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CONCEPTUALISING WASTE PREVENTION UNDER EU LAW IN THE CONTEXT OF THE CIRCULAR ECONOMY

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Abstract: ***The transition from a linear to a circular economy is one of the principal goals of contemporary European Union policy and law, with waste prevention being the top priority. Even though EU policy documents keep emphasising the importance of the circular economy, progress remains slow, as indicated by rather low circularity rates and high levels of waste generation. The EU's circular economy policy initially relied mostly on voluntary measures which proved insufficient in driving significant change. A major shift came with the adoption of the second Circular Economy Action Plan in 2020 which eventually led to the adoption of many new legislative acts aimed at strengthening waste prevention. However, the theoretical foundations of waste prevention in EU law remain underdeveloped. This study examines the legal definition and scope of waste prevention in EU law, assessing its adequacy in addressing current challenges, such as product obsolescence. By critically analysing existing legislation and policy frameworks, the study identifies key issues and argues for a re-conceptualisation of waste prevention in EU law. The study also includes a systematic analysis of the case law of the Court of Justice related to waste prevention. The proposed re-definition seeks to align with the practical needs of our society and the issues we must face. It aims to improve the enforceability and effectiveness of waste prevention measures within the EU's circular economy framework.***

Key words: ***Waste Prevention; Product Obsolescence; Waste Hierarchy; Circular Economy; EU Law; Environmental Law***

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1. INTRODUCTION

One of the main goals of current European Union (EU) policy and law is the transition from a linear to a circular economy,[1] i.e., the transition to an economic model in which the value of products, materials and resources is maintained for as long as possible and in which the generation of waste is minimised.[2]

The concept of circular economy is based on the waste hierarchy. The waste hierarchy sets priorities in waste prevention and management legislation and policy in a hierarchical order.[3] The primary objective is waste prevention, with the subsequent

[1] European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal COM(2019) 640 final, 11 December 2019.

[2] Julian Kirchherr and others, 'Conceptualizing the Circular Economy (Revisited): An Analysis of 221 Definitions' (2023) 194 *Resources, Conservation and Recycling* 107001 https://doi.org/https://doi.org/10.1016/j.resconrec.2023.107001 accessed 25 June 2026.

[3] Article 4(1), Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives [2008] OJ L312/3 (hereinafter as the "Waste Framework Directive").

waste management objectives being various forms of waste recovery: the preparation for re-use in the first place, recycling as the next option and finally other forms of recovery (e.g., energy recovery). Waste disposal is placed last in the order of precedence and is conceived as a measure of last resort when prevention and recovery are not feasible.[4] The waste hierarchy is enshrined in the Waste Framework Directive, i.e., in a legally binding act. However, the waste hierarchy functions as a legal principle rather than a legal norm in the traditional sense. This is because it is allowed for specific waste streams to depart from the hierarchy where this is justified, applying the principles of high level of environmental protection and life-cycle thinking to achieve the best overall environmental outcome.[5] Thus, according to the Court of Justice, the waste hierarchy *"amounts to an objective, which leaves a margin of discretion to the Member States by not obliging them to opt for a specific prevention and management option."*[6]

The waste hierarchy is key to achieving circularity because circularity consists, in essence, in achieving high levels of waste prevention in the first place and of waste recovery in the second place.[7] The circular economy therefore represents an economic model which seeks to apply the waste hierarchy more consistently and stringently.[8] The reality nowadays is that although accelerating the transition to a circular economy has become one of the main priorities of EU policies in recent years, measurable progress has so far been relatively small.[9] According to Eurostat statistics, the circularity rate (the share of recycled materials used) in the EU was 11.6% in 2018, 11.2% in 2019, 11.2% in 2020, 11.1% in 2021, 11.5% in 2022, and 11.8% in 2023.[10] The total amount of waste generated in the EU is also rather stagnant, reaching 2,338,310,000 tonnes in 2018, 2,153,170,000 tonnes in 2020, and 2,233,120,000 tonnes in 2022.[11]

It is therefore clear that there is still a relatively large discrepancy between the declared objectives, including waste prevention, and the reality. This is related, among other things, to the fact that when the concept of the circular economy first entered the European discourse more significantly thanks to the European Commission's first action plan in 2015,[12] the Commission relied mainly on voluntary instruments to implement it (e.g., EMAS environmental management systems, voluntary green public procurement).

[4] Case C-551/13 Società Edilizia Turistica Alberghiera Residenziale SpA (SETAR) v Comune di Quartu Sant'Elena ECLI:EU:C:2014:2467 [44].
[5] Article 4(2), Waste Framework Directive.
[6] Case C-305/18 Verdi Ambiente e Società (VAS) — Aps Onlus and Movimento Legge Rifiuti Zero per l'Economia Circolare Aps v Presidenza del Consiglio dei Ministri and Others ECLI:EU:C:2019:384 [29].
[7] Chunbo Zhang and others, 'An Overview of the Waste Hierarchy Framework for Analyzing the Circularity in Construction and Demolition Waste Management in Europe' (2022) 803 *Science of The Total Environment* 149892, 149901 https://doi.org/https://doi.org/10.1016/j.scitotenv.2021.149892 accessed 25 June 2026.
[8] Alejandro Egüez, 'Compliance with the EU Waste Hierarchy: A Matter of Stringency, Enforcement, and Time' (2021) 280 *Journal of Environmental Management* 111672 https://doi.org/10.1016/j.jenvman.2020.111672 accessed 25 June 2026.
[9] European Environment Agency, *Accelerating the Circular Economy in Europe* (Publications Office of the European Union 2024) https://doi.org/10.2800/055236 accessed 25 June 2026.
[10] Eurostat, *Circular Material Use Rate by Material Type* (2024a) https://doi.org/10.2908/ENV_AC_CURM accessed 25 June 2026.
[11] Eurostat, *Generation of Waste by Waste Category* (2024b) https://doi.org/10.2908/TEN00108 accessed 25 June 2026.
[12] European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Closing the Loop — An EU Action Plan for the Circular Economy COM(2015) 614 final, 2 December 2015.

However, as it turned out, voluntary instruments alone could not bring about a major change.[13]

The turning point came only in 2020 with the adoption of the second circular economy action plan.[14] This second action plan led to the preparation and subsequent adoption (mainly in 2024) of several new EU legal acts crucial for both waste prevention and the various forms of waste recovery (e.g., the Directive empowering consumers for the green transition,[15] revision of the IPPC Directive,[16] the new Ecodesign Regulation,[17] the Right to Repair Directive,[18] the Packaging and Packaging Waste Regulation,[19] among others). These new directives and regulations are expected to create a stronger legal framework for the transition to a circular economy.

The ongoing evolution of the legal framework underscores two key points. Firstly, it demonstrates the EU's dedication to enhancing waste prevention measures. Secondly, it highlights the conceptual ambiguity surrounding the precise nature of waste prevention. The present study will illustrate that the notion of waste prevention is not consistently implemented across EU legislation, which may potentially compromise its effectiveness. A more profound theoretical understanding is essential to ensure that the prevention of waste generation is genuinely prioritised in practice. It is crucial to align the preventive principle with the overarching objectives of the circular economy.

This study therefore focuses on the conceptualisation of "waste prevention" and its position in EU law. The aim is to analyse how this concept is defined in current EU law, to confront this definition with contemporary problems (in particular, the problems of product obsolescence) and to argue why the current definition and understanding of waste prevention, embodied in the Waste Framework Directive, are no longer appropriate. Based on this analysis, the study proposes a different definition of the concept of waste prevention, which could contribute to its more effective enforcement in practice.

The present study adopts a doctrinal analytical approach,[20] grounded in the analysis of relevant sources of (mainly) secondary EU law which form the concept of waste prevention. The central focus is the conceptual clarification of waste prevention

[13] Alba Nogueira, 'Are Soft Legal Measures in Circular Economy Action Plans Enough to Permeate EU Strong Economic Core Regulations Bringing Systemic Sustainable Change?' (2023) 3 *Circular Economy and Sustainability* 1545 https://doi.org/10.1007/s43615-022-00227-0 accessed 25 June 2026.

[14] European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A New Circular Economy Action Plan COM(2020) 98 final, 11 March 2020.

[15] Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024 amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and through better information [2024] OJ L, 2024/825.

[16] Directive (EU) 2024/1785 of the European Parliament and of the Council of 24 April 2024 amending Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC on the landfill of waste [2024] OJ L, 2024/1785.

[17] Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC [2024] OJ L, 2024/1781.

[18] Directive (EU) 2024/1799 of the European Parliament and of the Council of 13 June 2024 on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394 and Directives (EU) 2019/771 and (EU) 2020/1828 [2024] OJ L, 2024/1799.

[19] Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC [2025] OJ L, 2025/40.

[20] Stefan Theil, 'Carefully Tailored: Doctrinal Methods and Empirical Contributions' (2025) 45 *Oxford Journal of Legal Studies* https://doi.org/10.1093/ojls/gqaf029 accessed 25 June 2026.

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under the Waste Framework Directive and related legislative instruments (regulations and directives). The focus is on how waste prevention is conceived by legislation across various EU legal acts and whether this corresponds with the goals of the circular economy. The methodological perspective is thus predominantly normative.

In order to provide a more comprehensive set of findings, the study also incorporates a systematic analysis of relevant case law of the Court of Justice and the General Court. The focus of this analysis is on the manner in which these courts employ the concept of waste prevention in its argumentation and reasoning. The study thus explores whether the concept of waste prevention has any significant impact on the courts' reasoning. The methodology of the analysis is described further below in Section 2.

The study is structured as follows: Section 2 examines the fundamental concepts of waste and waste prevention, including their developments over time. It also includes a systematic analysis of relevant case law. Section 3 explores various strategies of quantitative waste prevention. Section 4 addresses the challenge of product obsolescence in its many forms, examining how different types of obsolescence affect waste prevention efforts and require distinct legal responses. Section 5 analyses qualitative waste prevention, focusing on the prevention of hazardous waste, and critically examines its understanding in the circular economy context. Section 6 concludes by synthesising the findings and proposing a reconceptualisation of waste prevention in EU law.

2. THE CONCEPTS OF WASTE AND WASTE PREVENTION

Before delving into the concept of waste prevention, it is crucial to acknowledge that from a legal perspective, every substance or object may be classified either as waste, or as non-waste, depending on the individual circumstances of each case. From there, we can infer another distinction. Any human activity related to the use of substances or objects may either lead to the production of waste or, conversely, prevent waste from being generated (which includes, among others, the re-use of substances and objects). Against the backdrop of this dichotomy, it can be deduced that the broader we define the concept of waste, the less room there is to legally classify a particular activity as waste prevention. Therefore, an overly broad definition of the concept of waste, even if driven by efforts to achieve a high level of environmental protection,[21] may hinder an effective implementation of the waste hierarchy, in particular waste prevention.

The basic legal definition of waste, as established by European (or, at the time, Community) legislation, has remained relatively consistent since 1975 when it was first delineated in the 1975 Waste Directive as *"any substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force"*.[22] In 1991, the term "dispose of" was replaced by the term "discard", which was deemed to be a more appropriate term in this context.[23] Cases where the holder only intends to discard a substance or an object were also included in the definition. Finally, a reference to a list of categories of waste was incorporated in the definition, as well.[24] This reference

[21] Case C-9/00 Palin Granit Oy and Vehmassalon kansanterveystyön kuntayhtymän hallitus ECLI:EU:C:2002:232 [23].
[22] Article 1 letter (a), Council Directive 75/442/EEC of 15 July 1975 on waste [1975] OJ L194/39.
[23] Eloise Scotford, 'Trash or Treasure: Policy Tensions in EC Waste Regulation' (2007) 19(3) Journal of Environmental Law 367, 375 https://doi.org/https://doi.org/10.1093/jel/eqm022 accessed 25 June 2026.
[24] Article 1 letter (a), Council Directive 75/442/EEC of 15 July 1975 on waste, as amended by Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste [1991] OJ L78/32.

was subsequently abandoned by the 2008 Waste Framework Directive which constitutes the foundation of European waste law to the present day. The current legal definition of waste thus encompasses *"any substance or object which the holder discards or intends or is required to discard"*. However, it was not legislation that played the main role in shaping the understanding of the concept of waste, but rather the case law of the Court of Justice (which also informed the later legislative developments). It was (and still is) the task of the Court of Justice to clarify, in particular, the term "discard", because *"the scope of the term 'waste' turns on the meaning of the term 'discard'"*[25], and to ensure its uniform application across Member States. The Court of Justice has fulfilled this role in countless judgments.[26]

It is not the aim of this study to recapitulate this case law in its entirety.[27] However, several important conclusions which may be derived from the case law should be noted: The concept of waste cannot be interpreted restrictively. It does not, among others, exclude substances or objects which are capable of economic re-use. The existence of waste must be determined in the light of all the circumstances, regard being had to the aim of the Waste Framework Directive and the need to ensure that its effectiveness is not undermined.[28]

It follows that that the concept of waste is interpreted by the Court of Justice rather broadly. This creates a risk of certain activities being legally classified as waste management rather than waste prevention which would render such activities subject to stringent waste regulation. On the contrary, it may be desirable that activities which are not associated with the generation of waste, contribute to environmental protection, and do not present significant environmental risks, be classified as waste prevention and thus benefit from a more lenient legal regime for non-waste.

This can be illustrated by the *Porr Bau* case, which was dealt with by the Court of Justice. The dispute arose against the backdrop of Austrian national authorities finding that excavated materials discharged on cultivation areas constituted waste. Porr Bau, on the other hand, sought recognition of their status as non-waste. The Court paved the way for high-quality excavated materials used in land transformation being classified as non-waste in its judgment. What is important to note is that one of the reasons for the Court's decision was that the use of excavated materials contributes to the objectives of the Waste Framework Directive, namely to the reduction of waste.[29]

The fact that the understanding of the concept of waste in the *Porr Bau* case was explicitly informed by the objective of waste reduction (prevention) is crucial and should

[25] Case C-129/96 Inter-Environnement Wallonie ASBL v Région wallonne ECLI:EU:C:1997:628 [26].

[26] To name only a few examples: Case C-129/96 Inter-Environnement Wallonie ASBL v Région wallonne ECLI:EU:C:1997:628; Joined Cases C-418/97 and C-419/97 ARCO Chemie Nederland Ltd v Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer ECLI:EU:C:2000:318; Case C-9/00 Palin Granit Oy and Vehmassalon kansanterveystyön kuntayhtymän hallitus ECLI:EU:C:2002:232; Case C-263/05 Commission of the European Communities v Italian Republic ECLI:EU:C:2007:808; Case C-188/07 Commune de Mesquer v Total France SA and Total International Ltd ECLI:EU:C:2008:359; Joined Cases C-241/12 and C-242/12 Shell Nederland Verkoopmaatschappij BV and Belgian Shell NV ECLI:EU:C:2013:821; Case C-624/17 Criminal proceedings against Tronex BV ECLI:EU:C:2019:564; Case C-629/19 Sappi Austria Produktions-GmbH & Co KG and Wasserverband 'Region Gratkorn-Gratwein' v Landeshauptmann von Steiermark ECLI:EU:C:2020:824; Case C-238/21 Porr Bau GmbH v Bezirkshauptmannschaft Graz-Umgebung ECLI:EU:C:2022:885.

[27] For reference, see, e.g., Geert van Calster, EU Waste Law (2nd edn, Oxford University Press 2015) or Nicolas de Sadeleer, Droit des déchets de l'UE: De l'élimination à l'économie circulaire (Bruylant 2016).

[28] See the case law listed in the previous footnote, especially the newer judgements which summarise the relevant case law.

[29] Case C-238/21 Porr Bau GmbH v Bezirkshauptmannschaft Graz-Umgebung ECLI:EU:C:2022:885, especially par. 58 and 59.

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be followed in subsequent case law. It would help better align the concept of waste with the waste hierarchy and the overarching objective of the transition to a circular economy, where waste prevention is prioritised.[30]

This leads us to the concept of waste prevention. The current understanding of the concept of waste prevention is also influenced by historical developments of European waste law. When the 1975 Waste Directive was amended in 1991, one of the obligations of the Member States was to adopt appropriate measures to encourage the *"prevention or reduction of waste production and its harmfulness"*.[31] In other words, the principle of prevention was enshrined into the framework of waste management under European law in two senses: the quantitative sense (amount) and the qualitative sense (harmfulness).[32] The Directive mentioned the quantitative and qualitative aspects of prevention together in a single sentence as a common objective, thus treating them as two closely related problems.

This two-fold concept of prevention in waste management persists in the current 2008 Waste Framework Directive to this day. According to its latest wording, waste prevention is understood as

> measures taken before a substance, material or product has become waste, that reduce:
> (a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
> (b) the adverse impacts of the generated waste on the environment and human health; or
> (c) the content of hazardous substances in materials and products.[33]

Thus, even today waste prevention, according to its legal definition, has a quantitative [letter a)] and a qualitative [letters b) and c)] aspect. The question is whether this two-fold concept of prevention in a quantitative and qualitative sense is appropriate and correct in the context of the transition to a circular economy.

This dichotomy of quantitative and qualitative waste prevention has been embraced by the European Commission in its Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste.[34] However, the Commission has not provided further elaboration on this approach, only using the terms "quantitative" and "qualitative" as such. It is also relevant to examine how the Court of Justice deals with the concept of waste prevention and whether, in addition to the above-mentioned *Porr Bau* case, it has had any clear influence on the Court's decisions in other cases. To this end as part of this study, a search was conducted for relevant judgments of the Court of Justice and the General Court available throughout the time in the Court of Justice database, using the search phrase *"waste prevention"* in English, type of document: judgment, as of November 11, 2025. The search using these criteria returned a total of

[30] This aspect is also highlighted in the opinion of advocate general Medina in: Case C-238/21 Porr Bau GmbH v Bezirkshauptmannschaft Graz-Umgebung EU:C:2022:532, Opinion of AG Medina, point 73.
[31] Article 3, Council Directive 75/442/EEC of 15 July 1975 on waste, as amended by Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste [1991] OJ L78/32.
[32] Milan Damohorský and others, *Právo životního prostředí* (3rd edn, C H Beck 2010) 428, 429.
[33] Article 3 point (12), Waste Framework Directive.
[34] European Commission, *Guidance on the Interpretation of Key Provisions of Directive 2008/98/EC on Waste* (June 2012) 28 https://ec.europa.eu/environment/pdf/waste/framework/guidance_doc.pdf accessed 16 November 2025.

15 results.[35] A similar search for *"prevention of waste"* returned 2 results,[36] a search for *"waste reduction"* returned no results, a search for *"reduction of waste"* returned 21 results,[37] a search for *"waste generation"* returned 6 results,[38] and a search for *"generation of waste"* returned 5 results.[39]

[35] Full list of search results for "*waste prevention*": Case C-292/12 Ragn-Sells AS v Sillamäe Linnavalitsus ECLI:EU:C:2013:820; Case C-551/13 Società Edilizia Turistica Alberghiera Residenziale SpA (SETAR) v Comune di Quartu Sant'Elena ECLI:EU:C:2014:2467; Case C-147/15 Città Metropolitana di Bari, formerly Provincia di Bari v Edilizia Mastrodonato Srl ECLI:EU:C:2016:606; Case C-335/16 VG Čistoća d.o.o. v Đuro Vladika and Ljubica Vladika ECLI:EU:C:2017:242; Case C-60/18 Tallinna Vesi AS v Keskkonnaamet ECLI:EU:C:2019:264; Case C-305/18 Verdi Ambiente e Società (VAS) — Aps Onlus and Movimento Legge Rifiuti Zero per l'Economia Circolare Aps v Presidenza del Consiglio dei Ministri and Others ECLI:EU:C:2019:384; Case C-212/18 Prato Nevoso Termo Energy Srl v Provincia di Cuneo and ARPA Piemonte ECLI:EU:C:2019:898; Case C-642/18 European Commission v Kingdom of Spain ECLI:EU:C:2019:1051; Case C-629/19 Sappi Austria Produktions-GmbH & Co KG and Wasserverband 'Region Gratkorn-Gratwein' v Landeshauptmann von Steiermark ECLI:EU:C:2020:824; Case T-9/19 ClientEarth v European Investment Bank ECLI:EU:T:2021:42; Case C-238/21 Porr Bau GmbH v Bezirkshauptmannschaft Graz-Umgebung ECLI:EU:C:2022:885; Case C-254/23 INTERZERO and Others and Surovina and Others ECLI:EU:C:2025:569; Case T-579/22 ClientEarth AISBL v European Commission ECLI:EU:T:2025:862; Case T-583/22 Fédération environnement durable and Others v European Commission ECLI:EU:T:2025:863; Case T-625/22 Republic of Austria v European Commission ECLI:EU:T:2025:869.

[36] Full list of search results for "*prevention of waste*": Case C-64/09 Commission of the European Communities v French Republic ECLI:EU:C:2010:187Case T-625/22 Republic of Austria v European Commission ECLI:EU:T:2025:869.

[37] Full list of search results for "*reduction of waste*": Case C-155/91 Commission of the European Communities v Council of the European Communities ECLI:EU:C:1993:98; Case C-304/94 Euro Tombesi and Adino Tombesi, Roberto Santella, Giovanni Muzi and Others and Anselmo Savini ECLI:EU:C:1997:314; Joined Cases C-418/97 and C-419/97 ARCO Chemie Nederland Ltd v Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer ECLI:EU:C:2000:318; Case C-324/99 DaimlerChrysler AG v Land Baden-Württemberg ECLI:EU:C:2001:682; Case C-6/00 Abfall Service AG (ASA) v Bundesminister für Umwelt, Jugend und Familie ECLI:EU:C:2002:121; Case C-159/00 Sapod Audic v Eco-Emballages SA ECLI:EU:C:2002:343; Case C-458/00 Commission of the European Communities v Grand Duchy of Luxembourg ECLI:EU:C:2003:94; Case C-228/00 Commission of the European Communities v Federal Republic of Germany ECLI:EU:C:2003:86; Case C-116/01 SITA EcoService Nederland BV v Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer ECLI:EU:C:2003:198; Case C-444/00 Mayer Parry Recycling Ltd v Environment Agency and Secretary of State for the Environment, Transport and the Regions ECLI:EU:C:2003:356; Joined Cases C-53/02 and C-217/02 Commune de Braine-le-Château and Michel Tillieut and Others v Région wallonne ECLI:EU:C:2004:205; Joined Cases C-53/02 and C-217/02 Commune de Braine-le-Château and Michel Tillieut and Others v Région wallonne ECLI:EU:C:2004:205; Case C-309/02 Radlberger Getränkegesellschaft mbH & Co and S Spitz KG v Land Baden-Württemberg ECLI:EU:C:2004:799; Case C-463/01 Commission of the European Communities v Federal Republic of Germany ECLI:EU:C:2004:797; Case C-442/06 Commission of the European Communities v Italian Republic ECLI:EU:C:2008:216; Case C-251/07 Gävle Kraftvärme AB v Länsstyrelsen i Gävleborgs län ECLI:EU:C:2008:486; Case C-172/08 Pontina Ambiente Srl v Regione Lazio ECLI:EU:C:2010:87; Case C-584/14 Commission v Hellenic Republic ECLI:EU:C:2016:636; Case C-15/19 AMA — Azienda Municipale Ambiente SpA v Consorzio Laziale Rifiuti — Co.La.Ri ECLI:EU:C:2020:371; Case C-238/21 Porr Bau GmbH v Bezirkshauptmannschaft Graz-Umgebung ECLI:EU:C:2022:885; Case C-86/22 Papier Mettler Italia Srl v Ministero della Transizione Ecologica and Ministero dello Sviluppo Economico ECLI:EU:C:2023:1023.

[38] Full list of search results for "waste generation": Case C-551/13 Società Edilizia Turistica Alberghiera Residenziale SpA (SETAR) v Comune di Quartu Sant'Elena ECLI:EU:C:2014:2467; Case C-335/16 VG Čistoća d.o.o. v Đuro Vladika and Ljubica Vladika ECLI:EU:C:2017:242; Case C-104/17 SC Cali Esprou SRL v Administraţia Fondului pentru Mediu ECLI:EU:C:2018:188; Case C-60/18 Tallinna Vesi AS v Keskkonnaamet ECLI:EU:C:2019:264; Case C-305/18 Verdi Ambiente e Società (VAS) — Aps Onlus and Movimento Legge Rifiuti Zero per l'Economia Circolare Aps v Presidenza del Consiglio dei Ministri and Others ECLI:EU:C:2019:384; Case C-212/18 Prato Nevoso Termo Energy Srl v Provincia di Cuneo and ARPA Piemonte ECLI:EU:C:2019:898.

[39] Full list of search results for "*generation of waste*": Case C-444/00 Mayer Parry Recycling Ltd v Environment Agency and Secretary of State for the Environment, Transport and the Regions ECLI:EU:C:2003:356; Case T-360/13 VECCO and Others v Commission ECLI:EU:T:2015:695; Case C-311/22 Anklagemyndigheden v PO and Moesgaard Meat 2012 A/S ECLI:EU:C:2024:145; Case C-626/22 C.Z. and Others v Ilva SpA in Amministrazione

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This makes a total of 49 search results, out of which 9 judgments appeared in two searches each: *Mayer Parry Recycling* (reduction of waste, generation of waste), *SETAR* (waste prevention, waste generation), *VG Čistoća* (waste prevention, waste generation), *Tallinna Vesi* (waste prevention, waste generation), *Verdi Ambiente e Società – Aps Onulu and Others* (waste prevention, waste generation), *Prato Nevoso* (waste prevention, waste generation), Porr Bau (waste prevention, reduction of waste), *Austria v Commission* (waste prevention, prevention of waste), *INTERZERO and Others* (waste prevention, generation of waste). The cases *Tillieut and Others* and *Commune de Braine-le-Château* appeared separately in the search results, but in fact they were joined cases decided by one judgment. All this means there were only 39 court judgments in the search results.

The search phrases were chosen based on the fact that the 1975 Waste Framework Directive, as amended in 1991,[40] and the subsequent 2006 Waste Directive[41] used the term *"prevention or reduction of waste production"*, while the last 2008 Waste Framework Directive uses various terms, namely *"waste prevention"*, *"prevention of waste"*, *"waste generation"*, and *"generation of waste"*.[42]

All search results (39 court judgments) were then analysed in three respects: (1) whether the relevant search phrase appeared in the introductory "legal context" part of the Courts' reasoning (which only indicates the relevant legal framework), (2) whether the relevant search phrase appeared in the main part of the Courts' reasoning (where the court explains what led him to the decision on the case), and (3) whether the concept of waste prevention had any observable influence on the Courts' legal argumentation (whether it was informed by the concept of waste prevention). This analysis was done manually by the author of this study.

The results of the analysis demonstrate that, in the majority of cases, the pertinent search phrases were included in the introductory part of the reasoning of the judgements which lists the relevant legal provision relating to the case (35 of 39 judgements, 89,74 %). In only about a half of the judgments analysed were the relevant search phrases mentioned by the court in the main part of the reasoning (17 of 39 judgments, 48,57 %). Notably, the *Porr Bau* case stands as a singular exception, where the concept of waste prevention evidently informed the Court's legal argumentation, as previously outlined.

This distributional pattern reveals a significant gap between the formal recognition of waste prevention in EU judicial discourse and its substantive integration into legal reasoning. The Court of Justice and the General Court tend to list waste prevention, usually as part of the waste hierarchy, in their reasoning but hardly ever engage with the concept as a contributory factor in their legal analysis.

It is also worth mentioning that the courts have not explicitly embraced the terms "quantitative" and "qualitative" waste prevention in their case law. It may be derived from the search results that the use of the term *"reduction of waste"*, which is exclusively linked to quantitative waste prevention, was predominant in cases related to legislation prior to the adoption of the 2008 Waste Framework Directive. The Directive introduced a shift in terminology used in case law, with the term *"waste prevention"* basically replacing

Straordinaria and Others ECLI:EU:C:2024:542; Case C-254/23 INTERZERO and Others and Surovina and Others ECLI:EU:C:2025:569.

[40] Article 3, Council Directive 75/442/EEC of 15 July 1975 on waste, as amended by Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste [1991] OJ L78/32.

[41] Article 3(1)(a), Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste [2006] OJ L114/9.

[42] For example, Articles 4 and 9, Waste Framework Directive.

the term *"reduction of waste"*. However, this change in terminology has not led to any significant changes in the manner in which the courts engage with the notion of waste prevention. The prioritisation of waste prevention persists in its designation as a fundamental tenet of waste policy; however, it remains marginalised within the ambit of legal argumentation.

These findings raise important questions about the effective implementation of the concept of waste prevention as the priority option in waste hierarchy. The disconnect between legislative prioritisation and judicial application may ultimately undermine the EU's transition towards a circular economy, which depends in the first place on reducing the generation of waste.

In the context of the transition to a circular economy, it is therefore crucial that the legal reasoning of the Court of Justice of the European Union in cases pertaining to waste encompasses the notion of waste prevention in a substantive sense, as opposed to a declaratory approach which has historically characterised the analysed case law..

3. WASTE PREVENTION IN THE QUANTITATIVE SENSE

Quantitative waste prevention consists – as the Waste Framework Directive states – in reducing the amount of waste. The reduction of the amount itself must be perceived broadly, as it can occur in many different ways and through many different measures:[43]

First, space for waste reduction may exist in production and operational processes through various industrial ecology tools.[44] Over time, thanks to internal and external tools and appropriate adjustments to production and other processes, it is possible to reduce the negative impacts of these processes on the environment and, as a result, reduce the amount of waste generated.

Second, waste reduction can be achieved by reducing single-use products in favour of reusable products. Single-use products may often be more user-friendly, but they also represent (especially plastic ones) a significant environmental burden.[45] In some cases, there will be a preference for retaining single-use products for various serious reasons, such as hygiene or technical reasons. However, where such overriding reasons are not given, reusable products will usually be the more suitable choice from an environmental point of view.[46] It is for this reason that the Single-Use Plastics Directive, for instance, introduced a prohibition on the placing of certain single-use plastic products on the market, or that the Packaging and Packaging Waste Regulation prohibits packaging in certain (single-use) formats.[47] Re-use of products is a form of quantitative

[43] Hervé Corvellec, 'A Performative Definition of Waste Prevention' (2016) 52 *Waste Management* 3 https://doi.org/10.1016/j.wasman.2016.03.051 accessed 25 June 2026.
[44] Yovana M B Saavedra and others, 'Theoretical Contribution of Industrial Ecology to Circular Economy' (2018) 170 *Journal of Cleaner Production* 1514 https://doi.org/10.1016/j.jclepro.2017.09.260 accessed 25 June 2026.
[45] Oluseye O Oludoye and others, 'Pro-Environmental Behavior Regarding Single-Use Plastics Reduction in Urban–Rural Communities of Thailand: Implication for Public Policy' (2024) 14 *Scientific Reports* 4713, 4714 https://doi.org/10.1038/s41598-024-55192-5 accessed 25 June 2026.
[46] Henrik Pålsson and John Olsson, 'Current State and Research Directions for Disposable versus Reusable Packaging: A Systematic Literature Review of Comparative Studies' (2023) 36 *Packaging Technology and Science* 391 https://doi.org/10.1002/pts.2722 accessed 25 June 2026.
[47] Article 25, Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC [2025] OJ L, 2025/40.

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waste prevention, as recognised by the Waste Framework Directive and the European Commission.[48]

Third, ecodesign of products, i.e., the integration of environmental sustainability considerations into the characteristics of a product and the processes taking place throughout the product's value chain, will always play a significant role in reducing waste.[49] Ecodesign can positively influence a number of product impacts on the environment. Historically, in the EU, this has primarily been energy efficiency.[50] However, ecodesign can also influence various aspects related to the product's lifespan, such as its durability, reliability, reusability, upgradeability, repairability, or the possibility of maintenance and renovation.[51] All of these are ultimately waste prevention strategies, because even if a product becomes waste after a certain time, ecodesign creates space for this to happen later rather than earlier, thereby reducing the rate of waste production. It is true that whether a product becomes waste ultimately depends on the will of its owner. If a product breaks, the owner may decide to discard the product instead of repairing it, as a result of which the product becomes waste. However, by eco-designing a product so that it is easily repairable, we create an important prerequisite for the owner to decide to repair the product in the first place.

Fourth, the amount of waste can be reduced by reducing the number of products we produce and use. This is primarily a problem of the so-called consumer society in which the consumption of material goods (materialism) is given great social value.[52] Consumerism and materialism, characteristic of our society, represent very complex phenomena, for the change of which there would have to be a change in the value scale of individuals, as well as broader social priorities. Law can also help to a certain extent, especially instruments to support the concept of sustainable consumption.[53]

These include, among others, the right to repair. It is necessary to distinguish between repairability as an aspect of ecodesign and the right to repair as a subjective right of the consumer or other end user. Repairability and the right to repair are closely related, one cannot exist without the other. However, repairability is primarily a technical problem, while the right to repair is a problem at the border of law, economics, psychology and other sciences.[54] Repairability is a question of sustainable production, while the right to repair is a question of sustainable consumption. This is reflected in the

[48] European Commission, *Guidance on the Interpretation of Key Provisions of Directive 2008/98/EC on Waste* (June 2012) 30 https://ec.europa.eu/environment/pdf/waste/framework/guidance_doc.pdf accessed 16 November 2025.

[49] Article 2 point (6), Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC [2024] OJ L, 2024/1781.

[50] Tereza Fabšíková, 'Aktuální Vývoj Evropské Právní Úpravy v Oblasti Ekodesignu Výrobků' (2019) 65 *Acta Universitatis Carolinae Iuridica* 69, 70 https://doi.org/10.14712/23366478.2019.29 accessed 25 June 2026.

[51] For the full list of ecodesign requirements which may be subject to regulation, see Article 5, Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC [2024] OJ L, 2024/1781.

[52] Roger Swagler, 'Evolution and Applications of the Term Consumerism: Theme and Variations' (1994) 28 *Journal of Consumer Affairs* 347 https://doi.org/10.1111/j.1745-6606.1994.tb00856.x accessed 25 June 2026.

[53] James Salzman, 'Sustainable Consumption and the Law' (1997) 27 *Environmental Law* 1243.

[54] Keshav Parajuly and others, 'Product Repair in a Circular Economy: Exploring Public Repair Behavior from a Systems Perspective' (2024) 28(1) *Journal of Industrial Ecology* 74 https://doi.org/10.1111/jiec.13451 accessed 25 June 2026.

different regulatory approaches to repairability on the one hand and the right to repair on the other.

The circular economy is often graphically depicted as a loop in which natural resources "circulate" within their life cycle between different phases from design and production through distribution and consumption (including maintenance and repairs) to the phase when the product becomes waste, from which various recovery processes (e.g., recycling) turn waste into a secondary raw material, which can then enter the next cycle within the loop. It is a material – product – waste – material loop. Although this model is simplistic (e.g., residual waste also arises to some extent, and therefore part of the original natural resources "fall out" of the loop), it clarifies the essence of the concept of a circular economy.[55]

One of the goals of the circular economy is to close resource loops as much as possible, so that the largest possible share of natural resources continues to "circulate" and does not end up in the waste phase, i.e., so that it is truly a loop and not a straight line.[56] The main purpose of closing loops is to regulate the management of waste and secondary raw materials.[57] From this point of view, legal regulation should aim to turn waste into secondary raw materials and at the same time to ensure that there is a well-functioning market for secondary raw materials.[58]

The second basic goal of the circular economy from the perspective of resource loops is to slow down the loops, which consists primarily in extending the lifespan of products, or more broadly in preferring products with a longer lifespan.[59] Extending the lifespan of products can be achieved by various tools, e.g., by prioritising reusable products over single-use ones, by adopting mandatory eco-design requirements, by regulating industrial processes, or by sustainable consumption tools. Slowing down resource loops contributes to waste prevention.

While closing resource loops is primarily focused on waste management (and secondary raw materials management), slowing resource loops places emphasis on the phase before a product becomes waste. This distinction is essential for a correct understanding of the circular economy, which is neither just about waste management, nor just about waste prevention. However, according to the waste hierarchy, waste prevention must be a priority.[60]

In addition, scholarly literature recognises a third approach to the circular economy, which is narrowing resource loops.[61] This consists in reducing the amount of resources used to produce a certain product. In other words, it is about increasing

[55] Walter R Stahel, 'The Circular Economy' (2016) 531(7595) *Nature* 435 https://doi.org/10.1038/531435a accessed 25 June 2026.
[56] Sami Kara and others, 'Closed-Loop Systems to Circular Economy: A Pathway to Environmental Sustainability?' (2022) 71(2) *CIRP Annals* 505 https://doi.org/10.1016/j.cirp.2022.05.008 accessed 25 June 2026.
[57] Julia Hoernig, 'Towards 'Secondary Raw Material' as a Legal Category' (2022) 24(2) *Environmental Law Review* 111 https://doi.org/10.1177/14614529221087642 accessed 25 June 2026.
[58] European Environment Agency, *Investigating Europe's Secondary Raw Material Markets* (Publications Office of the European Union 2023) https://doi.org/10.2800/48962 accessed 25 June 2026.
[59] Nancy M P Bocken and others, 'Product Design and Business Model Strategies for a Circular Economy' (2016) 33(5) *Journal of Industrial and Production Engineering* 308, 309-310 https://doi.org/10.1080/21681015.2016.1172124 accessed 25 June 2026.
[60] Article 4(1)(a), Waste Framework Directive.
[61] Bocken and others (n 59) 309, 310.

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resource efficiency.[62] The tool for this is primarily the regulation of ecodesign[63] and production processes.[64]

Reducing the amount of resources used to produce certain products can potentially lead to a smaller amount of waste. However, it is unfortunately a well-known phenomenon that technological progress enabling more efficient use of a certain natural resource often leads to a reduction in the price of such a resource, which increases the demand for it, and as a result, the consumption of the given resource is ultimately higher than before (the so-called Jevons paradox).[65] Increasing resource efficiency can paradoxically have undesirable consequences. Therefore, it requires careful monitoring of its consequences and, accordingly, the use of other instruments to support sustainable consumption, whether these are direct regulatory instruments or, for example, economic instruments. The benefits derived from higher resource efficiency must be taxed or otherwise removed from further economic circulation and they should be used primarily for investments in the restoration of natural capital.[66]

Among these various strategies for quantitative waste prevention, the extension of product lifespans through ecodesign, repairability, and sustainable consumption deserves particular attention. However, the effective implementation of these strategies confronts a fundamental obstacle: the phenomenon of product obsolescence. Understanding the different types of obsolescence is essential for developing coherent legal responses to waste prevention challenges.

4. PRODUCT OBSOLESCENCE

While ecodesign can enable longer-lasting products, and the right to repair can facilitate product maintenance, these measures are undermined when products become obsolete prematurely. It is difficult to define the concept of product obsolescence in general, because obsolescence can have many forms and can occur due to many reasons.[67, 68] However, what they all have in common is that over time, a given product ceases to be suitable or useful for its owner for certain reasons, and as a result of that, the product prematurely (earlier than would be usual or desirable) becomes waste. At least the following types of obsolescence can be distinguished:[69]

Arguably, the most commonly mentioned type is planned obsolescence. This consists in intentional (i.e., conscious and intended) conduct in which a product is

[62] Organisation for Economic Co-operation and Development, Policy Guidance on Resource Efficiency (OECD Publishing 2016) https://doi.org/10.1787/9789264257344-en accessed 25 June 2026.
[63] Carl Dalhammar, 'Promoting Energy and Resource Efficiency through the Ecodesign Directive' (2014) 59 *Scandinavian Studies in Law* 147.
[64] Kimmo Silvo, Timo Jouttijärvi and Matti Melanen, 'Implications of Regulation Based on the IPPC Directive – A Review on the Finnish Pulp and Paper Industry' (2009) 17(8) *Journal of Cleaner Production* 713 https://doi.org/10.1016/j.jclepro.2008.11.011 accessed 25 June 2026.
[65] Antonio Alonso-Jiménez and Manuel Regueiro González-Barros, 'The Paradox of the Circular Economy in the Raw Materials Industry' (2022) 349, 350-351 *E3S Web of Conferences* 01003 https://doi.org/10.1051/e3sconf/202234901003 accessed 25 June 2026.
[66] Mathis Wackernagel and William E Rees, 'Perceptual and Structural Barriers to Investing in Natural Capital: Economics from an Ecological Footprint Perspective' (1997) 20(1) *Ecological Economics* 3, 20 https://doi.org/10.1016/S0921-8009(96)00077-8 accessed 25 June 2026.
[67] Lesly Sierra-Fontalvo and others, 'Decoding Product Obsolescence: A Taxonomic Approach from Product Design Attributes' (2024) 475 *Journal of Cleaner Production* 143635 https://doi.org/10.1016/j.jclepro.2024.143635 accessed 25 June 2026.
[68] Among scholars, there is no single, universally accepted classification of the types of product obsolescence.
[69] Mónica García Goldar, 'Types of Obsolescence and Ways to Combat It from Private Law' (2021) 3(6) *Legal-Political Analysis* 231, 234-237 https://doi.org/10.22490/26655489.4743 accessed 25 June 2026.

designed and manufactured in such a way as to shorten its lifespan compared to the lifespan it would have achieved if such action had not been taken.[70] After a certain period of time (sometimes only shortly after the expiration of the product's guarantee period), the product ceases to be functional or its performance is reduced. Planned obsolescence can also take the form of the intentional limitation of the repairability of the product.[71] If a defect occurs in a product that cannot be properly removed as a result of the manufacturer's intentional conduct in designing the product, the product can no longer serve its purpose and thus prematurely reaches the end of its lifespan. Another example of planned obsolescence, which has appeared in practice, is the intentional reduction of the performance of a product after its owner installs a software update for the product.[72] All these forms of planned obsolescence directly contradict the ecodesign principles discussed above, as they intentionally undermine product durability and repairability.

The reasons for such intentional conduct by manufacturers or other persons in the value chain are economic. The aim is to make the customer need or want to buy a product that fulfils the given need again sooner.[73] This intentional conduct harms not only consumers but also the environment because it leads to the creation of a larger amount of waste and thus conflicts with the goal of waste prevention. It is a specific business strategy which accelerates resource loops. It is necessary for law to regulate planned obsolescence in an appropriate manner (e.g., by prohibiting such conduct or through ecodesign).[74]

In connection with planned obsolescence, it is also necessary to take into account such obsolescence which is a consequence of the relatively low quality of the product (its components, materials or method of execution). The quality of the product is mainly the result of the manufacturer's decision. Similar to planned obsolescence, this is essentially intentional conduct by the manufacturer which affects the product's lifespan. Relatively lower quality products (in terms of lifespan) are less desirable from an environmental perspective, because they ultimately lead to faster waste generation and greater resource consumption. This is also related to the fact that relatively lower quality products are usually cheaper and therefore more accessible to consumers, which contributes to their greater and less sustainable consumption and a more significant negative impact on the environment.[75] For these reasons, law should

[70] Nicole Cullen, 'From Lightbulbs to #Sheinhauls: Considerations for Planned Obsolescence Regulation in the Modern Era' (2024) 99(2) *Washington Law Review* 607, 608 https://digitalcommons.law.uw.edu/wlr/vol99/iss2/8 accessed 25 June 2026.

[71] Maja van der Velden, Eléonore Maitre-Ekern and Deborah Katland Wanja, 'The Role of Independent Repair in a Circular and Regenerative Economy' (2024) 4(4) *Circular Economy and Sustainability* 2981, 2985 https://doi.org/10.1007/s43615-023-00304-y accessed 25 June 2026.

[72] Sylvie De Macedo, 'Modèles d'iPhone « Ralentis » : 25 Millions d'Euros d'Amende pour Apple' *Le Parisien* (7 February 2020) https://www.leparisien.fr/high-tech/apple-ecope-d-une-amende-record-de-25-millions-d-euros-pour-defaut-d-information-des-consommateurs-07-02-2020-8254773.php accessed 29 September 2024.

[73] Jeremy Bulow, 'An Economic Theory of Planned Obsolescence' (1986) 101(4) *The Quarterly Journal of Economics* 729 https://doi.org/10.2307/1884176 accessed 25 June 2026.

[74] Jurgita Malinauskaite and Fatih Buğra Erdem, 'Planned Obsolescence in the Context of a Holistic Legal Sphere and the Circular Economy' (2021) 41(3) *Oxford Journal of Legal Studies* 719 https://doi.org/10.1093/ojls/gqaa061 accessed 25 June 2026.

[75] This is a serious problem in the field of e-commerce, often in relation to goods imported from third countries outside the EU. See European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A Comprehensive EU Toolbox for Safe and Sustainable E-commerce* COM(2025) 37 final (5 February 2025) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0037 accessed 25 June 2026.

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also address the issue of product quality in selected cases with the aim, among other things, of preventing rapid obsolescence and waste generation.

The question is whether the obsolescence of relatively lower quality products should be considered as part of planned obsolescence or as a separate problem. On the one hand, they are linked by the manufacturer's intentional conduct concerning the design of the product. On the other hand, relatively high-quality products can also be subject to planned obsolescence if they are designed and manufactured in such a way that they lose their functionality or their performance is reduced otherwise than as a result of normal wear and tear.

The answer to this question will depend on the purpose for which we define the concept of planned obsolescence. If it is a question of defining the objectives of ecodesign requirements which may be adopted, it will be desirable for the definition of planned obsolescence to be as broad as possible and to include the obsolescence of relatively low-quality products.[76]

On the other hand, if we want to define planned obsolescence as criminal conduct, the requirement of legal certainty must be met (*nullum crimen sine lege certa*). As a result of that, the definition cannot be infinitely broad and too vague.[77] It would therefore obviously not be sufficient and would not be in line with constitutional and human rights law to define the crime of premature obsolescence, for example, as an intentional act of the manufacturer as a result of which the product achieves a shorter lifespan than the buyer could reasonably expect for products of the same type. Leaving aside whether such broad criminalisation would be appropriate and necessary at all, such a definition would include relatively lower quality products, but it would inadmissibly undermine legal certainty. Among other things, it would be difficult to establish what the lifespan is that the buyer could reasonably expect for products of the same type (if the minimum lifespan were not set by law).

On the other hand, such a more general definition will not necessarily be excluded in civil or commercial law, which are based on different legal principles. The 2019 Sales of Goods Directive, for example, currently stipulates that the seller is liable to the buyer-consumer that, in addition to the agreed properties, the good, among other things, corresponds in its durability to the usual properties of goods of the same type that the buyer can reasonably expect.[78] The interpretation and application of this provision in specific cases will obviously require a case-by-case specification, which is left primarily to the civil courts. In any case, this is a provision which is directed against "below average" products in terms of, among other things, durability, even though this provision is primarily motivated by consumer protection, and not by environmental protection and waste prevention.

[76] The Ecodesign Regulation defines premature obsolescence rather narrowly in Article 2 point 21 as "a product design feature or subsequent action or omission resulting in the product becoming non-functional or performing less well without such changes of functionality or performance being the result of normal wear and tear". Products of relatively low quality become obsolete quickly due to their design features, but the obsolescence occurs due to normal wear and tear and is therefore not premature obsolescence within the meaning of the legal definition cited. Despite this, the Ecodesign Regulation allows for the setting of different ecodesign requirements (e.g., durability or reliability of the product), thus also addressing the problem of relatively low-quality products.

[77] It must be foreseeable what conduct is illegal and might give rise to criminal liability (see, e.g., judgment of the European Court of Human Rights of 25 May 1993, Kokkinakis v Greece (Judgment) ECtHR App No 14307/88 (25 May 1993)).

[78] Article 7(1)(d), Directive (EU) 2019/771 of the European Parliament and of the Council of 20 May 2019 on certain aspects concerning contracts for the sale of goods, amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and repealing Directive 1999/44/EC [2019] OJ L136/28.

Closely related to planned obsolescence is obsolescence resulting from the fact that a product which requires repair cannot be repaired easily or at all: indirect obsolescence.[79] Repairability depends to a large extent on how the product was designed and manufactured, i.e., again on the intentional conduct of the manufacturer. However, the causes of indirect obsolescence can also be other, e.g., spare parts are not available, repair costs are disproportionately high for various reasons, etc. If a product is not easily repairable for any reason, it is likely that its owner will get rid of it and the product will thus become waste. This highlights why the right to repair, discussed in the context of sustainable consumption above, requires not only legal rights but also practical availability of spare parts and reasonable repair costs. The repairability of products and the right to repair are therefore also key measures for preventing waste.

Another type of obsolescence that is becoming increasingly relevant today is digital obsolescence.[80] An increasing number of products placed on the market are products with digital elements, especially software, which may require ongoing updates and support. If a manufacturer decides at a certain point that it will no longer provide updates and support at all or that newer software will only be compatible with newer product models, the existing product will usually no longer be able to fully fulfil its purpose, which may lead its owner to decide to discard the product and the product will thus become waste. This represents a contemporary challenge to the ecodesign strategies outlined above, requiring legal frameworks to extend beyond physical product characteristics to encompass digital support obligations. In order to prevent waste, it is therefore necessary that the law also prevents premature digital obsolescence.

Psychological obsolescence is of a completely different nature. In this case, the product itself as an object does not become obsolete.[81] Psychological obsolescence consists in artificially creating the impression in potential customers that they should discard their current product (making it waste) and replace it with a new one, even though the current product is still able to perform its function well. Psychological obsolescence is therefore based on a particular business model and marketing.

Psychological obsolescence occurs more often in some sectors of the economy than in others. This is especially the case of fashion or electronics. Fashion and electronics are products associated with style and social status. That is why we sometimes talk about style obsolescence and throw-away culture, a phenomenon with roots far back in the 20th century.[82] Many manufacturers in these sectors change their product models extremely quickly and try to convince potential customers to replace old models with new ones. This then leads to psychological obsolescence of the older models, even though they could objectively still perform their function. Psychological obsolescence is therefore subjective in nature, unlike, for example, planned or digital obsolescence. It concerns the subject (the product owner), not the object (the product

[79] Jana Valant, *Planned Obsolescence: Exploring the Issue* (European Parliamentary Research Service 2016) https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/581999/EPRS_BRI(2016)581999_EN.pdf accessed 29 September 2024.

[80] Sandra Deljanin, 'Digital Obsolescence' (2012) 13(1) *Infotheca – Journal for Digital Humanities* 43 https://infoteka.bg.ac.rs/ojs/index.php/Infoteka/article/view/380 accessed 25 June 2026.

[81] Justin Spinney and others, '"What I've Found Is That Your Related Experiences Tend to Make You Dissatisfied": Psychological Obsolescence, Consumer Demand and the Dynamics and Environmental Implications of De-Stabilization in the Laptop Sector' (2012) 12(3) *Journal of Consumer Culture* 347 https://doi.org/10.1177/1469540512456928 accessed 25 June 2026.

[82] Nigel Whiteley, 'Toward a Throw-Away Culture: Consumerism, "Style Obsolescence" and Cultural Theory in the 1950s and 1960s' (1987) 10(2) *Oxford Art Journal* 3 https://doi.org/10.1093/oxartj/10.2.3 accessed 25 June 2026.

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itself). In other words, it is a question of sustainable consumption and is another significant problem that law should address in order to prevent waste.

Another type of obsolescence is technical/technological obsolescence. This is related to how our society develops over time. Scientific and technological progress occurs and at the same time the values and needs of society change. As a result, products that could still fulfil their function from a technical or technological point of view become useless or unsuitable. Examples include a VHS player, a fax machine, new types of lighting or new models of household appliances.

Unlike planned obsolescence, technical/technological obsolescence will often be legitimate and even desirable from an environmental perspective.[83] For example, newer products may be more energy or resource efficient (consume fewer resources, e.g., household or office appliances)[84] or less polluting to the environment (e.g., emissions from cars or heating sources). From another perspective, newer products may be safer. The interest in preventing waste will therefore in such situations conflict with other legitimate interests protected by law, in particular other environmental interests or the interest in product safety. Technical or technological obsolescence is therefore specific in that it may be desirable depending on individual circumstances. Therefore, law should not always impede it, taking into account the overall impact on the environment, even if it means the production of waste.

All this shows us how complex and multi-layered the quantitative aspect of waste prevention is. Although it is not obvious at first glance, the legal measures for waste prevention are potentially numerous and are far from being only waste law measures. Increasingly, these include tools regulating sustainable production and consumption.

5. WASTE PREVENTION IN THE QUALITATIVE SENSE

In addition to the quantitative aspect, it is also necessary to analyse the qualitative aspect of waste prevention. This is usually defined as the prevention of hazardous waste.[85] Compared to the quantitative aspect of waste prevention, the qualitative aspect is narrower in a certain sense. It concerns the prevention of only one of the two categories of waste, namely hazardous waste (versus non-hazardous waste) whose reduction has been advocated for decades.[86] The qualitative aspect of waste prevention does not directly imply the requirement to reduce the total amount of all waste generated, but only of hazardous waste. The mere prevention of hazardous waste does not mean that waste will no longer be generated at all during a given activity. It might be "replaced" by the production of non-hazardous waste, so the total amount of waste does not necessarily have to change and be reduced. Or it might be "replaced" by other hazardous waste which will be less hazardous and pose a lower risk to the

[83] In some cases, the government even motivates consumers to replace an old product with a new one through subsidies (e.g., for the purchase of an electric car, a new heating source, or the installation of house insulation).

[84] This can have not only environmental but also financial benefits for customers. The issue is that customers are often unaware of this financial advantage or do not know its extent when making decisions. See Julia E Blasch and others, 'Boosting the Choice of Energy-Efficient Home Appliances: The Effectiveness of Two Types of Decision Support' (2022) 54(31) *Applied Economics* 3598 https://doi.org/10.1080/00036846.2021.2014395 accessed 25 June 2026.

[85] According to Article 3 point 12, Waste Framework Directive, waste prevention includes measures that reduce the adverse impacts of the generated waste on the environment and human health, and the content of hazardous substances in materials and products.

[86] Hirschhorn, JS and Oldenburg, KU, 'Hazardous Waste: Prevention or Cleanup?' (1987) 21(6) *Environmental Science & Technology* 532 https://doi.org/10.1021/es00160a601 accessed 25 June 2026.

environment and human health.[87] Where it is not possible to completely prevent the generation of hazardous waste, the aim is to at least minimise its adverse impacts on the environment and human health.

We may distinguish a large number of qualitative waste prevention legal frameworks. However, there will be three main groups. First, there will be general and sectoral (specific) regulations regulating the placing on the market of chemical substances and mixtures.[88] Examples include the REACH Regulation,[89] the CLP Regulation[90] and sector-specific legislation, such as the Cosmetics Regulation.[91] Secondly, there are regulations governing the ecodesign of products, e.g., the Ecodesign Regulation. Thirdly, there are legal instruments regulating industrial and other activities, such as the IPPC Directive.[92] Some of these regulations can serve to fulfil both the quantitative and qualitative aspects of waste prevention at the same time. For example, within the framework of ecodesign, measures can be introduced both to support a longer lifespan of products and to limit the presence of hazardous substances in them. However, the objectives of quantitative and qualitative waste prevention are different.

From the perspective of comprehensive environmental protection, the qualitative aspect of waste prevention is extremely important. However, it is questionable whether, in the context of the circular economy, the classification of both quantitative and qualitative aspects under the common concept of waste prevention can still be sustained. At least two objections can be raised against this.

First, considering quantitative and qualitative waste prevention as two sides of the same issue may, given their different objectives, lead to the neglect of one aspect in favour of the other. It would be problematic, in particular, to neglect quantitative waste prevention, because it is more desirable that no waste is generated rather than having waste which is "just" less hazardous. Distinguishing quantitative and qualitative waste prevention will enable their more consistent and effective implementation. Gradual reduction of some hazardous substances (e.g., PFAS, sometimes called "forever chemicals") in products does not address the amount of waste generated. Conversely, legally binding waste reduction targets do not address the hazardous properties of waste. From a sustainability perspective, we need both quantitative and qualitative waste prevention, but they are not two related problems. It would therefore be appropriate to clearly distinguish between them, which is not the case in the current legislation. We must

[87] Lidia Kim and others, 'A Comprehensive Methodology for Assessing the Hazardousness of Waste Categorized in the European Union Legislation as "Mirror Entries"—Case Studies' (2023) 10(10) *Environments* 183 https://doi.org/10.3390/environments10100183 accessed 25 June 2026.

[88] Joonas Alaranta and Topi Turunen, 'How to Reach a Safe Circular Economy?—Perspectives on Reconciling the Waste, Product and Chemicals Regulation' (2021) 33(1) *Journal of Environmental Law* 113, 122 https://doi.org/10.1093/jel/eqaa016 accessed 25 June 2026.

[89] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC [2006] OJ L396/1.

[90] Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 [2008] OJ L353/1.

[91] Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products (recast) [2009] OJ L342/59.

[92] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (recast) [2010] OJ L334/17.

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clearly define in which cases (areas) we require less waste altogether and in which cases we will be satisfied with lower amounts of hazardous waste or less hazardous waste.[93]

Second, qualitative waste prevention is not waste prevention from a textual point of view. It is only the prevention of its hazardous properties. It can be assumed that the reason why not only its quantitative but also qualitative aspects are always included under the concept of waste prevention is that they are connected by the more general principle of prevention. The quantitative aspect consists in the prevention of the amount of waste, whereas the qualitative aspect in the prevention of the hazardous properties of waste. If we look at the different language versions of the waste hierarchy according to the Waste Framework Directive, the simple term prevention is actually used in a number of languages (prevention in English, *prévention* in French, *prevención* in Spanish). In German, the term *Vermeidung* is used, i.e., avoidance, without specifying what should be avoided. In Czech, the expression *předcházení vzniku* is used, similar to Slovak *predchádzanie vzniku*, which both mean "prevention of generation". It must be noted that the more general term "prevention" and the more specific term "prevention of generation" are not identical in meaning in common language. The concept of prevention is significantly broader, and can include prevention in any sense, while prevention of generation, according to a purely textual interpretation, should consist only in quantitative prevention of waste generation (reducing the amount of waste generated). The law may create its own legal definitions, but ideally they should be as precise as possible and not deviate unreasonably from the general understanding of the concepts defined.

There is no dispute that the general principle of prevention should be applied in a broad sense also in the field of waste management. It is a general principle of law, including environmental law.[94] Therefore, if we were to be consistent, we should not limit prevention only to the prevention of waste generation on the one hand and to the prevention of hazards (i.e., to limiting the presence of hazardous substances in materials, products and waste or limiting the hazardous properties of waste) on the other hand. In the context of a circular economy, it is equally important to prevent the generation of waste which will not be recoverable (suitable for reuse, recycling, energy or other recovery) or will be recoverable only with difficulties. For this reason, for example Spanish law generally correctly requires reducing the generation of waste which is not suitable for reuse or recycling.[95]

Even in a circular economy, a certain amount of waste will always be generated, but the goal is to achieve the highest possible level of its recovery, whether through preparation for reuse, recycling, energy or other recovery.[96] The recovery of waste is often made more difficult by the presence of hazardous substances or mixtures, but this does not necessarily apply in all cases. The recovery of, for example, packaging waste is often complicated by a large proportion of different dyes or combinations of different materials, which do not necessarily have to be hazardous chemical substances or

[93] Alba Nogueira López, '¿Circular o en Bucle? La Insuficiente Transformación de la Legislación de Residuos' (2022) 21 *Revista Aragonesa de Administración Pública* 11, 12 https://revistaaragonesa.aragon.es/index.php/raap/article/view/450 accessed 25 June 2026.
[94] Article 191(2), Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/47.
[95] Article 18(1)(j), Ley 7/2022, de 8 de abril, de residuos y suelos contaminados para una economía circular.
[96] Federico Savini, 'The Circular Economy of Waste: Recovery, Incineration and Urban Reuse' (2021) 64(12) *Journal of Environmental Planning and Management* 2114 https://doi.org/10.1080/09640568.2020.1857226 accessed 25 June 2026.

mixtures.[97] The recovery of waste can therefore also be made more difficult by certain aspects of product design which are not hazards in the ordinary sense of the word, because they do not pose a risk to human health, for example. However, these aspects of product design are also undesirable in a circular economy and we need to prevent them. It is therefore clear that qualitative prevention within waste management, if consistently conceived, should also include the prevention of the generation of unrecoverable or difficult-to-recover waste.[98]

However, this broader concept of qualitative waste prevention does not appear in the current legislation (with one exception analysed below). The current law limits qualitative prevention to hazardous substances and mixtures, which is inconsistent and may – from the doctrinal point of view – be considered outdated in the context of a circular economy.

Two solutions are offered: expanding the legal definition of waste prevention to include the prevention of unrecoverable or difficult-to-recover waste, or, conversely, narrowing the legal definition of waste prevention to include only quantitative waste prevention.

The second (narrower) concept of waste prevention appears to be more appropriate. If we were to follow the first path of expanding the definition, the concept of waste prevention would become even vaguer. This could jeopardise the effective implementation of all the various aspects of prevention, which, although they are different forms of the prevention principle, have significantly different goals (limiting the amount of waste generated in general, limiting hazardous properties, limiting the generation of unrecoverable or difficult-to-recover waste). A narrower concept would ensure not only terminological clarity, but also a clearer definition of what we are dealing with and what we should be aiming for. This does not mean that the legal regulation should focus only on quantitative waste prevention. Qualitative prevention in the sense of preventing hazardous properties and unrecoverable or difficult-to-recover waste is also important. However, it would be more appropriate not to refer to it as waste prevention because it is not exactly waste prevention.

The narrower (only quantitative) concept of waste prevention has recently appeared in European law for the first time, namely in the new Packaging Regulation. According to it, packaging waste prevention means

> measures that are taken before any packaging or packaging material has become packaging waste and that reduce the quantity of packaging waste, so that less or no packaging is required to contain, protect, handle, deliver or present products, including measures as regards the re-use of the packaging and measures to extend the life of the packaging before it becomes waste.[99]

This definition therefore covers only quantitative waste prevention. The Packaging Regulation also sets out requirements for qualitative prevention in a number of its provisions, e.g., limiting the presence of certain chemicals in packaging (e.g., Article 5) or

[97] Anna-Sophia Bauer and others, 'Recyclability and Redesign Challenges in Multilayer Flexible Food Packaging—A Review' (2021) 10(11) *Foods* 2702 https://doi.org/10.3390/foods10112702 accessed 25 June 2026.

[98] Essi Karell and Kirsi Niinimäki, 'Addressing the Dialogue between Design, Sorting and Recycling in a Circular Economy' (2019) 22(sup1) *The Design Journal* 997 https://doi.org/10.1080/14606925.2019.1595413 accessed 25 June 2026.

[99] Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC [2025] OJ L, 2025/40.

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the recyclability of packaging (e.g., Article 6). However, it no longer calls this waste prevention, which is in line with the arguments presented above.

It may also be noted that in September 2025, a Directive amending the Waste Framework Directive was adopted.[100] The revised Directive now also includes provisions to prevent the generation of food waste, i.e., it requires measure for the quantitative food waste prevention. While it does address qualitative food waste prevention, this cannot be seen as a paradigm but rather as a natural consequence of the issue in question. Food waste, by its very nature, represents a problem in terms of its quantity, not hazardous properties.

From the theoretical point of view, it is therefore appropriate to distinguish between prevention in the quantitative and qualitative sense. It is suggested that the term "waste prevention" should be applied only to waste prevention in the quantitative sense (reducing the amount of waste). Other issues related to prevention in a circular economy must also be dealt with but they should not be designated as waste prevention.

6. CONCLUSIONS

Although it may not be obvious at first sight, waste prevention is a complex and multi-layered problem which may be approached in different ways, both within and outside the law. In the European context, the perception of waste prevention is largely predetermined by EU law and policy. However, as this study shows, the current two-fold concept of waste prevention in its quantitative and qualitative aspects, derived from the 2008 Waste Framework Directive, no longer meets our contemporary needs.

The systematic case law analysis performed in this study reveals a concerning gap between legislative prioritisation and judicial application of waste prevention. While the Court of Justice and the General Court often cite the notion of waste prevention in the introductory sections of their judgments, providing legal context, they rarely engage with it substantively in their legal reasoning. The *Porr Bau* case represents a notable exception, showing that waste prevention can meaningfully inform judicial interpretation. These findings suggest that waste prevention currently functions more as a declaratory principle than as a guiding legal standard. In the context of the transition to a circular economy, courts should follow the *Porr Bau* approach and use the concept of waste prevention to inform their decision-making.

The examination of quantitative waste prevention in this study reveals its multifaceted nature and the challenge of product obsolescence. Slowing resource loops through extended product lifespans represents the essence of quantitative waste prevention. However, this objective is confronted by multiple forms of obsolescence in practice: planned, indirect, digital, psychological, and technical/technological. Some forms, particularly planned obsolescence, directly contradict waste prevention objectives and require regulatory intervention. Others, such as technical obsolescence driven by energy efficiency improvements, may sometimes be environmentally desirable. Legal frameworks must therefore be sophisticated enough to distinguish between obsolescence which should be prevented and obsolescence which may serve legitimate environmental purposes.

The qualitative aspect of waste prevention presents fundamental conceptual problems. Treating quantitative and qualitative prevention as two sides of the same concept risks neglecting one dimension in favour of the other and creates terminological

[100] Directive (EU) 2025/1892 of the European Parliament and of the Council of 10 September 2025 amending Directive 2008/98/EC on waste [2025] OJ L, 2025/1892.

confusion, as qualitative prevention does not actually prevent waste from being generated but rather addresses its hazardous properties. Moreover, the current understanding of qualitative waste prevention is, from a theoretical point of view, incomplete in the circular economy context. It fails to address the prevention of non-recoverable waste (waste which cannot be readily recycled or otherwise recovered).

This study therefore proposes a reconceptualisation: the term "waste prevention" should be reserved only for measures which reduce the amount of waste generated. Other important objectives, such as limiting hazardous substances, ensuring recoverability, or increasing resource efficiency, should be addressed through specially targeted legal frameworks but should not be included in the term "waste prevention". This narrower definition would provide terminological clarity, enable more focused policy development, and facilitate implementation.

Although the concept of waste prevention has been an important part of EU law for several decades, its understanding must evolve and adapt to developments in society. If we want to effectively prevent waste, we must clearly identify the problems that lead to the production of relatively large amounts of waste.

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