

Recycling Development, Overview and Challenges for Environment Protection in Romania

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Abstract: The developing countries are facing huge challenges in the waste management sector. Romania in particular is still making transition steps to meet the European Union regulation regarding the waste management activities and regarding recycling practices.

Current waste management practice have led to many environmental challenges: resources become depleted and end up as waste and emissions. The lack of adequate infrastructure to manage wastes safely leads to these wastes being buried, burnt in the open air or dumped into surface water bodies.

One of the key strategies to overcome these problems is using waste as a resource, evolving toward a circular economy as an alternative to a linear economy. To accomplish this transition, suitable indicators are needed to adequately evaluate the recycling degree for useful materials whilst taking into account the technical reality.

A proper evaluation of the reality faced is essential when dealing with waste management in the light of the present situation of waste into the developing countries and the lack of basic or state-of-the-art recycling and waste disposal facilities. Change in attitude by governments, appropriate legislation and transfer of recycling technology of wastes are the key issues in effective management of wastes.

Keywords: Circular economy, recycling degrees, recycling indicators, waste management, environment protection.

1. INTRODUCTION

Measures on the management of packaging waste were first introduced by the European Union in the early 1980s. It was the Directive 85/339/EEC that set the rules on the production, marketing, use, recycling and refilling of containers of liquids for human consumption and on the disposal of used containers. Subsequently, some Member States started introducing their own measures in this area in order to address the environmental aspects of packaging and packaging waste. A diverging national legislation appeared as a consequence, a situation that called for harmonization at European level.

The next naturally step derived from the necessity to harmonize national measures concerning the management of packaging and packaging waste and to

prevent or reduce its impact on the environment and therefore the Directive 94/62/EC was adopted.

The Directive 94/62/EC aims at providing a high level of environmental protection and ensuring the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition [1].

In the following years the Directive was continuously amended in 2004, the Directive was amended to provide criteria clarifying the definition of the term 'packaging' and increase the targets for recovery and recycling of packaging waste, in 2005, the Directive was revised again to grant new Member States transitional periods for attaining the recovery and recycling targets and in 2013 Annex I of the Directive containing the list of illustrative examples of items that are or are not to be considered as packaging was revised in order to provide more clarity by adding a number of examples to the list.

The latest revision of the Packaging and Packaging Waste Directive occurred on 29 April 2015 with the adoption of Directive (EU) 2015/720 of the European Parliament and of the Council amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags [1].

2 REVIEW OF WASTE POLICY AND LEGISLATION

Alongside a number of other waste stream Directives, the Packaging and Packaging Waste Directive was subject to review of waste policy and legislation in 2014, covering a review of key targets and related elements and an ex-post evaluation.

To understand the European Packaging and Packaging Waste Directive 94/62/EC (EPPWD) one must first look at the driving force behind it. This is known as the hierarchy of waste, first introduced into European waste policy in the European Union's Waste Framework Directive of 1975 [2]. It worked on the principle that: "Waste that is not created in the first place does not need to be reused, recycled or disposed of, and is therefore the most environmentally desirable option.". It will be argued that the emphasis on reduction of waste when applied to packaging has

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been blinkered resulting in misapplication.



Figure 1. The most environmentally desirable option regarding waste [2]

The European Commission adopted an ambitious Circular Economy Package in December 2015, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy which will boost global competitiveness, foster sustainable economic growth and generate new jobs. The proposals for waste management set a long-term vision to minimize waste generation, increase recycling in terms of quantity and quality by re-introducing waste into the economy as raw materials, thus reducing the use of resources and reducing disposal by storage

The action plan includes concrete measures to address obstacles on the ground and the different situations across EU Member States, to ensure effective implementation, the waste reduction targets in the new proposal.

Leading elements of the revised waste proposal include [1, 3]:

- ✓ a common EU target for recycling 65% of municipal waste by 2030 (with an intermediate target of 60 % by 2025); Romania may benefit from an additional period of five years, provided that the necessary measures are taken to increase the preparedness for reuse and recycling of municipal waste to at least 50% and 60% of their weight until 2025 respectively 2030;

- ✓ a common EU target for recycling 75% of packaging waste by 2030 (with an intermediate target of 65 % by 2025);

- ✓ a binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030; Romania can benefit from an additional period of five years, provided that the necessary measures are taken to reduce by 2030 the amount of municipal waste deposited to 20% of the total amount of waste generated;

- ✓ a ban on landfilling of separately collected waste;

- ✓ promotion of economic instruments to discourage landfilling ;

- ✓ simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU;

- ✓ concrete measures to promote re-use and stimulate industrial symbiosis –turning one industry's by-product into another industry's raw material;

- ✓ economic incentives for producers to put greener products on the market and support recovery and recycling schemes (eg for packaging, batteries, electric and electronic equipment, vehicles).

3. NATIONAL RECYCLING POLICY.

Law no. 249/2015 on the management of packaging and packaging waste with subsequent amendments [4] provides that economic operators placing packaging and packaged products on the market are responsible for ensuring the management of packaging that has become waste within the national territory. Responsibilities can be accomplished:

- ✓ individual;
- ✓ by transferring responsibilities, on a contractual basis, to an economic operator authorized by the central public authority for environmental protection.

Although this is not an explicit requirement of the European Packaging and Packaging Waste Directive 94/62/EC, Romania, like most EU Member States, has opted for the management of packaging waste to implement the Producer Enhanced Responsibility Scheme (REP).

The extended liability scheme of the manufacturer has been in operation since 2004 with the establishment and licensing of the first economic operator to take over the responsibility of packaging waste management (Eco-Rom packaging). At present, there is a competitive system in Romania, being licensed to several economic operators to take over responsibility for the management of packaging waste [5].

Packaging waste management is done in Romania, through collection operators and treatment operators (sorting stations, recyclers/recovery operators and landfill operators who take up waste packaging that is not valued).

As far as collection operators are concerned, according to data provided by NEPA [5], over 700 operators (including work points) were authorized in 2014 to collect packaging waste from both the population and from industry and commerce. Collection operators are authorized to collect more than one type of packaging waste (from two to all

types of packaging material). Collection operators are generally specialized waste collection operators but also sanitation or recycling operators.

Table 1 presents the recycling of packaging wastes for the years 2010-2014 [3].

Table 1

Material type	2010		2011		2012		2013		2014	
	tones	%	tones	%	tones	%	tones	%	tones	%
Glass	91.03	56.8	83.79	60	106.192	66.3	73.467	49.2	89.103	54.2
Plastic	79.39	28.2	112.46	40.3	152.852	51.3	149.940	51.7	149.76	44.5
Paper and cardboard	177.63	66.8	191.99	65.5	211.698	69.8	232.58	74.6	323.55	83.4
Metal	36.26	65.7	34.41	62.3	32.398	55.5	28.732	52.8	2.147	64.2
Wood	38.45	18.1	73.39	32.5	98.66	41.1	71.902	28.9	77.07	26.6
Total	422.776	43.4	493.04	50	601.80	56.8	556.62	52.8	681.64	54.8

Issues identified in the management of packaging waste are as follows [6,7,8]:

- ✓ Technical aspects of how to handle packaging waste:
 - The separate collection system for municipal packaging waste is poorly developed at national level;
 - The use of waste by methods other than recycling is very low, despite the fact that there is a high authorized capacity for co-incineration of waste;
 - Existing recycling capacities for wood, glass and plastic packaging are not sufficient if the recycling targets are increased compared to current legislation;
- ✓ Aspects of a legislative nature:
 - The definition of "reusable packaging" in Law no. 249/2015 is not correlated with the definition of "reuse of packaging", the return of reusable packaging being conditional on the existence of a deposit system;
 - Law no. 249/2015 stipulates at art. 16 (2) a) that individual responsibility can be achieved by collecting and recovering packaging waste from its own activity or taken over from generators or holders of waste, sorting facilities, collectors authorized to protect the environment for the collection and recovery packaging waste. This is in breach of the principle of individual responsibility applied at European level in the extended producer responsibility schemes, which states that individual responsibility relates to the own products that producers place on the national market;
 - Law no. 249/2015 and the Order of the Minister of Environment, Waters and Forests and Minister of Economy, Trade and Business Relations 932/2016 regarding the approval of the Authorization Procedure for taking over the responsibility of the packaging waste management do not contain clear provisions regarding the organizational and financial responsibility of the transfer organizations responsibility for packaging waste. The fact that the extended liability scheme of the producer is not clearly defined leads to implementation deficiencies with an

impact on the achievement of the recycling/recovery targets;

- The current legislation does not include a definition of municipal packaging waste. The lack of this definition raises issues of responsibility for the management of this waste stream;
- ✓ Aspects of institutional/organizational nature:
 - The current legislation does not provide for the possibility of organizing in the clearinghouse system;
 - Although local authorities are major players, being the sole responsible for the management of municipal waste, including municipal packaging waste, according to current legislation, LPAs are not included in the packaging waste management scheme;
 - Missing between the provisions of the legislation on sanitation and the specific legislation on packaging and packaging waste. According to the provisions of art. 16 (11) of Law no. 249/2015, the collection of packaging waste from the population can be done by both sanitation operators and other authorized collectors, although the local public authority, through the sanitation operators, is solely responsible for the management of municipal waste (Law no. 101/2006);
- ✓ Financial and investment aspects:
 - The current legislation does not contain clear provisions on the financial responsibility of the transfer of responsibility for packaging waste. Thus, in the case of municipal packaging waste, the responsibility transfer organizations pay bonuses to sanitation operators and recyclers, and not net packaging waste management costs, which are reflected in their management fee;
- ✓ Reporting issues:
 - Lack of legislation on clear provisions for verification by the environmental authority of reported data on packaging and packaging waste.

4. APPROVAL OF THE NATIONAL WASTE MANAGEMENT PLAN. EVALUATING THE ACHIEVEMENT OF OBJECTIVES

On 20 December 2017 was approved through Government Decision the National Waste Management Plan (NWMP). NWM is promoted by the Ministry of Environment according to its attributions and responsibilities under Law no. 211/2011 on the waste regime, as subsequently amended and supplemented.

The plan creates the necessary framework for the development and implementation of an integrated ecological and economic integrated waste management system at national level.

The approval of the National Waste Management Plan leads to the closure of a contentious infringement procedure due to the European Commission's decision to refer the European Union Court of Justice (EUCJ) and the avoidance of pecuniary sanctions to Romania.

On April 27, 2017, the European Commission (EC) sent Romania to the EU Court of Justice for failing to review and adopt the National Waste Management Plan and the Waste Prevention Program, in line with the objectives of the Framework Directive on waste (Directive 2008/98/EC) and the circular economy.

According to the European forum, the Romanian authorities had to revise and update the National Waste Management Plan and the waste prevention program by 2013 at the latest. The Commission initiated infringement proceedings in September 2015 and sent an opinion to Romania motivated in May 2016, urging the authorities to quickly adopt these basic instruments under waste legislation.

5. CONCLUSIONS

It is desired that the National Waste Management Plan contributes to the fulfilment of one of the ex-ante conditionalities for accessing the European funds in the field of waste.

Also the achievement of the strategic objectives set out in the NWMP will contribute to the long-term realization of the necessary process of transforming the linear economy into an economically efficient circular economy, based on the promotion of the re-use of secondary raw materials.

The National Waste Management Plan was conceived taking into account the progress made, the new international concepts as well as the future challenges to which Romania must respond. Also, the achievement of the objectives included in the NWMP will contribute to the proper management of waste, thus leading to the long-term conservation of natural resources and at the same time create opportunities for new jobs in specific sectors (recycling, recovery, re-use of waste, research and innovation, green investments, etc.).

The National Waste Management Plan will allow local investments to continue in the facilities needed to ensure efficient waste management and at the same time will enable local public authorities to propose new investments in this sector, depending on the necessities of each county

According to the EU community executive Romania is one of the worst performing member states in the management of solid municipal waste. In 2015, it recorded the highest waste disposal rate in the EU, namely 72%, well above the EU average of 25,6%.

REFERENCES

- [1] <http://ec.europa.eu/environment/waste/packaging/>
- [2] *First Waste Framework Directive, 1975*
- [3] <http://www.mmediu.ro/PNGD.pdf>
- [4] *Law 249/2015 on the management of packaging and packaging waste*
- [5] <http://www.anpm.ro/waste-and-packaging>
- [6] *Preparing a Waste Management Plan, a methodological guidance note, 2012*
- [7] *Preparing a Waste Prevention Programme, Guidance document, 2012*
- [8] *Towards a better exploitation of the technical potential of waste-to-energy Study, elaborated by Science for Policy report for Joint Research Centre, 2016*