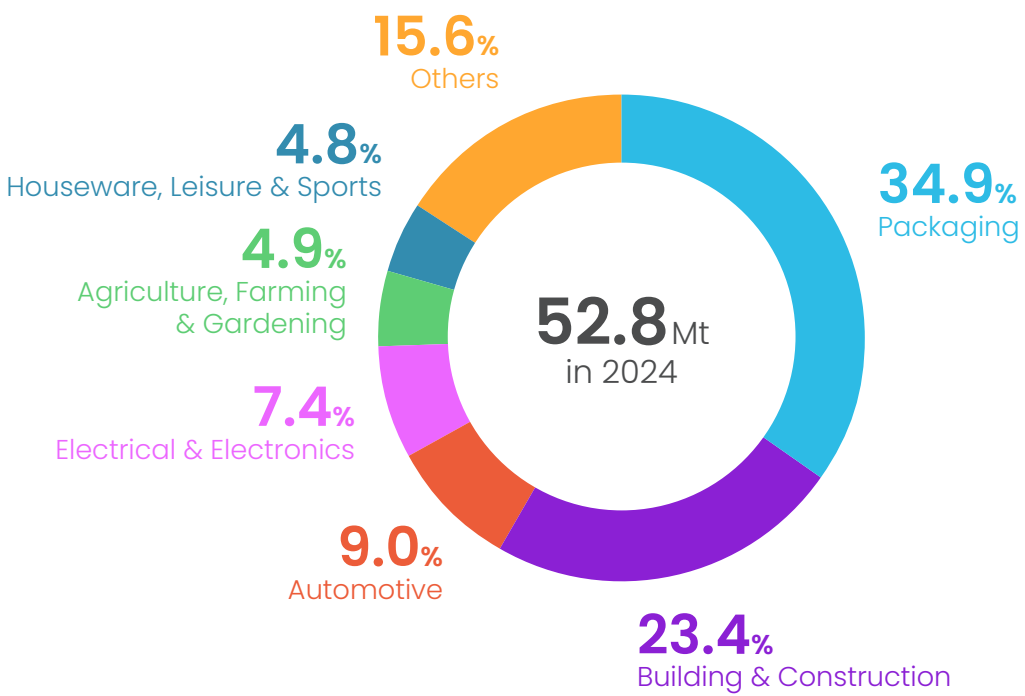
Plastics consumption covers all plastic products (e.g. pipes, bottles, etc.) or components embedded in larger goods (e.g. a car dashboard), that are ultimately used in household, commercial or industrial activities.

European plastics consumption includes both products and components converted within Europe and those imported from abroad.

In 2024, with the exception of packaging, Europe was a net importer of plastic products and components, with the highest net import levels seen in electrical and electronics, houseware, leisure and sports applications.

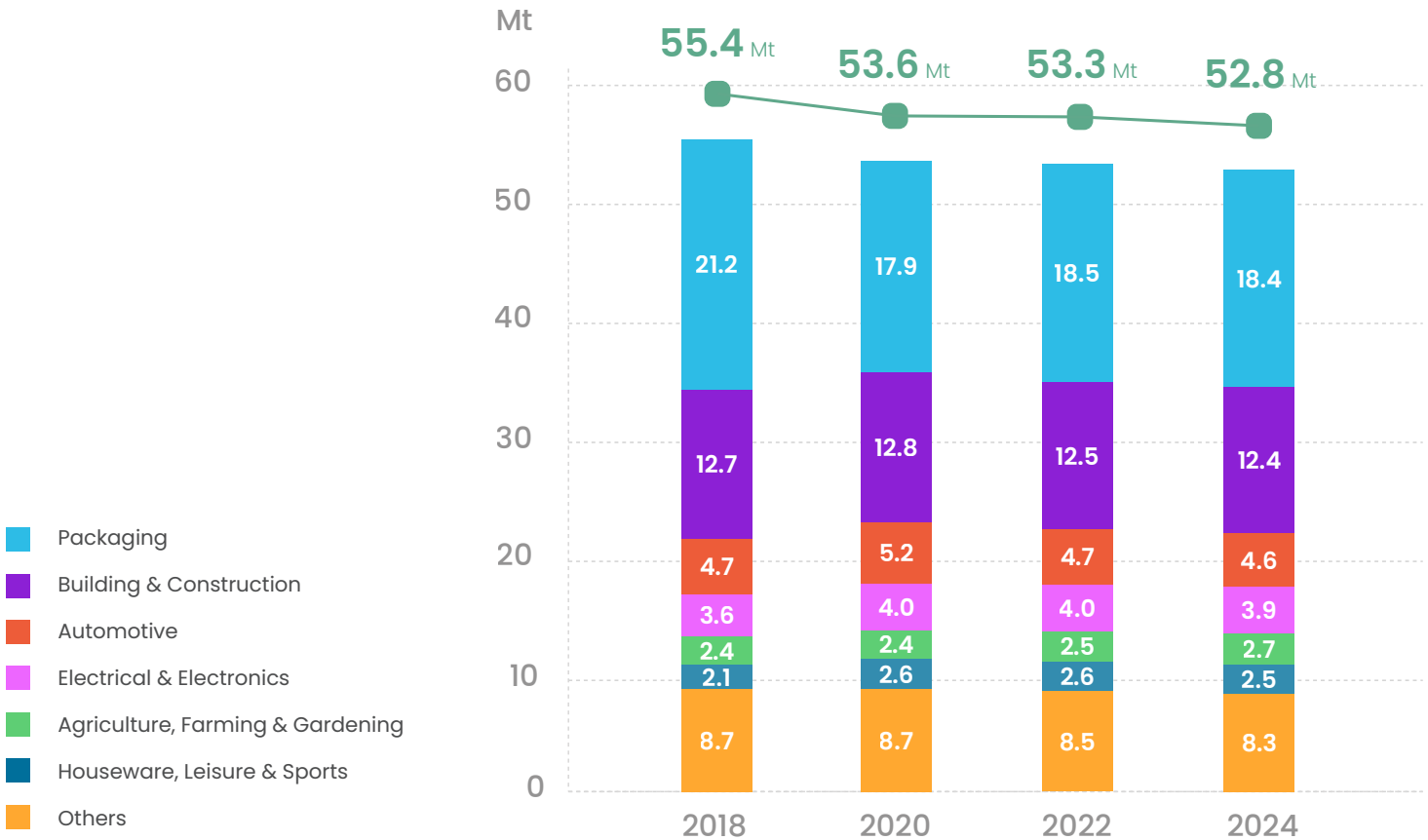
The above data are rounded estimations.
1. Extra EU27+3 trade.

Plastics consumption in Europe



The above data are rounded estimations.

Evolution of the plastics consumption in Europe



Compared with 2022, plastics consumption by European end-users declined slightly in 2024 (-0.9%), reaching 52.8 Mt. This is a trend largely driven by the current economic context.

Consumption decreased across all sectors except in the agriculture, farming and gardening sector, which shows an increasing trend since 2018, driven by new agricultural practices (e.g. increased use of films in fields, to protect crops from frost or pest, and maintain moisture).

The above data are rounded estimations.

New data on selected reusable plastic packaging items

In its **'Plastics Transition' roadmap**, Plastics Europe and its member companies identify reuse as a key circular business model that optimize material use and reduce CO_2 emissions from overall production.

However, there is currently no official European calculation methodology for measuring reuse. This gap makes it difficult to determine which reusable products are circulating on the European market as well as which reusable products are being introduced in the market for the first time.

In the absence of such a methodology, Plastics Europe has taken the initiative to examine existing reusable systems in Europe, focusing this first assessment specifically on some packaging formats.

The analysis concentrates on reusable plastic packaging already in circulation as well as new reusable plastic packaging placed on the market in EU27+3. For the purpose of this exercise, the analysis covers only packaging that is part of an established reusable system and for which data could be obtained, which are:

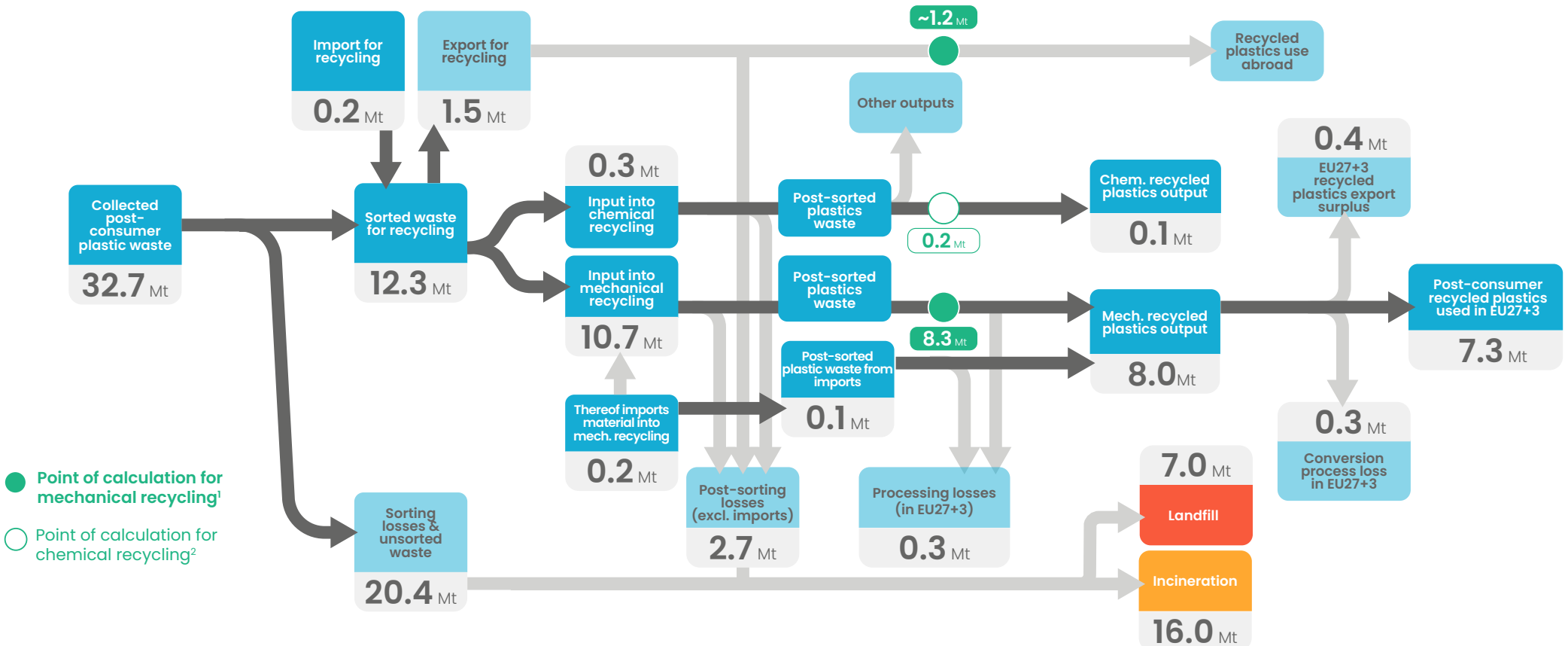
- Reusable logistics and transport packaging
- Reusable beverage bottles and bottle crates
- Reusable take-away packaging for food and beverages

Based on this limited scope, the **total circulating volume of reusable plastic packaging** in EU27+3 in 2024 is estimated at around **1.9 Mt**. Around two thirds of this volume consists of reusable logistics and transport packaging used by economic operators, in the form of reusable plastic crates, boxes, and pallets. Almost one third comes from reusable plastic beverage bottles and bottle crates used by private consumers. Reusable takeaway packaging represents a smaller share, as they are lighter and smaller items.

Considering the amount of **new reusable plastic packaging placed on the market** in EU27+3 for the first time, in 2024 was estimated at **nearly 260 kt**, representing approximately 1.4% of all plastic packaging placed on the market that year. This figure is largely driven by the replacement of damaged or worn reusable crates and boxes, as well as the expansion of existing reusable packaging systems.

European plastic waste management

From plastic waste collection to recycled plastics



The above data are rounded estimations.
1. Materials entering a recycling process - Directive (EU) 2018/852.
2. The official methodology to calculate chemical recycling rates is still under discussion by the European Commission and the EU Member States.

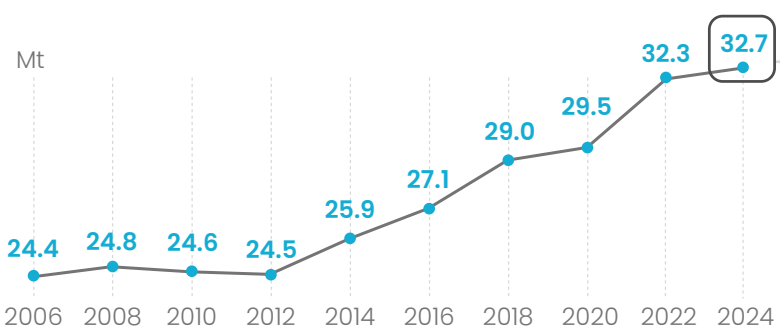
European plastic waste collection

In 2024, about 32.7 Mt of post-consumer plastic waste was collected. Growth slowed due to slightly lower packaging use and fewer automotive plastics entering the waste stream, driven by reduced vehicle turnover, longer lifespans and delayed scrapping during the economic downturn.

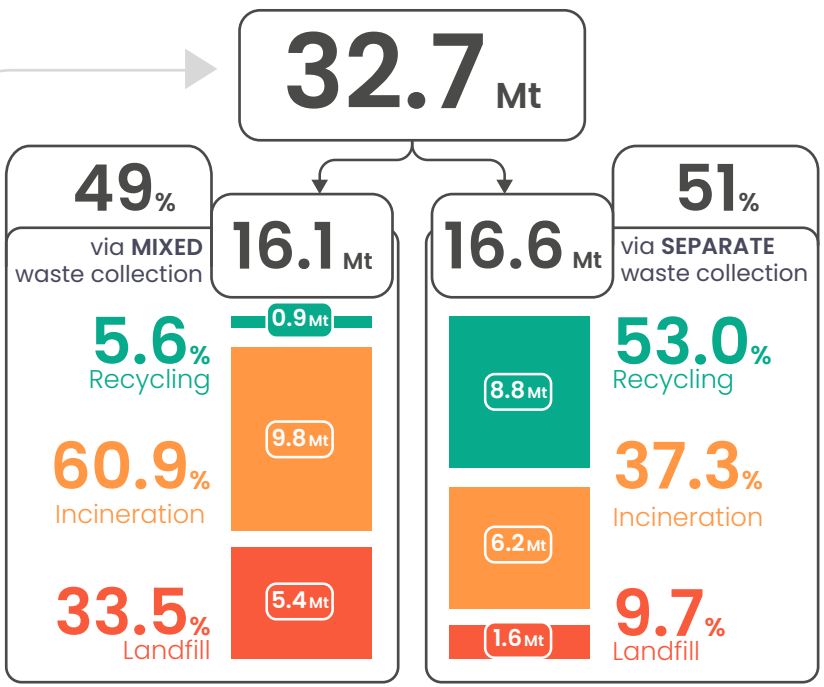
Separate collection remained the main source of captured plastic waste, but further improvement is needed to raise recycling rates. Strengthening separate-collection systems, particularly through effective EPR schemes, and expanding mixed-waste sorting can significantly boost recycling performance.

Plastic waste recycling rates are **11X higher when collected separately** compared to mixed collection streams.

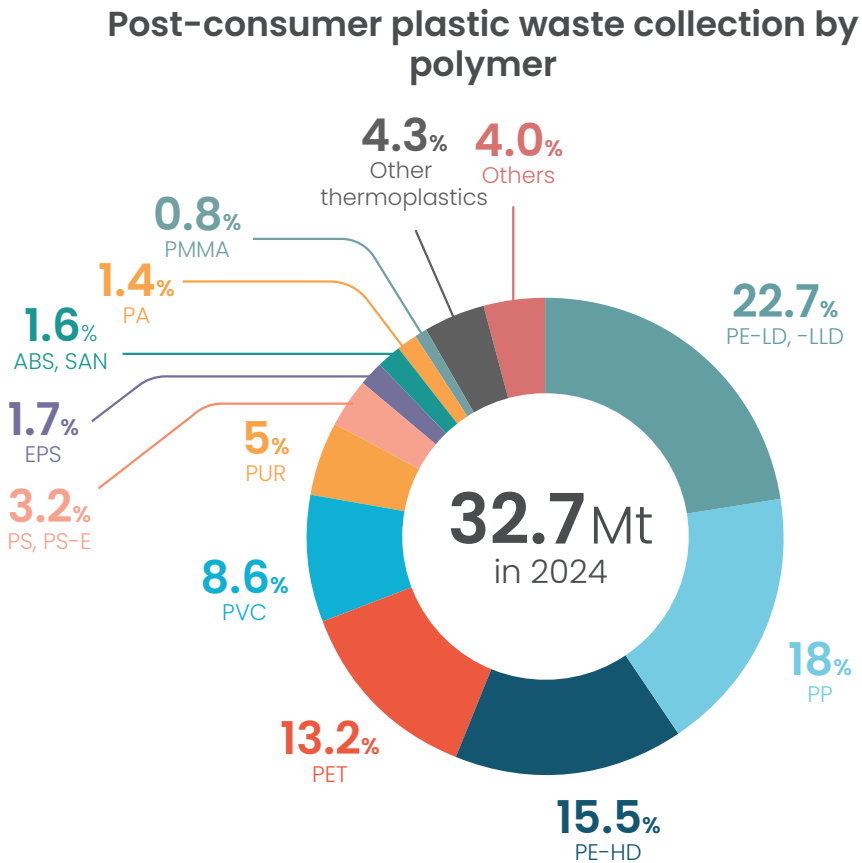
Evolution of post-consumer plastic waste collection



Post-consumer plastic waste collection and treatment



Plastic waste collection by polymer



The above data are rounded estimations.

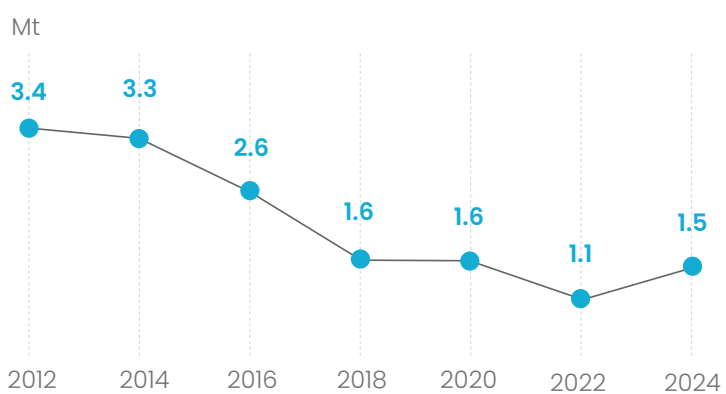
Plastic waste export

Plastic waste exports from the EU27+UK rose by 36.5% in 2024 compared with 2022, reaching 1.5 Mt. Turkey (~0.4 Mt) and Malaysia (~0.3 Mt) remained the main destinations. This increase reflects competitiveness challenges in European recycling, such as high energy costs, and reduced recycling capacity in Europe.

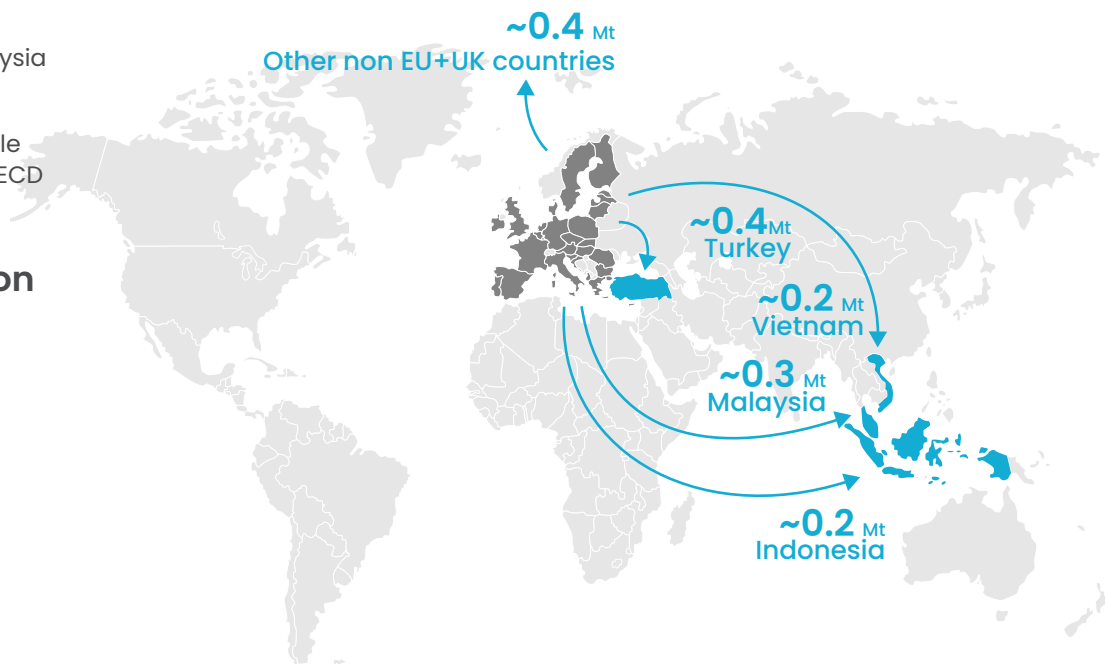
The rise in exports was broad-based across destinations, with Vietnam and Malaysia showing the largest increases in both tonnage and percentage terms.

These exports represent a missed opportunity to retain plastic waste as a valuable resource within the European economy. However, plastic waste exports to non-OECD countries will be banned starting in November 2026.

EU27+UK post-consumer plastic waste exports evolution



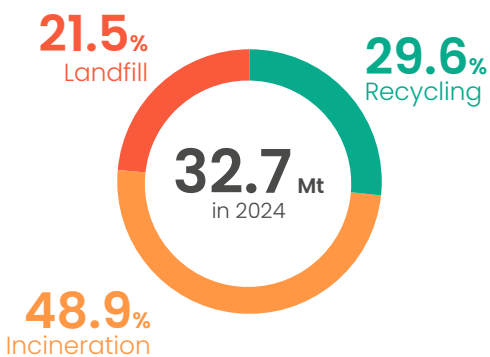
EU27+UK post-consumer plastic waste export



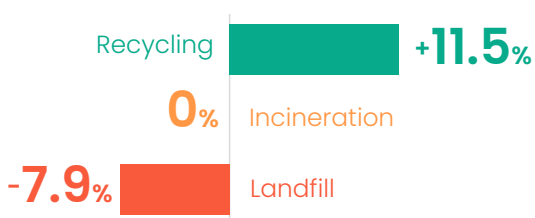
The above data are rounded estimations.
Source: Eurostat.
For data availability reasons, plastic waste exports data are limited to the EU27+UK.

European plastic waste treatment

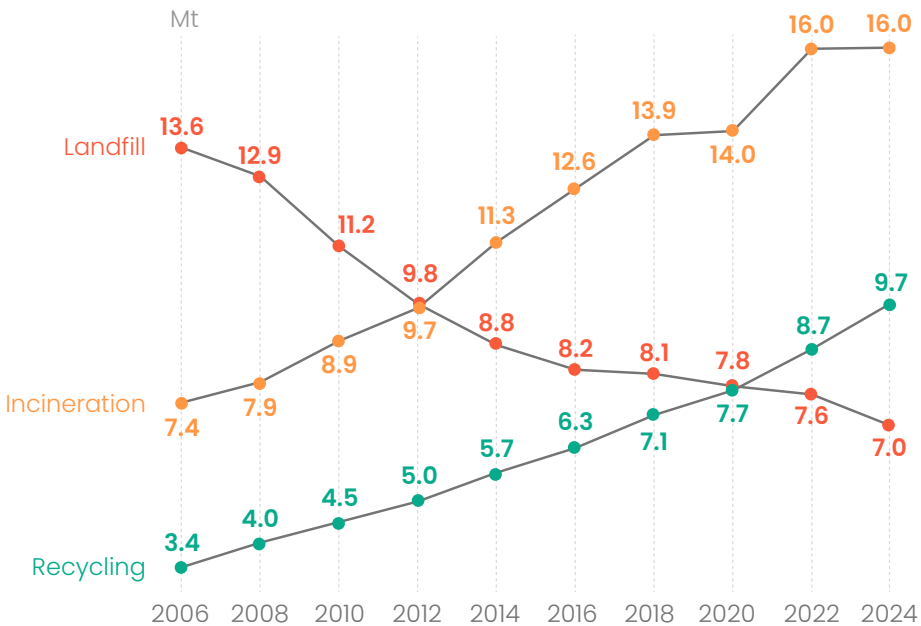
Post-consumer plastic waste treatment



2022-2024 evolution



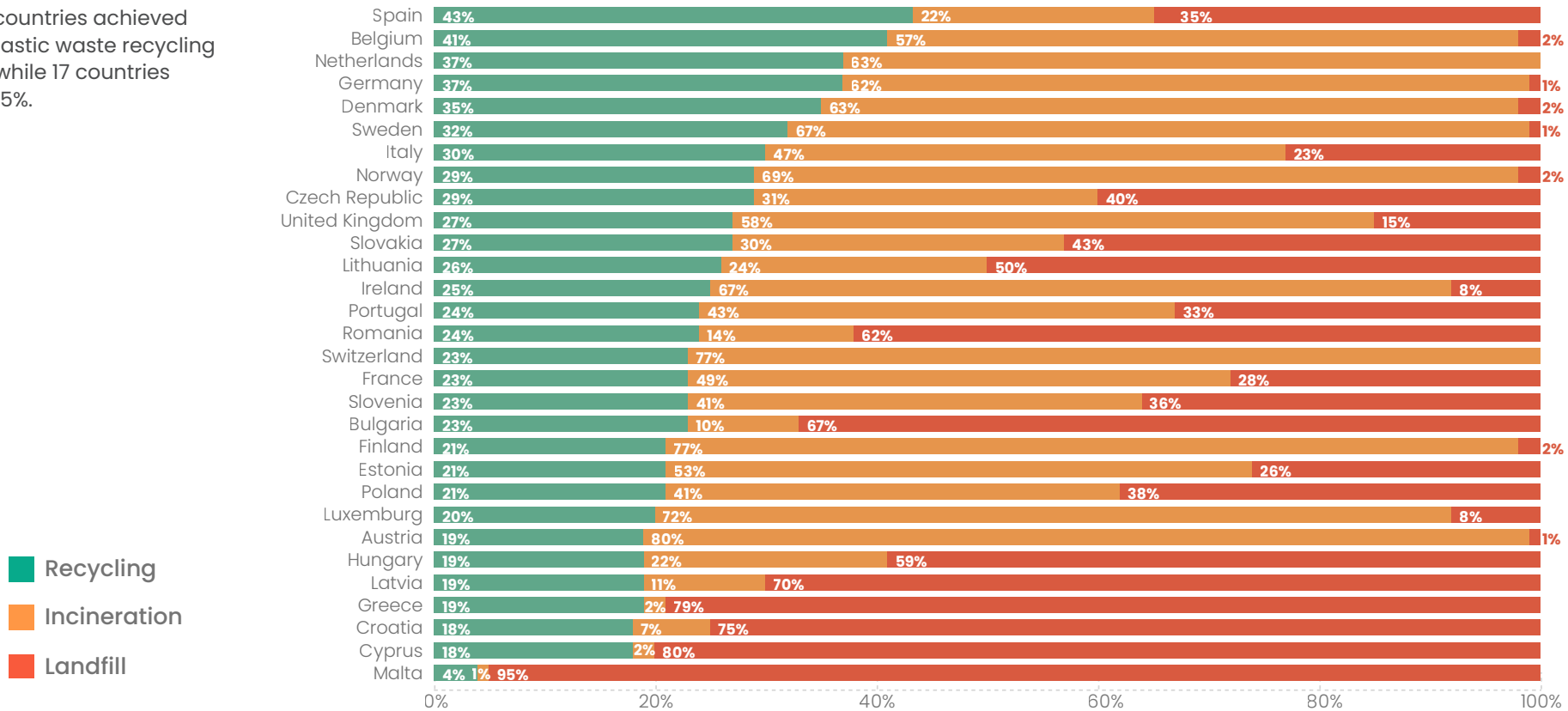
Evolution of post-consumer plastic waste treatment



The above data are rounded estimations.

Plastic waste treatment by country

In 2024, only four countries achieved post-consumer plastic waste recycling rates above 35%, while 17 countries remained below 25%.



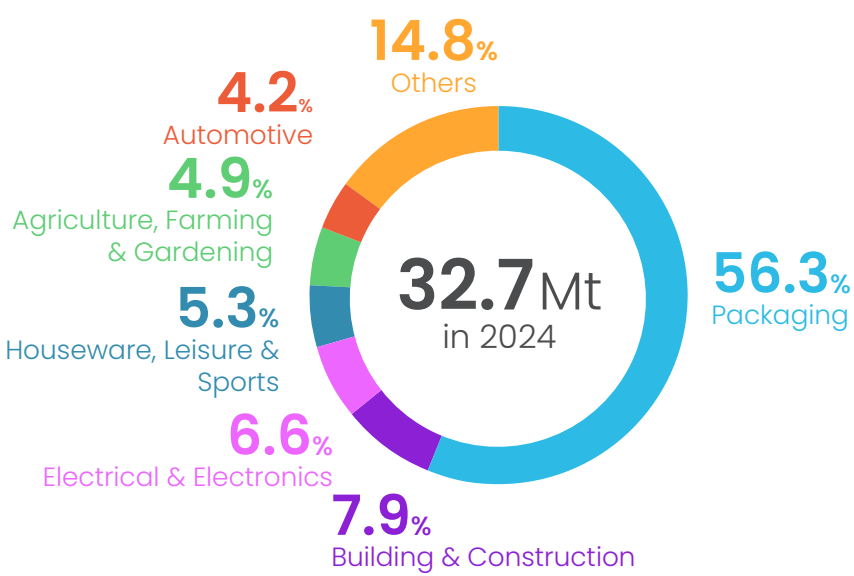
The above data are rounded estimations.

Plastic waste management by application

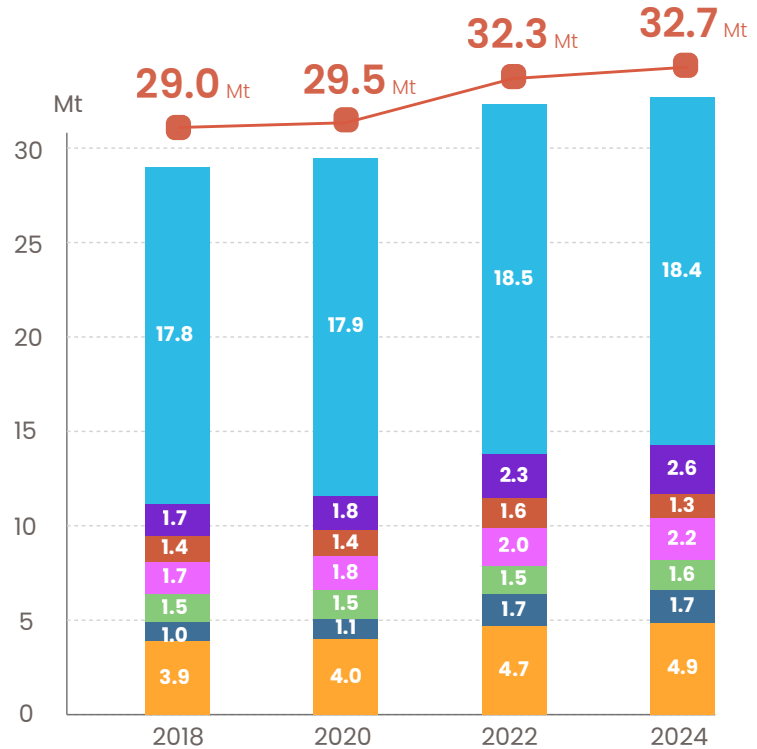
European plastic waste collection by application

In 2024, more than half of all collected post-consumer plastic waste came from packaging applications. The next largest sources were building and construction, followed by electrical and electronics.

Post-consumer plastic waste collection by application



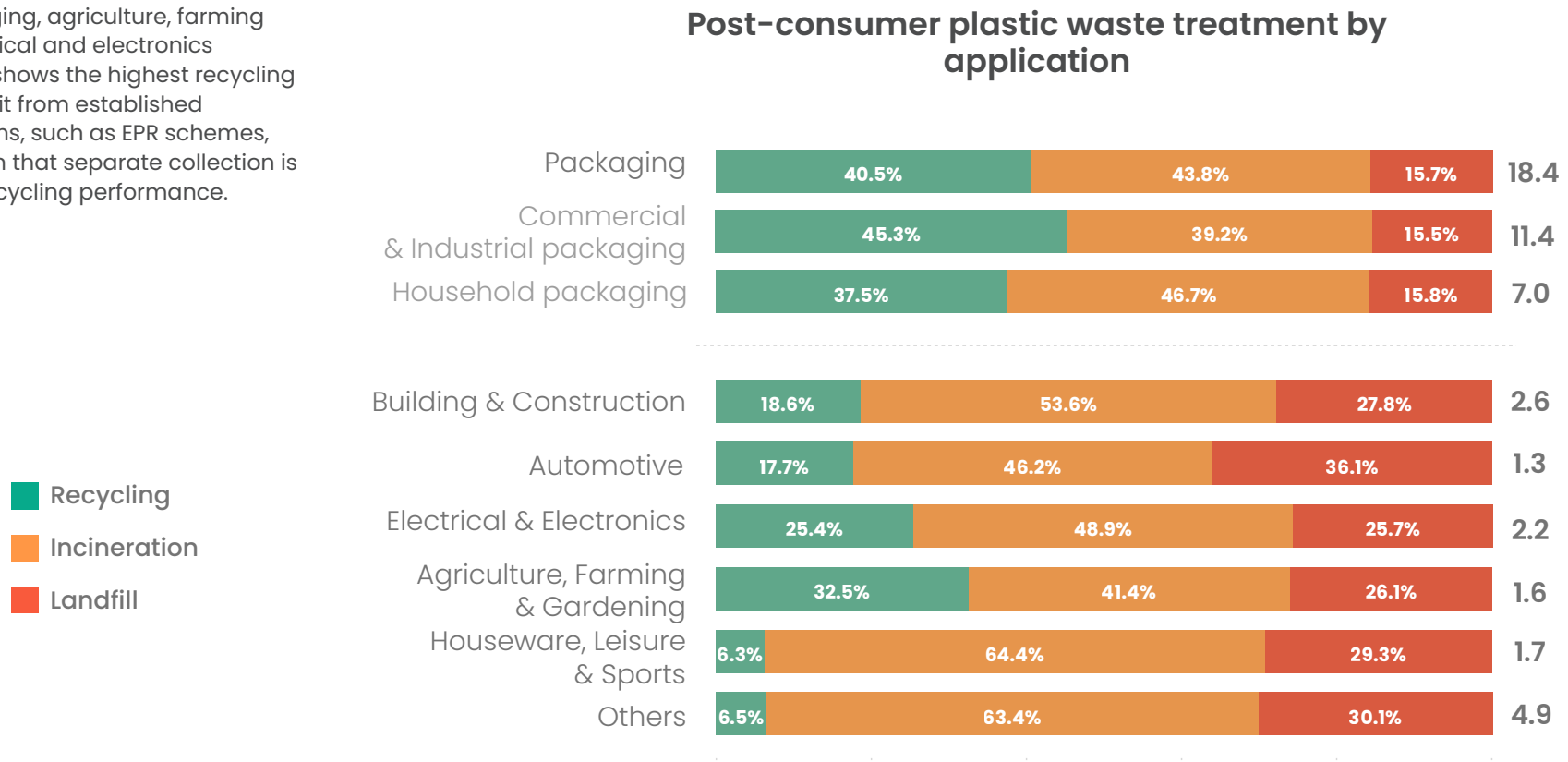
Post-consumer plastic waste collection evolution by application



The above data are rounded estimations.

Plastic waste treatment by application

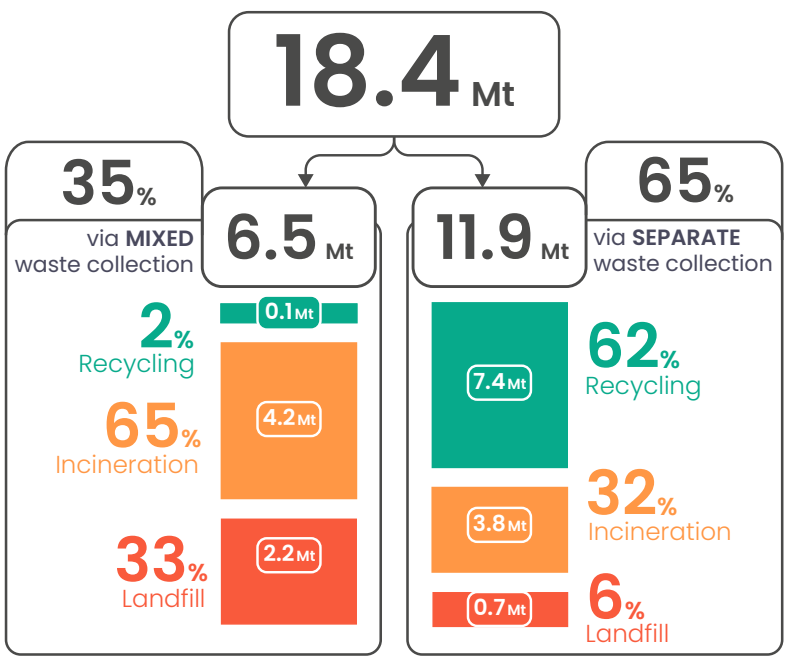
Plastic waste from packaging, agriculture, farming and gardening, and electrical and electronics applications consistently shows the highest recycling rates. These sectors benefit from established separate collection systems, such as EPR schemes, demonstrating once again that separate collection is key to achieving higher recycling performance.



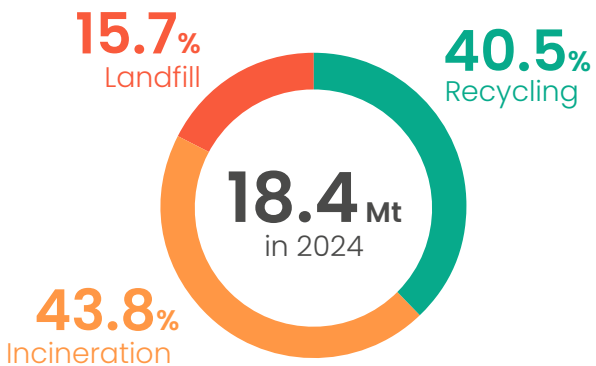
The above data are rounded estimations.

Plastic waste management - Packaging*

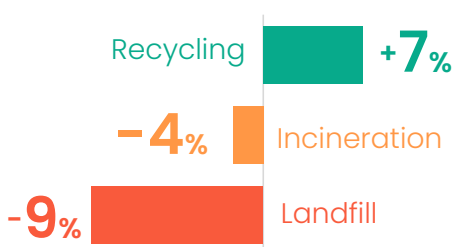
Post-consumer plastic waste collection and treatment



Post-consumer plastic waste treatment



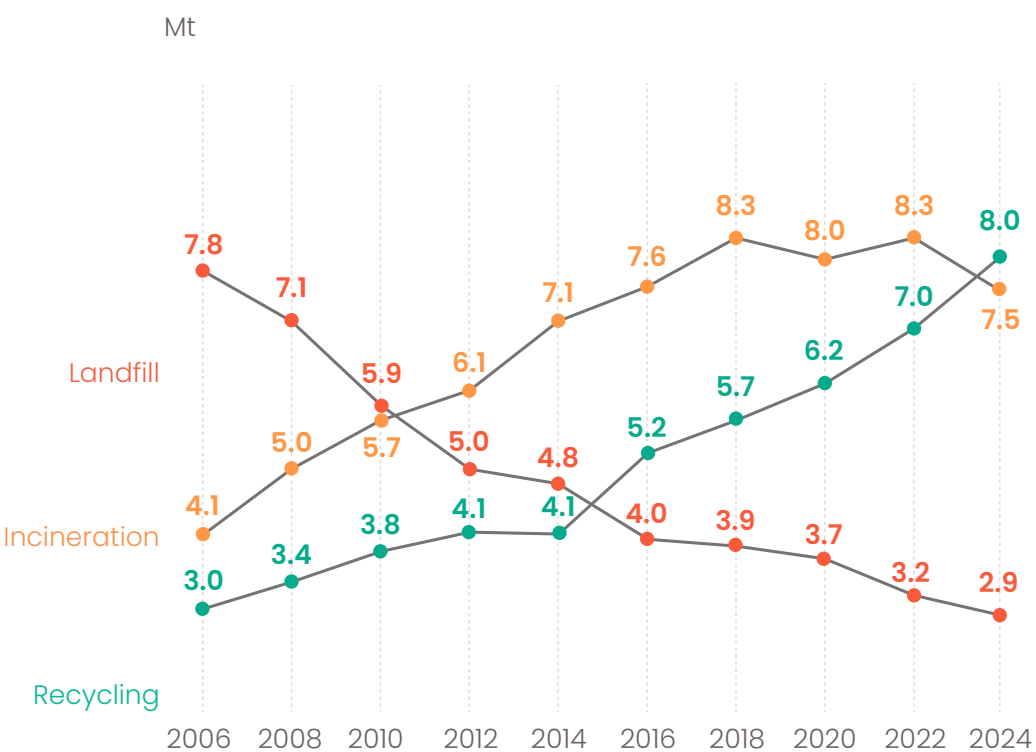
2022-2024 evolution



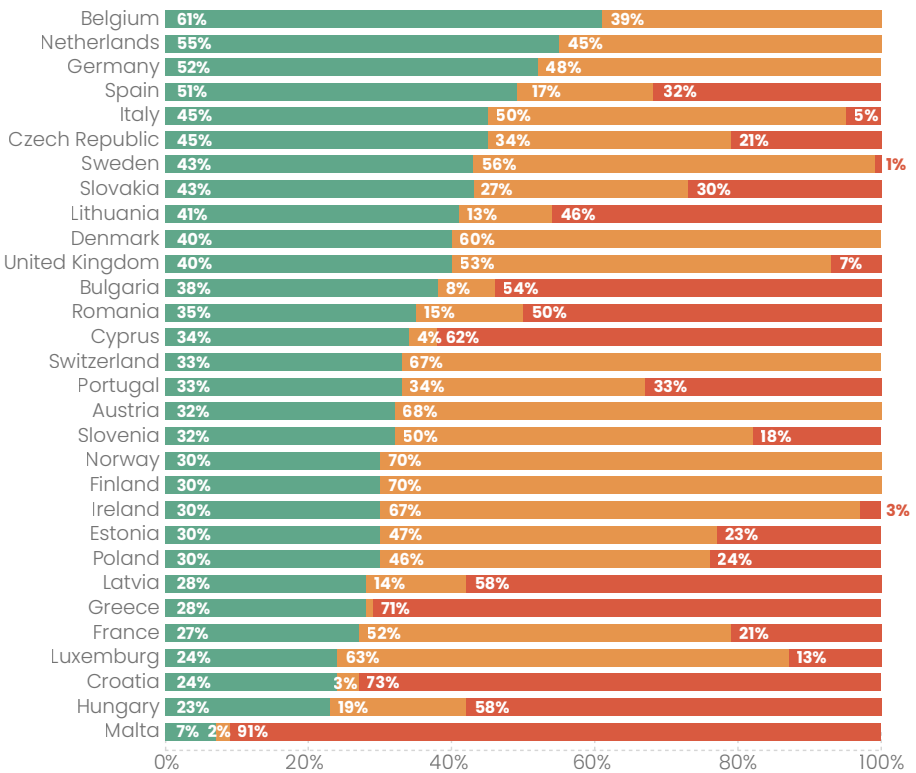
The above data are rounded estimations.
*From household, industrial and commercial plastics packaging.

Plastic waste management - Packaging*

Evolution of post-consumer plastic waste management



Post-consumer plastic waste management by country

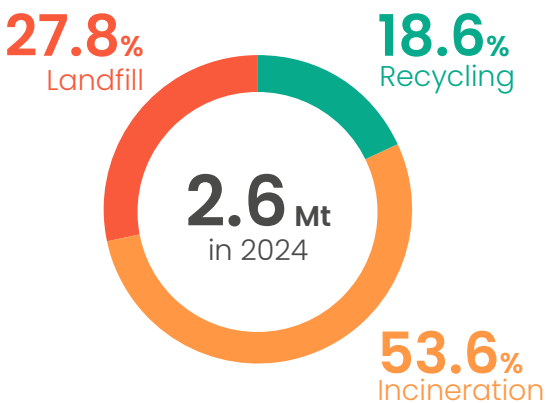


The above data are rounded estimations.
*From household, industrial and commercial plastics packaging.

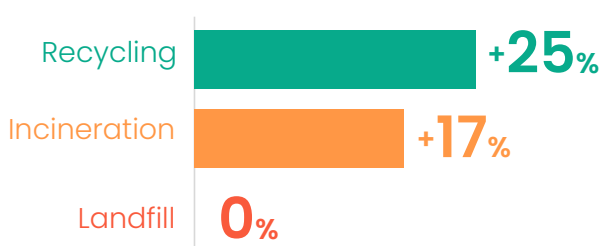
Plastic waste management - Building & Construction

Post-consumer plastic waste collection and treatment

Post-consumer plastic waste treatment



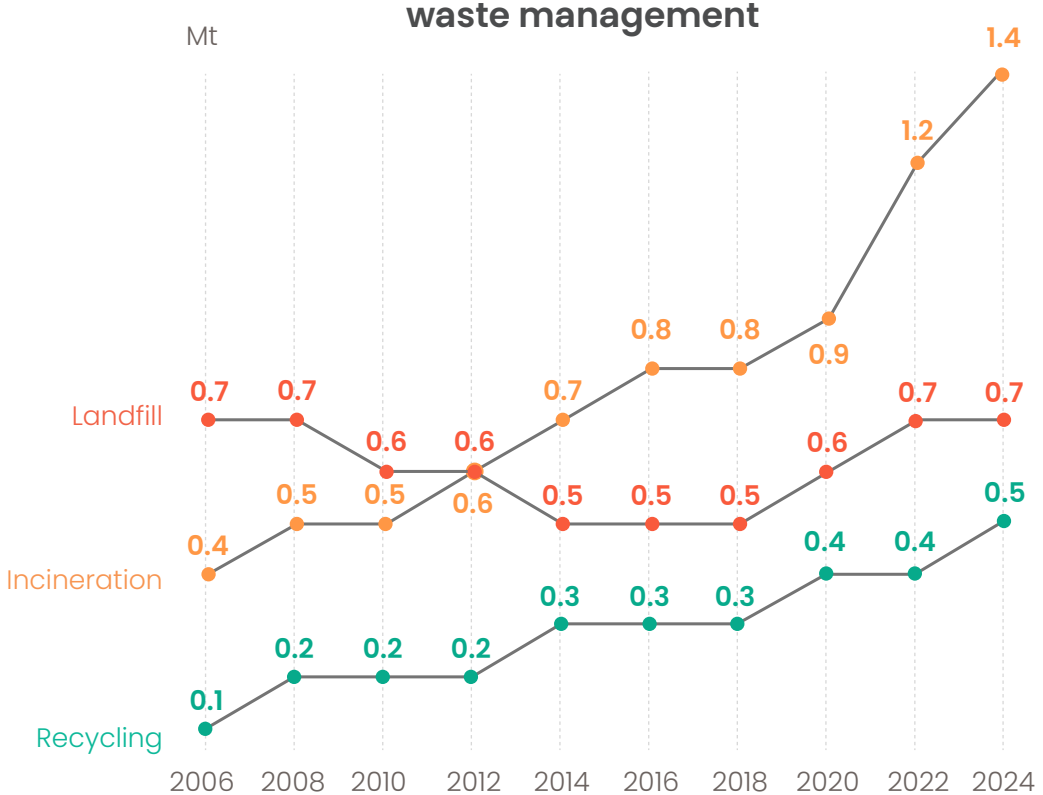
2022-2024 evolution



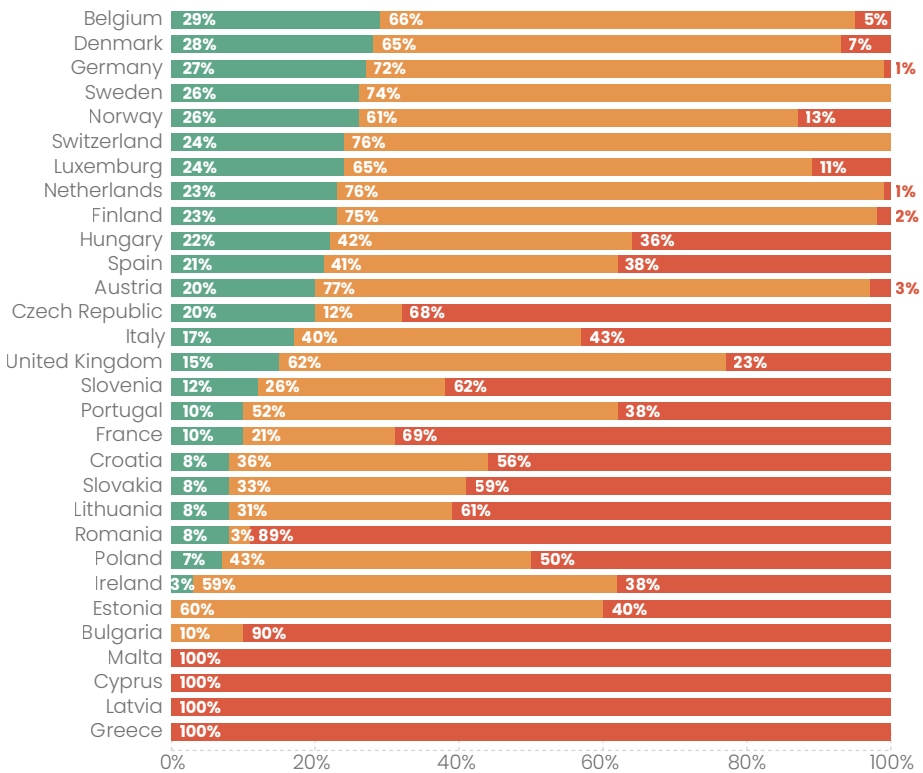
The above data are rounded estimations.

Plastic waste management - Building & Construction

Evolution of post-consumer plastic waste management



Post-consumer plastic waste management by country

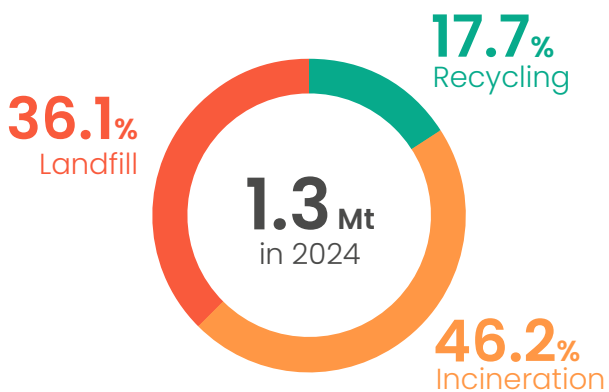


The above data are rounded estimations.

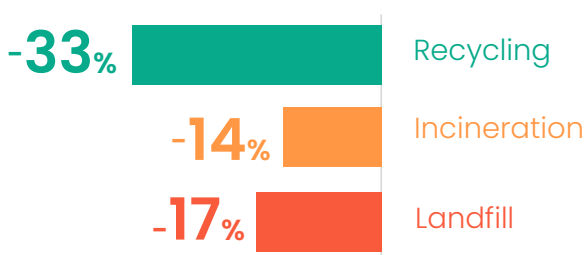
Plastic waste management - Automotive

Post-consumer plastic waste collection and treatment

Post-consumer plastic waste treatment



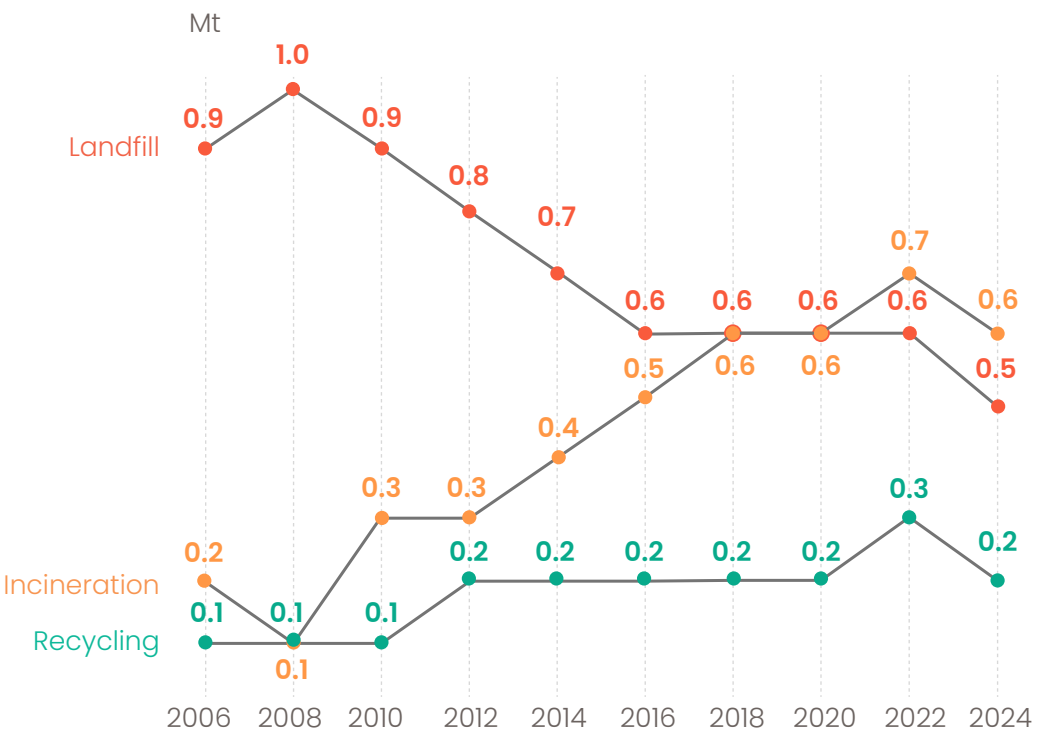
2022-2024 evolution



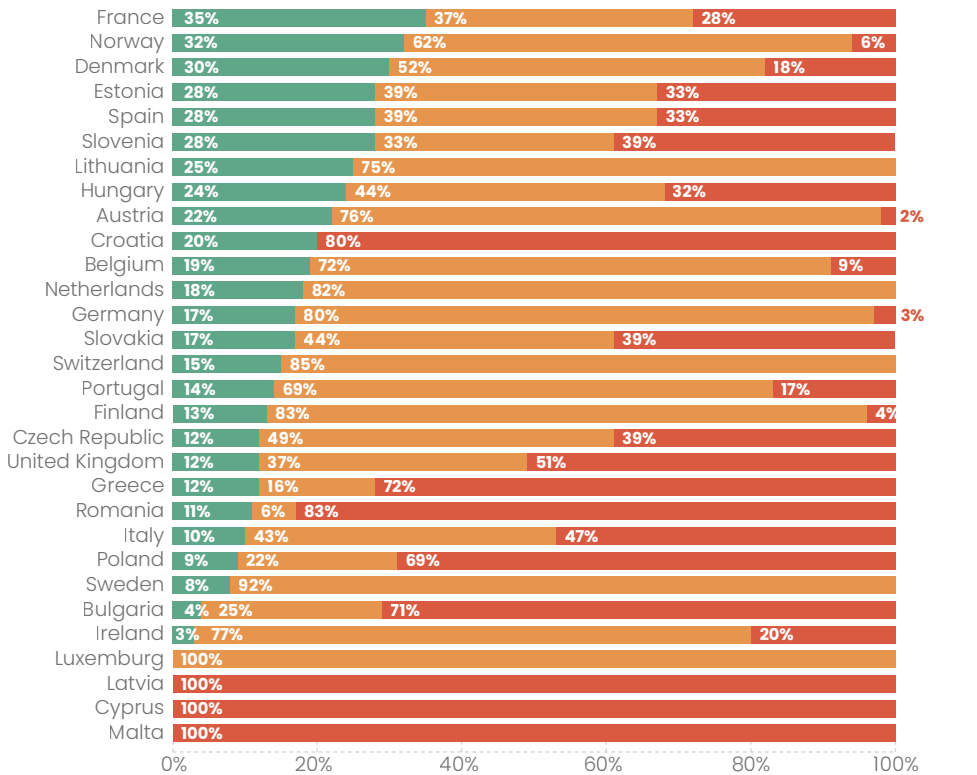
The above data are rounded estimations.

Plastic waste management - Automotive

Evolution of post-consumer plastic waste management



Post-consumer plastic waste management by country

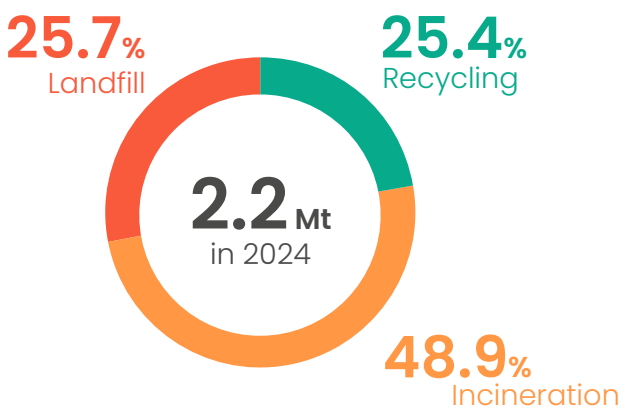


The above data are rounded estimations.

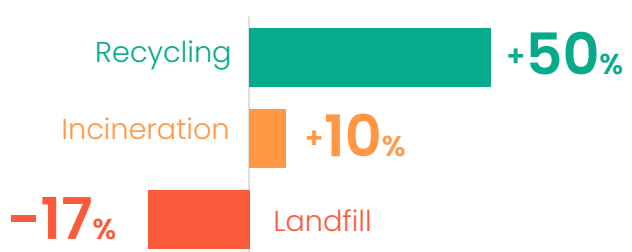
Plastic waste management - Electrical & Electronics

Post-consumer plastic waste collection and treatment

Post-consumer plastic waste treatment



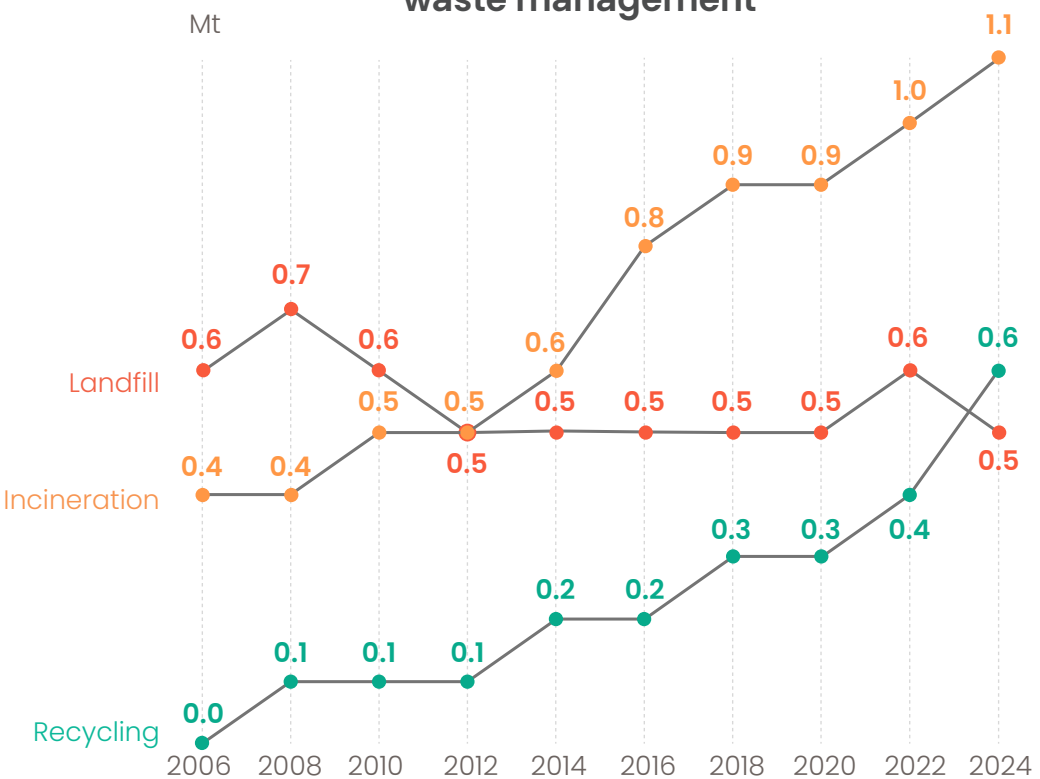
2022-2024 evolution



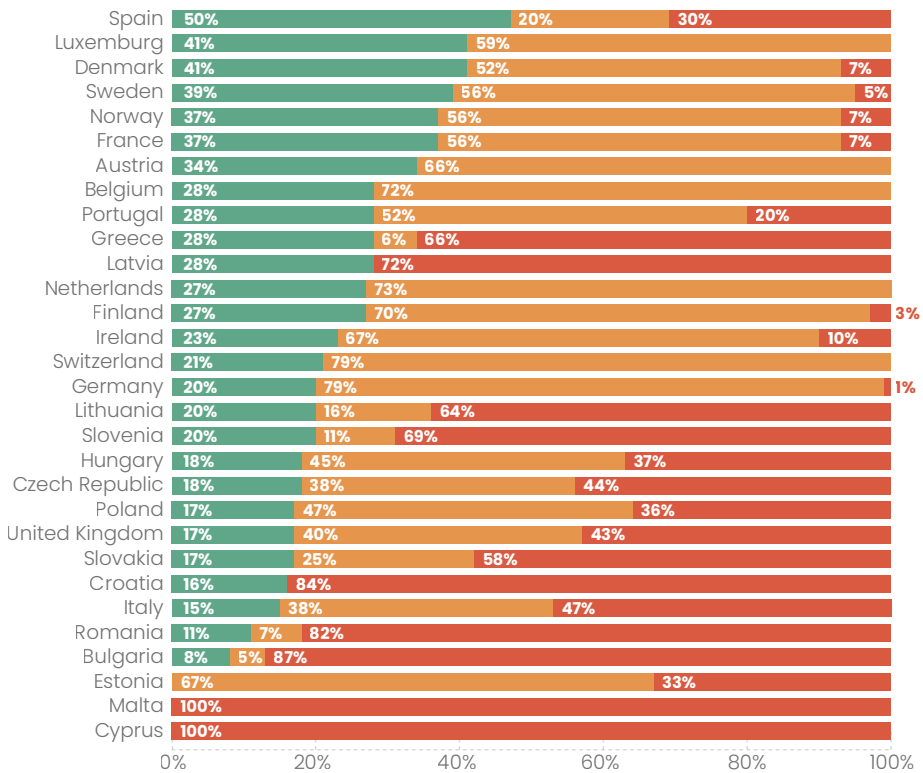
The above data are rounded estimations.
1. Recycling evolution only available as of 2008.

Plastic waste management - Electrical & Electronics

Evolution of post-consumer plastic waste management



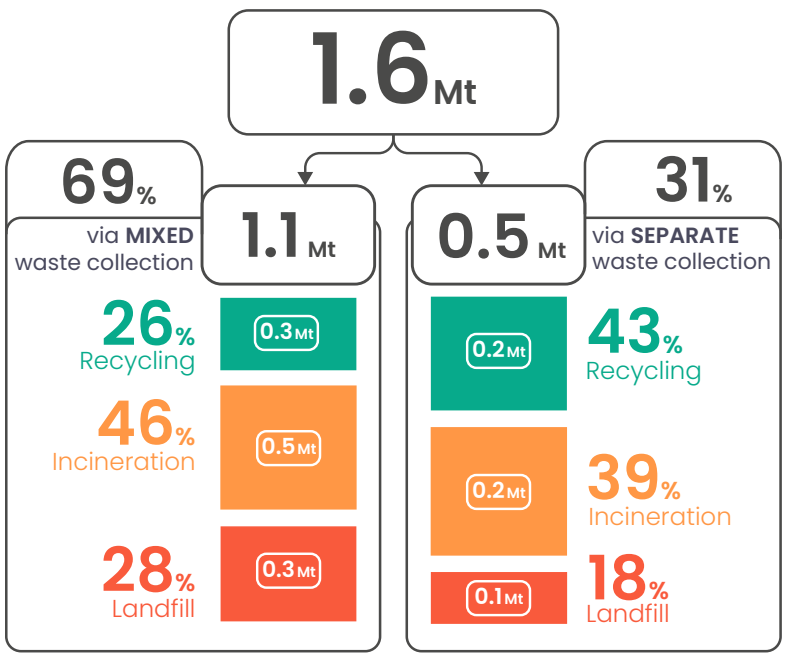
Post-consumer plastic waste management by country



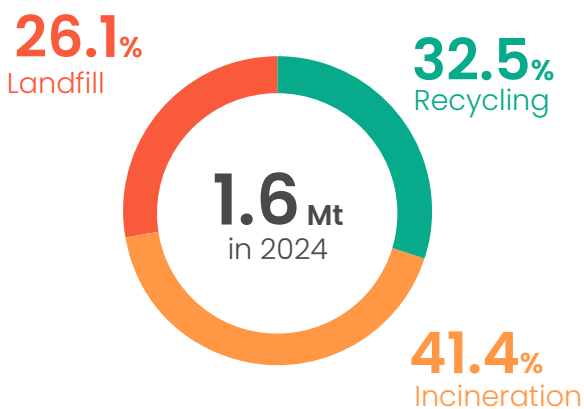
The above data are rounded estimations.

Plastic waste management - Agriculture, Farming & Gardening

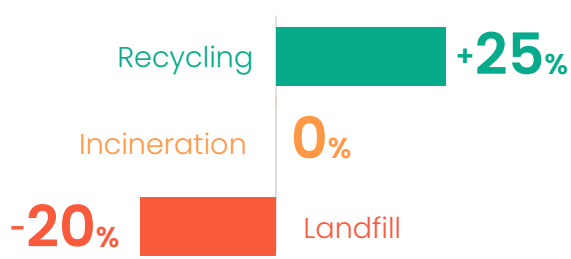
Post-consumer plastic waste collection and treatment



Post-consumer plastic waste treatment



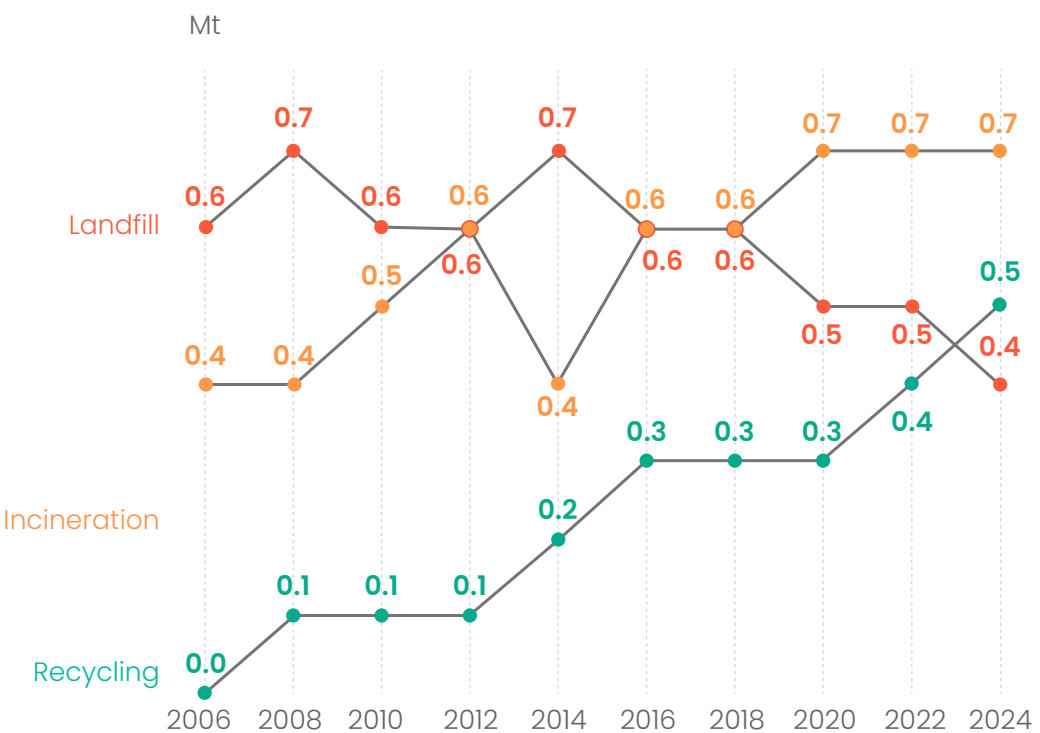
2022-2024 evolution



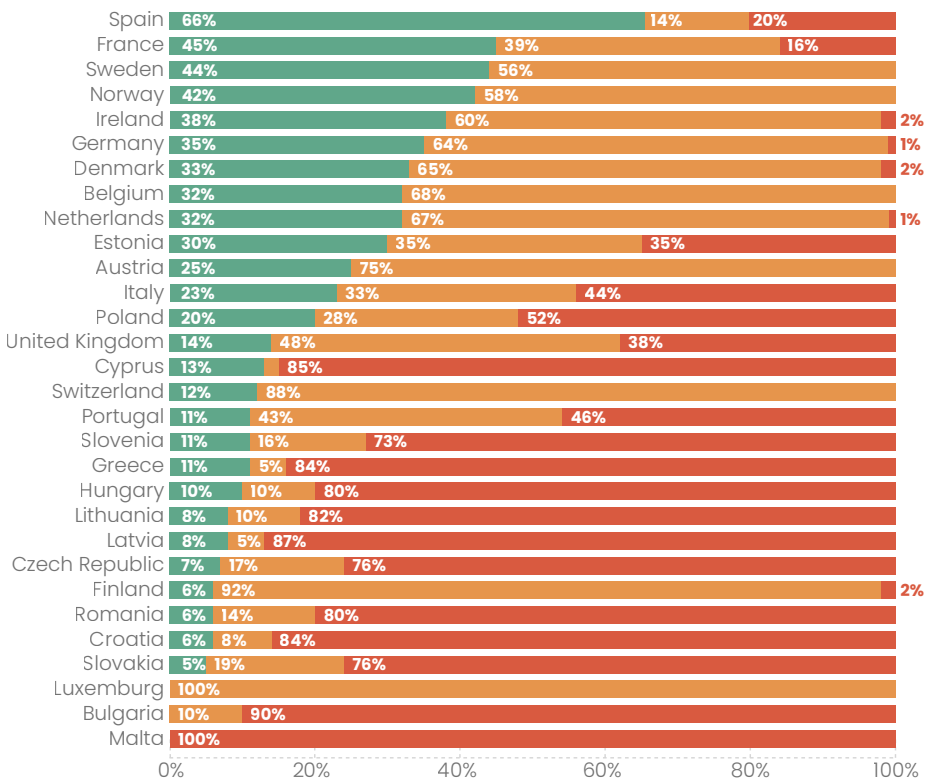
The above data are rounded estimations.
1. Recycling evolution only available as of 2008.

Plastic waste management - Agriculture, Farming & Gardening

Evolution of post-consumer plastic waste management



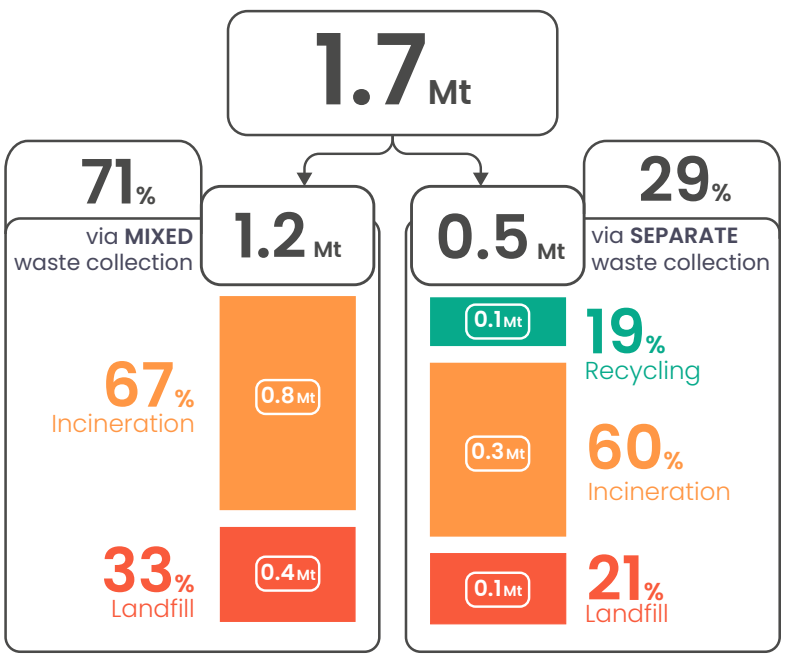
Post-consumer plastic waste management by country



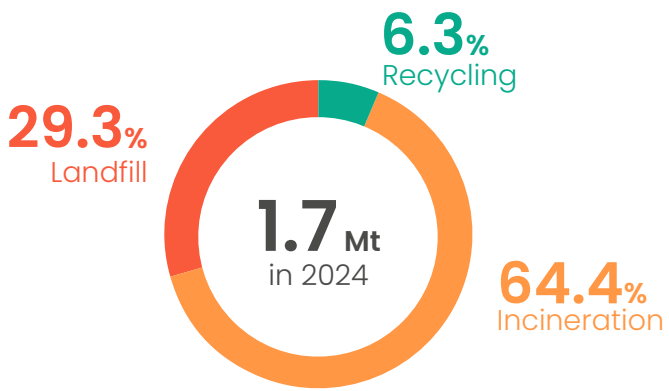
The above data are rounded estimations.

Plastic waste management - Houseware, Leisure & Sports

Post-consumer plastic waste collection and treatment



Post-consumer plastic waste treatment



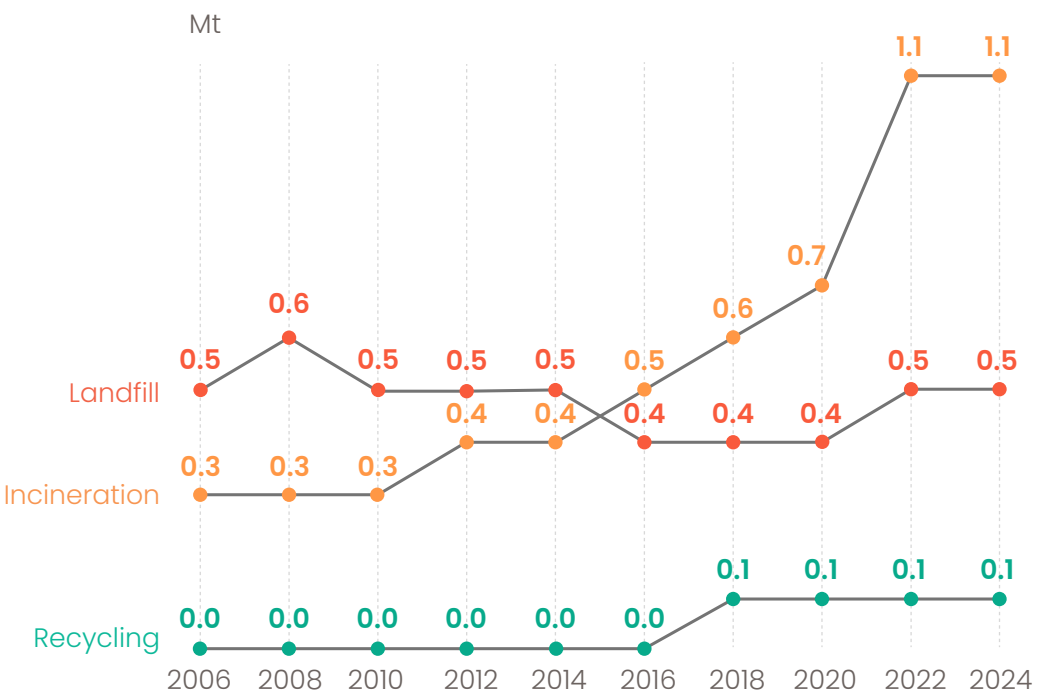
2022-2024 evolution

Recycling	0%
Incineration	0%
Landfill	0%

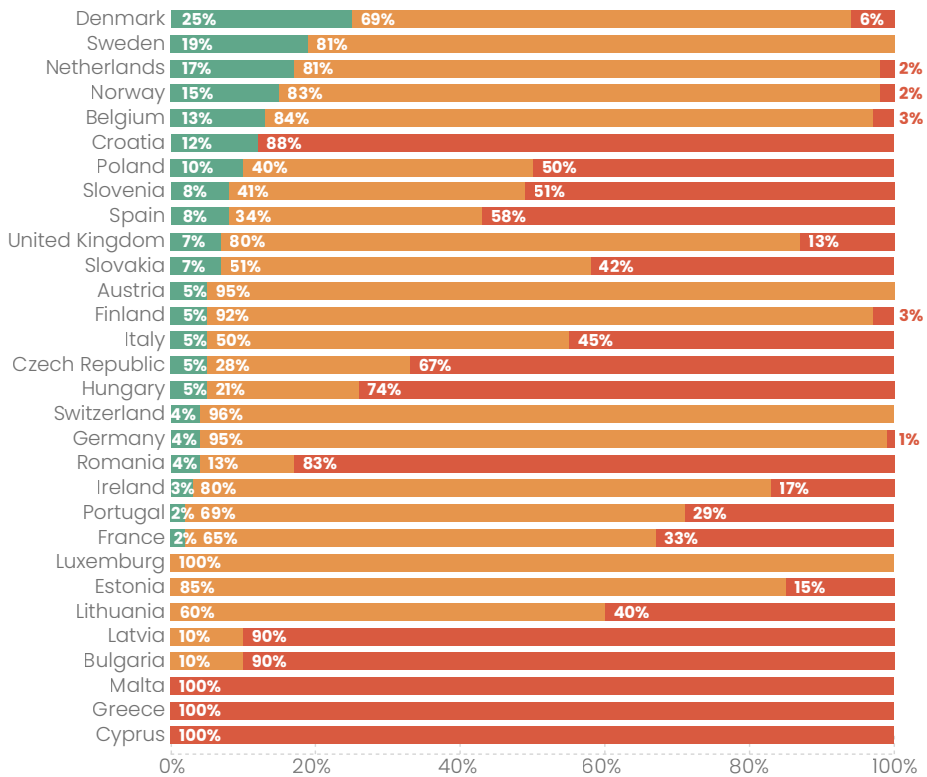
The above data are rounded estimations.
1. Recycling evolution only available as of 2008.

Plastic waste management - Houseware, Leisure & Sports

Evolution of post-consumer plastic waste management



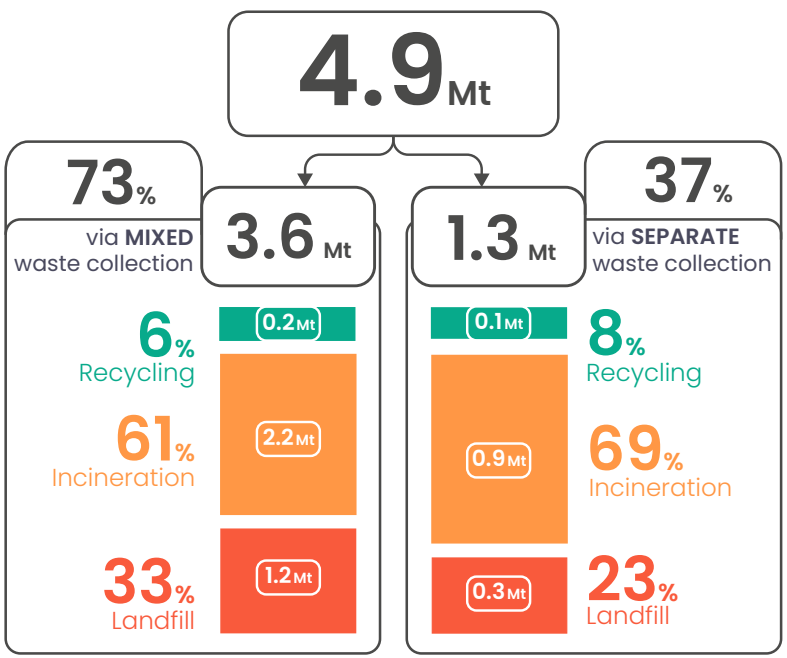
Post-consumer plastic waste management by country



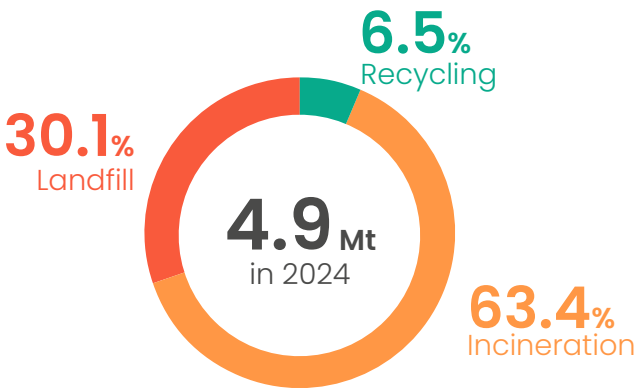
The above data are rounded estimations.

Plastic waste management - Others

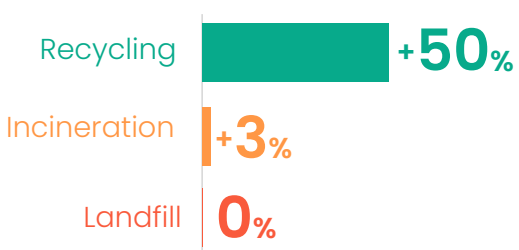
Post-consumer plastic waste collection and treatment



Post-consumer plastic waste treatment



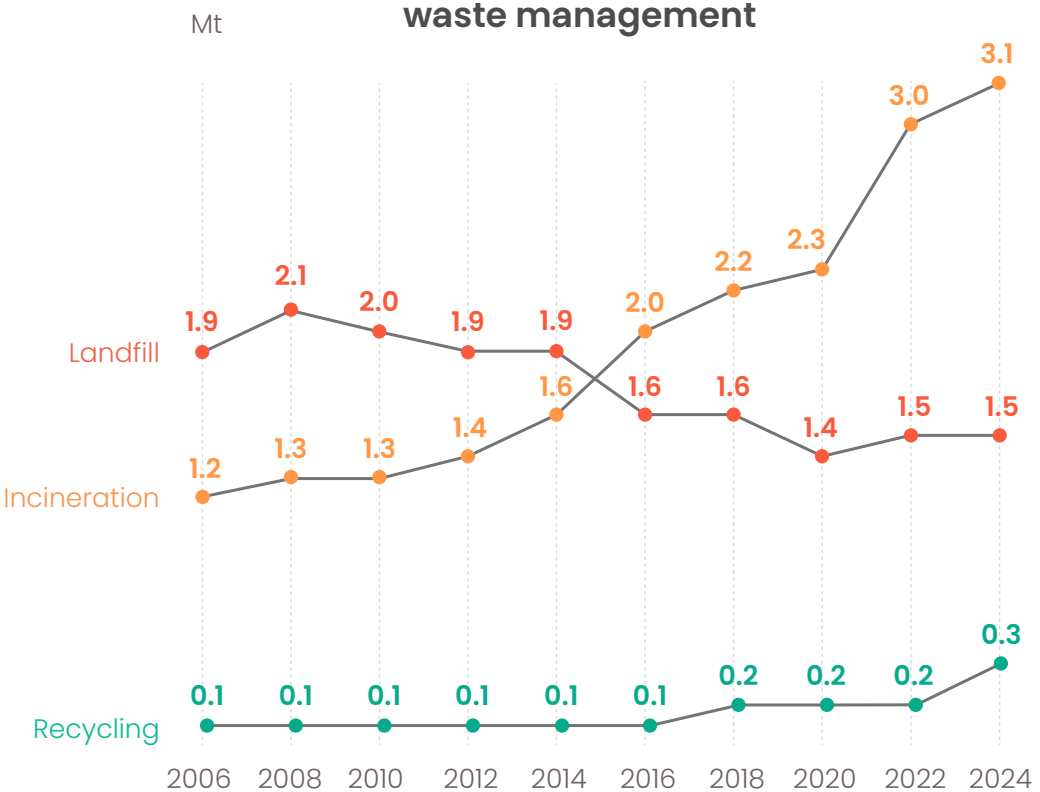
2022-2024 evolution



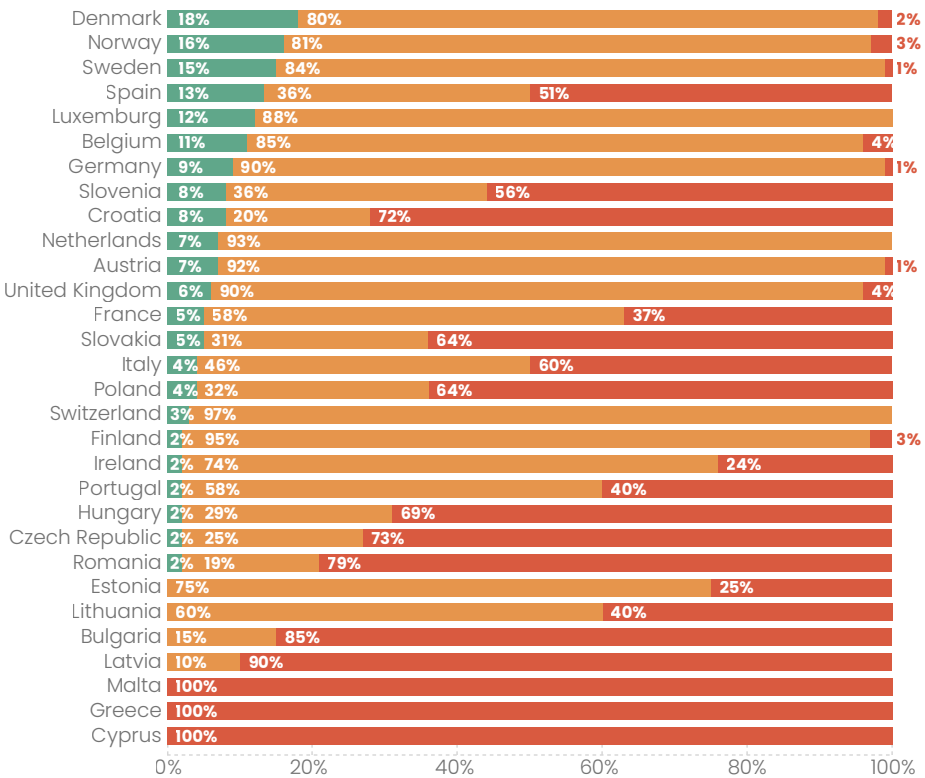
The above data are rounded estimations.

Plastic waste management - Others

Evolution of post-consumer plastic waste management



Post-consumer plastic waste management by country



The above data are rounded estimations.

Appendix

Feedstock of the future

To achieve its circularity and net-zero ambitions by 2050, the European plastics industry must sharply reduce its reliance on fossil-based feedstock and transition to circular alternatives (i.e. recycled, bio-based, and carbon-captured feedstock).

According to The Plastics Transition roadmap of Plastics Europe, the substitution of fossil-based plastics will be gradual, reaching an estimated 25% by 2030 and 65% by 2050. Achieving this shift requires significant investment in recycling capacities and technologies to increase both the quantity and quality of recycled plastics.

Today, mechanical recycling remains the main source of recycled plastics and will need to be further enhanced to accelerate circularity. To complement it, several chemical recycling technologies have been developed and are operating on a smaller scale, pending the legislative clarity required to unlock broader investment. Recycled feedstock can also be produced through dissolution processes.

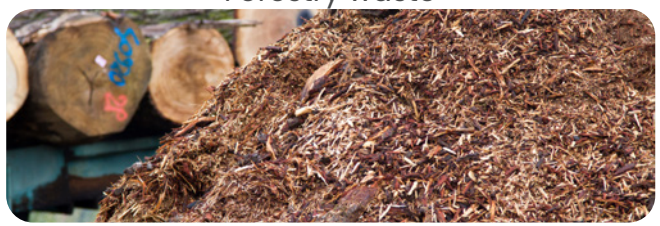
Bio-based feedstock currently represents only a small fraction of plastics production, yet availability is increasing and growth potential is significant. These feedstocks can be derived from primary sources (such as crops) or secondary sources (such as organic waste including compost or used cooking oils, crop and farm residues, animal fats, forestry residues, and sewage sludge). When sustainably sourced and managed, bio-based feedstocks can support efficient resource use and contribute to lowering greenhouse gas emissions.

Carbon Capture and Use (CCU) also holds strong potential. By converting captured CO_2 into new chemical building blocks, CCU can create alternative feedstock while simultaneously preventing emissions from being released into the atmosphere. The plastics industry views CCU as a promising complementary pathway to support the transition toward circular and low-carbon plastic production.

Circular feedstock as alternative to oil and gas

Bio-based feedstock

Forestry waste



Crops

Food waste

Crop residues

Animal manure

Sewage sludges

Plastic waste for mechanical recycling

Plastic waste for chemical recycling

Captured carbon

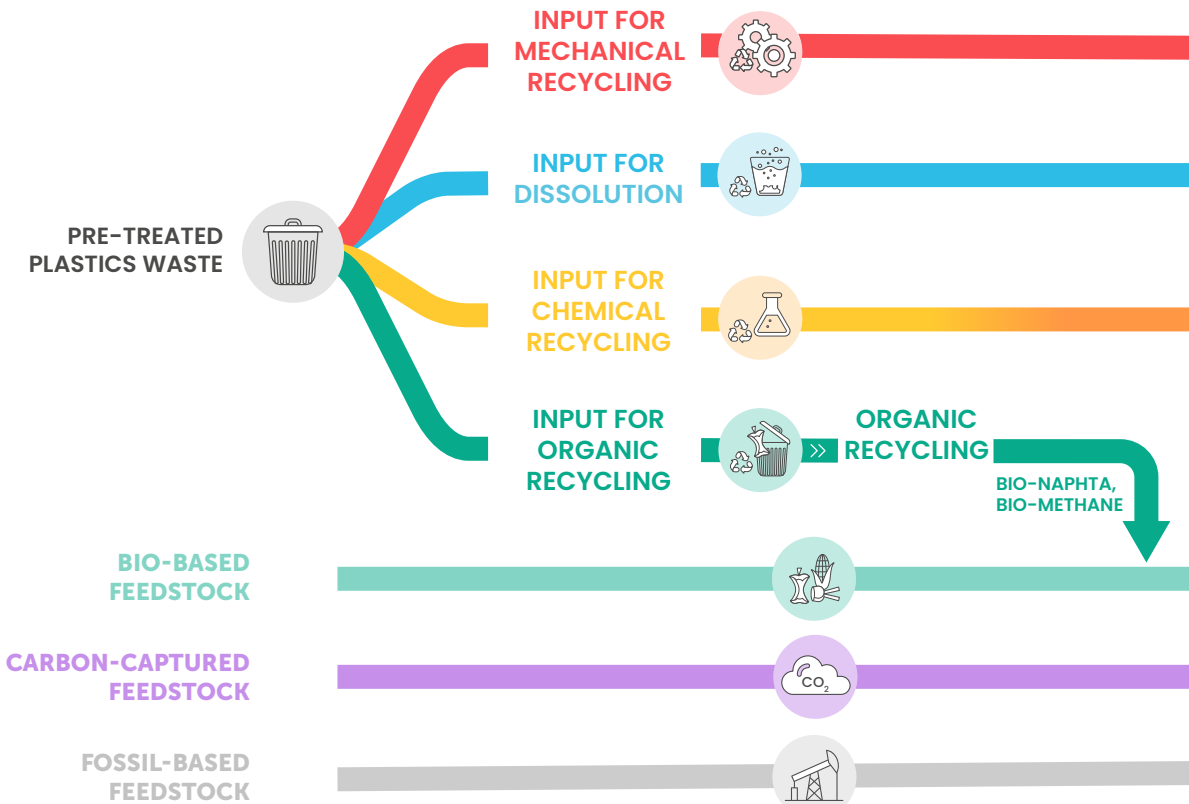
Integrated circular plastics production processes for a faster transition

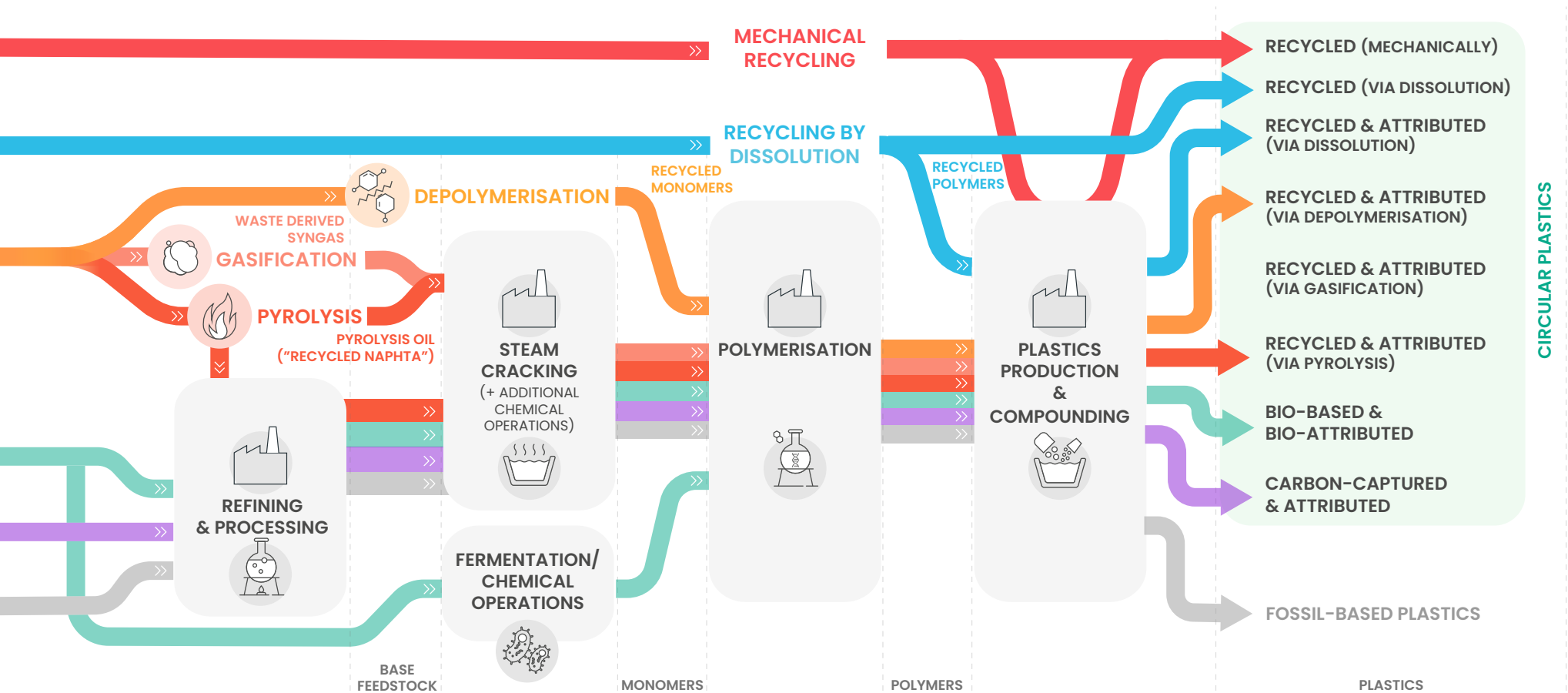
Several complementary pathways can support the plastics industry's shift away from fossil-based feedstock, accelerate circularity, and achieve net-zero emissions. To optimise the recycling of the diverse types of plastic waste generated, a variety of waste-treatment technologies will be required.

As highlighted in The Plastics Transition roadmap, mechanical recycling alone will not be sufficient to meet the industry's circularity target of 65%. It must therefore be complemented by other solutions, notably chemical recycling.

However, this transition will need to occur gradually. In the near and medium term, chemical recycling volumes will remain limited. Building fully separate production lines with such small capacities would be prohibitively expensive, and the resulting lower technical efficiencies could increase environmental burdens rather than reduce them. As a consequence, chemically recycled materials will have to be processed together with fossil-based feedstocks in the transition phase.

For this reason, it is essential to establish a transparent and robust methodology to track recycled feedstocks across the entire value chain. A Mass Balance approach provides this transparency: it prevents double counting of recycled and other circular feedstocks in final products, while enabling consumers to understand whether their purchasing choices support greater circularity in the plastics system.




MECHANICAL RECYCLING
RECYCLING BY DISSOLUTION
DEPOLYMERISATION
WASTE DERIVED SYNGAS
GASIFICATION
PYROLYSIS
PYROLYSIS OIL ("RECYCLED NAPHTA")
RECYCLED MONOMERS
RECYCLED POLYMERS
REFINING & PROCESSING
STEAM CRACKING (+ ADDITIONAL CHEMICAL OPERATIONS)
FERMENTATION/ CHEMICAL OPERATIONS
POLYMERISATION
PLASTICS PRODUCTION & COMPOUNDING
RECYCLED (MECHANICALLY)
RECYCLED (VIA DISSOLUTION)
RECYCLED & ATTRIBUTED (VIA DISSOLUTION)
RECYCLED & ATTRIBUTED (VIA DEPOLYMERISATION)
RECYCLED & ATTRIBUTED (VIA GASIFICATION)
RECYCLED & ATTRIBUTED (VIA PYROLYSIS)
BIO-BASED & BIO-ATTRIBUTED
CARBON-CAPTURED & ATTRIBUTED
FOSSIL-BASED PLASTICS
CIRCULAR PLASTICS
BASE FEEDSTOCK
MONOMERS
POLYMERS
PLASTICS

Average life spans of plastic products

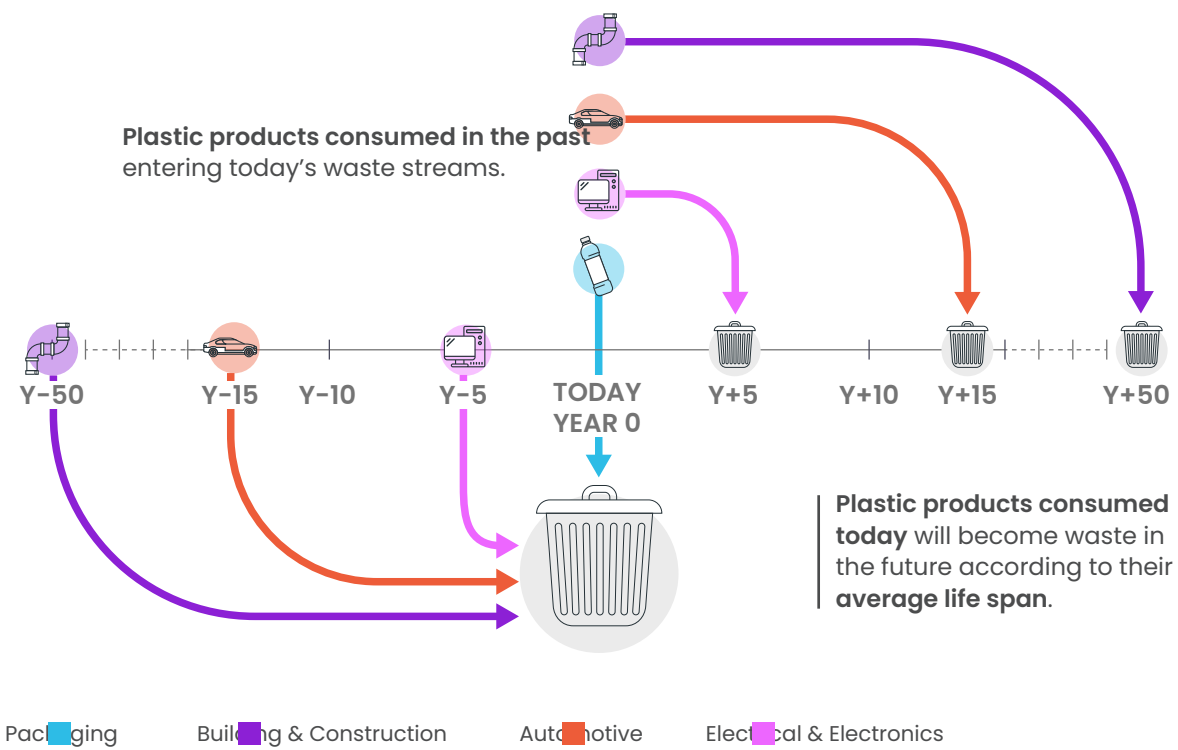
Plastic products and components have widely differing life spans. Many remain in use for years before becoming waste (e.g. pipes, insulation boards, cables, cars, and electrical or electronic devices).

Some products are exported for continued use abroad, meaning they never become waste in Europe, such as used vehicles. Others, like furniture or toys, may be resold, passed on second-hand, or stored for long periods, delaying their end of life.

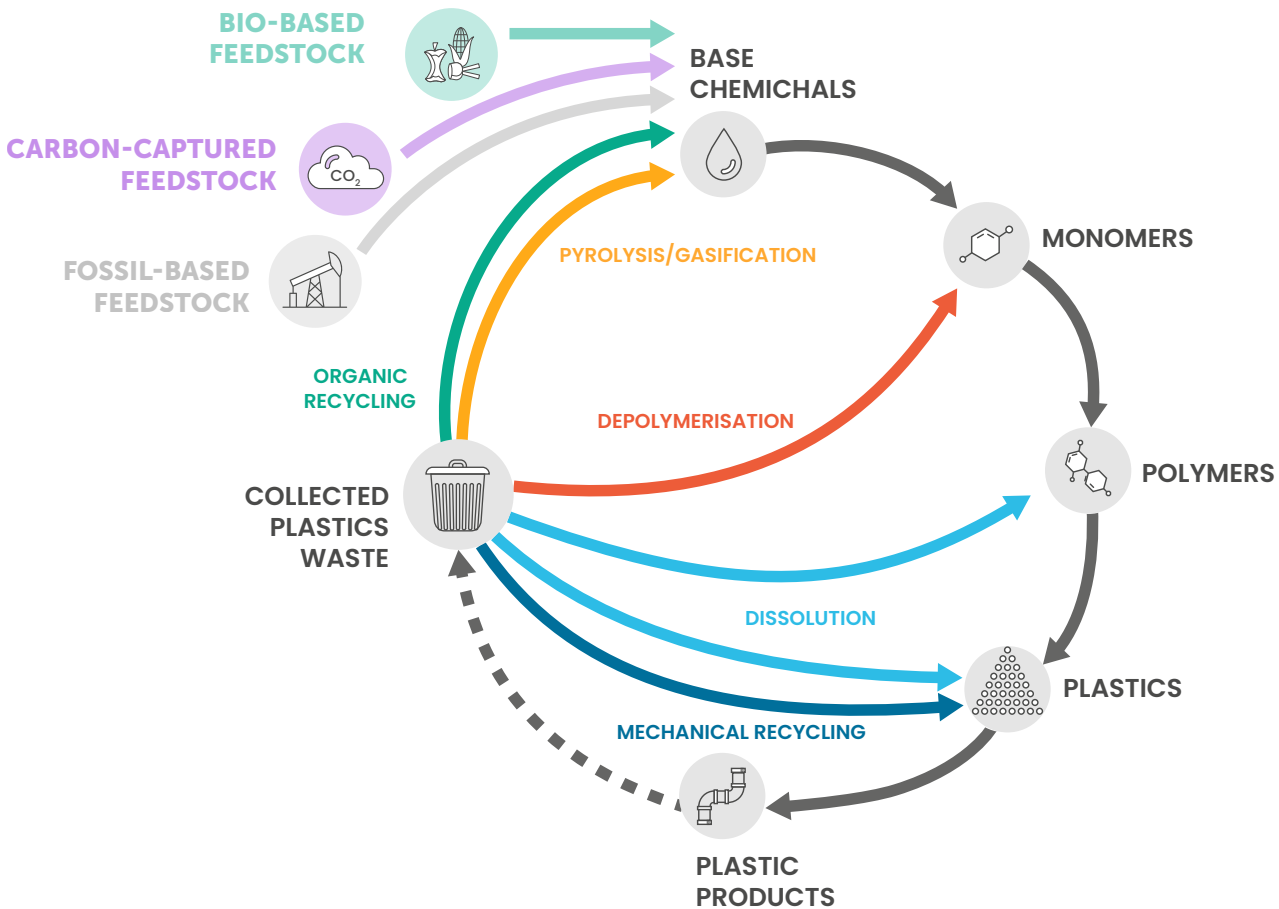
Likewise, many items collected as waste today may have entered the market decades earlier, such as older appliances or construction materials.

These varied lifetimes help explain why the amount of plastic waste generated in a given year is significantly lower than the volume of products placed on the market in that same year.

When do plastic products become waste?



Different recycling techniques to turn waste into new resources



A range of recycling solutions exists to transform plastic waste into new value. Because plastic waste streams vary widely in composition and quality, no single treatment method can address all of them. Advancing the circular use of plastics therefore requires a portfolio of complementary recycling technologies. When applied together, these processes help maximise the recovery of plastic waste and convert it into high-value materials that can re-enter the plastics value chain.

Mechanical recycling remains the most established route. It typically involves shredding, washing, and often melting and re-granulating plastic waste. This approach currently delivers the bulk of recycled plastics on the market and allows recycling several times, however, with a progressive loss of quality.

Dissolution is another recycling process using solvents to separate polymers from additives or contaminants without breaking their chemical structure, resulting in recycled polymers or plastics (when additives are partially removed) and thus not affecting the chemical structure of the input material.

To broaden what can be recycled, chemical recycling provides additional pathways for processing complex or mixed plastic waste. These technologies make it possible to produce high-quality recycled plastics suitable for applications with strict safety or performance requirements, such as food or healthcare packaging, effectively matching the quality of virgin materials. They also allow a wider range of input materials, such as mixed or contaminated waste streams. Although still operating at a smaller scale, chemical recycling needs significant expansion to help Europe achieve higher recycling rates and limit the volumes of mixed waste sent to landfill or incineration. It is standard to classify chemical recycling technologies by the extent to which they break down the polymer structure of the plastic waste :

- Depolymerisation breaks plastics back down into their original monomers, which can then be used again to produce new polymers.
- Pyrolysis and gasification convert plastics into secondary raw materials such as pyrolysis oil or syngas, which can replace fossil-based feedstocks.

Today, most chemical recycling capacity in Europe is based on depolymerisation and pyrolysis technologies.

In addition, organic recycling offers solutions for biodegradable and compostable plastics, transforming them into new bio-based feedstocks through processes such as bio-naphtha production, composting or anaerobic digestion.

Plastic applications and products

Packaging

Packaging foils/films (incl. shrink and stretch films, bubble wrap, shipping foil etc.), household films (clingfilm, bags and sacks (excluding garbage sacks), bottles (incl. drinking bottles and other bottles for non-food applications), caps, seals and closures, tubs, cans, trays (e.g. presentation and collection trays), blister packs (for pharmaceutical and other applications), spools, crates, plastic containers (incl. storage containers for food applications), barrels, canisters, buckets (for packaging purposes, e.g. paint buckets), transport packaging (e.g. plastic pallets, IBC's/intermediate bulk containers, transport boxes, packaging tapes, technical packaging). Packaging can be used for households consumption, or for industrial and commercial activities. The latter may include secondary and tertiary packaging for a wide range of products, such as stretch films around bricks pallets or packs of drinking bottles.

Building & Construction

Pipes and fittings (e.g. for drinking water, gas or sewage), window profiles and other plastic profiles, roof/rainwater gutters, drainage systems (drainage boxes), cladding, shutters, flooring, wall covering, roofing and weatherproofing membranes, sheets (e.g. corrugated sheets and other sheets), wallpapers, toilet lids/seats, films for construction applications, storage containers (e.g. for oil), construction cables, road safety, road construction products (e.g base plates, pillars, traffic cones/traffic cylinders, barriers).

Plastic applications and products

Automotive

Parts in passenger cars and light commercial vehicles, such as battery housings, connectors, wire harnesses, automotive cables, lights and other “under the hood“ applications in road vehicles, interior trim, dashboards, window seals and gaskets, specific automotive profiles, mirrors, bumpers and other exterior components, foamed films, coated fabrics, tarpaulins for lorries.

Electrical & Electronics

Components in all types of electrical and electronic devices, such as major household appliances (e.g. washing machines, dishwashers, refrigerators etc.), small household appliances (microwave ovens, coffeemakers, food processors, toasters, vacuum cleaners, electric heating devices, fans, lighting equipment etc.), consumer electronics (partially also described as “brown goods“, e.g. telecommunication devices, radio sets and HiFi-equipment, television sets, housings and components for computers/laptops, keyboards etc.), electrical power tools, electrical driven lawnmovers, electrical/electronic devices for medical applications, other components for electrical devices or electrical engineering (e.g. plugs, switches etc.).

Plastic applications and products

Agriculture, Farming & Gardening

Includes plastic products and components for agricultural applications (e.g. vegetable/animal production), gardening/horticulture and forestry. Typical product segments are agricultural foils/films (e.g. greenhouse films, mulching films, silage films, stretch films etc.), bale nets, farm technology (mobile cabinets for calves, greenhouses), flower pots and planting pots, cultivation pallets, watering cans, rain barrels and irrigation systems, composters, raised beds, gardening hand tools, garden hoses, gardening decoration articles and other gardening articles.

Houseware, Leisure & Sports

Includes tableware and kitchen utensils (e.g. mixing bowls, stirring spoons, spatulas/flippers etc.), bath equipment and toiletries (e.g. toothbrushes, soap dispensers, etc.), combs and hair clasps, housekeeping articles (e.g. boxes/cases for the storage of food or other articles, folding boxes, waste containers), clothes-hangers, decorative articles, sport/leisure/camping accessories, bathing and swimming articles, swimming pools, toys, etc.

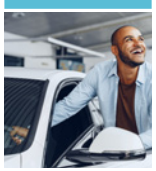
Plastic applications and products

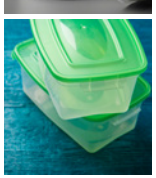
Others

Medical applications (e.g. hoses, blood bags, orthopaedic and sanitary equipment etc), furniture (e.g. garden furniture, plastic chairs, furniture fittings), office and school supplies, waste disposal bags, plastic components for heavy trucks, coaches, motorcycles/bicycles, e-scooters, agricultural machinery and tractors, construction vehicles, railways, aviation and shipping, technical components for machines and mechanical engineering, petrol driven tools for gardening/forestry/agricultural applications (e.g. lawnmovers, chain saws etc.), compact discs and vinyls, etc.

Polymers and plastic products: matchmaking

PP





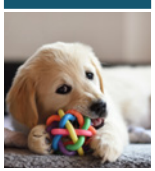
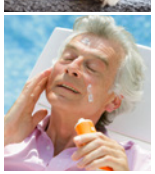
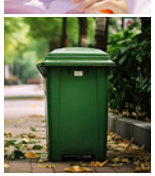
Furniture, food containers and packaging, pipes and fittings, automotive components, etc.

PE-LD, -LLD



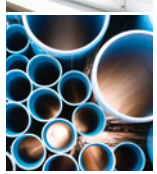
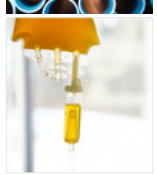
Reusable bags, agricultural film, food packaging film, etc.

PE-HD, -MD

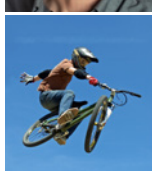
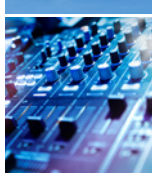
Toys, pipes and fittings, fuel tanks, wiring and cables, milk and shampoo bottles, sun cream tube, etc.

PVC

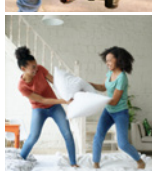
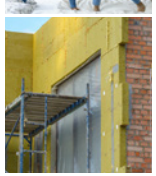
Blood and transfusion bags, floor and wall covering, window profiles, screens, pipes and fittings, cable insulation, garden hoses, inflatable pools, etc.

PS, PS-E

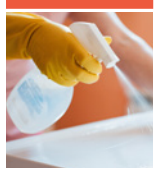
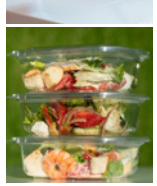
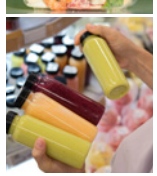
Inner liner for fridges, safety helmet, food packaging, building insulation, electrical & electronic equipment, glass frames, etc.

PUR

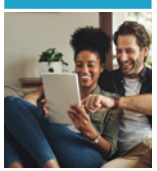
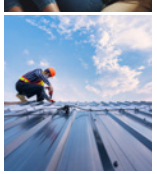
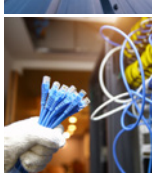
Building insulation, pillows, mattresses, car and office seats, insulating foams for fridges, etc.

PET

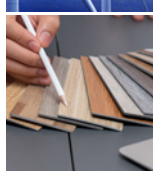
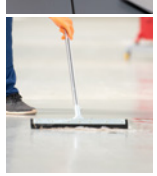
Beverage bottles, cleaning spray bottles, ready meal trays, etc.

Other thermo-plastics

Hub caps, optical fibers, roofing sheets, touch screens, etc.

Thermo-sets (excl. PUR)

Flooring, coatings, wind turbine blades, laminates, binders, furniture, reusable tableware, etc.

Scope

This report provides an overview of the European circular economy for plastics, based on the "Circular Economy of Plastics 2024 in EU27+3" study that was commissioned by Plastics Europe and carried out by Conversio Market & Strategy GmbH, in partnership with the nova-Institut.

The report provides a detailed analysis of the plastic material flow in the European Union, Switzerland, Norway and the United Kingdom (EU27+3), for the reference year 2024. All figures and graphs in this report show data for EU27+3, which is referred to as Europe for the purposes of abbreviation – other country groups are explicitly listed.

The report looks at the production of plastics, their conversion into products and components, plastic consumption trends, as well as plastic waste collection and treatment, including recycling. It also covers the production of recycled plastics and bio-based (and bio-attributed) plastics and their use in different applications, including imports and exports data.

For the first time, the report shares an initial estimation of some established reusable plastic packaging systems both in terms of volume of reusable plastic packaging currently in circulation and quantities of new reusable plastic packaging placed on the market (i.e. logistics and transport packaging, beverage bottles and bottle crates, takeaway food and beverage packaging). The report also includes - for the first time - World pre-consumer recycled plastics production data, and some trade data to show Europe's reliance on imports for its conversion input.

The report does not cover other aspects of circularity such as repair, reuse in other sectors or organic recycling.

The study was conducted from January 2025 and October 2025.

The scope of the study mainly focused on post-consumer plastic waste and recycled plastics. Indeed, the various targets put on the industry (for recycling and recycled content) mainly focus on post-consumer waste and recycled plastics. However, conscious that pre-consumer plastic waste flux is part of the circular economy, the study provides some general estimations of pre-consumer waste recycling and pre-consumer recycled plastic content, which are shown in the present report.

As official data for plastic packaging consumption and waste in 2024 was generally not available at the time of publication, most of the data on plastic packaging consumption and waste in this report is an extrapolation of the figures available for 2023.

The study has some limitations in so far as it does not include waste that was not officially collected, stored or was littered. For data availability reasons, plastic waste export data... is limited to the EU27+UK for data availability reasons, and intra-EU shipments of post-consumer recycled plastics are also not shown. Estimates are based on mass balance and market surveys.

This study focuses on the following plastic materials: PE-LD/ LLD, PE-HD/MD, PP, PVC, PS, EPS, PA, PET, ABS/ SAN, PC, PMMA, PUR, other thermoplastics, and other thermosets. Elastomers, and polymers that are not used in the manufacturing of plastics (i.e., quantities used for adhesives, sealants, coatings, paints, varnishes, waterproofing textiles, or within the production of cosmetics, medicines or chemical processes) are excluded from the scope as the study focuses on plastic materials. PVC-, PO- and PU-fibers are included, whereas PA, PET-, PBT-fibers, or acrylic polyesters are not included.

All figures in the report are rounded up.

Methodology

The multi-methodological approach used for this study – modellisation based on both primary and secondary data research – leads to the best possible estimations.

Primary research includes data collection from European and national authorities (e.g. Eurostat), EPR systems, waste management as well as sector organisations. Plastics Europe's Market Research Group (PEMRG) also provided input on the demand for fossil-based plastics by European converters. Additionally, interviews were conducted with stakeholders along the plastic value chain: 400 in-depth interviews with plastics converters in several European countries – to get a better and more nuanced view of how plastics (including recycled materials) are used to manufacture plastic products and components – and 100 additional in-depth interviews with plastics producers, compounders, brand owners, EPR schemes, sector federations, waste management companies, sorting plants and recyclers, ministries and market experts – to complement the research and data collection, including on trade.

Third party reports, statistics and publications were analysed in the secondary research. This includes the collection of data from EPR schemes and other sector organisations to analyse existing waste streams at national and European levels. Additional datasets were also used, such as official ELV (end-of-life vehicles) and WEEE (waste from electrical and electronic equipment) data, trade statistics, industry databases and statistics from European associations, private entities, environmental statistical agencies as well as from NGOs and academics.

Recycling rates were calculated according to new methodology mandated by Packaging and Packaging Waste Directive to calculate mechanical recycling of plastic packaging waste. Although only applicable for packaging, the methodology has been applied, in this study, to mechanical recycling of all types of plastic waste.

The independent ReShaping Plastics report (2022), commissioned by Plastics Europe, identified a major gap between reported plastic demand and waste captured in official statistics, with 9–15 Mt of waste per year missing. While part of this reflects long-lived in-use stocks, the report also pointed to underestimated plastics in mixed waste, differing lifetime assumptions, and unreported exports.

For the "Circular Economy of Plastics 2024 in EU27+3" study , Conversio Market & Strategy GmbH reviewed Plastics Europe's data and methodology, leading to slight upward revisions of plastic content in mixed commercial and construction waste. The review also showed that the ReShaping Plastics report used different lifetime assumptions, significantly affecting estimates of unreported waste, and that unreported exports of end-of-life vehicles likely account for 0.5–0.7 Mt.

Glossary of terms

Base chemicals: Chemicals obtained via processing and/or refining of fossil-based or circular feedstock.

Bio-attributed plastics: Plastics with attributed bio-based content. The determination of bio-based content can be done via feedstock attribution (Mass Balance).

Bio-based feedstock: Raw materials of biological origin, that are grown, naturally replenished at human time scale, excluding materials embedded in geological formations and/or fossilised. It can either be produced from grown crops (so-called "first-generation" such as maize, rapeseed) or organic residuals and waste ("second-generation" such as agricultural waste, frying oils, manure).

Bio-based plastics: Plastics fully or partially produced from bio-based feedstock.

Carbon Capture and Usage: Process of capturing CO2 from potential system emissions streams before it enters the atmosphere or from the atmosphere itself (Direct Air Capture). Captured CO2 can then be used as a feedstock to produce plastics.

Carbon captured feedstock: Raw material derived from technically captured CO2 from air or industrial processes used as a feedstock.

Chemical recycling: Chemical recycling converts e. g. polymeric waste by changing its chemical structure to produce products (e. g. waxes) or substances (e.g., oil and gas) that are used as raw materials for the manufacturing of plastics or other products. Products exclude those used as fuels or means to generate energy. There are different chemical recycling technologies such as pyrolysis, solvolysis, gasification, hydro-cracking and depolymerisation.

Chemically recycled feedstock: Feedstock derived from waste through chemical recycling.

Circular feedstock: Circular feedstocks are recycled feedstock, bio-based feedstock, carbon-captured feedstock. Note: The definition is based on the feedstock used and does not refer to the end-of-Life of the plastics.

Circular plastics: Group of plastics fully or partially produced from circular feedstock including recycled plastics, bio-based plastics, bio-attributed plastics and plastics derived from carbon-capture. Note 1: Antonym of fossil-based plastics. Note 2: The definition is based on the feedstock used and does not refer to the End-of-Life of the plastics.

Consumption: Every plastic product (e.g. a bottle) or component embedded in larger products (e.g. a plastic component in a car), which is used by the end-user for household, commercial and/or industrial activities.

Conversion: Manufacturing of plastic products and components.

Depolymerisation: Transformation of a polymer to its monomer(s) or to a polymer of lower relative molecular mass. The process can be mediated by e.g. heating, chemical solvents or enzymatic/catalytic reactions. Note: The process belongs to chemical recycling processes.

Dissolution: A purification process through which the polymer present e. g. in a mixed plastic waste or in a multi-layer formulation/ composite is selectively dissolved in a solvent, allowing it to be separated from the waste and recovered in a pure form without changing its chemical nature.

Energy recovery: The use of combustible plastic waste to generate energy through direct incineration, with or without other types of waste, for electricity and/or heat conversion. Energy recovery also includes high-grade energy recovery in industrial facilities, if the main purpose of the operation is to replace fossil fuels (e.g. cement kilns, pulp mills, gasification plants).

Glossary of terms

Extended Producer Responsibility (EPR): Set of measures taken to ensure that products manufacturers bear operational responsibility or finance an organization for the management of the waste stage of a product's life cycle.

Extrusion moulding process: Manufacturing process that consists of melting plastics that are extruded and cooled into various solid shapes.

Feedstock: Raw material or material that is the principal input for an industrial production process.

Fossil/fossil-based feedstock: Raw material that is derived from fossil resources (crude oil, natural gas, coal).

Fossil-based plastics: Plastics produced directly and fully from fossil feedstock.

Gasification: A process where mixed after-use materials, such as polymeric waste, are heated in the presence of limited oxygen to produce primarily syngas that can be converted into polymers again. Note: The process belongs to chemical recycling processes.

Incineration: Process of burning plastic waste. In the EU27+3, the vast majority of plastic waste incineration is with energy recovery.

Landfill: A waste disposal site for the deposit of waste onto or into land (i.e. underground). In Europe, landfill are controlled (in opposition to uncontrolled landfill) to avoid significant negative environmental effects in terms of greenhouse gas emissions and pollution of surface water, groundwater, soil and air.

Mass Balance: Set of rules that enables traceability of different types of feedstocks, between their input and output, along the value chain to the manufacturer of the final plastic products or components.

Mechanical recycling: A method of processing by which plastics are recovered from plastic waste without changing the basic polymeric structure of the material. Plastic waste undergoes sorting processes in specialised sorting facilities to separate different plastic streams. After cleaning and grinding the sorted plastic waste, the material is recovered by melting and reshaping (e.g. regranulating) processes (pellets, flakes or powders), to be used in the manufacture of plastic products and components.

Mixed waste collection: Collection of waste without pre-sorting of plastics or other materials by the end-user (e.g. household residual waste, municipal waste).

Monomer: Molecule that is used to produce polymers. Monomers are the main building blocks of polymers.

Organic recycling: Recycling (e.g. via composting or anaerobic digestion) of biodegradable/compostable organic waste including biodegradable/compostable plastics under controlled conditions using microorganisms to produce, in the presence of oxygen, stabilized organic residues, carbon dioxide and water or, in the absence of oxygen, stabilised organic residues, methane, carbon dioxide and water.

Plastics production & compounding: Manufacturing of material which contains as an essential ingredient an organic polymer and which at some stage in its processing into finished products can be shaped e.g., by flow, extrusion, or moulding.

Plastics: Material which contains as an essential ingredient an organic polymer and which at some stage in its processing into finished products can be shaped e.g., by flow, extrusion, or molding.

Polymer: Means a substance consisting of molecules characterised by the sequence of one or more types of monomer units.

Glossary of terms

Polymerisation: Process in which monomer molecules are combined to form polymers via a chemical reaction.

Post-consumer plastic waste: Waste generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain or the installation of plastic products (e.g. cut-offs of insulation, flooring or wall-covering boards).

Post-sorting losses: Losses occuring in the plastic waste recycling process, i.e. when plastics are further separated from impurities and residues. Those losses usually are non-plastic materials such as wood, glass, paper, textiles, rubber, composites, metals, etc.; organic residues such as water, milk, yoghurt, etc.

Pre-consumer plastic waste: Waste arising from the plastics manufacturing (production and converting) processes (e.g. faulty production and sprues, edge sections of plastic sheets, production leftovers). Note: This term excludes re-utilised material, such as rework, regrind or scrap that has been generated in a given process and is capable of being reclaimed within that same manufacturing process.

Processing loss: Losses occuring at the end of the plastic waste recycling process, i.e. when plastics are melted or extruded. Those losses usually are small and mostly non-plastic residues (e.g. wood, paper, aged rubber particles, fillers) and dirt.

Products in use: See the "consumption" definition.

Pyrolysis: A thermal process of heating up polymeric waste (e.g., plastics) under the absence of oxygen. It converts polymers into a range of simpler hydrocarbon compounds mainly in the form of liquid pyrolysis oil. Note: The process belongs to chemical recycling processes.

Recycled plastics: Plastics fully or partially produced from waste via utilizing a recycling process. Recycled plastics can be used as feedstock in the manufacture of plastic products and components. Recycled plastics may be produced either from post-consumer waste or pre-consumer waste.

Repair: Operation by which a faulty or broken product or component is returned back to a usable state to fulfill its intended use.

Reuse: Reutilisation of plastic products or components without undergoing a recycling process or significant modification.

Separate waste collection: Collection of pre-sorted waste on a product level (e.g. household lightweight packaging, WEEE collection, container park).

Service life: The life-span of a product.

Sorting: Physical processing techniques and processes to separate materials in waste streams. Sorting is typically performed in Material Recovery Facilities (MRFs) or specific Plastic Recovery Facilities (PRFs). Sorting can be performed automatically with sorting technologies or manually.

Sorting losses: Losses occuring at the sorting of collected plastic waste, when plastics are separated from other waste that have been jointly collected. Those losses usually are non-plastics materials such as wood, glass, paper, textiles, rubber, composites, metals, etc.

Unsorted waste: Discarded plastic waste for quality and/or size reasons, but also because of possible lack of available recycling streams or capacity.

Use: The time span during which a product is utilised by the end-user. Every plastic product (or part embedded in larger products) that is still utilised, independently of when it was put on the market.

Acronyms

ABS/SAN:
Acrylnitril-Butadien-Styrol/Styrol-Acrylnotril

CA:
Cellulose acetate

ELV:
End-of-Life Vehicles

EPR:
Extended Producer Responsibility

EU27+3:
27 European Member States + Norway + Switzerland + the United Kingdom

kt:
kilo tonnes

Mt:
million tonnes

OECD:
Organisation for Economic Co-operation and Development

PA:
Polyamide

PBAT:
Poly(butylene adipate-co-terephtalate)

PBT:
Polybutylene terephthalate

PBS:
Polybutylene succinate and copolymers

PE:
Polyethylene

PE-LE/-LLD:
Polyethylene Low Density/Linear Low Density

PE-HD/-MD:
Polyethylene High Density/Medium Density

PET:
Polyethylene terephtalate

PHA:
Polyhydroxyalkanoates

PLA:
Polylactic acid

PMMA:
Polymethylmethacrylate

PO:
Polyolefins

PP:
Polypropylene

PTT:
Polytrimethylene terephtalate

PS:
Polystyrene

PS-E:
Expanded polystyrene

PUR:
Polyurethane

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Enabling a sustainable future

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