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List of abbreviations

EC	European Commission
EPR	extended producer responsibility
PET	polyethylene terephthalate
PPW Directive	Packaging and Packaging Waste Directive
SUP Directive	Single Use Plastics Directive
WFD	Waste Framework Directive

1. Introduction

Deliverable D9.14 is the first of the two policy reviews that are going to be prepared within the upPE-T project. It contains an overview of the policy framework at the EU level for the management of post-consumer plastic packaging waste for food and beverages. The primary aim of these two deliverables is to serve as inputs for the preparation of the policy paper (D9.16) that would contain recommendations for the improvement of the legal and regulatory framework at the EU level.

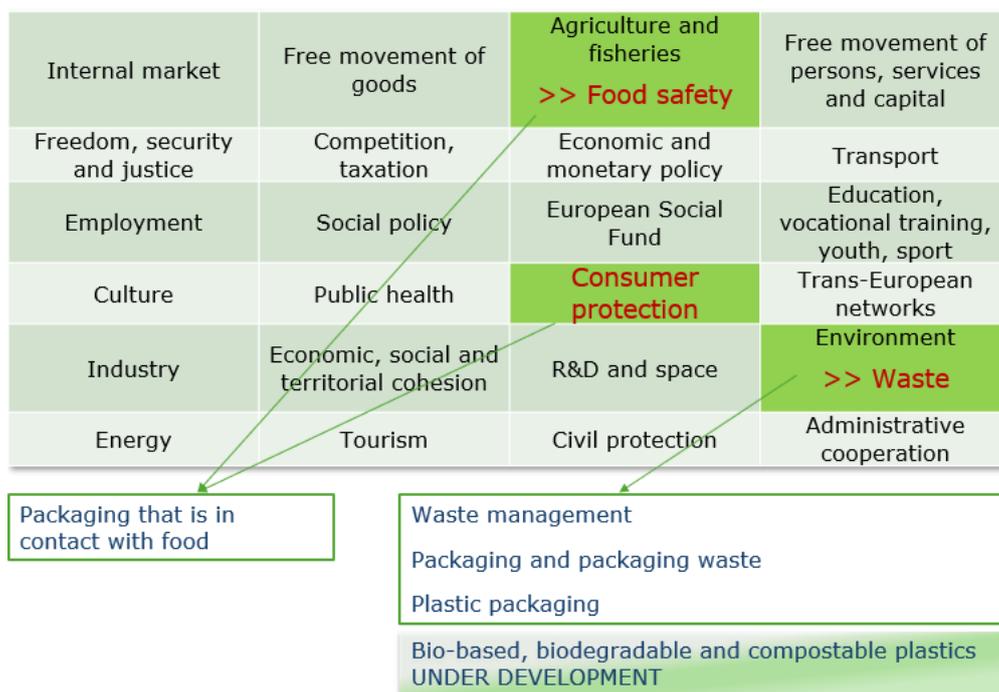
1.1. Context

Recycling of food and beverage plastic packaging waste is included in several policies at the EU level:

- First and foremost, recycling and other waste management activities, as well as specifics related to the management of packaging waste and to the use of certain types of plastic packaging, are part of the *environmental policy*;
- Safety issues related to the use of plastics in contact with food are parts of the *consumer protection* policy and the policy on *agriculture and fisheries*.

Figure 1 provides an illustration of these connections.

Figure 1: EU policies relevant for the recycling of food and beverage plastic packaging waste



1.2. Contents and structure

Deliverable D9.14 contains an overview of provisions on the part of environmental policies, that are relevant for the recycling of food and beverage plastic packaging waste. Intention is to learn about the policies that are established at the EU level, but also to discern the areas that are not sufficiently or not at all regulated at the EU level.

Firstly, a short outline of key legislation is provided.

The second part describes legislative requirements imposed on waste management activities. In addition to explaining general rules that apply to all waste management activities, focus is put on those measures that apply to food and beverage plastic packaging, such as the obligations related to separate collection and EPR requirements.

Afterwards, specifics that apply to packaging and packaging waste are provided. Particularly relevant are distinctive features of EPR schemes for packaging, and establishment of recycling targets for packaging.

Finally, recently introduced provisions applying to specific types of plastic products and plastic packaging are provided. They refer to the measures launched with the intention to cut down the consumption of single-use plastic products that cause marine littering, and the development of the EU legislation on bioplastics, that is currently underway.

Deliverable D9.15, due to be submitted by November 2023, will contain an overview of relevant provisions related to the safety of plastic packaging in contact with food, and also updates on environmental policy developments (particularly relevant would be the announced introduction of provisions on bioplastics).

2. Environmental legislation applying to food and beverage plastic packaging waste

Competences for the environmental policy in the EU are shared between the European Union and Member States. This means that Member States can enact legally binding acts and other measures, but only in cases when the EU does not exercise its competences or refrains to do so. When the EU enacts laws and measures, it is binding for Member States to abide by these provisions.

The **Waste Framework Directive** (2008/98/EC) (hereinafter referred to as *WFD*) is the key piece of legislation at the EU level referring to waste management activities. The key principles enshrined in the Directive are that waste management activities must be sustainable and must be conducted in such a manner to protect the environment and human health, and to contribute to the efficient and rational use of resources. The Directive is comprehensive, and is not focusing specifically on plastic packaging. However, it is highly relevant as it provides general setting for conducting the activities of separate collection and recycling; it sets out targets for the recovery of municipal waste and introduces unified methodology for their calculation; and sets out the playing ground for the functioning of EPR schemes, which are the most significant means for achieving the sustainable and circular use of plastic packaging.

Packaging and Packaging Waste Directive (94/62/EC) (hereinafter referred to as *PPW Directive*) prescribes requirements related to packaging, as well as specifics related to the management of packaging waste. The objective is to harmonize national rules, with the twofold aim: 1) to reduce the negative environmental impact of packaging waste, by preventing the generation and promoting the recovery of packaging waste (e.g. through the repetitive use, upcycling or recycling), and 2) to avoid distortions on the internal market.

Directive on the reduction of the impact of certain plastic products on the environment (EU 2019/904) (hereinafter referred to as *SUP Directive*) prescribes bans and other measures with the aim to prevent and reduce the impact of single-use plastic products on the environment, in particular on marine environments.

Latest developments include the announced introduction of the EU policy framework for the bio-based, biodegradable and compostable plastics (due by the mid-of 2022, but postponed), and the kick-off of the consultation process for the revision of the WFD. Overview of these latest developments is also provided within this paper.

3. Waste management provisions

Relevant EU law is the *Waste Framework Directive (WFD)* (2008/98/EC, 2008). Content within this heading is to be referenced to this Directive, unless other reference is specified.

3.1. Key definitions and principles

WFD provides a definition of *waste* in simple terms, as “any substance or object which the holder discards or intends or is required to discard”¹. For the management of post-consumer plastic packaging, the most relevant type of waste is municipal waste. According to the WFD, *municipal waste* encompasses waste collected from households, but also comparable waste collected from other sources, which is in nature and composition similar to household waste (such as waste from administrative activities, education, health, retail, accommodation, food services, health and the like)².

When it comes to the *waste management*, by definition it encompasses the activities of collection, transport, recovery and disposal of waste³, including their supervision and the after-care of disposal sites.

The main principle guiding waste management is *waste hierarchy*. This means that decisions and activities in the area of waste management must abide by the following priority order of actions: 1) prevention, 2) preparation for re-use, 3) recycling, 4) other recovery, and 5) disposal. Waste hierarchy can thus be regarded as a way to achieve the sustainability and circularity of the waste management activities.

Waste prevention refers to precautionary measures, taken before waste is generated, in order to reduce the quantity or the adverse impact of waste. WFD sets requirements on Member States related to waste prevention, and these have become stricter over the years. Out of the long list of different waste prevention measures Member States are expected to carry out, those that may be most relevant for the recycling of food and beverage plastic packaging are the following:

- Reducing the generation of waste, especially the types of waste that cannot be re-used or recycled;
- Supporting innovative sustainable production and consumption models;
- Encouraging the design, production and the use of products that are durable, easily repairable, reusable, upgradable and resource-efficient;
- Setting up systems that promote re-use and repair activities, in particular for certain types of products, including the packaging (examples of such measures include support to the establishment and operation of deposit-refund schemes and return-refill schemes);
- Promoting the reduction in the use of hazardous substances, which is relevant because the presence of hazardous substances reduces the recyclability;
- Preventing and reducing littering in natural and marine environments. Marine litter is particularly relevant, because it is dominantly comprised of plastic packaging waste;
- Organizing awareness-raising campaigns about the waste prevention and littering;

¹ However, objects and substances that result from the production of another product are not considered to be waste, but are regarded as by-products, provided that prescribed requirements are met. These requirements specify that such objects and substances are produced as an integral part of the production process, that they can be further used without further processing, and that their use is lawful.

² Some Member States have used the same definition as the one prescribed by the WFD, and some have elaborated it in more detail. For instance, in Italy municipal waste is defined in such a manner to include a comprehensive list of all types of wastes generated by specified activities that are regarded as municipal waste.

³ Recovery and disposal of waste are often referred to as *waste treatment* activities.

▪ Another obligation of Member States in this regard is to monitor the implementation of all waste prevention measures (e.g. by measuring the volumes of generated waste, by measuring the re-use and recycling of products etc.).

Protection of human health and the environment is a broader environmental principle that also applies to waste management. The WFD stipulates that waste management operations must be performed in such a way that they do not harm or endanger human health and the environment, and also that they do not pose risk to the environment (to the soil, water and air, or to plants and animals), that they do not cause nuisance (by realising odours or noise), and that the countryside or places of special interest are not adversely affected.

"*Polluter pays*" principle imposes the requirement that waste management costs are to be borne by the original waste producer.

The principle of *self-sufficiency* means that a network of waste disposal and mixed waste recovery facilities should be established throughout the EU, that would enable the EU to become fully self-sufficient, while *proximity* principle implies that waste should be recovered or disposed of in one of the nearest suitable facilities.

3.2. Waste management activities

As previously defined, waste management includes the activities of collection, transport, recovery and disposal of waste. Recovery and disposal are also covered by the umbrella term *treatment* of waste.

Recovery is in fact a term used for various operations whose principal result is that the waste serves a useful purpose. In the case of plastic packaging, recovery mostly refers to the preparation for re-use, recycling and energy recovery.⁴ Recovery in the form of biodegradation may also be relevant for certain types of bioplastics; however, there are no provisions at the EU level yet regulating specifically the biodegradation of plastics.

At this point, it is worth noting that, once the waste is prepared for re-use, recycled, or in other ways recovered so that it can serve a useful purpose, it ceases to be considered as waste, so it is not within the scope of the WFD anymore⁵.

3.2.1. Waste collection

Waste collection refers to the gathering of waste, including the preliminary sorting and storage. *Separate collection* is a form of collection that keeps separately the wastes of different type and nature. It is regarded as key for enabling high-quality recycling and increasing the re-use and recycling rates.

For this reason, the WFD establishes the obligation for Member States to organize separate collection at least for paper, metal, plastic and glass⁶. The 2018 amendments to the WFD have broadened this obligation, so that separate collection of bio-waste (or alternatively separation and treatment at source) must be achieved by 31 December 2023, while the separate collection for textiles and for hazardous household waste must be introduced at latest by 1 January 2025.

⁴ Recovery excluding energy recovery or reprocessing waste into fuels (e.g. by aerobic or anaerobic digestion) is also referred to as *material recovery*.

⁵ Actually, WFD specifies the so called end-of-waste criteria that the waste needs to meet, so that it stops to be considered as waste anymore. For instance, waste that has been recycled or in other ways recovered ceases to be waste, if it can be further used for certain purposes, provided that it meets standards, technical and other requirements for that specific purpose, that its use does not harm the environment or human health, and that there exists demand for it.

⁶ Other types of waste that could be separately collected from municipal waste may also include wood, packaging, waste electrical and electronic equipment (WEEE), waste batteries and accumulators, and bulky waste, including mattresses and furniture.

Obligation related to bio-waste is applicable to certain types of bioplastics as well. Namely, although bio-waste by definition does not include bioplastics⁷, the WFD stipulates that packaging waste with similar biodegradability and compostability properties, that complies with relevant standards, may be collected together with bio-waste.

However, separate collection is not always an easy task, especially for certain types of waste, or in less populated areas. For this reason, the WFD provides for possible exemptions from the obligation of separate collection – for instance, if it is not technically feasible, if the costs would be disproportionate (e.g. organizing separate collection in remote and scarcely populated territories), or if there are alternatives which have a better environmental impact (e.g. mixed collection, which allows for the easy sorting of different waste fractions).

3.2.2. Re-use and recycling

Re-use refers to operations when the product or its components are used for the same purpose as initially conceived. In order to be re-used, products often undergo *preparation for re-use*, which includes the operations of checking, cleaning or repairing a product or its components, before they can be re-used.

Recycling, on the other hand, refers to operations when waste is reprocessed into another product, material or substance.

Member States have the obligation to make sure that waste undergoes the preparation for re-use and recycling. They must also encourage these activities, e.g. by making separate collection of certain types of waste mandatory, by offering subsidies, by supporting the establishment of collection, re-use or repair schemes, by specifying procurement criteria that favour recycled or re-used material and products etc.

One of the most prominent obligations of Member States is to make sure that re-use and *recycling targets for municipal waste* are met. The target to be achieved by 2025 is set at minimum 55% by weight; further on, targets are progressing, and are set at 60% by 2030, and 65% by 2035⁸. There also exist recycling targets for packaging waste, but they will be elaborated in point 4.5.2.

Rules for the calculation of the attainment of targets are prescribed at the EU level (regulated by (Commission Decision 2011/753/EU) and (Commission Implementing Decision 2019/1004)). Apart from providing a unified methodology, the rules can also be regarded as a means to increase the re-use and recycling of municipal waste. Namely, rules for the calculation of targets for 2025 onwards have become stricter in relation to the ones applied until 2020. As Pettinao et al. (2021) explain, previously the calculation point was at the entrance of the recycling plant, and now it is moved to the entrance of the recycling process, thus eliminating all materials that have been removed during the possible treatment activities carried out by the recycler. In particular:

- The re-use of municipal waste takes into account only the weight of products and materials that can effectively be re-used – after the operations of checking, cleaning and repairing have been completed, and without any additional sorting or pre-processing.
- The recycling of municipal waste, in general, takes into account only the weight of waste at the point where it enters the recycling process – after the operations of checking, sorting and removing the materials that are not subject to processing in the given recycling process.

⁷ WFD provides definition of bio-waste as “biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants”.

⁸ Under certain conditions, specified by the WFD, Member States may postpone the attainment of these targets. However, even then there exist minimum targets they must attain, and these are 50% by 2025, 55% by 2030 and 60% by 2035.

- Specifically for plastics, the calculation point encompasses a point at which plastics separated by polymers enter the operations of pelletization, extrusion or moulding, and a point at which plastic flakes are obtained, which do not require any further reprocessing. Similar requirements apply to plastics coming from composite waste.
- Exemptions may apply under certain conditions, that allow Member States to count at the output of the sorting operation. However, any subsequent loss of material must be deducted (e.g. materials that are rejected by the recycling facility or materials that are removed during the treatment in the recycling facility).

3.2.3. Other recovery and disposal

According to the waste hierarchy, other types of recovery, and ultimately disposal, can be carried out only if the re-use or recycling are not undertaken.

Energy recovery refers to the incineration of waste for the production of heat or electricity, or instances when waste is being used as a fuel. Other types of recovery activities may include backfilling, using waste to improve agriculture land (e.g. composting bio-waste), or reprocessing of waste into secondary raw materials for the construction of roads or other infrastructure.

Disposal includes various operations where waste is not recovered for useful purposes. In the case of municipal waste most common disposal operations are incineration without energy recovery and landfilling. However, incineration applies mostly to mixed municipal waste, because the WFD prohibits the incineration of separately collected waste, unless it is not recyclable.

The WFD also provides for possible establishment of targets for disposal operations, that would aim to reduce disposal of waste. However, no such targets have been put in place so far.

3.3. Responsibilities for the organisation of waste management

General responsibility to organise waste management activities falls on the *waste producer or waste holder* (waste holder being the producer of waste or other person that is in possession of waste). Namely, they are responsible for arranging the treatment of waste, either by treating it themselves, or handling it to waste management operators.

However, exemptions from these general obligations may apply for certain types of waste.

It should be mentioned that in many countries the management of waste collected from households, and often of the broader municipal waste (which may contain comparable waste generated by entities other than households), is the responsibility of municipalities. However, since this practice is not included in the EU legislation, it will not be discussed here.

Another major exemption refers to the *extended producer responsibility (EPR)*. Member States may decide that the producers of specific products should be held liable throughout the product lifecycle. In this regard, the term "producer" applies not only to the actual manufacturer of the product, but also to sellers, importers and other persons who develop, process and treat products.

At the EU level the EPR is obligatory for several types of used products and waste, including packaging waste (introduced with the 2018 amendments to the PPW Directive). This obligation will be discussed in more detail when elaborating EU requirements related to packaging in point **iError! No se encuentra el origen de la referencia.iError! No se encuentra el origen de la referencia.**. At this point, requirements on the EPR schemes imposed by the WFD will be presented.

In general, requirements related to the EPR may encompass the obligation to accept returned products or waste left after the use of the product, to organise and/or to finance

waste management operations, to publicly provide information on the re-usability and recyclability of the product etc.

In cases when producers have the obligation to be financially (or financially and organisationally) responsible for the waste management of the product, we are talking about the *EPR scheme*. The WFD imposes minimum requirements for the EPR schemes, with the aim to reduce the costs of functioning and improve the performance of the EPR schemes. The minimum requirements were set with the 2018 amendments to the WFD, and include obligations of both Member States and producers:

- Member States must ensure the following:
 - Roles and responsibilities of producers, waste operators, municipalities, and other entities related to the waste management of products in questions are clearly defined;
 - Targets are set (e.g. recycling targets);
 - Reporting system on the products placed on market and on the waste management activities is put in place;
 - SMEs or producers of small quantities may be exempted from certain measures.
- Producers of products and operators of the EPR schemes are obliged to meet the following requirements:
 - To organise waste collection systems for designated products, and to have sufficient number of collection points;
 - To apply self-control mechanisms, related to the financial management and the data collection (referring to data on products placed in the market, on waste collected, recycled etc.);
 - To make information on the attainment of prescribed targets publicly available;
 - Operator of the scheme is also required to make information on membership, financial contributions of members, and procedures for the selection of waste management operators publicly available.

When it comes to the financial liability of producers, the WFD stipulates that they are required to pay financial contributions that cover at least 80% of the necessary costs. Necessary costs should at least include the costs of separate collection, transport and treatment; costs of providing information to waste holders; and costs of the required data collection and reporting.

Member States are free to put in place economic incentives or regulatory obligations to encourage waste holders to deliver waste to designated locations organised within the separate collection systems. They should also make sure that waste holders are well informed about the waste prevention measures, available collection systems, re-use centres etc.

The WFD prescribes that compliance with the above-described provisions on EPR schemes must be attained by 5 January 2023.

4. Provisions on packaging and packaging waste

Relevant EU law is the *Directive on Packaging and Packaging Waste* (94/62/EC). Content within this heading is to be referenced to this Directive, unless other reference is specified.

4.1. Definition of packaging

Packaging is defined as any product that is used to contain, protect, handle, deliver or present other materials or goods, from producer to the user or the consumer, provided that it satisfies the following *criteria*:

- Object is considered to be packaging if it fulfils the above-mentioned definition, unless it is the integral part of the product, with the intention to be used, consumed or disposed of together with that product.

Examples of such objects are listed in Annex 1 of the WFD. Those that can be regarded as food and beverage plastic packaging include sweet boxes, beverage capsules for coffee that are left empty after use, or pouches, trays and other materials used as a sterile barrier to preserve the product. On the other hand, examples of objects that are not considered to be packaging include tea bags, sausage skins, or coffee capsules, coffee filters or foil pouches that are intended to be disposed of together with the product.

- Object that is designed and intended to be filled at the point of sale, and which fulfils the packaging function, is considered to be packaging.

Examples of such objects are also listed in Annex 1 of the WFD. Those types that can be regarded as food and beverage plastic packaging include plastic carrier bags, disposable plates and cups, sandwich bags, plastic foils etc. On the other hand, examples of objects that are not to be considered as packaging include disposable cutlery and beverage stirrers.

- Components of packaging and ancillary elements integrated into packaging are considered to be packaging. Ancillary elements that are directly hung or attached to a product are also considered as packaging if they fulfil the packaging function; however, if they are an integral part of the product, and are intended to be used or disposed of together with the product, then they are not considered as packaging.

Examples of packaging and packaging components, according to this criterion, are labels attached to a product, plastic sleeves, detergent caps that are also used for measuring dosage, or mechanical querns that are used in non-refillable packaging which includes the main product (such as pepper mills containing pepper).

The definition of packaging is rather complex and comprehensive, because it is intended to cover all sorts of packaging – packaging applied at the point of production as well as the one used at the point of sale, packaging for both a single item and for a group of products, packaging that is intended to preserve the quality of the product, or only used for carrying it etc. To make distinction between *different uses of packaging*, it is further classified in one of the three categories:

- Sales (or primary) packaging, which is packaging containing a product sold to the final user at the point of sale;
- Grouped (or secondary) packaging, which refers to the packaging that is used to store a group of products at the point of sale, and which can be removed without affecting the characteristics of the product;
- Transport (or tertiary) packaging, which encompasses packaging that is used to facilitate the handling and transport of a product or group of products. Containers are not considered as transport packaging.

Composite packaging is defined as those made of two or more layers of different materials (including plastics), which form a single integral unit and cannot be separated by hand.

4.2. Requirements for packaging

The PPW Directive imposes essential requirements that the packaging placed on the EU market must meet. These requirements relate to the composition and manufacturing of packaging, and also to the possibility that the packaging can be reused or recovered.

- Requirements related to the composition and manufacturing of packaging:
 - Weight and size of packaging must be limited to the minimum level that is sufficient to provide adequate level of safety, hygiene and acceptability;
 - Presence of heavy metals must be minimal. For that part, maximum concentrations of lead, cadmium, mercury and hexavalent chromium is limited to 100 milligrams per kilogram of packaging. Certain exemptions are established, such as for packaging made of lead crystal glass and for plastic crates and plastic pallets kept in closed and monitored product loops.
 - Design and manufacturing must enable packaging to be reusable or recoverable.
- For the packaging to be reusable, the following conditions must be satisfied simultaneously:
 - Physical properties of packaging are such that allow for the repetitive use,
 - The processing of the used packaging complies with the health and safety standards at the workplace, and
 - Once the packaging cannot be further reused and becomes waste, it must meet the requirements related to recoverable packaging.
- Recoverable packaging must meet one of the following requirements:
 - It is recyclable, which means that it contains a certain percentage of materials that can undergo the process of physical recycling,
 - It is recoverable in the form of energy recovery, which means that it has a certain calorific value,
 - It is compostable, which means that it is sufficiently biodegradable, so that it does not obstruct the composting process to which it is introduced, or
 - It is biodegradable, which means that it is made of materials that can undergo different types of decomposition (physical, chemical, thermal or biological), ultimately decomposing into carbon dioxide, biomass and water.

4.3. Material markings

Packaging may contain markings that indicate the nature of the packaging material. The aim of these markings is to facilitate separate collection, reuse and recovery of packaging waste. The markings can be put on the packaging itself or on the label.

The identification system for packaging materials is established at the EU level, and regulated by the (Commission Decision 97/129/EC). However, the use of markings is voluntary, which means that producers are free to decide whether they would use them or not; if they choose to use them, they must follow the prescribed identification system.

The identification system for the packaging that contains plastics is as follows:

- Polyethylene terephthalate: abbreviation PET, numerical mark 1,
- High-density polyethylene: abbreviation HDPE, numerical mark 2,
- Polyvinyl chloride: abbreviation PVC, numerical mark 3,
- Low-density polyethylene: abbreviation LDPE, numerical mark 4,
- Polypropylene: abbreviation PP, numerical mark 5,
- Polystyrene: abbreviation PS, numerical mark 6,

▪ Composites are marked with “C” and abbreviations of materials are separated by “/”. Numerical marks used for composites which contain plastics are the following:

- Plastic/aluminium: 90,
- Plastic/tinplate: 91,
- Plastic/miscellaneous metals: 92,
- Paper and fibreboard/plastic: 81,
- Paper and fibreboard /plastic/aluminium: 84,
- Paper and fibreboard /plastic/aluminium/tinplate: 85,
- Glass/plastic: 95.

4.4. EPR for packaging

Member States are required to ensure the functioning of systems for the return and/or collection of used packaging or packaging waste, and also that the collected packaging is reused or recycled. Such systems must apply to imported packaging as well.

EPR schemes for packaging have been established in many EU Member States. With the 2018 amendments to the PPW Directive, EPR schemes for packaging have become obligatory for all EU Member States, and the deadline for this is the end of 2024.

EPR schemes for packaging must follow harmonized requirements on EPR schemes, that are prescribed by the WFD and elaborated in point 3.3. In addition to this, they must also follow specific requirements prescribed by the PPW Directive, that relate to public awareness activities. Namely, it is stipulated that Member States must ensure that consumers are well informed about the available return, collection and recovery systems, about the ways how they can contribute to the reuse and recovery of packaging, what is the meaning of markings on packaging, and about the goals and measures related to the management of packaging waste. The reasoning is that properly informed and knowledgeable consumers are necessary for the successful functioning of the EPR schemes for packaging.

4.5. Re-use and recycling of packaging

4.5.1. Promoting the re-use of packaging and recycling of packaging waste

The 2018 amendments to the PPW Directive impose requirements on Member States to do more in order to promote the re-use of packaging and the utilization of recycled packaging.

The PPW Directive contains a proposal of measures that could be put in place. For instance, in order to increase the share of reusable packaging, Member States may rely on deposit-return schemes, refer to economic incentives (such as subsidies), set quantitative or qualitative targets, or specify a minimum percentage of reusable packaging that must be placed on market each year. And in order to support the utilization of materials from recycled packaging waste, Member States are required to work on the improvement of market conditions, and to review legislative obstacles in that regard.

4.5.2. Recycling targets for packaging waste

Recycling targets for packaging waste that Member States need to achieve have been prescribed by the EU. Targets are set out both for total packaging and for specific materials:

- By the end of 2025, at least 65% by weight of all packaging waste must be recycled. The recycling target for plastic packaging is set at 50%.
- By the end of 2030 the recycling target for total packaging is 70%, and for plastic packaging 55%.

The PPW Directive also announces that the EC would examine the feasibility of the introduction of reuse targets for packaging waste, and decide on this by the end of 2024.

4.5.3. Calculation rules for the achievement of recycling targets

For the purpose of calculating the achievement of targets, all packaging that has been placed on the market in a given year is considered as packaging waste. Rules are set out by the PPW Directive (Article 8) and the (Commission Decision 2005/270/EC), and have become stricter with the 2018 amendments to the PPW Directive. Namely, for the calculation of the 2025 target only packaging waste that enters recycling process should be taken into account.

Since packaging made of certain material happens to be collected together with non-packaging waste made of the same material, it should be underscored that only packaging waste is taken into account for the calculation of recycling targets (Commission Decision 2005/270/EC). This would mean that any plastic waste that does not satisfy the definition of packaging (e.g. toys, sports equipment, plastic tools, kitchen utensils etc.) must be subtracted.

Calculation rules that apply to plastic packaging waste are provided below (Commission Decision 2005/270/EC):

- In general case, calculation point is a point at which plastics separated by polymers enter the operations of pelletization, extrusion or moulding, and a point at which plastic flakes are obtained, which do not require any further reprocessing.
- Certain derogations may apply, as in the case of municipal waste. Namely, under specific circumstances, it may be possible to count the packaging waste at the end of the sorting operation; however, in these cases any material rejected by the recycling facility, or removed during the treatment in the recycling facility, must be deducted.
- With respect to composite packaging and other packaging made of different materials, rules have also become stricter. Previously, only the dominant material by weight was calculated for the attainment of recycling targets; by 2025 at the latest, all materials will have to be calculated separately. Only for materials that constitute a negligible portion of the total mass (at most 5%) this requirement is not obligatory.
- As regards biodegradable packaging, quantity that can be taken into account for the calculation of recycling targets is the recycled content of the aerobic or anaerobic treatment (compost, digestate or other), that can be used as recycled product, material or substance.
- Reusable packaging can also be counted for the attainment of recycling targets. The PPW Directive (Article 5) specifies that, in this case, adjusted recycling targets are applied, which represent prescribed targets from which the share of the reused packaging is subtracted. To be precise, what is subtracted is the share of reused packaging placed on the market for the first time⁹, in the total packaging placed on the market, over the preceding three years. The maximum share that can be subtracted in this way is 5 percent.
- Shipments of packaging waste sent to the recycling can also be counted, under the following conditions: i) when the packaging waste is generated in one Member States and recycled in another, it can be counted only in one country, and that is the country in which it was collected; ii) shipments to third countries can be counted only if the exporter can prove that the exported packaging waste is treated under the conditions that are in line with the EU environmental regulations (in line with the requirements specified in the Waste Shipment Regulation).

⁹ Reusable packaging that is sent back for reuse is not calculated as being placed on the market in the given year, nor it is considered as packaging waste. Reusable packaging becomes packaging waste only when it is discarded.

5. Specifics related to certain types of plastic packaging and plastic waste

5.1. Plastic carrier bags

Following the steps of some Member States, the EU has introduced measures to decrease the consumption of plastic carrier bags, in order to mitigate the damage to the environment caused by the plastic bags litter. These measures have been brought in with the so-called Plastic Bags Directive (Directive 2015/720), which was actually an amendment to the PPW Directive.

Before describing the measures, it would be worthwhile explaining the terminology. *Plastic carrier bag* is defined by the PPW Directive as a carrier bag made of plastic, with or without handles, which is provided to a consumer at the point of sale. If the thickness of the wall is below 50 microns, such a bag is referred to as a *lightweight carrier bag*; and if the thickness of the wall is below 15 microns, these are *very lightweight carrier bags*.

What is targeted with the Plastic Bags Directive are specifically lightweight plastic carrier bags. Namely, this Directive stipulates requirements on Member States to:

i) Take measures in order to achieve prescribed targets related to the consumption of lightweight carrier bags (target set to be achieved by the end of 2025 is that the annual consumption is up to 40 lightweight plastic carrier bags per person, or its weight equivalent);

and/or

ii) Take measures to ensure that by the end of 2018 lightweight plastic carrier bags are not provided free of charge at the sales points anymore;

In both cases very lightweight carrier bags may be excluded.

It is left to Member States to decide which measures they would rely on. The Directive only sets out the proposal of measures, such as the introduction of national reduction targets, use of economic instruments (e.g. charges), or restricting their placing on the market.

5.2. Single-use plastic products

The Single-use Plastics Directive (EU 2019/904) has been enacted with the aim to address the growing problem of beach and marine littering. Namely, explanatory notes to the draft directive report that plastics constitute around 80% of total littering at EU beaches, out of which 50% were single-use plastic products covered by this Directive. The Directive builds on the Plastic Bags Directive, in terms of taking action to reduce the generation of single-use plastic waste.

It is important noting that the SUP Directive presents a *lex specialis* in relation to the WFD and other legislation, which means that, in the event of possible conflict, the SUP Directive has prevalence.

5.2.1. Product and marking requirements

Single-use plastic products refer to products that are partly or entirely made of plastics, and which are typically intended to be used once¹⁰. The SUP Directive imposes certain requirements for some of these products, intended to improve their collectability, reusability and recyclability.

Product requirements are specified for the following types of beverage containers:

¹⁰ However, it is specified that the SUP Directive does not cover microplastics.

- Beverage containers with a capacity of up to 3 litres will need to have plastic caps and lids attached to the product, at latest by 3 July 2024¹¹;
- In addition to the previous design requirement, content requirements are imposed on PET beverage bottles. Namely, it will be compulsory for them to contain recycled plastics – from 2025 they will have to contain at least 25% recycled plastics (calculated as an average of all PET bottles placed on the market in that MS), and from 2030 the minimum content would increase to 30%.¹²

Rationale for the introduction of these product requirements is that plastic caps and lids have been among the most frequent beach litter, so collecting them jointly with plastic beverage containers would hopefully decrease the volume of littering.

Marking requirements are imposed on certain plastic products, so that they need to contain labels, informing consumers about the plastic content and the negative impact of littering on the environment, as well as about the appropriate waste management options. In relation to food and beverage plastic packaging, compulsory marking requirements have so far been established only for beverage cups, and this requirement is applied as of 3 July 2021.

5.2.2. Reductions and bans

The SUP Directive explicitly forbids the use of certain single-used plastic products, for which appropriate alternatives are available. Products that do not have proper alternatives are not banned, however their consumption must be reduced. In the following paragraphs focus is put on bans and reductions that apply to food and beverage plastic products.

Placing on the market is banned as of 3 July 2021 for the following food and beverage plastic products:

- products made of oxo-degradable plastics¹³,
- forks, knives, spoons and other cutlery made of plastics,
- plastic plates,
- plastic straws, plastic stirrers for beverage,
- food and beverage containers and cups made of expanded polystyrene.

Consumption reduction applies to single-use plastic products for which there is no suitable alternative. Among them, the following types of food and beverage plastic packaging are included:

- beverage cups (including covers and lids), and
- food containers (e.g. boxes), containing food which is prepared for immediate consumption, without further preparation, and where the food is typically consumed from the container.

The SUP Directive does not specify targets for the reduction. However, it imposes an obligation on Member States to employ different measures to substantially reduce the consumption of these plastic products by 2026. Some of the measures that countries can apply are setting national reduction targets, making sure that re-usable alternatives are offered to consumers at sales points, prohibiting the free-of-charge offer of these products at sales points, etc.

¹¹ Exemptions from this obligation include metal and glass beverage containers (even if the caps and lids are made of plastics), and beverage containers used for medical purposes.

¹² Containers for medical purposes are exempted from this obligation.

¹³ Rationale for the ban of oxo-degradable plastics is because they contribute to the microplastics pollution, and negatively affect the recycling of the conventional plastic. This is due to their properties, as they contain additives, that lead to the oxidation and fragmentation or chemical decomposition of the product.

5.2.3. Measures at the level of Member States

Member States have the obligation to establish *EPR schemes for certain single-use plastic products*, at latest by 31 December 2024. Food and beverage plastic products for which this obligation applies are:

- food containers (e.g. boxes), containing food which is prepared for immediate consumption, without further preparation, and where the food is typically consumed from the container,
- packet and wrappers containing food, from which the food is consumed without further preparation,
- beverage containers with a capacity of up to 3 litres, including their caps and lids,
- beverage cups, including their covers and lids, and
- lightweight plastic carrier bags.

General requirements on these EPR schemes are prescribed by the WFD (refer to point 3.3 for more details). The SUP Directive imposes additional requirements on producers of these products, as they are also liable to cover the following costs: i) costs of the waste collection of products discarded in the public collection system, ii) costs of the clean-up of litter, and iii) related transport and treatment costs.

An obligation is imposed on Member States to put in place *separate collection of plastic beverage containers* of up to 3 litres¹⁴. Targets for the separate collection are also prescribed, so that until 2025 at least 77% of these containers is separately collected, and by 2029 this percentage should be at least 90%. It is left to Member States which measures they would put forward in order to meet prescribed obligations; some of the measures indicated by the SUP Directive include the establishment of deposit-refund schemes, or national targets for the separate collection.

Finally, the SUP Directive imposes a requirement related to *awareness-raising measures*. In that regard, for certain single-use plastic products, Member States must make sure that consumers are properly informed about the available re-usable alternatives, about the waste management options, and about the negative impact of littering and inappropriate disposal on the environment and on the sewage network. Food and beverage plastic products for which awareness-raising obligation applies are the ones that are subject to EPR responsibilities described above.

5.3. Bioplastics

There is currently no EU legislation regulating bioplastics. However, the framework is being developed, and the EC communication on this subject is expected by the end of 2022 (initially it was announced for July 2022, but postponed). The proposal would encompass biobased, biodegradable and compostable plastics.

References in existing legislation

Different types of bioplastics are referred to in existing Directives.

The WFD does not specifically address bioplastics. However, it prescribes that packaging waste that has similar biodegradability and compostability properties as bio-waste may be separately collected together with bio-waste.

The PPW Directive makes a distinction between biodegradable packaging waste and packaging waste that is compostable. Requirements on biodegradable packaging stipulate that it must be able to undergo physical, chemical, thermal or biological decomposition, resulting in biomass, carbon-dioxide and water. Requirements of compostable packaging specify that it must be sufficiently biodegradable, so that it does not hinder the composting process into which it is introduced. The PPW Directive also

¹⁴ Beverage containers for medical use are exempted from this obligation.

makes provision for the incorporation of recycled content of biodegradable packaging for the purpose of calculating the achievement of packaging recycling targets.

The SUP Directive makes no distinction between ordinary plastics and bioplastics, its provisions apply to all types of plastics.

Development of the policy framework for biobased, biodegradable and compostable plastics

The rationale for the development of the policy framework is the need to promote alternatives to materials based on fossil fuels, but also to clarify and address possible issues related to available alternatives. For that part, EC finds it particularly important to distinguish whether bio-based plastics represent only an alternative to the use of fossil fuels, or it is also genuinely beneficial to the environment; and whether biodegradable and compostable plastics have a positive effect on the environment. For this purpose, the consultations process, that was launched in January 2022, put focus on three policy areas:

1. Sustainability of the biological feedstock used for the production of biobased plastics (e.g. should sustainability criteria for the feedstock be established; should a minimum biobased content be specified, etc.).
2. Effective biodegradation of biodegradable and compostable plastics (e.g. should the use of biodegradable and compostable packaging be limited to certain applications; should additional standards in this regard be developed; the issue of labelling of such products, etc.).
3. Widespread confusion. In this area it is particularly important that consumers are well informed about the terminology and the properties of different types of bioplastics (e.g. that biobased plastics is not necessarily biodegradable, and *vice versa*; the proper disposal of biodegradable and compostable plastics; how to provide relevant information to consumers etc.).

More details on the development of the policy framework on bioplastics is available at https://environment.ec.europa.eu/topics/plastics/bio-based-biodegradable-and-compostable-plastics_en

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