SMARTEnvi PROJECT

SMART DECISION TOOLS FOR REDUCING HAZARDS TO OUR ENVIRONMENT AND WATER RESOURCES BY REHABILITATING OPEN DUMPS

NATIONAL REPORT

ROMANIA

UNIVERSITATEA PETROL - GAZE DIN PLOIEȘTI
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NATIONAL REPORT ROMANIA

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1. Introduction

In December 2017, Romania adopted the national waste management plan. Waste management continues to be a major challenge for Romania. The country's performance is still characterized by a very low recycling rate of municipal waste (14%, which includes 7% for material recycling and 7% for composting) and very high waste disposal rates, contrary to the waste hierarchy and recycling targets set at the EU level. In addition, recycling rates have stagnated since 2013, while the incineration rate has risen slightly to 4%. In 2017, Romania reported a 70 percent waste disposal rate to the European Commission. Depending on population dynamics, season, location, type of waste and type of waste collection, the main factors involved in the production and waste composition might be socioeconomic characteristics. Over 95% of Romania's total municipal garbage is landfilled, with recycled or co-incinerated waste accounting for only a minor percentage. According to Eurostat data from 2017, Romania ranks top among EU countries in terms of municipal waste generation, with 261 kg/inhabitant/year assessed by the garbage management system [1].

Microbial activity in landfills is influenced by the composition of municipal solid waste (MSW), which is accentuated when biodegradable organic fractions such as garbage of plant and animal origin are present. These biodegradable wastes also contain inorganic materials such as ash, construction waste, and pesticides. From 2010 to 2017, Figure 1, 2 and 3 shows the percentage of municipal waste that was recycled.

Romania adopted the long-awaited national waste management plan and the waste prevention program in December 2017, following a major delay, both of which are valid until 2025. The Commission recognized Romania as one of the Member States at risk of failing to reach its municipal waste recycling target by 2020 in its Early Warning Report [2]. To aid Romania in reducing the landfill gap, country-specific suggestions were provided.

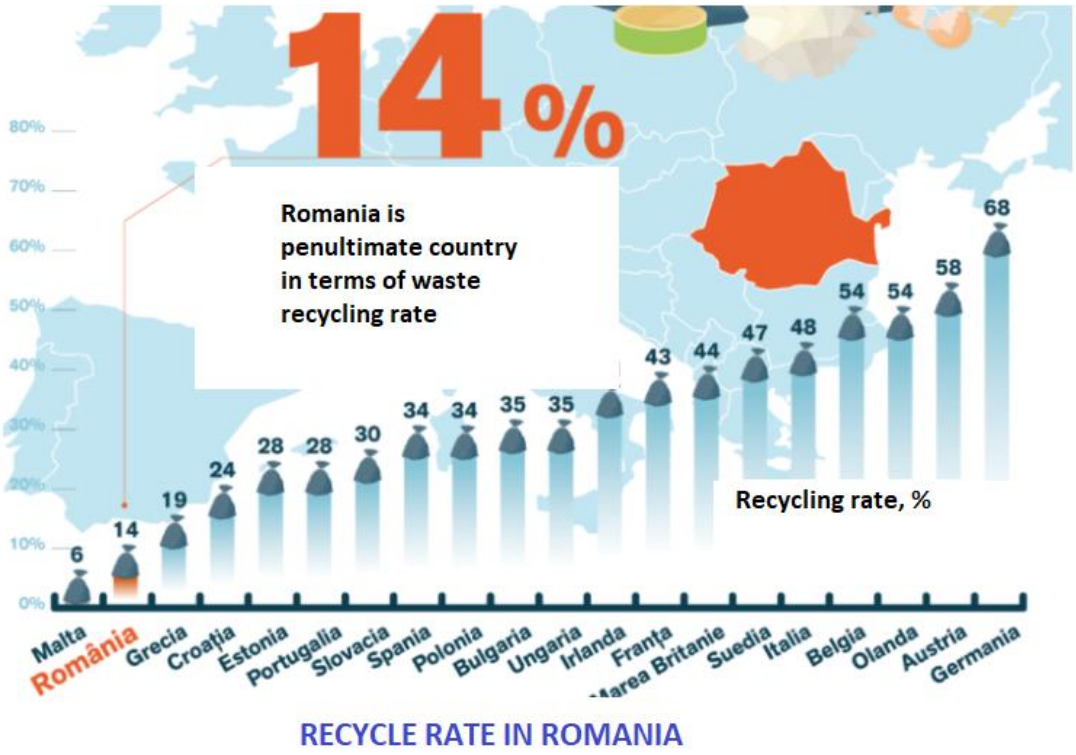

Figure 1. Romania has a 14 % recycling rate.

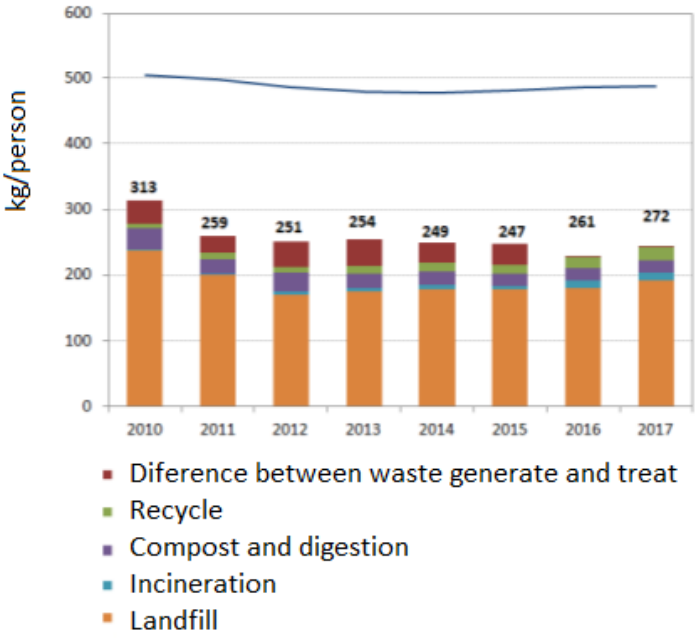

Figure 2. Romania - The amount of municipal garbage generated by treatment methods between 2010 and 2017.

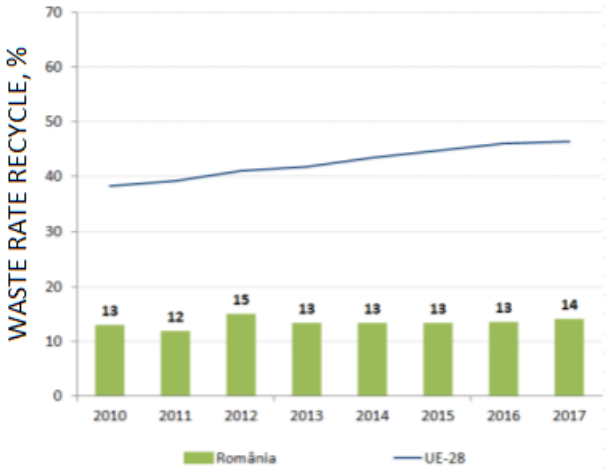

Figure 3. Waste rate recycle.

The Romanian public is well-informed on the subject of "zero waste." In this regard, there are non-profit organizations whose goal is to keep the environment clean. Figure 4 shows the structure of the zero waste hierarchy.

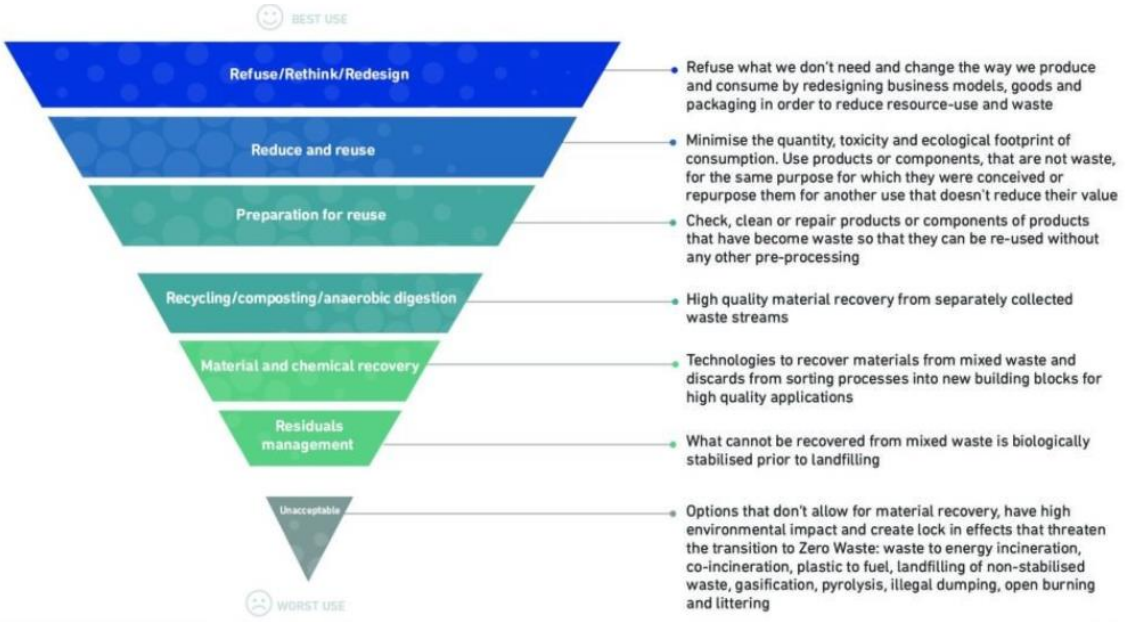

Figure 4. Zero Waste Hierarchy [3].

The Zero Waste pyramid hierarchy promotes resource cycle usage and waste disposal incentives. Government subsidies and financial incentives should be allocated at all levels to encourage a circular economy and the reintroduction of trash into the system as resources, instead of mining and the exploitation of primary resources. Adopting sustainable procurement policies to achieve social and environmental goals is the government's responsibility and the economic community-Table 1.

Table 1 . Distribution of the amount of waste by categories

Waste collected	Percent%
Household waste	78.50%
Waste from municipal services	12.90%
Construction / demolition waste	8.60%
TOTAL	100%

2. Solid Waste Management in Romania

Waste management is a major topic in Romania right now. Large amounts of waste, as well as the negative impact they have on water, air, and ground, have necessitated a rethinking of Regional Waste Manager Plans. Waste management includes all waste collection, transportation, treatment, recovery, and disposal activities, as well as the monitoring of these operations and landfills after they close.

Waste management's top priorities are to avoid and reduce waste creation as well as its level of hazard by:

- development of clean technologies with low natural resource consumption;
- development of technology and marketing of products that have no or the least possible impact on increasing the volume or danger of waste, or on the risk of pollution, as a result of their manufacture, use, or disposal;
- The development of acceptable technologies for the final disposal of hazardous compounds from waste for recovery;
- Waste material and energy recovery, including the transformation of waste into secondary raw materials or the use of waste as a source of energy.

Figure 5. Waste collection in Romania.

The Regional Agencies for Environmental Protection, in partnership with members of local environmental authorities and local and county public administration authorities, began developing Regional Waste Management Plans (PRGD) in 2006, using data from their level. Since 2005, the National Agency for Environmental Protection has collected data on waste generation and management in the previous year, both for internal reporting purposes and for reporting to the European Commission and EUROSTAT, in collaboration with the National Institute of Statistics and the County Agencies for Environmental Protection. This activity is based on both broad environmental legislation and specialized trash laws. The 2007 data is still being gathered.

Household waste collection is not widely practiced in the country-Figure 5. Household and similar waste, street waste collected from public spaces, streets, parks, and green spaces, construction-demolition waste created in houses, and collected by sanitation and sludge operators from urban wastewater treatment are all examples of municipal waste. Municipal waste management includes waste collection, transportation, recovery, and disposal, as well as landfill monitoring after closure.

Municipal waste management is the responsibility of local governments, who must ensure the collection, selective collection, transport, treatment, recovery, and final disposal of this garbage either directly or through the concession of the sanitation service to an approved economic

operator.

In Romania, integrated waste management involves examining issues from a variety of angles, including "ECOLOGICAL," "ECONOMIC," "TECHNICAL," "ETHICAL," and so on.

Effective problem solving requires a comprehensive approach.

INTEGRATED WASTE MANAGEMENT

In Romania, there are three key elements for strategic waste collection:

WASTE PREVENTION—RECYCLING AND REUSE—IMPROVING FINAL STORAGE AND MONITORING

There's also operational management in addition to strategic management. It is supported by the following actions:

TREATMENT-RECYCLING- DISPOSITION OR COLLECTION-DRAWING-TRANSPORTATION-PROCESSING

In Romania, waste collection entails collecting rubbish, categorizing it, and keeping it temporarily until it can be transported.

2.1. Solid Waste Generation in Romania

Landfilling is the only method for disposing of municipal waste in Romania. Approximately 98 percent of the overall municipal waste generated is deposited each year. Following an evaluation of landfills in the urban area in 2004, an inventory of 240 landfills that did not reach the Landfill Directive's requirements was put into operation. During the environmental chapter negotiations, Romania agreed to stop disposing of 139 landfills by July 16, 2009, and to dispose of the remaining 101 municipal landfills between July 16, 2009 and July 16, 2017. They stopped the activity of 35 non-compliant municipal depots between 2004 and 2007, leaving 225 municipal waste, of which 205 landfills do not comply with the requirements of the current waste storage legislation, which will stop storage in stages until July 16, 2017, and 20 landfills by the requirements of the current landfilling legislation. Table 2 shows the list of complying municipal deposits as of the end of 2007.

Table 2. List of compliant municipal landfills at the end of 2007

Nr.crt	County	Deposit	Operator
1	Arad	Arad	ASA ARAD SERVICII ECOLOGICE SRL Arad
2	Bihor	Oradea city	ECO BIHOR SRL Oradea
3	Brasov	Braşov	FIN-ECO SA Braşov
4	Brăila	Brăila	TRACON SRL Brăila
5	Bucharest	Chiajna	IRIDEX GROUP IMPORT EXPORT Bucharest
6	Buzău	Galbinasi	RER SERVICII ECOLOGICE SRL Gălbinaşi - Buzău
7	Constanţa	Ovidiu	TRACON SRLBrăila
8	Constanţa	Costinesti	IRIDEX GROUP IMPORT-EXPORT SRL Bucharest
9	Constanţa	Mangalia - Albeşti	ECO GOLD INVEST SA Mangalia
10	Dolj	Mofleni -Craiova	PUBLIC HEALTH SERVICE Craiova
11	Ialomita	Slobozia	VIVANI SALUBRITATE SA Slobozia
12	Ilfov	Glin	ECOREC SA Popeşti Leordeni
13	Ilfov	Otter	ECO SUD SRL Bucharest
14	Mures	Sighisoara	SCHUSTER ECOSAL SRL
15	German	Piatra Neamţ	SALUBRIS SA Piatra Neamţ
16	Prahova	Ploieşti- Boldeşti	IRIDEX GROUP IMPORT EXPORT SRL Bucharest
17	Prahova	Câmpina - Băneşti	APASCO SA Măneciu
18	Prahova	Boy	ECOLOGICA SA Băicoi
19	Prahova	Vălenii de Munte	SALUBRITATE SA Ploieşti
20	Sibiu	Sibiu- Cristian	TRACON SRL Brăila

Busteni transfer station, Prahova county (operator SC Servicii de salubritate SRL, environmental authorization no. PH 6345/24.07.2006 valid until 2011, projected capacity 7600 t/year) and Urziceni transfer station, Ialomiţa county (operator SC Vivani Salubritate SA, environmental authorization no. 153/18.09.2006 valid until 2011, projected capacity 418 t/month) were both in operation in 2007.

Besides the municipal landfills in the city, roughly 2,686 storage places with a total size of less than 1 hectare were detected in 2004 in the rural region. The closure and greening of rural landfills, as well as the expansion of trash collection services to rural areas, the development of a transportation system, and the transfer and opening of zonal landfills, will all take place until July 16, 2009.

In 2006, 6.77 million tons of municipal waste were deposited, with around 2.46 million tons in complying landfills, according to data on waste generation and management.

2.2. Solid Waste Collection and Transportation

Government Decision No. 1061 on the transport of hazardous and non-hazardous waste on Romanian territory, published in Official Gazette No. 672/30.09.2008, controls waste transport in Romania.

The following is the most important information about municipal waste collection and transportation:

- Data on sanitation agents
- Degree of coverage with sanitation services
- Equipping sanitation agents
- Data on transfer stations

The County Public Health Authority approves routes for hazardous waste transport on public streets to the final disposal location. Non-hazardous waste will be transported by local rules.

Equipping sanitation agents

The term "supply" refers to both the collection and transportation of sanitary agents.

In terms of collection, information on the types of containers used for mixed and selective collections, as well as their volume, will be provided.

There will also be presented information on the type and number of forms of transport.

Data on sanitation agent endowment will be supplied at the county level for the year preceding the PJGD's (Regional Plan Waste Management-PJCD) development.

Information about transfer stations

For the transfer stations, two types of data will be presented:

- data on transfer stations for a year "a";
- data on waste transfer amounts for the previous 5 years.

2.3. Recycling and Recovery

Romanian law no. 132, adopted on June 30, 2010, regulates the selective collection of garbage in public facilities. Its purpose is to establish a selective waste collection obligation in public institutions, as defined in Law No. 500/2002 on public finances, with subsequent amendments and completions, as well as in institutions in which the state is the majority shareholder, hereinafter referred to as public institutions:

7(1) "Each public institution is required to develop a plan of action for the selective collection of its trash, based on the categories outlined in article 3."

11 (1) "Each public institution must create an information and training program for its workers."

Examples of waste recovery in Romania- Figure 6.

-using ceramic insulators to consolidate river banks

Figure 6. Examples of waste recovery in Romania.

In the framework of integrated waste management, the four steps now being used in the country are:

collection - transport - sorting – capitalization (Figure 7)

Figure 7. Collection - transport - sorting – capitalization in Romania.

The objectives pursued are the following:

- reduction of waste production and recovery through recycling (reduction of the quantities finally deposited and efficient management of natural resources);
- energy recovery embedded in waste (incineration, co-incineration);
- reducing the negative impact on environmental factors.

Waste recycling

Any waste recovery activity that converts waste into products, materials, or substances to restore its original function or for other reasons. It also covers organic material recycling, but not energy recovery and conversion for use as fuel or filling processes. The main operations of treatment/recovery of municipal waste are:

- **Municipal waste sorting**
- **Recovery of municipal waste**
- **Composting of biodegradable waste**
- **Mechano-biological treatment**
- **Other treatment/recovery methods**

A sorting plant's job is to extract recyclable material from municipal waste. Paper, plastic, glass, metals, and wood are the principal materials separated.

Municipal waste recycling

The capacities for recycling at the county level (year a) will be determined and provided by material type:

- Paper and cardboard;
- Plastics;
- Glass;
- Metals;
- Wood.
- **Waste composting**
- Municipal biodegradable waste, as well as sludge from municipal wastewater treatment plants, can be processed in composting plants.

- Depending on its quality, compost produced by the composting process can be used for a variety of purposes (agriculture, remediation of degraded land, etc.).

- **Mechanical-biological treatment**

- Municipal waste is processed in mechanical-biological treatment plants using a combination of mechanical and biological processes, with the material and energy recoverable waste being mechanically separated and the leftover waste becoming biologically inert-Table 3.

Table 3. Domain / Activity vs. Subsidiary Objectives / Targets

Domain / Activity	Objection	Subsidiary Objectives / Targets		Term
Human resources	1. Ensuring human resources as a number and professional training	1.1 Ensuring a sufficient number of qualified employees for the coordination and control system of waste management in the county 1.2. Ensuring the professional training of the employed staff		2007-2008
Development of a separate waste collection/collection system	Generalization of the waste collection system in urban and rural areas Implementation of the separate waste collection system	Providing the necessary infrastructure Introduction of financial mechanisms to stimulate the separate collection Carrying out awareness campaigns		According to PRGD
Waste disposal	2. Disposal of waste by the requirements of the legislation on waste management to protect the health of the population and the environment	2.1 Opening of a class "b" landfill by legal regulations		2010
		2.2 Staged closure of non-compliant urban landfills		Staged until 2017, according to GD no. 349/2005
		2.3 Closure of storage facilities in rural areas		July 2009

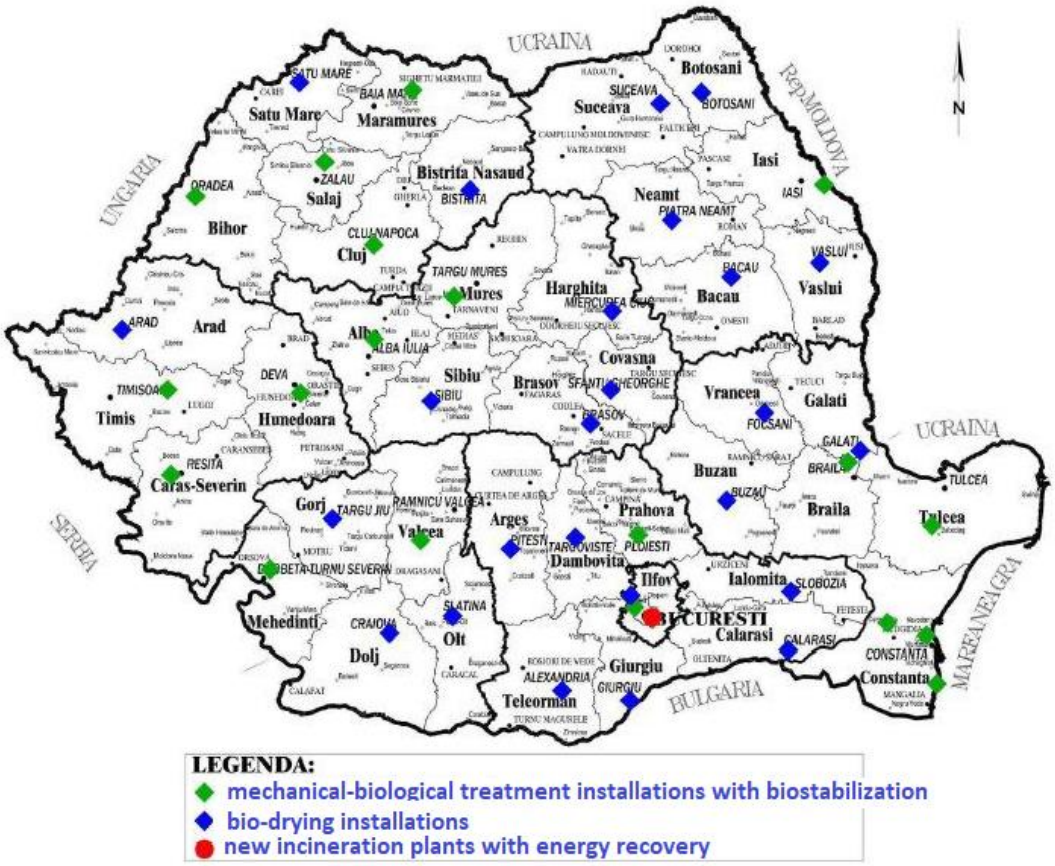

Figure 8. Waste treatment in Romania.

3. Romania's Open Dump Situation and Rehabilitation

There are still 12 municipal landfills that need to be removed, according to the Environment Ministry. Ten administrative-territorial units (UATs) have applied for financing to eliminate their landfills through the designated program, which is managed by the Environmental Fund Administration (AFM), and all of their requests have been granted [4].

In addition, 36 industrial waste landfills have yet to be closed (12 landfills with non-hazardous industrial waste and 24 with hazardous industrial waste)[4].

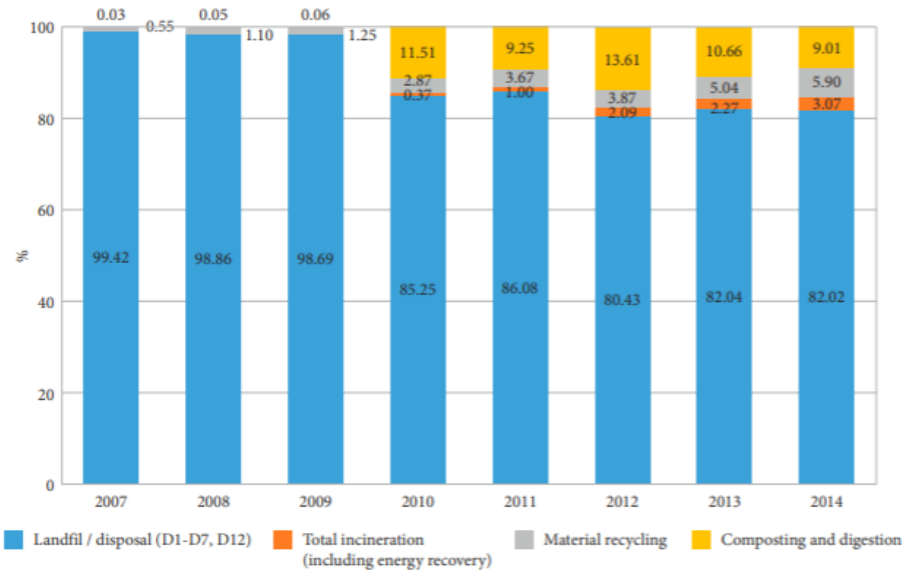

Figure 7. Between 2007 and 2014, the structure of municipal waste by type of treatment in Romania (source: own elaboration based on Eurostat data, 2018).

The national plan sets out a strategy to increase recycling rates and comply with the landfill diversion targets for biodegradable waste. It focuses on the roll-out of separate collection, including for biodegradable waste, and plans for infrastructure to treat it via composting or anaerobic digestion. It also proposes to significantly extend the network of mechanical-biological treatment plants so that there will be one per county, which sounds excessive. The plants should be convertible so that they can also treat separately collected waste once the production of residual waste decreases [34].

The EU funds have been used for construction of compliant landfills and for introduction of separate collection and management of municipal waste on a county level. 35 out of 41 counties have benefited from these projects formulated at the time of Romania's accession to the EU. The majority of them comes to completion in 2018-2019, therefore a considerable number of new plants have recently been put into operation [34].

4. Solid Waste Management and Open dumps Legislation and Directives

General principles: a) only use waste management processes and methods that do not damage community health or the environment; b) the "polluter pays" principle; c) producer responsibility; d) use the best possible technology without incurring excessive costs.

The terms "by-product" and "secondary raw material" have no legal meaning in EU waste legislation; materials are either waste or not. In addition to waste, as defined in the Directive, the following illustrative phrases will be used in the 2007 COMMUNICATION TO THE

COUNCIL AND THE EUROPEAN PARLIAMENT on the Interpretative Communication on Waste and By-Products: • Product - all materials produced as part of a production process. The major material produced in many circumstances can be identified as one or more "primary" products. • Production residues - a material obtained unintentionally during a manufacturing process that may or may not constitute a waste. • By-product - a non-waste production residue

Waste Management Law 211/2011 From "waste audits" to "measures to prevent waste generation," starting in 2012, "legal entities involved in a commercial or industrial activity" are required to create and implement a waste prevention and reduction program. A waste audit must form the foundation of the program.

• Toxic material must be labeled and packaged. Waste producers must ensure that hazardous waste is packaged and labeled according to the provisions of Regulation (EC) No. 1,272/2008 on the classification, labeling, and packaging of substances and mixtures, GD No. 1,408/2008 on the classification, packaging, and labeling of dangerous substances, and GD No. 937/2010 on the classification, packaging, and labeling of dangerous substances during collection, transport and storage operations.

Solid waste management legislation in Romania:

- GD no. 1470/2004 (Official Gazette no. 954 of October 18, 2004), revised and extended by GD no. 358 / 11.04.2007 (Official Gazette no. 271 / 24.04.2007); GD no. 358 / 11.04.2007 (Official Gazette number. 271 / 24.04.2007); GD no. 358 / 11.04.2007 (Official Gazette no. 271 / 24.04.2007);
- **OM no. 1364/1499/2006** regarding the approval of the regional waste management plans (Official Gazette no. 232 / 04.04.2007, and annexes 1-8 in no. 232bis of the same date) **;**

• OM no. 1385 / 29.12.2006 approving the Procedure for public participation in the development, modification, or revision of waste management plans adopted or approved at the national, regional, and county levels (Official Gazette no. 66 / 29.01.2007);

• OM no. 951 / 06.06.2007 (Official Gazette no. 497 and 497bis / 25.07.2007) regarding the acceptance of the Methodology for elaborating regional and county waste management plans;

- GD no. 235/2007 on waste oil management replace GD no. 662/2001 (Official Gazette number. 199 / 22.03.2007).

- **GD no. 1132/2008** on the regime of batteries and accumulators and waste batteries and accumulators
- **OMno. 669/1304 / 30.06.2009** regarding the registration procedure of the battery and accumulator manufacturers
- GD no. 349/2005 on waste storage (Official Gazette no. 394 of May 10, 2005), which was supplemented by GD number. 210 / 28.02.2007 for the adjustment and completeness of various normative acts that translate the protocol communautaire in the field of environmental protection.;
- Order no. 757/2004 for the approval of the Technical Norm regarding waste storage (Official Gazette no. 86 of January 26, 2005), as modified by Order no. 1230 of November 30, 2005 amending the annex to Order no. 757/2004 for the approval of the Technical Norm regarding waste storage (Official Gazette no. 1101 of December 7, 2005);
- Order no. 95/2005 (Official Gazette no. 194 of March 8, 2005) establishing acceptance criteria and preliminary procedures for the acceptance of waste for disposal, as well as a national list of accepted waste in each landfill class;
- Order no. 775/2006 for the approval of the List of isolated localities that can deposit municipal waste in existing landfills and are exempted from some provisions of Government Decision no. 349/2005 on waste disposal (Official Gazette no. 675/07 July 2006), supplemented by Order 27/2007 for the modification and completion of some orders transposing the acquis communautaire environment (Official Gazette no. 675/07 July 2006). (Official Gazette no. 194 of March 21 2007)
- **GD no. 128/2002** on waste incineration (Official Gazette no. 160 of March 6, 2002) amended and supplemented by **GD no. 268/2005** (Official Gazette no. 332 of April 20, 2005);
- **Order no. 756/2004** for the approval of the Technical Norm regarding the incineration of waste (Official Gazette no. 86 of January 26, 2005, published in Official Gazette no. 86bis of January 26, 2005);
- **Order 1274/2005** regarding the issuance of the environmental permit upon cessation of waste disposal activities, respectively storage and incineration (Official Gazette no. 1180 of December 28, 2005), supplemented by **MMDD Order no. 636/2008** (Official Gazette no. 425 of June 6, 2008)

- GD no. 621/2005 on packaging and packaging waste management (Official Gazette no. 639 of July 20, 2005) packaging was amended and augmented by GD no. 1872/2006 (Official Gazette no. 15 of January 10, 2007);
- Order no. 927/2005 (Official Gazette number. 929 of October 18, 2005) on the method for reporting data on packaging and packaging waste;
- Order no. 1281 / 1121/2005 establishing techniques for identifying containers for various types of commodities to apply selective collection (Official Gazette no. 51 of January 19, 2006);
- Order no. 1229/731/1095/2005 (Official Gazette no. 27 of January 12, 2006) for the approval of the Procedure and criteria for the authorization of economic operators to take responsibility for the achievement of the annual objectives of packaging waste recovery and recycling, as amended by Order 194/360/1395/2006 (Official Gazette no. 499 of June 8, 2006) and Order no. 968/2006 (Official Gazette no. 836 of October 11, 2006) and Order no. 12.
- Order no. 493/2006 established the Commission for the evaluation and authorization of economic operators to take responsibility for achieving the annual objectives of packaging waste recovery and recycling (Official Gazette no. 456/25 May 2006), as amended by Order no. 1140/2006 (Official Gazette no. 888/31 Oct. 2006) and Order no. 978/2009 (Official Gazette no. 978/10 July 2009).
- Order no. 493/2006 established the Commission for the evaluation and authorization of economic operators to take responsibility for achieving the annual objectives of packaging waste recovery and recycling (Official Gazette no. 456/25 May 2006), as amended by Order no. 1140/2006 (Official Gazette no. 888/31 Oct. 2006) and Order no. 978/2009 (Official Gazette no. 978/10 July 2009).
- GD no. 173/2000 (Official Gazette no. 131 of March 28, 2000) for the regulation of the special regime for the management and control of polychlorinated biphenyls and other similar compounds (Official Gazette no. 330 of April 19, 2005) and GD no. 975/2007 (Official Gazette no. 598 of August 30, 2007), completed by GD no. 210 / 28.02.2007 for the modification and completion of some normative acts.
- GD no. 856/2002 on waste management records and approval of waste lists, including toxic waste (Official Gazette no. 659 of September 5, 2002), as amended by GD no. 210/2007 on the modification and completion of some normative acts transposing the acquis communautaire in the field of environmental protection (Official Gazette no. 659 of September 5, 2007). (Official Gazette no. 187 of March 19, 2007)

- GD no. 788/2007 on the establishment of measures for the implementation of Regulation (EC) No. 1,013/2006 on waste transfer - repeals GD no. 895/2006 for the application of EEC Regulation 259/93 (Official Gazette no. 255/02.08.2007 amended and supplemented by GD 1453/2008 (Official Gazette no. 783 of November 24th 2008);
- GD no. 1061 / 10.09.2008 on toxic and non-toxic waste transportation on Romanian soil (Official Gazette no. 672 / 30.09.2008);
- Order No. 1119/2005 delegating the Ministry of Environment and Water Management's responsibilities in the fields of toxic waste export and non-toxic waste transport for import, inward processing, and transit to the National Agency for Environmental Protection (Official Gazette no. 1024 of 18 November 2005)
- Joint Order No. 344/708/2004 for the approval of Technical Norms for the protection of the environment, especially soils, when sewage sludges are used in agriculture (Official Gazette no. 959 of October 19, 2004)
- GD no. 1313/2006 (Official Gazette no. 829 of October 9, 2006) for the modification and completion of the Government Decision number. 2406/2004 on the management of end-of-life vehicles;
- Order no. 1224/722/2005 (Official Gazette no. 1178 of December 27, 2005) modifying and supplementing Order no. 985/1726/2007 (Official Gazette no. 561 of August 15, 2007) for the approval of the Procedure and conditions for the authorization of legal entities to take responsibility for achieving the annual objectives of reuse, recycling, and energy recovery of end-of-life vehicles;
- **DECISION No. 1037** of October 13, 2010 on waste electrical and electronic equipment
- Order number. 901/2005 authorizing special measures for the collection of waste electrical and electronic equipment that present a risk to the safety and health of staff at collection points due to contamination (Official Gazette no. 910 of October 12, 2005);
- Order no. 1223/715/2005 on the procedure for registering producers, as well as how to record and report data on electrical and electronic equipment and waste electrical and electronic equipment (Official Gazette no. 1 of January 3, 2006), as amended and supplemented by Order no. 706/2007 (Official Gazette no. 307 of May 9, 2007);
- Order no.556 / 435/191 of June 5th 2006 on the specific marking applied to electrical and electronic equipment placed on the market after 31 December 2006 (Official Gazette no. 608 of July 13 2006);
- GD no. 816 of June 21, 2006, amended by Decision no. 992/2005 (Official Gazette no. 822 of September 12, 2005) on limiting the use of certain toxic components of electrical

and electronic equipment (Official Gazette no. 822 of September 12, 2005). (Official Gazette no. 588 of July 7, 2006). MMDD Order no. 1226/1771/2007 (Official Gazette no. 626 of September 12, 2007) and Order 1771/2007 (Official Gazette no. 626 of September 12, 2007) amended the annex to the GD, which has been completed by Order no. 344/2009 (Official Gazette no. 291 of May 2009) and Order 732/2009 (Official Gazette no. 291 of May 2009). (Official Gazette no. 291 of May 5th, 2009)

- **Order no. 751 / 870/2004** on the waste management of titanium dioxide industry (Official Gazette no. 10 of January 5th, 2005)
- GD 124/2003 on the prevention, reduction, and control of asbestos pollution in the environment, as modified by GD 734/2006 (Official Gazette no. 519 of June 15th, 2006)
- ORDER No. 2042/2934/180 dated November 22, 2010, adopting the Procedure for Approval of the Waste Management Plan for Extractive Industries and its Content Regulations
- Government Decision No. 856/2008 on waste management in the extractive industry, which was published in Official Gazette No. 624 on August 27th, 2008.
- **Law no. 211/2011** on the waste regime

5. Target Groups

The Ministry of Environment and Water Management develops the National Waste Management Strategy in compliance with its responsibilities as a result of the transposition of European waste management legislation and the provisions of Law 211/2011.

The National Waste Management Strategy (NWMS)is being developed to establish the required framework for the development and implementation of an integrated waste management system that is both environmentally and economically efficient. The rules of the NWMS apply to all forms of waste as defined by Government Emergency Ordinance 78/2000 on the waste regime, as amended and approved by Law 27/2007.

The Ministry of Environment and Water Management is the competent authority for waste management, and other public authorities with waste management responsibilities include the Ministry of Health, Ministry of Economy and Trade, Ministry of Transport, Construction and Tourism, Ministry of Administration and Interior, and Ministry of National Defense.

Since 1995, information on waste types and quantities has been collected and processed by European classification requirements (the European Waste Catalog, which was replaced in 2002 by the List of Wastes, including Hazardous Wastes) and reported to EUROSTAT and the European Environment Agency (via the EIONET network). Municipal waste (home waste,

waste from parks and gardens, sewage sludge), industrial waste (hazardous and non-hazardous), and waste from medical activities are all collected and reported on.
The following principles govern waste management activities: the principle of primary resource protection, the principle of prevention, the "polluter pays" principle correlated with the principles of producer and user responsibility, substitution, proximity principle correlated with the principle of autonomy, the principle of subsidiarity and the principle of integration.

Municipal decision-makers include:

At the level of communes, cities, and municipalities, including at the level of Bucharest, local public administration authorities, including Bucharest, have the following obligations: a) Ensure that the waste management obligations assumed by Romania's Treaty of Accession to the Union are implemented at the local level. b) monitor and ensure compliance with the PJGD's provisions; c) develop its own waste management strategies and programs; d) decide to associate or cooperate with other local public administration authorities, Romanian or foreign legal entities, non-governmental organizations, and other social partners for the purpose of carrying out public-interest waste management projects, as permitted by law; e) are responsible for the separate collection, transportation, neutralization, recovery and final disposal of waste, including toxic household waste, in accordance with applicable specific laws; f) accordingly, the centers established based on the provisions of the Government Emergency Ordinance No. 5/2015 to provide the population with the opportunity to dispose of waste paper and cardboard, glass, metal, plastics, wood, textiles, packaging, waste electrical and electronic equipment, and waste electrical and electronic equipment, free of charge; g) guarantees that residents are informed about the waste management system in their communities, including the centers described in paragraph f), by using suitable means and posting information on its own website; h) acts to restore and protect the environment, i) assures and is responsible for monitoring activities related to medical waste management.

As a result, the local public administration authorities of administrative-territorial units and the Bucharest municipality approve, through decisions of the local / county / general council, the necessary measures to prevent waste abandonment, disposal, or uncontrolled management (art. 59 paragraph (2) of Law no. 2111/2011). Also, as a result of these legislative provisions and defined competencies, local public administration authorities can determine and administer sanctions, with the requirement that they are controlled as such by a local Council

decision and the clear identification of the competent persons.

Technical workers employed by the municipality:

We also want to point out that Government Ordinance No. 21/2002 on the Management of Urban and Rural Localities establishes a series of obligations and competencies in charge of local public authorities, specifically stating in the content of art. 2 paragraph (2) that the organization, development, and participation in municipal activities is a permanent obligation of county councils, local councils, and mayors, public authorities and institutions, economic operators, with or without financial interests.

The mayors, as well as the county and local councils, are in charge of organizing, leading, guiding, coordinating, and controlling the entire activity of managing and improving the localities, as well as keeping order and cleanliness in the country's cities and communes.

Non-governmental organizations (CEE, CCE):

Many non-governmental organizations in Romania fight to protect areas where open dumps exist:

- Zero Waste Romania Network
- ARIN Association
- Biosilva Association
- EcoBucovina
- Association Energy Justice Association (E-JUST) Prahova Econatura
- "Colt" Ecological Flower Association

Their work focuses on developing awareness programs in the areas of environmental protection and packaging waste management, organization of conferences, conferences in the field of environmental protection and recovery/recycling of packaging waste, dissemination of "best practices" in the collection and recovery/recycling of packaging waste.

Environmental Engineering Department Students:

Students from all engineering faculties are involved in research at PGU Ploiesti and other universities. It is taken into account not only the management of non-toxic waste but also the management of toxic waste.

These students can:

- create professional projects including the investigation of environmental pollutants using a variety of quantitative and qualitative methodologies creatively.
- manage and address all specific environmental issues for sustainable development
- using specialized software to solve complicated environmental pollution reduction problems; promptly and effectively assess environmental quality and develop low-impact technology alternatives in compliance with BAT/BREF criteria and current legislation; design environmental pollution reduction and sustainable development systems, devices, and devices; carry out operations such as environmental engineering consultation, training, and instruction, as well as management of professional groups or institutions.

6. Dissemination

Web site: The project's website (https://smart-envi.gtu.edu.tr/) breaks down the various requirements from internal (or external) team members into specific tasks and subtasks, which are then tackled in a collaborative process.

Potential project book: The book provides the understanding and motivation to build and implement a quality communication, dissemination and exploitation strategy and which tools to use for this EU projects.

Journal papers: The articles developed during the project will be based on the case studies of the project. It will take into account the strategies adopted in waste management in the respective country but also in the European context.

Conferences and visiting: The initiative will be promoted through sharing project information, papers, and training modules with relevant non-governmental groups such as the Chamber of Commerce and Industry of Prahova County (CCIPh), non-governmental waste management associations, and environmental service companies. Some conferences will be held at appropriate universities to achieve this goal. In addition, the initiative will be promoted by visiting other municipalities.

7. Conclusion

At the European and national level, an increasing proportion of food is lost along the food chain, from primary production (agricultural and fisheries), food processing, distribution to the

stage of consumption - restaurants, catering places, and residences - and ends up as waste. As a result, a large proportion of food is considered waste, even though it is eatable, in a context where food waste causes ethical and environmental issues, as well as economic and social consequences. In 2014, bio waste, including food waste, accounted for approximately 58 percent of total household and similar waste created, totaling 2.6 million tons (131 kg per person per year). There are no statistics on the amount of food waste generated by the population from biodegradable waste. According to FUSIONS' study "Estimates of European Food Waste Levels," published in March 2016, based on an analysis of data collected at the EU level, 53 percent of food waste came from households in 2012, and 12 percent came from businesses. Waste management options are listed in descending order of priority: waste prevention/minimization; reuse/recycling; material or energy recovery; treatment/storage.
The National Waste Management Strategy's objectives are as follows: general waste management objectives; specific waste stream management objectives; general waste treatment objectives; specific hazardous waste management objectives;
Regulatory tools, economic tools, statistical tools, and other tools are required to achieve the strategy's goals.

To reach national and European waste management objectives, the entire society must be involved in this practice, which includes central and local governments, waste generators, professional associations, research institutes, and civil society.

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