

*Proceedings of the 26th International Symposium "The Environment and the Industry"  
 (SIMI 2023), 27-29 September 2023*

### **Waste management regulatory framework in the circular economy context**

RUXANDRA-EUGENIA POP<sup>1</sup>, STELIANA RODINO<sup>1,2\*</sup>

<sup>1</sup>*Institute of Research for Agriculture Economy and Rural Development, 61 Marasti Blvd, District 1, Bucharest, Romania, office@iceadr.ro*

<sup>2</sup>*National Institute of Research and Development for Biological Sciences, 296 Splaiul Independenței, District 6, Bucharest, Romania*

\*Correspondence author: [steliana.rodino@yahoo.com](mailto:steliana.rodino@yahoo.com)

*Received:*  
14.09.2023

*Accepted:*  
12.12.2023

*Published:*  
20.12.2023

#### **Abstract**

*One of the main challenges regarding the transition to a circular economy at the European level is waste management and achieving specific objectives. By 2025, the recycling and reuse rate of municipal waste should reach 55% and the total volume of recycled packaging 65%, according to European Directives (Waste Directive 05/07/2018). Statistical data and EEA reports are not encouraging: most European countries will not be able to reach these targets until 2025. The current work aims to analyze European legislation regarding waste management but also the national transposition measures communicated by the Member States. The reference statistical data regarding the efficiency of waste management are also analyzed, at the member states level and at national level, to determine to what extent Romania has reached the targets set by the European Commission regarding waste management, depending on the specific time horizon set by the reference legislative policies.*

**Keywords:** *circular economy, recycling rate, regulatory context, waste management*

#### **INTRODUCTION**

At the European level, reducing waste and increasing the recycling rate are just some of the important objectives regarding the transition to a “more cleaner and competitive Europe”.

In the domain of contemporary international treaties, it is notable to mention the following universal agreements: the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change from 2015. Within the context of regional agreements, noteworthy treaties include the European Strategy on Plastics from 2018, the European Green Deal from 2019, and the Circular Economy Action Plan from 2020. Going deeper into European Union legislative context, the Waste Framework Directive is setting the regulatory framework governing waste management and disposal practices, providing guidelines and standards for the sustainable handling and treatment of waste materials within the European Union Member States.

According to the Circular Economy Plan [1], “each citizen produces on average nearly half a tonne of municipal waste” and despite reducing waste efforts, the reference statistics aren’t encouraging. In this context, it is the member states responsibility to ensure that each producer, manage waste efficiently, even if this is done by outsourcing services (private or public waste collector) [2]. The legal framework requires that the waste management applied priorities is: “prevention, preparing for re-use, recycling, other recovery and disposal” [3]. Thus, generally, human health and the environment as well are protected, with specific interest for reducing risk at water, air, soil, plants or animals’ level, for neutralizing the discomfort caused by smell or noise and for ensuring rural areas protection [4]. According to the Waste Framework Directive

(version 05/07/2018), “by 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively” [5].

In Romania, as in others European countries, the main document that represents the foundation of waste management strategies is National Waste Management Plan. Unfortunately, in the European Commission published report in 2023, Romania is mentioned among others 17 countries (Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Greece, Hungary, Ireland, Lithuania, Latvia, Malta, Poland, Portugal, Slovakia, Spain and Sweden) being at risk of missing one or more Waste Framework Directive targets until 2025 [6]. In addition, according to 2030 Agenda, it is mandatory that 17 Sustainable Development Goals to be achieved, category in which GOAL 11 Sustainable cities and communities, GOAL 12 Responsible consumption and production, with specific waste addressing indicators [7].

In circular economy context, the present article offers a perspective regarding the waste management legislative framework, at the EU member states level and the Romanian transposed context.

## **MATERIALS AND METHODS**

This article employs a variety of scientific methodologies, including but not limited to observation, analysis and synthesis, simulations, system structural analysis, formal logical reasoning, historical research, and more. The study draws upon a diverse information pool, including international organizations documents, European Union legislation, national legislation, international normative legal texts, as well as data from official statistics. Therefore, in order to achieve the goal of the present work, one of the applied methods is the qualitative analysis of the legislative and administrative framework, at the level of the European member states, with an emphasis on the Romanian national legislation in force regarding waste management.

Therefore, starting from Waste Framework Directive, we analyzed the Romanian National Waste Management Plan, and also legislative counterparts across European countries. Furthermore, in order to evaluate to which degree the European directives and policies have been effectively applied, specialized official open access statistical databases (EUROSTAT, National Statistics Institute) related to the specific SGD goals indicators (11.6.1 Municipal Solid Waste Management, 12.4.1 Information Transmitted under Chemicals and Waste Conventions, 12.4.2 Hazardous Waste generated and treated, 12.5.1 National Recycling Rate) will be referred.

## **RESULTS AND DISCUSSION**

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives) sets important targets and objectives aimed at improving waste management practices and fostering sustainability within the European Union. Its targets and objectives are related to waste reduction, waste hierarchy, recycling targets, extended producer responsibility, landfill diversion. In the same time, the focus of this directive on promoting the circular economy aligns with global sustainability goals. By encouraging the efficient use of resources and reducing waste, it contributes to a more sustainable and environmentally responsible economy.

According to this version, the two main objectives for the 2020 reference year are: “the preparing for re-use and the recycling of waste materials (such as paper, metal, plastic and glass) from households shall be increased to a minimum of overall 50 % by weight” and “the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight”[8].

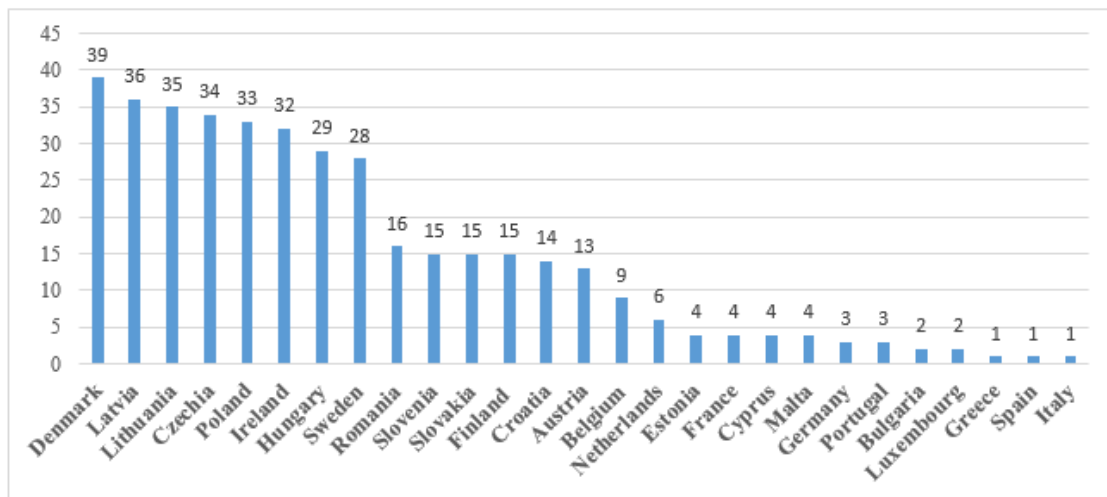
In 2018, Eunomia published a report for European Commission, in order to identify European member states at risk of non-compliance with the 2020 target of the Waste Framework. Romania was mentioned in this report, with a 31% final distance to 2020 target, followed by Slovakia (23%), Malta (22%), Cyprus (18%), Croatia (17%). There are also mentioned countries that achieved the

2020 targets, such as Czechia, Ireland, Italy, Lithuania [9]. Considering the construction and demolition waste recycling 2020 objective, European Commission published in 8 February 2018 a report for “CDW - the largest waste stream by volume in EU” [10].

In this document, Romania is mentioned in “relatively small CDW market and with a low CDW recycling performance” European countries, among Czechia, Hungary, Greece, Bulgaria, Portugal, Croatia, Lithuania, Latvia, Slovakia, Slovenia, Estonia and Cyprus. Countries like Netherlands, Sweden, Denmark, Luxembourg, Germany and Austria are countries with a good CDW recycling collection and treatment and a relatively large market. The same source states that countries such as Netherlands, Denmark, Germany, Belgium, France and Italy have the most complex legislation regarding CDW recycling infrastructure [10].

Regarding the Waste Framework Directive, all the European countries have implemented several measures. At the time of 2018, In Romania, the Law no. 211/2011 [11] defined waste and regulated waste management, with two others important regulation Law no. 101/2006 (which sets the legislative framework for waste management operators) [12] and Law no. 50/1991 (which authorizes the execution of construction works and some measures for housing, as amended and supplemented) [13].

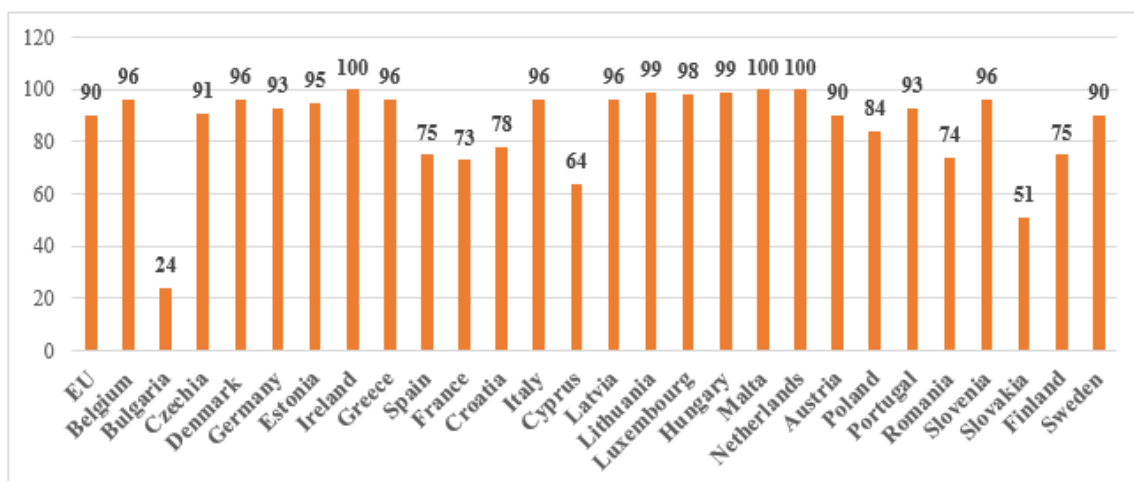
In Figure 1 it can be observed the number of national transposition measures communicated by the Member States (until transposition deadline 2010).



**Fig. 1.** The number of national transposition measures communicated by the Member States (until 12/12/2010) [2]

*Waste Framework Directive’s goals achievement in EU Member States*

Overall, at the end of 2018, recovery rate of construction and demolition waste in EU was 90%, with significant differences between the member states countries (Figure 2) [14].



**Fig. 2.** Recovery rate of construction and demolition waste in EU member states, 2018 [14]

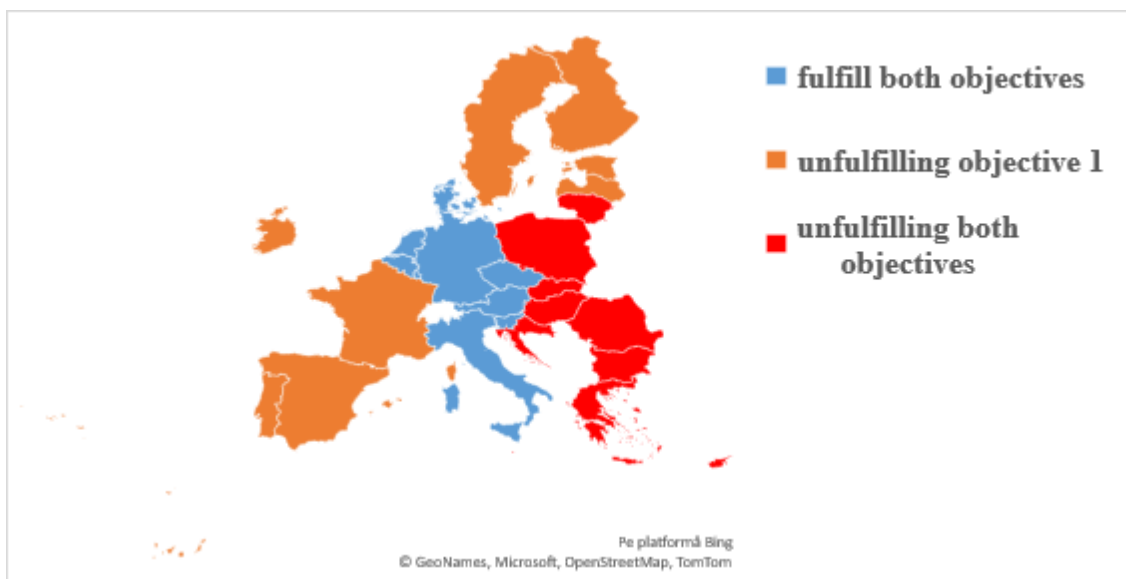
Thus, Bulgaria and Slovakia did not achieved the 70% target regarding the recovery rate of construction and demolition. Romania managed to reach the European threshold, managing to exceed it with 4 percentage points.

On 5 July 2018, a consolidated version of Waste Framework Directive was published. According to this, new targets where inserted [5]:

- by 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 % by weight;
- by 2030, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 60 % by weight;
- by 2035, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 65 % by weight.

The typology of national legislation at the level of the member states is diverse: decree, ministerial order, laws, ordinances and others. An increased number of measures at the level of European country doesn't absolutely assume a more efficient waste management. For example, in countries like Denmark and Czechia, which are "rich" in legislation, both of municipal waste reuse and recycling and total volume recycling package goals are about to be fulfilled. But according to the same source, countries like Poland, Irland and Hungary are predisposed to unfulfilling the mentioned objectives by 2025 [15].

In Figure 3, it can be observed the prognoses of the European Environmental Agency, regarding the fulfillment of waste objectives by the European countries, until 2025 (55% on preparation for municipal waste reuse and recycling and the 65% objective of recycling the total volume of waste packaging).



**Fig. 3.** EU Member States' prospects for achieving training targets for reuse and recycling of municipal waste and packaging waste [15]

Every year, the average European generates approximately 530 kilograms of municipal waste per person, which includes waste from households and similar waste from businesses. Despite an increasing emphasis on recycling and a reduction in landfilling, the management of municipal waste remains a highly intricate task. Within the European Union, approximately 50% of municipal waste undergoes recycling or composting, while 23% is still disposed of in landfills.

One concerning trend is the continuous growth in the volume of packaging waste generated. Between 2013 and 2020, the quantity of packaging waste generated in the EU increased by 15%, reaching nearly 80 million tones [Eurostat data]. Presently, approximately 64% of packaging waste is recycled, although this percentage varies depending on the type of material. Notably, over 75% of paper, cardboard, and metal packaging is recycled, whereas less than 40% of plastics are recycled,

presenting a significant challenge in many EU countries [EC data]. Consequently, several EU nations are at risk of not meeting the specific targets set for the recycling of plastic packaging waste.

The packaging waste objectives derives from the Packaging Directive (consolidated version 07/07/2018), document with specific targets for recycling to be achieved by 2025, 2030 and 2035 (table 1) [16].

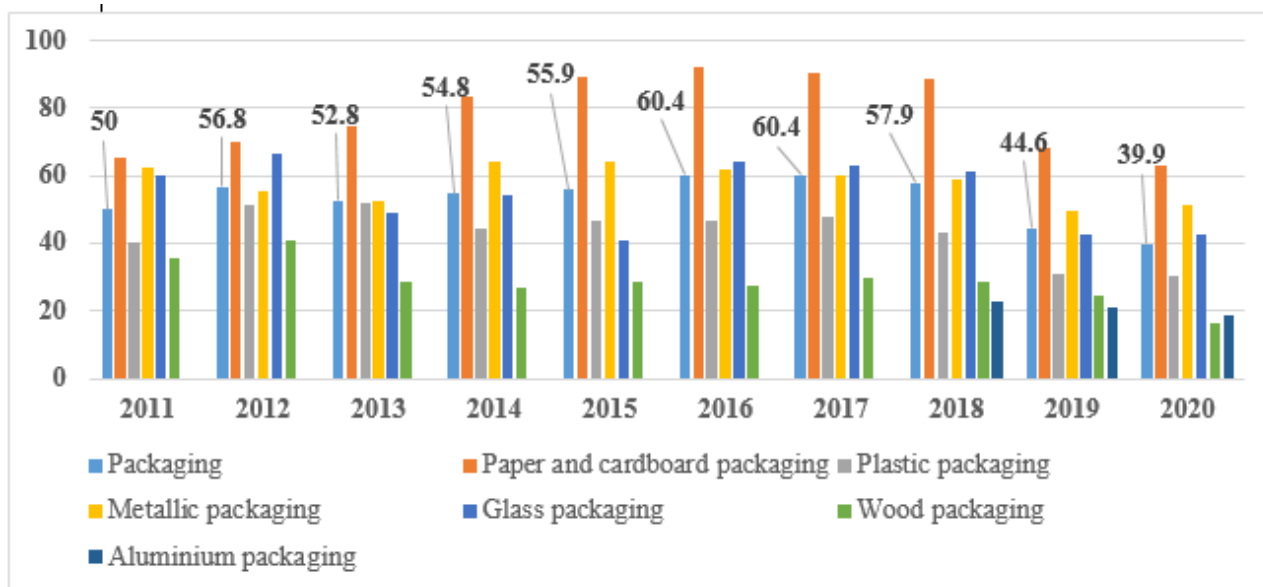
**Table 1.** Packaging Directive’s targets for 2025, 2030 and 2035

	Current targets (%)*	Until 2025 (%)**	Until 2030 (%)**
Packaging (all category)	55	65	70
Plastic	25	50	55
Wood	15	25	30
Ferrous metals	50	70	80
Aluminum	-	50	60
Glass	60	70	75
Paper & Cardboard	60	75	85

\*According to Directive 94/62/EC (version 26/05/2015) [17]; \*\* According to Directive 94/62/EC (version 04/07/2018) [16].

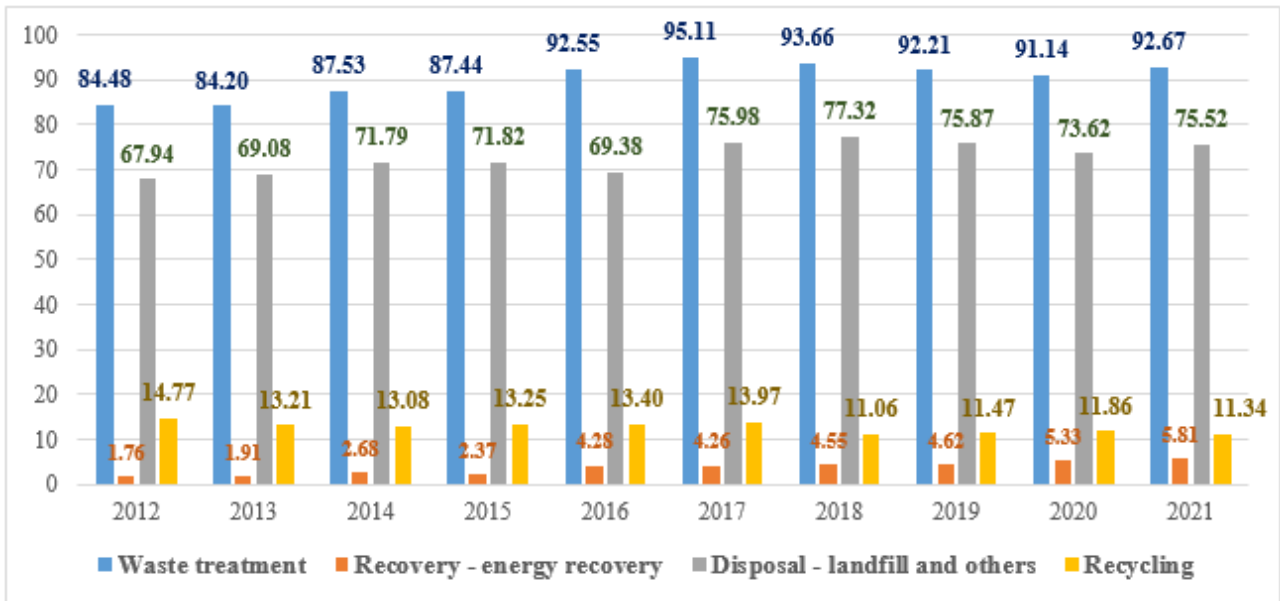
#### Waste Framework Directive’s goals achievement in Romania

In Figure 4, it can be observed the statistical data regarding the recycling rates of packaging waste, depending on the material (paper, metal, plastic, glass, wood, aluminum), in Romania, for 2011-2020 period. Thus, it can be state that in 2020 the recycling rates of packaging waste 55% target (2025) was not fulfilled, for none of the packaging materials, excepting the paper packaging. Also, we can observe that this indicators values had decreased in 2019 and 2020, comparative with 2016-2018 period.



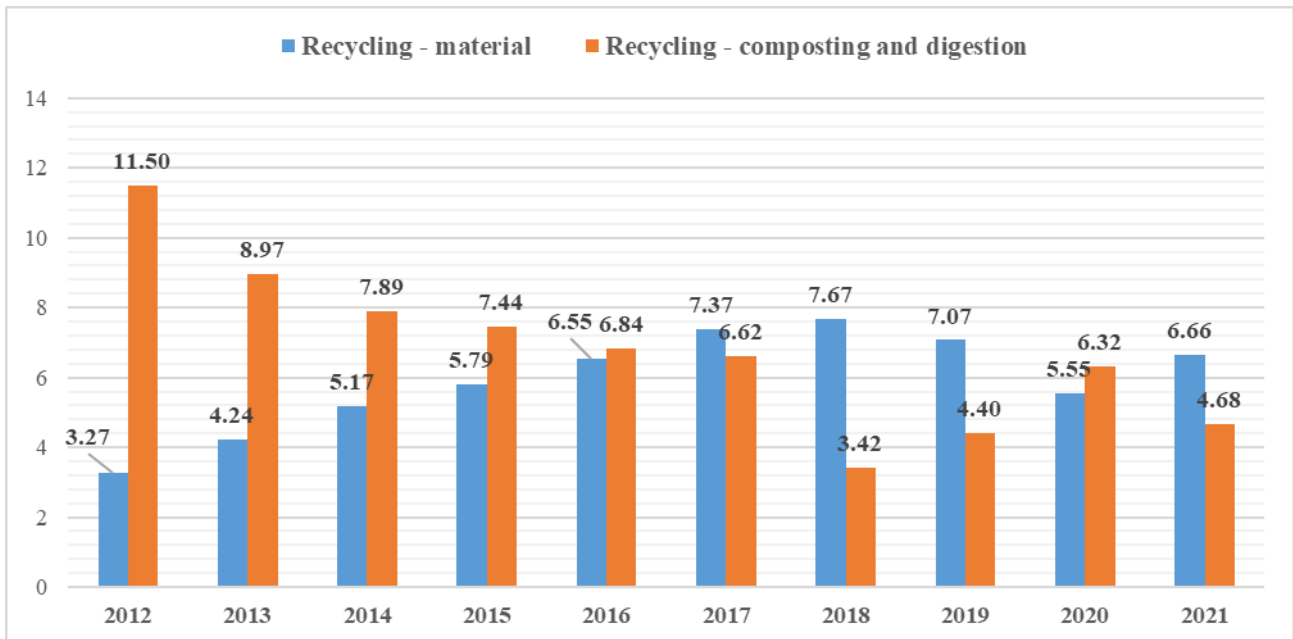
**Fig. 4.** Romania’s Recycling rates of packaging waste, by type of packaging, 2011-2020 [18]

Regarding the municipal waste objective, according to Eurostat data for Romania, the highest percent of the generated waste is treated by disposal – landfill and other (percentage between 68% in 2012 and 76% in 2021), only 6% of waste generated was treated by recovery operations and 11.34% was recycled, in 2021 (Figure 5).



**Fig. 5.** Municipal waste treatment types rates (%), Romania, 2011-2020 [19]

Therefore, the cumulative rate of re-use and the recycling of municipal generated waste reached in Romania 17.15% in 2021, value that places Romania at a 37.85% distance from the European targets, for 2025. Regarding the recycling rate, statistic data shows that 6.66% of the recycled waste was made for material and 4.68% for composition and digestion, in the reference year, 2021 (Figure 6) [19].



**Fig. 6.** Municipal waste recycling treatment types rates (%), Romania, 2011-2020 [19]

*Law 17/2023, National Transposition of 2023 Waste Framework Directive`s*

In order to implement better the European directives and reach the set targets, at the national level the legislative framework on waste also changed. At 9 January 2023 was published in the Official Monitor, the Law 17/2023 [20] for OUG 92/2021 (last amendment in 12 January 2023) [21], modification regarding the waste regime.

Thus, Law no. 211/28 November 2011 [11] regarding the waste regime is repealed and replaced by the above-mentioned document. Among the main changes included in Law 17/2023 can be mentioned the following references:

- Waste transport, waste traceability and separate waste storage: waste is transported only with vehicles marked with the letter "D" in a visible place, only by generic routes established in advance by provisions of the central public administration (Article 16, paragraph 2.1);
- Every organization, regardless of the field of activity, has the obligation to have a waste specialist (Prior to this decision, only the economic operators generating waste, holders of the Environmental Authorization, were subject to the mentioned provision);
- Waste management designated responsible for waste regime must be trained in the field of waste generation prevention and management, including in the hazardous substances field, following the completion of nationally recognized training and specialization programs. Article 23, paragraphs 4 and 5;
- Producers and holders of used oils, legal entities (except natural persons), will obligatorily hand over used oils only to economic operators to carry out activities of collection, recovery and/or disposal of used oils. Article 31, paragraph 3. They also have the obligation to submit to the competent authority for environmental protection the completed documentation according to the provisions of art. (2) and to request the review of the environmental permit/integrated environmental permit by February 1, 2023. Article 34, paragraph 5;
- Is mandatory to establish collection centers for types of waste such as vegetable oil, textiles, glass, metal, plastic materials, paper-cardboard, wood, waste electrical equipment, waste batteries and accumulators, bulky waste, by the local administrations;
- Are introduced sanctions and custodial sentences, in the case of crimes in the field of waste management;
- The re-using process of a certain by-product, substance or object needs to be demonstrated by the existence of a firm contract or other use guarantee form for the entire generated amount generated Article 5 (1); The main responsibilities of the local public administration authorities of the administrative-territorial units or the administrative-territorial subdivisions of the municipalities, as well as their inter-community development associations are: to ensure separate collection at least for paper, glass, plastic, metal waste, and for textiles from municipal waste until 1st January 2025, to determine whether the waste management is done within a single service delegation contract sanitation / on several types of contracts/distinct materials for all types of materials and to organize the distribution according to the taken decision; to establish and approve the separate fees/tariffs for waste management (under the Law sanitation service of localities no. 101/2006, republished in 2014 [22]);
- The content of Waste Management Plan: regulations regarding the measures to fulfill the objectives established by the provisions of art. 7 (1) of Government Ordinance no. 2/2021 [23], regarding waste storage or in other strategic documents covering the entire national territory;
- Increasing the amount of fines for contraventions (Article 62, paragraphs 1a÷1e);
- Types of acts that constitute crimes are introduced (Article 66, paragraphs 1a, 1g, 1h);
- Several definitions are added, for hiding, burying and disposal (Annex 1, 12, 13, 14).

### *Future developments*

On 5 July in 2023, the European Commission unveiled its proposal for amending the Waste Framework Directive (WFD). The proposal lays out objectives for reducing food waste generation. It aims for a 10% reduction in food waste during processing and manufacturing and a 30% reduction in food waste at retail outlets, restaurants, food services, and households, as compared to 2020 levels and per capita. The responsibility for devising food waste prevention programs to achieve these targets is delegated to individual Member States. However, the proposal does emphasize the importance of awareness-raising campaigns and measures designed to address inefficiencies in the food supply chain, making explicit mention of these approaches within the text.



Awareness raising activities are essential for a smooth transition towards green economy. The concept of a circular economy is a relatively recent development, with its European strategies and frameworks starting around 2016. However, it has become clear that this concept is not just another passing trend but rather a permanent focus in the global economic landscape. In this context, the evaluation of regulatory framework related to circular economy is an important step, especially for policymakers in countries currently working towards setting the cornerstones for the transition to a circular economy.

One key aspect that cannot be overlooked is the need to engage and involve all major stakeholders in the transition process toward a circular economy and waste management. This will ensure that the transition is not just a top-down approach imposed by policymakers, but a collective effort that incorporates the perspectives, concerns, and expertise of various stakeholders, such as industrial players, farmers, processors, logistics providers, environmental organizations and general public. By settlement of a collaborative approach that brings together these diverse stakeholders, the transition to a circular economy becomes more robust, resilient, and sustainable. It allows designing of policies and strategies that can be only environmentally effective but also socially accepted, generating long-term benefits for economy, society and environment.

In conclusion, the emergence of circular economy as a pertinent economic paradigm can lead to significant changes in the current approach to natural resources management.

## **CONCLUSIONS**

In circular economy context, present paper offers a perspective regarding the waste management legislative framework, at the member states level, depending on its size but also on the typology of legislative acts in force. In addition, the interest legislative framework applied in Romania and the ways in which the national authorities transposed the mandatory European directives was analyzed. Although at the national level progress has been recorded in terms of the efficiency of waste management, according to the European Environment Agency, Romania is mentioned among others 17 countries being at risk of missing one or more Waste Framework Directive targets until 2025 (55% reuse and recycling the municipal waste and 65% total packaging recycling). This shows us that regardless of the legislative framework complexity, in order to achieve the mentioned objectives, each citizen should contribute to a healthier and cleaner Europe.

One the other hand, the published statistical data shows also that Romania is far from reaching the targets set by the Waste Directive or Packaging Directive, for 2025, 2030 and 2035. This situation is similar with the previous European targets set for 2020. At that time, in an official EC report Romania was mentioned as being at risk of non-compliance with the 2020 target of the Waste Framework. with a 31% final distance to 2020 target. In the end, Romania managed to fulfill the specific European objectives for the year 2020.

Nowadays, in Romania, the recycling rates of packaging waste 55% (target 2025) was not fulfilled, for none of the packaging materials, excepting the paper packaging. Also, the cumulative rate of reuse and the recycling of municipal generated waste reached in our country 17.15% in 2021, value that places Romania at a 37.85% distance from the European 2025 targets.

In this context, one of the main measures in order to achieve the current European goals for 2025-2035 period implemented by the competent authorities is represented by Law 17/2023 for OUG 92/2021 (last amendment in 12 January 2023) modification approval regarding the waste regime. This official document offers a new approach regarding the responsibility of waste management, which is no longer the responsibility only for local and central administration or waste producers, but for all citizens, including ordinary people. Also, the level of fines amount for contraventions where substantially increased and new types of specific crimes in the waste management field where introduced. The authorities have the obligation to ensure favorable conditions for waste recycling and reuse, in an organized framework, but is every citizen responsibility to respect and apply the legislation in order to protect the environment and to ensure our health.



## REFERENCES

- [1] EUR-lex Access to European Union law, European Commission Document 52020DC0098, A new Circular Economy Plan, <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN> [06.09.2023].
- [2] EUR-lex Access to European Union law, European Commission Document 32008L0098 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>, Chapter III, Article 15. [06.09.2023].
- [3] EUR-lex Access to European Union law, European Commission Document 32008L0098 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>, Chapter I, Article 4. [06.09.2023].
- [4] EUR-lex Access to European Union law, European Commission Document 32008L0098 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>, Chapter II, Article 13. [06.09.2023].
- [5] EUR-lex Access to European Union law, European Commission Document 02008L0098-20180705 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705> [06.09.2023].
- [6] EUROPEAN COMMISSION, Directorate-General for Environment, Romania, 2025 EU waste recycling targets – State of play, Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2779/08362>. [06.09.2023].
- [7] EUROPEAN COMMISSION, International Strategies, EU and the United Nations Organisation: common goals for a sustainable future 2030 Agenda for sustainable development, [https://commission.europa.eu/strategy-and-policy/international-strategies/sustainable-development-goals/eu-and-united-nations-common-goals-sustainable-future\\_ro](https://commission.europa.eu/strategy-and-policy/international-strategies/sustainable-development-goals/eu-and-united-nations-common-goals-sustainable-future_ro) [06.09.2023].
- [8] EUROPEAN COMMISSION, Environment, Waste Framework Directive, Targets, [https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en) [12.09.2023].
- [9] EUNOMIA REPORT, Study to Identify Member States at Risk of Non-Compliance with the 2020 Target of the Waste Framework Directive and to Follow-up Phase 1 and 2 of the Compliance Promotion Exercise, [https://ec.europa.eu/environment/pdf/waste/framework/Early%20Warning%20System\\_Final\\_Report.pdf](https://ec.europa.eu/environment/pdf/waste/framework/Early%20Warning%20System_Final_Report.pdf) [12.09.2023].
- [10] EC REPORT, Development and implementation of initiatives fostering investment and innovation in construction and demolition waste recycling infrastructure, [https://environment.ec.europa.eu/system/files/2020-12/CDW%20infrastructure%20study\\_0.pdf](https://environment.ec.europa.eu/system/files/2020-12/CDW%20infrastructure%20study_0.pdf) [12.09.2023].
- [11] LAW no. 211 of 15 November 2011 on the waste regime (Last Amendment Date 28 march 2014), <http://legislatie.just.ro>, <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC197106/>, [12.09.2023].
- [12] LAW no. 101/2006 (republished), Official Monitor no. 658/8 September 2014, <https://legislatie.just.ro/Public/DetaliiDocument/71304>, [12.09.2023].
- [13] LAW no. 50/1991 (republished) Official Monitor no. 933/13 October 2004, <https://legislatie.just.ro/Public/DetaliiDocument/1515>, [12.09.2023].
- [14] SPISAKOVA, M., MESAROS, P., MANDICAK, T., Buildings, **11**, no. 2, 2021, <https://doi.org/10.3390/buildings11020061>.
- [15] EEA Report 2023 of identifying the Member States exposed to the risk of not meeting the objective for 2025 on preparation for reuse and recycling of municipal waste, the objective for 2025 regarding the recycling of packaging waste and the objective for 2035 regarding reduction of municipal waste storage, <https://www.eea.europa.eu/publications/many-eu-member-states-are>. [06.09.2023].

[16] EUR-lex Access to European Union law, European Commission Document 01994L0062-20180704 Consolidated text: European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (version 04/07/2018), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01994L0062-20180704> [12.09.2023].

[17] EUR-lex Access to European Union law, European Commission Document 01994L0062-20150526 Consolidated text: European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (version 26/05/2015), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01994L0062-20180704> [12.09.2023].

[18] EUROSTAT DATABASE, Recycling rates of packaging waste for monitoring compliance with policy targets, by type of packaging [ENV\_WASPACR\_\_custom\_7432079], Time Series 2011-2020.

[https://ec.europa.eu/eurostat/databrowser/view/ENV\\_WASPACR\\_\\_custom\\_7432079/default/table](https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPACR__custom_7432079/default/table) [12.09.2023].

[19] EUROSTAT DATABASE, Municipal waste by waste management operations [ENV\_WASMUN\$DEFAULTVIEW], Time Series 2011-2020, [https://ec.europa.eu/eurostat/databrowser/view/ENV\\_WASPACR\\_\\_custom\\_7432079/default/table](https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPACR__custom_7432079/default/table) [13.09.2023].

[20] LAW no.17/6 January 2023, for the approval of the Ordinance No. 92/2021 on the waste regime, Official Monitor no.21/9 January 2023, <https://legislatie.just.ro/Public/DetaliuDocumentAfis/263753>, in Romanian. [13.09.2023].

[21] OUG no. 92/19/08/2021 on the waste regime, Official Monitor no. 820/26 August 2021, <https://legislatie.just.ro/Public/DetaliuDocumentAfis/245846>, in Romanian. [13.09.2023].

[22] LAW of the local sanitation service no. 101 of April 25, Official Monitor no. 658/8 September 2014, <https://legislatie.just.ro/Public/DetaliuDocument/71304>, in Romanian. [13.09.2023].

[23] OG no. 2/11/08/2021 on the waste storage, Official Monitor no. 794/18 August 2021, <https://legislatie.just.ro/Public/DetaliuDocumentAfis/245381>, in Romanian. [13.09.2023].

Citation: Pop, R.E., Rodino, S., Waste management regulatory framework in the circular economy context, *Rom. J. Ecol. Environ. Chem.*, **2023**, 5, no. 2, pp. 107-116.



© 2023 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).