

## Waste Policy of the European Union: Policy Implementation in the Case of Plastic and Packaging Waste in Austria

By Taida Hajdarpašić

Submitted to Central European University Department of Public Policy

In partial fulfilment of the degree of the Master of Arts in International Public Affairs

Supervisor: Prof. Zoltan Illes

Vienna, Austria 2024

## Abstract

This study explores the intricate landscape of EU waste policy, with a specific focus on the implementation of directives governing plastic and packaging waste management in Austria. It analyzes key legislative measures such as the Waste Framework Directive, Packaging and Packaging Waste Directive (including the 2018 Circular Economy Package amendment), and the Single-Use Plastics Directive. Through empirical case studies from Vienna and broader Austrian contexts, the research illuminates the practical challenges and successes in applying these directives, emphasizing subsidiarity and proportionality principles. Austria's experience serves as a lens to understand how stringent EU regulations shape national policies and the ongoing discourse on subsidiarity in waste management. The study also examines the nature of EU legislative measures and their impact on national policy frameworks, highlighting complexities influenced by varying capacities and local national dynamics. It advocates for nuanced, adaptive approaches that consider diverse national contexts to effectively manage plastic and packaging waste while advancing overarching EU environmental objectives.

## **Table of Contents**

ABSTRACT	2 -
INTRODUCTION	6 -
METHODOLOGY	8 -
LITERATURE REVIEW	8 -
FIELD RESEARCH AND DATA COLLECTION	8 -
SEMI-STRUCTURED INTERVIEWS WITH EXPERTS	
COMPARISON OF POLICIES	
ONLINE DATA COLLECTION THROUGH GOOGLE AND ACADEMIC DATABASES	
OBJECTIVE AND SCOPE	10 -
CHAPTER 1. IMPORTANCE OF WASTE MANAGEMENT	11 -
1.1 DEFINITION OF WASTE	11 -
1.1.1 European Waste Catalogue (EWC)	12 -
1.2 PLASTICS AND PACKAGING	13 -
1.2.1 Types of plastics and packaging waste	13 -
1.2.2 Terminology and historical overview of plastics	14 -
1.2.3 - Plastics industry	16 -
1.2.4 - Different types of plastics and their use	17 -
1.2.5 - Benefits of plastics	18 -
1.2.6 - Labels used and recyclability of dif. types of plastics	18 -
1.3. PACKAGING	21 -
1.3.1 Definition of packaging - Directive 94/62/EC	22 -
1.3.2 Packaging Materials	23 -
1.4 New Targets - Circular Economy Package influence	24 -
CHAPTER 2 - THE EUROPEAN UNION'S LEGISLATION ON WASTE	26 -
2.1 Environmental policy - legal basis	26 -
2.1.2.Legislative initiative of the EU institutions	27 -
2.1.3. Ordinary legislative procedure of legislative acts	27 -
2.1.4. Waste Management as a part of the environmental policymaking	28 -
2.2. THE CIRCULAR ECONOMY PACKAGE (CEP) – STRATEGY 2014 WITHDRAWAL	29 -
2.2.1. Legal basis for waste management policy	31 -
2.3 PRINCIPLES OF SUBSIDIARITY AND PROPORTIONALITY	32 -
2.3.1 Interpretation of Directives	34 -
2.3.2 Transposition of Directives into National law	34 -
2.4 HARMONIZATION OF ENVIRONMENTAL POLICY	38 -
2.4.1. Policy Effectiveness of environmental policy measures	39 -
2.5. FINANCIAL RESPONSIBILITY	40 -
2.5.1 Extended Producer Responsibility (EPR)	41 -
2.5.2 SINGLE-USE PLASTICS DIRECTIVE (SUP)	43 -
CHAPTER 3 POLICY AND LEGISLATION IN AUSTRIA	45 -
3.1 DEFINITION OF WASTE AND DIRECTIVE CHANGES	46 -
3.2 THE 2008 WASTE FRAMEWORK DIRECTIVE	46 -
3.3. REGULATION OF WASTE COLLECTION - AUSTRIA	48 -
3.3.1 Position of producers in Austria - EPR	49 -

50 -
51 -
52 -
53 -
54 -
55 -
56 -
57 -

To all of the people in my life that helped me get through this period, especially my supervisor Prof. Zoltan Illes, my mother ,father and to you Bino, who have been the rock of my studies and shoulder to lean on through life.

Love,

Taida

## Introduction

In a year average person can generate up to 845 kilograms<sup>1</sup> of waste, whereas globally in every single minute 3, 825 tons of municipal waste are produced and collected<sup>2</sup>. This is the reality we are all living in silently, without even wanting to notice the main contributors to the issue, the very same us. Consumers and people of a world where most of the products we use or hold in our hands on a daily basis, are packaged especially for that one, single use.

If we are some of the lucky ones, living in a more developed region and country, that is has active governments working towards regulating bad practices of us as a people, but also and mostly because of how our societies are built. Consumerism and capitalist systems, thus economies, lead us to overconsumption and generation of vast amounts of waste, which can be reprehended, but at most not faced 'head on'. Main reasons are environmental pollution and degradation of life as we know it. Some of ways, other than self-control and less consumption, need to be implemented though governmental decision- and policymaking. Only with support of legislative measures can we change how our future will look like, as waste generation and waste streams are expected, if recent trends continue, to grow to about 75 million tons by 2030, which when counted from data from 2020 would amount to 40 percent in just one decade<sup>3</sup>. Many stakeholders and actors on the global scene have started in last few decades to tackle these questions, but not in the most efficient manner. Even so, one great example and world leader in sustainable policymaking and decisions, has been the European Union, which showcased since its creation, interest for dealing with societal issues not many have tried to or even been interested enough to partake in. Such is an example of waste policy, even though it took some time for the European Union to considered it a more important sector within the environmental policy, it was an issue which gained momentum in 70s and 90s EU policy of 20th century, but pivoted in the early 00s and in 2010s started regulating the

<sup>&</sup>lt;sup>1</sup> as it was the case in Denmark in 2002 – Statista 2022

<sup>&</sup>lt;sup>2</sup> https://www.developmentaid.org/news-stream/post/158158/world-waste-statistics-by-country

<sup>&</sup>lt;sup>3</sup> https://www.statista.com/topics/4983/waste-generation-worldwide/#topicOverview

policies towards Member States in a more rigorous manner than before, as globally and EU-27 wide interest on environmental protection increased with an public expectation for action by governments. Even so, with such a range of different opinions and national stances, it is important to understand the European Union's perspective through published legislation and how such were transposed and implemented by national governments. It is important to also note, that the average European produces 5 tones of waste every year, while only 38% of waste in the EU is recycled and some EU countries, over 60% of household waste is still sent to landfill . Through this research, I will be referring to the Republic of Austria as an example of such implementation in Austrian legislature and in-field practices. As it is one of the most advanced countries in the world when it comes to dealing with the waste<sup>4</sup>. There are many instances, especially when in relation to single-use plastic which need improvement, as the current situation of single-use packaging in comparison to household waste collection, and its re-use and recyclability does not correspond with goals Austria has obligated itself to reach in the future. Here we will explore the reasons and intricacies of legislation and policies, while discussing the current situation and past instances in which Austria and European Union regulated on the topic of waste, but also plastic and packaging waste. As plastics is one of the leading pollutants in Europe and plastics is the main material used for production of packaging.

Chapter division---

<sup>&</sup>lt;sup>4</sup> <u>https://eunomia.eco/reports/global-recycling-league-table-phase-one-report/</u>

## Methodology

In this chapter I outline the methodologies used to conduct this research on EU waste policy, focusing specifically on plastic waste from municipal solid waste in Austria. The approach integrated a comprehensive literature review, in-depth field research, interviews with experts, and policy comparison to effectively answer the research questions.

## Literature Review

A thorough literature review was the key phase of the research. This involved a detailed review of existing studies, reports, and academic articles related to EU waste management policies, plastic packaging waste, and municipal waste management practices. The analysis was conducted using academic databases and online libraries from three major Austrian universities. The main databases included JSTOR, ScienceDirect, and SpringerLink. Search terms such as "plastic packaging," "EU policy," "EU law," "plastic waste in the EU," "plastic," "waste," "waste management," "Austria," "Vienna," and "plastic packaging waste" were used systematically. A ranking system based on number of citations and relevance helped prioritize sources, ensuring that the review covered the most significant and influential work in the field.

#### Field research and data collection

Field research was conducted through site visits, particularly to Vienna. Key sites included the Rautenweg landfill in Vienna, where direct observations and interviews with site staff provided practical insights into waste management systems in Austria. This field experience was crucial in contextualizing theoretical knowledge with real-world practices. In addition, the study relied on resources available in the libraries of the University of Vienna, the Vienna University of Technology, and the Vienna University of Natural Resources and Life Sciences.

## Semi-structured interviews with experts

A significant component of the research was conducting semi-structured interviews with experts in the field of waste management, environmental policy and European regulations. The selection of interviewees was guided by their expertise and experience in European waste policy and Austrian waste management practices. The interview protocol was designed to explore their perspectives on the implementation of European directives, challenges in policy implementation, and the role of local authorities. Although not all interviews are cited directly in the thesis, they were instrumental in setting the direction of the research and providing a comparative perspective on the practical aspects of waste management. Key interviews included stakeholders from government agencies, academic institutions, and environmental NGOs. In addition, field visits, such as the one to the Rautenweg landfill, were critical in gaining an in-depth understanding of waste management practices.

## Comparison of policies

To contextualize Austrian waste policies within the broader EU framework, a policy comparison was conducted. This involved an analysis of similar or contrasting policies in different EU member states, focusing on how European regulations on waste management and plastic packaging are implemented. The comparison included a review of legislative documents, policy reports, and comparative studies on waste management practices in other countries. The comparative analysis helped identify common trends, challenges, and best practices, providing a comprehensive understanding of the EU's regulatory impact on national waste policies.

## Online data collection through Google and academic databases

Additional data collection was conducted using the Google search engine, employing keywords such as "waste management," "packaging," "plastic packaging," "EU policy," "EU plastic packaging waste," "policy implementation," "Vienna," "plastic," and "single-use plastic." These keywords were used individually and in combination to gather a wide range of relevant information. The data collected included articles, policy briefs, reports, and statistics from credible sources, which were meticulously reviewed and integrated into the research framework.

## Objective and scope

The primary objective was to highlight the main features of EU policy on plastic waste, with a focus on plastic packaging waste, and to analyze the differences between these policies in the context of global environmental and social challenges related to pollution and plastic waste. This approach ensured a well-rounded analysis, mixing theoretical insights with practical observations and expert opinions to provide an in-depth understanding of the topic.

In **summary**, this methodological paper underlines a multifaceted approach, combining literature review, field research, expert interviews, and policy comparison, to comprehensively study the implementation of European waste policy in Austria, particularly with regard to plastic and packaging waste.

## Chapter 1. Importance of Waste Management

Well-constructed waste management systems are crucial in protecting the environment, public health and economic stability. Properly managing waste reduces pollution, minimizes greenhouse gas emissions, and conserves natural resources by recycling and reusing materials, thereby preserving ecosystems and biodiversity. It can also prevent the spread of disease by avoiding water and air pollution and the breeding of disease-carrying pests and vermin. It ensures compliance with local, national and international regulations, thereby avoiding legal penalties and protecting the organization's reputation. Economically, efficient waste management creates job opportunities, generates revenue, and reduces the costs associated with landfills and incineration. Furthermore, waste management promotes resource efficiency and sustainability and reduces environmental impact. Effective waste management can significantly reduce greenhouse gas emissions, particularly methane emissions from landfills, thereby contributing to climate change mitigation.

## 1.1 Definition of waste

Definition of waste has been disputed many times by now and various contexts<sup>5</sup>. Some of the main definitions globally accepted are:

By OECD: " 'Wastes' are substances or objects, other than radioactive materials covered by other international agreements, which:

i) are disposed of or are being recovered; or

ii) are intended to be disposed of or recovered; or

iii) are required, by the provisions of national law, to be disposed of or recovered"

<sup>&</sup>lt;sup>5</sup> see Case C-341/01 in ----?

<sup>&</sup>lt;sup>6</sup> https://legalinstruments.oecd.org/public/doc/221/221.en.pdf 2024

By the Basel Convention (Art 5): "Wastes' are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law"<sup>7</sup>. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is an international treaty that aims to minimize the generation of hazardous waste and to control its transboundary movement and disposal. It was adopted in 1989 and has been ratified by 187 countries<sup>8</sup>, being the main building block of many waste management systems and cross-state import and transit regulations.

In the European Union, such a definition was also changed immensely, but this paper will be focusing on the current in-force and EU-wide accepted definition coined in the Waste Framework Directive:

" Waste' means any substance or object which the holder discards or intends or is required to discard;"9

#### 1.1.1 European Waste Catalogue (EWC)

Municipal solid waste encompasses a wide range of waste types generated by households and businesses, including biodegradable waste, paper, cardboard, textiles, metals, and plastics. The amended version of the Decision 2000/532/EC, directly applicable as the list of waste in the 2008 Waste Framework Directive, was the Commission Decision 2014/955/EU, a document behaving as an around 40 pages long table list of different types of waste classified under specific codes. Some examples include separately collected fractions (20 01), which include paper and cardboard (20 01 01), glass (20 01 02), biodegradable kitchen and canteen waste (20 01 08), textiles (20 01 11), and plastics (20 01 39). While Garden and park wastes (20 02) include biodegradable waste (20 02 01), while other municipal wastes (20 03) include mixed municipal waste (20 03 01) and bulky waste (20 03 07). Unlike packaging, which includes separately collected municipal packaging

<sup>&</sup>lt;sup>7</sup> https://www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.aspx

<sup>&</sup>lt;sup>8</sup> <u>https://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx</u>

<sup>&</sup>lt;sup>9</sup> Directive 2008/98/EC, Art. 3(1)

waste (15 01), but which is excluded from the separately collected fractions (20 01), as it has its own separation fraction.

## 1.2 Plastics and packaging

Materials which make our surrounding world are used for very specific purposes and can only be versatile as long as their limitations allow for it. One material which has experienced an expansion in its use for the last couple of decades, has been plastics. As it can be shaped, molded and mixed into many different shapes and forms, thus being one of the most commonly used materials for packaging on the market. The expansion of products made out of plastic, mostly occurred due to their more affordable price and properties of easier adaptability.

#### 1.2.1 Types of plastics and packaging waste

As an increasing environmental concern, plastic waste is also specifically identified in the Commission Decision 2014/955/EU<sup>10</sup>. The different types of waste considered as such by the European Union, can be understood under codes such as plastic packaging (15 01 02), plastic from end-of-life vehicles (16 01 19), and plastic from construction and demolition (17 02 03). This highlights the diverse sources of plastic waste within the broader category of municipal solid waste. The single-use plastics, although not explicitly categorized under a separate heading, are often included within the plastic waste and plastic packaging waste categories. Items such as plastic bags, straws, and disposable cutlery typically fall under codes for plastic packaging (15 01 02) and plastics (20 01 39). This classification system aids in the management, recycling, and reduction of waste, promoting sustainable practices and environmental conservation (Commission Decision 2014/955/EU). From which, the categories of packaging waste can be derived, with several specific types based on the material and contamination level. These include:

o paper and cardboard packaging

<sup>&</sup>lt;sup>10</sup> https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014D0955

- o plastic packaging
- o wooden packaging
- o metallic packaging
- o composite packaging
- o mixed packaging
- o glass packaging
- o textile packaging.

Some packaging materials may contain residues or be contaminated by hazardous substances, requiring special attention. For instance, certain packaging can be contaminated by hazardous substances, such as residues of chemicals or metals in metallic packaging, which would if not possible for treatment classify them as hazardous wastes, which fall under different regulatory measures than non-hazardous waste, but which need careful handling and disposal. Such detailed classification of various packaging and related waste materials helps in ensuring proper identification, management, and disposal, particularly when dealing with hazardous contaminants. Even as such structured approach is built for environmental safety and promoting effective waste management practices, it is also made to harmonize the European Union's policies and ensure the 'smooth' functioning of the internal market for all EU Member States.

#### 1.2.2 Terminology and historical overview of plastics

When "plastic" is mentioned, many would have a similar idea of what it means, and some might even describe it as a substance that can flow or be moulded, that is light and ductile or that it can be shaped easily<sup>11</sup>, but it is indeed not that easy to define that differently the material "plastics". The term "plastics" is used to describe a class of materials that are formed by breaking the chemical bonds in simple molecular groups called monomers, which are composed of carbon, hydrogen, oxygen, nitrogen, and other organic or inorganic elements, which grouped in long and chained

<sup>&</sup>lt;sup>11</sup> <u>https://plastiquarian.com/?page\_id=14296</u> (Wells 2015)

structures are called polymers<sup>12</sup>, that can then be converted into a variety of products. Polymers are composed of large molecules, which are comprised of smaller units, known as monomers, that themselves are composed of even smaller units, interestingly enough most polymers comprise monomers that are similar to each other and are joined together in a straight chain, like a long string of pearls<sup>13</sup>.

Plastics is indeed the youngest of all the other packaging materials, but only if synthetically produced, as natural plastics like rubber, shellac, horn, amber and tortoiseshell have been used since antiquity (Cordier et al. 2024), which when processed with heat and pressure, were made into articles such as hair combs and items of jewellery for many centuries<sup>14</sup>. Use of polymers has a long history, dating back sometime 3,500 years ago (1600 BC), when ancient Mesoamericans (Olmecs of Mexico) first used natural rubber to make balls, figures and ribbons<sup>15</sup>. The first innovative try at developing a new material in 1832, was Styrene , developed from a balsam tree, but as it was very fragile and easily shattered<sup>16</sup>. That changed when a Belgian chemist Leo Baekeland invented the first fully synthetic plastic called Bakelite in 1907, the first major thermoset material that could replace wood, ivory<sup>17</sup> after which plastic use and manufacturing rose<sup>18</sup>. After Baekeland's invention, the process of synthetic plastic was refined in Germany in 1933 and by the 1950s available in form of foam worldwide<sup>19</sup> and it was mainly used as insulation, material for developing foam boxes, cups and trays in the food industry sectors, as well as a material for various kinds of cushions, thus this period can be referred to as the 'Polymer Age'<sup>20</sup>. Some milestones of invention

**CEU eTD Collection** 

<sup>&</sup>lt;sup>12</sup> Koçak 2022

<sup>&</sup>lt;sup>13</sup> American Chemical Society 1993

<sup>&</sup>lt;sup>14</sup> <u>https://plastiquarian.com/?page\_id=14296</u>

<sup>&</sup>lt;sup>15</sup> Hosler et al. 1999; <u>10.1098/rstb.2008.0304</u>

<sup>&</sup>lt;sup>16</sup> Hook and Heimlich 2017

<sup>&</sup>lt;sup>17</sup> Wells, 2015

<sup>&</sup>lt;sup>18</sup> Cordier et al. 2024; Science History Institute 2023

<sup>&</sup>lt;sup>19</sup> Hook and Heimlich 2017

<sup>&</sup>lt;sup>20</sup> American Chemical Society 1993

of different types of plastics are: In 1929 - polystyrene, 1930 - polyester, 1933 for both - polyvinylchloride (PVC) and polythene, 1935 - nylon and 1941 - polyethylene terephthalate (PET).

#### 1.2.3 - Plastics industry

One of the main drivers of the industry's growth was the war effort, as plastics were used for everything from military vehicles to radar insulation (BBC 2014). For which the petrochemical companies created plants to turn crude oil into plastic by the truckload, but as the war ended in 1945, the industry faced a surplus and to maintain production, they were forced to find new use for the material, and with new products such as Tupperware launched in 1948, the attention of plastic production was shifted to appeal to the mass consumer market<sup>21</sup>.

Since the Second World War, global plastics production expanded, with over 8,300 megatons produced to date, with annual production growing exponentially as well, reaching 460 megatons in 2019<sup>22</sup>. By 2060, production is expected to triple, with single-use plastics accounting for a much larger share<sup>23</sup>. Modern plastics are derived primarily from fossil carbon, over 98% of which is derived from coal, oil and gas. They consist of a carbon-based polymer backbone and a few chemicals added to achieve specific properties such as colour, flexibility and flame retardancy. Petrochemical companies had built plants to turn crude oil into plastic by the truckload, but when the war ended in 1945, the industry faced a surplus and to maintain production, they were forced to look beyond and find new use for the material with new products such as Tupperware, launched in 1948, which led the attention of plastic production to appeal to the mass consumer market<sup>24</sup>. Plastics have become an integral part of modern society, providing a wide range of social benefits, including improved consumer health and safety, energy conservation, and resource conservation. Consumption patterns of plastics vary by region, with a large proportion used in packaging, building products, automotive applications, and the production of toys and furniture. Many of the

<sup>&</sup>lt;sup>21</sup> https://www.bbc.com/news/magazine-27442625

<sup>&</sup>lt;sup>22</sup> Landrigan et al., 2023

<sup>&</sup>lt;sup>23</sup> Landrigan et al., 2023

<sup>24</sup> https://www.bbc.com/news/magazine-27442625

added chemicals used to improve the performance of plastics, such as phthalates, bisphenols and flame retardants, are toxic and pose a risk to human health and the environment, highlighting the importance of proper regulation and monitoring of this industry.

#### 1.2.4 - Different types of plastics and their use

In modern use for production of packaging and various other products following synthetic plastics are common: Low-density polyethylene (LDPE); linear low-density polyethylene (LLDPE); high-density polyethylene (HDPE); polypropylene (PP); polystyrene (PS); expanded polystyrene (EPS); polyethylene terephthalate (PET); and polyvinyl chloride (PVC). According to PlasticsEurope some of these polymers accounted for 99% of all plastics used in packaging in Europe in 2015 (Van Eygen, Laner and Fellner, 2018), and in 2022 the composition changed (see Figure 1), where still the main portion of plastics was fossil-based.







In 2022, about 19,7% of plastics production was 'circular 'plastics, that was either recycled or biobased. When compared to 2021, when it amounted to 12,4%, it is a great improvement, showing that policy taken, and various influences are impacting the industry. Still in 2022, bio-

<sup>&</sup>lt;sup>25</sup> https://plasticseurope.org/knowledge-hub/plastics-the-fast-facts-2023/

based and bio-attributed polymers were only accounting for 1% of plastics production, where the most prominnent material used, was mechanically (post-consumer) recycled plastics.

#### 1.2.5 - Benefits of plastics

One of the positive impacts of plastics in recent decades has been their significant contribution to the medical sector. Plastics are indispensable in the manufacture of medical equipment and instruments, such as syringes, infusion bags, prosthetics, and surgical instruments, providing versatility, sterility, and durability (Seymour, 1989). For instance, single-use plastic products were crucial for contamination prevention and testing during the COVID-19 pandemic. However, the pandemic led to increased plastic contamination; hospitals in Wuhan, the epicenter of the outbreak, generated over 240 tonnes of plastic disposable medical waste per day at the height of the pandemic, six times the pre-pandemic daily average<sup>26</sup>. Plastics also offer numerous benefits in modern technology, enabling innovative designs, lightweight properties, and fuel efficiency<sup>27</sup>. Plastic packaging extends food shelf life, ensures safety, and improves transport efficiency, ultimately reducing carbon dioxide emissions. Additionally, plastic pipes and fittings are crucial for water and sanitation, especially in developing regions, due to their resistance to corrosion compared to copper. However, plastic pipes do age and, without proper maintenance, can pose health risks, which can in some instances also be pinned towards the general application of plastics.

#### 1.2.6 - Labels used and recyclability of dif. types of plastics

For daily practices and to ease the sorting of plastic packaging and goods before recycling, it is crucial to have clear insignia indicating the type of plastics used, typically marked with plastic resin codes (see Table 1). These codes help identify different applications, such as PET for soft bottles and clothing, HDPE for shampoo/soap bottles, utility pipes, bottle caps, and pens, and PP for plastic bags and bottle caps. In 2019, PP was among the most used polymers for plastic production (see Graph 1), with 22% of global plastics comprising "Other" (code 7) types. Plastics are

<sup>&</sup>lt;sup>26</sup> https://www.science.org/doi/full/10.1126/science.abd9925 Adyel 2020

<sup>&</sup>lt;sup>27</sup> https://www.bpf.co.uk/plastipedia/applications/Default.aspx

categorized into two main types: thermoplastics and thermosets. Thermoplastics, commonly found in daily life, are mostly recyclable, while thermosets, used in specialized applications, cannot be recycled except as filler. Key thermoplastics include those in Resin Identification Codes 01-07 (see Table 1). PET, HDPE, and PP are widely used for their recyclability and safety in food and beverage applications due to their non-reactive nature<sup>28</sup>. LDPE, although sharing similar applications, is less commonly recycled due to contamination issues. PVC is also infrequently recycled because processing releases hazardous chemicals, posing health risks<sup>29</sup>. Polystyrene (PS) is rigid and used in single-use items, but its poor chemical resistance makes recycling challenging<sup>30</sup>. The "Other" category includes various specialized plastics like polycarbonate and acrylic, known for durability and clarity but not widely recycled (International Association of Plastics Distribution, 2023). Improving recycling efforts and minimizing health risks associated with improper plastic use and disposal are essential.

Code-No.	Abb.	Name	Examples of Products
	PET	Polyethylene terephthalate	Beverage bottles, mouthwash bottles, cooking oil bottles, clothing (polyester)
HDPE	HDPE	High-density polyethylene	Milk jugs, butter tubs, ice cream tubs, shampoo/soap bottles, bottle caps, utility pipes, pens
×3 PVC	PVC	Polyvinyl chloride	Door/window frames, plastic pipes, wire surrounds, cling film, outdoor furniture

Table 1 - Resin Identification Codes

<sup>&</sup>lt;sup>28</sup> PlasticsEurope, 2023

<sup>&</sup>lt;sup>29</sup> World Health Organization 2023

<sup>&</sup>lt;sup>30</sup> EPA 2023

	LDPE	Low-Density polyethylene	Sauce/condiment bottles, plastic films, plastic bags, bubble wrap, plastic tubing
<b>ح</b> رج ₽₽	рр	Polypropylene	Medicine bottles, food packaging, bottle caps, straws, plastic bags
<del>کو</del> ک ₽s	PS	Polystyrene *includes Expanded Polystyrene (EPS)	Rigid formats, such as yoghurt and margarine containers, insulation, electronic equipment. (EPS) Disposable foam drinking cups, takeaway food containers, refrigerator trays and packaging peanuts
OTHER	Other	Other Plastics Polycarbonate, Polylactide, Acrylic, Acrylonitrile Butadiene,Styrene, Fibreglass, Nylon	Reusable bottles, Eyeglass lenses, aquariums, car parts, textiles.

Source: <sup>31</sup>

Especially interesting are the amounts of which plastic products polymers from. In 2019, the biggest percentage of plastics applied towards producing was observed in the production of packaging, taking the first place of 31%<sup>32</sup> as pictured in Graph 1 showcasing the share of plastics application and polymer. Followed by construction and it shows how big of an impact packaging has on the production chain. The five main polymers applied in production of plastics were (in

<sup>&</sup>lt;sup>31</sup> https://ismwaste.co.uk/help/seven-different-plastic-types ; https://www.oecd-

ilibrary.org/sites/71a51317-en/index.html?itemId=/content/component/71a51317-en#tablegrp-d1e2860 <sup>32</sup> OECD 2022

order of mention): Other, PP, HDPE & LDPE and PVC, with PET amounting to only 5 percent as pictured below.



Graph 1 - Share of plastics by application and polymer in 2019, OECD (2022)

Source: OECD Global Plastics Outlook Database, <u>https://doi.org/10.1787/c0821f81-en</u>; In: <u>OECD 2022</u>

## 1.3. Packaging

Packaging plays an important role in modern society by providing essential functions such as containment, protection and transport of goods, ensuring product integrity from production to consumption<sup>33</sup>. It also contributes significantly to consumer convenience by providing features such as portability, protection of goods and easy use, enhancing the overall user experience<sup>34</sup> and ease up daily lives of us all. In addition, effective packaging needs to include on itself important information about the product, such as instructions for use, storage conditions and disposal, thereby facilitating consumers to make informed decisions<sup>35</sup>. Well-designed packaging also includes information on product use, storage and disposal, further enhancing consumer convenience. Overall, effective packaging supports a seamless and enjoyable consumer experience

<sup>&</sup>lt;sup>33</sup> Soroka 1995

<sup>&</sup>lt;sup>34</sup> Yam 2009

<sup>&</sup>lt;sup>35</sup> Twede, 2012 <u>https://www.destechpub.com/wp-content/uploads/2015/01/Cartons-Crates-and-Corrugated-Board-2nd-Ed-preview.pdf</u>

and especially if it contributes significantly to product accessibility, usability and most importantly nowadays sustainability. With packaging as we have it today, our daily life and consumption would have to look different or closer to how people use to not consume much outside of their homes. The reusable packaging with take-away possibilities can be a future of sustainable consumption patterns, that need to change in the near future.

#### 1.3.1 Definition of packaging - Directive 94/62/EC

According to Directive 94/62/EC<sup>36</sup>, 'packaging' encompasses all products made from any material intended for containment, protection, handling, delivery, and presentation of goods, from raw materials to processed items, for producers, users, or consumers.

This includes non-returnable items used for similar purposes. Where the directive classifies packaging into three categories:

1) Sales or Primary Packaging: Packaging designed to constitute a sales unit for the final user or consumer at the point of purchase.

2) Grouped or Secondary Packaging: Packaging that groups several sales units at the point of purchase, either sold as a unit to the final consumer or used for shelf replenishment; it can be removed without affecting the product's characteristics.

3) Transport or Tertiary Packaging: Packaging designed to facilitate handling and transport of multiple sales units or grouped packages to prevent physical damage during transit, excluding road, rail, ship, and air containers.<sup>37</sup>

Which later in the last 2018 amendment changed and added on many different points, related to the meaning of packaging waste, reusable packaging, and relation of definitions introduced in the

<sup>&</sup>lt;sup>36</sup> European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10). Art. 3(1)

<sup>&</sup>lt;sup>37</sup> European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10). Art. 3(1)

2008 Waste Framework Directive. With this new amendment (Directive 2018/852/EU)<sup>38</sup> of the '94 Directive the definition of packaging widened the scope of different kinds of packaging, but especially for reusable and composite packaging. Referring to reusable packaging as packaging that is specifically designed and marketed to be refilled or reused multiple times for the same purpose throughout its lifecycle. On the other hand, defining the composite packaging as packaging made from two or more different materials that are inseparably bonded to form a single unit. This type of packaging consists of an inner receptacle and an outer enclosure and is intended to be filled, stored, transported, and emptied as a cohesive unit.

## 1.3.2 Packaging Materials

Various materials are utilized in packaging production, including rigid plastic (e.g., PET and HDPE for bottles), paper (versatile for wrapping and labeling), paperboard (thicker for cereal boxes), cardboard (for shipping electronics), aluminum (durable in foil and cans), glass (recyclable for food packaging), and flexible plastic (e.g., LLDPE and LDPE for wrap and bags). Non-packaging applications drive demand for PVC and PS, while PET, LDPE, and HDPE are predominant in packaging materials.



Graph 2 - Demand for common plastics, by plastic type

<sup>&</sup>lt;sup>38</sup> Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste (Text with EEA relevance) OJ L 150, 14.6.2018, p. 141–154, EN. <u>http://data.europa.eu/eli/dir/2018/852/oj</u>

<sup>&</sup>lt;sup>39</sup> https://www.eea.europa.eu/data-and-maps/figures/demand-for-common-plastics-in

## 1.4 New Targets - Circular Economy Package influence

In 2019, global plastic packaging production exceeded 140 million tonnes, highlighting its significant contribution to plastic waste generation. The EU's Directive (EU) 2018/852 introduces rigorous recycling targets aimed at addressing this issue. By 2025, a mandatory 65% recycling rate for all packaging materials is mandated, with specific goals for plastics (50%), aluminum (50%), and others. These targets increase by 2030 to achieve a 70% overall recycling rate, with higher thresholds for individual materials. Member States may extend deadlines under strict conditions, subject to Commission review. The Commission will reassess these targets by 2024 to enhance sustainability efforts and promote a more circular economy. Through this Directive, the Member

Graph 3 - Global plastic waste generation - 2019



#### Source: https://debrisfreeoceans.org/the-life-cycle-of-plastics/

States are mandated to establish comprehensive systems for the return, collection, reuse, and recycling of packaging waste by 31 December 2024. These systems must be inclusive, involving both economic operators and public authorities, and designed to avoid trade barriers or

competitive distortions<sup>40</sup>. Additionally, extended producer responsibility (EPR) schemes for all packaging must be implemented by the same deadline to ensure producers bear financial and operational responsibility for waste management<sup>41</sup>. The directive prioritizes high-quality recycling and adherence to sector-specific standards. By 31 December 2020, the Commission is tasked with reviewing the feasibility of strengthening essential requirements, such as design for reuse and promoting high-quality recycling, which may result in new legislative proposals<sup>42</sup>. Moreover, the directive outlines rigorous reporting obligations for Member States, including the electronic submission of data and quality checks, to ensure transparency and accuracy. The Commission will evaluate and publish reports on data reliability and completeness<sup>43</sup>. These comprehensive measures are designed to enhance the management and recycling of packaging waste across the EU, thereby fostering environmental protection and sustainability<sup>44</sup>.

<sup>&</sup>lt;sup>40</sup> European Commission 2018

<sup>&</sup>lt;sup>41</sup> (OECD, 2016

<sup>&</sup>lt;sup>42</sup> European Commission. (2018). Directive 2018/852 amending Directive 94/62/EC on packaging and packaging waste.

<sup>&</sup>lt;sup>43</sup> (European Parliament, 2018

<sup>&</sup>lt;sup>44</sup> European Environment Agency 2013

## Chapter 2 - The European Union's legislation on waste

The EU's legal framework is made up of primary and secondary sources. Primary sources include intergovernmental agreements and related documents such as the Treaty on European Union (TEU), the Treaty on the Functioning of the European Union (TFEU) and the Charter of Fundamental Rights of the European Union. In addition, protocols, declarations accompanying the treaties and accession treaties of the new Member States are also considered primary sources. Amendments to these primary sources are made by new treaties, which must be ratified by all Member States. For example, the first Treaty of Rome was amended by several subsequent treaties: the Single European Act of 1987, the Maastricht Treaty of 1992, the Amsterdam Treaty of 1997, the Nice Treaty of 2000 and the Lisbon Treaty of 2009 (McCormick, 2011).

## 2.1 Environmental policy - legal basis

The founding of the European Union, was initiated through two very well-known acts of the European Community signed in 1957, known as the "Treaty of Rome<sup>345</sup> (or "Treaties of Rome"). The first establishing the European Economic Community (EEC) and the second establishing the European Atomic Energy Community (EURATOM)<sup>46</sup>, thus forming a common market based on the free movement of goods, persons, services and capital. Many changes were introduced, but in relation to the protection of the environment none were mentioned in the treaties<sup>47</sup>, as environmental protection was not an important topic on the political agenda at the time. As the construction of the current European Union changed, throughout the years following its creation, so did the goals and structure of the decision-making. From a set of Member States which enjoyed the benefits of a common market, to a community which shares foreign, security and home affairs issues and legal matters, through an intergovernmental decision-making process. This all was

<sup>&</sup>lt;sup>45</sup> <u>http://data.europa.eu/eli/treaty/teec/sign</u>

<sup>&</sup>lt;sup>46</sup> <u>https://www.affarieuropei.gov.it/en/legislation/the-treaties-of-</u>

rome/#:~:text=The%20%22Treaties%20of%20Rome%22%20were,Community%2C%20better%20known %20as%20EURATOM.

<sup>&</sup>lt;sup>47</sup> https://doi.org/10.1093/acprof:oso/9780198753926.003.0002 Langlet and Mahmoudi 2016

mainly changing after the adoption of the Single European Act in 1987<sup>48</sup>, with a more formal Community competence to enact laws and thus in several areas including environmental protection.<sup>49</sup>

#### 2.1.2.Legislative initiative of the EU institutions

The European Union (EU) has four main (key) institutions, which work closely together to define the EU agenda and initiate and co-ordinate the EU law-making process. They work closely together to define the EU agenda and initiate and co-ordinate the EU law-making process, and each with its own functions. These bodies are the European Commission (the Commission), the European Council, the Council of the European Union (the Council) and the European Parliament (EP). The main feature of the EU's unique decision-making system is known as the 'Community method', as it is based on a triangle of interaction and power between three autonomous institutions: the Commission, the European Parliament and the Council<sup>50</sup>. There the Commission has the monopoly to introduce legislative initiatives, supported as the basic principle in the Lisbon Treaty (TFEU), which gives the Commission a pre-existing legal position<sup>51</sup>. Prior to TEU, the power of legislative initiative was given to the Council or the European Council President<sup>52</sup>.

#### 2.1.3. Ordinary legislative procedure of legislative acts

A legal act is classified as an EU legislative act only if it is adopted on the basis of a Treaty provision that expressly refers to the ordinary or special legislative procedure<sup>53</sup>.

To determine the applicable legislative procedure, one has to refer to the specific Treaty article relevant to that area. The ordinary legislative procedure, outlined in Article 294 of the TFEU, is the standard method for EU legislation and has been extended to cover more areas than before, such as agriculture, services, asylum and immigration, structural and cohesion funds, and the

<sup>&</sup>lt;sup>48</sup> <u>http://data.europa.eu/eli/treaty/sea/sign</u>

<sup>&</sup>lt;sup>49</sup> Langlet and Mahmoudi 2016, Ch 1.

<sup>&</sup>lt;sup>50</sup> https://ec.europa.eu/commission/presscorner/detail/en/MEMO\_02\_102

<sup>&</sup>lt;sup>51</sup> Craig and de Búrca 2020a

<sup>52</sup> https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12016ME/TXT

<sup>53</sup> https://doi.org/10.1093/he/9780198856641.003.0006

creation of specialized courts. When considering and voting on a draft legislative act, the European Parliament and the Council have do so in a public session, which all member state representatives can join of course.

#### 2.1.4. Waste Management as a part of the environmental policymaking

The introduction of a wider policy framework that is focusing on sustainable consumption and production with later introduced climate goals, started through the so-called 'circular economy framework'. Even-though the notion of circularity began its appearance in EU legislation long before the term was introduced as such, as prevention and reuse have been repeating notions within the EU waste policy and law. The Circular Economy Package was later introduced within the framework of the EU Green Deal, along with the European Plastic Strategy. These were the key moments due to which the sustainability moved into the core of waste management policies in the European Union and its Member States. It is important to keep in mind that even if presented as such in the European Union legislation, it would not mean perfect implementation in the numerous MSs, as many have practiced different systems and application of waste management policies, even before their accession to the EU. Within the process of European Integration, just as Austria did in 1995, all MSs needed to adapt to the aquis in order to fulfil the requirements of the EU, but still it allowed for national transposition into the national reality.

The EU policy process presents a distinctive structure characterized by multiple access points for policy actors, in contrast to the more centralized policy-making systems of many member states. According to Richardson (2006) such unified and centralized policy systems can promote cohesion within policy communities, partly because all participants recognize the limited options for exercising influence elsewhere. However, this is not the case within the EU, where multiple venues are available to actors who may have lost out in any particular one. Even so, the EU policy process tends to alternate between periods of stability and episodes of significant institutional change, such nature of EU contributes to instability in actor relationships, where changes in institutional

structures, a frequent occurrence within the EU, can often lead to dramatic and long-lasting changes in policy outcomes especially in the respect of environmental policy, as suggested by Baumgartner and Jones (1991). This dynamic environment contrasts sharply with the more stable and predictable systems found in many member states, emphasizing the unique nature of the EU's policy-making landscape. Even so, policy coherence is essential to ensure that initiatives taken by different agencies do not have detrimental consequences on the state of waste generation and unsuitable management, in which way one can exploit the potential benefits, detrimental to the environment. This is why it is very important that many sectors of industry, business, social and others are aware of environmental and pollution policies.

## 2.2. The Circular Economy Package (CEP) – Strategy 2014 withdrawal

Recent changes have not only seen an increasing emphasis on re-use and recovery, but also on product design and construction that minimizes waste generation and facilitates the conversion of waste materials into new products<sup>54</sup>. Before adopting the 'Circular Economy Package' (see Figure 2) in 2015, the Commission introduced the 'Towards a Circular Economy in Europe' strategy in 2014. This strategy aimed to increase reuse and recycling of municipal waste to a minimum of 70% by 2030, while banning landfilling of recyclable and biodegradable waste by 2025 and promoting secondary raw materials. Despite opposition from the Council and European Parliament, this proposal was withdrawn under the new Commission, citing a need for better regulation but criticized by some for prioritizing business interests over environmental standards. The revised package adopted in 2015 set less ambitious targets, lowering the goal for preparing for reuse and recycling to 65% by 2030, a reduction from earlier proposals. Similarly, recycling targets saw a decrease, with the EU recycling rate targeted at 80% by 2030 in the original proposal reduced to more generalized goals. Directive (EU) 2018/852 later reinstated specific targets, including

<sup>&</sup>lt;sup>54</sup> Langlet and Mahmoudi, 2016

recycling rates and bans on landfilling of certain waste types, as part of ongoing efforts to transition to a circular economy framework supported by the Eco-design directive (Directive 2009/125/EC). Figure 2 - Circular Economy Model of EU -



Member State Implementation of CEP - Example of Austria

The Circular Economy Package (see figure 2), implemented through amendments to Austria's Waste Management Act 2002, sets ambitious targets for recycling and waste management by 2030 and 2035, take completely (1:1) from the Directive (EU) 2018/852. Specifically, it mandates that by 2030, total packaging recycling rates must reach 70%, with stringent targets for plastics (55%), wood (30%), ferrous metals (80%), aluminum (60%), glass (75%), and paper and cardboard (85%). Member States are also required to establish separate collection systems for textile waste by 2025 and ensure organic waste is either separately collected or composted by 2023. Furthermore, the legislation directs Member States to phase out landfilling of recoverable waste by 2030, except where landfilling remains the most environmentally sound option. The package emphasizes extended producer responsibility, making manufacturers accountable for managing their products' waste stages and financially contributing to recycling efforts. It also mandates that foreign

manufacturers of vehicles and batteries appoint representatives in Austria, similar to requirements for electrical appliances. These provisions reflect Austria's commitment to integrate EU circular economy principles into national legislation, promote sustainable resource use and reduce environmental impact. The requirements of the Directive are specified in Austria's Waste Management Act (AWG 2002) and in the 2014 amendments to the Packaging Ordinance.<sup>55</sup>

#### 2.2.1. Legal basis for waste management policy

The primary legal basis for the EU's environmental policy, thus the waste management policy, is grounded in the Article 192 (ex Article 175 TEC). This article sets in stone the legislative authority of the EU in adopting measures to protect and improve the quality of environment, thus waste management. Even so, in the Article 192 para 2 subpar (b), when considering which EU decision-making body would be the main legislator on waste management is explicitly excluded from being exempted from the actions of the European Parliament (EP) and the Council. Regarding waste management related policies, the EP and the Council need to act in line with the ordinary legislative procedure ,after referring to the Economic and Social Committee and the Committee of the Regions. Cooperation between the EP and the Council is required, as they are to decide what action should the European Union take to achieve objectives referred to in Article 191 (TFEU), through which the 'European Union would need to consider four different aspects when creating environmental policy. Such as:

- "available scientific and technical data,
- environmental conditions in the various regions of the Union,
- the potential benefits and costs of action or lack of action,

<sup>&</sup>lt;sup>55</sup> Kriwanek, AWG-Novelle Kreislaufwirtschaftspaket (25.9.2023, Lexis Briefings in lexis360.at)

- the economic and social development of the Union as a whole and the balanced development of its regions." <sup>56</sup>

Whereas the following Art. 193 introduced a quite important principle for Member States to possibly use more stringent regulation than required by EU-law<sup>57</sup>. According to the Art.193 TFEU, more stringent protective measures (MSPM) can be introduced or maintained by Member States (MSs) without prevention by the Art. 192 TFEU and its provisions, in all cases when measures are compatible with bot TEU and TFEU, and thus notified to the Commission. Even so, in practice Art. 193 cannot be as easily proven as applicable. In the Court case  $C-194/01^{58}$  can serve as an example. Austria hereby claimed that the Austrian national catalogue (Abfallverzeichnisverordnung Bgbl II 2003/570) on waste was better and that it is resulting in a more effective waste management, along with the protection of the environment. Which the Court dismissed and ruled that it is not in accordance with the European Waste Catalogue, as it has to be implemented in its entirety due to possible issues which can arise if such is not held obligatory for all MSs. This was one of many disputes in applying the terminology provided in the EU legislation throughout the years and decades. Harmonization of a waste management policy in the past proved to be a hard case of terminology implementation, ever since the European Waste Catalogue was introduced in the Commission Decision 94/3/EC, later and currently in-force being replaced by the Decision 200/532/EC.

## 2.3 Principles of Subsidiarity and Proportionality

Subsidiarity and proportionality are fundamental principles of the EU governance framework, clarifying the division of responsibilities between the European institutions and member states. According to Barnard (2022), subsidiarity is enshrined in Article 5 of the Treaty on European

 <sup>&</sup>lt;sup>56</sup> Consolidated Versions of The Treaty on European Union and The Treaty on The Functioning of The European Union. OJ *C 202, 7.6.2016, p. 1–388*, EN. <u>https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02016ME/TXT-20200301</u> Article 191(3) (ex Article 174 TEC)
<sup>57</sup> Weydemann 2021

<sup>&</sup>lt;sup>58</sup> Case C- 194/ 01 Commission of the European Communities v Republic of Austria ECLI:EU:C:2004:248,; <u>https://eur-lex.europa.eu/legal-content/FR/TXT/?uri=CELEX:62001CJ0194</u>

Union and reinforced by the Protocol (No. 2) on the application of the principles of subsidiarity and proportionality, as annexed to the Treaty on European Union and the Treaty on the Functioning of the European Union, establishes fundamental guidelines for EU decision-making processes.

Subsidiarity, originally formalized in the Maastricht Treaty, serves as a fortification against centralization of power and emphasizes decision-making at the level closest to citizens, while assessing whether action at the EU level can add significant value. Subsidiarity encompasses both substantive and procedural aspects. The substantive dimension is encapsulated in Article 5(3) TEU, which involves assessing the comparative efficiency of action at different levels of governance. Meanwhile, the procedural dimension, outlined in the Protocol (No.2), mandates consultations, justification for decisions, consideration and involvement of national parliaments' perspectives. This concept raises pivotal federalist concerns regarding the distribution of authority between constituent states and a central authority within a multi-layered system<sup>59</sup>. It aligns closely with principles of cooperative federalism, wherein the EU and Member States collaborate based on their respective capacities to effectively address specific tasks.

Proportionality, which complements subsidiarity, governs the scope and intensity of EU action. It is also rooted in Article 5 of the Treaty on European Union<sup>60</sup>, stating that EU measures must be appropriate to achieve their objectives, necessary because there are no less restrictive alternatives, and must be proportionate in the balance between potential burdens and benefits. Proportionality, which has developed through the case law of the European Court of Justice and legislative measures, serves as a safeguard against disproportionate EU interventions and ensures that regulatory measures are finely tailored to align closely with the intended objectives while minimizing unintended consequences.

<sup>&</sup>lt;sup>59</sup> https://www.oxfordlawtrove.com/display/10.1093/he/9780198856641.001.0001/he-9780198856641chapter-4

<sup>60</sup> http://data.europa.eu/eli/treaty/teu\_2012/oj

Both subsidiarity and proportionality represent the EU's commitment to effective governance and democratic legitimacy. Subsidiarity guides decisions by decentralizing power to the level closest to citizens and promotes accountability and responsiveness in decision-making. Proportionality, on the other hand, acts as a check on EU action and requires rigorous assessment of the necessity and impact of proposed measures. These interactions underscore the EU's distinctive governance model, characterized by a delicate balance between supranational powers and national sovereignty, which aims to optimize policy outcomes while maintaining the diversity and autonomy of member states. In the COM(2022)0677), the Euroepan Parliament in 2022, stressed that the draft legislative act proposed by the Commission did not comply with the priciple of subsidiarity. Showing that sometimes these notions are contested and not entirely as such in practice, as much as the treaties propose they would be.

#### 2.3.1 Interpretation of Directives

Regarding the requirements of the EU law, it should be noted that terms defined in EU law must be interpreted autonomously and uniformly throughout the EU in accordance with the Directives. This interpretation must be based on the case law of the Court of Justice of the EU. Therefore, the case law of the Court of Justice of the European Union (the Court) must be applied, while the court has a monopoly on the interpretation of EU law (Berl/Forster 2016). In cases when it is not possible to interpret the national term in accordance with the Directive, then the national term will be suspended due to the primacy of EU law. As in the context of European legislation, subsidiarity is not a possible option, as it refers to the principle that, the most appropriate level of governance, whether local, national or European, should be determined according to where the action can be implemented most effectively or where added value can be derived from EU action.

#### 2.3.2 Transposition of Directives into National law

Beginning with the identification of need and initial proposal, the process of Directive transposition progresses through consultations, subsidiarity checks by national parliaments, impact assessments, and reviews by the Council and European Parliament and sometimes the Committee

of Regions (CoR), culminating in formal adoption and transposition into national law, after which monitoring follows. This methodical approach of creation of legislative acts in the EU pictured in Graph 3, guarantees comprehensive consideration of stakeholder views and adherence to subsidiarity principles, fostering effective implementation across EU Member States.

Graph 3 – The policy-making process in EU (Directive)



Source: Author's Interpretation of the policy-making process defined in TFEU61

As stressed in the Court case C-194/01 Commission of the European Communities v Republic of Austria<sup>62</sup>, and discussed by Weydemann (2021) the obligation to ensure the full effectiveness of a directive cannot be interpreted as meaning that a Member State is free from transposition of the

<sup>&</sup>lt;sup>61</sup> https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12012E%2FTXT

<sup>&</sup>lt;sup>62</sup> Case C- 194/ 01 Commission of the European Communities v Republic of Austria ECLI:EU:C:2004:248, <u>https://eur-lex.europa.eu/legal-content/FR/TXT/?uri=CELEX:62001CJ0194.</u>

directive, even though it considers its national provisions 'better' to the Community provisions concerned, even if the existence of national rules may render transposition of the Directive unnecessary, they can only be relied upon if such rules ensure the full application of the Directive by the national authorities<sup>63</sup>. Which is why the Art. 193, is quite hard to implement and is a complex issue which would need separate research to be truly understood. In a non-related manner, but relatable to the question of more stringent measures, Austria has been an example of such a country, especially when it came to its waste management policies and laws, in comparison with the EU and most member states.

In an interview, with a public official in the Austrian Federal Ministry of Environment<sup>64</sup>, stated that as for rules implemented in waste management, Austria has had clearly stricter national rules than the EU, which has not been an issue in the past as most of regulation coming from the EU have been in forms of directives, but with the upcoming packaging regulation which has been proposed as an amendment to the Directive originating from 1994 it is an issue, only to the binding nature of a regulation. As when transposing it to national legislation and analyzing the regulation nationally member states need to search for what falls under the regulation and what not, meaning that, if a state would like to reach some of its national goals, even if they are stricter than EU is imposing, only what is not covered (regulated) in the EU regulation, can be nationally regulated.<sup>65</sup>

This phenomena or nature of regulations in the EU has been contested many times, and as argued in the section mentioning the Art. 192 of TFEU, it is officially possible to have more stringent measures, but not always in practice, as seen in the Court case C-194/01. One of the main reasons behind can be the need for harmonization of all EU member state policies, which has been the underlined and most prominent feature of the recent policymaking in the EU<sup>66</sup> when it comes to

<sup>63</sup> https://www.maastrichtuniversity.nl/sites/default/files/2023-03/master\_thesis\_weydemann.pdf

<sup>&</sup>lt;sup>64</sup> Interview, 27<sup>th</sup> of May 2024, with a public official of the Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology of the Republic of Austria (anonymized).

<sup>&</sup>lt;sup>65</sup> Paragraph selected refers to the above-mentioned interview, led on the 31<sup>st</sup> of May 2024.

<sup>66</sup> Example - P9\_TA(2024)0318

general policies regulating single-use plastic and packaging waste. Even if as such, harmonization has been the core feature of many policy fields in the European Union, as from its beginnings the need for a single internal market, highlighted in the Single Market Act, would not have been allowed for if interstate relations did not overlap with common policies.

#### EU participation of local the level example of City of Vienna

As an example of EU policy implementation to a Member State, in the interview with a public waste management official of the City of Vienna, I was given information that currently on the EU level the 2008 Waste Framework Directive is being revised and thus the representatives of the City of Vienna included in the process. Meaning that local and regional levels, are well informed on upcoming policies, where they have an opportunity from the start to work on such documents together with other Member State authorities. The City of Vienna and various Austrian interest groups, they represent the interests of the Viennese and Austrian reality. Meaning that they are usually involved in some of the discussions in advance, before a draft of a legislation is even drafted or before the implementation of provisions for directives or regulations are implemented. This is usually done through established networks, such as the Joint Research Center, which works out many things in advance for the European Commission, if there is any need for support, the City of Vienna can be invited in a working group there. Information on current developments in the European Union is shared with the City of Vienna through well connected European organizations in Brussels, which are also well connected with the Commission, such as the Municipal Waste Europe or Eurocities. A national position is discussed and worked on in national working groups, where strategic meetings of different institutions are led, with additionally a liaison office for the nine provinces in Austria called the 'The Austrian Association of Cities and Towns'67 (further referred to as the Association of Cities), where Austrian cities and towns can discuss matters on a regional level between provinces. Here they usually provide each other with information on how

<sup>67</sup> Städtebund, short for ,Der Österreichische Städtebund'

these respective provinces<sup>68</sup> commented on the EU legislation being proposed. Also, as some environmental questions need to be disucssed on the national level officially, a meeting with the minister of the environment<sup>69</sup> happens annually, which allows for an open discussion on the province level to be transferred onto the national, allowing for well fitted feedback to show representation and functionality.<sup>70</sup>

Such an exchange at the Austrian level, shows an exchange of opinions and information, and a great deal of transparency. Relationship and communication by such groups, is held also on the European level, as one of staff members of the Secretariat of the Association of Cities is present at the Austrian office in Brussels, which takes part in meetings of the Committee of the Regions of the EU, where City of Vienna is well represented, as well as in meetings of the Congress of Local and Regional Authorities of Europe (Congress) at the Council of Europe<sup>71</sup>. It is to conclude that while being very active on the national level, City of Vienna has good connections to the ministry of Environment and the European level and is well included in the decision-making taking place in the EU. Where the contact concluded that it was a good thing that they, as City of Vienna, reached through their opinion and through their positioning in early stages. In relation to upcoming regulation on textiles, the contact noted that their representation and collaboration with the EU has been fairly successful, especially when it comes to textiles.<sup>72</sup>

#### 2.4 Harmonization of Environmental Policy

A harmonized legal order represents a condition for membership in the EU, as the Member States and candidate countries legislators have to bring domestic law in complete conformity with the EU law. Harmonization of policy within the Members States (MSs), ensures the functioning of the

<sup>68</sup> GER. Bundesländer

<sup>&</sup>lt;sup>69</sup> Ländesumweltreferendumkonferenz

<sup>&</sup>lt;sup>70</sup> This paragraph was derived from an interview led on 10<sup>th</sup> of May 2024, with a City of Vienna's public officer in the field of waste management (anonymized version).

<sup>&</sup>lt;sup>71</sup> <u>https://www.staedtebund.gv.at/spezielle-elemente/the-austrian-association-of-cities-and-towns-der-oesterreichische-staedtebund/</u>

<sup>&</sup>lt;sup>72</sup> This paragraph was been partially derived from an interview led on 10<sup>th</sup> of May 2024, with a City of Vienna's public officer in the field of waste management (anonymized version).

internal market, as significant differences can usually be observed as stressed by Langlet and Mahmoudi (2016), especially important for this paper, when observing views of the member states on the importance and function of the environmental legislation. The difficulty of implementation of environmental legislation was specifically expressed by the Commission<sup>73</sup>, as it recognized that the aquis, needs to be applied to various natural conditions, varying among national and regional administrative arrangements. The additional communication supplemented in 2012<sup>74</sup>, stressed the importance of proper policy implementation, but also several negative consequences in lack of it which harm the environment and human health and create regulatory uncertainty for industry, calling into question the level playing field of the single market. As costs of prevention can be higher than the long-term remediation costs (e.g. cleaning up illegal waste disposal sites) in cases of improper or late policy implementation.

In a general scope of things, it is important to note as well, that excessive regulations can often lead to 'overregulation', resulting in significant costs for both the affected groups and the authorities responsible for policy enforcement (Baldwin & Cave, 1999). In such cases, a more adaptable approach to implementation, recognizing the diversity within the target group and allowing flexibility for both regulators and those being regulated, proves more effective (Steinebach, 2022). This pragmatic approach to implementation appears more feasible in countries where public administration traditionally focuses on managing public policies rather than strictly enforcing them, as discussed in the Europeization theory of policy and polity (Steinebach, 2022).

#### 2.4.1. Policy Effectiveness of environmental policy measures

The meaning of policy effectiveness can be evaluated by assessing how well environmental policy measures (policy outcomes) contribute to improving environmental conditions (results). A policy can be considered effective if there is a significant relationship between policy achievements and

<sup>&</sup>lt;sup>73</sup> Communication from the Commission on implementing European Community Environmental Law (18 November 2008) COM (2008) 773 final. <u>https://eur-</u>

lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0773:FIN:EN:PDF

<sup>&</sup>lt;sup>74</sup> COM/2012/095 final https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52012DC0095

outcomes, demonstrating a positive impact on environmental quality. Policy outcomes are the direct consequences of decision-making processes. For instance, the implementation of new environmental programs or regulations setting standards for waste incineration and air quality exemplifies policy outcomes. Correspondingly, changes in biodiversity levels or pollutant concentrations in the air represent results. The degree of effectiveness depends on the magnitude of these results, which is why policy evaluation is thus a central element used to help policymakers make informed decisions by putting the best available data at the center of policy formulation and implementation<sup>75</sup>. Embedded in a country's legal, administrative, and cultural systems, administrative traditions constantly reaffirmed by the daily activities of public officials<sup>76</sup>, as they represent the relatively stable features of a bureaucracy that determine the organization of policymaking and implementation in a national context<sup>77</sup>.

#### 2.5. Financial responsibility

The Polluter Pays Principle (PPP) was introduced by the OECD in 1972<sup>78</sup> as an economic principle, which would allocate the costs of pollution prevention and control measures mandated by public authorities to the polluter. This legally binding principle serves as a crucial policy tool for curbing pollution and restoring environmental quality by holding polluters financially responsible for the damage they cause. It internalizes the costs of pollution, which are reflected in the prices of goods and services, thus encouraging consumers to opt for less polluting alternatives. The 1992 United Nations Rio Declaration enshrined PPP as one of its 27 guiding principles for sustainable development. Whereas the European Union was quite progressive as it adopted PPP for the first time in its 1973 Program of Action on the Environment<sup>79</sup>, followed two years later by Recommendation 75/436, concerning cost allocation and public authority actions, and in the

<sup>&</sup>lt;sup>75</sup> Howlett et al. 2009; Head 2016; Adam, Steinebach and Knill, 2018

<sup>&</sup>lt;sup>76</sup> Dyson 2010; Steinebach, 2022

<sup>&</sup>lt;sup>77</sup> Steinebach, 2022

<sup>&</sup>lt;sup>78</sup>https://one.oecd.org/document/OCDE/GD(92)81/En/pdf#:~:text=Under%20the%201972%20and%2019 74,is%20in%20an%20acceptable%20state%22.

<sup>&</sup>lt;sup>79</sup> Official Journal No C 112 of 20.12.1973

Single European Act<sup>80</sup>, signed in 1986. These foundational steps enabled the EU to implement policies like Extended Producer Responsibility (EPR), reinforcing the principles of PPP to enhance environmental protection and promote sustainable waste management practices.

#### 2.5.1 Extended Producer Responsibility (EPR)

Extended Producer Responsibility (EPR) is a policy tool and an environmental protection strategy to achieve a decrease in the environmental impacts by making the manufacturers of products responsible for the products throughout its entire life cycle, especially during the 'afterlife' of products and packaging, when they are ready for their recycling and/or final disposal. Thomas Lindquist founded the idea of EPR in 1980s, on the principle that a manufacturer's responsibility lies also in the environmental impact of their products and packaging, extending it beyond the point of sale and consumption. He says, in an interview with the Packaging Insights on Feb 2023<sup>81</sup>, that he was the one who wrote the idea and gave it a name, but that the idea was somewhat present in some Western European societies, including Germany, the Netherlands, Scandinavia, Austria and Switzerland. He states further that municipalities should not have to pay for waste management, but that producers should pay as well as the consumers which buy the product.

In general, some producers and manufactures of products, cannot see waste produced as their responsibility, mainly to the additional costs such responsibility would incline, but the EPR shouldn't just be about who pays for recycling and how to optimize it. The impacts of packaging waste are about more than whether packaging ends up in a landfill or a recycling facility or as litter. The impacts of relying on single-use packaging can be greatly minimized by developing new reuse/refill systems for delivering the same products to consumers. Similarly, reducing unnecessary packaging where practical can have a huge impact on the overall environmental footprint of product delivery. In the European Union, the EPR scheme was explicitly first introduced in Union

<sup>&</sup>lt;sup>80</sup> OJ L 169, 29.6.1987, p. 29–29

<sup>&</sup>lt;sup>81</sup> <u>https://www.packaginginsights.com/news/thomas-lindquist-the-inventor-of-epr-reflects-on-33-years-of-failure-and-future-prospects-for-recovery.html</u>

legislature on waste<sup>82</sup> in the Waste Framework Directive (Directive 2008/98/EC), even though it was included much early on within the polluter pays principle. Here EPR would be a means of supporting the design and production of goods which:

"take into full account and facilitate the efficient use of resources during their whole life-cycle including their repair, re-use, disassembly and recycling without compromising the free circulation of goods on the internal market."<sup>83</sup>

#### 2.5.1.1 EPR - Policy Instruments

Extended Producer Responsibility (EPR) employs four key policy instruments: product take-back requirements, economic incentives, regulations, and information-based measures<sup>84</sup>. Product take-back mandates require producers or retailers to manage end-of-life products, while economic tools like deposit-refund systems and advanced disposal fees incentivize recycling. Regulatory standards, such as recycled content requirements, and information-based tools, like labeling, further support EPR goals. These integrated approaches enforce producer accountability and promote sustainable waste management. However, EPR systems have had limited impact on product design improvements, necessitating eco-tax modulation and incentives for circular packaging and reusable systems. These integrated approaches aim to enforce producer accountability throughout the product lifecycle, fostering sustainable waste collection but not improved product design, necessitating eco-tax modulation and incentives for circular packaging and reusable business models.<sup>86</sup>

<sup>&</sup>lt;sup>82</sup> To note: Not including specific streams of waste e.g. WEEE and legislative documents thereof.

<sup>&</sup>lt;sup>83</sup> https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0098

<sup>&</sup>lt;sup>84</sup> https://www.oecd-ilibrary.org/environment/extended-producer-responsibility\_9789264256385-en OECD, 2016

<sup>&</sup>lt;sup>85</sup> Ibid.

<sup>&</sup>lt;sup>86</sup> <u>https://zerowasteeurope.eu/wp-content/uploads/2022/05/ZWE\_-Creating-a-policy-framework-to-support-the-transition-to-reuse.pdf</u>

## 2.5.2 Single-Use plastics Directive (SUP)

In the Single-Use Plastics Direcitve (EU) 2019/904, the main goals is proportion of circualrity and sustainability of reusable packaging, whilst being non-toxic. The need for reusable systems for single-use items and tackaling of single-use packaging waste, is a undelined with the decrease of waste streams, coined in the Waste Framwork Directive (2008/96/EC). Other EU legislation important for such packaging - Directives 2008/98/EC, 2000/59/EC, 2000/60/EC and 2008/56/EC, (EU) 2015/720, and Council Regulation (EC) No. 1224/2009 (10).

#### Graph 4 - Marine plastic pollution

Marine li	tter	
85% Plasti	c	
65% PPSI	Plastic packaging and small non-packaging plastic items	
50% SUP	Single use plastic	

Single-use plastic products are a significant burden on the environment and on resources, mainly because of the negative influences of the great amounts of single-use packaging put onto the environment, amounting to 50% of marine litter, that in general is taken up by plastic waste with a very high amount of 85% of all Marine Waste<sup>88</sup> (see Graph 4) stressed in the SUP Directive's

202387

<sup>&</sup>lt;sup>87</sup> <u>https://www.eea.europa.eu/publications/european-marine-litter-assessment/human-needs-the-</u> <u>drivers-of</u>

<sup>&</sup>lt;sup>88</sup> <u>https://www.eionet.europa.eu/etcs/etc-icm/products/etc-icm-reports/etc-icm-report-6-2022-marine-litter-watch-mlw-2021-european-beach-litter-assessment</u>

Article 5<sup>89</sup>. All as marine pollution is mainly caused by land-based activities (85%), such as daily life, food production, and industrial activities, which then generate a significant amount of plastic waste. The remaining 20% comes from maritime activities like coastal tourism, fishing, and shipping, with some shipping waste not being disposed of properly, potentially even being dumped into the ocean illegally.

<sup>&</sup>lt;sup>89</sup> Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment.

## Chapter 3 Policy and Legislation in Austria

Waste and management thereof in Austria has thus long only been considered in only one article in the whole body of the federal constitution, B-VG - Federal Constitutional Law, Art 10 para 1 subpara 12:

"(...) waste management with regard to hazardous waste, with regard to other waste only insofar as there is a need for the enactment of uniform regulations; from which it is undisputed that waste management is a legitimate state task"<sup>i</sup>

Hereby, undisputed that waste management is a legitimate state task in connection with the division of competences between the federal and state governments <sup>90</sup>, formally recognized in the 1988 constitutional amendment (BGBl 1988/685), whereas previously it was only mentioned in the annexes of the B-VG. For Austria to reach the primary principles and objectives for waste management (AWG Art. 1) of sustainability and prevention of waste, a Waste Hierarchy was included in the Waste Management Act (Abfallwirtschaftgesetz, AWG) in the amnendment of the law in 2011 (BGBl 2011/9, §1 Para 2 and 2a). It completely follows in defining the waste hierarchy (see Figure 1) proposed in the Directive 2008/98/EC on waste and repealing certain Directives, where the goals are: 1. Prevention; 2. Preparation for re-use; 3. Recycling; 4. Other recovery, e.g. energy recovery; and 5. Disposal. In the order of preference 1-5, and in the Figure 1, from least to most preferred 5 to 1. Disposal is considered as the least preferred outcome, as it is the most detrimental to the environment, due to the implications laid down in the Landfill Directive (EU) 2018/850<sup>91</sup> (initially Directive 1999/31/EC), which aims to specify measures, procedures, and guidelines to prevent or minimize adverse environmental impacts by progressively reducing the landfill of waste, especially waste suitable for recycling or other recovery. The implementation of the Landfill Directive has not been conformed with well by the MSs, as they have been given a

<sup>&</sup>lt;sup>90</sup> Bergthaler and Wolfsllehner 2004

<sup>91</sup> https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L0850

playing feeling of avoiding a uniform implementation of the rules in the European Union, with yearlong exceptions<sup>92</sup>.

#### 3.1 Definition of Waste and Directive Changes

The first Waste Framework Directive, adopted in 1975 by the European Economic Community (EEC), defined "waste" and established the foundation of EU waste legislation. Initially, it considered waste as any substance the holder disposes of according to national law (Council Directive 75/442/EEC)<sup>93</sup>. The definition was later amended in Directive 91/156/EEC<sup>94</sup> to include substances listed in an annex, and the European Waste Catalogue (see 1.1.1) was introduced in Decision 94/3/EC (amended 2000/532/EC); the original directive was ultimately replaced by the 2008 Waste Framework Directive.

#### 3.2 The 2008 Waste Framework Directive

The general directive on waste, Directive 2008/96/EC (so-called 'Waste Framework Directive', 'WFD') has been the legal basis for many legislative acts on EU, but also of national legislation. In the Waste Directive 2008, after the Art 4, which introduced the Waste Hierarchy (see Figure 2), following Article 5 'By-Products', it was distinguished between by-products and waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product was certain and can meet all industrial processes, legal environmental and health requirements. The WFD, sets specific conditions that need to be fulfilled for a substance or object, which is a secondary result of a production process (where the main goal isn't to produce that substance or object), to be classified as a by-product rather than waste. between by-products and waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through the life cycle of waste in cases where 'further use' of the product waste or object', to be classified as a by-product rather than waste. between by-products and waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product was

<sup>&</sup>lt;sup>92</sup> 10.05.2024, Interview, public official , City of Vienna.

<sup>93</sup> http://data.europa.eu/eli/dir/1975/442/oj

<sup>94</sup> http://data.europa.eu/eli/dir/1975/442/1991-03-25



certain and can meet between by-products and waste through setting a basis of continuing the life cycle of waste in cases where 'further use' of the product was certain and can meet all industrial processes, legal environmental and health requirements. The WFD, sets specific conditions that need to be fulfilled for a substance or object, which is a secondary result of a production process (where the main goal isn't to produce that substance or object), to be classified as a by-product rather than waste. This helps in determining the appropriate handling and regulation of such materials. The Article 5 of WFD, coined in the '94 Directive, which then only stated that "Member States may encourage reuse systems of packaging, which can be reused in an environmentally sound manner, in conformity with the Treaty", thus being the Treaty establishing the European Community (TEC), particularly the Article 100a<sup>96</sup> (now Article 95 TFEU). Change of this motion

<sup>&</sup>lt;sup>95</sup> The European Commission's pictogram was used as an inspiration:

https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive\_en <sup>96</sup> http://data.europa.eu/eli/treaty/tec\_2002/art\_95/oj

in implementing a more rigorous regulation took the EU twenty-four years to implement, as the current version of it amended in 2018 (the Circular Economy Package) legally obliges Member States to take measures of not just merely encouraging the reuse of packaging, in line with the Waste Hierarchy established in 2008/98/EC, made in a conformity with the TEC and Article 175 (now Article 192 TFEU)<sup>97</sup>. An example of recovery, energy recovery in landfills showcases how less benefitial it is than the corresponding benefit from material recovery, where the avoided emissions from recycling constitute almost 75% of the total avoided emissions<sup>98</sup>. That is why recycling is the main cause of the rapid decrease in net life-cycle GHG emissions from municipal waste management.

#### 3.3. Regulation of Waste Collection - Austria

Collection is ultimately left to the Member States as a part of their EU policy implementation, as such in the national system of Austria, the implementing bodies have jurisdiction in all nine provinces (federal states) but are given general laws and rules on how such should be organized by the federal laws. First laws on management of waste started in 1970s, which focused on hazardous wastes<sup>99</sup>. The first law on waste in general, used German law as guidance and as such was published in 1990 as the first Waste Management Act<sup>100</sup> (AWG 1990). It introduced various notions for prevention and asked for a creation of responsible actors in facilitation of the rules introduced, where the product needed to be observed starting with the production, the handling of waste all up until to the exporting<sup>101</sup>. Originally, this law was introduced as the Federal Act of 6 June 1990 on the Prevention and Treatment of Waste, which amended the Chemicals Act, BGBI.

<sup>&</sup>lt;sup>97</sup> Consolidated Versions of The Treaty on European Union and The Treaty on The Functioning of The European Union. OJ C 202, 7.6.2016, p. 1–388, EN. <u>https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02016ME/TXT-20200301</u> Article 192 (ex Article 175 TEC)

<sup>&</sup>lt;sup>98</sup> European Environment Agency 2013

<sup>&</sup>lt;sup>99</sup> Interview, 27.05.24, Contact in the Ministry of Environment.

<sup>&</sup>lt;sup>100</sup> Abfallwirtschaftsgesetz 1990

<sup>&</sup>lt;sup>101</sup> Ibid.

No. 326/1987, later it changed its name to AWG<sup>102</sup>. In the waste management system was redone and restructured when it was re-introduced in 2002<sup>103</sup>, as the regulation within all the provinces was harmonized, as beforehand provinces were the decision-makers. It behaves as a basis for all new regulations and provisions introduced in the Austrian system of managing waste. One important feature of the renewed law was that in 2002, Austria<sup>104</sup> introduced a measure that all what is implemented from the EU side is done at the federal level. Which was done to make the process easier and faster, while beforehand confirmed and done in agreement with all nine provinces. Meaning that EU policy implementation is the jurisdiction of the federal level in Austria<sup>105</sup>. On the other hand, in Austria the actual handling of waste, is given as a jurisdiction to the provinces and can be seen through their provincial management plans. Mainly in all provinces all plans can be found on provincial websites, but there is no central comparative system available on checking the differences and their consistency. Even so, I was able to only receive the most current version of such a plan, from a province other than Vienna, when contacting/emailing various responsibles of other provinces, e.g. Burgenland.

#### 3.3.1 Position of producers in Austria - EPR

Definition of producers was provided for in the Waste Management Act (AWG 2002) and followed in the Packaging Ordinance 2014 Art 16c (latest change in 2021). In the AWG 2002 Art 13g, the producers are seen as the primary responsible parties, and thus are defined as:

- I. Manufacturers and importers of service packaging
- II. Packers with their registered office or branch office in the local area of application of this federal law

<sup>&</sup>lt;sup>102</sup>https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=100106 15&FassungVom=2000-12-31

<sup>&</sup>lt;sup>103</sup> Abfallwirtschaftsgesetz 2002, BGBI I 2002/102 idF

<sup>&</sup>lt;sup>104</sup> Interview, 27.05.24, Contact in the Ministry of Environment.

<sup>&</sup>lt;sup>105</sup> Ibid.

- III. Importers with their registered office or branch office in the local area of application of the AWG, with regard to the packaging of their imported goods and merchandise<sup>ii</sup>
- IV. Own importers with their registered office or branch office in the local area of application of this federal law with regard to the packaging of goods or commodities that are purchased from abroad for the distribution of their own company and that are generated as waste by the companies, and
- V. Mail order companies that have no registered office or place of business within the territorial scope of this Oral Law and that transfer packaging or goods or goods in packaging in Austria to a private final consumer in the context of distance selling within the meaning of Article 5a KSchG<sup>106</sup>.

Where according to the Art. 13g 2, the primary obligated parties pursuant to above mentioned<sup>107</sup> paragraph 1, need to participate in a collection and recovery system for household packaging or commercial packaging authorized pursuant to § 29 et seq. for the packaging they put into circulation. Which makes them the main responsible for the waste packaging they produced and/or imported. In regard to Packaging Ordinance Art. 16c.

#### 3.3.2 Waste recycling in Austria

Austria has been recently recognized as the world's best country for recycling of municipal waste, according to a new study by Reloop and Eunomia Research and Consulting, followed by Wales, Taiwan, Germany and Belgium as the next top five out of the 48 countries ranked by the 2023 report. Even so, these world's leading recyclers do not recycle more than 60% of their general waste, with Austria reportedly having a 62,5% recycling rate of municipal waste, but after the change between the reported and adjusted recycling rate, it came down to 59%, thus Austria taking the place of the best performing one. These results highlight the importance of long-term

<sup>&</sup>lt;sup>106</sup> https://www.jusline.at/gesetz/kschg/paragraf/5a

<sup>&</sup>lt;sup>107</sup> Translated by DeepL.com without edits.

investments to make recycling convenient and efficient and emphasize the role of establishing long-standing codes of conduct in creating a strong recycling culture. <sup>108</sup> With future plans in Austria, in reaching the recycling target of 50% by 2030, has developed an interim plan of 80-80-80. Meaning that the collection of plastic packaging would need to reach 80%, sorting 80% and Recycling 80%, in order to by 2030, have the recycling rate one percent higher than the introduced by the Cirular Economy Package in 2018. This will be fullfilled most certainly<sup>109</sup>, as a new and very 'modern' sorting facility has been built in Upper Austria in Ennshafen, by three companies – ARA<sup>110</sup>, Bernegger and the Green Dot. In here, it is planned for a half of Austrian light packaging to be sorted into 20 different fractions of plastic and packaging.

#### 3.3.3 Collection systems in Vienna

The main collection and sorting system 'private entity' which workis in collaboration with the city of Vienna is ARA that fiances this process through licence fees, towards producers. Such rules are underpinned in the Austrian Packaging Ordinance (BGBl II 2014/184 idF). In Austria there are five different systems such as ARA, which all function on the priciple of free commpetiton, and lottery system, where every five years a region can choose which system gets their collection system. As good as it sounds, this is not that simple, as e.g. Vienna, a the most populated province cannot that easily change, due to it having a bigger imapet on them, then when compared to smaller provinces, which would not have to change the way they work with packaging producers every 6 years, as such systems do not have a cohesive method of collection.<sup>111</sup> Main respossible in the City of Vienna is the MA48, which controls the decision-making and represents the municipality in nationa, regional and state matters. Thus, when it comes to collection decision-making collaborating with ARA.

<sup>&</sup>lt;sup>108</sup> <u>https://www.packaginginsights.com/news/western-preponderance-european-countries-score-best-in-packaging-material-recycling.html</u>

<sup>&</sup>lt;sup>109</sup> 27.05.2024, Interview with a contact from a Federal Ministry .

<sup>&</sup>lt;sup>110</sup> Altstoff Recycling Austria, <u>https://www.ara.at/</u>.

<sup>&</sup>lt;sup>111</sup> Information of this paragraph derived from a mix of Interviews.

#### 3.3.3.1.Collection of plastic and packaging waste

In the Austrian legislation the current basis for handling plastic and packaging waste is tackled by the AWG 2002 and the Packaging Ordinance introduced in 2014<sup>112</sup>. The Packaging Ordinance is supported by the Union law, as it acts as a legal implementation of EU aquis concerning packaging and plastics. Some of which include<sup>113</sup>: Directive 94/62/EC on packaging and packaging waste, along with its amendments in 2004, 2013 and 2018; the 2018 amandment (Directive (EU) 2018/851) of the Directive 2008/98/EC (Waste Framework Directive); Commission Implementing Decision (EU) 2019/665 and the Directive (EU) 2019/904.

In 2021, the Waste Management Act (AWG 2002) was significantly changed due to the influence of the amendment in 2018 of the Directive '94 (Directive 94/??/EC). Where the adaptation of the Austrian Federal Law on waste management was named AWG Amendment Circular Economy Package (BGBl I 200/2021)<sup>114</sup>. The main influence of this amendment for e.g. single-use plastic packaging, was the introduction of the legal obligation for a Deposit-Return System (DRS), with a concrete starting date on the 1st of January 2025. The items which can be deposited according to §14c para 1, are single-use beverage packaging and metal cans. A unified collection of packaging waste not just bottles and metals separately collected, was implemented starting of 2023 in Vienna. Such as system will be implemented next year in the entire Austria<sup>115</sup>, thus harmonizing the plastic packaging together with the Deposit (DRS) system which will also commence with the start of 2025.

## 3.4 DRS – Deposit scheme

Deposit schemes have a number of advantages. There is a financial incentive to return bottles and cans to collection points, which reduces the tendency to litter, and consumers are reimbursed for

<sup>&</sup>lt;sup>112</sup> Verpackungsverordnung 2014, BGBl II 2014/184 idF, BGBl II 2021/597, BGBl 2023/284

<sup>&</sup>lt;sup>113</sup> See BGBl 2023/284 Art. 23

<sup>&</sup>lt;sup>114</sup> https://360.lexisnexis.at/d/b\_bgbl\_2021\_2021\_l\_200\_a8c4357ad4?origin=lk

<sup>&</sup>lt;sup>115</sup> 31.05.2024, Interview with a policy officer, city of Vienna.

part of the deposit charged when importing/cooking beverage containers. Recycling is encouraged and secondary raw materials are maintained in the system. In addition, the system promotes highquality closed-loop recycling and enables the use of food-grade recycled materials<sup>116</sup>. The introduction of a deposit system promotes recycling infrastructure and has beneficial effects on waste management in general. In many cases, the system applies to both disposable and multipleuse beverage packaging, and in a circular economy, multiple-use should preferably be prioritized when it is the most environmentally friendly option. For a deposit system to work, it is essential that it is visible and that return facilities are varied and accessible to make it easier for consumers to use the deposit system.

#### 3.4.1 Single-use Plastic Packaging (Einwegkunststoff-Verpackungen)

When it comes to plastic waste, policy-makers generally regulate the use of certain polymers and other chemicals, or certain uses of plastics, because these measures are effective, cost-efficient and generally gain public support easily. For example, banning or taxing the use of single-use bags in France, Rwanda, the UK and Austria led to a rapid reduction in their use, as most paper bags were already available and consumers got into the habit of bringing their own reusable bags<sup>117</sup>. Single-use plastic products (SUPs) are used once, or for a short period of time, before being thrown away<sup>118</sup>. In the EU efforts are underway to reduce the consumption of single-use plastics, increase recycling rates, and promote sustainable alternatives. Member States areworking towards meeting the specific targets set out in the Directive (EU) 2019/904 (SUP Directive), such as the separate collection target for plastic bottles and the incorporation of recycled plastic in beverage bottles.

<sup>&</sup>lt;sup>116</sup>https://www.umweltbundesamt.de/sites/default/files/medien/2546/dokumente/170526\_epa\_network \_recommendations\_towards\_the\_eu\_plastics\_strategy.pdf

<sup>117</sup> https://www.science.org/doi/full/10.1126/science.aao6749

<sup>118</sup> https://environment.ec.europa.eu/topics/plastics/single-use-

plastics\_en#:~:text=Single%2Duse%20plastic%20products%20(SUPs,time%2C%20before%20being%20 thrown%20away.

#### 3.4.2 Example of Austria – DRS targets

Due to this Directive and the Circular Economy Package, the Austrian government decided to implement the shared targets in 2021. This process, was lately the longest one that took place in Austria to implement an act such as that. The published Directive, needed to bring these provisions given in the 2018 amndment of the Directive '94 by 5th of July 2020, but due to issues political nature, Austrian elections and change of government, the implementation took longer than foreseen. The requirements of the SUP Directive are enshrined in the Austrian Waste Management Act (AWG 2002) and in the 2014 amendment to the Packaging Ordinance.<sup>119</sup>

#### Aarhus Convention – public participation

The 1998 Aarhus Convention is a multilateral environmental agreement to which the European Union and all EU member states are parties to, which offers access to public participation in environmental decision making. Through it, the public is guaranteed three rights: 1st - public participation in environmental decision-making, 2nd - access to environmental information held by public authorities (such as on the state of the environment or its effects on human health), and 3rd - access to justice if the other two rights are not respected. These rights are enshrined in EU law through two important directives, 2003/4/EC and 2003/35/EC.EU Stance and Legislation on plastic waste (European Plastics Strategy).

<sup>&</sup>lt;sup>119</sup> Kriwanek, AWG-Novelle Kreislaufwirtschaftspaket (25.9.2023, Lexis Briefings in lexis360.at)

# 4. Relation to the European Green Deal – the stance of EU

The European Green Deal was presented in a Commission's communication (COM(2019) 640 final) which acts as "a roadmap for making the EU's economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all"<sup>120</sup>. This political ambition of the Commission was turned into a set of proposals and policies which are set out with a clear vision and steps of "making Europe the first climate neutral conitinent in the world"<sup>121</sup> until 2050 and a reduction of emmissions at least 55% compared to 1990 levels of greenhouse gas (GHG) emmissions by 2030. It covers many different sectors and industries, from transport, energy, agriculture, to intensive sectors such as textiles, construction, electronics and plastics<sup>122</sup>.

While the green deal encompasses the plethora of legislation and plans which aim to lead the Union towards a more sustainable path and future.

As it has been a wide-spread issue, landfilling targets proposed in directives, have not been met by most Member States<sup>123</sup>, but with an example of Austria and implementation to of policy to its national level, the 2008 landfill ordinance on banning landfills (Article 7) has produced immensely good results. As seen on my field visit to the landfill Rautenweg in Vienna, the odour, which is mostly associated with landfills, is close to non-existent (note that visit was in springtime) and that did the way it was built was quite well pre-planned, in

<sup>&</sup>lt;sup>120</sup> <u>https://ec.europa.eu/commission/presscorner/detail/en/ip\_19\_6691</u>

 <sup>&</sup>lt;sup>121</sup> <u>https://ec.europa.eu/commission/presscorner/detail/en/fs\_21\_3688</u> (EGD brochure)
<sup>122</sup> <u>https://eur-lex.europa.eu/legal-</u>

content/EN/TXT/?uri=CELEX:52019DC0640#document2 COM(2019) 640 final

<sup>&</sup>lt;sup>123</sup> 10.05.2024, Interview, public official on waste management, City of Vienna.

regard to highest environmental considerations, that the groundwater beneath the protective layer has not experienced leakage. The Donaukanal is also one of the waterways, through which cleaned wastewater from this very landfill is let out in the water stream. From the leader of the landfill, information given was that it is not harmful to the environment, but that as it is a saltwater, it cannot be used to irrigate the neighbouring area, thus that is the reason for its release in the public canal.

Prevention in Austria is encompassed in the Austrian Waste Prevention Programme 2023of the Federal Government's Waste Management Plan 2023 Part 3<sup>124</sup> from 2023. It is rooted in the goal of **ensuring environmental and human health protection** and decoupling economic growth from the environmental impacts associated with waste generation. Layed down in Article 4 of the Directive (EU) 2019/904, consumption reduction regulations outline measures to reduce waste by targeting specific items. It addresses beverage cups along with their covers and lids, aiming to minimize their environmental impact.

#### 4.1 Plastic Waste in the mixed Municipal solid Waste(MSW)

In Austria, as in many other EU countries, the separate collection of PPW as part of extended producer responsibility (EPR) forms the backbone of the existing recycling system. However, waste analysis shows that mixed solid waste (MSW) still contains significant quantities of PPW, which is either incinerated directly or pre-treated in material recovery facilities (MRFs) for mixed MSW prior to incineration.<sup>125</sup>

 <sup>&</sup>lt;sup>124</sup> Abfallvermeidungsprogramm 2023 Bund s-Abfallwirtschaftsplan 2023 Teil 3 https://www.bmk.gv.at/dam/jcr:67c5234f-e542-4a48-8489e23282a3de00/Abfallvermeidungsprogramm\_2023.pdf
<sup>125</sup> http://dx.doi.org/10.1016/j.wasman.2024.02.040

## 4.2 New packaging regulation - implementation hurdles for Austria

As Austria already maintains dense and detailed national regulations on waste, it makes it difficult to seamlessly integrate potentially less detailed or entirely new EU-level regulations. This disparity creates implementation hurdles and underscores a preference of Austrian public authorities for revising existing directives rather than adopting new regulations outright. Main reason for opposing views on this particular Regulation<sup>126</sup> which would be replacing the '94 Directive on packaging and packaging waste, was firstly the length of the document, and then its labelling requirements, which are not in the current form of a general regulation.

Despite this, the European Union's decision to pursue regulations aims to standardize practices across Member States, promoting consistent environmental standards throughout the Union. Balancing these opposing regulatory landscapes requires careful negotiation to ensure harmonization while respecting national frameworks and environmental goals. The general notion from all the interviewees when this particular regulation was mentioned was that it was too general and that it was written in a form of a Directive, general and not with precise actions Member States should take, where even the plain rule of what would be banned was not clear. Being a policy in a form of a regulation, this one is like other, also trying to harmonize policies in all EU member states immediately affective after its enforcement. This can either be a big issue or a good tactic in conditioning the EU-27 to take on an action, without looking into the detrimental effects such action can have in the national level, from the economy impacts to everyday life decisions. On EU Level, as it was proposed by the Commission, and recently approved in the first reading, this decision of having a regulation was more of political move<sup>127</sup>. The effects and final decisions are yet to be determined, as the draft document will be sent to all Member States in their respective languages, whereas by now it was only available in English. Autumn is a current goal of when the interviewees could estimate a final decision, but as the European Elections results pointed out and

<sup>&</sup>lt;sup>126</sup> <u>https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0677</u>

<sup>&</sup>lt;sup>127</sup> 31.05.2024, Interview with a public official, the City of Vienna.

general strength of more leftist voices has been on the decrease, it will be interesting to see if the following actions for this regulation come to a positive or negative final decision.

#### Conclusion

The current state of waste policy in the European Union is promising, especially with regard to future plans to improve waste management. A critical aspect of EU policy is the push toward full harmonization of some legislative measures. This push for harmonization aims to ensure uniformity among member states, facilitating the functioning of the internal market. The legislative process, often transposed into national laws through directives, reflects a broad approach to addressing environmental issues, including plastic and packaging waste policy. The analysis focused on three main directives: the Waste Framework Directive, the '94 Packaging and Packaging Waste Directive, along with its 2018 amendment known as the "Circular Economy Package," and the Single-Use Plastics (SUP) Directive. These directives were analyzed, with examples from Austria and Vienna demonstrating their implementation, particularly with regard to waste collection and separation under the principles of subsidiarity and proportionality. An example of Austrian case law from 2004 on the European Waste Catalogue illustrated the ongoing debate on the level of subsidiarity in EU practices.

#### Summary of the discussion

This study revealed that although harmonization is beneficial for the internal market and environmental protection, it can lead to systemic problems in policy implementation. In some ways, Austria disapproves of the idea that member states (MS) lack the momentum to implement stringent measures without external pressure. The analysis showed that many of Austria's strict laws are derived from EU legislation. Despite potential systemic problems, the Austrian example shows that effective legislation and active involvement of local public authorities in policy-making processes can lead to successful implementation without negative effects. The study focused on EU policies in the form of directives, action plans, and regulations, particularly those related to waste management, plastic waste, and packaging waste. The objectives were to improve waste management, stimulate innovation in recycling, and limit landfilling.

#### Research limitations

Several limitations were noted in the course of the research. First, the scope of the research was limited to Austria and did not extensively cover other EU member states, which may have different challenges and implementation successes. Second, the analysis relied heavily on existing legislative texts and available case studies, which may not fully capture the realities on the ground of policy implementation. In addition, the research did not take into account the socio-economic factors that influence waste management practices in different regions of Austria. Time constraints and limited resources also posed significant challenges. The inability to conduct interviews with a wider range of stakeholders, including politicians, industry representatives, and environmental organizations, limited the depth of the analysis. These interviews could have provided valuable insights into the practical challenges and successes of waste policy implementation.

#### Future prospects and the writer's observations

Looking forward, the future of EU waste policy seems to depend on a continued effort at harmonization, balanced by the flexibility of member states in addressing local challenges. More comprehensive studies including a wider range of member states are needed to understand the full impact of EU directives. Future research should also consider the socioeconomic dimensions of waste management, which play a crucial role in policy effectiveness.

In conclusion, harmonization of waste policy within the EU holds promise for environmental sustainability. However, it is essential that member states, such as Austria, continue to develop and implement rigorous measures tailored to their specific contexts. Effective legislative frameworks

and the involvement of local authorities are critical to successful policy implementation. The future of waste policy in the EU will depend on a delicate balance between harmonization and flexibility to ensure both environmental protection and the smooth functioning of the internal market.

#### Glossary

Acquis = the total body of applicable law in the European Union

Sustainability = "Sustainable development requires an integrated approach that takes into consideration environmental concerns along with economic development"<sup>128</sup>

Austria = The Republic of Austria

Pollution – "means the direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise into the air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment"<sup>129</sup>

<sup>&</sup>lt;sup>128</sup> United Nations 1987

<sup>129</sup> https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:024:0008:0029:en:PDF

#### Bibliography

Publication Office of the European Union (2024). Advanced Chemical Technology Transforms nonrecyclable Plastic Waste into Valuable Chemicals. [online] CORDIS | European Commission. Available at: https://cordis.europa.eu/article/id/451075-advanced-chemical-technology-transforms-nonrecyclable-plastic-waste-into-valuable-chemicals [Accessed 18 May 2024].

Adam, C., Steinebach, Y. and Knill, C. (2018). Neglected Challenges to evidence-based policymaking: the Problem of Policy Accumulation. *Policy Sciences*, 51(3), pp.269–290. doi:https://doi.org/10.1007/s11077-018-9318-4.

Adyel, T.M. (2020). Accumulation of Plastic Waste during COVID-19. *Science*, [online] 369(6509), pp.1314–1315. doi:https://doi.org/10.1126/science.abd9925.

Altstoff Recycling Austria AG (2019). Rohstoff Kunststoff. [online] Available at: https://www.ara.at/uploads/Dokumente/EU-

Kreislaufwirtschaftspaket/Kunststoffbroschuere/ARA\_Kunststoffbroschuere.pdf [Accessed 21 May 2024].

American Chemical Society (1993). Bakelite® First Synthetic Plastic - National Historic ChemicalLandmark.[online]AmericanChemicalSociety.Availableat:https://www.acs.org/education/whatischemistry/landmarks/bakelite.html#:~:[Accessed 18May 2024].

Arcadis, COWI, Directorate-General for Environment (European Commission), Eunomia and Milieu (2023). Assessment of Options for Reinforcing the Packaging and Packaging Waste Directive's Essential Requirements and Other Measures to Reduce the Generation of Packaging waste: Final Report. [online] Publications Office of the European Union. Publications Office of the European Union. Available at: https://op.europa.eu/en/publication-detail/-/publication/47936e9b-7067-11ed-9887-01aa75ed71a1/language-en/format-PDF/source-search [Accessed 18 May 2024].

Barnard, C. (2022). The Substantive Law of the EU: the Four Freedoms. Oxford: Oxford University Press.

Baumgartner, F.R. and Jones, B.D. (1991). Agenda Dynamics and Policy Subsystems. *The Journal of Politics*, [online] 53(4), pp.1044–1074. doi:https://doi.org/10.2307/2131866.

Baumgartner, F.R. and Jones, B.D. (1993). Agendas and Instability in American Politics. *Choice Reviews Online*, 31(01), pp.31-057431-0574. doi:https://doi.org/10.5860/choice.31-0574.

Bergthaler, W. and Wolfslehner, E. (2004). *Das Recht der Abfallwirtschaft*. Manzsche Verlags - Und Universitätsbuchhandlung.

Berl, F. and Forster, A. (2016). Abfallwirtschaftrecht. MANZ.

British Plastics Federation (2019). *Plastics Applications*. [online] Bpf.co.uk. Available at: https://www.bpf.co.uk/plastipedia/applications/default.aspx.

Coles, R., McDowell, D. and Kirwan, M. eds., (2003). FOOD PACKAGING TECHNOLOGY Blackwell Publishing. [online] Blackwell Publishing Ltd. Available at: https://polymerinnovationblog.com/wp-content/uploads/2017/02/Food-Packaging-Technology.pdf [Accessed 17 May 2024].

Collier, U. (1996). Deregulation, Subsidiarity and Sustainability: New Challenges for EU Environmental Policy. [online] cadmus.eui.eu. Available at: https://hdl.handle.net/1814/1475 [Accessed 21 May 2024].

Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union.OJ C 202, 7.6.2016, p. 1–388, EN [online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02016ME/TXT-20200301 [Accessed 15 Jun. 2024].

Craig, P. and de Búrca, G. (2020a). 6. Legislation and Decision-Making. In: *EU Law: Text, Cases,* and Materials (7th edn). Oxford University Press, pp.155–193. doi:https://doi.org/10.1093/he/9780198856641.003.0006.

Craig, P. and de Búrca, G. (2020b). EU Law: Text, Cases, and Materials (7th edn). Oxford University Press. doi:https://doi.org/10.1093/he/9780198856641.001.0001.

Directive 94/62/EC of 20 December 1994 on Packaging and Packaging Waste.OJ L 365, 31.12.1994, p. 10–23, EN [online] Available at: http://data.europa.eu/eli/dir/1994/62/oj.

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives (Text with EEA relevance).OJ L 312, 22.11.2008, p. 3–30, EN [online] Available at: http://data.europa.eu/eli/dir/2008/98/oj. Directorate-General for Environment (European Commission) and Eunomia (2023). *Study to Support the Finalisation of the Legal Proposal and the Impact Assessment for the Review of the Packaging and Packaging Waste Directive: Final Report.* [online] *Publications Office of the European Union.* Publications Office of the European Union. Available at: https://op.europa.eu/en/publication-detail/-/publication/24bda39e-a0a1-11ed-b508-01aa75ed71a1/language-en/format-PDF/source-search [Accessed 18 May 2024].

Directorate-General for Environment (European Commission), Eunomia, Umweltbundesamt, Karigl, B., Neubauer, C., Kral, U., Tesar, U. and Montevecchi, F. (2022). *Scoping Study to Assess the Feasibility of Further EU Measures on Waste prevention: Final Report*. [online] *Publications Office of the European Union*. Publications Office of the European Union. Available at: https://op.europa.eu/en/publication-detail/-/publication/0778b2a8-b61d-11ec-b6f4-01aa75ed71a1/language-en/format-PDF/source-320526876 [Accessed 18 May 2024].

Doralt, W. (2023). KODEX Abfallrecht mit Öko-Audit 2024 - inkl. App. 42nd ed. LexisNexis.

Ellen MacArthur Foundation (2016). *The New Plastics Economy:* Rethinking the Future of Plastics. [online] Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation\_Th eNewPlasticsEconomy\_Pages.pdf [Accessed 21 May 2024].

European Environment Agency (2013). *Managing Municipal Solid Waste : a Review of Achievements in* 32 European Countries. Copenhagen: European Environment Agency.

European Parliament (2024). Resource Efficiency and the Circular Economy | Fact Sheets on the European Union | European Parliament. [online] www.europarl.europa.eu. Available at: https://www.europarl.europa.eu/factsheets/en/sheet/76/resource-efficiency-and-the-circular-economy [Accessed 21 May 2024].

Golub, J. (1996). State Power and Institutional Influence in European Integration: Lessons from the Packaging Waste Directive. [online] cadmus.eui.eu. Available at: https://hdl.handle.net/1814/1418 [Accessed 21 May 2024].

Hadjiyianni, I. (2024). The Emergence of New Own Resources to Strengthen the EU Budget and Achieve Green Policy Objectives : a win-win or a Difficult fit? [online] cadmus.eui.eu. Available at: https://hdl.handle.net/1814/76837 [Accessed 21 May 2024].

Haverland, M. (1999). National Adaptation to European Integration: The Importance of Institutional Veto Points. [online] cadmus.eui.eu. Available at: https://hdl.handle.net/1814/1622 [Accessed 21 May 2024].

Hook, P. and Heimlich, J.E. (2017). *A History of Packaging*. [online] Osu.edu. Available at: https://ohioline.osu.edu/factsheet/cdfs-133.

Knight, L. (2014). A Brief History of plastics, Natural and Synthetic. *BBC News*. [online] 16 May. Available at: https://www.bbc.com/news/magazine-27442625.

Koçak, N. (2022). *A Brief History of Glass and plastic, Friend and Enemy of Nature*. [online] Daily Sabah. Available at: https://www.dailysabah.com/life/history/a-brief-history-of-glass-and-plastic-friend-and-enemy-of-nature [Accessed 18 May 2024].

Kriwanek, S. (2024). *AWG - Amendment Circular Economy Package*. [online] Lexisnexis.at. Available at:

https://360.lexisnexis.at/d/gesetzgebung/awg\_novelle\_kreislaufwirtschaftspaket/h\_80002\_645 2953708977047037\_00c61a0bcf?searchid=20240615041116576&page=1&index=6&origin=rl&r lclick=title&originview=STM [Accessed 16 Jun. 2024].

Landrigan, P.J., Raps, H., Cropper, M., Bald, C., Brunner, M., Canonizado, E.M., Charles, D., Chiles, T.C., Donohue, M.J., Enck, J., Fenichel, P., Fleming, L.E., Ferrier-Pages, C., Fordham, R., Gozt, A., Griffin, C., Hahn, M.E., Haryanto, B., Hixson, R. and Ianelli, H. (2023). The Minderoo-Monaco Commission on Plastics and Human Health. *Annals of Global Health*, 89(1). doi:https://doi.org/10.5334/aogh.4056.

Langlet, D. and Mahmoudi, S. (2016a). *EU Environmental Law and Policy*. Oxford University Press. doi:https://doi.org/10.1093/acprof:oso/9780198753926.001.0001.

Langlet, D. and Mahmoudi, S. (2016b). Waste. Oxford University Press eBooks, [online] pp.283–308. doi:https://doi.org/10.1093/acprof:oso/9780198753926.003.0012.

McCormick, J. (2011). Understanding the European Union. London Macmillan Education Uk.

Michotte, S. (2016). Circular Economy Package Why Did the Commission Withdraw the Proposal to Submit a New Package, and What Does It Mean in Terms of Environmental Ambition? [online] www.academia.edu. Available at:

https://www.academia.edu/24749256/Circular\_Economy\_Package\_Why\_Did\_the\_Commissio

n\_Withdraw\_the\_Proposal\_to\_Submit\_a\_New\_Package\_and\_what\_Does\_it\_Mean\_in\_Terms\_ of\_Environmental\_Ambition [Accessed 16 Jun. 2024].

OECD (2014). Plastic Additives. Series on Emission Scenario Documents, No.3. doi:https://doi.org/10.1787/9789264221291-en.

Richardson, J. (2006). European Union: Power and Policy-Making. Routledge eBooks. Routledge. doi:https://doi.org/10.4324/9780203004449.

Science History Institute (2023). *History and Future of Plastics*. [online] Science History Institute. Available at: https://www.sciencehistory.org/education/classroom-activities/role-playing-games/case-of-plastics/history-and-future-of-plastics/.

Soroka, W. (1995). Fundamentals of Packaging Technology. [online] Institute of Packaging Professionals. Available at:

https://www.google.at/books/edition/Fundamentals\_of\_Packaging\_Technology/GHYTTN4x 3H0C?hl=en&gbpv=0&bsq=inauthor:%22W.%20Soroka%22 [Accessed 14 Jun. 2024].

Steinebach, Y. (2019). Instrument choice, Implementation structures, and the Effectiveness of Environmental policies: a Cross-national Analysis. *Regulation & Governance*. doi:https://doi.org/10.1111/rego.12297.

Steinebach, Y. (2022). Administrative Traditions and the Effectiveness of Regulation. *Journal of European Public Policy*, 30(6), pp.1–20. doi:https://doi.org/10.1080/13501763.2022.2070240.

Stocker, U. and Wiener Umweltschutzabteilung - MA 22 (2016). *MTV 2015 Einsatz Von Mehrwegtransportverpackungen in Wien (Engl. MTV 2015 Use of Reusable Transport Packaging in Vienna).* [online] Available at: https://www.wenigermist.at/uploads/bericht\_mehrweg-transport-verpackungen-2015.pdf [Accessed 21 May 2024].

The World Bank (n.d.). *Tackling Increasing Plastic Waste*. [online] datatopics.worldbank.org. Available at: https://datatopics.worldbank.org/what-a-waste/tackling\_increasing\_plastic\_waste.html [Accessed 21 May 2024].

United Nations (1987). Sustainability. United Nations. [online] Available at: https://www.un.org/en/academic-impact/sustainability.

Van Eygen, E., Laner, D. and Fellner, J. (2018). Circular Economy of Plastic packaging: Current Practice and Perspectives in Austria. *Waste Management*, [online] 72, pp.55–64. doi:https://doi.org/10.1016/j.wasman.2017.11.040.

Wells, A. (2015). *What Are Plastics?* [online] The Plastics Historical Society. Available at: https://plastiquarian.com/?page\_id=14296.

Weydemann, M. (2021). Strengthening EU Environmental Law: Legal Perspectives on Greening EuropeAbstract.[online]Availableat:https://www.maastrichtuniversity.nl/file/lectureprofleoniereins0pdf [Accessed 11 Jun. 2024].

Wien Energie (n.d.). *Abfallrecht Österreich» Abfallrahmenrichtlinie Einfach Erklärt*. [online] Positionen Wien Energie. Available at: https://positionen.wienenergie.at/wissenshub/einfach-erklaert/oesterreichische-gesetzgebung/abfallrecht/ [Accessed 21 May 2024].

<sup>&</sup>lt;sup>i</sup> "(...) Abfallwirtschaft hinsichtlich gefährlicher Abfälle, hinsichtlich anderer Abfälle nur soweit ein Bedürfnis nach Erlassung einheitlicher Vorschriften vorhanden ist; Veterinärwesen; Ernährungswesen einschließlich der Nahrungsmittelkontrolle" Art. 10 B-VG, para 1, subpara 12, <u>https://www.jusline.at/gesetz/b-vg/paragraf/artikel10</u> Extracted from the sub-paragrpah (row 6-7).

<sup>&</sup>lt;sup>ii</sup> "Hersteller und Importerue von Service verpackungen, Abpacker mit Sitz oder Niederlassung im örtlichen Geltungsbereich dieses Bundesgesetzes, Importeure mit Sitz oder Niederlassung im örtlichen Geltungsbeteuich dieses Bundesgesetzes, hinsichtlich der Verpackungen von ihenen importierten Wasren und Güter" §13g, paragraph 1, AWG 2002 (2023) -