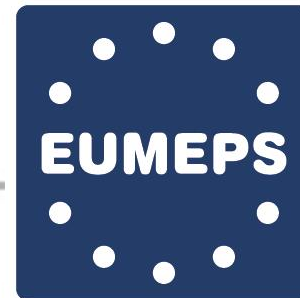


THE EPS-INDUSTRY'S JOURNEY TOWARDS CIRCULARITY

Progress report

CONVERSIO
Market & Strategy



November 2021

Main subjects presented in the Report



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Introduction and methodology

EUMEPS

The association for European Manufacturers of Expanded Polystyrene (EUMEPS) is the voice of the Expanded Polystyrene (EPS) industry. Our members cover the entire EPS value chain from raw material suppliers, EPS converters and recyclers as well as supporting industries including machinery provider companies and additive suppliers. Members include individual companies as well as 23 National Associations of Expanded Polystyrene (EPS) in Europe. This unique representation of the entire value chain ensures that EUMEPS represents both large companies and small-medium sized converters and recyclers. Altogether our membership represents more than 1.000 companies, most of them small and medium sized companies (SMEs), which employ more than 80.000 people in Europe.

METHODOLOGY USED

In 2020 EUMEPS carried out a survey to set up the state of play of the EPS market and draw a mass flow model of the EPS waste. Data was collected from all 22 National Associations who actively cooperated to provide the most reliable and up-to-date figures of their own market. When a National Association didn't feel confident with the robustness of data, it preferred not to reply to specific questions, motivating its reasons. Whenever this happened, the survey was completed with the last figures available, specifically Conversio.⁽¹⁾

A number of National Associations only cover EPS insulation materials and have limited knowledge of the EPS waste streams for packaging materials. It is certain from the responses to the survey that this leads to a lower estimate of EPS recycling than what is actually occurring.

To ensure even more reliable data, EUMEPS recommends a European Waste Code for clean, white EPS (typically packaging pure white EPS) and a European Waste Code for other EPS be added.

(1) EPS Post-Consumer Waste Generation and Management in European Countries 2017 by Conversio Market and Strategy (released in June 2018)

Introduction and methodology

Data includes the latest EPS production by country (2019) provided by each National Association ⁽²⁾.

The EPS waste stream data was collected by category (packaging and construction), subcategory (household and commercial) and application (white goods and food for packaging and cut-offs and demolition for construction); this to allow comparisons with previous Conversio/Consultic studies and provide updated data to the Circular Plastics Alliance (CPA) who was collecting it by polymer.

Further detailed information was collected in 2021 alongside dedicated activities by EUMEPS, in particular:

- Recycling rates from EPS fish box waste produced by a Task Force created to sponsor recycling practices in that category.
- EPR schemes info collected during an ad-hoc research promoted across all the National Associations.
- For competition rules, data for the Netherlands and Romania are aggregated into “Other countries” charts.

The Report is based on best available data provided by 22 National Associations who collected it from their own members (recyclers, converters and raw material suppliers) as well as from other available data on EPS collection, sorting and recycling.

The lack of a separated waste code (EWC) for EPS, although repeatedly requested by the EPS value chain, makes data monitoring challenging. Nevertheless, our Association and its members, as signatories of the CPA, are fully committed towards the fulfillment of the EUMEPS Pledge (see page 27) as a contribution to the 10mt Pledge of the CPA.

For this reasons more accurate data monitoring have been deployed and any effort has been made to collect the most accurate figures in EPS waste collection and recycling from each country.

Said that, EUMEPS and the European EPS industry reaffirm the need to have a separate waste code for EPS which would make data monitoring simpler and more accurate.

(2) Production volumes is based on the KN-codes for import of EPS raw materials, where no raw material supplier is present in combination with other national data.

Introduction and methodology

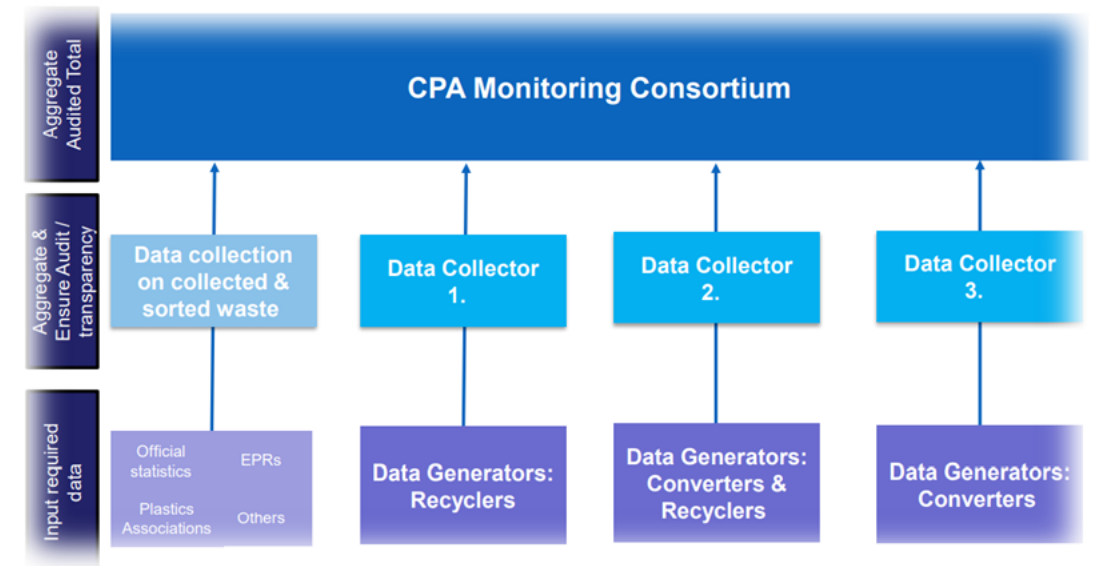
FUTURE METHODOLOGY

EUMEPS is going to collect data for a new survey to have the new state of play.

It may be the last time that data are based on the current methodology, according to the figures collected by each National Association country by country.

From 2022 EPS waste streams will use an updated methodology based on Monitoring schemes accredited by the European Commission and developed by the Circular Plastics Alliance (3).

Publication of the data from the 2021 survey will depend on the availability of the data from the monitoring schemes within the CPA at the time of publication.



(3) https://ec.europa.eu/growth/industry/policy/circular-plastics-alliance/commitments-and-deliverables_en

CRITICAL REVIEW OF SURVEY DATA

- EUMEPS has collected data on EPS recycling in Europe via a questionnaire to the National EPS-associations. The survey data covers recycling of both EPS packaging and construction waste for 2019. Based on survey data a critical review has been done by Conversio. For a number of countries import of EPS in combination with White Goods were not included in the survey. To account for this EPS packaging for white goods have been increased to match European averages.
- UK and Denmark was further subject to critical review as developments from the 2017 to the 2019 data warranted further investigation. Based on survey replies and interviews with relevant stakeholders it was found that data for these countries was valid, even though they were different from European averages. A key reason for the deviation between 2017 and 2019 number was a better collection of data for the 2019 data set. It is possible that recycling rates and volumes for Denmark and UK may change as new data emerges, however both countries have seen rapid increase in EPS collection and recycling since 2019, so current data is best available. In this report the data from UK and Denmark carries through into the overall report.
- JRC supports the results from EUMEPS and Conversion. JRC wrote the following on EPS/PS recycling rates:
“For example, for the polystyrene and expanded polystyrene stream, stakeholders reported higher recycling rates (a midrange recycling rate of 40% for polystyrene and expanded polystyrene from packaging/EUMEPS/Conversio 38%).”

Management summary

POSITIVE DEVELOPMENT OF EPS WASTE COLLECTION AND RECOVERY

- The collection and recovery of EPS waste is challenging for most of the European countries, but several projects have been developed in the last years to increase recycling activity and quality of the recyclates.
- In some leading countries (e.g. the Netherlands and Norway) separate collection of EPS/PS is widely performed, ensuring higher recycling rates. In other countries separate collection of EPS is also occurring although not in all municipalities (e.g. Denmark and Ireland).
- In general, a positive trend of EPS waste collection and recycling activities is evident. In comparison of European EPS waste in 2009 (Consultic), the generated and collected waste increased by 0,2% per year. About 507kt were collected in Europe in 2019; the increase resulted **mainly from packaging**, which remains the most important EPS waste category with a share of 73%.
- In eight countries (Portugal, Norway, Denmark, Netherlands, UK, Austria, Belgium and Ireland) **recycling of EPS packaging already exceeds 50%, which means these countries have already met the EU Commission target for 2025.**

(4) Compound Annual Growth Rate

(5) After a critical review done by Conversio, the best assessment for the recycling rate of EPS post-consumer packaging waste in 2021 is at least 37,3%. Also, JRC wrote that stakeholders reported even higher recycling rates (a midrange recycling rate of 40% for polystyrene and expanded polystyrene from packaging) than EUMEPS/Conversio (about 38%)

- Countries with best performances in recycling EPS packaging waste achieved **very high percentages**: Portugal (83%), Norway (76%), Denmark (60%), Netherlands (59%), Austria and UK (56%), Ireland and Belgium (52%).
- **The recycling rate rose above 4% per year.** The first 6 leading countries (Portugal, Norway, Denmark, United Kingdom, Ireland, and Netherlands) reached **overall recycling rates above 45%**. The overall recycling rate for EPS includes waste from demolition and cut-offs, where, as in the rest of the construction industry, waste collection for recycling is not as widespread as in the packaging sector. But there are still countries with large amounts of EPS not recycled yet. So, there is still a consistent untapped potential in EPS recycling which is likely to give a substantial boost to the recycling rate in the years to come.
- In 2019 the total recycling rate for EPS waste in Europe was **38% for packaging applications**, 10% for EPS in **construction** for a **total recycling rate of 30%**.
- Since data are collected from Conversio (2017) and from National Associations (2019), and assuming 4% linear CAGR⁽⁴⁾ in the past decade, then best assessment **for the recycling rate of EPS packaging waste in 2021 is 40,9%.**⁽⁵⁾

INCREASE OF FISH BOXES / STABILIZATION OF CUSHIONING FOR TECHNICAL APPLIANCES

- The increasing amount of EPS packaging waste was primarily caused by a significant growth of food transportation including fish boxes.
- Especially in seacoast countries of Northern Europe like Norway, Denmark and the Netherlands recycling rates are at 90%, but also other countries are quickly following up with Greece at 90% too.
- In Portugal, a national project was launched to collect, compact and recycle EPS fish boxes from all main ports. The activity started in 2020 and after one year the results are encouraging with 75% of fish boxes recycled in 1Q 2021. By the end of 2021 it is expected to achieve 90% recycling.
- In the decade 2009-2019 the EPS packaging sector showed a consistent growth in food applications (+2,5% CAGR), while a slight decrease (-0,9% CAGR) in “cushioning for technical and electronic appliances”, due to a more efficient packaging design aim to reduce the overall volume of white goods packaging.
- The survey does not capture the “shadow recycling” occurring of EPS cushioning packaging, which is reported as widely recycling into EPS cavity insulation as loose fill for light weight concrete and other applications. In several countries such recycling activities occur but are not included in the statistics. It is likely that EPS recycling rates for cushioning EPS would be substantially higher if this data was included.
- EPS construction waste remained stable, although it is expected to grow in the years to come, following the objectives of the European Green Deal towards climate neutrality by 2050 and the Circular Economy Action Plan promoting concrete actions towards energy efficiency in building and construction.
- Recycling rate of EPS waste from demolition is still small, but it is expected to grow thanks to the activity of the new PSLoop plant which has just started up. The Dutch plant will be able to recycle EPS demolition waste from the Netherlands, Belgium, France, Germany and Austria. The PS Loop plant and its physical recycling technology is likely to be replicated in other parts of Europe.

PERSPECTIVES FOR THE FUTURE

- Changes in the regulatory framework - landfill bans or higher fees for disposal and incineration, mandatory EPR schemes for commercial packaging, taxes and levies on non-recycled single use plastic packaging - the recycling rate for EPS waste can further increase. By 2025 several countries committed to exceed 60% recycling rate of EPS packaging waste: Portugal (89%), Norway (81%), Denmark (80%), Austria (72%), UK (68%), Ireland (67%), Netherlands and Belgium (65%), France and Germany (63%), Italy (62%). Targets far more ambitious than those of the European Commission.
- Growing environmental awareness of the population and its increasing involvement in separate waste collection systems will contribute to higher EPS collection and recovery quantities as well. But systems for separate collecting need to be installed and a separate EWC (waste code) for EPS is highly recommended by

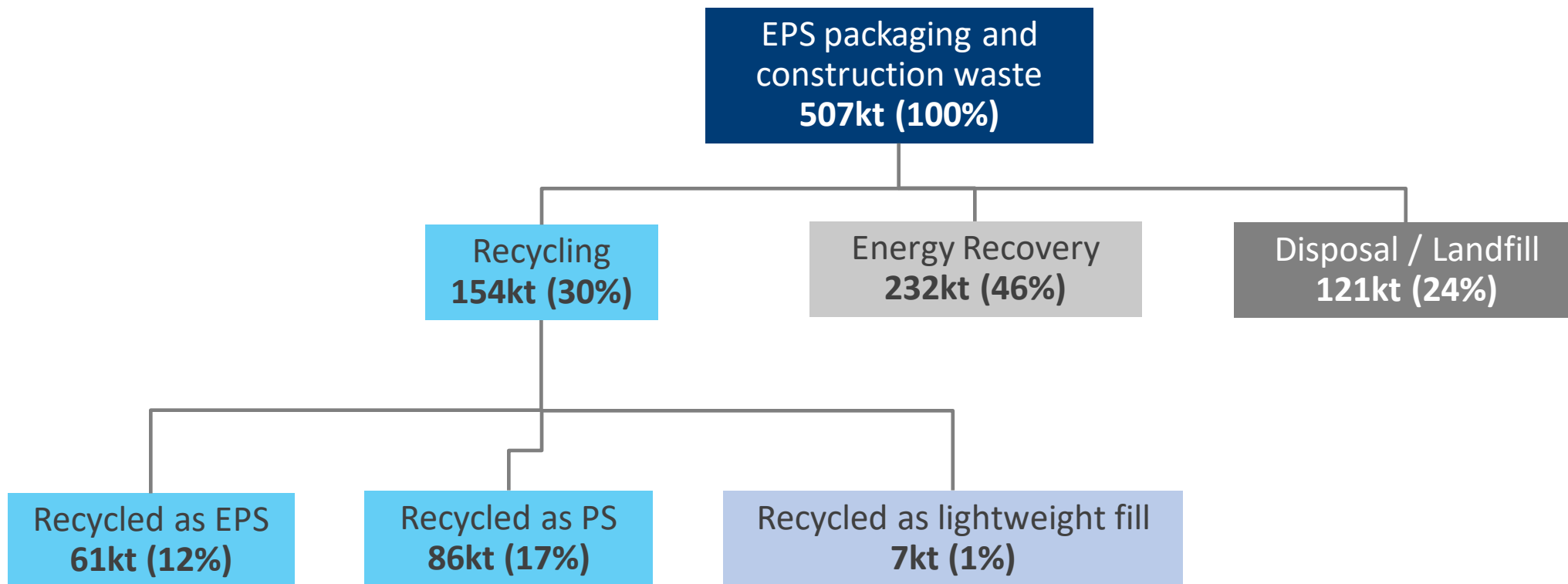
the whole industry to increase collection and recycling rates.

- **Mostly EPS packaging waste is a clean material that can be well separated from other substances.**
- EPS packaging waste was the driver of EPS recycling in 2019 and will be the crucial factor in future.
- EPS waste from construction will also be collected and recycled at much higher rates, thanks to new dissolution technologies that allow recycling of EPS containing the HBCD flame retardant. The PSLoop pilot plant in the Netherlands was inaugurated on 16 June 2021 and will recycle up to 3.300 tonnes of EPS waste from construction and demolition sites.

SUMMARY AT A GLANCE

- Positive development of EPS waste collection and recovery
- Several projects have been developed in the last years to increase recycling activity and quality of the recyclates.
- A positive trend is evident. In comparison of European EPS waste in 2009, the generated and collected waste increased every year.
- In Portugal, Norway, Denmark, Netherlands, UK, Austria, Belgium and Ireland recycling of EPS packaging already exceeds 50%. They have already met the EU Commission target for 2025.
- Total recycling rate 2019 for EPS waste in Europe 30%
- 38% for post-consumer packaging applications, 10% for EPS in construction
- Since data are collected from Conversio (2017) and from National Associations (2019), and assuming linear progressing, then best assessment for the recycling rate of EPS post-consumer packaging waste in 2021 is at least 37,3%. Based on recycling projects undertaken in 2019-2021 a linear progression seems very likely.

Recovery and disposal streams of EPS packaging and construction waste 2019

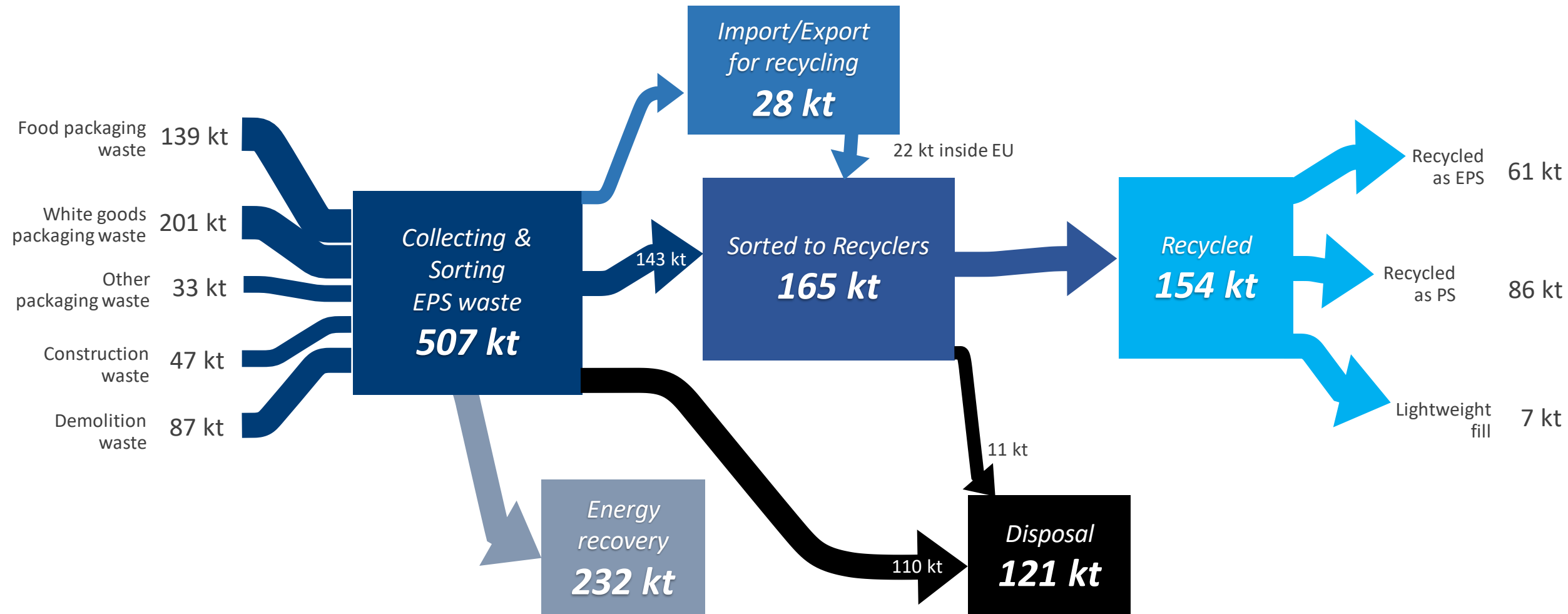


European summary

Sankey diagram

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European summary

EPS waste

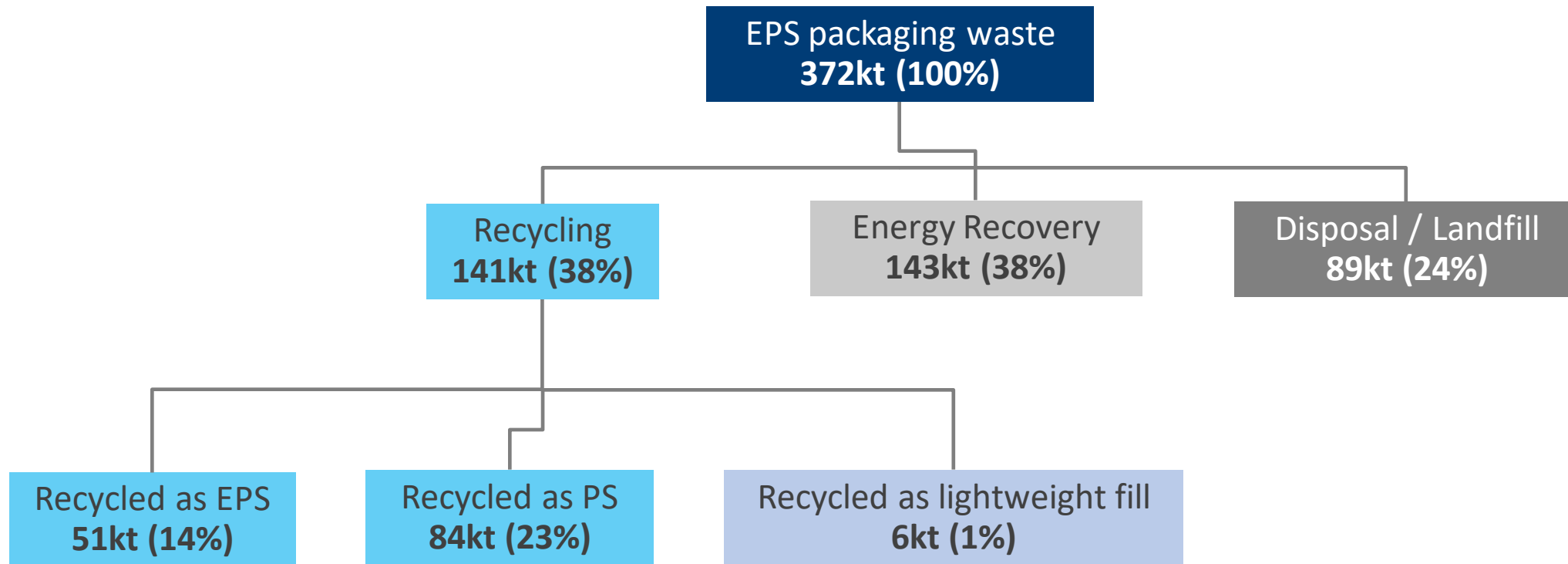
EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	372,2	73,4%	50,7	84,4	5,5	37,8%	142,7	88,9
EPS Construction	135,0	26,6%	10,5	1,2	1,3	9,6%	89,3	32,7
TOTAL	507,2	100%	61,2	85,6	6,8	30,3%	232,0	121,6
			12,1%	16,9%	1,3%		45,7%	24,0%

- Regarding total EPS waste the largest share of collected waste is generated by the packaging application in Europe.
- Over 30% of EPS is recycled, 46% is recovered energetically (with a major contribution from the EPS construction waste, 2/3 of which being incinerated) and 24% is still landfilled.

European summary

EPS packaging waste stream

Recovery and disposal streams of EPS packaging waste 2019



JRC supports the results from EUMEPS and Conversion. JRC wrote the following on EPS/PS recycling rates:

"For example, for the polystyrene and expanded polystyrene stream, stakeholders reported higher recycling rates (a midrange recycling rate of 40% for polystyrene and expanded polystyrene.)"

The EPS-industry's journey towards circularity

European summary

EPS packaging waste

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	164,4	44,2%	24,9	15,1%
EPS Commercial Packaging	207,8	55,8%	115,7	55,7%
TOTAL	372,2	100%	140,6	37,8%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	139,3	37,4%
EPS White Goods Packaging	200,5	53,9%
Others	32,4	8,7%
TOTAL	372,2	100%

- Commercial Packaging waste is recycled at above 55%, while recycling rate for Household Packaging waste is much lower due to lack of separate sorting and collection. A separate waste code (EWC) for EPS is an easy way step towards increasing the recycling rate of Household waste.
- EPS Food applications represent 37% of Packaging waste, but its share has grown consistently in the last few years, while White Goods protective packaging (54%) is slightly decreasing both in quantities and as percentage. This is to a large extent due to even more effective packaging designs, reducing the overall volume of the EPS packaging.

European summary

EPS fish box recycling

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HIGH RECYCLING RATES IN SEVERAL COUNTRIES

In many European countries EPS fish boxes are recycled at very high rates: Norway, Denmark, Greece and the Netherlands recycle 90% of their fish box waste.

A GOOD STORY FROM PORTUGAL

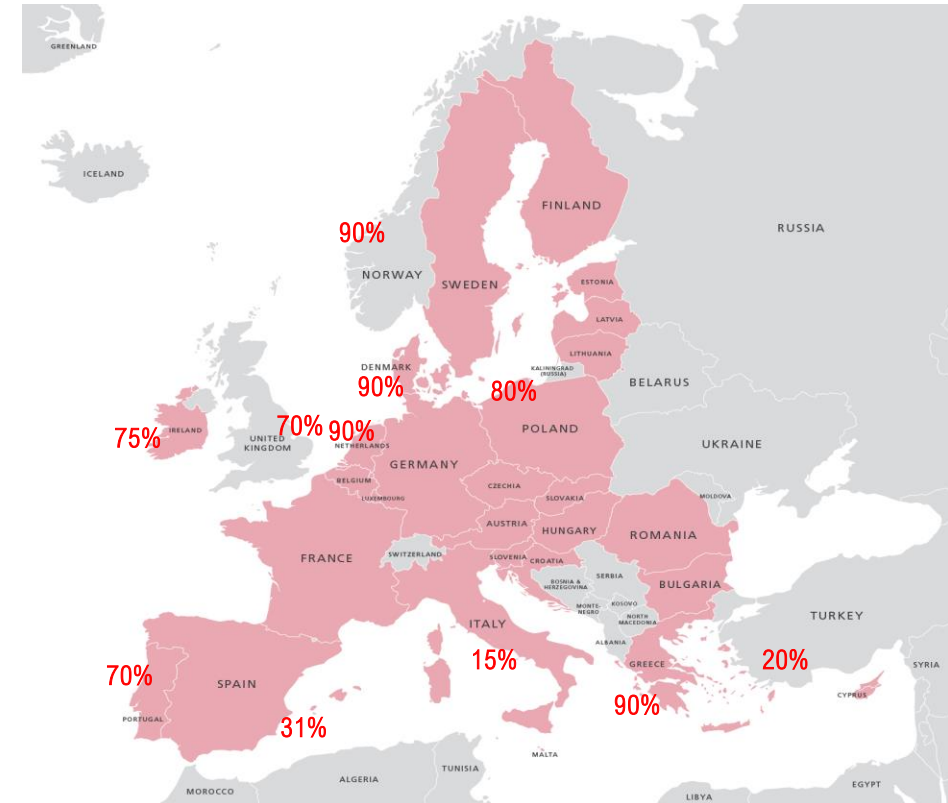
In 2020 in Portugal, a national project was launched with the cooperation of all the stakeholders of the fishery and recycling industry; the objective was to collect and recycle more than 90% of the EPS fish boxes from all Portuguese harbours, by the end of 2021. After 12 months (December 2020) recycling rate had already achieved 70% and growing.

NORWAY RECYCLES 90% OF ITS EPS FISH BOX WASTE

Norway has set up an extremely efficient system of collecting and sorting, and most of the EPS waste is exported to European recyclers.

COOPERATION IN ITALY BETWEEN AIPE AND FEDERPESCA

In Italy, AIPE – the Italian EPS Manufacturers Association – has signed an agreement with Federpesca (the Italian Federation of Fishboat Owners) to start recycling projects in different harbours and fish markets; this will allow in the near future to increase substantially the recycling rate of EPS fish boxes.



EPS fishbox recycling rates in some European countries according to data reported by National Associations (2020).

European summary

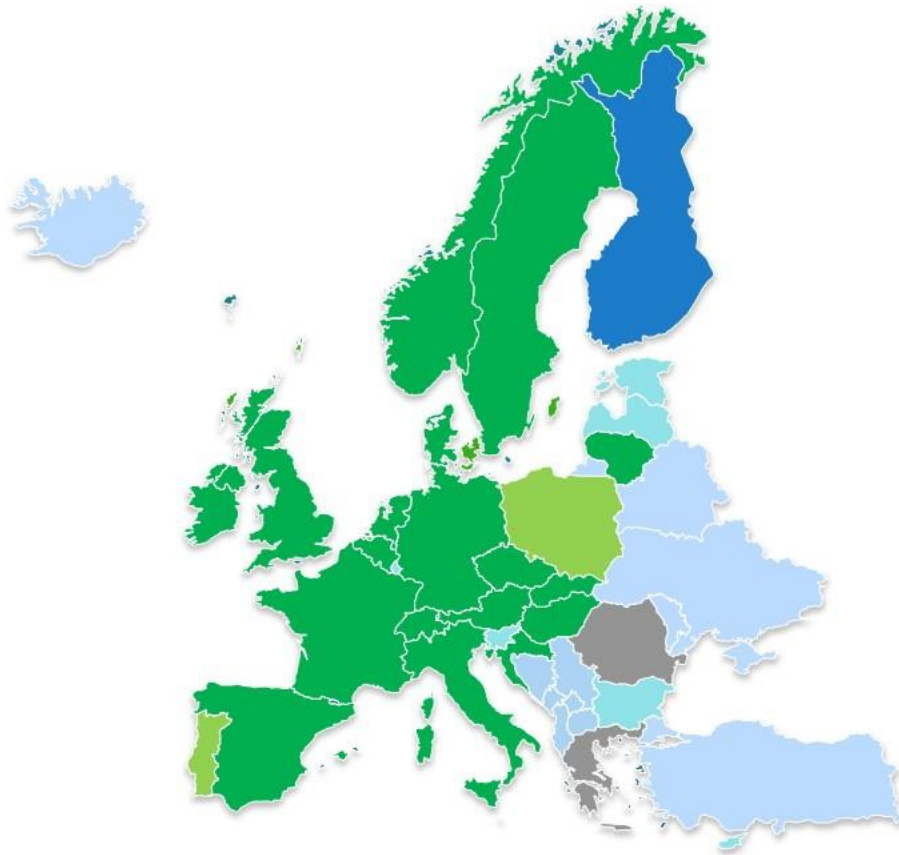
EPS household waste collected and recycled in most European countries in 2022

EPS HOUSEHOLD WASTE COLLECTED AND RECYCLED IN MOST EUROPEAN COUNTRIES IN 2022.

Countries with EPS collection for recycling at the local/ municipal level.

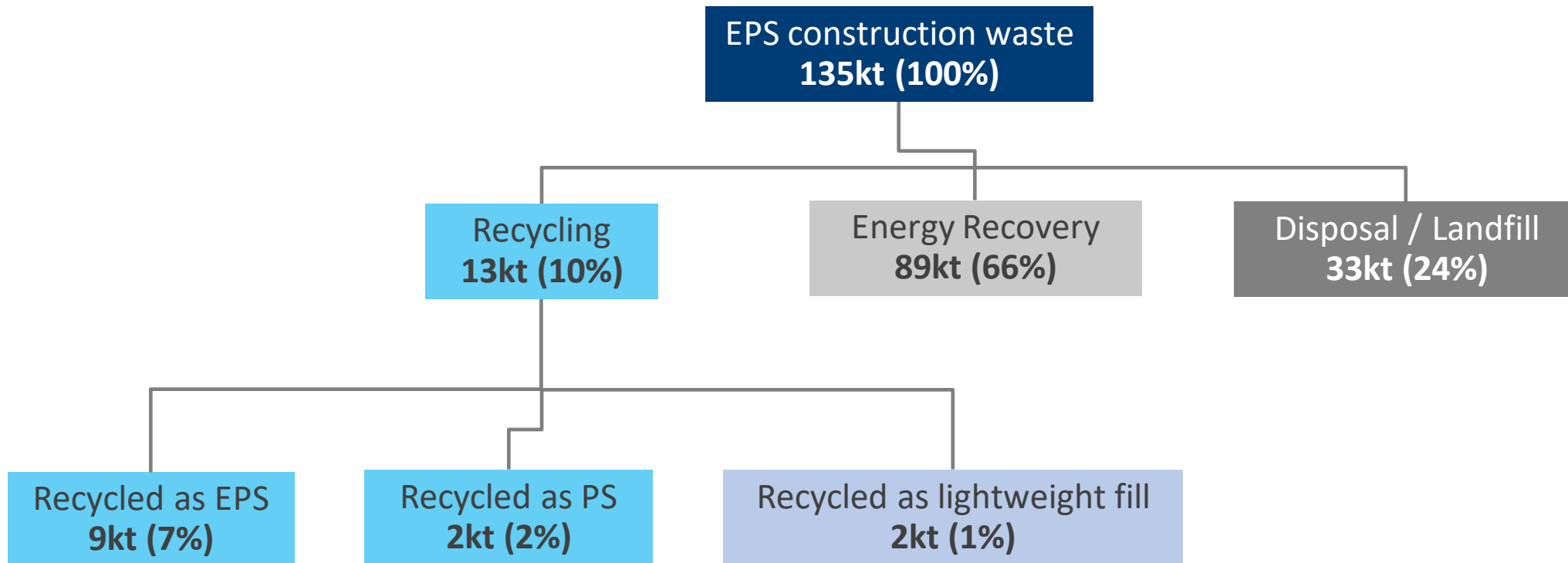
We have been able to map 21 out of 27 EU countries in 17 of those EPS household packaging is documented to be recycled at some level.

15 EU countries, UK and 2 from EEA have collection points & Eco-Islands that collect EPS for recycling. Some have mixed plastic collection with recycling as well.



Colour	Description
Dark Green	Household recycling occurs via collection points
Light Green	Household collection via mixed plastic, with some recycling
Blue	Collected, but not recycled
Grey	EU - no Household recycling confirmed.
Cyan	EU – no EUMEPS members, mapping not possible.
Light Blue	Not mapped (not EU or no EUMEPS member)

Recovery and disposal streams of EPS construction waste 2019



European summary

EPS construction waste

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	46,9	34,7%	11,8	25,2%
EPS Demolition waste	88,1	65,3%	1,2	1,4%
TOTAL	135,0	100%	13,0	9,6%

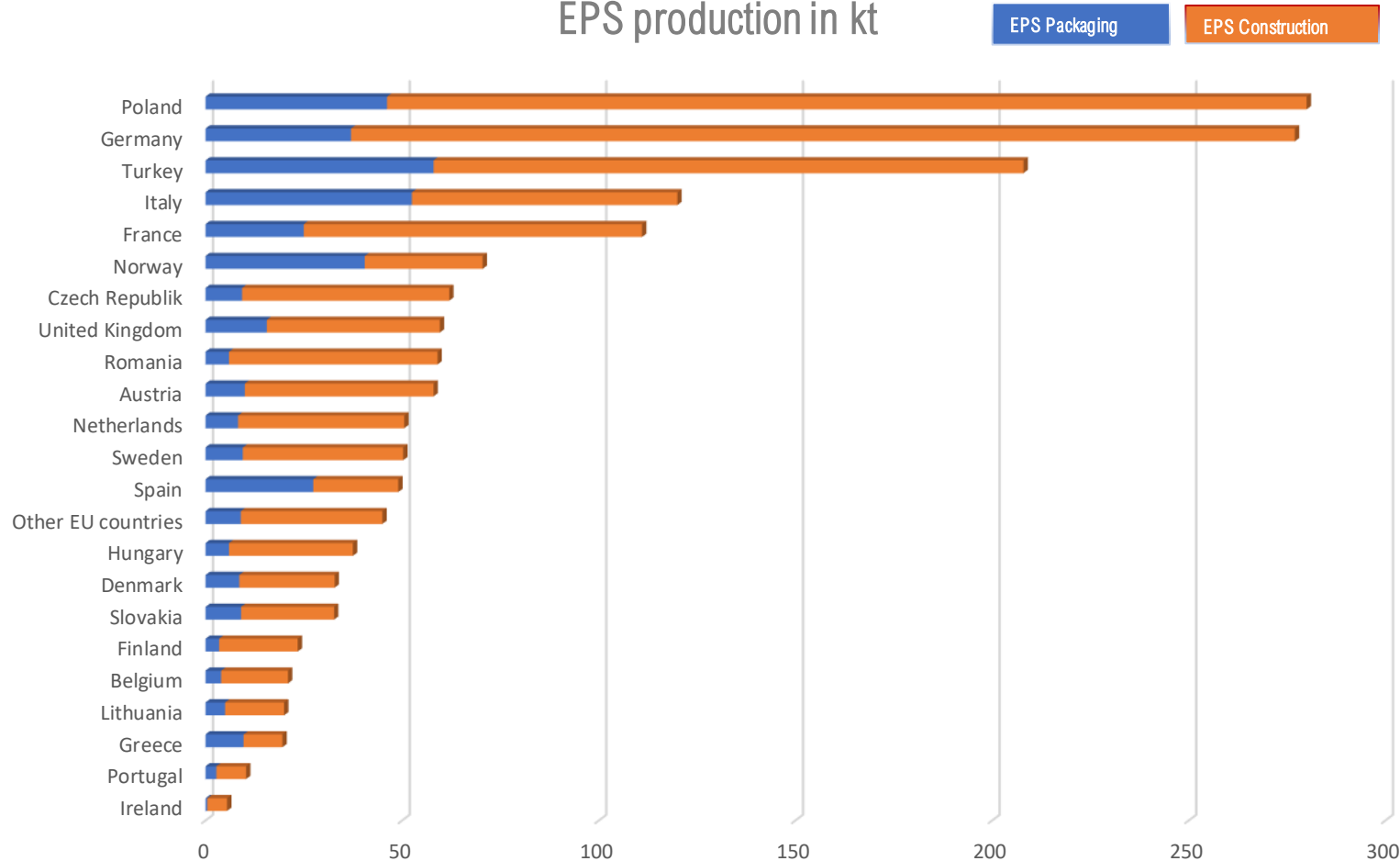


- Compared to packaging waste the amount of EPS Construction waste is significantly lower.
- Most of the collected construction waste is from demolition. However demolition waste is often collected in mixed waste streams; the recycling rate (~1,4%) is very low, but it is likely to grow soon thanks to the PSLoop plant, inaugurated on 16 June 2021, that will recycle EPS demolition waste containing HBCD. Once demonstrated the full potential of this recycling technology, other similar plants are likely to start up across Europe.
- Otherwise, the installation waste (clean waste) can be recycled quite well (~25%). Therefore, almost all recycling amounts are derived from EPS installation waste. The EPS construction recycling rate is ~10% in total.

European summary

EPS production by country

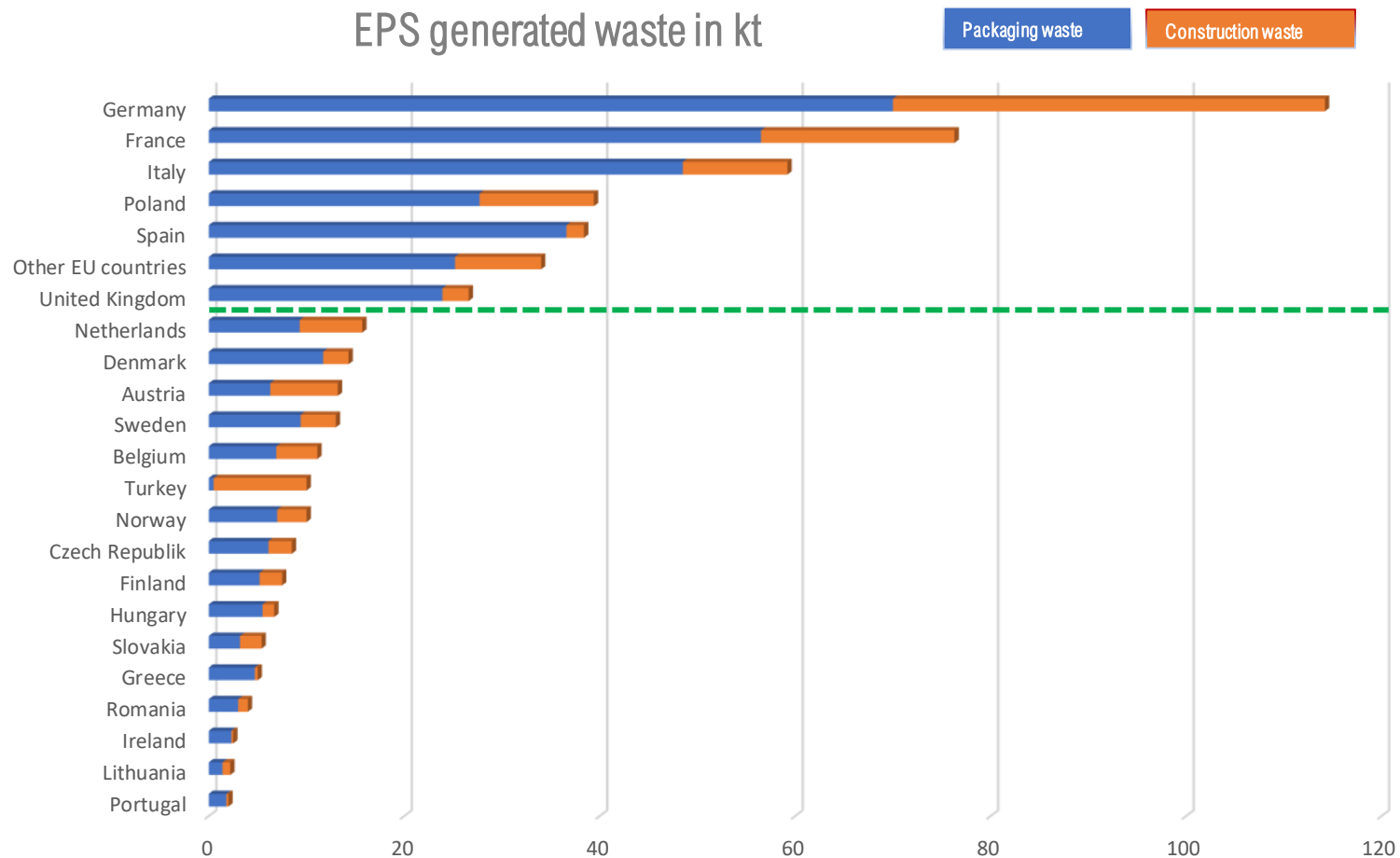
EPS production in kt



- The blue part of the histogram shows the quantity of EPS produced for packaging; the orange part for construction.
- Norway and Spain are the only countries where the production of EPS for Packaging is bigger than Construction.
- Ireland, Romania and Germany are the countries where EPS for Construction has the highest ratio vs EPS for Packaging.

European summary

EPS waste generated by country in kt

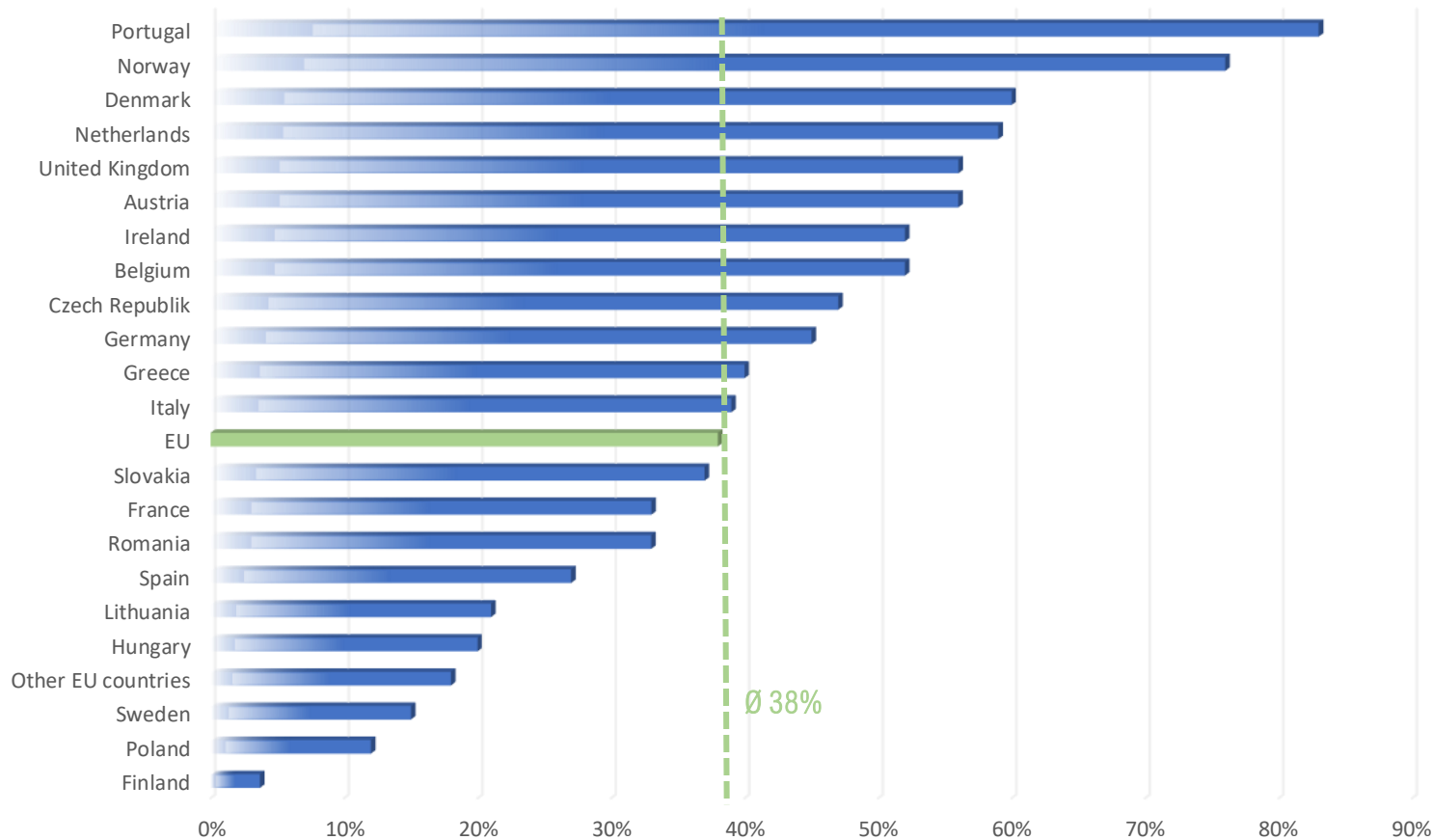


- The graph shows a comparison of the total generation of post-consumer EPS waste 2019 in the focus countries.
- More than 2/3 of the entire EPS waste was generated by the first 6 countries.
- Germany dominates the EPS generation market with 114 kt, followed by France (76kt), Italy (59kt) and Poland (39kt).

European summary

Recycling rate of EPS packaging waste per country

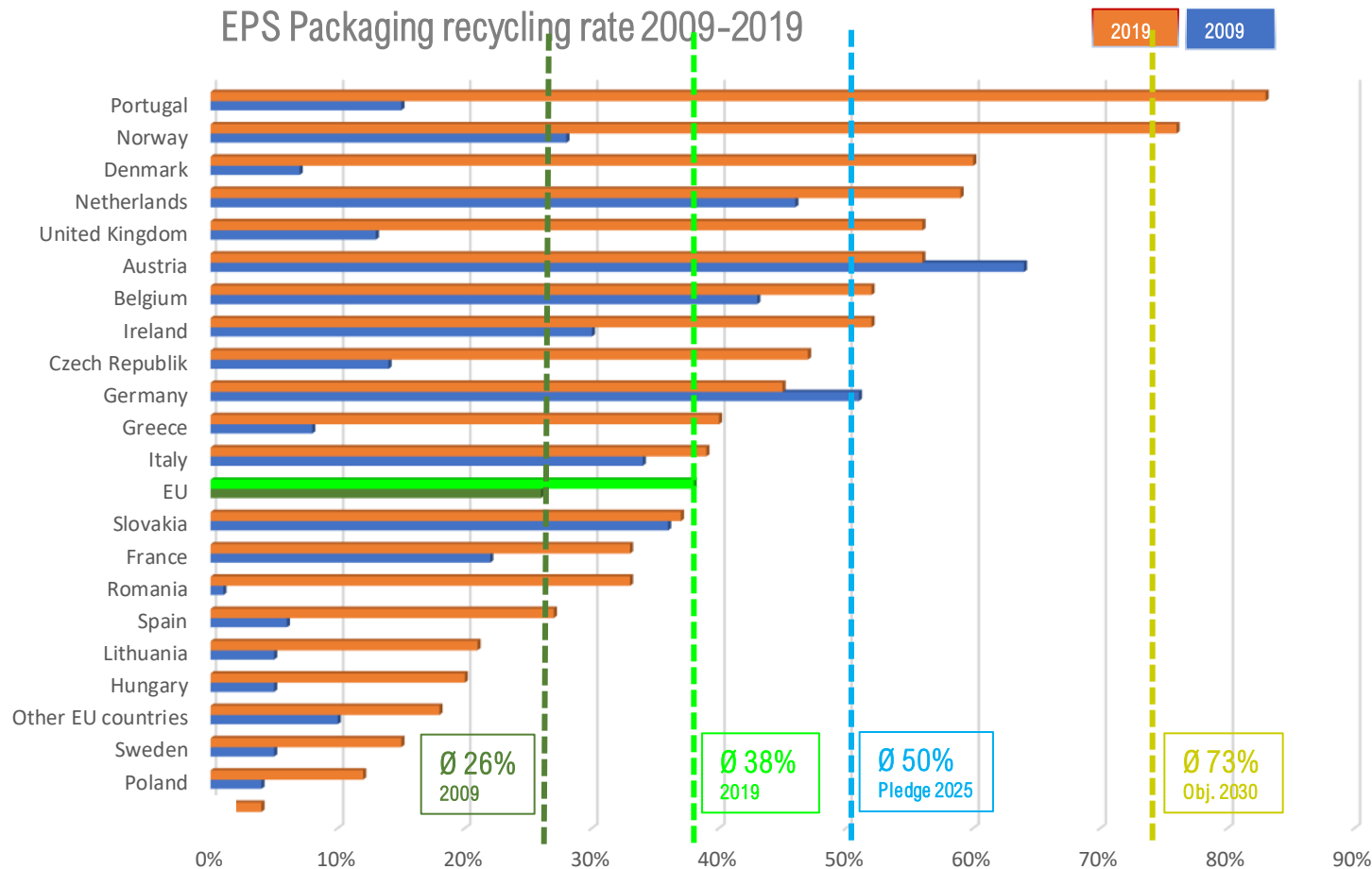
EPS PACKAGING RECYCLING RATE



- The figure shows the total recycling rate of EPS packaging waste 2019 per focus country.
- 12 of the first countries recycled more than the EU average.
- Portugal, Norway, Denmark, Netherlands, UK, Austria, Ireland and Belgium have a recycling rate above 50%.
- The European average of recycling is about 38%.

European summary

EPS packaging recycling rate 2009-2019

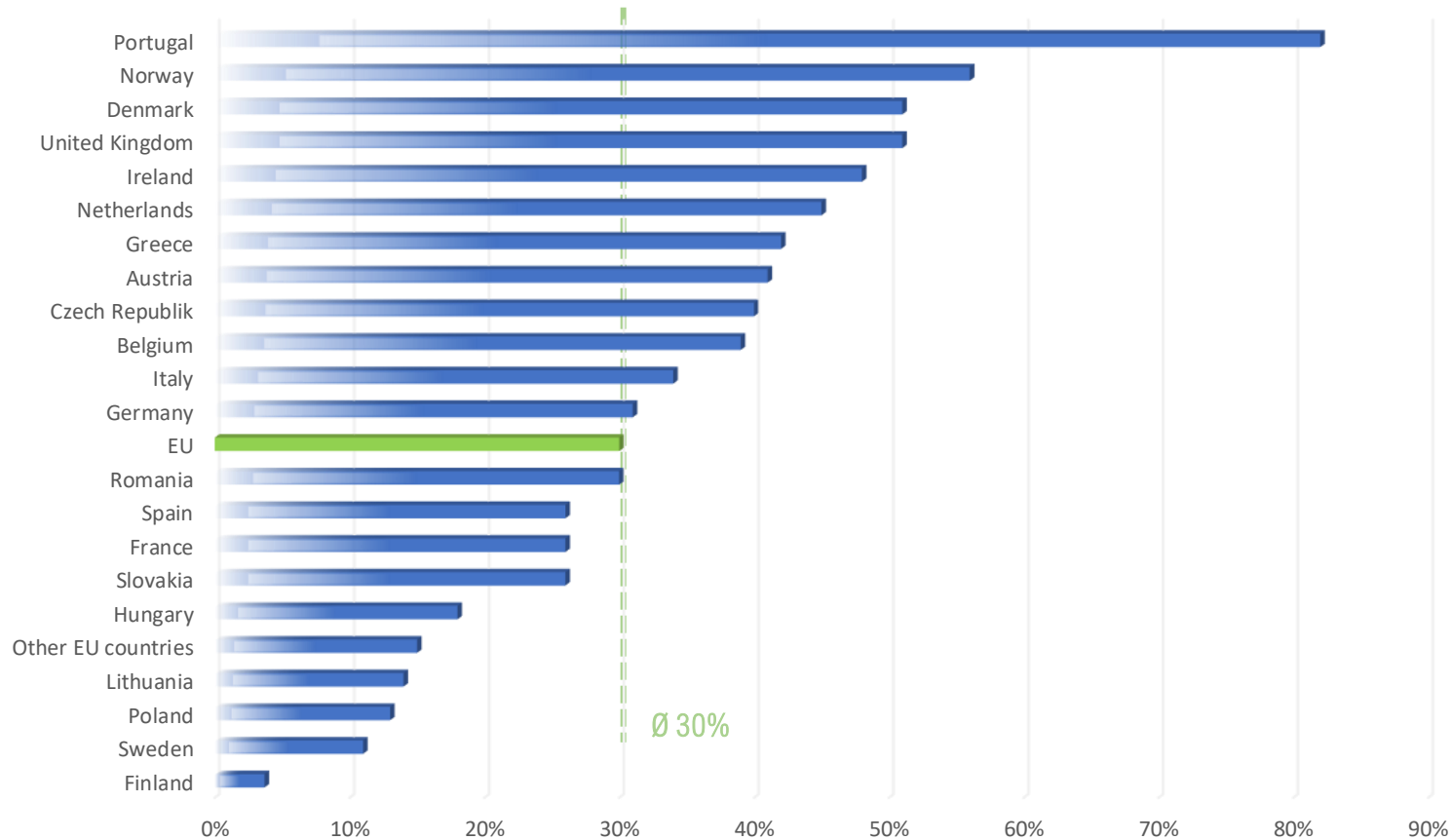


- The recycling rate of EPS Packaging waste raised from 26% to 38% in the last decade.
- In 2009 only 5 countries assessed a percentage higher than 35%; in 2019 this rate had been achieved by 13 countries.
- By 2025 EUMEPS pledged to recycle 50% of EPS Packaging waste.
- EPS Packaging value chain recognizes that there is a need to aim more ambitiously to achieve recycling rates similar to main alternative materials. 73% is seen as a target for 2030 with Austria, Denmark, Ireland, Norway, Portugal, Turkey and the UK targeting over 80%.

European summary

Recycling rate of EPS waste per country

EPS RECYCLING RATE

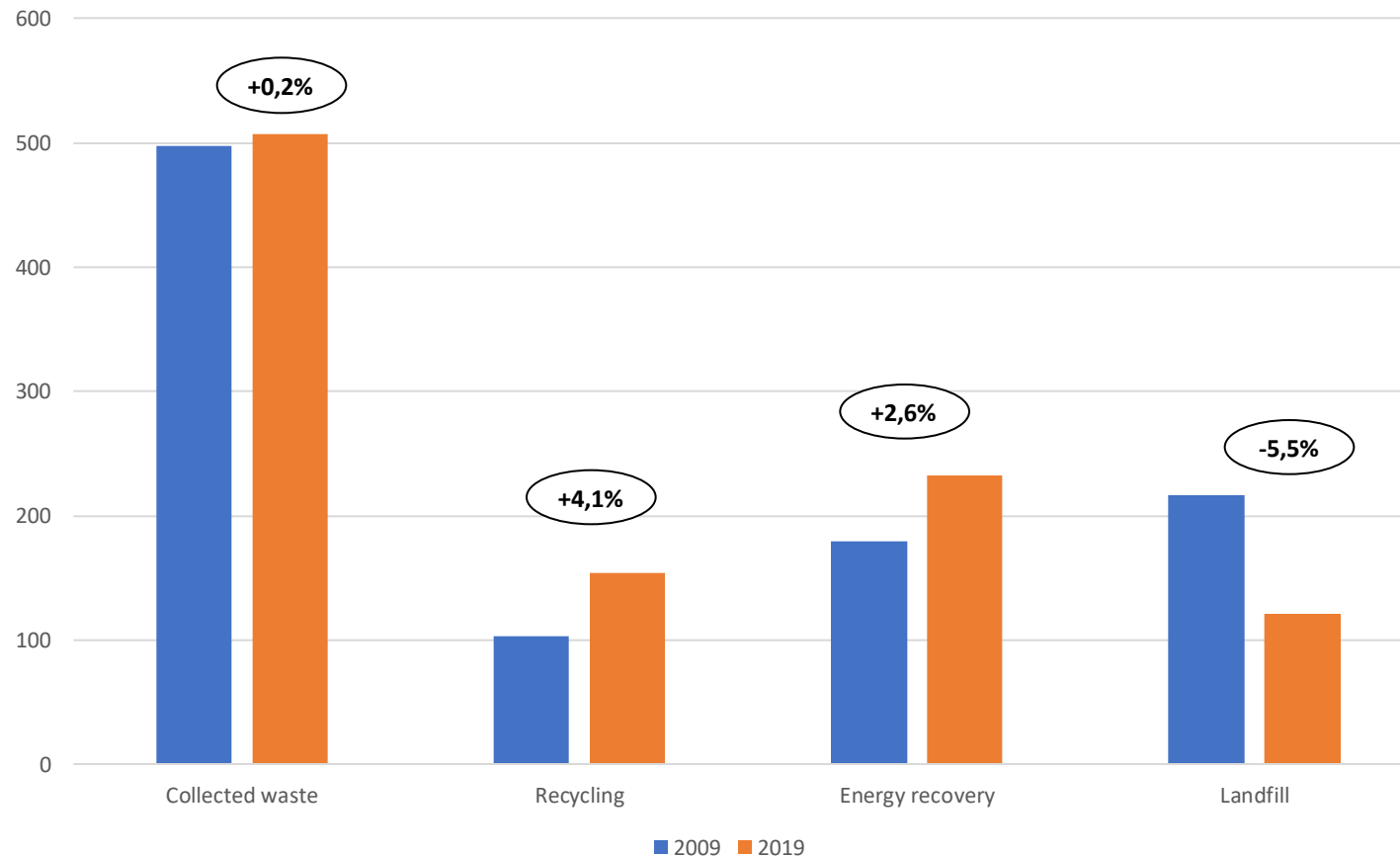


- The figure shows the total recycling rate of EPS waste 2019 per focus country.
- 12 of the first countries recycled more than the EU average.
- The European average of recycling is about 30%.

European summary

EPS waste stream flow – Comparison 2009-2019 (yearly variation rate)

Waste stream flow 2009-2019

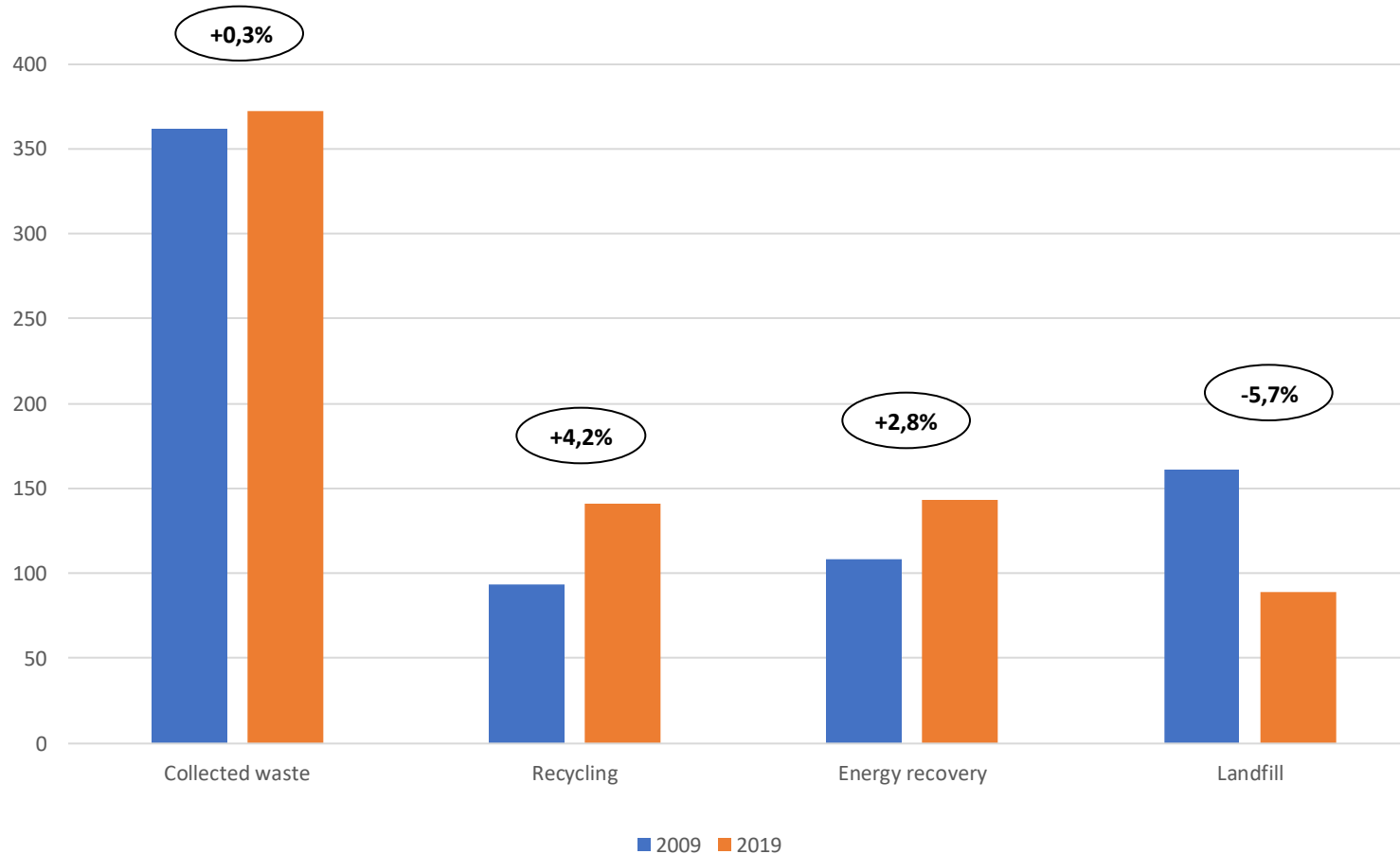


- The graph shows the comparison of total EPS waste from 2009 to 2019 in the EU.
- The total amount increased in the decade by around +0,2% per year.
- Recycling (as EPS, PS and lightweight concrete) had the highest yearly increase (+4,1%), with energy recovery at +2,6%. The survey does not capture the “shadow recycling” occurring of EPS cushioning packaging, reported as widely recycled as loose fill for light weight concrete and other applications. In several countries such recycling occurs but is not included in the statistics. It is likely that EPS recycling rates for cushioning EPS would be substantially higher if this data was included.
- Disposal dropped by -5,5% yearly.

European summary

EPS packaging waste stream flow – Comparison 2009-2019 (yearly variation rate)

Packaging waste flow 2009-2019

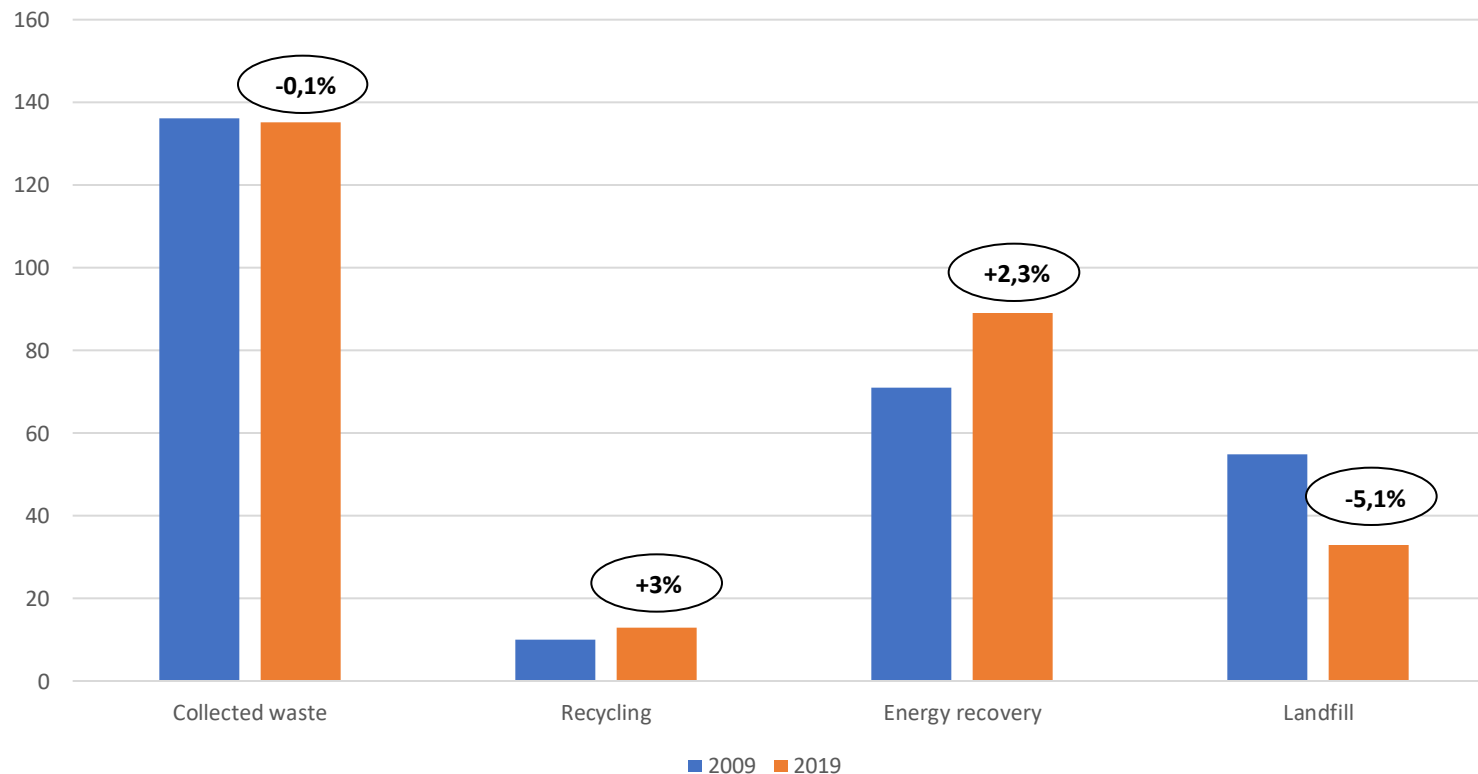


- The graph shows the comparison of total packaging EPS waste flow in the EU.
- On the packaging side the amount of waste increased by +0,3% annually from 2009 to 2019.
- The recycling (EPS, PS and lightweight concrete) had a significant growth of +4,2% per year (from 93kt to 141kt).
- Energy recovery increased by 2,8% per year (from 108kt to 143kt).
- The amount of disposal decreased from 161kt in 2009 to 89kt.

European summary

EPS construction waste stream flow – Comparison 2009-2019 (yearly variation rate)

Construction waste flow 2009-2019



- The graph shows the comparison of total construction EPS waste flow in the EU.
- In construction the amount of waste slightly decreased from 136kt to 135kt.
- The recycled quantity is still fairly low, but raised from 10kt to 13kt.
- On 16 June 2021 PSLoop plant in the Netherlands has become operative and this will give a push towards recycling.
- The amount of disposal decreased by 5,1% each year of the decade.

European summary

EPS waste stream flow – Comparison 2009-2019 (yearly variation rate)

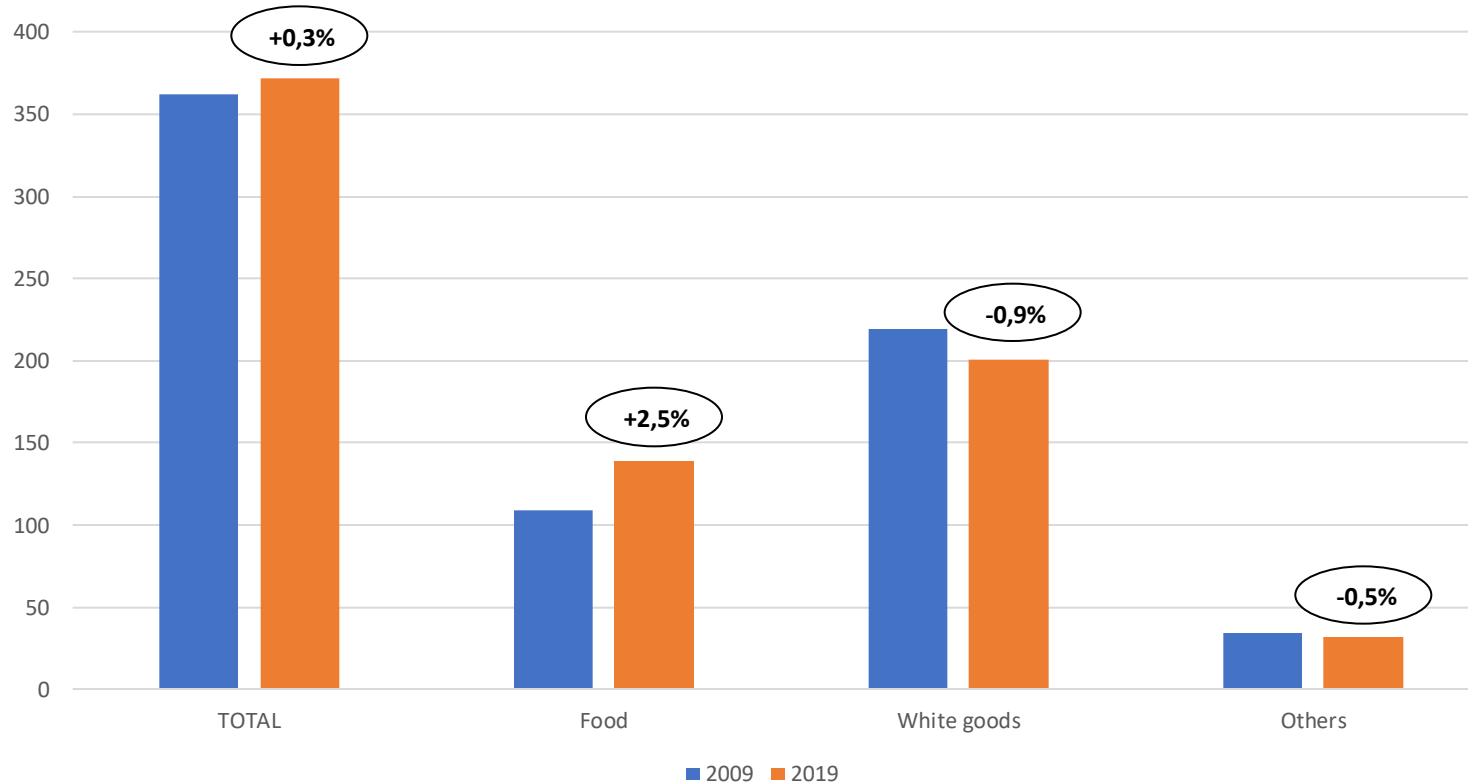
EPS waste 2019	EPS waste		Recycling in kt						Energy Recovery in kt		Disposal in kt	
	kt	CAGR 2019-2009	Recycl. as EPS	CAGR 19-09	Recycl. as PS	CAGR 19-09	Rec. as light fill	TOTAL Recycling	Total	CAGR 19-09	Total	CAGR 19-09
EPS Packaging	372,2	+0,3%	50,7	-0,4%	84,4	+7,8%	5,5	140,6	142,7	+2,8%	88,9	-5,7%
EPS Construction	135,0	-0,1%	10,5	+1,6%	1,2	-0,8%	1,3	13,0	89,3	+2,3%	32,7	-5,1%
TOTAL	507,2	+0,2%	61,2	-0,1%	85,6	+7,5%	6,8	153,6	236,0	+2,6%	121,6	-5,5%

- Definition of CAGR: Compound Annual Growth Rate.
- The table shows that the growth of EPS waste by 0,2% per year was mainly caused by the increase of EPS packaging waste (~0,3%).
- Energy recovery grew by ~2,6%.
- The decrease of disposal (~5,5%) is similar for EPS packaging and construction waste.

European summary

EPS packaging waste per application – Comparison 2009-2019 (yearly variation rate)

EPS Packaging applications (2009-2019)



- The graph shows the comparison of packaging EPS waste 2009 to 2019 in the EU by application.
- While the application of “technical appliances” and “others” have slightly decreased, the “food transportation” market increased significantly by +2,5% per year, due to higher usage of fish boxes.
- Food application allowed a steady growth of EPS for packaging in the last decade.

EUMEPS Pledge

Pathway towards the Pledge

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2019

EPS collected: 507.200 tons

EPS recycled: 153.600 tons (30%)

2025

560.000 tons

257.000 tons (46%)

EPS packaging waste collected: 372.200 tons

EPS packaging recycled : 140.600 tons (38%)

370.000 tons

185.000 tons (50%)

EPS construction waste collected: 135.000 tons

EPS construction recycled: 13.000 tons (10%)

190.000 tons

72.000 tons (38%)

Pathway towards EUMEPS Pledge

EPS waste

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Year	EPS waste collected in kt	Variation %	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
2019	507,2	-1,4%	153,6			30,3%	232,0	121,6
2020	484,4	-4,5%	148,7			30,7%		
2021	498,9	+3,0%	169,4			34,0%		
2022	513,9	+3,0%	194,7			37,9%		
2023	526,4	+2,4%	220,5			41,9%		
2024	536,4	+1,9%	248,4			46,3%		
2025	545,5	+1,7%	278,7			51,1%	stable as %	towards zero

- The 2020-2025 data is based on an estimated trend, considering the effects of the Covid-19 pandemic.
- The Recycling target is slightly above the EUMEPS Pledge based on the sum of the responses provided by the Member States according to the Breakdown of the Pledge by country.
- Recycling activity should focus on circularity with a progressive growth of EPS waste becoming EPS (as first choice) or GPPS, to allow closed loop. Recyclates used as lightweight fill should progressively decrease (open loop).
- Considering that “zero landfill” is an objective of the EPS industry, the percentage of EPS waste being incinerated should remain stable until 2025, with likely decrease in following years.

Pathway towards EUMEPS Pledge

EPS packaging waste

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Year	EPS Packaging waste collected in kt	Variation %	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
2019	372,2	-1,6%	140,6			37,8%	142,7	88,9
2020	355,5	-4,5%	133,0			37,4%		
2021	366,2	+3,0%	150,1			41,0%		
2022	377,2	+3,0%	170,5			45,2%		
2023	386,3	+2,4%	190,4			49,3%		
2024	393,6	+1,9%	213,9			54,3%		
2025	400,3	+1,7%	237,8			59,4%	stable as %	towards zero

- The 2020-2025 data is based on an estimated trend, considering the effects of the Covid-19 pandemic.
- The Recycling target is substantially above the EUMEPS Pledge, both in percentage (59,4% vs 50%) and in quantity (237,8kt vs 185kt), based on the sum of the responses provided by the Member States on the Breakdown of the Pledge by country.
- Recycling activity should focus on circularity, with a progressive growth of EPS waste becoming EPS (as first choice) or GPPS, to allow closed loop. Recyclates used as lightweight fill should progressively decrease (open loop).
- Considering that “zero landfill” is an objective of the EPS industry, the percentage of EPS waste being incinerated should remain stable until 2025, with likely decrease in following years.

Pathway towards EUMEPS Pledge

EPS construction waste

CONVERSIO
Market & Strategy

Year	EPS Construction waste collected in kt	Variation %	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
2019	135,0	-0,7%	13,0			9,6%	89,3	32,7
2020	128,9	-4,5%	15,7			12,2%		
2021	132,8	+3,0%	19,3			14,5%		
2022	136,8	+3,0%	24,2			17,7%		
2023	140,1	+2,4%	30,1			21,5%		
2024	142,8	+1,9%	34,5			24,2%		
2025	145,2	+1,7%	40,9			28,2%	stable as %	towards zero

- The 2020-2025 data is based on an estimated trend, considering the effects of the Covid-19 pandemic.
- The Recycling target is substantially below the EUMEPS Pledge both in percentage (28,2% vs 38%) and quantity (40,9kt vs 72kt), based on the sum of the responses provided by the Member States on the Breakdown of the Pledge by country.
- The EPS industry strongly relies upon the result of the PSLoop plant in the Netherlands (3,3kt per year) and the possibility to replicate the project in other territories across Europe.
- Considering that “zero landfill” is an objective of the EPS industry, the percentage of EPS waste being incinerated should remain stable until 2025, with likely decrease in following years.

EUMEPS Pledge

Europe



CONVERSIO
Market & Strategy

EPS waste 2019	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	372,2	73%	50,7	84,4	5,5	38%	142,7	88,9
EPS Construction	135,0	27%	10,5	1,2	1,3	10%	89,3	32,7
TOTAL	507,2	100%	61,2	85,6	6,8	30%	232,0	121,6
			12%	17%	2%		46%	24%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	400,3	73%	237,8			59%	slight growth	towards zero
EPS Construction	145,2	27%	40,9			28%	slight growth	towards zero
TOTAL	545,5	100%	278,7			51%	steady as %	towards zero

- In 2018 EUMEPS signed a pledge to increase recycling activity on EPS waste. EUMEPS committed to recycle 257kt of EPS waste (46% of the collected waste) by 2025, with the following split: 185kt (50%) of EPS Packaging waste and 72kt (38%) of EPS Construction waste.
- Based on the data collected in 2020, it is likely that recycling target on Packaging waste will be exceeded, while it will be more difficult to reach it on Construction waste because of the longer life cycle of such category.
- **Overall, the recycling target is above the EUMEPS Pledge** both as a percentage (51% vs 46%) and as quantity (278,7kt vs 257kt), based on the sum of the responses provided by the Member States on the Breakdown of the Pledge by country.
- There are no objectives for Energy Recovery and Landfill, but since disposal must go to zero in the future, it is likely that incineration will slightly grow even in the next years.

Breakdown by country

Austria



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	6,3	48%	3,6	0,0	0,0	56%	2,8	0,0
EPS Construction	6,9	52%	1,8	0,0	0,0	26%	4,9	0,1
TOTAL	13,2	100%	5,4	0,0	0,0	41%	7,7	0,1
			41%	0%	0%		58%	1%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	6,8	48%	4,9			72%	decrease	0,0
EPS Construction	7,4	52%	3,1			42%	decrease	0,0
TOTAL	14,2	100%	8,0			56%	decrease as %	0%

- Data are mostly based on Conversio 2018.
- The Austrian EPS Association (GPH) is aware that a considerable share of EPS waste is recycled open loop (lightweight fill). To implement Circular Economy a Task Force with all major stakeholders (National Association, Converters, Raw Material Producer, Retailers, Brand Owners, Waste Management Organizations, Recyclers...) was set up and a project was drafted to reach the target by the end of 2025.
- Landfill is banned in Austria.

Breakdown by country

Austria – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	3,8	61%	2,1	55%
EPS Commercial Packaging	2,5	39%	1,5	60%
TOTAL	6,3	100%	3,6	56%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,8	28%
EPS White Goods Packaging	4,0	64%
Others	0,5	8%
TOTAL	6,3	100%

- Ca. 1,200 recycling centers operated by municipalities and waste management associations are responsible for the recycling of household and commercial packaging waste. Some of the EPS waste is collected separately by these collection points.
- Most of the EPS waste is collected in the yellow bin and recycling centres.
- Often the EPS packaging waste is recycled for secondary use in constructions.

Breakdown by country

Austria – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,8	26%	1,6	89%
EPS Demolition waste	5,1	74%	0,2	4%
TOTAL	6,9	100%	1,8	41%

- Only clean EPS material without contamination (e.g. especially cuttings and roof insulation to a little extent) is recycled.
- As disposal is not allowed in Austria most of the EPS construction waste is energy recovered.
- The EPS industry is studying solutions to increase recycling rate of EPS waste from demolition. The experience of the PSLoop plant in the Netherlands is followed closely as a possible solution to this issue.

Breakdown by country

Belgium



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	6,9	62%	3,3	0,3	0,0	52%	3,3	0,0
EPS Construction	4,2	38%	0,6	0,1	0,0	17%	2,9	0,6
TOTAL	11,1	100%	3,9	0,4	0,0	39%	6,2	0,6
			35%	4%	0%		56%	5%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	7,4	64%	4,8			65%	decrease	0,0
EPS Construction	4,2	36%	1,7			40%	decrease	0,0
TOTAL	11,6	100%	6,5			56%	decrease as %	0%

- Data are based on Conversio 2018.
- Energy recovery is expected to slightly decrease as the disposal is already very close to zero and recycling will grow both in Packaging and Construction.
- Landfill is banned in Belgium.

Breakdown by country

Belgium – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	3,8	55%	1,0	26%
EPS Commercial Packaging	3,1	45%	2,6	84%
TOTAL	6,9	100%	3,6	52%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,3	19%
EPS White Goods Packaging	5,1	74%
Others	0,5	7%
TOTAL	6,9	100%

- One of the major players Fost Plus is organizing the collection and recycling of household packaging in Belgium.
- Besides VAL-I-PAC, an EPR system for trade and industry packaging in Belgium is in charge of EPS collection and recycling. The company collaborates with around 220 waste management companies.
- EPS collectors represent 74% of the EPS-market (tonnage), but only 4% of the waste collectors are specialized in the collection of EPS.

Breakdown by country

Belgium – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,8	19%	0,6	75%
EPS Demolition waste	3,4	81%	0,1	3%
TOTAL	4,2	100%	0,7	17%

- Almost 70% of EPS Construction waste is incinerated.
- The proximity of the PSLoop plant should help Belgium increase the recycling rate of EPS Construction waste and exceed the EUMEPS Pledge target of 38%.

Breakdown by country

Czech Republic



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	6,1	71%	0,6	1,2	1,1	47%	2,4	0,8
EPS Construction	2,4	29%	0,3	0,1	0,1	21%	0,9	1,0
TOTAL	8,5	100%	0,9	1,3	1,2	40%	3,3	1,8
			11%	15%	14%		39%	21%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	6,6	73%	4,1			62%	steady	towards zero
EPS Construction	2,5	27%	1,0			40%	increase	towards zero
TOTAL	9,1	100%	5,1			56%	steady as %	towards zero

- The tonnes of EPS construction waste aimed to incineration is likely to increase in the next years while the objective is reducing drastically the landfilled quantity.
- EPS packaging contributes by far to the waste generated in the Czech Republic.
- The recycling pathway must aim more decisively towards close loop (EPS or GPPS), reducing waste recycled as lightweight fill. This would allow a faster transition towards circularity, with a greater quantity of recyclates available as secondary raw material in (E)PS applications.

Breakdown by country

Czech Republic – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	1,8	30%	0,6	33%
EPS Commercial Packaging	4,3	70%	2,3	67%
TOTAL	6,1	100%	2,9	47%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	0,3	19%
EPS White Goods Packaging	5,5	74%
Others	0,3	7%
TOTAL	6,1	100%

- The packaging scheme EKO-KOM is responsible for packaging waste management (including EPS) in Czech Republic. EKO-KOM has contracts with most municipalities in Czechia for the collection of household packaging waste. One of the most problematic aspects of EKO-KOM is the fact that this organization lacks transparency in many key aspects - including the provision of precise data to public, professionals or its own clients.
- In Czech Republic there are national plastics collecting systems with yellow containers for the public and collecting points for companies. Companies have to pay for all packaging to EKO-KOM.
- The problem is that there are no collection bins in small cities, that means people have distances of 5 km and more to bigger cities where they can dispose their EPS waste.

Breakdown by country

Czech Republic – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,2	50%	0,5	42%
EPS Demolition waste	1,2	50%	0,0	0%
TOTAL	2,4	100%	0,5	21%

- In Czech Republic the waste is handled by private waste management companies.
- In addition, there are nine units for incineration with energy recovery and 22 units for incineration with low energy recovery.
- In recent time, the EPS consumption increased due to growth in the construction sector and due to state subsidy programs (“New Green Savings Programme 2014 - 2020”) that support building insulation systems.
- Most of the EPS construction waste is collected in a mixed construction waste stream (Conversio).

Breakdown by country

Denmark



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	11,7	82%	1,0	3,7	2,3	60%	4,7	0,0
EPS Construction	2,6	18%	0,3	0,0	0,0	11%	2,3	0,0
TOTAL	14,3	100%	1,3	3,7	2,3	51%	7,0	0,0
			9%	26%	16%		49%	0%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	12,6	82%	10,1			80%	decrease	0,0
EPS Construction	2,8	18%	0,3			11%	increase	0,0
TOTAL	15,4	100%	10,4			68%	decrease as %	0%

- EPS is separately collected in different areas of the country.
- There is a considerable amount of waste (2,6kt =18% of all collected waste) that is exported to recyclers. A substantial amount of EPS is also recycled using take-back schemes operated by the members of EPS-branchen (the Danish National Association).
- There is not an EPR Scheme in place. Currently, municipalities in Denmark are responsible for managing packaging waste, not producers. Municipalities also collected construction cut-offs as part of their responsibilities. These two fractions are often mixed for recycling.
- The new proposed legislation on EPR obligations is due to come into effect by 2025.

Breakdown by country

Denmark – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate	EPS Packaging waste	EPS collected in kt	%
EPS Household Packaging	7,0	60%	3,7	53%	EPS Food Packaging	5,9	50%
EPS Commercial Packaging	4,7	40%	3,3	70%	EPS White Goods Packaging	4,1	35%
					Others	1,7	15%
TOTAL	11,7	100%	7,0	60%	TOTAL	11,7	100%

- Separate EPS waste collection in municipalities allows Denmark to be among the leading countries in Household waste collection and recycling.
- Traditionally Denmark exports most of its fish and seafood products. Over 80% are destined to EU countries. Germany is the largest single market.
- Denmark has a number of companies producing EPS machinery. This includes compactors allowing EPS users to compact EPS into blocks, making the EPS waste a valuable resource which is sold to recyclers in both Denmark and internationally.
- EPS-Branchen promotes recycling activities achieving some of the best results in Europe: i.e. 90% recycling for EPS fish box waste. It also support actions against marine litter and microplastics loss, having all of its members signatories of the Operation Clean Sweep (OCS) pledge.

Breakdown by country

Denmark – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	2,3	88%	0,3	13%
EPS Demolition waste	0,3	12%	0,0	0%
TOTAL	2,6	100%	0,3	11%

- All EPS Demolition waste is currently collected by a mixed construction waste stream. Afterwards the biggest share is recovered energetically.
- Several municipalities collect EPS packaging in separate containers. In these municipalities cut-offs from the construction sectors can also be recycled. Some converters also operate take back of cut-offs.
- There is a substantial reuse-recycling of EPS cut-offs within the construction sector, which cannot be captured by the study, since there is no separate waste code for EPS materials.

Breakdown by country

Finland



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	5,2	69%	0,2	0,0	0,0	4%	5,0	0,0
EPS Construction	2,3	31%	0,1	0,0	0,0	4%	2,1	0,1
TOTAL	7,5	100%	0,3	0,0	0,0	4%	7,1	0,1
			4%	0%	0%		95%	1%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	5,5	69%	1,9			35%	decrease	0,0
EPS Construction	2,5	31%	0,7			28%	decrease	0,0
TOTAL	8,0	100%	2,6			32%	decrease as %	0%

- Waste law proposal: EPR not to be handled anymore by material specific (plastics, cardboard) producer organization, but they would need to cover all materials.
- The EPR scheme Suomen Uusiomuovi Oy, is responsible for the EPS domestic waste. Suomen Uusiomuovi Oy is a non-profit organization owned by 42 Finnish firms and organizations. It was founded in 1992. The firm's task is to create and maintain systems that reuse plastic packaging as raw material.
- The fact that incineration plants are owned by municipalities is a huge problem for recycling in Finland. Recycling includes only taking plastics out of the mainstream and reducing the calorific power.

Breakdown by country

Finland – Packaging waste



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Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	3,1	60%	0,0	0%
EPS Commercial Packaging	2,1	40%	0,2	10%
TOTAL	5,2	100%	0,2	4%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,8	34%
EPS White Goods Packaging	3,1	60%
Others	0,3	6%
TOTAL	5,2	100%

- Data based on Conversio 2018 mainly.
- The Finnish packaging scheme PYR claims there is almost no recycling of packaging EPS in Finland. EPS waste from household packaging waste is energy recovered.
- PYR currently has 1,850 collection points in total in Finland, of which only 500 can take all non-PVC post-consumer plastic packaging waste (inclusively EPS).
- Almost all goods with EPS packaging (especially EPS packaging for technical appliances) are imported.
- Experts say that EPS waste of fish boxes is not as relevant in Finland as in other European countries.

Breakdown by country

Finland – Construction waste



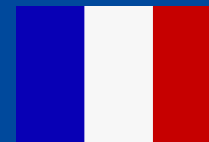
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Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	2,0	87%	0,1	5%
EPS Demolition waste	0,3	13%	0,0	0%
TOTAL	2,3	100%	0,1	4%

- Almost the whole amount of the construction EPS goes to ground insulation.
- In construction still a major part of the usage is perimeter and floor applications.
- Because of the landfill ban the recyclable EPS waste has to be recovered (mainly as energy) and is not allowed to be disposed.

Breakdown by country

France

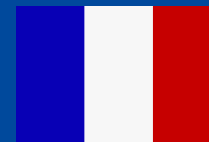


EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	56,5	74%	3,8	15,1	0,0	33%	17,9	19,7
EPS Construction	19,8	26%	0,7	0,6	0,0	7%	8,0	10,5
TOTAL	76,3	100%	4,5	15,7	0,0	26%	25,9	30,2
			5%	21%	0%		34%	40%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	60,7	74%	38,2			63%	steady	towards zero
EPS Construction	21,3	26%	2,5			12%	increase	towards zero
TOTAL	82,0	100%	40,7			50%	increase as %	towards zero

- EPS Packaging is under attack at political level. Various MP are presenting proposal more severe than EU regulations.
- In March 2021, 8 Parliamentarians proposed an amendment to a legislative proposal against climate change to ban household packaging made from styrenic polymers and co-polymers from 2025. One of the eight proposed another amendment prohibiting Styrenics food and transport packaging, with similar justification. Although at first declared inadmissible, the amendments were re-presented and approved by the National Assembly in April. In June 2021 it was voted at Senate.

Breakdown by country

France – Packaging waste



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Market & Strategy

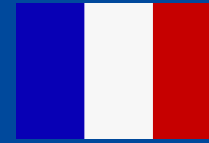
EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	24,9	44%	3,3	13%
EPS Commercial Packaging	31,6	56%	15,6	49%
TOTAL	56,5	100%	18,9	33%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	18,1	32%
EPS White Goods Packaging	32,5	58%
Others	5,9	10%
TOTAL	56,5	100%

- Data based on Conversio 2018.
- In general Eco-Emballages is organizing the collection and recovery of packaging waste in France.
- The manufacturers in France produce more than 6,000 tons of fish boxes as an essential packaging for the French fish and seafood market.
- The EPS fish box consumption in France accounts for more than 10,000 tons (incl. imported fish boxes).
- Until 2022, all French municipalities will extend their sorting systems. All packaging (including EPS packaging) can be deposited in recycling bins.

Breakdown by country

France – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	8,9	45%	1,2	13%
EPS Demolition waste	10,9	55%	0,1	1%
TOTAL	19,8	100%	1,3	7%

- For EPS cut offs on construction site most of converters individually organize the collection, on a voluntary basis. The cut offs should be clean and correctly collected which is technically feasible, but expensive.
- EPS demolition waste is collected as mixed waste together with other materials. More than half of this waste is still going to landfill.
- A regulatory EPR scheme on construction and demolition waste coming from buildings will enter in force on the 1st January 2022. It may affect the prospects for recycling, notably depending on EPS insulation waste sorting (ongoing discussion on separate collection).

Breakdown by country

Germany



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	70,0	61%	12,6	18,7	0,0	45%	38,7	0,0
EPS Construction	44,2	39%	3,8	0,6	0,0	10%	39,8	0,0
TOTAL	114,2	100%	16,4	19,3	0,0	31%	78,5	0,0
			14%	14%	0%		69%	0%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	75,3	61%	47,5			63%	decrease	0,0
EPS Construction	47,5	39%	13,8			29%	decrease	0,0
TOTAL	122,8	100%	61,3			50%	decrease as %	0%

- Because of landfill ban, the disposal of EPS waste is not allowed in Germany.
- The EPR scheme was recently replaced by a new Verpackungsgesetz, or Packaging Act, that entered into force in January 2019. One of the most significant changes to EPR in Germany has been its transformation from a system based on a single, non-profit PRO to one that incorporates several for-profit PROs, operating in competition with each other.

Breakdown by country

Germany – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	31,0	44%	2,0	6%
EPS Commercial Packaging	39,0	56%	29,3	75%
TOTAL	70,0	100%	31,3	45%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	18,9	27%
EPS White Goods Packaging	42,7	61%
Others	8,4	12%
TOTAL	70,0	100%

- Data based mainly on Conversio 2018.
- The household waste is separately collected by a door-by-door collection system in yellow bags. In addition there are collection sites with containers for EPS waste.
- Return systems of retailers/manufacturers exist in Germany, e.g. some furniture stores and electronic markets take the EPS waste back. Afterwards the waste is picked up from big waste management organizations and delivered to recyclers.
- The commercial waste is collected and recycled by private disposal companies and recyclers.

Breakdown by country

Germany – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	6,0	14%	3,9	65%
EPS Demolition waste	38,2	86%	0,5	1%
TOTAL	44,2	100%	4,4	10%

- Germany is number 1 in Europe for EPS production in this specific category with 240kt.
- Approx. 90 - 95% of EPS is used for roof insulation and facade insulation boards.
- Most of the recycled EPS origins from installation waste (cut-offs). For over 30 years the EPS converters have been offering a take-back system (EPS Cycle) to their customers, and thanks to it, all cut-offs collected by IVH members are recycled, mostly as lightweight aggregate for mortar, plaster or concrete.
- The EPS cut-offs are collected separately according to colour and application type, free of foreign substances and impurities and returned dry and sorted.

Breakdown by country

Greece



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	4,7	94%	1,6	0,2	0,1	40%	0,0	0,5
EPS Construction	0,3	6%	0,2	0,0	0,0	67%	0,0	0,1
TOTAL	5,0	100%	1,8	0,2	0,1	42%	0,0	0,6
			36%	4%	2%		0%	12%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	5,1	94%	2,7			53%	0,0	0,0
EPS Construction	0,3	6%	0,3			95%	0,0	0,0
TOTAL	5,4	100%	3,0			56%	0%	0%

- There aren't Producer Responsibility Organizations in EPR schemes for plastics packaging in Greece.
- Producers are registered to HERRCO - Hellenic Recovery Recycling Corporation and they pay a fee for packaging of EPS products.
- Moreover, some producers manage recycling quantities themselves, inside their industries, with compactors.
- A considerable amount (2,3kt) of EPS Packaging waste is exported. This share is not reported in the above table, but should remain stable as volume until 2025.

Breakdown by country

Greece – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	0,7	15%	0,2	33%
EPS Commercial Packaging	4,0	85%	1,7	42%
TOTAL	4,7	100%	1,9	40%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	4,5	96%
EPS White Goods Packaging	0,2	4%
Others	0,0	0%
TOTAL	4,7	100%

- In Greece, HEPSA – the National EPS Association - outreached the Ministry of Environment achieving important results on two relevant matters:
 - a. Implementation of separate collection and sorting by each type of plastic that will allow a more accurate monitoring on fish box recycling. There will be separate collection bins in each municipality, starting from three main areas: Athens, Thessaloniki and Piraeus.
 - b. Local legislation will make mandatory for those who use EPS fish boxes (fish mongers, fish processors, supermarkets, etc.), but also other EPS packaging material, to recycle it.
- HEPSA, in cooperation with the Ministry of Environment, will take charge of the communication to educate people and operators.
- In Greece recycling rate of EPS fish boxes is 90%.

Breakdown by country

Greece – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,3	100%	0,2	67%
EPS Demolition waste	0,0	0%	0,0	0%
TOTAL	0,3	100%	4,4	67%

- EPS for construction is very small in Greece and recycling activity is limited to regrinding of cut-offs from new building sites.

Breakdown by country

Hungary



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	5,5	82%	0,2	0,3	0,6	20%	2,2	2,2
EPS Construction	1,2	18%	0,0	0,0	0,1	8%	0,4	0,7
TOTAL	6,7	100%	0,2	0,3	0,7	18%	2,6	2,9
			3%	4%	11%		39%	43%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	5,9	82%	3,0			51%	steady	strong decrease
EPS Construction	1,3	18%	0,4			31%	steady	strong decrease
TOTAL	7,2	100%	3,0			56%	decrease as %	high decrease

- In general, the EPS domestic waste is going to landfill. There are only little volumes that are energy recovered and small amounts that are recycled.
- Commercial/industrial waste is either recycled inside manufacturers' factories (probably also other commercial companies) or sent to other recyclers.
- Incineration plants are owned by mixed companies (municipalities and private companies).

Breakdown by country

Hungary – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	0,8	15%	0,1	12%
EPS Commercial Packaging	4,7	85%	1,0	21%
TOTAL	5,5	100%	1,1	20%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,1	20%
EPS White Goods Packaging	4,1	75%
Others	0,3	5%
TOTAL	5,5	100%

- There are no retailers like supermarkets/wholesalers who separate the EPS packaging waste.
- The financing of the system is through a product fee, which the obligated entities have to pay for the amounts put on the market. The money goes into the state budget and is only partly redistributed to the sorters by NHKV (National Waste Management Coordination and Asset Management Private Limited Company). This leads to the current problem that the separate collection is too low.
- If someone buys an item and wants to change it or return it to the seller, it will only be accepted in the good's original packaging. Therefore, sellers do not collect the packaging back, which ends up as household waste.

Breakdown by country

Hungary – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,1	92%	0,1	9%
EPS Demolition waste	0,1	8%	0,0	0%
TOTAL	1,2	100%	0,1	8%

- For treatment of waste materials companies have to get a license from governmental authorities. All companies work separately.
- Out of 4,8 millions living units (flats, single family houses) approx. 3 millions are not properly insulated or not insulated at all (Conversio 2018). Therefore, the quantities of EPS demolition waste are really small (only 100 tonnes of demolition waste collected).
- The installation waste is not separated after work, so the recycling amount is low (~0,1kt).
- MEPS – the National EPS Association – is active in promoting EPS for its insulation properties and fire safety standards.
- The new Waste Management Act was adopted by Parliament at the beginning of 2021, but no implementing instructions have been issued yet.

Breakdown by country

Ireland



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	2,3	92%	1,2	0,0	0,0	52%	1,0	0,1
EPS Construction	0,2	8%	0,0	0,0	0,0	0%	0,2	0,0
TOTAL	2,5	100%	1,2	0,0	0,0	48%	1,2	0,1
			48%	0%	0%		48%	4%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	2,4	89%	1,6			67%	decrease	0,0
EPS Construction	0,3	11%	0,1			33%	steady	0,0
TOTAL	2,7	100%	1,7			63%	decrease as %	0%

- In Ireland most of EPS waste comes from the packaging category, and in particular from fish boxes.
- The construction section is relatively small and there is no recycling activity so far.
- There is an EPR scheme in place in Ireland and Participation Fees (2020) charged at a flat fee per tonne in euro in the different categories irrespective of material type, for use of the Green Dot:
 - Manufacturers/Converters/Distributors/Wholesalers: € 2,05/tonne
 - Retailers: € 4,10/tonne

Breakdown by country

Ireland – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	0,2	9%	0,0	20%
EPS Commercial Packaging	2,1	91%	1,2	57%
TOTAL	2,3	100%	1,2	52%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,5	65%
EPS White Goods Packaging	0,1	4%
Others	0,7	31%
TOTAL	2,3	100%

- The most important application is fish boxes where recycling rate achieves 75%. Almost 1kt of EPS fish box waste is recycled each year.
- In Ireland there's a company who runs a mobile recycling, moving around with trucks at various ports. The reason is because these are remote locations and it's too expensive to transport. The big issue is kerbside recycling on small quantities.
- Nevertheless, EPS and plastics are seen as responsible of marine litter and pollution and some big retailers are running away from EPS (i.e. Tesco).
- Landfilling is banned in Ireland.

Breakdown by country

Ireland – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,2	100%	0,0	0%
EPS Demolition waste	0,0	0%	0,0	0%
TOTAL	0,2	100%	0,0	0%

- There is no recycling activity on Construction EPS waste.
- The market is small and the available quantities too limited to allow an economically viable activity of collecting and sorting for recycling.

Breakdown by country

Italy



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	48,5	82%	13,6	4,9	0,5	39%	10,2	19,3
EPS Construction	10,7	18%	0,0	0,0	0,9	8%	3,2	6,6
TOTAL	59,2	100%	13,6	4,9	1,4	34%	13,4	25,9
			23%	8%	3%		23%	44%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	52,2	82%	32,4			62%	increase	strong decrease
EPS Construction	11,4	18%	2,6			23%	increase	strong decrease
TOTAL	63,6	100%	35,0			55%	increase as %	strong decrease

- The EPR scheme in place had its fees recently (1/1/21) remodulated for plastics. There are 4 different levels based on the effective and consolidated activity of sorting and recycling of plastics packaging.
- A Plastic Tax of € 0,45/kg has been approved by Parliament. Its coming into force has been delayed to beginning of 2022, due to the economic crisis caused by the Covid pandemic.
- Italy is very much specialised in packaging applications being the European country with the highest production in this category (53kt).

Breakdown by country

Italy – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	20,4	42%	3,0	15%
EPS Commercial Packaging	28,1	58%	16,0	57%
TOTAL	48,5	100%	19,0	39%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	24,7	51%
EPS White Goods Packaging	20,4	42%
Others	3,4	7%
TOTAL	48,5	100%

- PEPS (EPS recycling platforms) spread throughout the country are specialized in recycling of EPS packaging. These plants, linked by a specific contract with COREPLA – the Italian Consortium for the Collection and Recycling of Plastics Packaging - receive and/or collect, in compliance with pre-established specifications and limits, EPS packaging waste.
- AIPE, the National EPS Association, has signed an agreement with Federpesca – the Federation of Fishboats Owners – to implement collection and recycling projects of EPS fish boxes in main Italian harbours. The region Puglia has been selected to start up with these initiatives in 2021.

Breakdown by country

Italy – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	2,0	19%	0,8	40%
EPS Demolition waste	8,7	81%	0,1	1%
TOTAL	10,7	100%	0,9	8%

- Italy introduced in 2020 a “Superbonus” of 110% tax deduction for traceable expenses aimed at the energy requalification of buildings. To get the deduction, it is necessary to improve the energy efficiency, relating to each real estate unit, of at least two energy classes. The Superbonus will be available until 30 June 2022.
- The certification of the recycled content in insulation products is one of the necessary requirements to obtain the Superbonus 110%. As for EPS, the content of recycled material must be between 10% and 60% .
- EPS waste coming from demolition is usually a dirty mix of EPS with other materials and this is harder to recycle (only ca. 0,1kt).
- EPS waste is also collected and compacted for XPS and light concrete.

Breakdown by country

Lithuania



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	1,4	64%	0,3	0,0	0,0	21%	0,3	0,8
EPS Construction	0,8	36%	0,0	0,0	0,0	2%	0,2	0,6
TOTAL	2,2	100%	0,3	0,0	0,0	14%	0,5	1,4
			14%	0%	0%		23%	64%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	1,5	63%	0,8			53%	steady	strong decrease
EPS Construction	0,9	37%	0,3			33%	steady	strong decrease
TOTAL	2,4	100%	1,1			46%	decrease as %	strong decrease

- Data mainly from Conversio 2018.
- Lithuania is still a growing economy in Europe, with a lot of investment going on – so plastics waste in total is increasing significantly.
- Although quantities are relatively small, recycling rate is expected to grow consistently in the next years, according to EPSA, the National EPS Association.

Breakdown by country

Lithuania – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	0,8	57%	0,0	0%
EPS Commercial Packaging	0,6	43%	0,3	50%
TOTAL	1,4	100%	0,3	21%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	0,7	50%
EPS White Goods Packaging	0,6	43%
Others	0,1	7%
TOTAL	1,4	100%

- The Green Dot organization Zaliasis Taskas is the biggest organization taking care of plastic packing in Lithuania. Most of the EPS collected packaging waste is from food transportation (ca. 50%). But in general, the volumes of EPS packaging (~1,4kt) are low.
- East to the Baltic Sea, Lithuania also has several fish processors. Some of them have already started to recycle the waste fish boxes or sell them to recyclers after having compacted them internally.

Breakdown by country

Lithuania – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,3	38%	0,0	4%
EPS Demolition waste	0,5	62%	0,0	0%
TOTAL	0,8	100%	0,0	2%

- The main programs in Lithuania are “Program for renovating (upgrading) multi-apartment buildings” (funded by state and municipality budgets etc. 2005 - 2020) and “Modernization of Multi-family Houses” (financed by the European Union Structural Funds 2014 - 2020). These programs could lead to rising renovation numbers and therefore increasing demolition waste in future.
- So far recycling activities in EPS accounts for just few kilos.
- There is still a high disposal rate of ca. 75% in Lithuania and the rest is recovered energetically (~25%).

Breakdown by country

Norway



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	7,0	70%	0,0	5,3	0,0	76%	1,7	0,0
EPS Construction	3,0	30%	0,0	0,3	0,0	10%	2,7	0,0
TOTAL	10,0	100%	0,0	5,6	0,0	56%	4,4	0,0
			0%	56%	0%		44%	0%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	7,5	70%	6,1			81%	decrease	0,0
EPS Construction	3,2	30%	1,1			34%	decrease	0,0
TOTAL	10,7	100%	7,2			67%	decrease as %	0%

- The EPR scheme in place is Collective, covering both Household and Commercial Packaging.
- Fees are equal for plastics and paper, with lower fee for Commercial than Household waste.
- EPS has the same fee on both categories (€ 273/tonne), but slightly lower than other plastics (€ 325-319/tonne).
- There is no eco-modulation criteria for plastics based on Design for Recycling.
- In Norway there are discussions for a possible extension of the EPR scheme also to construction.

Breakdown by country

Norway – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	2,1	30%	1,1	52%
EPS Commercial Packaging	4,9	70%	4,2	86%
TOTAL	7,0	100%	5,3	76%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	4,9	70%
EPS White Goods Packaging	2,1	30%
Others	0,0	0%
TOTAL	7,0	100%

- Grønt Punkt Norge is the Producer Responsibility Organization operating in collection and sorting of waste.
- With a view to cost-efficiency, Grønt Punkt Norge divided plastic packaging into the following fractions: "foil", "hard plastic packaging", "PP-bags", "EPS". The sorted EPS packaging waste is compressed and sent to mechanical recycling, mainly out of Norway (exported to Spain, Germany and China).
- 95% of all households have a household plastic collection, most of them curbside.
- Collection & sorting of EPS fish boxes is very efficient in Norway and thanks to this, recycling rate is 90%, the best in Europe, like Denmark, Netherlands and Greece.

Breakdown by country

Norway – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,8	27%	0,3	37%
EPS Demolition waste	2,2	73%	0,0	0%
TOTAL	3,0	100%	0,3	10%

- The recycled EPS comes from installation sites through collection and recycling of cut-off waste.
- In the future a substantial growth in the recycling rate is likely to happen thanks to the relative proximity of the PSLoop plant in the Netherlands, where a fraction of the waste collected from demolition sites will be destined.
- Most of the EPS construction waste is collected in mixed construction waste streams on commercial site (~2/3 of the collected quantity or ~1,5kt).

Breakdown by country

Poland



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	27,7	70%	0,0	3,4	0,0	12%	18,0	6,4
EPS Construction	11,7	30%	1,2	0,0	0,6	15%	7,6	2,3
TOTAL	39,4	100%	1,2	3,4	0,6	13%	25,6	8,7
			3%	9%	1%		65%	22%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	29,8	70%	12,0			40%	decrease	decrease
EPS Construction	12,6	30%	4,4			35%	steady	decrease
TOTAL	42,4	100%	16,4			38%	decrease as %	decrease as %

- Data and info mainly from Conversio 2018.
- According the collection and treatment of EPS waste each local community has its own system and solutions.
- Having sufficient amounts of internal EPS waste, the manufacturers of commercial and industrial sector recycle inside their factories. Otherwise, they send the waste to recyclers.
- Poland is the only country in Europe where recycling rate is higher in the Construction sector than the Packaging one.

Breakdown by country

Poland – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	19,1	69%	1,4	7%
EPS Commercial Packaging	8,6	31%	2,0	23%
TOTAL	27,7	100%	3,4	12%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	10,5	38%
EPS White Goods Packaging	13,0	47%
Others	4,2	15%
TOTAL	27,7	100%

- Still the PRN-system is in place in Poland with more than 15 schemes taking care of (plastic) packaging waste (with Rekopol and Interseroh being the biggest schemes).
- In general, fish boxes are exported from Norway to Poland. Then they are reginded and sent back to Norway. This is mainly the reason for relative high amounts of fish boxes in Poland.
- The waste of fish boxes that is generated in Poland has only low presence, because fish is usually sold in small plastic bags.
- One of the major player is Greenmax. They compact the EPS fish boxes into EPS blocks (in a range about 1kt per year) and sell them abroad to Intco, which recycles the EPS waste.

Breakdown by country

Poland – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	10,5	90%	1,7	16%
EPS Demolition waste	1,2	10%	0,1	8%
TOTAL	11,7	100%	1,8	15%

- There is almost no waste separation of EPS installation waste, because the volumes are very low and the workers aren't educated in waste separation. If the quantities are higher, a recycling company is responsible for the waste.
- As the landfill prices are very low, disposal rate is still fairly high (20%).
- It is estimated that approx. 70% of detached single-family houses in Poland (3.6 million) have no or inadequate, thermal insulation. Only 1% of all houses in Poland can be considered energy efficient, primarily those that have been built in the last few years. These leads to small quantities of EPS demolition waste (ca. 1,2kt).

Breakdown by country

Portugal



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	1,8	90%	0,3	1,2	0,0	83%	0,0	0,3
EPS Construction	0,2	10%	0,0	0,0	0,1	50%	0,0	0,0
TOTAL	2,0	100%	0,3	1,2	0,1	82%	0,0	0,3
			17%	60%	5%		2%	16%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	1,9	90%	1,7			89%	0,0	towards zero
EPS Construction	0,2	10%	0,2			95%	0,0	0,0
TOTAL	2,1	100%	1,9			90%	0,0	towards zero

- ACEPE, the National EPS Association, reports very high recycling rates both in construction and in packaging categories.
- For this reason, Portugal is on top of the list of European countries for EPS collection and recycling.
- Most of the recyclates come from packaging waste and in particular from EPS fish boxes. Waste is recycled as GPPS (General Purpose PolyStyrene) and then mainly used in construction as XPS.

Breakdown by country

Portugal – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	0,2	11%	0,1	50%
EPS Commercial Packaging	1,6	89%	1,4	88%
TOTAL	1,8	100%	1,5	85%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	1,3	72%
EPS White Goods Packaging	0,4	22%
Others	0,1	6%
TOTAL	1,8	100%

- Most of the EPS waste comes from the fishery activity (fish boxes).
- BewiCircular started up in 2020 a project to collect, compact and recycle EPS fish boxes from all Portuguese harbours and fish markets. To avoid transportation costs many collection points across the country were placed.
- At the end of 2020 recycling rate for fish boxes was 70%. Objective by end of 2021 is 90% recycling.
- EPS is collected in big bags and cages. Bewi has local warehouses spread all over the country where waste is stocked and compacted. Then they transport the compacted EPS to their recycling plant.
- There are different frameworks according to dimension: in big fish markets 2 employees with a compacting machine can generate 10-20t each month. In smaller places, fish boxes are put in a cage and when full, the chief of the port calls for collection. Final destination must be within 150 km.

Breakdown by country

Portugal – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,2	100%	0,1	50%
EPS Demolition waste	0,0	0%	0,0	-
TOTAL	0,2	100%	0,1	50%

- EPS waste from Construction is mainly cut-offs which are collected and reginded as rEPS or lightweight concrete.
- Energy recovery and disposal account for 15% each, with 30t of waste incinerated and 30t landfilled.

Breakdown by country

Slovakia



CONVERSIO
Market & Strategy

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	3,2	59%	0,6	0,6	0,0	37%	0,7	1,3
EPS Construction	2,2	41%	0,2	0,0	0,0	9%	0,2	1,8
TOTAL	5,4	100%	0,8	0,6	0,0	26%	0,9	3,1
			15%	11%	0%		17%	57%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	3,5	60%	1,7			49%	increase	decrease
EPS Construction	2,3	40%	0,9			39%	steady	decrease
TOTAL	5,8	100%	2,6			45%	increase as %	decrease

- The EPR scheme in Slovakia is for Household packaging waste only.
- There are many Producer Responsibility Organizations in place here: Envi-Pačl, Recyklogroup, RECobal, Natur-pack, Sewa, Elekos, E-cycling, OZV Slovensko, Nowas, Asekol.
- An eco-modulation scheme is in preparation.
- There are many free riders in the country, and controlling and sanctioning are not sufficient. Many producers find it worth avoiding compliance.

Breakdown by country

Slovakia – Packaging waste



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Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate	EPS Packaging waste	EPS collected in kt	%
EPS Household Packaging	1,8	56%	0,6	33%	EPS Food Packaging	1,0	31%
EPS Commercial Packaging	1,4	44%	0,6	43%	EPS White Goods Packaging	2,1	66%
					Others	0,1	3%
TOTAL	3,2	100%	1,2	37%	TOTAL	3,2	100%

- The municipalities have individual contracts with the schemes and the collectors, so no common collection system exists. The majority of the collection is door-to-door collection from the households.
- Recycling rate is just below the European average (37% vs 39%).
- EPS for protective packaging represents 2/3 of the total packaging waste produced in Slovakia.

Breakdown by country

Slovakia – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,2	55%	0,2	17%
EPS Demolition waste	1,0	45%	0,0	0%
TOTAL	2,2	100%	0,2	9%

- Only cut-off waste from installation sites is partially collected and sent back to converters.
- There is no collecting & sorting from demolition sites where waste is commonly landfilled.

Breakdown by country

Spain



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	36,6	95%	1,1	8,4	0,4	27%	7,0	19,7
EPS Construction	1,8	5%	0,0	0,1	0,0	6%	0,4	1,3
TOTAL	38,4	100%	1,1	8,5	0,4	26%	7,4	21,0
			3%	22%	1%		19%	55%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	37,9	95%	20,9			55%	steady	decrease
EPS Construction	1,9	5%	0,6			31%	steady	decrease
TOTAL	39,8	100%	21,5			54%	decrease as %	decrease

- Currently there is only one EPR scheme for Household packaging waste (ECOEMBES); for Commercial packaging it is on voluntary basis or through a private system.
- There are different fees for the different plastics, depending of management cost. An Eco-modulation system is been studied.
- ECOEMBES, in charge of all Household Packaging excluding glass, has developed a software (Packaging Circular Design or PackCD) for companies promoting eco-design. It is a tool that provides an objective and technical information for all persons in charge of Design for Recycling criteria in a company.
- Greenpeace attacked ECOEMBES, accused to not being transparent and not being interested to organize Commercial packaging waste streams. There is a strong political discussion in Spain for Deposit and Return Systems.

Breakdown by country

Spain – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate	EPS Packaging waste	EPS collected in kt	%
EPS Household Packaging	5,4	15%	1,1	20%	EPS Food Packaging	22,3	61%
EPS Commercial Packaging	31,2	85%	8,8	28%	EPS White Goods Packaging	12,2	33%
					Others	2,1	6%
TOTAL	36,6	100%	9,9	27%	TOTAL	36,6	100%

- The total tonnage of fish boxes produced for the country's fish and seafood industry is around 13kt. ANAPE, the EPS National Association, has evidenced that around 31% is recycled and re-introduced in new products. ANAPE also estimates that the recycled rate of EPS fish box is much higher, but this is difficult to prove due to lack of official data.
- The main problem is dispersion in retailers and local markets, having Spain more than 8.000 municipalities. Mix plastics fraction recycling ratio is different depending on the region.
- The local transposition of the SUPD and the WFD is creating concerns: in the future, if a converter wants to use recyclates in new products, these must have the condition of "final waste", otherwise the converter will have to be entitled as "waste manager". But this certificate might require years to obtain due to bureaucratic procedures (more than 2 years).
- The EPS-Sure project proved that it is possible to recycle EPS fish boxes into new Polystyrene (PS) packaging, namely yogurt pots.

Breakdown by country

Spain – Construction waste



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Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,8	100%	0,1	6%
EPS Demolition waste	0,0	0%	0,0	-
TOTAL	1,8	100%	0,1	6%

- In Spain a lot of buildings are insulated by SATE (the Spanish version of ETICS). The majority of SATE systems use EPS as thermal insulation for their suitability in this application.
- According to the Spanish national law “Real Decreto 105/2008 concerning building demolition waste” the owner of the demolition license is responsible for the adequate disposal of the waste.
- The main Spanish XPS converters offer up to 100% recycled content boards. The recycled EPS in XPS is coming from fish boxes and appliances packaging waste; around 20,000 tons are imported from all over the world.

Breakdown by country

Sweden

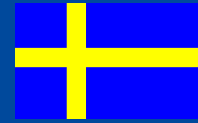


EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	9,4	72%	0,0	1,4	0,0	15%	7,8	0,1
EPS Construction	3,6	28%	0,0	0,0	0,0	0%	3,7	0,0
TOTAL	13,0	100%	0,0	1,4	0,0	11%	11,5	0,1
			0%	11%	0%		88%	1%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	10,0	72%	5,0			50%	decrease	0,0
EPS Construction	3,9	28%	1,0			26%	decrease	0,0
TOTAL	13,9	100%	6,0			43%	decrease as %	0%

- Data from Conversio 2018 mainly.
- The EPR scheme in Sweden covers both Household and Commercial packaging waste. There is also an eco-modulation of fees based on Design for Recycling (Sortability/Recyclability).
- The Producer Responsibility Organization is non-profit based and has full financial and organizational responsibility for Household packaging, only financial for Commercial packaging.
- Most of the EPS waste is used for energy recovery.

Breakdown by country

Sweden – Packaging waste



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Market & Strategy

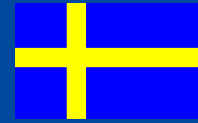
EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	5,4	58%	1,0	18%
EPS Commercial Packaging	4,0	42%	0,4	10%
TOTAL	9,4	100%	1,4	15%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	3,0	32%
EPS White Goods Packaging	5,5	59%
Others	0,9	9%
TOTAL	9,4	100%

- The packaging scheme in Sweden “FTI” is in charge of plastics packaging.
- The collection of mixed household plastic packaging waste is organized by FTI via more than 5,800 collection points. There is only a little share of kerbside collection from the households, the biggest part is via bring system.
- The commercial packaging waste is often collected by big waste management companies like Stena, Sita and send for recycling to other European countries.

Breakdown by country

Sweden – Construction waste



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Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	0,8	22%	0,0	0%
EPS Demolition waste	2,8	78%	0,0	0%
TOTAL	3,6	100%	0,0	0%

- There is no recycling of installation and demolition waste in Sweden but since 1st August 2020 plastic waste, including EPS, generated by building and construction activities should be collected and sent to material recycling.
- Because of the rising construction activity, the amounts of installation waste grew a little bit during the last decade.
- As in Finland and Norway, the main application of EPS construction is in ground insulation.

Breakdown by country

United Kingdom



EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	23,9	90%	0,0	13,5	0,0	56%	9,4	1,0
EPS Construction	2,7	10%	0,0	0,0	0,0	0%	2,7	0,0
TOTAL	26,6	100%	0,0	13,5	0,0	51%	12,1	1,0
			0%	51%	0%		45%	4%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	25,7	90%	17,5			68%	decrease	towards zero
EPS Construction	2,9	10%	0,9			31%	decrease	0,0
TOTAL	28,6	100%	18,4			64%	decrease as %	towards zero

- The 81% of EPS waste is exported to recyclers in EU, namely Germany (1), Spain (2) and Netherlands(3). Only a small quantity (0,2kt) goes to China.
- UK has not a fully fledged EPR system, the packaging regulations are still governed by the Packaging Recovery Notes (PRN) system. EPR system is still being consulted on, with an implementation date tentatively set for 2023.
- The current PRN system is not a EPR scheme in the form recognized in the EU - i.e. no fixed rates, no eco-modulation and not based on net costs.
- The current state of play in the UK will most probably not be relevant to the revision of the Packaging and Packaging Waste Directive as the UK won't be bound by EU legislation after Jan. 2021 (due to Brexit).

Breakdown by country

United Kingdom – Packaging waste



CONVERSIO
Market & Strategy

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate	EPS Packaging waste	EPS collected in kt	%
EPS Household Packaging	10,7	45%	0,4	4%	EPS Food Packaging	3,6	15%
EPS Commercial Packaging	13,2	55%	13,1	99%	EPS White Goods Packaging	20,3	85%
					Others	0,0	0%
TOTAL	23,9	100%	13,5	56%	TOTAL	23,9	100%

- UK is a big exporter of EPS fish box waste. The big challenge if UK wants to increase the actual recycling rate for EPS (~56%) is to find compactors, especially in less populated areas. Compactors are crucial to allow other stakeholders to invest locally.
- Collection and sorting of EPS fish boxes is very well organized in the UK. As most of them are exported to recyclers in the EU, the British Plastic Federation (BPF) can claim a 70% recycling rate for this application.
- With an integral EPS waste management system in Central Fish Market in London, UK tries to improve the collection and recycling of EPS waste.
- In Grimsby, ENVIRO (GY) Ltd, offers an EPS recycling service to the seafood sector within the area.

Breakdown by country

United Kingdom – Construction waste



CONVERSIO
Market & Strategy

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	1,6	59%	0,0	0%
EPS Demolition waste	1,1	41%	0,0	0%
TOTAL	2,7	100%	0,0	0%

- There is no recycling of installation and demolition waste in the UK.
- Some improvements are expected both in installation through a better organized collection and sorting activity, and in demolition thanks to dissolution technology in recycling that allows separation of HBCD.

Breakdown by country

Rest of Europe

EPS waste	EPS collected in kt	%	Recycling in kt			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
			Recycled as EPS	Recycled as PS	Recycled as lightweight fill			
EPS Packaging	37,5	70%	5,9	5,2	0,0	30%	9,6	16,7
EPS Construction	16,2	30%	2,1	0,1	0,0	14%	7,1	7,0
TOTAL	53,7	100%	8,0	5,3	0,0	25%	16,7	23,7
			15%	10%	0%		31%	44%
Breakdown of the Pledge (2025 Target)	EPS collected in kt (2025)	%	Recycling in kt (2025)			Recycling rate	Energy Recovery in kt	Landfill / Disposal in kt
EPS Packaging	40,3	69%	20,7			51%	steady	decrease
EPS Construction	18,5	31%	5,1			28%	increase	decrease
TOTAL	58,8	100%	25,8			44%	increase as %	decrease as %

- Data based on Conversio 2018 for some countries or provided by the National Associations.
- Included are the following countries: The Netherlands, Romania, Bulgaria, Croatia, Cyprus, Estonia, Latvia, Luxembourg, Malta, Slovenia and Switzerland.
- Contribution to the EUMEPS Pledge has been estimated with prudential criteria (below the average target) as there is no control over the activity in those countries.

Breakdown by country

Rest of Europe – Packaging waste

EPS Packaging waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Household Packaging	21,6	58%	2,2	10%
EPS Commercial Packaging	15,9	42%	8,9	56%
TOTAL	37,5	100%	11,1	30%

EPS Packaging waste	EPS collected in kt	%
EPS Food Packaging	9,9	26%
EPS White Goods Packaging	24,7	66%
Others	2,9	8%
TOTAL	37,5	100%

Breakdown by country

Rest of Europe – Construction waste

EPS Construction waste	EPS collected in kt	%	Recycling in kt	Recycling rate
EPS Installation waste	5,1	31%	2,1	41%
EPS Demolition waste	11,1	69%	0,1	1%
TOTAL	16,2	100%	2,2	14%

Circular Economy

a pledge and an opportunity

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Market & Strategy

EU GREEN DEAL

No net emissions of greenhouse gases by 2050.

EU PLASTIC STRATEGY

All plastics packaging reusable or recyclable and 55% of plastics waste recycled by 2030 (PPWD 2018/852).

CIRCULAR PLASTIC ALLIANCE

The plastics industry has committed to use 10mt of recycled plastic into new material. This objective is achievable only moving towards circular economy, through a stronger control over the waste streams and the recycling technologies.

Upon request of the European Commission who asked for robust and reliable data (not just based on estimates or best guesses), CPA is developing a Monitoring system that will come into action from 2022. From then on, the whole plastics industry will have to provide data into certified platforms of data collection. A mass balance approach will be in place to verify robustness of data.

EUMEPS PLEDGE

257.000 tonnes of EPS recycled by 2025:

50% of EPS Packaging waste (including fish boxes)

80% of EPS Construction cut-offs

90% of cuts of civil engineering/geofoam

27% of EPS from demolition

The European Commission has asked for a renewal of the Pledge; EUMEPS cannot do it publicly yet, but has internally revised ambitions to compete against alternative materials with better recycling rates.

Here below are the targets set for 2030:

95% of EPS fish box recycled

85% of EPS Packaging waste recycled

50% of EPS from demolition (or even more, tackling the HBCD issue)

Circular Economy

a pledge and an opportunity

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PERSPECTIVE FOR THE FUTURE

- Growing impact of legislation (i.e. landfill bans, European plastics strategy, taxes on virgin feedstock).
- Growing environmental awareness of the population.
- Growing attacks from alternative products, NGOs, opinion leaders and legislators based on wrong myths which describe EPS as a *non-recycled plastic, but mainly landfilled or energy recovered because of its difficulty in collecting, sorting and recycling*.

FOCUS ON CIRCULARITY TO CHANGE WRONG PERCEPTIONS

EPS is 100% recyclable as it becomes polystyrene plastic when recycled. With the highest recycling rates for any plastic and accounting for a non-substantial portion of municipal waste, expanded polystyrene is an environmentally friendly polymer. The EPS industry encourages recycling of the packaging products, and many large companies are successfully collecting and recycling EPS.

Expanded Polystyrene can be recycled in many different ways, but to fulfil the

EUMEPS Pledge it is important to “go circular” both to build a market for secondary raw material able to feed converters with recycled content and to make EPS industry fully sustainable and eco-friendly.

The path towards circularity is a necessary step and the EPS industry is fully aware of its importance (see Annex 1.a and 3.a).

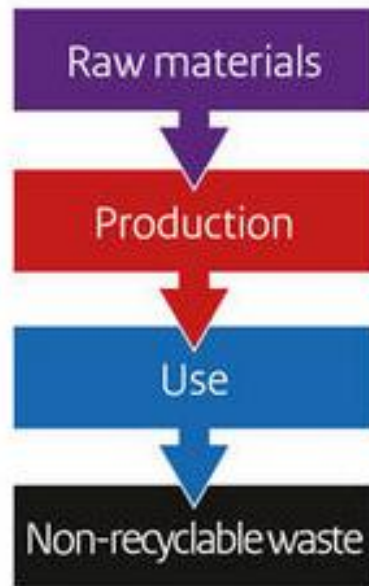
Circular economy is also important because of the growing attention of legislators and public opinion on climate impact and the emission into the atmosphere of CO₂ throughout the life cycle of plastics products (see Annex 2).

It goes without saying that beyond all necessary commitments by the value chain, other requirements are necessary to implement a full circular economy, namely: technological improvements in recycling and legislative directives to drive separate collection, sorting and recycling.

From linear to Circular Economy

LINEAR ECONOMY

Raw materials are used to make a product, and after their use any waste is thrown away.



REUSE/RECYCLING ECONOMY

Process of converting waste into reusable material (original product **or others!**). See also Annex 1.b



CIRCULAR ECONOMY

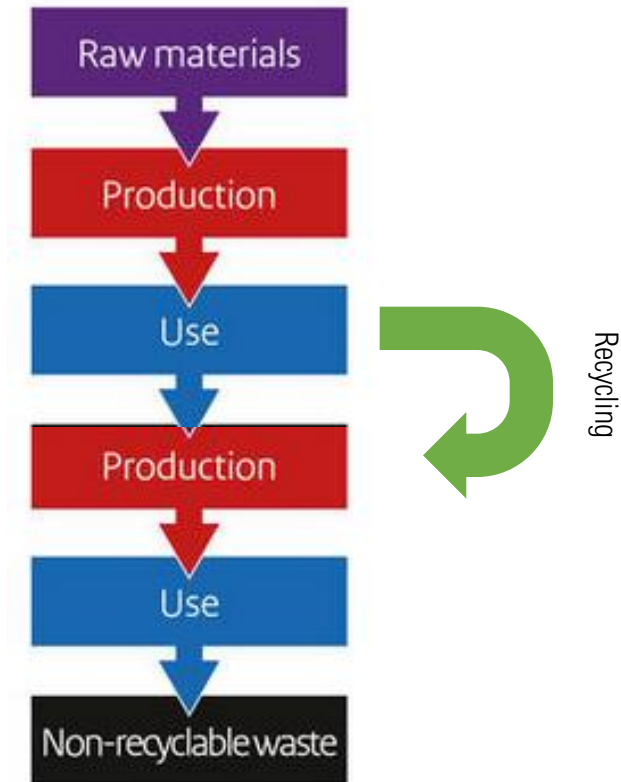
Create closed-loop systems, minimizing the use of resource inputs and the creation of waste.



EPS to lightweight concrete

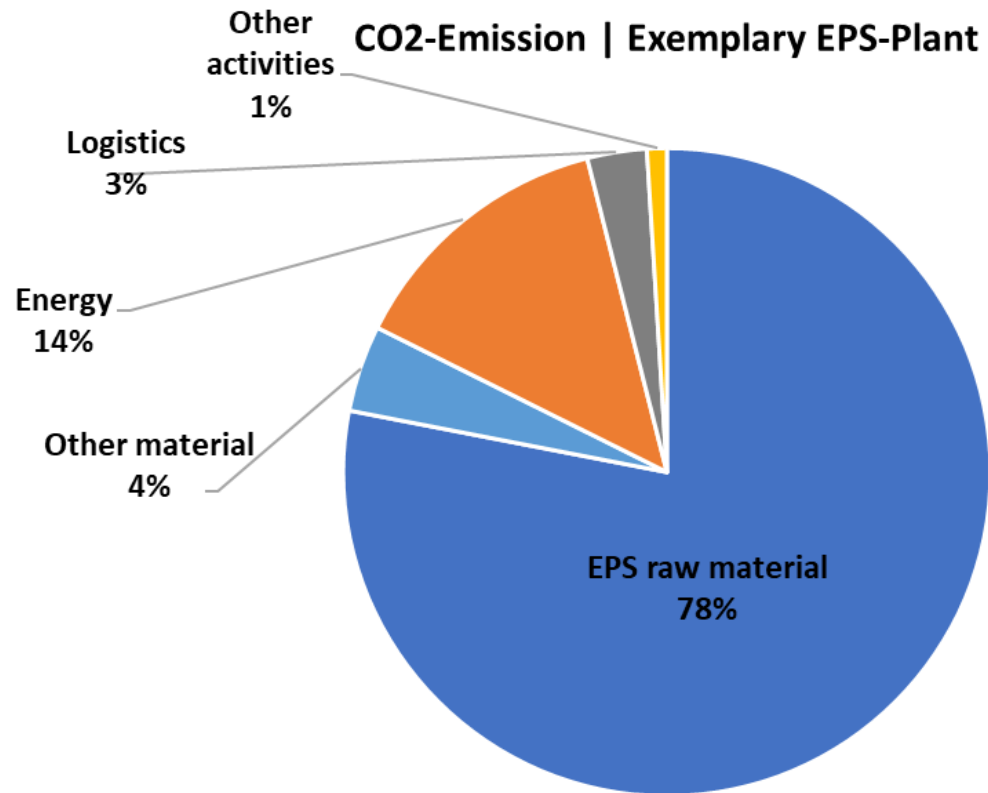
a case study

1. **Raw materials:** polystyrene for EPS products
2. **Production:** EPS boards for thermal insulation
3. **Use:** EPS at construction site
4. **Recycling:** shredding leftovers of EPS boards
5. **Production:** produce polystyrene concrete
6. **Use:** levelling compound for new build/renovation
7. **Non-recyclable waste:** no further possibility to reuse EPS bound in concrete



EPS waste at construction site is recycled and re-used e.g. for polystyrene concrete. This waste stream is included in the key figure “recycling-rate”

Why is Circular Economy so important?



2,4 tonnes of CO₂

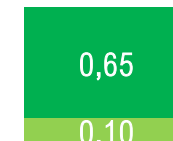


1 tonne of raw material PS (primary)

-68% CO₂



0,75 tonnes of CO₂



1 tonne of raw material PS (recycled)
incl. collecting and processing

Recycling rate vs Circular Economy

RECYCLING OF EPS

The recycling process usually starts with the grinding of EPS waste (for a complete view of the waste streams, please see also Annex 3.b). After that, there are several alternatives for the further valorization of the grinded waste:

A) Recycling as EPS

- Re-use in process for making **new EPS products**,
- Usage as **pulverized material in other applications**,
- Production of **insulation construction materials (building blocks, cement)**,
- Use as **ground improvement** (drainage, substrate for plants)

B) Recycling as PS

- Compacting or melting of grinded EPS and transformation into compact granules (PS) – this material can be
 - ... processed into injection moulding (utensils) or extrusion products
 - ... or it can be used (after extrusion and regassing) **to produce rEPS**
 - ... or it can be used to **produce XPS** for insulation applications

CIRCULAR ECONOMY OF EPS

- Re-use in process for making new EPS products

- It can be used (after extrusion and regassing) to produce EPS for once again the classic EPS applications (packaging, insulation)

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