

Review ^{NO} 04

EN

EU action to tackle the issue of plastic waste



EUROPEAN
COURT
OF AUDITORS

2020

Contents

	Paragraph
Executive summary	I-IV
Introduction	01-11
A mainstay material	01-02
A growing waste problem	03-04
The Commission's policy response	05-07
Energy recovery: between landfill and recycling	08-11
Review scope and approach	12-14
Overview of EU actions and policies by sector	15-25
EU policies on plastics in key sectors	15-25
Plastic packaging waste	26-73
Packaging design	27-31
Essential requirements deemed unenforceable in practice	27-29
The Circular Plastic Alliance can complement EU efforts	30-31
Extended Producer Responsibility Schemes	32-42
Widespread use of EPR schemes for packaging in the EU but wide disparities in levels of efficiency	33-34
EPR schemes promote lighter packaging but not recyclability	35-36
New EU rules intend to harmonise and reinforce EPR schemes	37-38
Deposit Return Schemes can support more ambitious recycling targets for plastic bottles but come at a cost	39-42
Reporting, data and meeting the targets	43-48
Implementation of legal requirements is considered satisfactory	43
Wide discrepancies and margin of error in Member States' data reporting	44-46
Legislative updates will result in a corrective drop in reported recycling rates	47-48
EU funding for plastic packaging waste: infrastructure and treatment options	49-54

EU funds waste management infrastructure through cohesion policy instruments	49-50
Horizon 2020 could improve plastic design and recyclability	51-52
The LIFE programme finances ways to deal with plastic waste	53-54
Plastic packaging waste shipment	55-66
The conditions for shipping plastic waste abroad will become stricter	55-56
Exports of plastic waste and plastic packaging waste are decreasing	57-58
Shipped plastic packaging waste accounts for a third of the EU's reported recycling rate	59-61
The China ban on imports of plastic waste led to changes in the destination of exports from EU Member States	62-66
Plastic packaging waste trafficking: environmental crime	67-73
Illegal disposal of plastic waste is a serious and complex crime	68-69
Plastic waste is one of the main commodities shipped illegally	70-71
The EU's legal framework to tackle waste crime marked by shortcomings	72-73
Overview of opportunities, gaps, challenges and risks	74-80
Acronyms and abbreviations	
Glossary	
ECA team	

Executive summary

I In January 2018 the European Commission approved a **Plastics Strategy** as part of the transition towards a more circular economy and to contribute to reaching the UN's Sustainable Development Goals. This strategy proposes measures aiming to improve recyclability, collection, sorting, recycling and recycled content of plastic products. New plastic packaging recycling targets for 2025 (50 %) and 2030 (55 %) were adopted in the 2018 update of the Packaging and Packaging Waste Directive. Achieving these targets would contribute to achieving the EU's circular economy goals. New stricter reporting rules will likely lead the EU's reported average plastic packaging recycling rate to drop. Industry sources estimate this could mean a drop from 41 % to 32-29 %.

II Given the recent adoption of the strategy, it is not possible to assess its impact at this time. We have therefore reviewed the EU's actions to tackle plastic waste, with a particular focus on plastic packaging waste. We focus on this because plastic packaging waste represents the single biggest part of plastic waste (61 %). This is not an audit report; it is a review mainly based on publicly available information or material specifically collected for this purpose.

III In our review we focus on:

- o Packaging design, which is critical to the recyclability of plastic packaging;
- o Extended Producer Responsibility schemes, which create a regulatory and funding framework for the management of plastic packaging waste;
- o Reporting of recycling data, the reliability of which is crucial to measuring the EU's progress towards attaining its plastic packaging waste recycling targets;
- o Plastic packaging waste shipments to third countries, which represent a third of the EU's reported plastic packaging recycling rate;
- o Waste trafficking, which is a challenging area of crime also impacting plastic packaging waste management.

IV We present the EU frameworks for the management of plastic waste in the automotive, electronics, agriculture and construction sectors which together account for 22 % of plastic waste generated in the EU. We also consider the EU funding tools available to support Member States' efforts to improve plastic waste management. New legislation and targets on plastic packaging waste are an indication of the EU's and Member States' commitment to allocating, sometimes considerable, resources to address the challenge of plastic waste. The strategy is a relatively recent document and its ambitions have still to be translated into actions in a number of areas. We highlight

some of the gaps, risks, challenges and opportunities of the approach the EU has adopted to tackle plastic packaging waste. This notably includes the opportunity for the EU to gain a first-mover advantage by developing circular economy solutions for plastic packaging but also the risk that some Member States may not meet the new targets.

Introduction

A mainstay material

01 **Plastics** are a mainstay of the modern economy, with countless industrial and consumer applications. They are a cheap, versatile, lightweight, resistant and widely used material in key sectors such as packaging, agriculture, construction, automotive and electric appliances. Global plastic production has increased exponentially from 1.5 million tonnes in 1950 to 322 million tonnes in 2015¹. Half of all the plastic on earth was produced since 2005². Demand for plastics has outpaced all other bulk materials (such as steel, aluminium or cement), nearly doubling since 2000. Developing economies currently use 20 times less plastic per capita than advanced economies. Their consumption is likely to grow as they develop.

02 Packaging (e.g. yogurt pots, water bottles, protective packaging for fruit) is the largest application of plastic in the EU. It represents about 40 % of plastic production³, and leads to 61 % of total plastic waste generated. The electrical and electronic equipment, construction, automotive and agricultural sectors are the next biggest producers of plastic waste (see [Figure 1](#)). Plastic packaging is also the type of packaging with the lowest reported recycling rate in the EU (42 %) compared to other materials. Metals (76 %), paper and cardboard (83 %) and glass packaging (73 %) all achieved significantly higher reported recycling rates⁴.

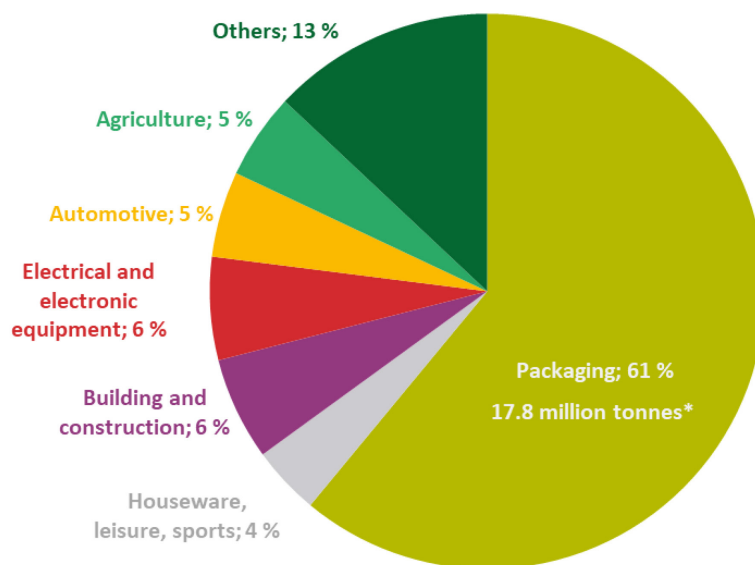
¹ European Parliament: [‘Plastic waste and recycling in the EU: facts and figures’](#), 19 December 2018.

² Roland Geyer, Jenna R. Jambeck, and Kara Lavender Law (2017), [‘Production, use, and fate of all plastics ever made’](#), Science Advances 19 July 2017.

³ Plastics Europe: [Plastics – the facts 2019](#), 14 October 2019.

⁴ European Commission: [Staff Working Document Accompanying ‘A European Strategy for Plastics in a Circular Economy’](#), SWD(2018) 16 final.

Figure 1 – Plastic waste generation by sector in 2018



* Total post-consumer plastic waste collected via relevant streams - 29.1 million tonnes

Source: ECA based on data from 'A circular economy for plastics – A European Overview', Plastics Europe, 2019.

A growing waste problem

03 Littering and plastic leakage in the environment harm terrestrial and marine ecosystems. Between 4.8 and 12.7 million tonnes of plastic waste enter the ocean each year⁵. The balance between land-based and marine-based plastic litter varies regionally. A recent study estimates that fishing nets constitute up to 46 % of the great pacific garbage patch⁶. Within Europe, around 85 % of marine litter found on beaches is plastic. Around 43 % of this marine litter is single use plastic, and 27 % fishing gear⁷.

⁵ Jenna R. Jambek et al., 'Plastic waste inputs from land into the ocean', Science, volume 347, February 2015.

⁶ L. Lebreton et al., 'Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic', Sci Rep 8, 22 March 2018.

⁷ European Commission: Proposal for a Directive on the reduction of the impact of certain plastic products on the environment, COM(2018) 340 final.

Picture 1 – The Ocean Plastics lab: exhibition of ocean plastic waste

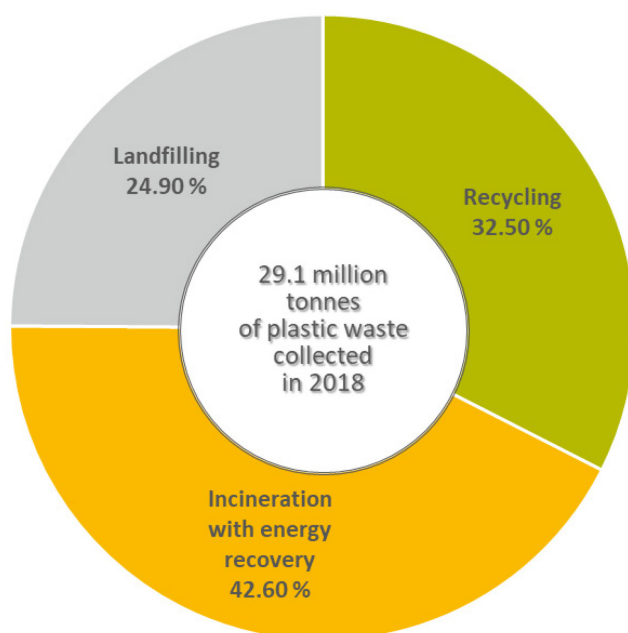


Source: European Parliament.

04 Worldwide, approximately 55 % of plastic waste was still going to landfill or discarded in nature in 2015⁸. Within the EU, we rely on landfill and incineration with energy recovery to dispose of most plastic waste (see [Figure 2](#)).

⁸ Hannah Ritchie and Max Roser: 'Plastic Pollution', Our World in Data, September 2018.

Figure 2 – Plastic waste treatment options in EU in 2018



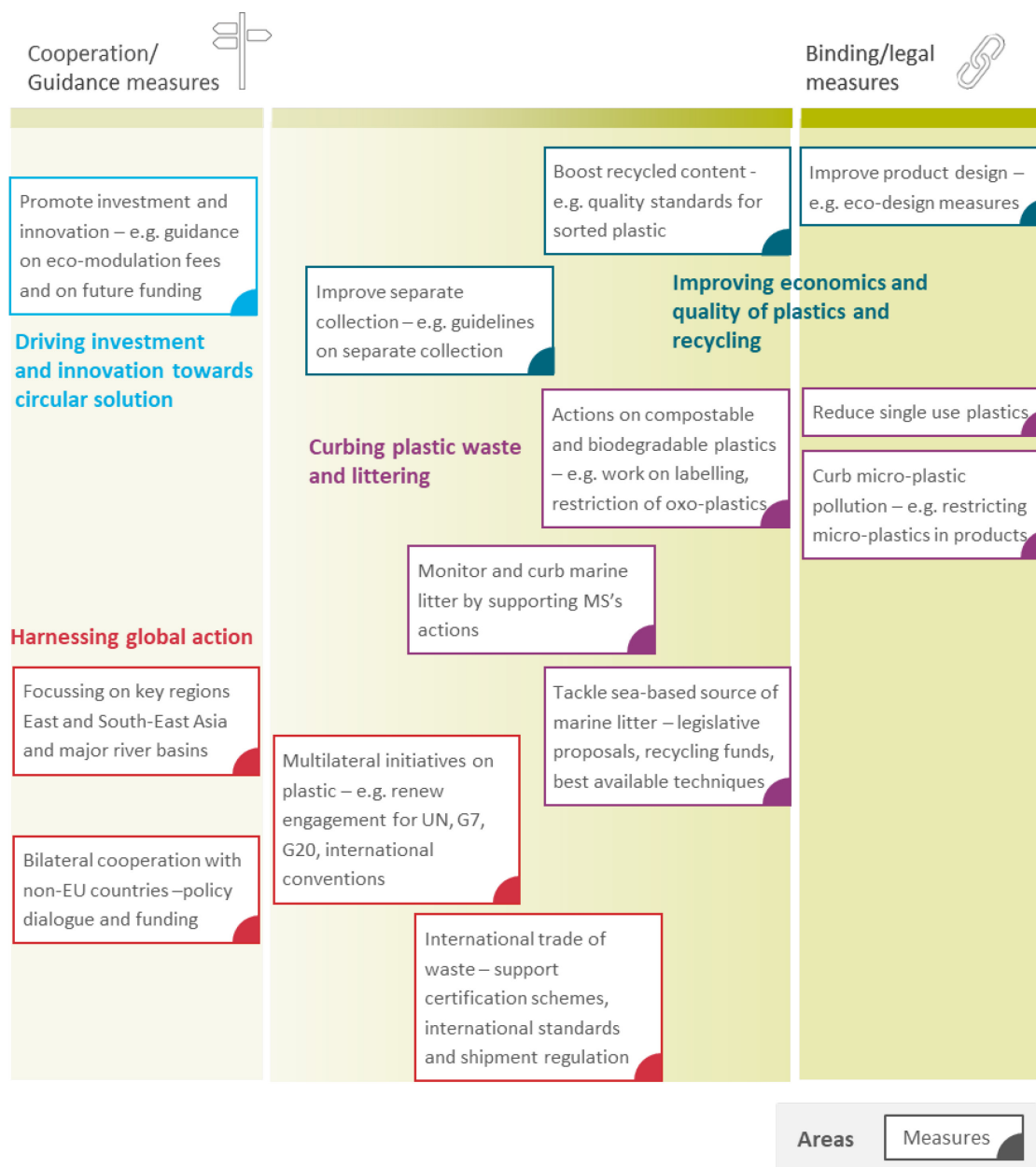
Source: ECA based on data from Plastics Europe, Plastics – the facts 2019.

The Commission's policy response

05 In January 2018 the European Commission approved a **Plastics Strategy**⁹ as part of the transition towards a more circular economy and as a contribution to reaching the UN's Sustainable Development Goals. The Commission considers that the Green Deal and the new Circular Economy Action Plan have further developed the policy on plastics. The strategy aims to address all sectors generating plastic waste, using EU laws as well as voluntary measures and standards. The strategy lists 39 measures, divided into four thematic areas (see [Figure 3](#)). One of the strategy's key goals is that all plastic packaging put on the EU market is either reusable or can be recycled in a cost-effective manner by 2030. The Commission also aims to support Member States in achieving plastic packaging recycling targets.

⁹ European Commission: [2018 Plastics Strategy](#).

Figure 3 – Main elements of the EU plastics strategy

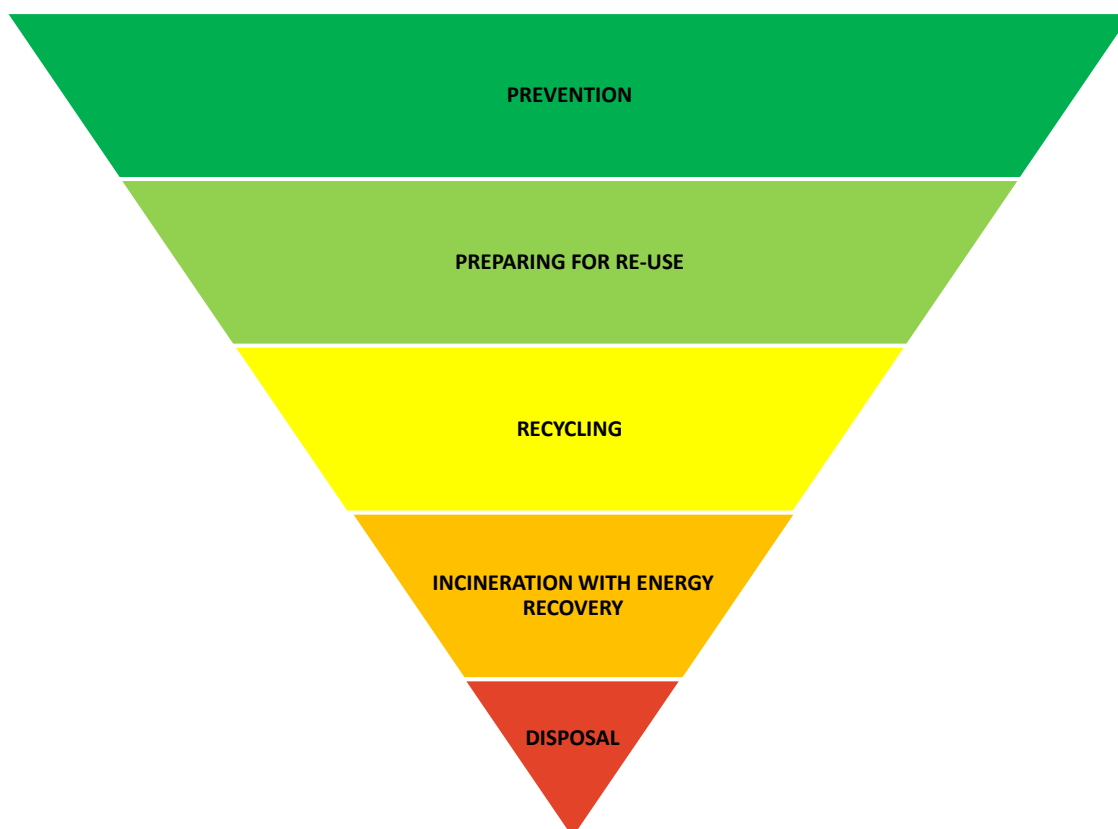


Source: ECA based on European Commission 2018 Plastics Strategy. Not all 39 measures of the Plastics Strategy included.

06 The Commission's plastics strategy seeks to strengthen the application of key waste management concepts for plastic waste: the 'polluter pays principle', the 'waste hierarchy' and the 'end-of-waste' status (see [Figure 4](#)). The EU has been supporting efforts to improve waste management practices for several decades. For example, the 6th Environment Action Programme (2002-2012) aimed to achieve a 'significant reduction' in the volume of waste generated, notably through waste prevention

measures¹⁰. This was not achieved, but the objective was maintained in the 7th Environment Action Plan (2014-2020).

Figure 4 – The waste hierarchy as defined by the 2008 Waste Framework Directive¹¹



Source: European Commission.

07 A key part of the Commission action on plastics was the review of the EU waste directives, concluded in May 2018¹². The amended Packaging and Packaging Waste Directive (PPWD) doubled the previous plastic packaging waste recycling target from 22.5 % (meant to be achieved by 2008 by most Member States) to 50 % by 2025 and 55 % by 2030. Member States are free to achieve the targets by whichever means they see fit. **Table 1** shows the targets set in the waste directives, per waste type, for 2025, 2030 and 2035. This PPWD also set other measures to facilitate the attainment of the increased recycling targets. These cover separate collection, extended producer responsibility, economic instruments and waste management plans.

¹⁰ Decision 1600/2002/EC.

¹¹ “Disposal” includes landfilling of waste.

¹² Directives (EU) 2018/850 on the landfill of waste, (EU) 2018/851 on waste and (EU) 2018/852 on packaging and packaging waste.

Table 1 – Recycling and landfilling targets set by current EU directives

Waste type	Legal basis	By 2025	By 2030	By 2035
Municipal waste prepared for reuse and recycling	Waste Framework Directive 98/2008	55 %	60 %	65 %
Landfilling of municipal waste	Landfill Directive 1999/31	-	-	No more than 10 %
Recycling of all packaging waste	Packaging and Packaging Waste Directive 94/62	65 %	70 %	-
Recycling of plastic packaging waste	Packaging and Packaging Waste Directive 94/62	50 %	55 %	-

Source: ECA based on the 2018 update of the waste directives.

Energy recovery: between landfill and recycling

08 Incineration of plastic waste with energy recovery sits below recycling in the hierarchy of waste treatment options (see [Figure 4](#)). At present we incinerate more plastic waste than we recycle in Europe. To meet the new plastic packaging recycling targets, we will need to reverse this situation¹³.

09 Plastics are mainly derived from crude oil and large quantities of CO₂ are released during their incineration, as well as varying quantities of other substances and pollutants such as nitrous oxide and mercury. Some emissions can be offset through the production of energy, as this reduces the need for other forms of energy generation.

10 Plastics could be chemically recycled or landfilled. Chemical recycling (i.e. transforming the waste back into chemical feedstock) can encompass many different technologies. These are not yet a technologically or economically feasible waste treatment option while landfilling is set to be dramatically reduced.

¹³ ICF/Eunomia: 'Plastics: reuse, recycling and marine litter', May 2018.

11 Incineration can therefore, in certain cases, be a solution for dealing with plastic waste containing toxic substances. Incineration can, depending on the outcome of a Life Cycle Analysis (LCA)¹⁴, be considered a viable solution for treating such plastic waste¹⁵, while other technological and regulatory solutions are being developed.

¹⁴ Directive 2008/98/EC.

¹⁵ ICF/Eunomia, May 2018.

Review scope and approach

12 This review examined the EU's approach to the issue of land-based plastic waste, with a particular focus on plastic packaging waste. It highlights some of the gaps, risks, challenges and opportunities of the approach adopted. We focus on plastic packaging waste because it represents the single biggest part of plastic waste (61 %). We have excluded marine littering from the scope.

13 This is not an audit report; it is a review mainly based on publicly available information or material specifically collected for this purpose. We have done a review rather than an audit as the 2018 plastics strategy is still far from being put into practice and the updated EU legislative framework (new directives) has deadlines for implementation by Member State that go beyond 2021. It is therefore not yet possible to assess the impact of these changes. This review is nevertheless timely given that future EU spending priorities are still being determined and reforms to important policy areas are still being decided. In addition, our Review would contribute to, and complement the EUROSAI cooperative audit on plastic packaging waste that started in 2020.

14 We met DG Environment, the lead Directorate-General on this issue, as well as a range of stakeholders from industry and civil society. We examined directives and regulations, strategies, policy documents, guidelines, evaluations, monitoring reports and internal documents provided by the Commission as well as reports from Member States, international organisations and Non-Governmental Organisations. We visited Portugal and the Netherlands to see the practical implementation of relevant policies. We chose these Member States, which face a range of plastic waste management challenges common to many EU Member States, in order to get an understanding of a range of different challenges public authorities face in improving plastic waste management and the solutions they chose in response.

Overview of EU actions and policies by sector

EU policies on plastics in key sectors

15 The 2018 Plastics Strategy seeks to address all the main sectors generating plastic waste in the EU. The work to implement the strategy is ongoing. It includes evaluations and reviews of directives as well as supporting studies to identify options for the prevention of waste and for improved plastic waste management. The new Circular Economy Action Plan (CEAP) commits the Commission to revising the legislation governing waste management in the coming years in key plastic waste generating sectors, namely vehicles, construction materials and packaging¹⁶.

16 While there are currently legally binding targets (see [Table 1](#)) for plastic packaging recycling, similar targets do not exist for plastic waste from the agricultural and construction sectors. The automotive and electrical and electronic equipment sectors are regulated by separate legislation¹⁷ to manage the waste they generate, but these do not set specific recycling targets for plastics.

Agriculture

17 The use of plastic in agriculture ('agri-plastics') is increasing. An estimated 1.7 million tonnes of plastics were used in EU agriculture in 2017¹⁸. The main applications of agri-plastics are, in descending order: silage films, greenhouses and tunnels, mulch films, pipes for irrigation, nets and twines. The plastics industry estimated in 2014 that 28 % of collected agricultural plastics waste was being recycled, 30 % sent to energy recovery and 42 % landfilled¹⁹. However, some plastics might be

¹⁶ Commission Communication: 'A new Circular Economy Action Plan For a cleaner and more competitive Europe', COM(2020) 98 final.

¹⁷ Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) and Directive 2000/53/EC on end of life vehicles.

¹⁸ Plastics Europe: [Plastics – the Facts 2018](#).

¹⁹ Plastics Europe: [Plastics – the Facts 2015](#).

left on the field or illegally burnt, as no agri-plastic collection scheme in the EU currently collects more than 70 % of end-of-life agri-plastics²⁰.

18 The EU does not have targets for the management of agri-plastics. Five Member States currently have national collection schemes for agri-plastic waste. Recycling agricultural plastic can be difficult, and reuse practically impossible. Waste from mulches tends to be heavily weathered, covered in soil and sometimes pesticides and can be contaminated with pathogens.

19 The Commission has launched a study to assess the possibility to improve collection and recycling rates of agricultural plastic waste across the EU in 2020. The EU Common Agricultural Policy (CAP) allows funding of, for example, the substitution of plastic tunnels with glass and steel.

Automotive

20 Plastics account for around 11 % of the materials used in vehicles²¹. This represents approximately 1 million tonnes of plastic waste generated per year²². The Commission estimates that approximately 30 % of the EU's end-of-life vehicles do not enter official treatment channels each year²³. As a result, these vehicles are not recovered or recycled properly, or even at all. Only 9 % of the plastic waste collected from those end-of-life vehicles that do enter proper treatment channels is currently being recycled²⁴. The amount of recycled plastics used in the manufacturing of cars rarely exceeds a few per cent of the total product. There is no industry-wide target, either for the use of recycled plastics in personal vehicles or for recycling plastics at the end of life of the vehicle. The End-of-Life Vehicle (ELV) directive sets targets for the recovery and reuse or recycling of vehicles by weight. The rate of recovery should be 95 % on average per vehicle per year and the rate of reuse or recycling should be

²⁰ Agriculture Plastics Europe data.

²¹ GHK: 'Study to examine the benefits of the End of Life Vehicles Directive', May 2006.

²² Based on the estimate of 8-9 million tonnes of ELV waste produced annually in the EU given in the 2014 fitness check of five waste streams.

²³ Oko Institut: 'Assessment of the implementation of Directive 2000/53/EU on end-of-life vehicles', 2017.

²⁴ Commission Staff Working Document Accompanying the 2018 Plastics Strategy, SWD(2018) 16 final, p. 21.

minimum 85 %. The EU-28 slightly exceeded the minimum 85 % for reuse/recycling but failed to reach the 95 % recovery target²⁵.

Electronics

21 The EU generates an estimated 9.4 million tonnes of Waste Electronic and Electrical Equipment (WEEE) each year, 20 % of which is estimated to be plastic²⁶. Only 35 % of the WEEE generated was reported as having entered the official collection and treatment system in the EU. Illegal shipments to third countries represent a significant challenge to improving this situation. An estimated 1.3 million tonnes (or around 14 % of the WEEE generated)²⁷ disappears from the EU each year. The majority of Member States have met the targets applicable up to 2015 for the collection and recovery and recycling of the principal categories of WEEE (IT & telecoms equipment, large & small household appliances)²⁸. These recovery/recycling targets vary according to the product category between 70 % and 80 % for recovery and between 50 % and 75 % for preparation for recycling or reuse. Higher targets apply from 2016 and 2019 respectively. There is no separate target for the recycling of plastics in WEEE, which focuses on recycling of critical metals.

22 The complexity of product design and the possible presence of chemicals of concern (e.g. flame-retardants) hamper recycling of plastics in WEEE. The Commission is examining ways of strengthening circular design principles (reparability, modularity, upgradability and ease of disassembly) to support reuse and recycling.

Construction and Demolition

23 Most Member States have already reached the 2020 construction waste recovery target of 70 % set by the Waste Framework Directive. This target has been achieved mostly by using recovered waste for practices such as backfilling and low-grade recovery applications (e.g. for road sub-bases). There are no targets for plastic recovery in construction and demolition waste. Recycling plastic construction waste presents a series of challenges: plastics can be part of composite structure, the plastic

²⁵ Eurostat.

²⁶ Commission Staff Working Document Accompanying the 2018 Plastics Strategy, SWD(2018) 16 final.

²⁷ Countering WEEE Illegal Trade Project: 'Summary Report', 30 August 2015.

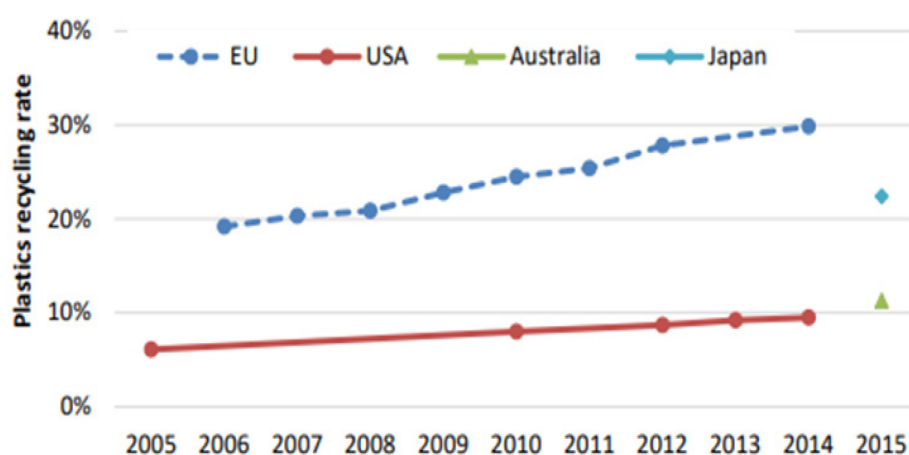
²⁸ Implementation report on the WEEE Directive, September 2018, p. 177.

can be degraded and contain various additives of unknown characteristics, it is mixed in with general waste making it difficult and uneconomic to sort²⁹. The Plastics Strategy foresees an evaluation and review of the Construction Products Regulation by the end of 2021, with a view to increasing the uptake of recycled content.

Packaging

24 On average, 32 kg of **plastic packaging waste** is produced per person per year in the EU, compared to 45 kg per person per year in the US, 5 kg in India and 33 kg in Japan³⁰. According to the information available to the OECD, the EU has the highest rate of plastic recycling (for all types of plastic waste combined) among advanced economies (see [Figure 5](#)). The nature and quality of the data supporting this finding varies widely from country to country but it, nevertheless, gives a broad indication of different levels of progress.

Figure 5 – Plastic recycling rates in selected high-income economies



Source: Based on OECD (2018), *Improving Markets for Recycled Plastics: Trends, Prospects and Policy Responses*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264301016-en>.

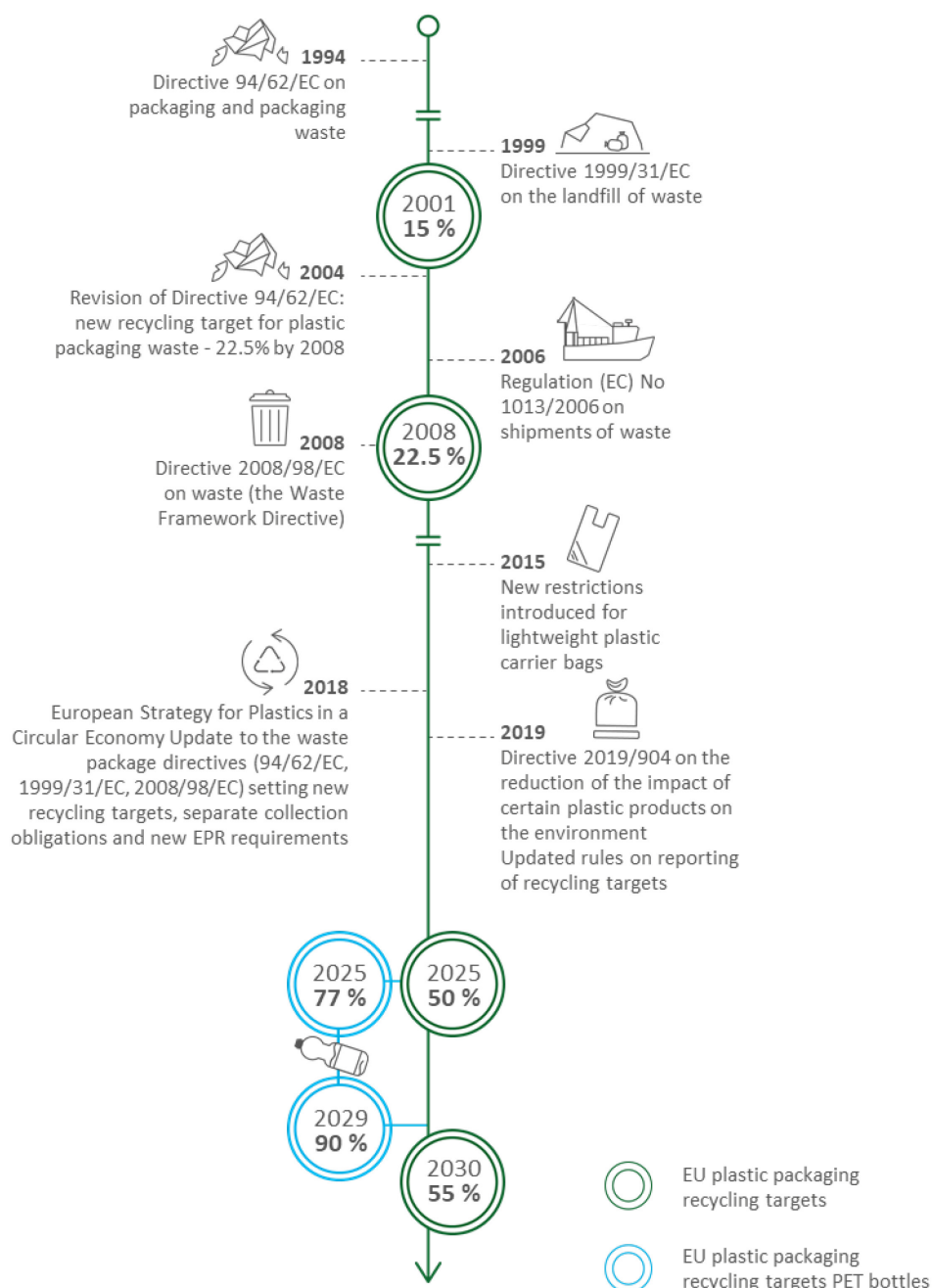
25 The legal framework to improve the management of plastic packaging waste provided by the PPWD has been gradually complemented by other Directives and regulations. These set targets on the preparation for reuse and recycling of municipal waste (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives), rules on the shipment of waste (Regulation (EC) No 1013/2006 of the European Parliament and of the Council

²⁹ European Environment Agency: 'Construction and demolition waste: challenges and opportunities in a circular economy', 16.1.2020.

³⁰ UN Environment: 'Single use plastics. A roadmap for sustainability', 2018.

of 14 June 2006 on shipments of waste) and restrictions on landfilling of waste (Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste) (see [Figure 6](#)).

Figure 6 – The EU framework and targets for plastic packaging



Source: ECA.

Plastic packaging waste

26 The entire life cycle of plastic packaging can be much longer than its consumption phase and choices at each stage in the cycle have an impact on how the waste is treated (see [Figure 7](#)). These choices start at the stage of feedstock selection, followed by the manufacture of the raw material, transformation into packaging, use/reuse and disposal and end-of-life treatment. Plastic packaging contributes significantly to the problem of environmental littering. This led to the adoption of the single-use plastics directive in 2019.

Figure 7 – Plastic packaging life cycle



Source: ECA.

Packaging design

Essential requirements deemed unenforceable in practice

27 Within the EU, packaging must comply with the Essential Requirements laid out in the PPWD in 1994. These requirements notably the manufacturing and composition

of packaging as well as procedures for material and energy recovery. Except for minor revisions in wording in 2018 these requirements remain unchanged, and set out that packaging should be:

- Of the minimum weight and volume to ensure safety and hygiene;
- Designed, produced and commercialised to permit re-use and recovery, including recycling, and to minimise its impact on the environment during disposal;
- So manufactured that the presence of noxious and other hazardous substances and materials is minimised in emissions, ash or leachate when it is disposed of.

28 The European Committee for Standardisation (CEN) published standards on packaging prevention, reuse, material recovery and energy recovery in 2004. The Commission published these standards in the official journal in February 2005 as ‘recognised standards’ which producers should prove they comply with. A 2009 survey of industry stakeholders by the Commission showed industry was in favour of the flexibility the Essential Requirements allow, as companies are in general free to implement different procedures to show compliance³¹. By 2011 five Member States have mechanisms to monitor application³² of the Essential Requirements. The PPWD states that compliance is presumed when CEN standards are applied.

³¹ BIO Intelligence Service: ‘Awareness and Exchange of Best Practices on the Implementation and Enforcement of the Essential Requirements for Packaging and Packaging Waste’, 2011.

³² Ibid.

29 In line with the mandate given to it in the 2018 revision of the PPWD, the Commission is currently considering options to revise Essential Requirements to support its goal that all plastic packaging should be reusable and/or recyclable in an economically feasible manner by 2030³³. A 2020 study for the Commission on the effectiveness of the Essential Requirements concluded that they are ‘unenforceable in practice’³⁴. The 2020 study for the Commission concluded that the Essential Requirements are not aligned with today’s needs and that the updated ones should notably:

- Reflect the waste hierarchy by promoting design for reuse or recycling;
- Identify packaging designs and materials that are likely to cause problems for waste collectors and processors;
- More strictly and explicitly define requirements for waste prevention;
- Ensure alignment with EU policy development on the use and value of certain compostables;
- Support the demand and supply of high-quality recycled material; and
- Set a well-defined enforcement procedure that replaces the presumption of compliance.

The Circular Plastic Alliance can complement EU efforts

30 A pledging campaign launched in the Plastics Strategy complements the Commission’s efforts to improve plastic waste management. Its objective is to integrate 10 million tonnes of recycled plastic into products annually by 2025. The Commission assessed the pledges in March 2019 and found a gap between the amount of recycled plastic companies pledged to provide (11 million tonnes) and the amount pledged to be used (6.4 million tonnes). Four million tonnes of recycled material are currently used per year in the EU. The Commission launched the Circular Plastic Alliance (CPA) to narrow this gap. By July 2020 225 actors, including the main players on the packaging, automotive, WEEE and agricultural plastics markets, had signed the

³³ European Commission: ‘[The Green Deal](#)’, COM(2019) 640 final.

³⁴ Eunomia: ‘[Effectiveness of the Essential Requirements for Packaging and Packaging Waste and Proposals for Reinforcement](#)’, February 2020.

CPA commitments. The companies and business associations pledge to provide or use a certain amount of recycled plastic or to facilitate this process.

31 At present, the Commission monitors the pledges on an ad hoc basis. The CPA has committed to creating by 2021 a voluntary system to monitor volumes of recycled plastics used in European products³⁵. Comparable and reliable data on the progress made towards the 10 million tonnes target can help increase trust in the efforts taken by key stakeholders and signpost success or failure of the initiative.

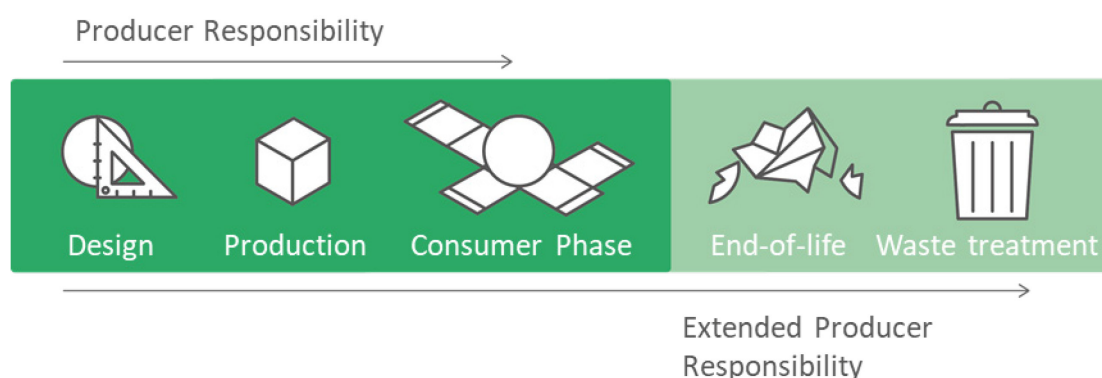
Extended Producer Responsibility Schemes

32 Extended Producer Responsibility (EPR) schemes seek to make producers financially and organisationally responsible for the management of their products once they become waste (see [Figure 8](#)). The introduction of binding plastic packaging recycling targets in the 1994 PPWD led many Member States to follow this approach in order to:

- Make producers responsible for packaging's end-of-life costs in order to incentivise better design to reduce these costs (lighter packaging, higher recyclability...);
- Improve reuse and recycling rates;
- Reduce the cost of waste management for municipalities (and taxpayers) by transferring it to producers and consumers (as the EPR fee is internalised in the product's price).

³⁵ Circular Plastic Alliance Declaration.

Figure 8 – The boundaries of producer responsibility and extended producer responsibility



Source: ECA.

Widespread use of EPR schemes for packaging in the EU but wide disparities in levels of efficiency

33 Every EU Member States has an EPR scheme (see [Figure 8](#)) in place for plastic packaging waste³⁶. The schemes' coverage varies across the EU. Some cover only household packaging, while others include commercial and industrial packaging as well. These schemes collect and treat plastic packaging waste to reduce the amounts sent to landfills. They help move Member States' plastic packaging waste management systems up the waste hierarchy (see [Figure 4](#)) by increasing recycling rates, thereby enhancing the resource efficiency of the EU economy.

34 A significant lack of data, methodological difficulties in distinguishing the impacts of EPR schemes from other factors and the wide variations in systems used has hindered the OECD's ability to assess the impact of EPR schemes³⁷. The EU co-legislators also noted the wide disparities in the schemes' levels of efficiency and producers' scope of responsibility³⁸.

³⁶ Bio Intelligence Services: 'Development of Guidance on Extended Producer Responsibility', 2014.

³⁷ OECD: 'Extended Producer Responsibility: Updated guidance for efficient waste management', 2016.

³⁸ Directive 2018/852.

EPR schemes promote lighter packaging but not recyclability

35 EPR schemes charge plastic packaging producers a fee for managing their products in their end-of-life phase. This fee reflects the cost of treating the plastic packaging waste collected and managed by the scheme. These fees are not based on the cost of treating 100 % of the plastic packaging put on the market but on the costs incurred by the EPR scheme for managing the packaging that it collects. The unit cost of end-of-life treatment for producers is therefore lower than the actual cost of recycling the plastic packaging.

36 Most EPR schemes require members to pay fees according to the weight of the plastic packaging they place on the market. This incentivises producers to reduce the weight of plastic packaging in order to reduce costs. For example, the average weight of a 500ml polyethylene terephthalate (PET) bottle in the EU decreased from 24 g in 1990 to 9.5 g in 2013³⁹. A Commission Staff Working Document found that the broader design of plastic packaging for recyclability is facing several obstacles linked to production processes, habits and a lack of dialogue across the value chain and between different actors⁴⁰. This can have a significant impact as over 80 % of all product-related environmental impacts are estimated to be determined during the design phase of a product⁴¹. In some cases, lightweight packaging may be less recyclable because it has a multilayer structure, using different plastics to achieve the same properties as a thicker mono-material packaging.

³⁹ [Plastic Converters Europe](#) webpage on plastic packaging.

⁴⁰ European Commission: [Staff Working Document accompanying the 2018 Plastics Strategy](#), SWD(2018) 16 final.

⁴¹ European Commission: [sustainable product policy webpage](#), last updated 13 December 2018.

New EU rules intend to harmonise and reinforce EPR schemes

37 To address these issues, and reinforce EPR contribution to achieving plastic packaging recycling targets, the EU made EPR schemes for packaging mandatory in the 2018 revision of the PPWD. In addition, the 2018 revision of the Waste Framework Directive required EPR schemes to have:

- Control mechanisms including independent audits for financial management and data reporting obligations;
- Fees that cover waste management, information provision and data gathering obligations;
- Eco-modulation of fees (adapting fees EPR members pay in order to promote recycling);
- Arrangements to disclose fees paid by members;
- A general coverage of areas and/or products (without limiting themselves to the most profitable segments or areas).

38 Some EPR schemes have already introduced a fee modulation system linked to the ease with which plastic packaging can be recycled. The fees can be set using considerations linked to the availability of recycling technology, the existence of disruptive or toxic additives, the composition of packaging (easily recyclable polymers, multilayer) and the existence of markets for secondary raw materials. Member States have chosen different approaches to modulation, such as the use of bonus vs. bonus-malus approaches (see [Box 1](#)).

Box 1

Fee modulation in Dutch EPR Scheme

The Dutch Packaging Waste Fund (Afvalfonds Verpakkingen) has been applying a fee modulation system for plastic packaging since 2019. It applies a bonus system of lower fees (€0.34 per kg instead of €0.60 per kg in 2020) to reward companies that use rigid plastic packaging that has good recyclability with a positive market value after sorting, thereby leading to lower net costs for Afvalfonds Verpakkingen.

To decide whether plastic packaging has good recyclability, Afvalfonds Verpakkingen uses the KIDV Recycle Check for rigid plastic packaging developed by the Netherlands Institute for Sustainable Packaging. Afvalfonds Verpakkingen rewards the use of packaging that has good recyclability and does not sanction the use of other packaging.

The decision to use a bonus scheme, not a bonus-malus one, was motivated by the desire to send a positive signal to the market and by the practical challenges of applying a malus system, which would require Afvalfonds Verpakkingen to perform detailed technical controls on a wide range of plastic packaging at considerable cost.

Deposit Return Schemes can support more ambitious recycling targets for plastic bottles but come at a cost

39 The Single Use Plastics (SUP) Directive sets the Member States collection for recycling targets for single-use plastic beverage bottles of up to 3 litres 77 % by 2025, and 90 % by 2029⁴². As beverage bottles are a type of plastic packaging, these efforts will count towards the plastic packaging recycling targets. Member States will be obliged to ensure that on average 25 % recycled material is included in PET single-use beverage bottles placed on the market in their country by 2025. This will, rise to 30 % by 2030 for all single use beverage bottles.

40 Deposit return-schemes (DRS) work by charging a surcharge on a product at the point of purchase. This fee is repaid once the empty packaging is returned. The SUP Directive does not mandate the use of DRS to attain the beverage bottle collection for recycling objective, but it does identify it as one of the options that Member States may use. The Commission suggested in its 2018 early warning reports on the implementation of waste legislation that some Member States (Cyprus, Portugal and

⁴² Directive (EU) 2019/904, Article 9.

Romania) consider introducing DRS as a possible solution to the risk of missing the 2020 target of 50 % preparation for re-use/recycling of municipal waste.

41 According to the network of environment protection agencies, Member States that have adopted this system collect on average over 80 %⁴³ of PET bottles compared to the average of 58 % across the EU. Achieving such high levels of separate collection of PET bottles can help Member States reach the 2025 and 2030 plastic packaging recycling targets. DRS can also lead to higher quality and more profitably recycled plastics⁴⁴. However establishing a DRS can come at a cost, both direct and indirect, and can add complexity to Member States' waste management systems.

42 There are direct costs to creating and running a DRS infrastructure. The German DRS system is estimated to cost approximately €800 million per year to run⁴⁵. The Slovak Ministry of Environment estimates that the DRS scheme operator will have an annual shortfall of €5 million (15 % of budget) for the operation of its DRS system for PET bottles and aluminium cans⁴⁶. Producers will pay an extra fee to cover this shortfall. The indirect costs of transferring PET bottles from kerb-side collection to DRS can also lead to a different distribution of the costs and gains in the value chain, such as a loss of income for municipalities that collect and sell the empty bottles to recyclers. The system of packaging marking (for the deposit return machines to read) prevents bottles bought abroad from entering a Member State's DRS system. Such cross-border movements can lead to reduced collection and recycling rates in the absence of EU harmonization or interoperability agreements between Member States.

Reporting, data and meeting the targets

Implementation of legal requirements is considered satisfactory

43 The Commission's implementation reports on PPWD present a broadly satisfactory implementation of the directive, though they highlight gaps on action on

⁴³ EPA Network: 'Working Paper. Deposit Return Schemes: Data and figures from 16 Member Countries of the EPA Network', March 2018.

⁴⁴ Commission Staff Working Document accompanying the 2018 Plastics Strategy, SWD(2018) 16 final.

⁴⁵ BBC: "Drinks bottles and can deposit return scheme proposed", 28 March 2018.

⁴⁶ Institute for Environmental Policy, Ministry of Environment of the Slovak Republic: 'Real Price of Deposit. Analysis of the introduction of the deposit-refund system for single-use beverage packaging in the Slovak Republic', November 2018.

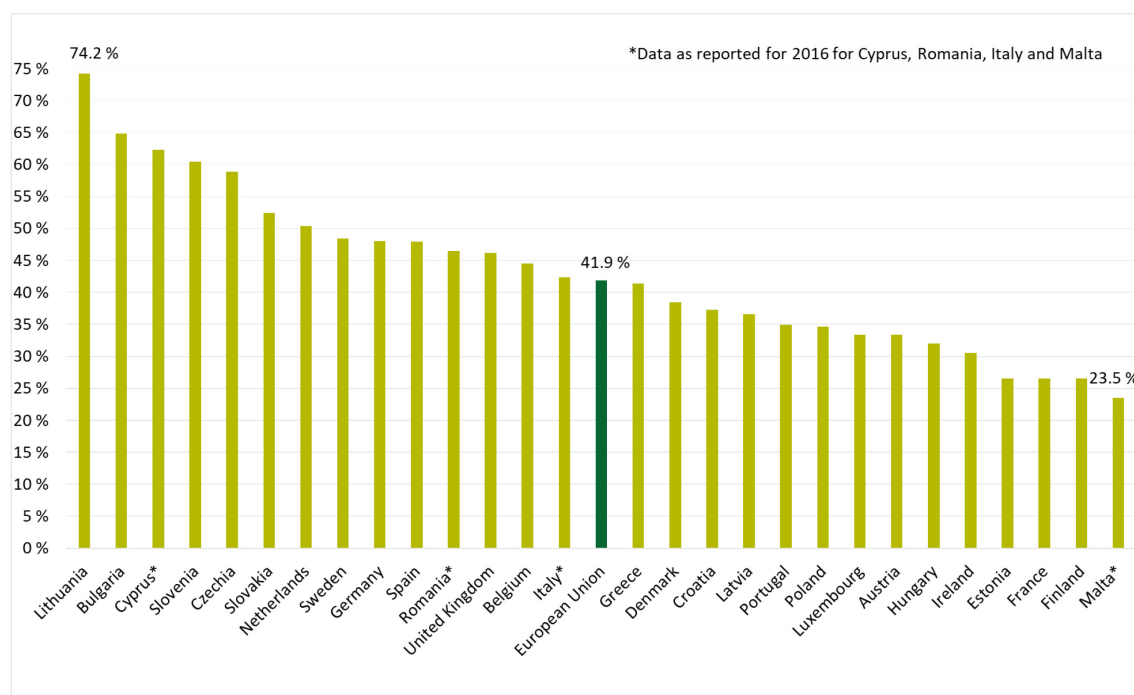
prevention and efficient separate collection of packaging waste. The Commission has launched 45 infringement procedures relating to PPWD against Member States since 2008. These mainly related to non-communication of measures taken by Member States (29 cases), insufficient transposition (8 cases) and bad application of the PPWD (8 cases). No Member State received a fine following these procedures.

Wide discrepancies and margin of error in Member States' data reporting

44 Member States report to the Commission yearly (in year n for year n-2) on plastic packaging recycling rates, as a percentage of the total plastic packaging put on the market. The latest available reported plastic packaging recycling rates vary significantly, from 23.5 % for Malta to 74.2 % for Lithuania with an EU average of 41.9 % (see [Figure 9](#)). Member States measure the quantity of plastic reported as recycled at different points in the collection-sorting-recycling process⁴⁷. This, together with inaccurate estimates of plastic packaging put on the market, can impact the reported recycling rate. Inaccurate estimates may be due to insufficient incentives for correct reporting, exclusion of small producers from data reporting, existence of free-riders, incomplete coverage of online sales and cross-border purchases, exclusion from the calculation of reusable packaging put on the market for the first time.

⁴⁷ Eunomia: 'Study on waste statistics - a comprehensive review of gaps and weaknesses and key priority areas for improvement in the EU waste statistics', October 2017.

Figure 9 – 2017 reported plastic packaging recycling rates



Source: ECA based on data from Eurostat.

45 The study on waste statistics⁴⁸ commissioned by the Commission shows that a significant margin of error is due to leeway in the interpretation of legally binding obligations, insufficient verification of data, wide variation in calculation methods and verification procedures and lack of incentives for accurate reporting. Both the study on waste statistics and the latest implementation report of waste legislation⁴⁹ indicate that the amounts of packaging put on the market may be underreported. Some Member States are trying to address data reporting problems by implementing electronic reporting systems for waste flows (see **Box 2** for an example).

⁴⁸ Ibid.

⁴⁹ European Commission: 'Report on the implementation of EU waste legislation, including the early warning report for Member States at risk of missing the 2020 preparation for re-use/recycling target on municipal waste', COM(2018) 656 final, September 2018.

Box 2

E-GAR platform in Portugal

The Portuguese authorities have set up a platform for on-line reporting of domestic waste movements in 2018, called E-GAR. The system keeps track of all the transports encoded and its managers perform quarterly quality validation checks. The focus is on waste management operations – there are about 3 000 entities treating waste.

The system is based on a validation procedure along the transport chain: the producer or transporter of the waste encodes the data in the system and the receiver of the waste has to confirm the type, quality and quantity of waste. The two parties have 30 days to reach a common position in case of disagreement. As there is a need for a confirmation from the entity of destination, the possibility to circumvent the law is more limited (i.e. an illegal dumping site cannot validate a transport).

E-GAR does not yet produce statistics as its data is still in a validation phase. However, the Portuguese authorities intend to use E-GAR as the main source of national statistical data, with the advantage that, since it covers all waste producers, there would be no need for data extrapolation, as is currently the case. Moreover, data on plastic packaging waste reaching recycling plants would be more accurate.

The system also brings benefits in terms of costs, as there is no need for a paper trail and related storage. The Portuguese authorities have estimated the compound cost of E-GAR to be €0.17 per file compared to €4.55 per paper file previously used.

46 The total EU reported recycling rate for plastic packaging increased by approximately 12 percentage points over the period 2008-2017 (see [Figure 10](#)). The quantity of recycled material steadily increased, but at the same time, the plastic packaging waste reported as generated also increased by 1.7 million tonnes. The quantity of waste material not recycled has thus remained relatively stable at approximately 9.5 million tonnes per year over the last 5 years. This is a significant challenge in the context of the new, more ambitious recycling targets set and broader circular economy ambitions.

Figure 10 – Plastic packaging waste generation and recycling



Source: ECA based on data from Eurostat.

Legislative updates will result in a corrective drop in reported recycling rates

47 To address the data weaknesses mentioned in paragraph 44, the 2018 update of the PPWD introduced stricter requirements for the calculation of recycling rates. It notably harmonised the point of measurement of recycled quantities to produce more accurate and comparable data. There are also additional requirements for the verification of reported data with other data sets and on the provision of data quality check reports. Experts consulted by the ECA estimated that applying the new calculation methods could lead to a decrease in reported recycling rates of up to 10 percentage points. Plastics Europe projected⁵⁰ that the EU plastic packaging recycling rate could decrease from 42 % (current reported rate) to about 29 % (see Figure 10). The new rules came into force in January 2020 for reporting on the new, 2025 and 2030, targets, with the first reports expected in June 2022 (covering year 2020).

48 Due to the new calculation methodology, the gap between current plastic packaging recycling rates and the 2025/2030 targets will increase significantly. Decisive actions are needed to reach the new legally binding recycling targets. In 2015, the

⁵⁰ Plastics Europe: 'The Circular Economy for Plastics. A European Overview', December 2019.

Extender Producer Responsibility Alliance (EXPRA) estimated the maximum theoretically feasible packaging recycling rate for plastic to be 60 %, indicating that recycling rates should be typically lower as it is not possible to collect everything consumers discard⁵¹. Plastic packaging recycling rates are expected to increase in the future following the implementation of new extended producer responsibility rules (see paragraph 37), the development of more and improved separate collection, sorting and recycling infrastructure and the expected update of Essential Requirements (see paragraph 29).

EU funding for plastic packaging waste: infrastructure and treatment options

EU funds waste management infrastructure through cohesion policy instruments

49 The EU finances waste management infrastructure for collection, sorting and treatment mainly through Cohesion Policy. While it is not possible to identify funding relevant solely for plastic waste management, the funding in general helps improve all waste management, which leads to cleaner waste streams that are easier to recycle. Two support measures are financed in this field:

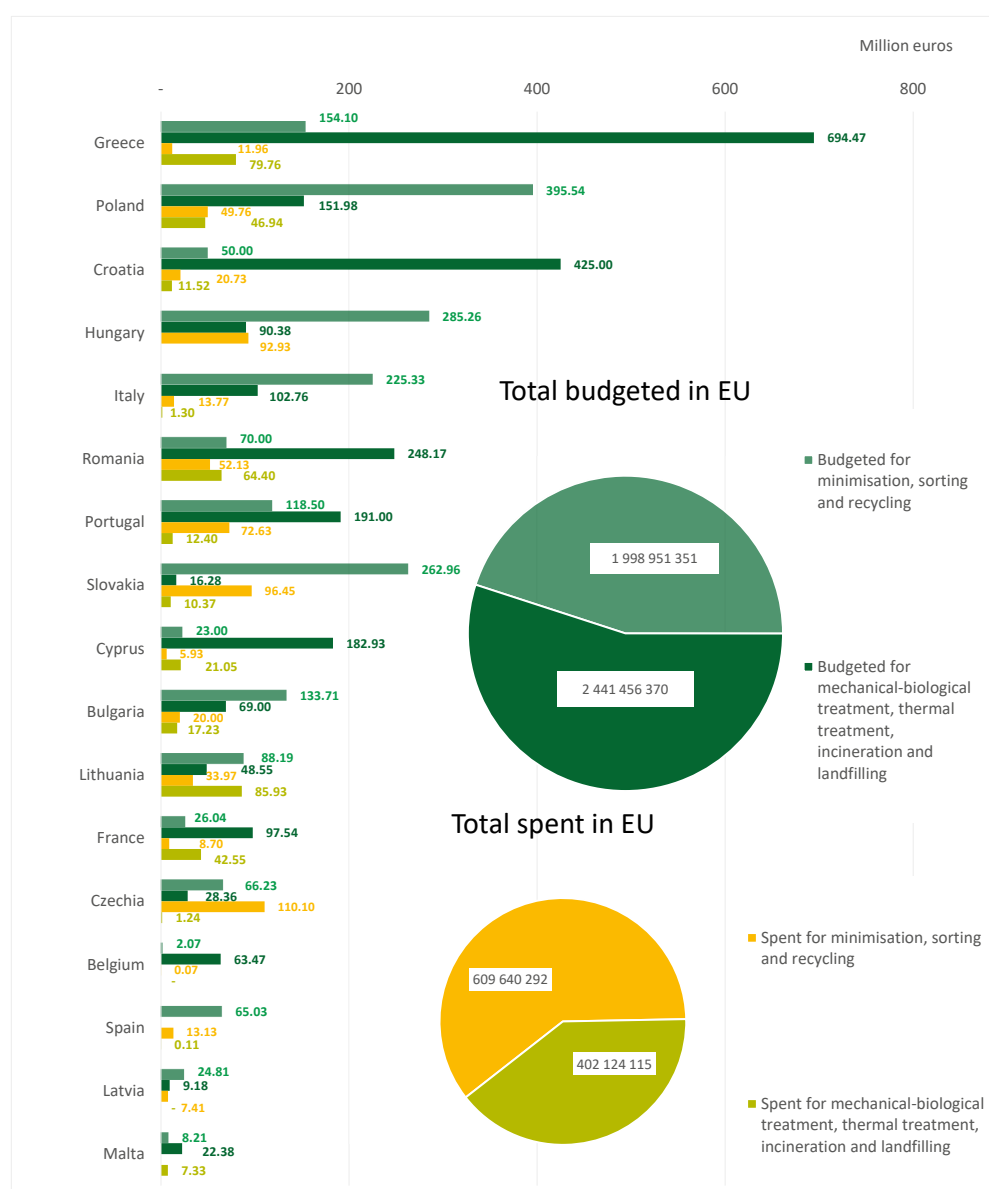
- Measure 17 on household waste management **concerning minimisation, sorting and recycling**, which aims to support treatment options higher up the waste hierarchy (see [Figure 4](#)) better reflecting ambitions to move to a more circular economy;
- Measure 18 on household waste management concerning **mechanical and biological treatment, thermal treatment, incineration and landfilling**, which has slightly larger allocations than Measure 17-55 % of the total allocation for Measures 17 and 18 (see [Figure 11](#)).

50 Expenditure for the current programming period (2014-2020) is low (€1 billion) compared to the funds budgeted (€4.4 billion). Overall, we calculated that 30.5 % of the budgeted funds for Measure 17 were spent and 16.5 % for Measure 18 as of 31 December 2019. A number of factors explain the big gap between allocation and expenditure, notably: bottlenecks to the revisions of Member States waste

⁵¹ EXPRA: 'Analysis of Eurostat packaging recycling data - a study of the years 2006-2012', October 2015.

management plans and other national legislation, the need to revise approved projects, lengthy evaluations of projects, delays in public procurement procedures, lack of capacity by local authorities to manage projects and lack of co-financing⁵².

Figure 11 – Funds from cohesion policy budgeted and spent for 2014-2020



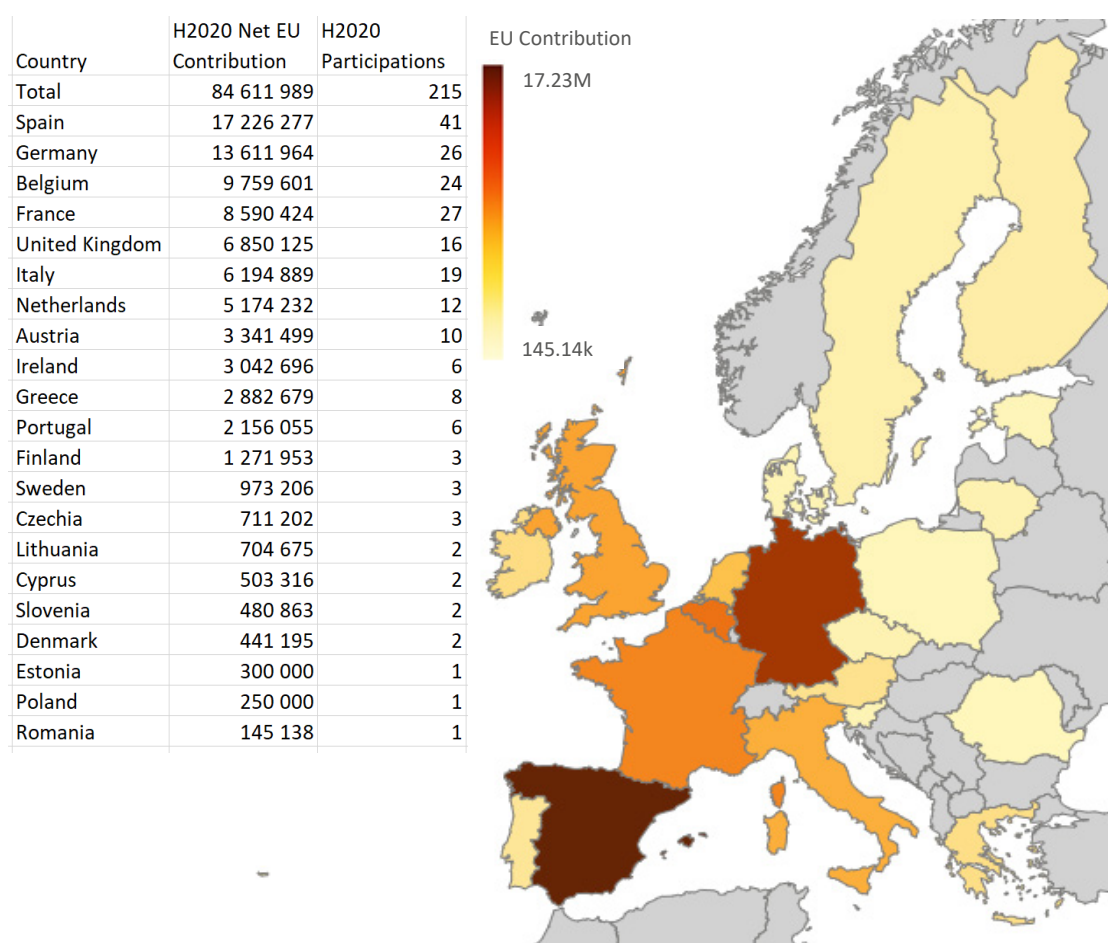
Source: ECA based on data extracted on 16 June 2020 from <https://cohesiondata.ec.europa.eu/> showing situation at 31 December 2019.

⁵² Eunomia: 'Study on investment needs in the waste sector and on the financing of municipal waste management in Member States', June 2019.

Horizon 2020 could improve plastic design and recyclability

51 The Commission reports on its website that the H2020 EU funding programme for research provided approximately €84.6 million in net EU contributions for plastic related research projects. The EU expenditure for plastic related projects represents 17 % of total H2020 funds disbursed by March 2020. *Figure 12* shows the main countries that participate in such projects, which are usually cross-national.

Figure 12 – Horizon 2020 EU net contribution by country for plastic related projects



Source: ECA based on data and map from application SEDIA (Single Electronic Data Interchange Area), data extracted on 16 March 2020.

52 The H2020 projects focus more on the upper part of the waste hierarchy, in line with EU plastic waste management objectives⁵³. They include research on alternative polymers, improved recycling methods or improved design. However, the innovative

⁵³ Ibid.

nature of H2020 projects means that their results are not easily and directly replicable on a large scale to tackle the plastic packaging waste issue.

The LIFE programme finances ways to deal with plastic waste

53 In addition to Cohesion and H2020 funding, the European Commission allocated €3.4 billion for the 2014-2020 period for the protection of the environment and climate through the LIFE fund. There is no disaggregation for plastic waste or plastic packaging waste related funding. However, data from the LIFE projects database shows that the European Commission financed twenty projects relating to plastic waste (funding amounts are not provided).

54 A study made for the Commission⁵⁴ shows that the funding priorities of LIFE support the attainment of EU waste policy objectives, encouraging the implementation of new business and consumption models, supporting resource efficiency and circular economy concepts. As with H2020, LIFE funding is targeting the upper part of the waste hierarchy (see [Figure 4](#)). The mid-term evaluation of the LIFE Programme noted that the Commission could do more to reproduce the projects, transferring their solutions and know-how to produce a catalytic effect. Therefore, the results of the projects are unlikely to have a substantial short-term impact on the plastic packaging waste issue.

Plastic packaging waste shipment

The conditions for shipping plastic waste abroad will become stricter

55 When not treated in the EU, plastic packaging waste can be shipped for recycling to third countries, with stricter rules being applied for hazardous waste as provided in the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Waste Framework Directive 2008/98/EC (WFD) states that it is the EU's goal to become self-sufficient in disposing of and recovering municipal waste (which includes most of the hard to recycle plastic packaging waste).

56 Most plastic packaging waste was considered non-hazardous for shipment purposes until now and was therefore 'green-listed' under the EU waste shipment regulation. In May 2019, the parties to the Basel Convention agreed that only

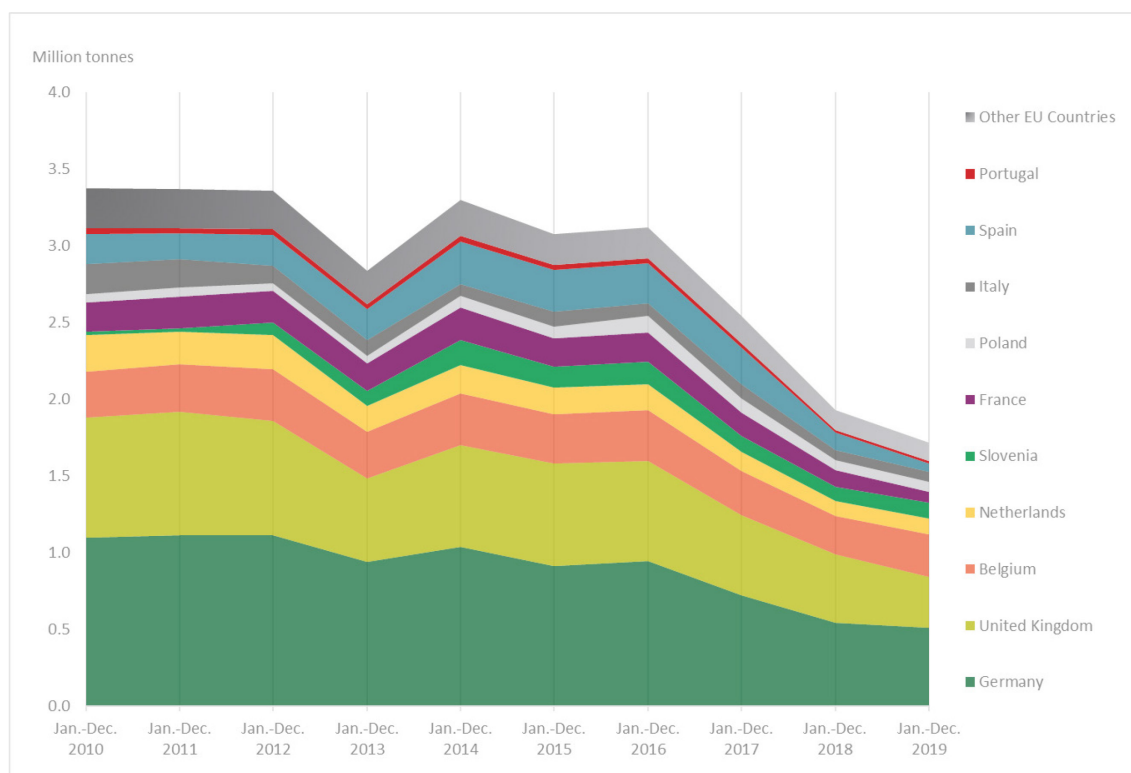
⁵⁴ Ibid.

shipments of pre-sorted, uncontaminated recyclable plastics that are free from all non-recyclable material and have been prepared for immediate environmentally sound recycling are considered as green-listed (non-hazardous). This change will come into effect on 1st January 2021.

Exports of plastic waste and plastic packaging waste are decreasing

57 Exports of plastic waste outside the EU have been decreasing, in particular during the last 3 years. The figure below shows the main Member States exporting plastic waste for recycling outside the EU over the 2010-2019 period.

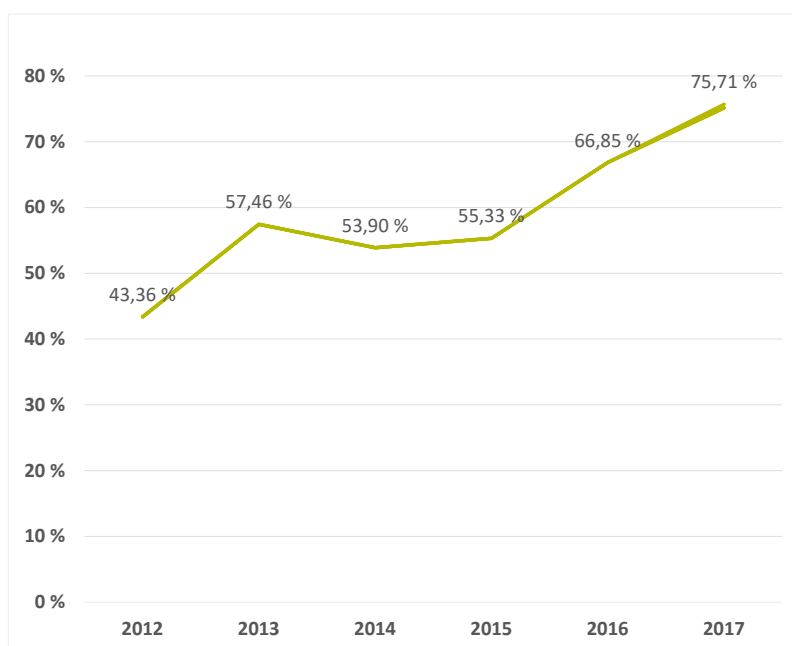
Figure 13 – Main EU countries exporting plastic waste outside EU



Source: ECA based on data from Eurostat – Comext international trade in goods.

58 Exports of both plastic waste and plastic packaging waste declined in 2017 in absolute terms. Packaging waste represents an increasingly large share of plastic waste exports outside the EU: 75 % in 2017 up from 43 % in 2012 (see [Figure 14](#)). This suggests that EU Member States are highly reliant on extra-EU recycling to manage their plastic packaging waste. This trend should be seen in the context of the challenges surrounding the development of waste management infrastructure (see paragraph [50](#)), including bringing new technologies to market at scale (e.g. chemical recycling), and increasing public and legislative pressure to address the plastic waste issue.

Figure 14 – Share of exports of plastic packaging waste in total plastic waste exported outside European Union



Source: ECA based on data on plastic packaging waste exports extracted from Eurostat's database on *Packaging waste by waste management operations and waste flow* and data on plastic waste exports extracted from Eurostat's Comext database on international trade in goods.

Shipped plastic packaging waste accounts for a third of the EU's reported recycling rate

59 Plastic packaging waste can be shipped outside the EU for recycling purposes. Exporters are required to demonstrate that the waste is treated under similar conditions to those in the EU⁵⁵. Member States have used this option to ship significant amounts of plastic waste overseas and in particular to Asia (see [Table 2](#)). In 2018, according to data from Plastics Europe, the EU shipped 6.5 % of all plastic waste collected overseas. This is equivalent to 20.2 % of the plastic waste sent to recycling facilities. Shipments for recycling outside the EU account for 27 % to 30 % of reported plastic packaging waste recycling over the 2012-2017 period⁵⁶. This shows that shipping for recycling outside the EU plays a significant role in reaching the plastic packaging recycling targets.

⁵⁵ [Waste Framework Directive](#).

⁵⁶ Based on data from Eurostat.

Table 2 – EU plastic waste exports

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Plastic waste exported outside EU (million tonnes)	3.37	3.37	3.36	2.84	3.30	3.08	3.12	2.55	1.93	1.72
Main ten Asian destinations (% in total EU exports)	95 %	96 %	95 %	94 %	95 %	95 %	94 %	91 %	86 %	83 %

Source: ECA based on data from Eurostat – Comext international trade in goods.

60 EU operators must receive documentation attesting that the treatment (including recycling) of plastic packaging waste in a third country is done under broadly equivalent standards to those in the EU. Nevertheless, the European Environment Agency notes that treatment in non-EU countries often causes higher environmental pressure in terms of pollution, CO₂ emissions and plastic leakage into the environment, than treatment or recycling in the EU. Verification of compliance with EU plastic waste treatment standards in third countries is often insufficient to ensure respect of EU standards⁵⁷. Member State national authorities have no control powers in third countries and extended producer responsibility organisations, which are responsible for plastic packaging waste management, rarely perform on-the-spot checks. This translates into a low assurance relating to recycling outside the EU and significant risk of illegal activities.

61 The 2018 update of the PPWD and implementing rules⁵⁸ requires Member States to describe in a quality check report the specific monitoring and validation measures taken to ensure that plastic packaging waste exporters comply with the obligation of equivalence of treatment conditions.

The China ban on imports of plastic waste led to changes in the destination of exports from EU Member States

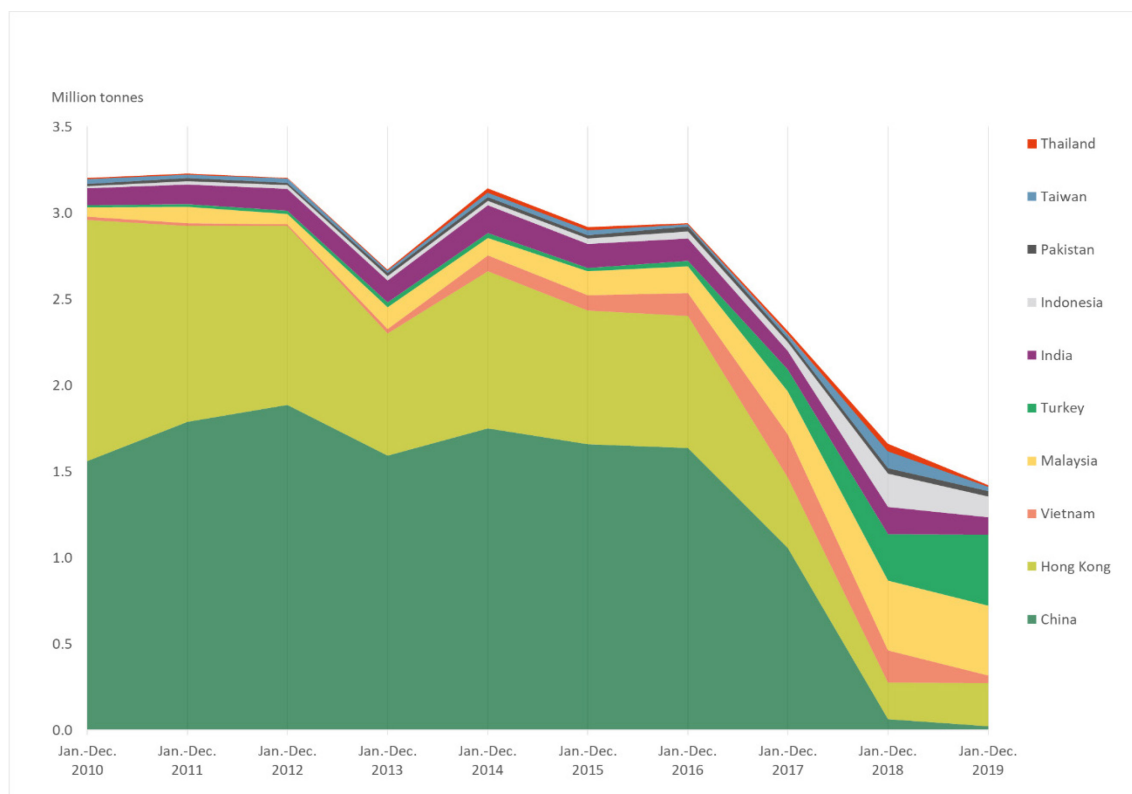
62 China (including Hong Kong) was the main destination for the export of EU plastic waste before 2018, accounting for 77 % (2.4 million tonnes) of total EU exported plastic waste in 2016. In July 2017, China announced a ban on imports of plastic waste, taking effect at the beginning 2018. Following this ban, exports to China decreased rapidly and the portfolio of destination countries for EU plastic waste diversified (see [Figure 15](#)). Other Asian countries experienced significant increases in imports of

⁵⁷ EEA: ‘Plastic waste trade and the environment’, October 2019.

⁵⁸ Commission Implementing Decision (EU) 2019/665 of 17 April 2019.

EU plastic waste between 2016 and 2018: Thailand an eightfold increase, Turkey a sevenfold increase, Taiwan a fivefold increase, Indonesia a threefold increase. As a result, more countries also imposed plastic waste import restrictions. Data for 2019 shows Turkey and Malaysia as the main Asian destinations for plastic packaging waste exports.

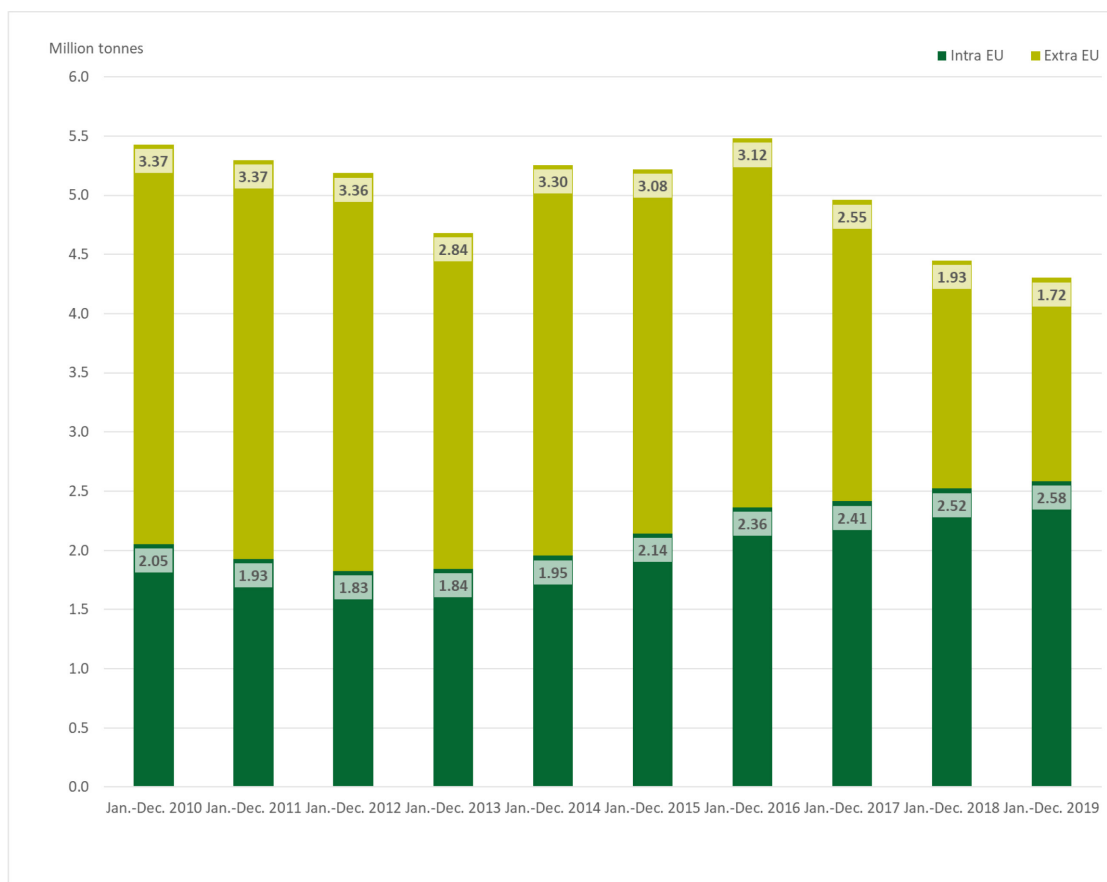
Figure 15 – Main Asian destination countries for EU plastic waste



Source: ECA based on data from Eurostat – Comext international trade in goods.

63 The China ban also accelerated the increase in intra-EU plastic waste movements (see [Figure 16](#)). These changes can be due to waste reaching available infrastructure inside the EU (recycling, incineration and landfill capacity) or due to different transit routes during the plastic waste's export outside the EU.

Figure 16 – Evolution of intra-EU and extra-EU trade in plastic waste



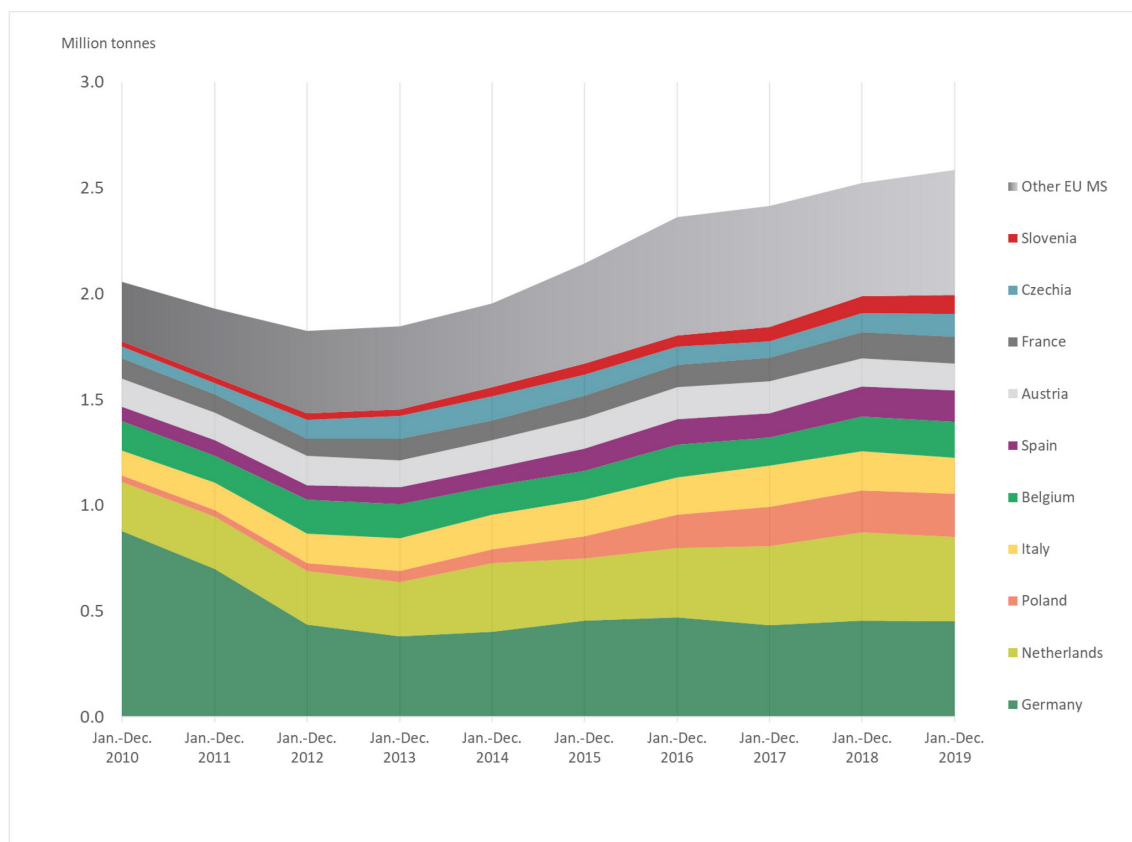
Source: ECA based on data from Eurostat – Comext international trade in goods.

64 Some Member States have seen significant increases in plastic waste imports between 2016 and 2019. Slovenia saw a 68 % increase, Poland 30 %, Czechia 26 %, Spain 25 % and the Netherlands and France around 20 %. [Figure 17](#) provides an overview of the main plastic waste destinations inside EU. Importing Member States may also just be transit points (see Green Tuscany case in [Box 3](#)).

65 The challenge posed by the China ban puts increasing pressure on Member States' capacity to manage their plastic packaging waste. The Commission estimates that the EU has facilities to recycle half of its total plastic waste⁵⁹. Data on other plastic waste capacities for sorting, incineration and landfilling is not available.

⁵⁹ European Commission: 'Staff Working Document Accompanying the 2018 Plastics Strategy'.

Figure 17 – Main destination countries for intra-EU trade of plastic waste



Source: ECA based on data from Eurostat – Comext international trade in goods.

66 In order to maintain the current plastic packaging recycling rate and increase it to meet the new targets, Member States will have to increase and improve their recycling capacity to cover:

- The quantities of plastic packaging waste that will become subject to the stricter controls of the Basel Convention (see paragraph 56) and thus not as easy or even not possible to export outside the EU for recycling;
- The quantities of plastic packaging waste that are currently reported as recycled but will be reclassified as not recycled following the change in the reporting requirements;
- The required increase in quantities of plastic packaging waste recycled to meet the 2025 and 2030 legally binding targets.

Plastic packaging waste trafficking: environmental crime

67 Environmental crimes are acts that breach environmental legislation and cause or risk causing significant harm to either the environment and/or humans. The EU

adopted Directive 2008/99/EC on the protection of the environment through criminal law requiring Member States to treat environmental crimes as criminal offences. The main areas of environmental crime include, among others, illegal shipment and dumping of waste.

Illegal disposal of plastic waste is a serious and complex crime

68 Environmental crime, including illegal plastic waste shipment and discharge, has a significant impact on the environment, wildlife and human health and leads to significant economic losses. A 2013 Commission report concluded that illegal waste disposal and insufficient waste treatment facilities, led to missed opportunities for economic growth and threats to the environment⁶⁰. Illegal waste disposal is linked to organized crime⁶¹ and money laundering and is one of the most lucrative illegal markets in the world, on a par with human trafficking and illegal drugs and firearms trade, due to the low risk of prosecution and low fines⁶². Europol's Serious and Organised Crime Threat Assessments from 2013 and 2017 flag this type of crime as an important threat and a key focus area of Europol's work, which includes coordinating Member States' actions (see [Box 3](#)).

69 A Council report on environmental crime⁶³ indicated that the current detection and prosecution rate for waste-related crime is low. It estimated that it is much lower⁶⁴ than other types of crime while sanctions are not proportional and dissuasive, sometimes being lower than the profits from illegal activity⁶⁵. The complexity of the shipment chain makes it hard to prosecute the parties involved and prove that they knew about the illegal disposal of the waste. The waste can change hands multiple times across multiple countries before being illegally disposed of, while the first actor initiating the waste flow receives documents attesting that the plastic packaging waste is recycled. The figure in [Box 3](#) gives a theoretical example of how illegal international

⁶⁰ European Commission: '[Report on the implementation of the EU waste legislation](#)', COM (2013) 6 final, 17 January 2013.

⁶¹ Waste force project: '[Waste Crime Alerts](#)'.

⁶² "European Union Action to Fight Environmental Crime" (EFFACE): '[Crime and the EU. Synthesis of the Research Project Final synthesis Report of the Research Project](#)', March 2016.

⁶³ Council of the European Union: '[Final report of the Eighth round of mutual evaluations on environmental crime - Information and discussion at the Council](#)', 15 November 2019.

⁶⁴ European Network of Prosecutors for the Environment: '[Environmental prosecution report tackling environmental crime in Europe](#)', March 2017.

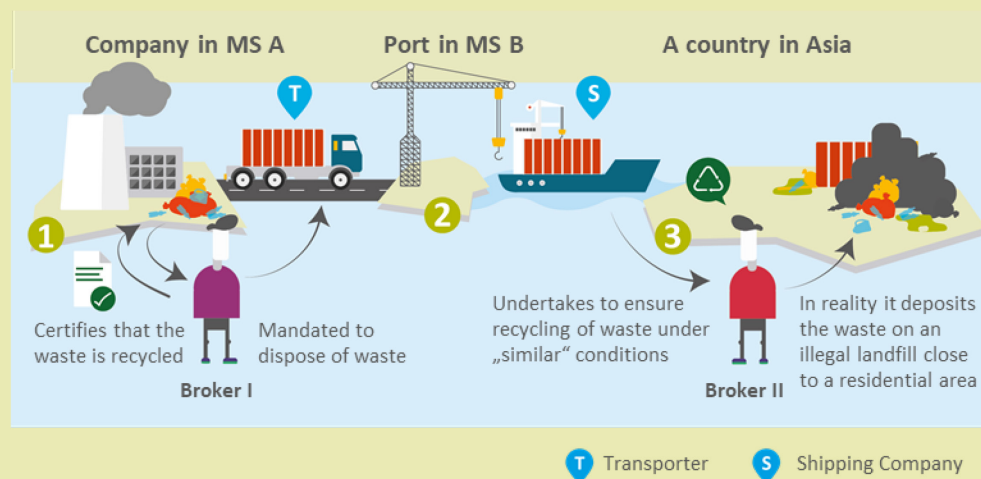
⁶⁵ Countering WEEE Illegal Trade: '[Summary Report](#)', 30 August 2015.

plastic packaging waste trafficking can take place, to complement the real life case uncovered by Europol's operation Green Tuscany.

Box 3

Illegal traffic of plastic packaging waste

Theoretical illegal waste flow



Source: ECA.

Operation Green Tuscany

In 2019, 96 people were arrested as part of operation Green Tuscany, a collaboration between Italian and Slovenian law enforcement authorities coordinated by Europol. The 96 individuals were part of an organized crime group, which was illegally transporting plastic waste from Italy to China via Slovenia. Slovenian companies were providing Italian companies with documents attesting that the waste was recycled before being sent to China. 560 illegal plastic waste shipments of a total value of €8 million were detected during the operation.

Source: Europol.

Plastic waste is one of the main commodities shipped illegally

70 IMPEL, the EU network of environmental authorities for the implementation and enforcement of environmental law, estimated in 2011 that illegally trafficked waste amounts to approximately 20 % of all waste shipments in the EU⁶⁶. The World Customs Organization launched in 2009 operation Demeter, a joint global initiative targeting illegal shipments of waste, which was repeated several times. Recent results⁶⁷ of operation Demeter confirm that plastic waste is one of the main types of illegal

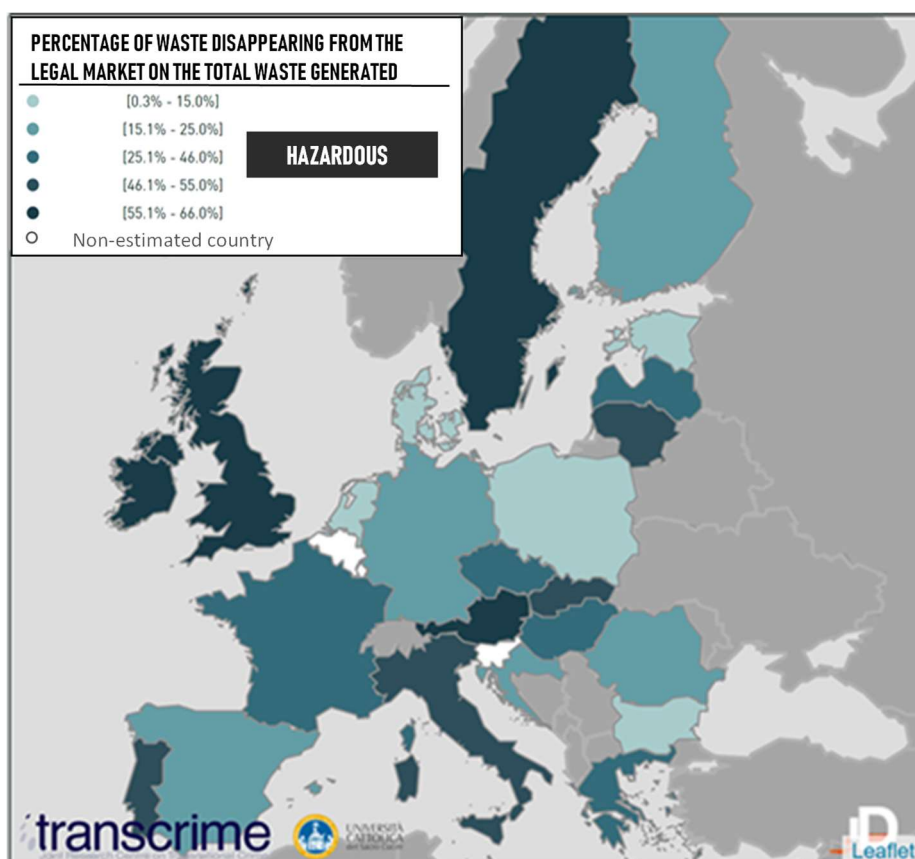
⁶⁶ EnviCrimeNet: 'Report on Environmental Crime', 27 May 2016.

⁶⁷ Operation Demeter of 2019.

shipments of waste (alongside WEEE), constituting about 23 % of the total commodities seized.

71 In 2017, Block Waste⁶⁸ estimated that on average 13 % of all non-hazardous waste disappears from the EU legal waste market each year. For hazardous waste, this percentage goes up to 33 % (see [Figure 18](#) below for data per Member State). Most plastic packaging waste was considered non-hazardous for shipment purposes until now. Recent changes to the Basel convention mean that from 2021 most current plastic packaging waste shipments would be assimilated to hazardous waste. It will therefore be subject to an export ban to non-OECD countries. This, combined with the lack of capacity to treat plastic packaging waste within the EU, increases the risk that it is disposed of illegally both within the EU's borders and when shipped to third countries.

Figure 18 – Estimated share of hazardous waste removed from the legal market



© Block Waste EU funded project.

⁶⁸ Block Waste project: 'An exploratory estimate of the extent of illicit waste trafficking in the EU', 31 October 2017 (research project co-funded by the Internal Security Fund of the European Union).

The EU's legal framework to tackle waste crime marked by shortcomings

72 In 2008, in response to this growing problem, the EU adopted Directive 2008/99/EC on the protection of the environment through criminal law. It requires Member States to treat as criminal offences activities that breach EU environmental legislation and ensure that they are punishable by effective, proportionate and dissuasive criminal penalties. Such activities include collection, transport (including illegal shipment), recovery and disposal of waste likely to be harmful to the environment or people. All operators along the value chain could be subject to such measures: from the entity generating the waste to dealers, brokers, shipping operators and destination operators. The directive is currently under review.

73 A report of the European Union Action to Fight Environmental Crime (EFFACE)⁶⁹ has identified a number of problems that limit the effectiveness of the Environmental Crime Directive and consequently of the fight against waste trafficking, including plastic packaging waste trafficking, notably:

- Lack of data on contaminated sites as well as on sanctions and prosecution rates;
- Difficulties in determining which behaviour constitutes environmental crime due to legal uncertainties such as the definition of waste versus end-of-waste;
- Failure of EU legal acts to address the growing involvement of organised criminal groups in environmental crime, which is then associated with other crimes such as money laundering (the Anti money laundering directive⁷⁰ has since updated the definition of predicate crime to include environmental crime);
- Absence of harmonised EU rules on the mix of sanctions (administrative/ criminal/ civil);
- Lack of specialised police forces, prosecutors' offices and judges to deal with environmental crime.

⁶⁹ "European Union Action to Fight Environmental Crime" (EFFACE): 'Crime and the EU. Synthesis of the Research Project Final synthesis Report of the Research Project', March 2016.

⁷⁰ Directive (EU) 2018/1673 of the European Parliament and of the Council of 23 October 2018 on combating money laundering by criminal law.

Overview of opportunities, gaps, challenges and risks

74 All Member States have reported meeting their 2008 plastic packaging recycling target of 22.5 %. Differences in data collection and reporting methods allowed for by the legal framework lead to considerable variations between Member States' reported recycling levels and hamper reliability of data. Significant shortcomings in the design, implementation and enforcement of the legislative and regulatory framework applicable to plastic packaging waste was found. Plastic packaging remains the only type of plastic waste subject to a binding recycling target. Other sectors generating plastic waste, even if they are subject to broader waste management targets, have yet to develop dedicated strategies or set specific targets for managing plastic waste. The Commission will review waste legislation in some of these sectors (e.g. automotive and construction) in the near future.

75 The EU has set its Member States challenging new plastic packaging recycling targets for 2025 (50 %) and 2030 (55 %). It has also set stricter recycling performance measurement rules for Member States' plastic packaging recycling rates. This should provide a more accurate reflection of the actual rate of plastic packaging recycling. However, a drop in the EU's reported plastic packaging recycling rate is expected as a result. The Commission welcomes the likely improvement in data accuracy and highlights that all the Member States and economic operators across the whole value chain need to take coordinated action if the EU is to almost double the amount of plastic packaging waste it recycles by 2030. The attainment of these targets would constitute a significant step towards achieving the EU's circular economy goals, reinforcing the EU's position as a global leader in plastic packaging recycling. This review underlines some of the opportunities, gaps, challenges and risks of the EU actions to tackle plastic waste.

Opportunities

76 The EU's reporting system for plastic packaging waste recycling has been strengthened and harmonised, which has the potential to reinforce trust in the system. Strengthened rules on separate collection and Extended Producer Responsibility should lead to higher quantity and quality of recyclables. Fee modulation in EPR schemes creates an opportunity to promote recyclable packaging, strengthening one of the main tools Member States can use to attain the new targets and sending a clear signal to the market to favour recyclability. Potential new strengthened and

enforceable Essential Requirements could achieve better packaging design for recyclability and could incentivise going even higher up the waste hierarchy by incentivising reuse. EU research funding can support all these efforts. The further development of the recycling industry and the market's adaptation to stricter circularity principles, notably by integrating recycled plastic into new products, could lead to job creation and create a first mover advantage for EU companies in certain sectors.

Gaps

77 Plastic packaging waste is the largest single plastic waste stream (61 % of all plastic waste) and is subject to ambitious EU plastic recycling targets. None of the other main plastic waste streams (agriculture, construction, electric and electronic equipment and automotive), which together generate 22 % of plastic waste in the EU, have been set any similar targets for the management of their plastic waste. The EU's strengthened and stricter reporting system for plastic packaging recycling is expected to lead to a downward correction in the EU's average reported plastic packaging recycling rate from 41 % (2017) to as low as 32-29 %. These new figures underscore the considerable gap between the EU's current level of recycling and its target for 2025 (50 %).

Challenges

78 Significantly increasing the EU's average plastic packaging recycling rate in the next ten years, coupled with the need to improve the uptake of recycled content in new products, is clearly a challenge. It will be an even bigger challenge for those Member States currently below the EU's average plastic packaging recycling rate (see [Figure 7](#)). The challenge of ramping up recycling capacity in Europe is all the greater given the entry into force of the new Basel convention in 2021. This will make the export of plastic packaging waste to third countries, which accounted for a third of the EU's reported plastic packaging waste recycling rate in 2017, more difficult and increase pressure on the EU's recycling capacity.

Risks

79 Given the challenges and gaps outlined above there is a risk that some Member States will miss the EU's new plastic packaging recycling targets, putting at risk the attainment of the EU's overall target as well. The expected increase in pressure on EU

plastic recycling capacity will coincide with the likely reduction in shipment of waste outside the EU, an important outlet for excess plastic waste. This risks leading to an increase in waste crime and illegal shipping, compounded by weaknesses in the current EU legal framework for the protection of the environment through criminal law.

80 The EU's ambition to improve its plastic packaging recycling reflects the scale of the environmental challenge that plastics constitute. New legislation and targets on plastic packaging waste are an indication of the EU's and Member States' commitment to allocating, sometimes considerable, resources to address the challenge of plastic waste. Concerted action by all actors along the value chain is necessary to address these challenges.

This Review was adopted by Chamber I, headed by Mr Samo JEREB, Member of the Court of Auditors, in Luxembourg at its meeting of 9 September 2020.

For the Court of Auditors

Klaus-Heiner LEHNE
President

Acronyms and abbreviations

CEAP: Circular Economy Action Plan

CEN: European Committee for Standardisation

CPA: Circular Plastic Alliance

DRS: Deposit Return Schemes

EFFACE: European Union Action to Fight Environmental Crime - a research project on environmental crime

EGAR: Guias eletrónicas de acompanhamento de resíduos

EPR: Extended Producer Responsibility

EXPRA: Extender Producer Responsibility Alliance

ELV: End-of-Life Vehicle

H2020: Horizon 2020 research funding programme

IMPEL: European Union Network for the Implementation and Enforcement of Environmental Law

OECD: Organisation for Economic Cooperation and Development

PPWD: Packaging and Packaging Waste Directive

PET: Polyethylene Terephthalate

SUP: Single Use Plastic

UN: United Nations

WEEE: Waste Electronic and Electrical Equipment

WFD: Waste Framework Directive

Glossary

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention): A multilateral environmental agreement to protect human health and the environment against the adverse effects resulting from the generation, transboundary movements and management of hazardous wastes and other wastes. Under the convention exports to non-OECD countries of hazardous waste and of some other 'waste requiring special consideration' (notably household waste and, from 2021, plastic waste which is difficult to recycle) is banned. Export to non-OECD countries of other waste is allowed only under specific conditions, including the requirement of prior consent from destination and transit countries.

Chemical recycling: A term used to describe innovative technologies where post-consumer plastic waste is converted into chemicals, to be used as feedstock that can produce virgin-like polymers to create new plastic articles.

Deposit-return scheme: A surcharge on a product when purchased and a rebate when it is returned. The scheme aims to limit pollution of various types by creating an incentive to return a product.

Eco-modulation: The process whereby the financial contribution paid by the producer of packaging to an Extended Producer Responsibility Scheme is varied for products or groups of products on the basis of factors such as recyclability, re-usability and presence of hazardous substances.

End-of-waste: According to the Waste Framework Directive 2008/98/EC, certain specified waste shall cease to be waste when it has undergone a recovery (including recycling) operation and complies with specific criteria set for specific materials by the Commission.

Environment Action Programme: A general multiannual policy framework for the EU's environment policy. The most important medium and long-term environmental goals are defined in the EAP and a basic strategy is set out, including, where appropriate, concrete measures.

Environmental crime: This crime category includes illegal shipment and discharge of waste, illegal emission or discharge of substances into air, water or soil, the illegal trade in wildlife and illegal trade in ozone-depleting substances.

Extended Producer Responsibility: According to this concept, companies producing a product are also responsible for its management at end-of-life and once it becomes waste.

Green-listed waste: For the EU Waste Shipment Regulation, green-listed wastes are those listed in Annexes III, IIIA and IIIB of the Regulation. These wastes, in principle, do not require a prior consent by the involved countries in order to ship them.

Hazardous waste: Waste that has substantial or potential threats to public health or the environment. It cannot be disposed of by common means like other by-products of our everyday lives.

Leachate: A liquid that has dissolved or entrained environmentally harmful substances that may then enter the environment. It is most commonly used in the context of landfilling of putrescible or industrial waste.

Life-cycle-analysis: A methodology for assessing environmental impacts associated with all the stages of the life-cycle of a commercial product, process, or service.

Plastics: A wide range of synthetic or semi-synthetic organic compounds that are malleable and so can be molded into solid objects. Plastics are typically organic polymers of high molecular mass and often contain other substances (additives). They are usually synthetic, most commonly derived from petrochemicals, however, an array of variants are made from renewable materials such as polylactic acid from corn or cellulose from cotton linters.

Polluter-pays principle: The idea that the person or organization that causes pollution should pay to put right the damage that it causes.

Polymer: A molecule whose structure is composed of multiple repeating units, from which originates a characteristic of high relative molecular mass and attendant properties (e.g. toughness and viscoelasticity).

Polyethylene Terephthalate (PET): The most common thermoplastic polymer resin of the polyester family and is used in fibres for clothing and containers for liquids and foods.

Recovery: Any activity listed in Annex IIB of the Waste Directive (74/442/EEC). This is a broad definition including 13 different activities, notably the recycling/reclamation of metals and the regeneration of acids or bases.

Reuse (of vehicles): Any operation by which components of end-of life vehicles are used for the same purpose for which they were conceived (ELV Directive, Article 2.6).

Waste crime alerts: Waste force project publishes regularly reports that analyse waste crime appearing in the media. Plastic waste crime is one of the main types of crime identified. The alerts also indicate the involvement of organized crime groups.

ECA team

ECA Review – EU action to tackle the issue of plastic waste

This review was adopted by Chamber I Sustainable use of natural resources, headed by ECA Member Mr Samo Jereb. The task was also led by him, supported by Kathrine Henderson, Head of Private Office and Jerneja Vrabič, Private Office Attaché; Michael Bain, Principal Manager; Nicholas Edwards, Head of Task; Lucia Roşca, Deputy Head of Task, Joanna Kokot, Paolo Braz and Marika Meisenzahl, Auditors.

As a consequence of the COVID-19 pandemic and the strict confinement conditions, no picture of the audit team could be provided.

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Figure 5: © OECD, 2018.

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This review examines the EU's response to the growing problem of plastic waste with a focus on plastic packaging waste. The EU's 2018 plastics strategy proposes measures aiming to improve recyclability, collection, sorting, recycling and recycled content of plastic products. The revised Packaging and Packaging Waste directive set new plastic packaging recycling targets for 2025 (50 %) and 2030 (55 %). New stricter reporting rules will likely lead the EU's reported average plastic packaging recycling rate to drop. Even for plastic packaging, the most developed arm of the plastics strategy, concerted action by stakeholders at EU and Member State level will be required to bridge the considerable gap between the current recycling rate and where we need to be in only 5 to 10 years' time.

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