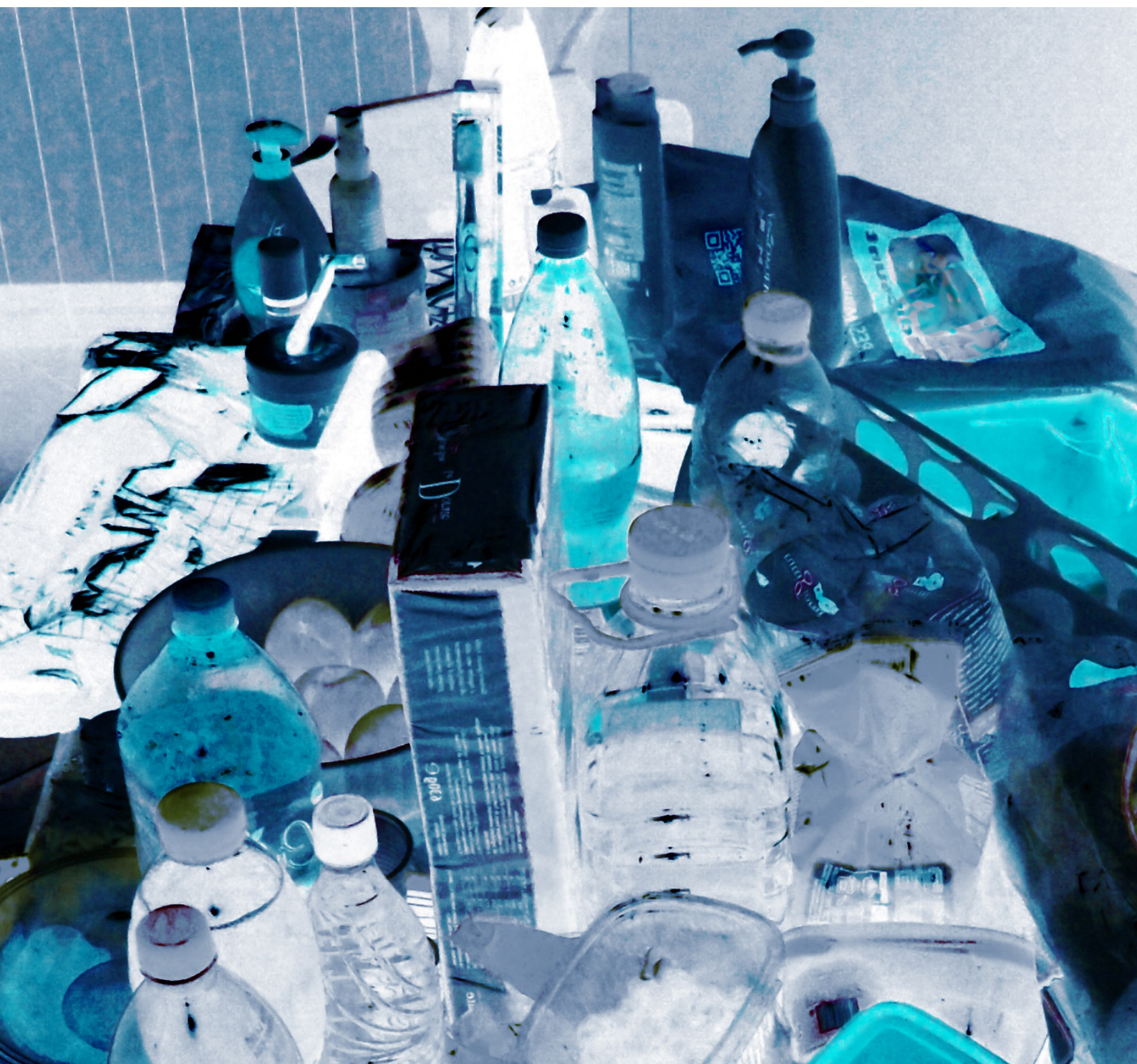


Preventing plastic waste in Europe

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The report has benefited greatly from the comments and feedback that were received from EEA member countries, cooperating countries and other partners during a survey conducted in 2018 and a final consultation process that took place in early 2019.

This is the fifth and last EEA report in a series of annual reviews of waste prevention programmes in Europe, as stipulated in the European Union (EU) Waste Framework Directive (EU, 2008). The Directive was revised in 2018 and now frames a different context for the EEA's work on waste prevention, which will be reflected in a new series of biannual waste prevention reports in the future. This year's review focuses on plastic waste prevention and covers 37 national and regional waste prevention programmes that had been adopted by the end of 2018.

Key messages

The use of plastics is increasingly recognised as a significant global environmental issue:

- **Demand** for plastics is increasing rapidly worldwide. In 2017, the demand for plastics in the 28 EU Member States stood at almost 52 million tonnes, up from 46 million tonnes in 2010. Global production of plastics reached 348 million tonnes in 2017, an extra 13 million tonnes compared with the year before.
- Plastic production has harmful impacts on the environment and climate. Estimates put the contribution of plastic production and plastic waste incineration globally at **400 million tonnes of carbon dioxide equivalent (CO₂e) annually**.
- Almost **one fifth** of the global plastics production of 335 million tonnes was produced in Europe.
- Plastics are mainly used in **packaging** and in the building and **construction** sectors.
- In 2016, **31.1 %** of plastic waste was **recovered** in Europe — but only 63 % of the recovery took place in Europe — and only about **6 %** of the current European demand for plastics was covered by domestic recycled or secondary plastics.
- Within the mapped measures, 25 are **regulatory** and refer mainly to measures banning micro-plastics, micro-beads and some types of single-use plastics.
- The review of the measures taken by countries revealed that 37 of the 173 measures identified are **market based**. The majority of the market-based instruments referred to fees for plastic carrier bags.
- A total of 30 **voluntary** agreements on plastic waste prevention have been initiated in different forms with different sets of stakeholders across the countries reviewed. They often include specific targets that are monitored by internal or external parties.
- Only nine countries have explicit waste prevention **targets** included in their prevention programmes. Clear and common targets are still lacking for most product groups and thus the levels of activity and ambition clearly differ among the countries.
- The good practice examples include both regulatory initiatives such as a ban on certain plastic products and softer measures such as stakeholder agreements to reduce the consumption of plastic products (mainly packaging), and training and capacity building. Unfortunately, there are very few cases in which the initiatives adopted have been properly **evaluated**.

Plastic waste prevention can offer solutions in reducing environmental pressures from plastic consumption. Countries are responding by taking waste prevention measures:

- Plastic waste is declared a **priority** waste stream by nearly half of the countries investigated.
- Of the 173 waste prevention measures identified, 105 cover the **production** phase of plastic products and 69 cover the **consumption** phase.
- With the exception of national legislative requirements, such as the levy on plastic carrier bags, the majority of the identified prevention measures refer to **voluntary** agreements and **informative** instruments.

The road ahead involves intensifying countries' waste prevention efforts:

- Prevention of the most **impactful plastic types**, plastic products that are designed to be used once and for a very short time (the so-called 'single-use plastics') and non-recyclable plastic products should be prioritised.
- Although the example of the fee placed on plastic carrier bags in many countries has borne impressive results, countries should be encouraged to **diversify** their implemented measures.

Executive summary

Waste prevention is at the centre of EU waste legislation as it delivers the most effective results in dealing with environmental issues around waste. EU or national strategies and legislation around waste, therefore, routinely place waste prevention at the top of their objectives.

Waste prevention can be implemented in any waste stream, but it needs to be customised to reflect each stream's particularities. This report focuses on plastic wastes, as there is potential for substantial mitigation of the environmental issues raised by increased plastic consumption through the use of waste prevention instruments and mechanisms.

The scale of plastic production and plastic waste generation

Demand for plastic products is increasing worldwide and in Europe in particular. In 2017, total demand in Europe reached 52 million tonnes, representing around 15 % of global demand. The use of plastic in products keeps increasing because of its low price and the useful properties of the various plastic types, which make them effective in a wide variety of applications. Packaging is the sector that uses most of the plastic produced, followed by the construction, automotive and electronics sectors.

Different applications of plastics have different consequences for waste management. Plastics become waste almost instantly if used for packaging but do so only after up to 50 years if used in construction. Therefore, different approaches for implementing waste prevention are needed for the different plastic products and types. For example, prevention measures targeting short-lived plastics can be more effective in both reducing waste generation and alleviating environmental impacts from their consumption.

The increasing consumption of plastics is reflected in plastic waste generation, which is also increasing. However, recovery of plastic waste is also on the rise, with plastic waste recycling reaching 31.1 % in 2016. A significant share of plastic waste generated in Europe is traded to other regions of the world and a lot of the

recycling of this material takes place outside Europe. In 2016, only 6 % of European plastic production was based on recycled material.

A circular economy refers to an economic model in which the value of the products and materials is kept as high as possible and for as long as possible. This principle can be implemented by considering the design, manufacturing, consumption and waste management stages of the products' life cycles. Under the circular economy context, some of the plastics' inherent characteristics are in conflict with this main principle (see Figure 1.1).

Already, managing plastic waste generation presents multiple challenges, and this will increase in the future. As waste prevention is the preferable option in the waste hierarchy, prevention can play a fundamental role in curbing plastic waste generation. Waste prevention measures are suitable for addressing issues around increasing consumption, reducing recirculation of hazardous substances present in plastic products and difficulties faced by waste management in recovering a substantial amount of plastic resources. In this report, we aim to map waste prevention initiatives in Europe targeting plastics, with a view to understanding:

1. What is their main focus?
2. To which policy structures (targets, indicators, measures) do they belong?
3. What are the best practice examples in the area?
4. What potential for improvement can be identified on the basis of this analysis?

Looking into data on plastic packaging waste generation helps us understand the effectiveness of waste prevention on plastic packaging to date. The effectiveness is primarily assessed by comparing rates of increase for waste generation and for the economy as a whole. Absolute decoupling indicates negative rates for waste generation and positive rates for gross domestic product (GDP). Relative decoupling indicates lower rates for waste generation compared with GDP.

Data from 2007 to 2016 for the 28 EU Member States show a recent relative decoupling of plastic packaging waste generation from economic growth. However, there are great differences in the development of plastic packaging waste generation per capita in the individual countries over the same time period. Of the 28 EU Member States, nine managed to decouple (absolutely or relatively) plastic packaging waste generation from economic growth. However, the economic level, structure and development of the countries plays an important role in the level of waste generation, making it difficult to attribute changes in waste quantities to waste prevention measures alone.

Scope and methodology

Based on a review of available waste prevention programmes, supplemented by a direct country consultation, 173 plastic waste prevention measures were identified as implemented, or planned for immediate implementation, by European countries. At the same time, the analysis was supported by identifying good practice examples.

State of play of waste prevention in Europe

Around 60 % of the measures identified address plastic production, while the rest refer to consumption patterns of plastic products. The vast majority of measures aim to reduce the amount of plastic waste, which reveals an imbalance compared with other types of waste prevention such as eco-design and measures to reduce the presence of hazardous substances in discarded products. The majority of policy instruments employed by countries are soft measures such as informative/public communication measures (42 % of all measures identified) and voluntary agreements. Market-based instruments are also a substantial group of measures and most of them refer to legal obligations to reduce the consumption of plastic carrier bags.

Specific and concrete prevention targets addressing plastic waste are not widespread in Europe. Only nine countries have explicit targets for plastic waste prevention. However, most countries have included indicators or monitoring schemes to assess progress in their waste prevention programmes. These schemes are in many cases qualitative, but indicators based on specific data flows have also been adopted.

Best practice and information sharing

This report has identified a range of good practice examples that go beyond the average prevention status in Europe. The examples include both regulatory initiatives such as bans on certain plastic products and softer measures such as stakeholder agreements to reduce the consumption of plastic products (mainly packaging), and training and capacity building. Unfortunately, there are very few cases in which the initiatives adopted have been properly evaluated; therefore, most of the good practice examples identified lack the evaluation element that could help determine their effectiveness.

The road ahead

It is very likely that the plastic consumption and waste issues and challenges will remain and intensify in the future as plastic products become an even more vital part of our consumption habits. It is therefore important to employ effective waste prevention measures so that some of the environmental and climate impacts of these developments are mitigated. Countries need to intensify their efforts and design more precise and concrete measures by giving priority to the most impactful plastic types or plastic products that are designed to be short lived and non-recyclable. More diversity is needed in the measures to address various aspects of waste prevention, beyond waste reduction, such as better design requirements, increased durability or reducing the content of hazardous substances.

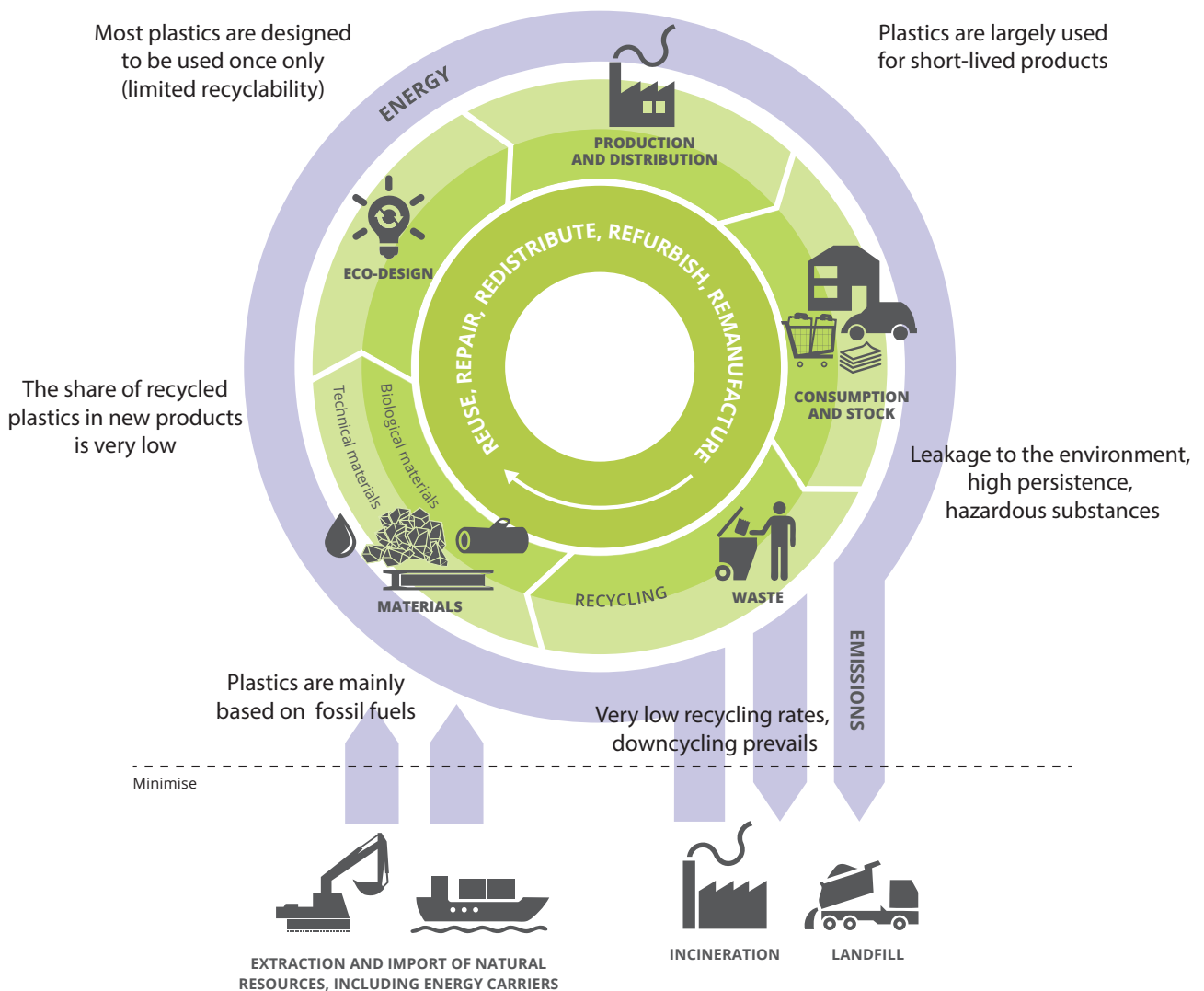
1 Waste prevention and plastics

Waste prevention is at the centre of EU waste legislation, as it delivers the most effective results in dealing with environmental issues around waste. Prevention measures aim either to reduce the amount of waste generated by our economies or to minimise the environmental impacts from waste management. EU or national strategies and legislation around waste, therefore, routinely place

waste prevention at the top of their objectives. Waste prevention can be implemented in any waste stream, but it needs to be customised to reflect each stream's particularities.

In recent years, various elements of EU environmental legislation have focused on plastics. Plastics are addressed by various strategies, action plans and

Figure 1.1 Environmental issues arising along the plastics value chain



Source: EEA.

dedicated directives, spanning from the circular economy package through the European strategy for plastics in a circular economy to the Single Use Plastics Directive (EC, 2018b).

The increased focus on plastics can be explained by the identification of various environmental issues and challenges associated with plastic consumption and plastic waste generation. As waste prevention is the preferred option for dealing with plastic waste and the one yielding the highest environmental benefits, it is interesting to examine the specific measures countries are taking to tackle plastic waste generation and the effects, if any, on plastic waste quantities and on the environment.

1.1 Environmental issues and plastics

The current plastics value chains have some inherent characteristics that are not compatible with the main objectives of the EU waste prevention and circular economy initiatives. Figure 1.1 shows a schematic representation of products' life cycle stages from a circular economy point of view. The figure also shows the challenges that plastics pose to increasing product circularity:

- Many single-use products, with very short life spans, are made of plastic and in many cases without considering their reuse potential.
- Plastics are used, in very significant quantities, for short-lived products (mainly packaging).
- Plastic products may contain hazardous substances that may be recirculated in the economy through recycling.
- Recycling rates are low.

Demand for plastics is increasing worldwide due to the materials' very useful properties. In 2017, the demand for plastics in the 28 EU Member States (EU-28) stood at almost 52 million tonnes, up from 46 million tonnes in 2010, following a stable increasing trend (Plastics Europe, 2018). Global production of plastics reached 348 million tonnes in 2017, an extra 13 million tonnes compared with the previous year (Plastics Europe, 2018).

Production of plastics is also environmentally costly. Estimates for 2012 put the contribution of plastic production and plastic waste incineration globally at 400 million tonnes of carbon dioxide equivalent (CO₂e) (EC, 2018a), which is the equivalent of the annual emissions of Poland in the same year.

Therefore, prevention of plastic waste would, by reducing demand for plastic products, subsequently reduce CO₂ emissions.

Waste prevention and corresponding measures address the majority of issues around the consumption of plastic products. As such, plastic waste prevention is the focus of this report. The main goal of the report is to map and analyse the countries' efforts to address plastic waste generation through waste prevention measures.

The scope of the report includes all plastic types, except biodegradable plastics, although, due to information and data limitations, the report focuses on plastic packaging. The properties, consumption patterns, and subsequent waste management systems and technologies are very different for biodegradable plastics and are outside the scope of this report. The scope of the report addresses all aspects of waste prevention, namely both qualitative and quantitative prevention.

1.2 Objective

Waste prevention measures are ideal for addressing many of the issues illustrated in Figure 1.1. Initiatives such as increased durability or reduction of packaging have the potential to significantly curb the increasing demand for plastic products. Better design of such products can increase recyclability and reduce the presence of hazardous substances in plastic waste. It is therefore important to look at the actions countries are taking, or planning to take, to prevent plastic waste and identify areas where increased efforts are required.

More specifically, the main objective of this report is to identify and map countries' policy efforts in the area of waste prevention that targets plastic wastes. This mapping aims to analyse efforts at European level to answer the following questions:

1. What is the main focus of plastic waste prevention initiatives across the countries?
2. What are the principal policy structures around the issue (targets, indicators, measures)?
3. What are the best practice examples in this area?
4. Which areas of improvement can increase the effectiveness and efficiency of implementing plastic waste prevention?

Through this process, the report attempts to highlight good practice in the sense of concrete initiatives

that may be applicable to other European countries. The report also offers solid recommendations for improving and intensifying efforts to prevent plastic waste. The recommendations build upon existing practice, respect the current and planned policy context and are forward looking.

1.3 Review methodology

In order to achieve the main objectives of the report, as outlined above, we will investigate how preventing plastic waste is addressed in the waste prevention programmes and in other programmes, strategies and initiatives, and provide data on the status of, and trends in, recent measures and initiatives in Europe.

In order to obtain the information, as a **first step**, the available national waste prevention programmes were screened for policy approaches and concrete initiatives to reduce plastic use and plastic waste. Given the recent prominence of the topic, however, it was decided to give countries the opportunity to flag new activities that may not have been captured in the waste prevention programmes as published, or that have evolved since. Therefore, as a **second step**, an additional survey was conducted, to verify and augment the information drawn from the national waste prevention programmes and to highlight good practice in preventing plastic waste. The survey was conducted by the European Topic Centre on Waste and Materials in a Green Economy (ETC/WMGE) in cooperation with the EEA and addressed all European Environment Information and Observation Network (Eionet) countries.

The report's geographical scope covers all EU Member States (except Cyprus, which has not adopted a waste prevention programme), Iceland, Norway, Switzerland (which are also subject to the obligations under the Waste Framework Directive) and Turkey. The review also covers the waste prevention plans available for these countries and their regions, as national waste prevention programmes may not exist (e.g. Belgium has three regional waste prevention programmes and the United Kingdom has four but no central plans).

1.4 Policy background

The amended Waste Framework Directive (EU) 2018/851 reiterated the importance of waste prevention by confirming its place as a top priority for waste legislation, according to the so-called waste hierarchy (Figure 1.2). In the revised Directive, the European Commission has confirmed the strategic importance of waste prevention, also in the context of

Figure 1.2 The EU waste hierarchy



Source: EU (2008).

the circular economy, and has especially highlighted the field of plastic waste prevention as a specific priority (EU, 2018).

The Directive provides flexibility regarding the nature of waste prevention implementation. This flexibility is reflected in countries' waste prevention programmes and requires that objectives and qualitative or quantitative benchmarks are set. The EEA will need to publish periodic reports on waste prevention, according to Article 30 of the amended Waste Framework Directive, every 2 years. These reports will contain 'a review of the progress made in the completion and implementation of waste prevention programmes, including an assessment of the evolution as regards the prevention of waste generation for each Member State and for the Union as a whole, and as regards the decoupling of waste generation from economic growth and the transition towards a circular economy'.

In April 2015, Directive 94/62/EC on packaging and packaging waste, was amended by Directive 2015/720 (EU, 2015) on lightweight plastic carrier bags. The amended Article 4 urges Member States to 'take measures to achieve a sustained reduction in the consumption of lightweight plastic carrier bags on their territory'. Such measures should ensure (1) an annual consumption of a maximum of 90 lightweight plastic carrier bags per person by 31 December 2019 and 40 per person by 31 December 2025, and/or (2) the levying of charges on lightweight plastic carrier bags at the point of sale of goods or products before 2019. In addition, the Directive establishes reporting obligations on the annual consumption of lightweight plastic carrier bags.

Besides the prevention perspective in waste legislation, in 2018 the European Commission published its strategy for plastics in a circular economy. In the strategy, plastic waste prevention is placed in the context of a circular economy and it is supported with specific measures and objectives targeting various aspects of plastic waste

generation, such as reducing consumption of plastic bags and reducing marine litter. Overall, the main objective of decoupling waste generation from economic growth is underlined.

Plastic packaging is addressed in the strategy by exploring ideas related to extended producer responsibility schemes, considerations about overpackaging, green public procurement, awareness campaigns and financial instruments that can help reduce packaging or replace single-use with reusable packaging. Another important aspect of the strategy, related to prevention, is promoting reuse. The European Commission will take action so that all plastic packaging is reusable or recyclable in a cost-effective manner by 2030.

The Single Use Plastics Directive contains extensive elements of waste prevention. EU Member States are encouraged to implement waste prevention measures, especially for single-use plastic items for which a more sustainable product alternative does not yet exist. The Directive suggests appropriate waste prevention measures to be taken against single-use plastic products such as providing information to consumers, market-based instruments and product design requirements.

The impacts of leaked plastic waste, especially into the marine environment, have also been the key drivers for the Helcom regional action plan for marine litter in the Baltic Sea (Helcom, 2015), the G20 action plan on marine littering (G20, 2017) or United Nations (UN) initiatives and resolutions on marine litter, single-use plastics and fighting plastic pollution (UNEP, 2018). Industry and private initiatives (e.g. by the Ellen MacArthur Foundation or the International Solid Waste Association) have also initiated a broad range of activities that, inter alia, aim to reduce plastic waste generation.

1.5 Definitions

The Waste Framework Directive (EU, 2008) defines waste prevention as 'measures taken before a substance, material or product has become waste that reduce:

- a) the quantity of waste, including through the reuse of products or the extension of the life span of products;
- b) the adverse impacts of the generated waste on the environment and human health; or
- c) the content of harmful substances in materials and products.'

Waste prevention is thus applicable to products that are still in use, or that will be produced in the foreseeable future. Prevention relates only indirectly to waste management by (1) reducing the quantity of waste that would have to be managed in the future, often referred to as quantitative prevention, or (2) facilitating future waste management operations by avoiding the presence of undesired substances, the so-called qualitative prevention.

For the scope of this assessment, plastic is defined according to the Single Use Plastics Directive (EC, 2018b), stating that 'plastic' means a material consisting of a polymer within the meaning of Article 3(5) of Regulation EC No. 1907/2006, to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified.

2 The plastics life cycle

2.1 The plastics value chain

Successful plastic waste prevention and the design of appropriate policy measures for this purpose require an in-depth understanding of the complex plastics value chain. It is important to note that, although plastics are usually referred to as a single, specific material, they are not. Instead, plastics should rather be seen as a big family of chemicals, composed of a great variety of materials designed to meet the very different needs of thousands of end applications. Flexible material design has resulted in a huge series of plastics and combinations of different plastics and other materials, such as fibres, each of them with highly specific, customised functionalities.

Two main categories of polymers can be clearly distinguished: thermoplastics and thermosets:

- Thermoplastics are defined as polymers that can be melted when heated and hardened when cooled. These characteristics are reversible (it can be reheated, reshaped and hardened repeatedly). This feature allows the mechanical recycling of thermoplastics, converting plastic recycle into new plastic products.
- Thermosets, in contrast, are polymers that undergo a chemical change when heated. After they are

heated and formed, they cannot be re-melted and reformed, but they may be chemically recycled back to feedstock or used as a fuel in cement kilns.

Of the total global production of plastics of 335 million tonnes, almost one fifth was produced in Europe. Plastics are produced by a relatively small number of globally active and large petrochemical companies. In the next stage of the value chain, the plastics produced are supplied to plastic converters, which are smaller in size and much greater in number than plastics producers. They convert the plastic resins into plastic products. This step might involve using a series of additives that allow converters to achieve the required user specifications.

The vast majority of plastics are composed of polymers of carbon and hydrogen, either alone or with oxygen, nitrogen, chlorine, fluorine or sulphur in the backbone (Professional Plastics, 2018). Plastics contain a main polymer and a bespoke load of additives to improve specific properties (e.g. hardness, softness, resistance to ultraviolet light, flame formation resistance) or their behaviour during manufacturing (lubricants, catalysts, stabilisers, solvents, polymerisation aids and recycling aids). The content of additives in plastics varies widely, from less than 1 % in polyethylene terephthalate (PET) bottles to up to 50-60 % in polyvinyl chloride (PVC), often striking a balance between technical properties

Box 2.1 A cross-value chain collaboration example

An example of the intended cross-value chain collaboration is provided by the '**New Plastics Economy**' initiative, launched in 2016. By the end of 2018, more than 250 organisation have signed for a global commitment to:

- Design out problematic and unnecessary plastics.
- Promote new business models that transform the way plastics are used.
- Make sure that all plastics are safely re-used, recycled or composted into new packaging and products.

The report '*The New Plastics Economy — Rethinking the Future of Plastics*' (Ellen MacArthur Foundation, 2017) states that by fostering an 'explicitly systemic and collaborative approach, the New Plastics Economy aims to overcome the limitations of today's incremental improvements and fragmented initiatives, to create a shared sense of direction, to spark a wave of innovation and to move the plastics value chain into a positive spiral of value capture, stronger economics, and better environmental outcomes.'

The global Plastics Pact that fosters collaboration across value chains is supported by national Plastics Pacts such as the UK Plastic Pact and the French *Pacte Nationale sur les emballages plastiques*.

and economics, as some additives are considerably more expensive than the main polymers, while others are inexpensive (e.g. inorganic fillers such as limestone or talc).

Considering this complexity of the plastics value chain, the 2018 European strategy for plastics in a circular economy highlights the relevance of increased cross-value chain collaboration, due to the many interlinkages of the value chain actors, to promote plastic waste prevention throughout the entire plastics life cycle. Global consumer goods companies, retailers, polymer producers, plastics manufacturers, consumers, governments, cities and businesses involved in plastics collection, sorting and reprocessing are the main actors and stakeholders in the plastics value chain.

2.2 Plastic consumption in Europe and the world

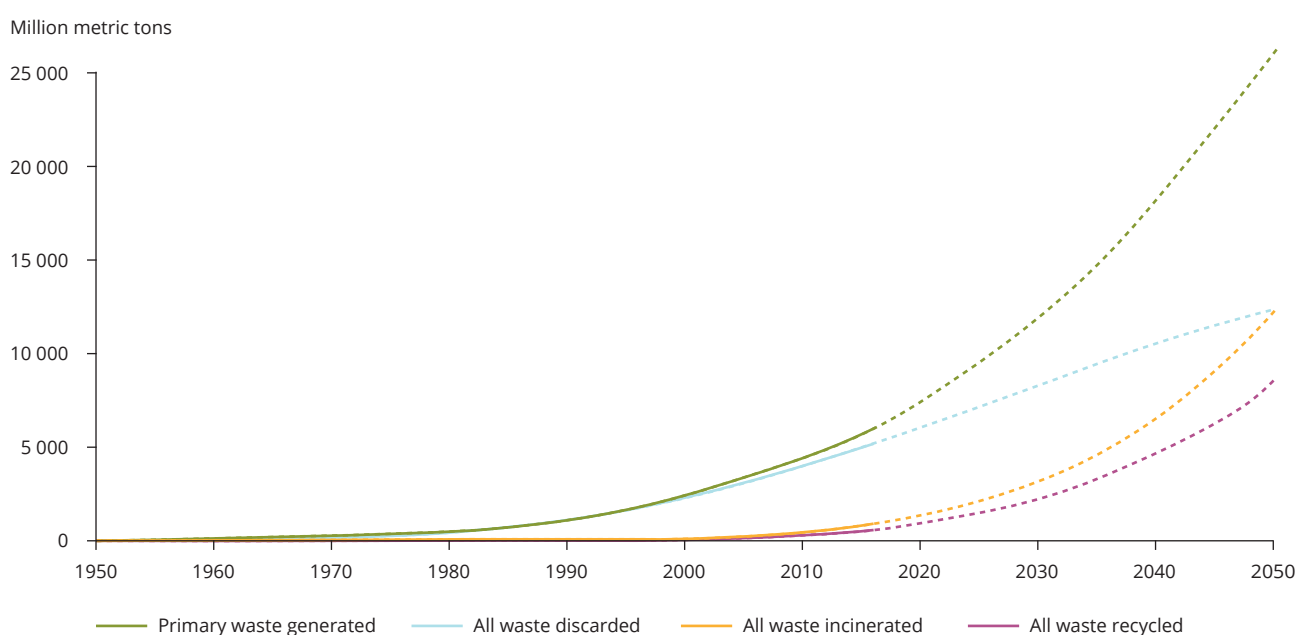
Waste prevention can be achieved through measures that affect products' life cycles before these become waste. It is therefore useful to have an overview of the consumption of plastic products in Europe so that the challenge of applying waste prevention to plastics is properly assessed.

Globally, humans had produced 8.3 billion tonnes of plastics by the year 2015, 6.3 billion tonnes of

which had already become waste (Geyer et al., 2017). Of that waste total, only 9 % was recycled, 12 % was incinerated and 79 % accumulated in landfills or the natural environment. If current trends continue, roughly 12 billion tonnes of plastic waste will be in landfills or the natural environment by 2050. The durability of many plastics is one of the key strengths of this material; however, as a consequence, most of this plastic waste is not expected to biodegrade significantly and will remain in the environment for years to come. Global production of plastics increased from 2 million tonnes in 1950 to over 400 million tonnes in 2015, outgrowing most other human-made materials. Of the total amount of plastics produced from 1950 to 2015, roughly half was produced in the last 13 years and will become plastic waste in the near future. Against this background, Figure 2.1 highlights the urgent need for effective prevention of plastic waste.

Taking into account that most plastic value chains are based on fossil fuel resources such as natural gas, oil or coal, it is estimated that about 5 % of all the oil and gas consumed in Europe is used in the production of plastic materials (Plastics Europe, 2018). About half of the fossil fuel resources are needed to provide energy to the production process; the other half are used as feedstock (World Economic Forum, 2016). Most plastics are produced from natural gas, feedstocks derived from natural gas processing and feedstocks derived from crude oil refining.

Figure 2.1 Cumulative global plastic waste generation and disposal

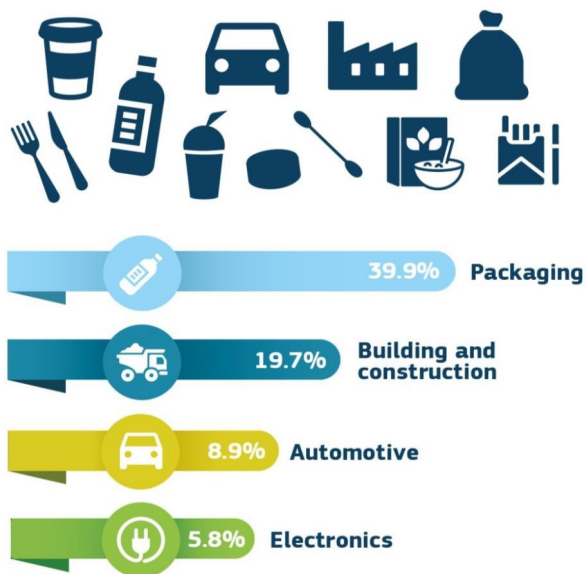


Source: Adapted from Geyer et al. (2017).

Figure 2.2 Demand for plastic products broken down to industrial sectors in 2015 (28 EU Member States, Norway and Switzerland)

EUROPEAN PLASTICS DEMAND IN 2015

49 million tonnes



Source: EC (2018a).

Figure 2.2 shows the share of the European industrial sectors that demand plastic products, highlighting that, within Europe, plastics are mainly used in packaging and in the building and construction sectors. One of the main differences between these applications for plastics is the life-time before the product is discarded as waste. It can vary from hours for plastic packaging — for example a single-use plastic shopping bag — to more than 50 years for plastic products in building and construction, such as PVC ceiling tiles (Baitz et al., 2004). This difference in the life span of products leads to a situation where packaging accounts for 40 % of the

plastic demand but for as much as 60 % of the total plastic waste generation.

These differences in life-time need to be taken into account and will require very different waste prevention strategies to be prepared and implemented. Prevention targeting packaging waste can be more effective and can yield immediate results, while tackling significant and short-term environmental impacts. Moreover, the potential for preventing packaging waste is much higher than, for example, construction materials that perform a necessary function in a building.

2.3 Plastic waste management in Europe

A part of the waste prevention definition refers to actions taken on products' life cycles that reduce the environmental impacts arising from their waste management (e.g. eco-design, design for recycling). There is indeed considerable potential for plastic waste management systems in Europe to improve and to reduce the environmental impacts stemming from them by moving up the waste hierarchy from disposal to recycling and preparing for re-use.

The European strategy for plastics in a circular economy (EC, 2018a) notes that plastic recycling has not kept pace with the increasing global production of plastics. Currently, in Europe, only 30 % of plastic waste is collected for recycling. In addition, most recycling operations take place outside Europe, where environmental practices and standards may differ. The plastic waste that is collected but not recycled is landfilled or incinerated, with the consequent irrecoverable loss of non-renewable resources and of material value. Both plastic production and plastic waste incineration contribute significantly to the generation of greenhouse gas emissions. The European strategy highlights the growing consumption of 'single-use' plastics, including packaging, that are especially prone to being littered and diluted into the

Box 2.2 Plastic waste prevention in the construction sector

Case study: Reuse in renovation of office buildings in Sweden.

Approximately EUR 2.8 billion is invested annually in renovating offices and shops in Sweden. The turnover of interior materials and products is high, as is the potential for reuse. A Swedish study (Andersson et al., 2018) concluded that the best potential for reuse was for office furniture and glass panels. The reuse of an office chair leads to the avoidance of, on average, 8 kg of plastic waste and 6 kg of metal. An adjustable office desk contains on average 2 kg of plastic and 20 kg of metal. In windows, the plastic content is around 5 %. The waste prevention potential of the renovation of a 2 000 m² office with 170 staff is 40 kt (combined with avoiding 69 tonnes of CO₂ emissions and monetary savings of EUR 0.2 million). On a national level, this translates into a 25 kt waste prevention potential, combined with a monetary saving of EUR 126 million and 43 kt CO₂ in Sweden alone.

environment, generating significant economic and environmental burdens. Moreover, all plastics that are not captured by an appropriate waste management system will degrade into micro-plastics that finally end up in marine or terrestrial ecosystems, including the human food chain (Gesamp, 2015).

In Europe, 27.1 million tonnes of plastic waste were collected for treatment in 2016 through official schemes in the 28 EU Member States (EU-28), together with Norway and Switzerland. According to Plastics Europe, for the first time, more plastic waste was recycled than landfilled. A total of 31.1 % of plastic waste was recovered — but only 63 % of the plastics recovery took place in Europe (the rest was exported for recycling outside Europe) and only about 6 % of the current European demand for plastics was covered by recycled or secondary plastics (Plastics Europe, 2018).

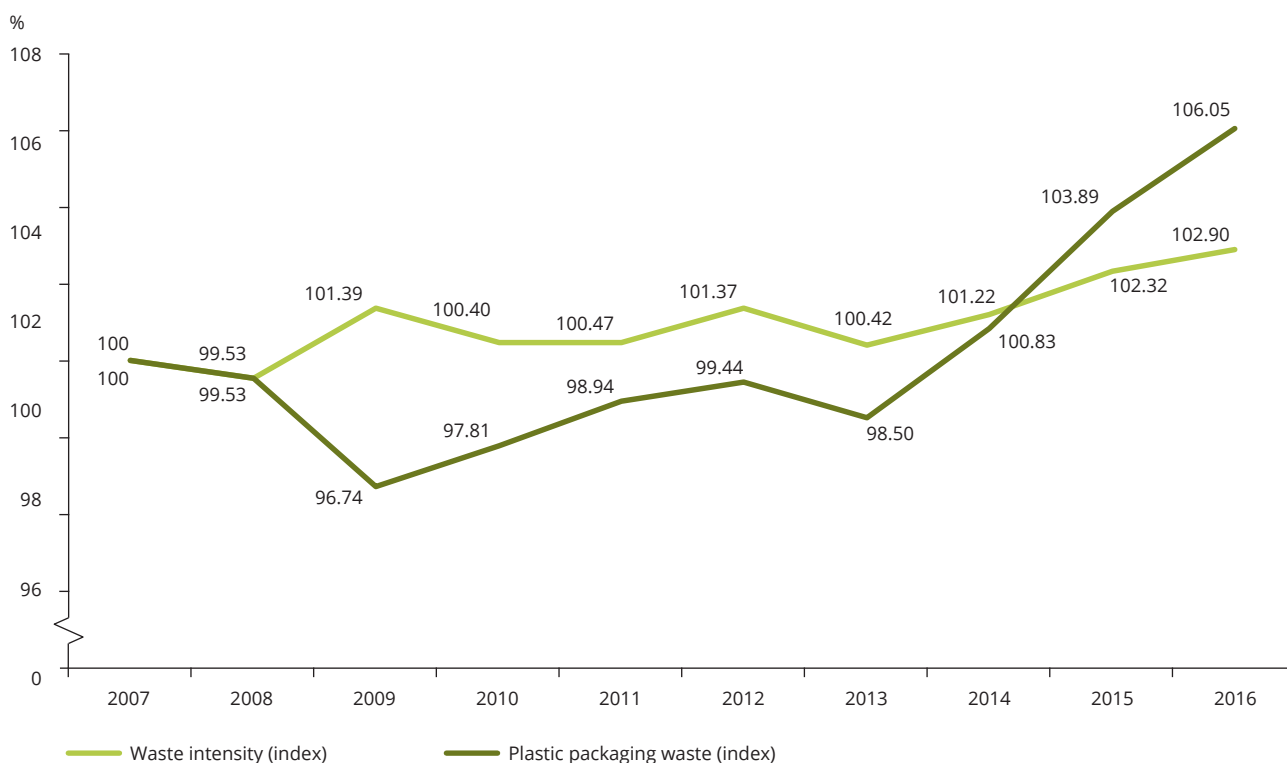
Data on generation of plastic waste are not available at European level. However, due to the EU Member States' obligations towards the Packaging and Packaging Waste Directive, data on plastic packaging waste are available and credible. Plastic packaging

waste is the single most important plastic waste stream and it is used here as a proxy for analysis of the plastic waste stream. Looking at developments in packaging waste, Figure 2.3 shows the increasing amount of plastic waste that has to be collected and treated. Compared with 2007, the average waste generation per capita in the EU-28 in 2016 increased from 30.1 kg to 31.9 kg — an increase of more than 6 %. Important drivers of packaging waste have been an increasing share of convenience food and food to go, smaller production units in the food sector and the booming and especially waste intensive online shopping sector (UBA, 2018, p. 43).

2.4 Plastic waste decoupling

As outlined previously, the EEA is required to specifically analyse the decoupling of waste generation from economic growth. Against this background, waste intensity — the link between waste generation and gross domestic product (GDP) — becomes a key indicator, as depicted in Figure 2.3, again taking the example of packaging

Figure 2.3 Plastic packaging waste generation (kg per capita) and plastic waste generation intensity (kg per capita and gross domestic product), EU-28 (1)



Source: Based on Eurostat (2018a, 2018b).

(1) Waste intensity is defined as the waste generation divided by GDP.

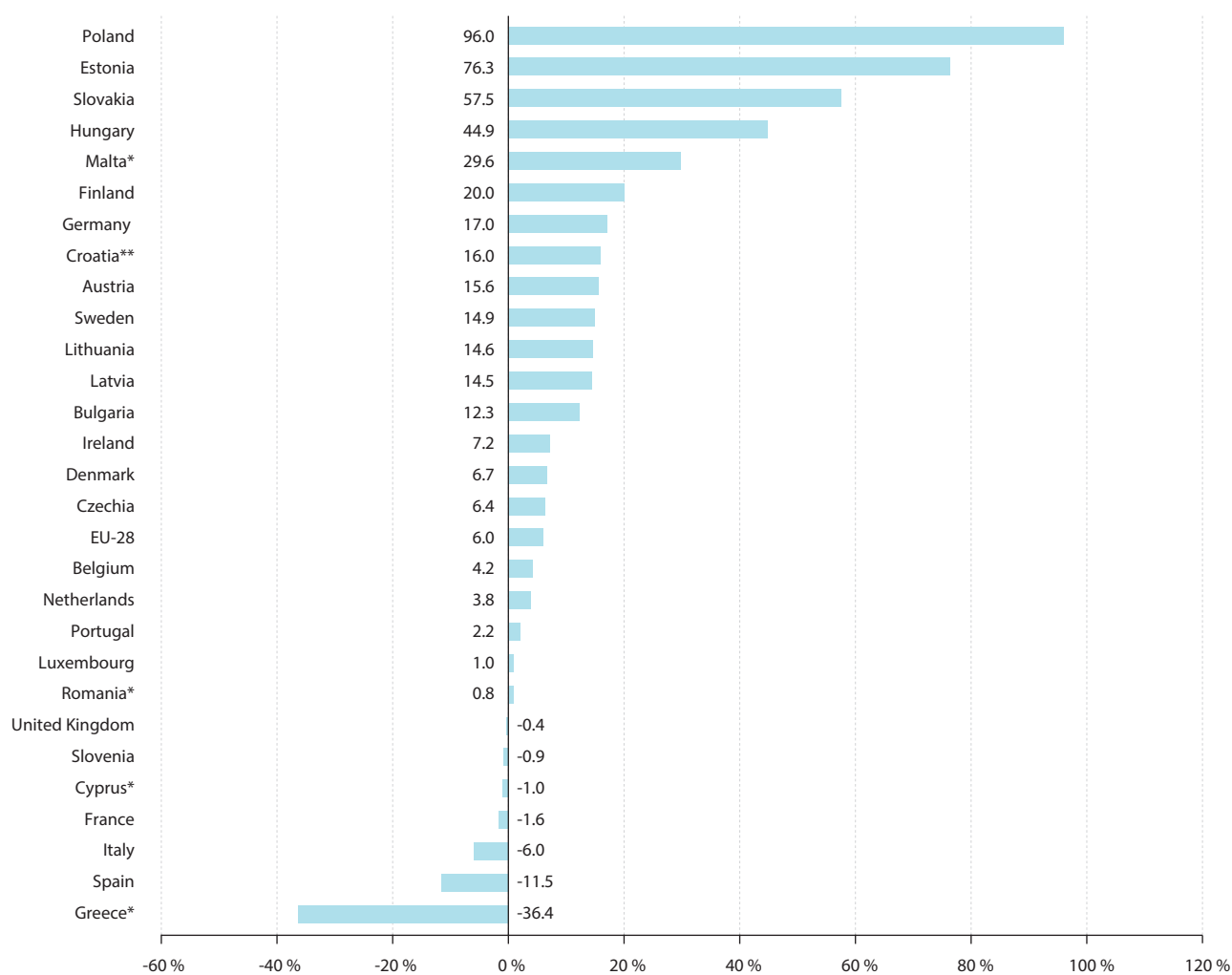
The plastics life cycle

waste. The increase of 2.9 % in waste intensity from 2007 to 2016 is lower than the increase in total plastic packaging waste generation, indicating a relative decoupling of waste generation from economic growth. Nevertheless an increase in GDP still leads to an increase in plastic waste generation, which means that absolute decoupling of waste generation has not yet been achieved.

The overall EU-28 trends result from diverging national trends, as depicted in Figures 2.4 and 2.5.

According to Eurostat data (Eurostat, 2018a), the development of plastic packaging waste generation per capita in the countries from 2007 to 2016 ranges from an increase of 96 % (Poland) to a decrease of 36 % (Greece). The economic level, structure and development of the countries play an important role, but also looking at plastic packaging waste intensity shows a very mixed picture: of the 28 EU Member States, nine managed to at least decouple plastic packaging waste generation from economic growth.

Figure 2.4 Percentage change in plastic packaging waste generation (per capita) between 2007 and 2016



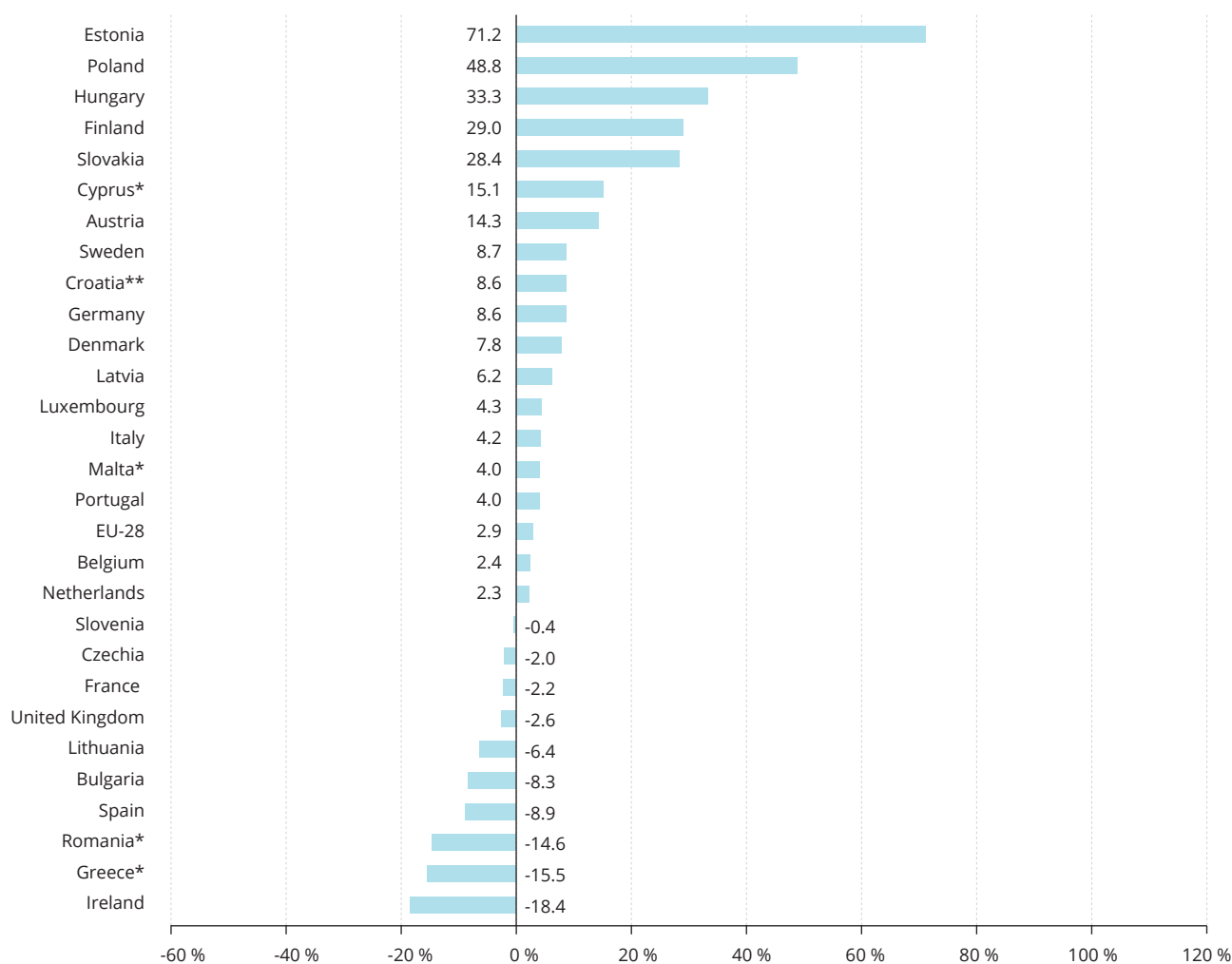
Notes: *Percentage change between 2007 and 2015; **percentage change between 2012 and 2016.

Source: Based on Eurostat (2018a).

The plastic packaging waste generation fluctuations in the various EU countries cannot necessarily be attributed to waste prevention measures. Municipal waste generation (including packaging) is affected by different factors such as household income, expenditure and household size per capita. Changes in these econometric factors might influence waste generation more than waste prevention measures. For example, some of the countries that demonstrate a relative decoupling of plastic packaging waste generation from economic growth in Figure 2.5 were

deeply affected by the economic crisis that started in 2008. That is not to say that waste prevention is ineffective: many examples with measures targeting plastic carrier bags have shown impressive results (see Chapter 3). A systematic analysis and evaluation of the implementation of waste prevention measures can reveal their effectiveness and their impact on waste generation. Until this type of evaluation becomes widely available, data such as those presented in Figures 2.4 and 2.5 should be interpreted with caution.

Figure 2.5 Percentage change in waste intensity (per capita) between 2007 and 2016



Notes: *Percentage change between 2007 and 2015; **percentage change between 2012 and 2016.

Source: Based on Eurostat (2018a, 2018b).

3 Plastic waste prevention in the waste prevention programmes of EEA countries

This chapter provides an analysis of how plastic waste is dealt with in countries' waste prevention programmes. The assessment follows the structure below:

1. the extent to which plastic waste is addressed in the prevention programmes;
2. measures envisaged for implementing prevention of plastic waste;
3. mapping of targets and indicators for plastic waste prevention.

To support the assessment, a combination of publicly available information (as it appears in countries' prevention programmes) and the results of the European Environment Information and Observation Network (Eionet) survey were used. Waste prevention programmes have been officially adopted by 31 EEA countries: the EU Member States (except for Cyprus) and also four non-EU countries that are members of the EEA (i.e. Norway, Iceland, Switzerland and Turkey).

By addressing the above three aspects of implementing plastic waste prevention, the assessment aims to identify deficiencies and successes in the entire policy chain with a view to providing solid recommendations for improvement, on the one hand, and underline the success stories and best practices, on the other. In this way, the analysis has a broader objective, that of providing feedback to countries on how to best implement plastic waste prevention by respecting the overarching EU waste prevention legislation.

3.1 Waste prevention programmes and plastic waste

To assess the position of plastic waste within countries' waste prevention policies (including the waste prevention programmes), the following elements were examined:

1. plastic waste declared as a priority waste stream in the waste prevention programmes;
2. concrete measures taken or planned to address plastic waste prevention;
3. objectives, quantitative targets and indicators of plastic waste prevention adopted by countries' waste prevention policies and strategies.


The second and third elements are examined in the following sections.


With regard to prioritising plastic waste, the results of the survey conducted show that plastic waste is declared as a priority waste stream by around half of the countries investigated. Thus, 14 countries and five regions (i.e. Brussels-Capital Region and Flanders, as well as Scotland, England and Wales) have declared plastic waste as a priority waste stream within their waste prevention programmes, while 15 countries and two reporting regions did not. Table 3.1 depicts the survey results.

The survey results suggest that plastic waste prevention is considered a priority issue for many EEA countries, although a significant number of countries did not articulate a focus on plastics as a priority material with specific chapters in their waste prevention programmes. An increase in the strategic and policy attention given to plastics at EU level, such as the recent development of a plastics strategy and the Single Use Plastics Directive may enhance efforts to prevent plastic waste in the countries. The survey results suggest that plastic waste prevention is considered a priority issue for many EEA countries, although a significant number of countries did not articulate a focus on plastics as a priority material with specific chapters in their waste prevention policy programmes. An increase in the strategic and policy attention given to plastics at EU level, such as the recent development of a plastics strategy and the Single Use Plastics Directive may enhance efforts to prevent plastic waste in the countries.

Table 3.1 Prioritisation of plastic or packaging waste within waste prevention programmes

Austria		Luxembourg	
Belgium (Brussels-Capital Region)		Malta ^(a)	
Belgium (Flanders)		Netherlands ^(a)	
Belgium (Wallonia)		Norway ^(a)	
Bulgaria ^(a)		Poland	
Croatia		Portugal	
Czechia		Romania	
Denmark		Slovakia	
Estonia		Slovenia	
Finland		Spain	
France		Sweden	
Germany		Switzerland	
Greece		Turkey	
Hungary		United Kingdom (Northern Ireland) ^(a)	
Iceland		United Kingdom (Scotland)	
Ireland ^(a)		United Kingdom (England)	
Italy ^(a)		United Kingdom (Wales)	
Latvia ^(a)		Cyprus	n/a
Lithuania			

 Packaging or plastics mentioned as priority waste stream/priority sector

 Packaging or plastics may be addressed but not mentioned as priority waste stream/priority sector

Notes: ^(a) No data available based on Eionet survey; data obtained based on desktop research
n/a, data not available.

3.2 Policy instruments and measures

All waste prevention programmes include measures that either directly address plastic waste prevention or are horizontal measures that also refer to avoiding plastic waste. In addition, a variety of countries have initiated targeted measures with regard to specific plastic products such as plastic bags (see Box 3.1), single-use plastics or micro-plastics. Several countries (e.g. Denmark and Belgium) have developed or are currently developing comprehensive plastic strategies that contain dedicated policy instruments on plastic waste prevention.

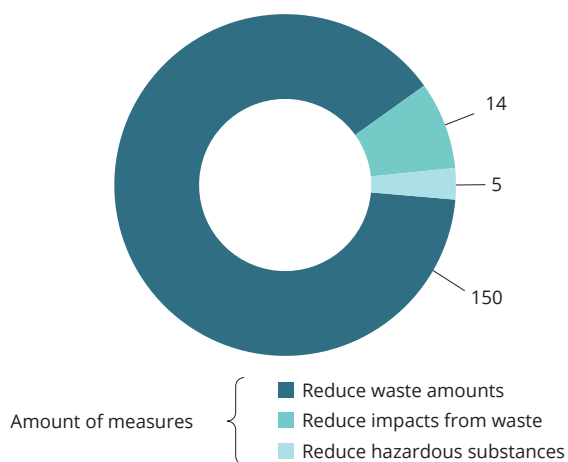
Through the review of the published and adopted waste prevention programmes, supplemented by the country responses to the Eionet survey, a total of 173 plastic waste prevention measures have been identified. The measures are not in most cases presented as supporting concrete targets but rather as generic objectives of waste prevention as a whole, namely reducing the amount of waste generated. In this chapter, the type and nature of these measures is analysed in order to:

- map where interventions are anticipated in terms of supply chains;
- correlate the three parts of the waste prevention definition and the different types of measures;
- understand the type of interventions these measures reflect.

This assessment aims to better analyse the prevention measures with the goal of identifying areas of intervention where sufficient measures are taken (among which, best practice examples can be identified) and areas that are not well covered by the countries' initiatives.

Of the 173 measures, 61 % cover the production phase of plastic products and 39 % cover the consumption phase. Production-oriented measures may refer to reducing production by, for example, smart packaging design or banning specific plastic products, while consumption-oriented measures can be, for example, information campaigns or fees

Figure 3.1 Distribution of measures identified according to waste prevention type



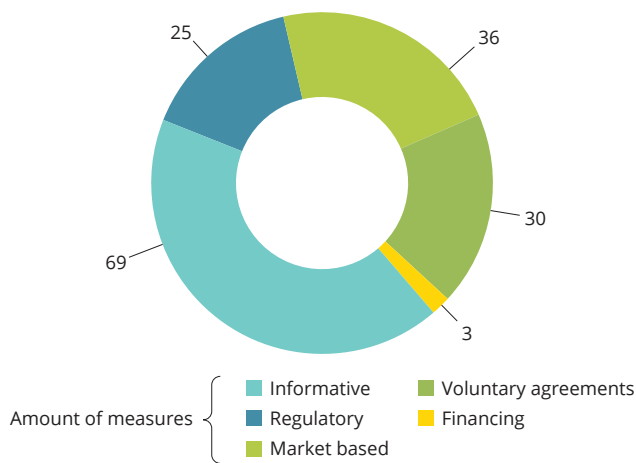
for specific plastic products such as plastic bags. The balance between these two types of measures is in line with the European Commission's plastics strategy, which in its Vision 2030 highlights the role of an innovative and sustainable plastics industry.

With respect to the three parts of the waste prevention definition (see Section 1.4), the majority of prevention measures set forth by the countries deal with quantitative prevention (Figure 3.1). Only 14 measures can be identified as directly relating to the second part of the definition and they mainly address eco-design. Regarding the reduction of hazardous substances in plastic products (part three of the definition), only five measures explicitly mention this objective. It is clear that the countries consider waste reduction, in terms of volumes generated, as the most important aspect of waste prevention, and the countries therefore support this objective with a wide variety of policy measures. It should be mentioned that in conducting this analysis only dedicated waste prevention measures were taken into account; countries might have measures in place that address eco-design or the presence of hazardous substances in other pieces of legislation such as acts and ordinances for hazardous waste management.

With regard to the choice of different types of policy instrument, Figure 3.2 differentiates between regulatory, market-based and informative instruments as well as voluntary agreements and financing schemes.

Overall, countries show a clear focus on informative instruments (42 % of all measures) but, compared with the analysis in previous waste prevention progress reports, the share of more stringent and binding regulatory and market-based instruments is significantly higher in the field

Figure 3.2 Distribution of measures identified according to instrument type



of plastic waste prevention. This analysis has, of course, to take into account that the number of measures is not necessarily related to their effect on plastic waste generation or reduced environmental burdens. Nevertheless, it hints at the clearly expressed will of policymakers to effectively address the issue of plastic waste in the seas and oceans as well as onshore.

3.3 Good practice examples

This section identifies good practice examples from the information gathered during the review behind this report. The good practice examples are presented per type of policy measure (i.e. regulatory, market based, financing, voluntary and informative). The selection of examples aims to highlight the broad range of activities with regard to different products or waste streams and the different actors who initiated such measures or actively support them, as well as the large number of countries that implement plastic waste prevention measures. Many of these measures are implemented in various countries and the following examples obviously cannot give a comprehensive overview but aim to showcase especially inspiring approaches.

Regulatory instruments are mandated by law and cover, for example, bans, prohibitions and standards. National and EU-wide regulations can contribute to plastic waste prevention in several ways: they can, for instance, manage chemical content in plastic products, especially with threshold and authorised substances. They can also regulate access to the market by restricting production and commercialisation of specific plastic products. Of the measures mapped, 25 fall into this category, and they refer mainly to measures banning micro-plastics, micro-beads and some types of single-use plastics. With regard to the product groups

Table 3.2 Good practice examples of implemented regulatory instruments

Country	Description
France	Review of the packaging regulations to strengthen the prevention of overpackaging, the use of reusable packaging and the marketing of easily recyclable packaging. The current system includes, inter alia, a bonus of 8 % on the licence fee if the producer can prove an overall volume reduction, for example due to product concentration or deployment of refills.
United Kingdom	Bans on certain single-use plastics: in October 2018, the British Government set out its plan to ban the distribution and sale of plastic straws, plastic drink stirrers and cotton buds. Although non-plastic alternatives are readily available, these single-use plastic items are used for just a few minutes but take hundreds of years to break down. Cleaning up the effects of littering costs local government millions of pounds every year; limited exemptions will be discussed where using plastic straws is necessary (e.g. for medical reasons).
United Kingdom	In Scotland, it is a criminal offence to manufacture or sell rinse-off personal care products containing plastic micro-beads. Ban infringement will result in penalties of up to 2 years imprisonment or a fine of up to GBP 5 000. Scotland announced the proposal to ban the manufacture and sale of plastic-stemmed cotton buds in January 2018. A public consultation closed in June 2018 and the results were published in July 2018. Regulations have been drafted and are expected to be laid in parliament in May 2019, with an anticipated enforcement date in June 2019.

Box 3.1 Examples of plastic bag regulations and their effects in Europe

Denmark has introduced the so-called green taxes on packaging and plastic bags. The taxes cover all bags that have the capacity to handle at least 5 litres and that can be reasonably replaced by cloth bags, carrier nets and the like. Very strong plastic bags directly comparable with cloth bags and carrier nets are not covered by the tax, which amounts to DKK 22/kg. Consumers are paying DKK 2-3.50 per bag. The revenue for retailers is in certain cases around DKK 1 per bag. The introduction of the tax halved consumption from around 800 million bags to 400 million bags, which amounts to around 80 bags per person annually.

In January 2018, **Greece**, in line with the Plastic Bags Directive (1) introduced a mandatory environmental fee of EUR 0.03 (also subject to VAT) per lightweight (thinner than 50 µm) plastic bag, increased to EUR 0.07 per bag since January 2019, and (2) prohibited the supply of 50-70 µm thin plastic bags free of charge at the point of sale of goods. The revenue collected through the aforementioned fee is earmarked for activities to produce, distribute and promote the use of reusable, biodegradable and compostable bags. Since the implementation of this measure, the reduction in the use of lightweight plastic carrier bags has reached 80 % in larger stores, mainly supermarkets, and 60 % in other stores.

In **Portugal**, the Green Taxation Reform imposed a charge on lightweight plastic bags (< 50 µm thickness plastic film), which has been applied since February 2015. Excluded are thin plastic bags used as bags primarily in contact with food. The charge amounts to EUR 0.10 per bag. Since the introduction of this tax, the use of plastic bags at stores and supermarkets across the country has seen a drop of more than 90 %.

In **Sweden**, in line with a voluntary agreement, supermarkets charge EUR 0.2-0.5 for plastic bags. Furthermore, a law requires anyone selling or giving away plastic bags to provide information about how plastic bags affect the environment and how consumers can reduce their consumption. One year after this law had been introduced, consumption declined by 35 % according to the Swedish Trade Federation.

In line with a voluntary agreement, since 2017 in **Switzerland**, predominantly big retailers have charged CHF 0.05 per lightweight plastic bag (with a few exceptions, mainly for primary bags used for vegetables and fruits). After 1 year, this measure resulted in an 84 % decrease in consumption of these plastic bags (compared with 2016). Plastic bags, other than lightweight plastic bags have, for some time, been chargeable (CHF 0.20 per bag) in grocery stores (sometimes also in retail stores selling other products).

In the United Kingdom, various laws require a charge of GBP 0.05 per bag. In England, customers now purchase the equivalent of just 19 bags per person annually, compared with 140 bags previously, since the government introduced the charge in 2015 (i.e. a reduction of 86 %). In Scotland, the respective law came into force in 2014. Since then, a reduction of 80 % has been achieved. The Scottish Government has committed to increasing the charge to GBP 0.10 as soon as possible. In Wales, where the GBP 0.05 charge had already been introduced in 2011, a reduction of 70 % was achieved by 2014. During 2017/18 Northern Ireland saw a reduction in bag numbers of 67.1 %. Compared with a baseline of 300 million bags in 2014, some 98.8 million bags dispensed by retailers in 2017/18.

An overview of all policy instruments for reducing the use of plastic bags as reported in the Eionet survey is provided in Annex 4, Table A4.1.

addressed, the measures identified predominantly refer to plastic bags, single-use plastics and cosmetics, and thus contribute to implementing European policy initiatives. For example, under the EU Plastic Bags Directive (amended Directive 94/62/EC), national governments must ensure that by the end of 2019 no more than 90 lightweight bags are consumed annually per person. By the end of 2025, that number should drop to 40 bags per person. Table 3.2 shows some good practice examples of regulatory instruments.

Market-based instruments are instruments for policymakers who wish to address environmental issues and achieve environmental objectives by encouraging targeted changes in business practices and consumer behaviour. Taxes and fees, subsidies and extended producer responsibility, and deposit refund schemes are known market-based instruments that can contribute to preventing plastic waste. If well-designed, they

could also give rise to revenue for supporting national budgets as well as eventually acting as a means of reducing the reliance on labour-related taxes (OECD, 2018). The review of the country measures revealed that 37 of the 173 identified measures are market based. The majority of the market-based instruments referred to fees for plastic carrier bags. Table 3.3 shows some good practice examples of market-based instruments.

Voluntary agreements usually refer to agreements that are not the result of an exclusively political decision-making process but the outcome of negotiations between social partner organisations and other relevant stakeholders. Since the 1990s, the EU has been developing a new regulatory policy, which increasingly puts emphasis on the use of such alternative instruments that are complementary to traditional legislation. There are 30 voluntary agreements on plastic waste prevention that have

Table 3.3 Good practice examples of implemented market-based instruments

Country	Description
Several	Pursuant to national packaging ordinances, the collection and recovery of packaging waste are financed through fees charged for participating in a collection and recovery scheme. The participation fees are calculated according to the specific material used in the packaging distributed and the weight thereof, and thus set incentives to avoid unnecessary packaging.
Portugal	The Portuguese National Budget Law for 2018 established an interministerial working group coordinated by the Portuguese Environment Agency to evaluate the application of fiscal incentives associated with the reduction in the consumption of plastic bags and their applicability to other disposable plastic products of fossil fuel origin.

Table 3.4 Good practice examples of implemented voluntary agreements

Country	Description
Czechia	The Ministry of the Environment of Czechia enters voluntary agreements with restaurants and refreshment outlets in shopping centres, cafes or fast food shops to make sure that customers have the opportunity to return their plastic dishes.
Luxembourg	The multiple-use 'eco-sac' carrier bag was introduced through a voluntary agreement between the Luxembourg Ministry of Sustainability and Infrastructures, the Luxembourgish Confederation of Commerce and VALORLUX a.s.b.l., a non-profit association and licensee of 'Green Dot Luxembourg', as part of the national waste prevention plan. Since the project's start, there has been a saving of some 300 million disposable shopping bags. Thanks to the eco-sac, the emissions of CO ₂ equivalent, linked to the production of disposable shopping bags, have been reduced by 1 000 tonnes annually.
Netherlands	The Sustainability Agenda for Packaging, as agreed in the Packaging Framework Agreement, was implemented. The main subjects for 2015 are reviewing the highest achievable goals in the branch sustainability plans, supervising research into the environmental effects of the Packaging Agreement 2013-2022 and carrying out the academic research programme.
United Kingdom	The UK Plastics Pact is a voluntary pact between industry, the Waste & Resources Action Programme and the Ellen MacArthur Foundation, which seeks to create a circular economy for plastics. It brings together businesses from across the entire plastics value chain with the British government and non-governmental organisations (NGOs) to tackle plastic waste. The targets include eliminating unnecessary single-use packaging by 2025.
United Kingdom	The Courtauld Commitment, a voluntary agreement aimed at improving resource efficiency and reducing waste within the United Kingdom's grocery sector, was implemented. The agreement is funded by the devolved governments of England, Scotland, Wales and Northern Ireland. It was launched in 2005 and is now in its third phase, which includes the quantified target to reduce traditional grocery ingredient, product and packaging waste in the grocery supply chain by 3 %.

been initiated in different forms with different sets of stakeholders across the countries reviewed. They often include specific targets that are monitored by internal or external parties. Table 3.4 shows some good practice examples of voluntary agreements.

Financial instruments are a different type of measure. Public investment can support the implementation of regulatory as well as market-based instruments. Different forms of investments can support various stakeholders and be applied to several stages of the plastic product's life cycle. Development of infrastructure for plastic waste prevention and management, provision of funding for research and development and new businesses and green public procurement are instruments identified that can contribute to preventing plastic waste (OECD 2018; EC, 2018b). However, only three measures (from Austria, Sweden and the United Kingdom) have explicitly earmarked funds for waste prevention activities. Table 3.5 shows some good practice examples of financial instruments.

Informative instruments that can facilitate the exchange of information among the plastics value chain and influence the behaviour of targeted stakeholders can contribute to preventing plastic waste. Awareness and education, as well as environmental labelling are identified tools that

public authorities can implement to achieve that purpose and they are all reflected in the measures planned by the countries. Of the reviewed measures, 69 are informative; thus, this type of instrument is the most popular type identified. Table 3.6 shows some good practice examples of informative instruments.

3.4 Targets

Table 3.7 shows a summary of all waste prevention-related targets set by countries. The targets might refer to entire waste streams such as municipal waste (including packaging), packaging waste, plastics or specific products such as plastic carrier bags. The targets are rather diverse as they are quantitative, qualitative and related to economic indicators or not.

Only 9 countries have explicit waste prevention targets included in their prevention programmes. This might be explained by the fact that measuring prevention is challenging, as a country needs to measure 'what is not there' in the case of waste reduction. Moreover, it is difficult to evaluate the effect of measures on waste reduction targets, as waste generation is affected by many factors other

Table 3.6 Good practice examples of implemented informative instruments

Country	Description
Austria	Waste consultancy training in the packaging sector, through the packaging coordination centre; promoting the issue of waste prevention at consumer level.
Greece	A pilot project for public fountains aims to prevent the use of plastic bottles; it started in the municipality of Athens with the intention of expanding to other municipalities.
Italy	Promoting points of sale for loose/bulk products.
Poland	Developing and implementing a database dedicated to products, packaging and waste management that will enable monitoring of waste prevention.
Slovenia	A consumer awareness programme for the reduced use of lightweight plastic bags and educational programmes for children.

Table 3.7 Identified plastic waste prevention targets

Target	Country
Absolute numerical targets (× kg of waste reduction or percentage reduction compared with baseline) for specific waste materials	Austria, Belgium, France, Romania, Switzerland, United Kingdom
Decoupling targets (reduction targets in relation to economic indicators)	Estonia, Lithuania
Reduction target combined with quantitative target	Sweden
Quantitative target for reuse	Romania, United Kingdom

than waste prevention measures, such as economic developments and lifestyle changes.

Apart from quantitative targets, qualitative objectives have also been declared in the waste prevention programmes. These objectives mostly remain on a more general level, such as reducing plastic waste or the volume of municipal waste. However, some ambitious objectives have been adopted, such as the objective in the United Kingdom (Wales) to develop a zero waste society by 2050.

The absence of concrete targets for prevention in most countries makes the process of implementing policy more difficult. Without a target functioning as a reference point, it is difficult to assess progress (indicators) and to evaluate and review the wide variety of policy measures taken in the field of waste prevention. On the other hand, the presence of concrete targets dictates to a certain extent the type of policy measures required, their appropriateness and the effort needed to implement them.

3.5 Indicators

Within their waste prevention programmes, EEA member countries have set out various indicators by which the development of plastic waste prevention can be measured and distance to target can be assessed. Table 3.8 depicts the indicators and shows that they can be condensed into five types, measuring:

1. the amount of plastic waste/plastic packaging waste;
2. the reuse of plastics/plastic packaging;
3. the introduction of deposit fees;
4. the number of measures implemented for plastic waste prevention;
5. the use of plastic carrier bags.

Apart from the indicators of plastic waste prevention stated in waste prevention programmes, as depicted in Table 3.8, some countries and regions have developed targets for, and indicators of, plastic waste prevention in other strategic documents (for an overview, see Table A3.1 in Annex 3). Some of these strategic documents focus particularly on plastic waste prevention.

For example, in the **United Kingdom**, the 'Plastics Pact' has been adopted as a voluntary pact between industry, the Waste & Resources Action Programme and the Ellen MacArthur

Foundation. The Plastics Pact has been signed by 68 organisations representing 80 % of plastic packaging sold through supermarkets in the United Kingdom. In this agreement, the following targets have been set for 2025:

- 100 % of plastic packaging to be reusable, recyclable or compostable;
- 70 % of plastic packaging to be effectively recycled or composted;
- problematic or single-use packaging items to be eliminated through redesign, innovation or alternative (reuse) delivery models;
- 30 % average recycled content across all plastic packaging.

In the **United Kingdom (Scotland)**, a ban on plastic cotton buds is in place, and a deposit return system will be in place by 2020. Scotland has also committed to a ban on non-recyclable single-use plastics from 2030, and its carrier bag charge has reduced plastic bags in circulation by over 80 %. Scotland's circular economy strategy, 'Making Things Last', has been in place since 2016 and its circular economy investment fund supports innovative circular technologies, including recycling plastics. All of this is supported by more general waste management targets:

- Reduce waste arising by 15 % by 2050 against the 2011 baseline of 13.2 million tonnes.
- No more than 5 % of all waste is to go to landfill by 2025.
- Recycling targets: 70 % of all waste by 2025 and 60 % of household waste by 2020.

Furthermore, in the **United Kingdom (England)** the 25-year environment plan aims to eliminate all avoidable waste by 2050 and all avoidable plastic waste by the end of 2042. An additional target refers to working towards all plastic packaging placed on the market to be reusable, recyclable or compostable by 2025.

In **Belgium**, a cooperation agreement on packaging waste has been concluded between the three regions of Flanders, Wallonia and Brussels-Capital. The aim of this agreement is to prevent and manage all packaging waste on Belgian territory.

Finally, in **Switzerland**, the Swiss ordinance on beverage packaging fixes a minimum rate of 75 % of material recovery of polyethylene terephthalate (PET)

Table 3.8 Indicators of plastic waste prevention in waste prevention programmes

Country	Indicator
Indicators relating to the amount of plastic waste/plastic packaging waste ^(a)	
Belgium (Brussels-Capital Region)	Volume of household packaging waste (kg)
Denmark	Trends in the amount of packaging and the proportion of packaging that is collected for recycling and recovery
Estonia	Growth rate of packaging waste generation in relation to the growth rate of gross domestic product
Lithuania	Quantity of packaging placed on the domestic market (per capita)
Poland	Quantity of packaging waste (kg) in relation to the volume of products put on the market (kg)
Slovakia	Amount of packaging waste generated and ratio of plastic packaging waste to amount of plastic packaging put on the market
Spain	Amount of packaging waste generated per year
Indicators relating to the reuse of plastics/ plastic packaging	
Greece	Percentage of reusable plastic packaging
Iceland ^(b)	The proportion of reusable beverage packaging in total packaging bearing a recycling deposit
Indicators relating to the introduction of deposit fees	
Germany	Amount of returnable (reusable) beverage packaging
Iceland ^(b)	Proportion of beverage packaging for which customers can receive a recycling deposit in the total amount of beverage packaging
Indicators relating to the number of implemented measures for plastic waste prevention	
Greece	Number of awareness raising events
Italy ^(b)	Number of signed agreements to promote points of sale of loose/bulk products and number of businesses that sell loose/bulk products
	Number of information campaigns created to encourage the consumption of tap water instead of bottled water
	Number of programme agreements to encourage the use of tap water
Sectoral indicators	
United Kingdom (England)	Amount of packaging waste in grocery supply chains
Indicators referring to the use of plastic carriers bags	
Bulgaria ^(b)	Amount of used polymer bags
Croatia	Number of bags put on the market
Iceland ^(b)	Number of new plastic carrier bags made per year
Romania	Number of shopping bags
Slovenia	Number of plastic bags (very lightweight plastic carrier bags are excluded)
Switzerland	The percentage reduction of lightweight plastic bags compared with a reference year (based on a voluntary agreement of the retailers)
Turkey	Consumption of single-use carrier bags
United Kingdom (Northern Ireland) ^(b)	Consumption of single-use carrier bags

Notes: ^(a) Some countries might use a combination of indicators to account for waste prevention (e.g. in Austria the combination of 'amount of residual waste' and 'quantity of separately collected waste packaging') but these are not reflected in this table.

^(b) No data available based on Eionet survey; data obtained based on desktop research.

n/a Information not indicated in Eionet survey.

Box 3.2 Examples of monitoring schemes for plastic waste prevention

Belgium — Flanders region

Together with Flemish industry, quantitative targets were set out. Progress in accomplishing the targets will be monitored by the Flemish government:

By 2022, 90 % of beverage packaging is collected and recycled.

By 2023, 65 % of all plastic packaging is recycled. By 2030, 70 % of all plastic packaging is to be recycled.

By 2025, 95 % of all household packaging is recycled. These targets are laid down in the agreement with the sector. If they are not met, considerable fines will be imposed. The fines set out in the agreement will be increased.

In addition, these types of ambitions and targets have been formulated for other waste fractions commonly found in litter. It is hoped there will be enthusiastic uptake by the sector, but failing that the government will impose higher targets.

By the end of 2023, the Flemish government will re-evaluate the situation. If the targets are not met, the sector will be asked to organise deposit schemes or introduce a general reward system.

The Flemish government will monitor the general packaging targets and the material-related packaging targets via the reporting instruments that are in place for monitoring the implementation of the Packaging and Packaging Waste Directive. For the monitoring of targets specific to beverage packaging, new parameters are proposed for inclusion in the new legislation (inter-regional cooperation agreement on packaging waste). The sector will be asked to report on the specific use of packaging for beverages; for each material used it will have to report in detail the quantity placed on the market and the quantities collected and recycled. For this target, OVAM, the Flemish government service dealing with waste, will propose a methodology that differs slightly from the methodology used in the Directive. There must be scrutiny of the collection and recycling of glass beverage packaging because glass is heavier than other beverage packaging materials and may skew the calculation of the recycling targets. In fact, it should be ensured that the targets are not met by including this category of beverage packaging.

Austria

In July 2016, in Austria, the voluntary agreement for reducing the use of carrier bags came into force. An increasing number of Austrian retail companies have entered into this voluntary agreement, which was initiated by the Federal Ministry for Sustainability and Tourism. The agreement includes the following objectives:

The use of carrier bags made of all kinds of materials will be reduced.

The number of plastic carrier bags put on the market should be reduced by 50 % by 2019 (reference year 2014).

For all kinds of carrier bags, a fee has to be charged that corresponds at least to the wholesale price. Retailers can differentiate the price depending on material, size or the wall thickness of the bags.

Bags for fresh food that is sold loose, such as meat, fish, fruit, vegetables, herbs, bread or pastries, or snacks, are excluded.

Every year, on 31 May, the Federal Ministry for Sustainability and Tourism (BMNT) draws up a report on the carrier bags put on the market in Austria and on the progress towards achieving the objectives. The first report was due on 31 May 2017.

Data are provided by the companies taking part (the number of carrier bags placed on the market, broken down by material and, in the case of plastic carrier bags, according to wall thickness.)

bottles put on the market yearly. In 2017, a material recovery rate of 83 % was reached with a collection rate of 92 %. The recycling system is based on a voluntary prepaid disposal fee and offers more than 50 000 collection points for PET bottles in Switzerland.

In addition to introducing specific targets, several countries and regions have also reported specific monitoring schemes as shown in Box 3.2.

Based on the depicted survey results, several conclusions can be drawn. **First**, survey results show that a broad range of indicators concerning plastic waste prevention has been developed in EEA member countries. However, particularly the indicators developed in waste prevention programmes

(see Table 3.8) are in many cases not connected to targets for indicator development. Indicators normally measure progress, but in the absence of concrete targets, progress is more difficult to assess.

Second, the diversity of indicators applied inhibits comparison of the state of plastic waste prevention across EEA member countries at present. The fact that there are no EU-wide prevention targets, data flows and indicators leaves room for countries to develop their own tools to implement waste prevention policies. This means that comparing actions across countries is not possible, but, on the other hand, a lot of country-specific knowledge and experience is developed that can be communicated across EEA member countries.

4 Key findings, policy options and future prospects

4.1 Key findings

Plastic waste and, in particular, its prevention has become an important policy issue and highlights the growing role of waste prevention in the transition towards a circular economy. Currently slightly more than 30 % of plastic waste is collected for recycling. In its plastics strategy, the European Commission notes that plastic recycling has not kept pace with the increasing global production of plastics and that plastic waste that leaks into the environment poses a severe threat not only to marine ecosystems but also economic activities such as fishing and tourism.

Against this background, plastic waste prevention is directly addressed as a policy priority, for example in the revised Waste Framework Directive, the revised Packaging and Packaging Waste Directive, the plastics strategy and the Single-Use Plastics Directive. In addition, industry and other organisations, and stakeholders have initiated various measures that aim to fight plastic pollution and have called for innovative policy instruments to avoid plastic waste at source.

The challenge of implementing plastic waste prevention is significant. The plastic family consists of thousands of materials used in wide-ranging applications that span various economic sectors. Some of these applications even help implement waste prevention, for example by reducing food waste or by enabling lightweight design solutions. Moreover, prevention is expected to overcome inherent technical barriers, consumption patterns, established value chains and economic barriers. For example, the absence of commercial recycling technologies for certain plastic materials restricts efforts to design for recycling. Nevertheless, there is a clear need to decouple economic growth and well-being from ever-increasing waste generation. Taking the example of plastic packaging waste as the most important plastic waste stream, the 28 EU Member States failed to achieve such a decoupling in the last decade. The future outlook hints at ever-increasing pressures from plastic waste and packaging waste in particular (EC, 2018a).

The survey conducted in the context of this report first mapped the indicators and connected targets that have

already been introduced by EEA member countries. In summary, five aspects of plastic waste prevention are reflected in the indicators adopted:

1. the amount of plastic waste;
2. the reuse of plastics;
3. the proliferation of deposit fees;
4. the number of implemented measures on plastic waste prevention;
5. the use of plastic carrier bags.

Furthermore, the analysis has shown that indicators introduced by the countries are often not yet connected to concrete targets.

In their waste prevention programmes, and additional strategies on plastics in general or those focused on specific product groups/materials (e.g. micro-plastics or plastic bags), the countries have already developed a broad range of measures on plastic waste prevention. For this report, 173 specific measures have been reported and analysed — mostly informative and awareness-raising measures but with an increasing share of binding regulatory or market-based measures.

4.2 Conclusions and policy options

This report addressed a range of questions, as laid out in Section 1.2. The assessment provided some insights to improve our understanding of the way countries have implemented waste prevention for plastics.

• Main focus of initiatives

Most countries have opted to adopt softer measures to support preventing plastic waste. With the exception of legislative requirements, such as the levy on plastic carrier bags, the majority of the identified prevention measures refer to voluntary agreements and informative instruments. These primarily aim to increase cooperation among stakeholders across the plastics value chain and exchange information.

Some agreements even set out targets and monitoring schemes. There are some stricter measures that focus on banning certain types of plastics such as micro-beads and there are others that countries have adopted in order to be prepared for the new legislation on single-use plastic products.

- **Policy structure (targets, indicators, measures)**

The waste prevention policy domain in general lacks initiatives that include concrete targets, and plastic waste prevention is no exception. Very few countries have put in place quantitative targets, although some have adopted qualitative ones. These include plans to decouple waste generation from economic growth or targets on reuse. On the other hand, most countries have decided to collect data and information for developing indicators and monitoring progress towards implementing waste prevention. Again, a lot of the indicators are related to the consumption of plastic carrier bags, which is related to the corresponding EU legislation.

Another aspect is the lack of evaluation of measures implemented and targets agreed. Without a proper evaluation, we cannot draw conclusions on the effectiveness of measures and the ambition of targets. Most of the countries' waste prevention programmes are still ongoing and have not yet been evaluated or replaced. In the coming years, these evaluations will help achieve a better understanding of which of the implemented measures, specifically which types of targets and incentives, have proven to be most effective.

- **Good practice examples**

This report has identified a range of good practice examples that go beyond the average status of waste prevention in Europe. The examples include both regulatory initiatives, such as banning certain plastic products, and softer measures, such as stakeholder agreements for reducing the consumption of plastic products (mainly packaging), and training and capacity building. Unfortunately, there are very few cases in which the initiatives adopted have been properly evaluated; therefore, most of the good practices identified lack the evaluation element that could help draw conclusions on their effectiveness.

- **Areas of improvement**

The analysis conducted in this report revealed improvement opportunities to make preventing plastic waste more effective. Efforts to increase plastic

waste prevention need to become focused, better coordinated and more explicit in terms of scope and ambition. The types and uses of plastic can be differentiated: priority for prevention should be given to the most impactful plastic types, to plastic products that are designed to be used once and for a very short time (the so-called single-use plastics⁽²⁾) and to non-recyclable plastic products. Such prioritisation would help direct and structure prevention efforts, reduce environmental impacts more quickly and also bear significant results in terms of reducing the waste generated. The mapping of plastic waste prevention initiatives in this report shows that the scope of national initiatives is often well defined and targeted (e.g. plastic carrier bags, single-use plastics or packaging). However, in many cases, the scope of a planned intervention is too generic, which might result in reduced effectiveness. For example, with regard to the often-mentioned support for the waste-light design of plastic products, it remains unclear how such an objective can actually be achieved.

4.2.1 Concrete options

Apart from their scope, a more detailed analysis of the mapped measures reveals some imbalances in their type and nature. The arrangement of the measures according to whether they support quantitative or qualitative plastic waste prevention shows that the great majority of them focus on quantitative prevention. Of the 173 measures, only five explicitly refer to qualitative prevention (e.g. reducing hazardous substances in packaging material), while 14 refer to eco-design (e.g. design for recycling plastics). It is therefore evident that countries are focusing significantly more on quantitative prevention. However, the broad definition of waste prevention helps to identify the broad benefits its implementation brings. Reductions in hazardous substances lead to cleaner supply chains, while better product design that extends the product's life span or increases its recyclability helps establish a circular economy. It is thus important for countries to address these aspects and focus more on qualitative prevention. It is possible that the lack of provisions reducing hazardous substances can be explained by the presence of similar provisions in other pieces of legislation, strategies and plans that cover other policy areas. In any case, waste prevention, as expressed through the countries' prevention programmes, is approached as an isolated area, while links and synergies with other efforts (e.g. the circular economy) are still in their infancy. The identification and processing of these links would increase the effectiveness and efficiency of the

(2) The Single Use Plastics Directive encourages Member States to focus on preventing exactly this type of plastics.

measures implemented and would facilitate a more comprehensive approach to environmental issues, for example burden shifting between plastic packaging and packaging made of extremely resource-intensive aluminium, or trade-offs between packaging waste prevention and food waste prevention.

When looking at the types of measures adopted by countries, especially stringent market-based and regulatory measures are dominated by one or two measures, often linked to the plastic carrier bag. These are, for example, the introduction of charging for, or the banning of, these bags. Although the charge that many countries have placed on plastic carrier bags has borne impressive results, countries should be encouraged to diversify the measures implemented, as this would target a greater variety of prevention measures. Diverse measures exist and have been successfully implemented, as the best practice examples show. Moreover, the newly revised Waste Framework Directive includes (in Article 9) examples of measures to implement waste prevention effectively. These examples are of a generic nature but can function well by inspiring countries to customise them to their particular needs and objectives.

The distribution of existing prevention measures for plastics into types of instruments (see Figure 3.2)

reveals that very few refer to financing. The EU plastics strategy, as well as the Single Use Plastics Directive (including establishing extended producer responsibility schemes) both call for financial stimuli related to more sustainable production and consumption patterns of plastic products. Given the effectiveness of financial instruments in shaping waste policies, countries could make better use of available financial instruments to reduce plastic consumption and contribute to waste prevention. These instruments could explore using state funds, as well as involving voluntary public-private partnerships, for example to provide eco-modulated packaging fees that promote not only recycling but also preventing packaging waste at source. Another possibility is to use the state's consumer power by taking account of waste prevention in green public procurement (see Box 4.1).

Moving away from measures, the survey of the countries revealed that adopting concrete targets, supported by relevant indicators, has not yet really spread throughout the EEA member countries. The potential driver presented by an EU-wide target^(?) for decoupling waste generation (for plastic waste or more broadly household waste) and economic growth is reflected in the countries' limited initiatives. However, concrete targets enable countries to intensify their efforts to prevent waste, monitor them against a benchmark and define

Box 4.1 Green public procurement

Europe's public authorities are major consumers of goods. By using their purchasing power to choose environmentally friendly goods, services and works, they can make an important contribution to sustainable consumption and production — and specifically to waste prevention. Green public procurement (GPP) can help stimulate a critical mass of demand for more sustainable goods and services, which otherwise would be difficult to get on to the market. GPP is therefore a strong stimulus for eco-innovation. To be effective, GPP requires the inclusion of clear and verifiable environmental criteria for products and services in the public procurement process.

The European Commission and a number of European countries have developed guidance in this area, in the form of GPP criteria, e.g. the EU GPP criteria for cleaning products and services (EC, 2019a), which include very specific and measurable requirements for packaging:

- The weight-utility ratio (WUR) for primary packaging must not exceed the following values:
 - For concentrated products, including liquid concentrates and solids, that are diluted in water before use — WUR 1.20 g packaging per litre solution (washing water).
 - For ready-to-use products, namely products used without further dilution — WUR 150 g packaging per litre solution (washing water).
- The challenge of increasing uptake by more public sector bodies so that GPP becomes common practice still remains.

There is an example of this in Germany: mandatory consideration of waste prevention aspects in GPP regulations has been established in German waste management law, for example taking into account the reduced total costs of ownership for more durable products.

(?) The European Commission will consider in future adopting an EU-wide target for preventing food waste.

appropriate indicators. More importantly, concrete targets for waste prevention help in the selection of a suitable spectrum of measures by providing structure and content to the potentially adopted measures.

4.3 Future prospects

Despite the high level of public interest in plastic waste and its severe impacts on the environment and eventually on human health, the generation of plastic waste is still increasing and, according to all available predictions, it will continue to do so.

Against this background, preventing plastic waste at source will rise in strategic importance, particularly taking into account the necessary investments in end-of-pipe waste treatment facilities and infrastructures that would become necessary to deal with these increasing amounts of plastic waste. The EU and its Member States have already started to develop much more stringent and binding waste prevention policies as, inter alia, reflected in the increasing share of regulatory and market-based instruments. The successful example of quantified reduction targets for plastic bags and single-use plastics, and the broad range of innovative approaches to reach these targets, might be an inspiration for future activities.

Nevertheless, this review of activities has shown that such clear and common targets are still lacking for most product groups and thus the levels of activity and ambition clearly differ between countries. This might be caused by very different framework conditions, the technical levels of the collection and recycling infrastructure or the willingness of industry to cooperate. Nevertheless, this diversity risks creating confusion for consumers. For example, should I simply replace a plastic bag with a paper bag or try to use reusable alternatives? The same is true for incentives for industry to engage in waste-light alternative designs or to promote waste-preventing business models. Plastic waste prevention policies will benefit from continuous coordination, cooperation and exchange of best practice examples.

Other aspects of waste prevention, such as product design (e.g. design for reuse) and reducing hazardous substances in products, may be implemented in the near future. Product design is expected to play a significant role in reducing plastic waste in the future.

For example, the European Commission will, by the end of 2020, consider the possibility of reinforcing the essential requirements for packaging products, especially with respect to design for reuse. On the other hand, alternative feedstocks (e.g. bio-based) that share the same functionality as plastics but come at a lower environmental cost could offer solutions for designing products with alternative materials and lower overall environmental impacts.

Moreover, focus will be given to the presence of hazardous substances in plastic products as indicated by the amended Waste Framework Directive: Member States are encouraged to modulate fees for extended producer responsibility schemes on the basis of durability, reparability, reusability and the presence of hazardous substances, and a database will be created containing information on hazardous substances in products. These indications, along with this report's conclusions that existing plastic waste prevention measures do not focus on qualitative prevention, show that there is room for improvement in this way of implementing waste prevention in the short term.

However, especially with regard to the broad range of applications for plastics, prevention policies will have to carefully take into account unintended side effects: if consumers switch from plastic packaging to aluminium foil, the overall burden to the environment might even increase, although plastic waste generation might decrease. The design of effective prevention measures will also have to take into account the specific functionality, for example, of packaging, and trade-offs between plastic waste prevention and an increase, for example, in food waste should be avoided.

This issue of the actual effectiveness of waste prevention measures, policies and programmes will become an increasingly important topic in upcoming waste prevention reports. In the revised Waste Framework Directive, the EEA will not only report on implemented measures but also assess 'the evolution as regards the prevention of waste generation for each Member State and for the Union as a whole'. This extended mandate will require the development of a more analytical approach, even closer cooperation with the countries and a deeper discussion of the role of waste prevention in the transformation towards a circular economy.

Abbreviations and acronyms

CO ₂ e	Carbon dioxide equivalent
EEA	European Environment Agency
ETC/WMGE	European Topic Centre on Waste and Materials in a Green Economy
EC	European Commission
Eionet	European environment information and observation network
EU	European Union
EU-28	The 28 European Union Member States: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom
GDP	Gross domestic product
GPP	Green public procurement
Helcom	Baltic Marine Environment Protection Commission (Helsinki Commission)
PET	Polyethylene terephthalate
PVC	Polyvinyl chloride
UN	United Nations
WUR	Weight-utility ratio

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Annex 1

Table A1.1 Waste prevention programmes in Europe as of 1 November 2018

Country	Title of programme (English translation (9))	Link to programme
Austria (a)	<i>Abfallvermeidungsprogramm</i> (Waste Prevention Programme)	https://www.bmnt.gv.at/umwelt/abfall-ressourcen/abfallvermeidung/Abfallvermeidungsprogramm-2017.html
Belgium (Brussels-Capital Region) (a)	<i>Plan de gestion des ressources et des déchets/Hulpbronnen en afvalbeheerplan</i> (Resource and Waste Management Plan) A new regional waste prevention and resources plan was developed in the meantime and will be adopted by the end of 2018	https://www.ovam.be/sites/default/files/atoms/files/HA-uitvoeringsplan-VR-20161609-def-LR.pdf
Belgium (Flanders) (a)	On 16 September 2016, the Flemish Government adopted ' <i>Het uitvoeringsplan voor het huishoudelijkafval en gelijkaardigbedrijfsafval</i> '. This plan replaces two former plans, namely ' <i>Milieuverantwoordbeheer van huishoudelijkeafvalstoffen</i> (UMBHA)' and ' <i>Gescheideninzamelingsbedrijfsafval van kleineondernemingen</i> '. (The Implementation Plan for Household Waste and Similar Industrial Waste)	http://document.environnement.brussels/opac_css/elecfile/PLAN_Gestion_DechetHulpbronnen_FR
Belgium (Wallonia) (a)	The Waste Prevention Plan is part of the National Waste Management Plan 2014-2020	http://www.moew.government.bg/wp-content/uploads/filebase/Waste/NACIONALEN_PLAN/_/NPUO_2014-2020.pdf (in Bulgarian)
Bulgaria (b)	<i>Plan wallon des déchets-ressources</i> (adopted by the Walloon Government on 22 March 2018) (Walloon Plan for Waste-Resources)	http://environnement.wallonie.be/rapports/owd/pwd/PWDR_3.pdf (in French)
Croatia (a)	Waste Management Plan of the Republic of Croatia for the period 2017-2022; an integral part of the plan is the Waste Prevention Plan	https://www.mzoip.hr/doc/management_plan_of_the_republic_of_croatia_for_the_period_2017-2022.pdf
Czechia (a)	Waste Prevention Programme (WPP) of Czechia was adopted by the Czech Government on 27 October 2014	https://www.mzp.cz/C1257458002F0DC7/cz/predchazeni_vzniku_odpadu_navrh/\$FILE/OO-EN-WPP_Czech-20150407.pdf
Denmark (a)	Danmark uden affald II — <i>Strategi for affaldsforebyggelse</i> (Denmark without waste II — Strategy for waste prevention)	https://mst.dk/media/90395/danmark_uden_affald_ii_web_29042015.pdf
Estonia (a)	Riigi Jäätmekava 2014-2020 (Current State Destination 2014-2020)	https://www.envir.ee/sites/default/files/riigi_jaatmekava_2014-2020.pdf
Finland (a)	From recycling to a circular economy — The National Waste Plan 2030	http://julkaisut.valtioneuvosto.fi/handle/10024/160889
France (a)	<i>Programme national de prévention des déchets</i> 2014-2020 (National waste prevention programme 2014-2020); Furthermore: <i>Feuille de Route pour une Economie Circulaire</i> (FREC, 23 April 2018, Roadmap for a Circular Economy)	https://www.ecologique-solidaire.gouv.fr/sites/default/files/Programme_national_prevention_dechets_2014-2020.pdf
Germany (a)	<i>Abfallvermeidungsprogramm des Bundes unter Beteiligung der Länder</i>	(Waste prevention programme of the federal government with participation of the federal states)
Greece (a)	ΕΘΝΙΚΟ ΣΤΡΑΤΗΓΙΚΟ ΣΧΕΔΙΟ ΠΡΟΛΗΨΗΣ ΔΗΜΙΟΥΡΓΙΑΣ ΑΠΟΒΛΗΤΩΝ (National strategic waste management prevention plan)	http://www.ypeka.gr/LinkClick.aspx?fileticket=2Y2%2B%2BPSM4P0%3D&tabid=238&language=el-GR

Table A1.1 Waste prevention programmes in Europe as of 1 November 2018 (cont.)

Country	Title of programme (English translation (9))	Link to programme
Hungary (a)	<i>Országos Megelőzési Program (Országos Hulladékgazdálkodási Terv 2014-2020)</i> (National Waste Management Plan 2014-2020)	http://videkstrategia.kormany.hu/download/c/96/90000/Orszagos%20Hulladékgazdalkodasi%20Terv%202014-2020.pdf
Iceland (b)	<i>Samangegnsóun — Almennstefna um úrgangsförvarnir 2016-2027</i> (Together against waste — Public policy on waste prevention 2016-2027)	https://www.stjornarradid.is/media/umhverfisraduneyti-media/media/pdf_skrar/saman-gegn-soun-2016_2027.pdf
Ireland (b)	Towards a Resource Efficient Ireland — National Waste Prevention Programme, 2014-2020	http://www.epa.ie/waste/nwpp
Italy (b)	<i>Programma Nazionale di Prevenzione dei Rifiuti</i> (National Waste Prevention Programme)	http://www.minambiente.it/sites/default/files/archivio/comunicati/Programma%20nazionale%20prevenzione%20rifiuti.pdf
Latvia (b)	<i>Atkritumu Apsaimniekošanas Valsts Plānu 2013-2020.gadam</i> (Waste Management Plan for 2013-2020)	http://polsis.mk.gov.lv/documents/4276
Lithuania (a)	<i>Valstybinė Atliekų Prevencijos Programos Patvirtinimo</i> (National Waste Prevention Programme)	https://www.e-tar.lt/portal/lt/legalAct/TAR.09C26B84F785/ejmYyEmdll
Luxembourg (a)	<i>Plan national de gestion des déchets et des ressources 2018</i> (National Waste and Resource Plan 2018)	https://environnement.public.lu/dam-assets/documents/offall_a_ressourcen/pngd/plan/PNGD.pdf
Malta (b)	The Waste Prevention Programme is an integral part of the 'Waste Management Plan for the Maltese Islands — A Resource Management Approach, 2014-2020'	https://msdec.gov.mt/en/document%20repository/waste%20management%20plan%202014%20-%202020%20-%20final%20document.pdf
Netherlands (b)	<i>Afvalpreventieprogramma Nederland</i> (Waste Prevention Programme Netherlands)	https://www.vang-hha.nl/@148486/nederland-2013
Norway (b)	Forebyggingavavfall (Chapter 4 in the waste management plan Fra avfalltilressurs) (Prevention of Waste)	https://www.regjeringen.no/contentassets/27128ced39e74b0ba1213a09522de084/t-1531_web.pdf
Poland (a)	National Waste Prevention Programme	https://archiwum.mos.gov.pl/fileadmin/user_upload/odpady/National_Waste_Prevention_Programme.pdf
Portugal (a)	National Waste Prevention Programme	https://apambiente.pt/_zdata/DESTAQUES/2014/Portaria_PlanoEstrategico_PERSU2020_final.pdf
Romania (a)	The National Waste Prevention Programme is included in the National Waste Management Plan (adopted through Governmental Decision nr. 942/2017)	http://www.mmmediu.ro/app/webroot/uploads/files/2018-01-10_MO_11_bis.pdf
Slovakia (a)	<i>Program predchádzania vzniku odpadu SR na roky 2014-2018</i> (Waste Prevention Programme for 2014-2018 in the Slovak Republic)	http://www.minzp.sk/sekcie/temy-oblasti/odpady-obaly/program-predchadzania-vzniku-odpadu
Slovenia (a)	<i>Program Ravnarja z Odpadki in Program Preprecevanja Adpadkov Republike Slovenije</i> (Waste Prevention Programme)	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/zakonodaja/varstvo_okolja/operativni_programi/op_odpadki.pdf
Spain (a)	<i>Programa estatal de prevencion de residuos 2014-2020</i> (State Programme for Waste Prevention 2014-2020)	http://www.conama.org/conama/download/files/conama2014/STs%202014/1996968947_ppt_TBarras.pdf
Sweden (a)	Swedish Waste Prevention Programme for 2014 to 2017 — Together we will gain from a non-toxic, resource efficient society	https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/avfall/avfallsforebyggande-programmet/Toget-her-gain-rom-non-toxic-resource-efficient-society-2017-05-22.pdf
Switzerland (a)	<i>Abfallvermeidungsstrategie</i> (Waste Prevention Strategy)	Currently under development

Table A1.1 Waste prevention programmes in Europe as of 1 November 2018 (cont.)

Country	Title of programme (English translation (9))	Link to programme
Turkey (a)	National Waste Management and Action Plan (2016-2023)	http://webdosya.csb.gov.tr/db/cygm/haberler/ulusal_at-k_yonet-m--eylem_plan--20180328154824.pdf
United Kingdom (Northern Ireland) (b)	The waste prevention programme for Northern Ireland — The road to zero waste	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/waste-prevention-programme-ni-road-zero-waste-2014.pdf
United Kingdom (Scotland) (a)	Safeguarding Scotland's Resources — waste prevention programme Making Things Last — circular economy strategy	https://www.gov.scot/publications/safeguarding-scotlands-resources-blueprint-more-resource-efficient-circular-economy/pages/2 https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/
United Kingdom (England) (a)	Prevention is better than cure – The role of waste prevention in moving to a more resource efficient economy	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/265022/pb14091-waste-prevention-20131211.pdf https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england
United Kingdom (Wales) (a)	The Waste Prevention Programme for Wales. The programme supports the overarching waste strategy 'Towards Zero Waste'	https://gov.wales/topics/environmentcountryside/epq/waste_recycling/prevention/waste-prevention-programme/?lang=en
Cyprus (b)	Waste Prevention Programme and Waste Management Plan (for municipal waste only)	http://www.moa.gov.cy/moa/environment/environmentnew.nsf/4874C4A6C6CE24F5C2257EF2003365EA/\$file/Strategic%20Plan%202016-2018.pdf

- Notes**
- (a) Countries reporting to Eionet survey.
 - (b) Survey data are lacking; data obtained from internet research conducted by the authors.
 - (c) Translations conducted by the authors.

Annex 2

Questionnaire for Eionet survey on prevention of plastic waste

Eionet survey on prevention of plastic waste

Invitation to provide information by 30 September 2018/12 November 2018

Introduction

In 2018, the European Commission launched a European strategy for plastics in a circular economy (EC, 2018a). Prevention of plastic waste streams is a key element in this strategy. The EEA's next waste prevention review will focus on the prevention of plastic waste. It will identify relevant measures in the Eionet countries, already taken or planned, within the framework of their national waste prevention programmes or beyond.

The available national waste prevention programmes have been screened for policy

approaches and concrete initiatives to reduce plastic use and plastic waste. Given the recent prominence of the topic, however, we would like to give countries the opportunity to flag new activities that may not have been captured in the waste prevention programmes as published, or that have evolved since.

The aim of this survey is to verify and augment the information drawn from the national waste prevention programmes, and to highlight good practices to prevent plastic waste.

Questions

Please have a look at the results of the screening (document attached), showing what has been stipulated in the present Waste Prevention Programme of your country in order to prevent plastic waste.

1. Does this information correctly reflect the ongoing measures, policies or initiatives implemented in your country?
2. Are there additional, newly implemented or planned initiatives?
 - If so, could you please elaborate briefly on these in terms of:
 - objective (open, specific, etc.)
 - measure (how does it work, scale of application, etc.)
 - type of instrument (e.g. voluntary, regulatory, market-based, sectoral, etc.)
3. What is the primary target of the measure in the life cycle (intervention point)?
 - Does it address production, retail, or consumption? Any other?
4. Are there any other promising practices that you want to share?

Annex 3

Table A3.1 Indicators and targets of plastic waste prevention in other strategic documents of EEA countries

Country	Indicator	Target	Strategic document
Indicators relating to the amount of plastic waste/plastic packaging waste			
Belgium	n/a	Prevent and manage all packaging waste on Belgian territory.	Cooperation agreement on packaging waste between the three regions of Flanders, Wallonia and Brussels-Capital. A Flemish waste management plan for 'all plastic waste' is under preparation.
United Kingdom (England)	n/a	Eliminating all avoidable waste by 2050 and all avoidable plastic waste by the end of 2042. All plastic packaging placed on the market to be reusable, recyclable or compostable by 2025.	25-year environment plan
Indicators relating to the recycling of plastics/plastic packaging			
Belgium (Flanders Region)	Share of beverage packaging/all household packaging/all plastic packaging that is recycled	By 2022, 90 % of beverage packaging is collected and recycled. By 2023, 65 % of all plastic packaging is recycled. By 2030, 70 % of all plastic packaging is recycled. By 2025, 95 % of all household packaging is recycled.	Agreement of the industry with the Flemish government. If the targets are not met, considerable fines will be imposed.
Switzerland	Minimum rate of material recovery of PET bottles put on the market yearly	75 % collection rate	Swiss ordinance on beverage packaging
United Kingdom (England)	<ul style="list-style-type: none"> Share of reusable/recyclable/compostable plastic packaging Share of effectively recycled or composted plastic packaging 	By 2025: <ul style="list-style-type: none"> 100 % of plastic packaging to be reusable, recyclable or compostable. 70 % of plastic packaging effectively recycled or composted. Eliminate problematic or single-use packaging items through redesign, innovation or alternative (reuse) delivery models. 30 % average recycled content across all plastic packaging. 	UK Plastics Pact (voluntary pact between industry, WRAP and the Ellen MacArthur Foundation, which has been signed by 68 organisations representing 80 % of plastic packaging sold through supermarkets in the United Kingdom).
United Kingdom (Scotland)	Indicators of the UK Plastics Pact (see information on United Kingdom — England, above)	Targets of the UK Plastics Pact (see information on United Kingdom — England, above)	UK Plastics Pact (see information on United Kingdom — England, above)
United Kingdom (Wales)	Indicators of the UK Plastics Pact (see information on United Kingdom — England, above)	Targets of the UK Plastics Pact (see information on United Kingdom — England, above)	UK Plastics Pact (see information on United Kingdom — England, above)

Table A3.1 Indicators and targets of plastic waste prevention in other strategic documents of EEA countries (cont.)

Country	Indicator	Target	Strategic document
Indicators referring to the use of plastic carriers bags			
Austria	Number of plastic carrier bags put on the market	The number of plastic carrier bags put on the market should be reduced by 50 % by 2019 (reference year 2014).	Voluntary agreement for the reduction of carrier bags. An increasing number of Austrian retail companies have joined this voluntary agreement, which was initiated by the Federal Ministry for Sustainability and Tourism (BMNT).
Switzerland	Percentage of lightweight plastic bags reduced compared with a reference year	70-80 % reduction by 2025	Voluntary agreement by retailers

Notes: n/a Information not indicated in Eionet survey; WRAP, Waste & Resources Action Programme.

Annex 4

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation

Table A4.1 provides an overview of policy instruments for reducing the use of plastic bags in European countries based on the results of the Eionet survey. In the absence of a response from a country, the authors collected the information from desktop research.

Austria		
Policy instruments for reducing the use of plastic bags	Type of agreement	Voluntary agreement
	Measure	In July 2016, the voluntary agreement for the reduction of carrier bags came into force. An increasing number of Austrian retail companies has joined this voluntary agreement, which was initiated by the Federal Ministry for Sustainability and Tourism (BMNT).
	Amount of tax	For all kinds of carrier bags a fee has to be charged that corresponds at least to the wholesale price. The retailers can differentiate the price depending on material, size or thickness of the bags. Excluded are bags for fresh food that is offered loose, e.g. meat, fish, fruits, vegetables, herbs, bread or pastries, or snacks.
	Objectives	Reduction of carrier bags made of all kinds of materials. The number of plastic carrier bags put on the market should be reduced by 50 % by 2019 (reference year 2014). For all kinds of carrier bags, a fee has to be charged that corresponds at least to the wholesale price. The retailers can differentiate the price depending on material, size or thickness of the bags. Excluded are bags for fresh food that is offered loose, such as meat, fish, fruits, vegetables, herbs, bread or pastries, or snacks.
	Outcomes	As a result of the savings from the fee for carrier bags, the partners have been able to reduce the annual consumption of plastic shopping bags by 20 % since the reference year 2014. This corresponds to a reduction in the total number of plastic bags of 112 million pieces. The decrease in very lightweight plastic carrier bags (so-called fruit bags) is 13 %, while for heavy plastic bags it is as much as 71 %.
	Sources	https://www.bmnt.gv.at/umwelt/abfall-ressourcen/pfiadtdisackerl/Bericht_2018.html https://www.bmnt.gv.at/service/presse/umwelt/2018/K-stinger--Plastiksackerl-Verbrauch-um-122-Mio.-St-ck-seit-2014-gesunken.html

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Belgium (Wallonia)		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	(1) Prohibition of the use of single-use plastic bags. Wallonia (cashier bags, December 2016); Brussels (September 2017); (2) Prohibition of the use of all other single-use plastic bags. Wallonia (bags other than cashier bags, intended for the packing of goods, March 2017); Brussels (September 2018) Wallonia: (1) Exceptions to the prohibition of the use of single-use cashier plastic bags since 1 December 2016: - for the packaging of liquids, aerosols and gels purchased at a point of sale in an airport beyond the boarding check-point. (2) Exceptions to the prohibition of the use of single-use plastic bags other than cashier bags since 1 March 2017: - until 1 September 2018: for packaging of foodstuffs other than bulk fruits and vegetables; - until 1 March 2020: for primary packaging of fruit and vegetables sold in bulk. The bags concerned must contain, since 1 January 2018, a minimum of 40 % bio-sourced material and they must be compostable at home; - for the primary packaging of aquatic plants and aquatic animals; - for packaging by the retailer of wet, liquid or liquid-containing foodstuffs sold at retail. These bags, since 1 January 2018, must have a minimum bio-sourced content of 40 % (60 % from 1 January 2025) and be compostable at home. The bags must be sealed at the service counter.
	Amount of tax	
	Objectives	
	Outcomes	
	Sources	https://portals.iucn.org/library/sites/library/files/documents/2017-052.pdf https://www.ff-packaging.com/plastic-bags-law-belgium/
	Belgium (Brussels)	
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	
	Amount of tax	Single-use carrier (shopping) bags $\leq 50 \mu\text{m}$ prohibited since 1 September 2017. All other single-use plastic bags $\leq 50 \mu\text{m}$ prohibited since 1 September 2018. Temporary exceptions apply for fruit and vegetables (until 29 February 2020) and for moist food (until 31 December 2029). These bags have to be biosourced and compostable. Another exception is made for plastic bags $< 15 \mu\text{m}$ for the packaging of aquatic plants and animals until 31 December 2029.
	Objectives	
	Outcomes	
	Sources	
Belgium (Flanders)		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	Law in preparation to no longer use lightweight plastic carrier bags free of charge.
	Amount of tax	
	Objectives	90 lightweight plastic carrier bags per person per year by 31 December 2019. 40 lightweight plastic carrier bags per person per year by 31 December 2025.
	Sources	Law in preparation; link not yet available

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Bulgaria			
Policy instruments for reducing the use of plastic bags	Type of agreement		Law
	Measure	Determining the amount of tax received from the sale of disposable plastic bags since 2015.	Tax since October 2011. This tax is imposed on producers and importers and is then passed on to retailers, who pass it on to consumers.
	Amount of tax		15 stotinki (EUR 0.08) per bag. Increasing to 55 stotinki (EUR 0.28).
	Objectives		
	Outcomes		Bag consumption more than halved in the first month of the tax.
	Sources	https://www.eea.europa.eu/themes/waste/waste-prevention/countries/bulgaria-waste-prevention-fact-sheet/view	
Croatia			
Policy instruments for reducing the use of plastic bags	Type of agreement	Annex IV of Directive 2008/98/EC	Regulation
	Measure	Measure 7: Encouraging waste plastic bag prevention: - introduce obligatory fee; obligation on sellers to inform consumers of the negative effects; - awareness campaigns.	Prohibition of the free distribution of plastic bags after 31 December 2018.
	Amount of tax		
	Objectives	Municipal waste prevention	Reduce the consumption of lightweight plastic bags
	Outcomes		
	Sources	http://www.mzoip.hr/doc/management_plan_of_the_republic_of_croatia_for_the_period_2017-2022.pdf	
Cyprus			
Policy instruments for reducing the use of plastic bags	Type of agreement	Regulation	
	Measure	Tax (from July 2018)	
	Amount of tax	Minimum fee will be EUR 0.05	
	Objectives		
	Outcomes		
	Sources	http://cyprus-mail.com/2017/07/13/134580 http://www.goldnews.com.cy/en/companies/plastic-bags-to-be-charged-from-july-1st	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Czechia		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	A law that requires retailers to charge for plastic bags with a thickness of 15 µm or more came into force in January 2018. Now, plastic carrier bags cannot be provided free of charge at the point of sale. Very lightweight plastic carrier bags are excluded from this measure.
	Amount of tax	The price is to be determined by shop owners but must cover the cost of the bag. Fine of up to CZK 500 000 (c. EUR 19 000).
	Objectives	Reduce the use of plastic bags <ul style="list-style-type: none"> • Currently: 300 units per person • 2019: 90 bags per person • End of 2025: 40 units per person
	Outcomes	
	Sources	https://news.expats.cz/weekly-czech-news/czech-republic-bids-farewell-free-plastic-bags-2018 http://www.plasticsnewseurope.com/article/20161215/PNE/161219930/czech-republic-to-introduce-compulsory-plastic-bag-fees
Denmark		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	Green taxes on packaging and plastic bags. Bags are covered by the tax if they have capacity to handle at least 5 litres and they can be reasonably replaced by cloth bags, carrier nets and the like. Very strong plastic bags directly comparable with cloth bags and carrier nets are not covered by the tax.
	Amount of tax	DKK 22 (EUR 2.90) per kg. Consumer is paying up to DKK 2- 3.50 (EUR 0.27-0.47) per bag. The share of the tax is DKK 0.44 (EUR 0.06) per bag. Marginal revenue for retailers is, in certain cases, around DKK 1 (EUR 0.13) per bag
	Objectives	
	Outcomes	The introduction of the tax halved consumption from around 800 million bags to 400 million bags, which amounts to around 80 bags per person annually. The retailer revenue has amplified the effects of the tax.
	Sources	http://www.seas.columbia.edu/earth/wtert/sofos/Denmark_Waste.pdf Fact sheet: tax on plastic bags (pdf: 150812_Tax on plastic bags)
Estonia		
Policy instruments for reducing the use of plastic bags	Type of agreement	Legislation
	Measure	At the point of sale of a packaging undertaking: <ol style="list-style-type: none"> (1) lightweight and very lightweight plastic carrier bags shall not be supplied to consumers free of charge, except for very lightweight plastic carrier bags, which are used for ensuring hygiene or for primary packaging of loose food when this helps to prevent food wastage; (2) besides lightweight plastic carrier bags, including very lightweight plastic carrier bags, other possibilities for packaging goods shall be offered to consumers; (3) the sale or free of charge supply of oxo-degradable plastic carrier bags shall be avoided. Clause 1) of subsection (2) came into force on 31 December 2018.
	Amount of tax	The price is to be determined by shop owners. Price range is EUR 0.30-1.00 per bag. Current average cost of reusable textile bags, which are a more durable and less expensive alternative, is EUR 0.75 on average.
	Objectives	<ul style="list-style-type: none"> • 90 lightweight plastic bags per person by 31 December 2019 • 40 lightweight plastic bags per person by 31 December 2025
	Outcomes	Many shops had stopped supplying consumers with lightweight and very lightweight plastic carrier bags before this claim entered into force. Some have been really successful and do not give any bags for free any more (e.g. some clothing shops which usually pack merchandise in plastic bags).
	Sources	Pakendiseadus (https://www.riigiteataja.ee/akt/104042012006?leiaKehtiv) § 5. Packaging Act in English (https://www.riigiteataja.ee/en/eli/ee/510042017001/consolide/current) paragraph 5.

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Finland		
Policy instruments for reducing the use of plastic bags	Type of agreement	Plastic Carrier Bag Agreement
	Measure	Companies in the trade sector are free to decide on the measures and how these are to be implemented. The issues to be included in the measures are, at least, the following: advice and information is provided to reduce the consumption of lightweight plastic carrier bags and prevent littering; there is a price for lightweight plastic carrier bags; and very thin plastic carrier bags are no longer available at retail outlets on a self-service basis.
	Amount of tax	By 2025, no more than 40 bags per person per year
	Objectives	Reducing the consumption of plastic carrier bags and preventing litter
	Outcomes	
	Sources	http://www.euronews.com/2017/05/05/finland-fights-plastic-pollution-with-green-bags http://www.ym.fi/en-US/The_environment/Waste/Green_Deal_agreements
France		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	Measures to reduce the use of single-use plastic bags (p. 66). Since 1 July 2016, single-use lightweight (< 50 µm) plastic bags (no matter which kind of plastic) are forbidden at point of sale . Since 1 January 2017, single-use lightweight (< 50 µm) plastic bags are also forbidden for the packing of goods at point of sale (e.g. for fresh fruit, vegetables, cheese, fish). However, lightweight plastic bags made of bio-plastics are allowed in this situation.
	Amount of tax	
	Objectives	2019: just 90 bags per year and person
	Outcomes	
	Sources	http://www.developpement-durable.gouv.fr/IMG/pdf/Programme_national_prevention_dechets_2014-2020.pdf http://www.thepaperbag.org/for-compliance-with-the-law/regulations-in-eu http://www.euronews.com/2016/06/30/france-bans-plastic-bags-what-about-the-rest-of-the-eu
Germany		
Policy instruments for reducing the use of plastic bags	Type of agreement	Agreement on Plastic Carrier Bags
	Measure	From 1 July 2016 to 30 June 2019, payment of a fee for plastic bags. The agreement will extend for another 2 years if it is not recalled 3 months before the end point.
	Amount of tax	
	Objectives	40 bags per capita until 2025
	Outcomes	According to the HDE trade association, one third less was used in Germany in 2016 than a year earlier (still 3.7 billion units). In 2017 there was a further reduction of 35 % to 2.4 billion units.
	Sources	http://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Abfallwirtschaft/vereinbarung_traetaschen_bf.pdf http://kunststofftrage tasche.info/wordpress/daten-erhebungen https://www.zeit.de/wissen/umwelt/2018-01/umwelt-eu-kommission-strategie-plastikmuell-vermeidung

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Greece		
Policy instruments for reducing the use of plastic bags	Type of agreement	Joint Ministerial Decision No 180036/952/2017 (OJG 2812 B), Law No 4496/2017 (OJG 170 A)
	Measure	Charge since January 2018.
	Amount of tax	At least EUR 0.04 per bag (including VAT). From 2019, EUR 0.09 per bag (including VAT).
	Objectives	Reduction of consumption of lightweight (thin) plastic carrier bags.
	Outcomes	To date, since the measure has been implemented, the reduction in the use of lightweight plastic bags reached 80 % through the sales in large stores and 60 % through the rest of the stores.
	Sources	http://www.plasticfreegreece.com/blog/category/zero-waste-solutions http://www.keeptalkinggreece.com/2018/02/06/greece-plastic-bags-fee-measure-results/ http://www.ypeka.gr/Default.aspx?tabid=389&snif[524]=6087&language=el-GR
Hungary		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law/Fee
	Measure	Since 1 January 2012, a significantly high environmental product protection fee payable on lightweight plastic carrier bags. Ongoing: from 2019 higher, weight-based fee system for all types of plastic bags, and higher fees for single-use plastic tools. Planned: July 2019 ban of oxo-plastic tools, from 2021, also planned ban of certain types of plastic bag.
	Amount of tax	HUF 57 or 1 900/kg at present. From 2019 higher, weight-based fee for all plastic bags.
	Objectives	Reduction of plastic bags (also planned ban of certain plastic bags) and oxo-plastics, reduce use of single-use plastics implementing the related EU legislation
	Outcomes	Further reduction of plastic waste generated
	Sources	https://www.dontwasteit.hu/2018/09/20/a-greenpeace-is-udvozli-az-itm-muanyag-zacskos-tilalmi-tervet
Iceland		
Policy instruments for reducing the use of plastic bags	Type of agreement	No information
	Measure	
	Amount of tax	
	Objectives	
	Outcomes	
	Sources	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

		Ireland	
Policy instruments for reducing the use of plastic bags	Type of agreement	Ireland's bag levy	Regulation
	Measure	Levy/Tax (Started March 2002)	Levy
	Amount of tax	<ul style="list-style-type: none"> • EUR 0.15 (Start) • EUR 0.07 (July 2007) • 2011 allowed to amend the levy once (max. EUR 0.70) 	EUR 0.22 per shopping bag
	Objectives	Limiting use to 21 bags per person per year or less	
	Outcomes	<ul style="list-style-type: none"> • Over 90 % decrease in consumption — from 328 bags per consumer per year to 21 bags • A subsequent increase in consumption — to 31 bags per person by 2006 	
	Sources	https://permaculturenews.org/2014/05/05/downfall-plastic-bag-global-picture	https://www.revenue.ie/en/companies-and-charities/plastic-bag-environmental-levy/index.aspx https://www.dccae.gov.ie/en-ie/environment/topics/waste/litter/plastic-bags/Pages/default.aspx http://www.irishstatutebook.ie/eli/2001/si/605/made/en/print
		Italy	
Policy instruments for reducing the use of plastic bags	Type of agreement		
	Measure	Italy introduced a law in 2011 stating that single-use plastic shopping bags of thickness < 60 µm (100 µm for food-contact applications) distributed by retail stores must be made from biodegradable plastics, which are certified compostable according to EN 13432.	
	Amount of tax		
	Objectives	Elimination of single-use plastic bags	
	Sources	https://portals.iucn.org/library/sites/library/files/documents/2017-052.pdf https://www.legambiente.it/sites/default/files/docs/a_ban_on_plastic_bags_legambiente2016.pdf https://www.greenbiz.com/news/2011/01/05/italy-dumps-plastic-bags-world-first-nationwide-ban https://www.nytimes.com/2018/01/08/world/europe/italy-plastic-bags.html http://edition.cnn.com/2010/WORLD/europe/12/31/italy.plastic.bags/index.html http://www.thepaperbag.org/for-compliance-with-the-law/regulations-in-eu	
		Latvia	
Policy instruments for reducing the use of plastic bags	Type of agreement		
	Measure	Prohibition of free plastic bags in shopping centres and other locations.	
	Amount of tax		
	Objectives		
	Sources	http://bnn-news.com/stores-in-latvia-will-no-longer-provide-plastic-bags-free-of-charge-178081 http://bnn-news.com/free-plastic-bags-to-be-prohibited-in-the-eu-147940	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Lithuania		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law on Packaging and Packaging Waste
	Measure	Ban on the distribution of lightweight plastic carrier bags, except very lightweight plastic carrier bags (wall thickness below 50 µm) at the points of sale of goods or products.
	Amount of tax	Not regulated
	Objectives	Reduce the consumption of lightweight plastic carrier bags
	Outcomes	Lithuania has recorded the number of lightweight plastic carrier bags used since 2014. The number of plastic bags with wall thickness below 15 µm changed from 206 in 2014 to 224 in 2016. The number of plastic bags with wall thickness 15-50 µm decreased from 39 in 2014 to 36 in 2016.
	Sources	http://senas.am.lt/VI/en/VI/article.php3?article_id=823 http://www.am.lt/VI/en/VI/article.php3?article_id=625
Luxembourg		
Policy instruments for reducing the use of plastic bags	Type of agreement	
	Measure	A voluntary agreement is in place between the Environment Ministry and Valorlux (association of producers and importers of packaging material) regarding the sale of the multiple-use 'eco-sac' carrier bag. The eco-sac replaces single-use plastic bags in supermarkets. The voluntary agreement has the target to maintain a market share for multi-use carrier bags of at least 60 % while taking the necessary steps to achieve a higher rate. This agreement was first made with food and DIY (do it yourself) shops. The first agreement was made in 2004, the second in 2006, the third in 2008, and the fourth in 2012. It was renewed again in 2017 for a further period of 5 years. It is applicable throughout the country. Other sectors will be analysed in order to extend the project. As of 31 December, 2018, no plastic bags are provided free of charge at the point of sale of goods or products. Luxembourg is actively seeking a multiple-use solution to replace the very lightweight bags in fruit and vegetable shops. Luxembourg has also introduced, in 2018, the 'ECOBX', a return-and-refill system to take away food and leftovers. The aim is to prevent takeaway packaging. There are also several initiatives in order to use multiple-use cups at public events or popular marches.
	Amount of tax	EUR 0.03 per bag. EUR 0.05 per bag (since January 2018).
	Objectives	Reduce the use of single-use packaging
	Outcomes	Since 2004, thanks to the eco-sac, around 560 million single-use bags have been saved, saving 3 738 tonnes of plastic and 8 313 680 litres of oil.
	Sources	https://environnement.public.lu/fr/offall-ressourcen/principes-gestion-dechets/Plan_national_de_gestion_des_dechets_PNGD.html http://prevention-valorlux.lu/en/eco-sac/operation-eco-sac https://environnement.public.lu/fr/actualites/2018/juin-2018/Ecobox.html https://environnement.public.lu/fr/actualites/2017/09/29_wanderbecher.html

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Malta		
Policy instruments for reducing the use of plastic bags	Type of agreement	
	Measure	Since 2009: tax on plastic bags
	Amount of tax	EUR 0.15 eco-contribution
	Objectives	Aim of eliminating the use of conventional bags
	Outcomes	
	Sources	Plastic waste EU Liste http://www.independent.com.mt/articles/2009-01-01/news/is-this-the-end-of-conventional-plastic-bags-218342
Netherlands		
Policy instruments for reducing the use of plastic bags	Type of agreement	Voluntary agreement Law
	Measure	<ul style="list-style-type: none"> • Ban on free plastic bags — prohibition of free plastic bags • Since the mid-1990s, supermarkets have voluntarily charged for most kinds of plastic bags. Customers pay about EUR 0.20 per bag.
	Amount of tax	
	Objectives	Reducing plastic waste
	Outcomes	
	Sources	https://www.government.nl/topics/environment/ban-on-free-plastic-bags https://permaculturenews.org/2014/05/05/downfall-plastic-bag-global-picture
Poland		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	Recycling fee for bags with a thickness of below 50 µm
	Amount of tax	PLN 0.20 (EUR 0.05). Maximum PLN 1 (EUR 0.23).
	Objectives	
	Outcomes	
	Sources	http://www.freshplaza.com/article/187217/Poland-Introduction-of-recycling-fee-for-plastic-bags-at-supermarkets http://wbj.pl/poland-to-introduce-fees-on-plastic-bags

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Portugal		
Policy instruments for reducing the use of plastic bags	Type of agreement	Green taxation reform
	Measure	Charge on lightweight plastic bags (< 50 µm thickness plastic film) (applied since 15 February 2015) NOT thin plastic bags used as primary bags in contact with food (for food safety, e.g. to carry meat and fish) Justification: The landfill tax is not specific for plastic bags. A new law was published (Decree Law 152-D/2017 of 11 December) that transposes Directive 2015/720. Decree 286-B/2014 on lightweight plastic bags has been repealed. Reference to the term 'no handles' is no longer in the legislation. http://www.apambiente.pt/index.php?ref=16&subref=84&sub2ref=197&sub3ref=276
	Amount of tax	EUR 0.10 per bag
	Objectives	
	Outcomes	The use of plastic bags at stores and supermarkets across the country has seen a drop of more than 90 % since the introduction of a government tax on their use.
	Sources	http://portugalresident.com/portugal%E2%80%99s-%E2%80%9Cplastic-bag-tax%E2%80%9D-has-increased-the-use-of-%E2%80%A6-plastic-bags http://www.theportugalnews.com/news/plastic-bag-use-plummets-a-year-after-tax-introduction/37473
Romania		
Policy instruments for reducing the use of plastic bags	Type of agreement	Law
	Measure	Lightweight plastic bags below 50 µm and very thin bags under 15 µm, plastic bags with a handle will be banned to introduce in stores and supermarkets (forbidden starting 1 July 2018). These bags will be banned from being sold as of 1 January 2019.
	Amount of tax	Fines from RON 15 000 to RON 25 000 (c. EUR 3 000-5 000)
	Objectives	
	Outcomes	
Sources	https://www.romania-insider.com/romania-ban-thin-plastic-bags https://www.romaniajournal.ro/plastic-bags-to-be-banned-in-romania https://www.esiassee.eu/romania-thin-plastic-bags-banned-july-1 https://www.romania-insider.com/romania-ban-thin-plastic-bags	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Slovakia			
Policy instruments for reducing the use of plastic bags	Type of agreement	Regulatory	Voluntary
	Measure	Ban on free plastic bags	Initiative 'Without plastic bags' (initiated by the Minister of Environment and realised during 2018). It includes a call for commercial chains to stop offering plastic bags to customers and to focus on more environmentally friendly alternatives. Chains accepting the call will use the official label ' <i>Bez igelitiek</i> ' ('Without plastic bags'). Furthermore, the media campaign 'Slovakia without plastic bags' is expected to be implemented during the period 2019-2021, under the umbrella of a national project to be implemented by the Slovak Environmental Agency (Operational Programme Quality of Environment, EU European Structural and Investment Funds).
	Amount of tax	Should be at least EUR 0.25 on the basis that shops currently charge EUR 0.05-0.09 for such a bag and that the revision will not reduce the number of plastic bags sold if this price is maintained.	Call for commercial chains to stop offering plastic bags to customers and to focus on more environmentally friendly alternatives.
	Objectives	The main goal is to lower the use of light plastic bags for shopping, which will result in a decrease in waste from packaging.	Significant reduction in the use of light plastic bags in the territory of Slovakia.
	Outcomes		
	Sources	http://www.plasticsnewseurope.com/article/20160804/PNE/160809916/slovak-environment-ministry-plans-to-ban-free-plastic-bags https://spectator.sme.sk/c/20236167/slovakia-seeks-to-curb-usage-of-plastic-bags.html https://spectator.sme.sk/c/20491160/parliament-passed-ban-on-giving-out-plastic-bags-for-free.html	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

		Slovenia
Policy instruments for reducing the use of plastic bags	Type of agreement	Legislation (Decree)
	Measure	Ban on free plastic bags (not later than January 2019) Exception: Consumers have free very light plastic carrier bags for primary non-prepackaged foods such as fruit, vegetables, fish, meat and meat products, dairy products, freshly prepared sandwiches and other freshly prepared food that is not prepacked. Information campaigns since 2016 (links in sources).
	Amount of tax	Environmental tax: EUR 0.0017/kg plastic Prices of plastic bags: ban on free plastic bag. The minimum price of plastic bags is not set by law.
	Objectives	90 lightweight plastic bags per person by 31 December 2019. 40 lightweight plastic bags per person by 31 December 2025. Very light plastic carrier bags for primary non-prepackaged food are excluded.
	Outcomes	Reduce consumption of plastic carrier bags. The first records for consumption of plastic carrier bags indicate that the first target for 2019 will be achieved. We also try to achieve a high level of consumer awareness to reduce the consumption of plastic bags. An awareness-raising campaign is in progress.
	Sources	http://www.rtvsllo.si/news-in-english/operator-bans-use-of-plastic-bags-at-farmers-markets-in-ljubljana/415800 http://www.rtvsllo.si/news-in-english/the-average-plastic-bag-in-slovenia-is-used-for-only-30-minutes/368964 https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2017-01-1927?sop=2017-01-1927 (Articles 10.e in (3) 40) Environmental tax: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2017-01-3258/uredba-o-spremembah-in-dopolnitvah-uredbe-o-okoljski-dajatvi-za-onesnazevanje-okolja-zaradi-nastajanja-odpadne-embalaze http://www.fu.gov.si/davki_in_druge_dajatve/podrocja/okoljske_dajatve/#c4651 Awareness-raising campaign: http://www.mop.gov.si/si http://www.mop.gov.si/si/medijsko_sredisce/novica/8429 http://www.mop.gov.si/si/delovna_podrocja/odpadki/akcije_ozavescanja_javnosti

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Spain					
Policy instruments for reducing the use of plastic bags	Type of agreement	National Regulation	Other initiatives	Regional regulation	Voluntary agreement
	Measure	<p><i>Real Decreto 293/2018, de 18 de mayo, sobre reducción del consumo de bolsas de plástico y por el que se crea el Registro de Productores:</i></p> <ul style="list-style-type: none"> - 1 July 2018: ban on providing plastic bags free of charge at the point of sale of goods or products except very lightweight plastic bags and bags with thickness up to 50 µm containing 70 % recycled plastic. - 1 January 2020: ban on providing oxo-degradable plastics bags and compulsory for plastic bags with thickness up to 50 µm to contain 50 % of recycled plastic. - 1 January 2021: lightweight plastic bags (including very lightweight) shall be compostable. 	Summary of different initiatives related to reducing plastic bag use in Spain (private sector and regional and local governments).	<p><i>Andalucía:</i> tax since 2010-2011 introduction, 2012 increasing the tax</p> <p><i>Navarra: Ley 14/2018 de Navarra sobre Residuos y su Fiscalidad (artículo 23)</i></p>	Voluntary agreement among Catalonia's waste agency, regional and national business groups, plastic bag manufacturers, food distributors and supermarkets.
	Amount of tax	EUR 0.05-0.10			
	Objectives				
	Outcomes	<p>Single-use plastic bag consumption in the region dropped by more than 40 % between 2007 and 2011.</p> <p>Annual supermarket plastic bag use dropped by 1 billion units in that time, a 87 % decline.</p>			
	Sources	<p>http://www.boe.es/buscar/doc.php?id=BOE-A-2018-6651</p>	<p>https://www.mapama.gob.es/es/calidad-y-evaluacion-ambiental/campanas/Iniciativas_Bolsas_Comerciales_un_Uso.aspx</p>	<p>https://www.juntadeandalucia.es/haciendayadministracionpublica/tributos/impuestos/propios/bolsas.htm</p> <p>https://www.boe.es/diario_boe/txt.php?id=BOE-A-2018-8953</p>	<p>https://permaculturenews.org/2014/05/05/downfall-plastic-bag-global-picture/</p>

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Policy instruments for reducing the use of plastic bags	Sweden			
	Type of agreement	Voluntary agreement	Voluntary agreement	Law
	Measure	Supermarkets charge EUR 0.2-0.5 for each plastic bag.	Deposit-refund system for plastic bags	Anyone selling or giving away plastic carrier bags should provide information about how plastic bags affect the environment and how consumers can reduce their consumption. Manufacturers and importers to Sweden should report to the Swedish Environmental Protection Agency how many plastic bags they have added to the Swedish market.
	Amount of tax			
	Objectives			<ul style="list-style-type: none"> • Reduce consumption of all plastic carrier bags • 90 lightweight plastic bags per person by 31 December 2019 • 40 lightweight plastic bags per person by 31 December 2025
	Outcomes			According to the Swedish Trade Federation there was an average reduced consumption of 35 % in the first year after the law came into force.
	Sources	https://www.svenskdagligvaruhandel.se/riktlinjer/branschoverenskommelser/plastbarkassar	http://www.pantapasen.se	http://www.naturvardsverket.se/Stod-i-miljoarbetet/Vagledning/Plast-och-mikroplast/plastbarkassar http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/_sfs-2016-1041 http://www.svenskhandel.se/aktuellt-och-opinion/pressmeddelanden/2018/handlarna-ser-minskad-konsumtion-av-plastbarkassar

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

Switzerland		
Policy instruments for reducing the use of plastic bags	Type of agreement	Voluntary agreement of retailers
	Measure	The biggest retailer associations in Switzerland signed an agreement to voluntarily stop giving away single-use plastic bags for free in retail stores, where mainly food is sold. Single-use plastic bags can still be given for free when used for the packing of fruit/vegetables sold without packaging or for hygienic reasons.
	Amount of tax	No tax
	Objectives	Reduction of the consumption of single-use plastic bags of 70-80 % by 2025
	Outcomes	Between 2016 and 2017, a reduction in single-use plastic bags in retail stores of 84 % was reached.
	Sources	http://www.swiss-retail.ch/wp-content/uploads/2017/09/Branchenvereinbarung_signed-1.pdf
Turkey		
Policy instruments for reducing the use of plastic bags	Type of agreement	Regulation
	Measure	Charge for plastic carrier bags from 1 January 2019 Sales point must charge for all plastic carrier bags NOT thin plastic bags (< 15 µm two-ply thickness) used as primary bags in contact with food
	Amount of tax	The price will be determined by the Packaging Commission, established by the presidency of the Ministry of Environment and Urbanisation.
	Objectives	Reduce the use of plastic bags: • By 31 December 2019: 90 bags per person • End of 2025: 40 units per person
	Outcomes	
	Sources	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

United Kingdom			
Policy instruments for reducing the use of plastic bags	Type of agreement	Law	Environment plan
Policy instruments for reducing the use of plastic bags	Measure	Charge for all single-use plastic carrier bags (shops with fewer than 250 employees are currently exempt from the charge, which is voluntary) Exceptions: <ul style="list-style-type: none"> • paper bags; • shops in airports, or on board trains, aeroplanes or ships; • bags that only contain certain items, such as unwrapped food, raw meat and fish where there is a food safety risk, prescription medicines, uncovered blades, seeds, bulbs and flowers, or live fish. 	The 25-year environment plan included a specific commitment to extend the carrier bag charge to small and medium-sized businesses (those with fewer than 250 employees) on a mandatory basis if voluntary approaches were not deemed to be sufficient. A consultation will be undertaken later this year to explore what further environmental benefits can be achieved by mandating the charge to all retailers and possibly increasing the current GBP 0.05 charge to at least GBP 0.10.
	Amount of tax	GBP 0.05	
	Objectives	Reduce the use of single-use plastic carrier bags, and the litter associated with them, by encouraging people to reuse bags.	
	Outcomes	The data show that the seven main retailers have distributed almost 15.6 billion fewer bags since the charge was introduced. Customers in England now purchase the equivalent of just 19 bags per person in England, compared with 140 bags since the government introduced the charge in 2015 — a dramatic reduction of 86 %.	
	Sources	pdf: 2017-052; IUCN (2017) National marine plastic litter policies in EU Member States: an overview http://www.bbc.com/news/uk-42630898 https://www.theguardian.com/environment/2018/apr/05/drop-in-plastic-bags-littering-british-seas-linked-to-introduction-of-5p-charge https://www.gov.uk/government/publications/single-use-plastic-carrier-bags-why-were-introducing-the-charge/carrier-bags-why-theres-a-5p-charge	
United Kingdom — Scotland			
Policy instruments for reducing the use of plastic bags	Type of agreement	Law	
	Measure	Since 2014, all shops must charge their customers for each new single-use carrier bag supplied for the purpose of taking goods home, regardless of material. Exemptions provided for health and safety, privacy or security. Very small bags and bags intended for multiple reuse are not included in the charge.	
	Amount of tax	Minimum required charge is GBP 0.05	
	Objectives	Reduce litter and resource use by encouraging switch to reusable alternatives.	
	Outcomes	<i>One year</i> on report indicated a cut of around 80 % in uptake.	
	Sources	https://www.zerowastescotland.org.uk/content/carrier-bag-charge-%E2%80%99one-year-on-%E2%80%99-report-0	

Table A4.1 Policy instruments for reducing the use of plastic bags — results from Eionet consultation (cont.)

United Kingdom — Wales			
Policy instruments for reducing the use of plastic bags	Type of agreement	Law	Voluntary
	Measure	<p>Since 2011, all shops must charge their customers for each new single-use carrier bag supplied, including those made from plastic, paper and bioplastics. Exemptions:</p> <ul style="list-style-type: none"> • shops in airports, or on board trains, aeroplanes or ships; • public health exemptions — bags which only contain certain items, such as unwrapped food, raw meat and fish where there is a food safety risk, prescription medicines, uncovered blades, seeds, bulbs and flowers, or live fish; • bags designed for multiple reuse. 	Shops selling, at point of sale, plastic bags designed for multiple reuse voluntarily charge customers for them. Charges vary according to retailer and bag construction.
	Amount of tax	GBP 0.05	Determined by retailer, but equal to or greater than £0.05, often significantly more
	Objectives	<ul style="list-style-type: none"> • Encourage a shift in consumer behaviour to reusable alternatives. • Cut down on the use of resources. • Prevent waste. • Reduce litter. 	
	Outcomes	<p>Between 2006 and 2009, a UK-wide, voluntary charge in seven major supermarkets resulted in an estimated 48 % reduction in single-use bag consumption.</p> <p>The introduction of the Welsh single-use bag charge resulted in a further reduction of 78 % between 2010 and 2014 in the same supermarkets. Consumption was estimated at 25 single-use bags per capita.</p> <p>In 2016, our post-implementation review investigated the impact of the charge across the whole retail sector, estimating a 70 % reduction in single-use bags between 2011 and 2014. Reusable 'bags for life' usage was also estimated, giving an overall reduction of 57 % for both bag types over the same time period.</p>	
	Sources	<p>Voluntary agreement 2006 to 2009: http://www.wrap.org.uk/sites/files/wrap/UK-Voluntary-Carrier-Bag-Agreement-Presentation_v4_0.pdf</p> <p>WRAP Data, 2010 until 2014: http://www.wrap.org.uk/2015_carrier_bag_figures</p> <p>Post-implementation Review: https://gov.wales/docs/caecd/research/2016/160314-post-implementation-review-single-use-carrier-bag-charge-summary-en.pdf</p>	

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