

# SELECTIVE COLLECTION OF MUNICIPAL WASTE IN ROMANIA: CHARACTERISTICS AND CHALLENGES

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## Abstract

Currently the quantity of municipal waste generated globally is above the carrying capacity of the Earth. In the context of the sharp decline of natural resources, increasing risk of damage to human health and ecosystems, the sector's contribution to climate change, international concerns regarding municipal waste management have acquired a distinct character, municipal waste management representing an underlying problem for the future socio-economic development. The growth tendency of municipal waste is encountered also in Romania, effective management of municipal waste in Romania became a problem both for policy makers due to the need of meeting the European standards and for citizens, taking into account that the waste presence is particularly visible in both urban and rural areas. In this context, the paper aims to examine the Romanian system of municipal waste collection and to identify the main challenges this system have to deal with it.

**Keywords:** municipal waste, selective collection, WEEE, packaging waste, informal sector

## 1. MUNICIPAL WASTE MANAGEMENT IN ROMANIA. BRIEF OVERVIEW

The issue of municipal waste management in Romania has gained attention mainly due to the need for meeting the accession criteria and alignment with European standards.

Thus, the main EU directives on waste have been implemented almost entirely in the period 2000-2007; this has contributed to the improvement of municipal waste management practices by: (1) establishing clear responsibilities for the main stakeholders involved in the municipal waste management, (2) development of reference documents in the field such as: national waste management strategy, national waste management plan, regional waste management plans, (3) creating the framework necessary for the development and implementation of WEEE management system<sup>1</sup>, (4) promoting cooperation between regional and local authorities, citizens and business environment and so forth. However, according to the European Commission studies and statistics, the Romanian waste policy needs to be further developed in order to create a sustainable municipal waste management system that ensures countrywide municipal waste

<sup>1</sup> Romania hasn't set up a framework for waste electrical and electronic equipments (WEEE) management from own initiative, the framework was created starting with 2005 by transposing European regulations into the national law.

collection and recycling schemes, minimisation of municipal waste quantities landfilled<sup>2</sup> and environmentally sound municipal waste treatment (BiPRO 2011, pp.7).

Currently the Romanian legal framework regarding waste is in the process of revision in the light of the second European framework Directive on Waste 2008 / 98 / EC<sup>3</sup>. By joining the EU in 2007, Romania has assumed a gradual achievement of objectives in terms of selective collection, recycling, recovery and disposal of municipal waste. For instance, Romania has to increase the percentage of population served by salubrity firms to 84% by 2013 and to 100% by 2017 (from 54% in 2008). Also Romanian authorities have to build almost 40 compliant landfills, to implement integrated waste management systems in over 30 counties and to increase the waste recovery rate and recycling rate to 60% and 55% respectively by 2012.

In the last years the total amount of municipal waste generated in Romania has increased mainly due to higher consumer rates especially in the period 2007-2008 when Romanian consumers confidence was high and banks were keen on expanding consumer credits. According to EUROSTAT data<sup>4</sup> approximately 382 kg municipal waste were generated per capita in 2008 in Romania. It is important to note that, although the amount of waste generated per capita in Romania is below the EU average, 99% of municipal waste collected is landfilled comparatively with the European average of 38% (Achim 2011). This is a current issue of great concern.

Between 2011 and 2013, a number of 75 noncompliant landfills must be closed. Thus, in accordance with the Accession Treaty, Romania needs to ensure the gradual reduction of municipal waste stored in the noncompliant landfills, by capping the maximum quantities stored annually as follows: by end 2011: max. 2 740 000 t; by end 2012: max. 2 460 000 t and by end 2013: max. 2 200 000 t (Larive Romania IBD 2011, pp.11).

The Environment Ministry experts argue that, at present, waste landfilling is cheaper than recycling and operators are currently tempted to resort to this alternative. Under these circumstances, taking also into account that Romania we'll have to recycle in 2020 50% of the generated waste quantity, authorities are considering the introduction of a landfill tax in January 2012 in order to encourage municipal waste recycling and to meet the targets assumed.

Because the infrastructure of facilities and collection schemes for environmentally sound municipal waste management is insufficient developed<sup>5</sup>, in order to comply with EU standards, authorities from almost all

<sup>2</sup> According to Directive 1999 / 31 / EC and Government Decision no. 162 / 2002, Romania have to reduce the quantity of biodegradable municipal waste deposited annually, as compared with 2001 (in weight) to 35% till 2017.

<sup>3</sup> The deadline for transposing the new Waste Directive into the national legislation was 12 December 2010.

<sup>4</sup> EUROSTAT report published in March 2010

<sup>5</sup> In 2008 only 54% from the total population has benefited of waste collection services out of which 80% of the population was in urban areas and only 20% of the population in rural areas.

counties have started to elaborate project proposals for getting funds from the Sectoral Operational Programme for the Environment to develop integrated waste management systems.

According to data from the Management Authority for the Sectoral Operational Programme for Environment at 30.06.2011, at national level have been approved major investment projects for municipal waste management in 16 counties namely: Neamt, Botosani, Vrancea, Giurgiu, Arad, Bistrita Nasaud, Salaj, Covasna, Mures, Sibiu, Arges, Olt, Calarasi, Vaslui, Bacau, Suceava and other 22 investment projects are either in the development or evaluation stage. Through the Sectoral Operational Programme for Environment, Romania has at its disposal almost one billion euros to implement in all its counties by 2015 an integrated waste management system and meet the objectives in terms of selective collection, recycling, recovery and disposal of municipal waste. However, currently 6 % of funding from European funds are used (BiPRO 2011).

In the last three years, the number of educational and informative campaigns have increased. The main aims of this type of actions are to educate people about the sustainable waste management system and to encourage pro-environmental attitudes at all levels. However, across Romania, there are still differences regarding awareness level of the long term impact that individual actions such as: waste recycling, reuse and disposal have on the quality of environment.

We can conclude that the municipal waste management practice in Romania has undergone numerous changes but it is still need for further improvements.

## 2. SELECTIVE COLLECTION OF MUNICIPAL WASTE IN ROMANIA. CHARACTERISTICS

### 2.1. Selective collection of municipal waste is not widespread at the national level

The underdeveloped infrastructure, the communist system of waste collection still in place in the areas with blocks of flats (the so called "trash chutes" system), the need for high levels of investment in physical infrastructure (sorting plants, recycling and treatment facilities), the relatively low concern among the population are the main drawbacks regarding the implementation of the selective collection of municipal waste system in Romania. Under these circumstances, Romanian authorities have opted for a gradually implementation of the selective collection system, in three stages, as follows:

**2004-2006:** development of selective collection pilot projects, raising awareness among population through information campaigns

**2007- 2017:** implementation of selective collection system at national level

**2017-2022:** implementation of selective collection system in difficult areas such as: collective housing, dispersed rural areas, mountain areas.

According to the National Environmental Protection Agency Report(2009), in 2008, 96% of household waste were collected using the traditional method of collection, namely mixed collection.

In 2009, a step further was made and at national level, were placed containers for selective collection of packaging waste in 399 localities (including some districts of Bucharest) while in another 22 localities are ongoing pilot projects.

The municipal waste quantities collected using the selective collection infrastructure, in 2009, at national level, are illustrated in Tabel 1:

TABEL 1 - THE MUNICIPAL WASTE QUANTITIES COLLECTED SELECTIVELY, IN 2009, AT NATIONAL LEVEL

The total amount of packaging waste collected (tons)	PET	Plastics	Paper/ cardboard	Glass	Metals	Wood
33263, 898	7818,161	3982,95	19342, 125	1470, 035	291, 522	359, 005

Source: National Environmental Protection Agency (2009). *Raport anual privind Starea Mediului în România pe anul 2009, capitolul 7 Deseuri*, pp.223

However, currently, in Romania, the separate collection of municipal waste in order to recover the recyclable materials from household waste (paper, cardboard, glass, metals, plastics) is still implemented to a limited extent, comparatively with the targets assumed, within the pilot projects initiated by sanitation companies and municipalities, in cooperation with collective associations which have taken producers responsibilities (e.g EcoRom for packaging waste, Ecotic, Environ, Recolamp for WEEE and so forth).

## 2.2. The market of selective collection of municipal waste services is fragmented

According to the study carried out by Larive Romania IBD (2011), currently, at national level the situation is as follows: for paper/ cardboard there are thousands of collectors and 7 large recycling companies also with collection capacity, such as: Vrancart, EcoPaper, Ambro Suceava etc; for WEEE collection have been licensed 320 collectors; for metals there are over 2000 authorised collectors; for used oils there are 88 authorised collectors; for packaging waste collection have been licensed more than 1000 companies and concerning glass waste more than 200 companies have a licence for collection.

## 2.3. WEEE and packaging waste are the municipal waste categories for which collection channels are quite well established

Currently in Romania are authorized six collective associations which took over the responsibilities of producers of electrical and electronic equipments (EEE), namely: EcoTic, Environ, Recolamp, Rorec, CCR Logistics Systems RO SRL and Ecosys Recycling (Ciocoiu N. et al 2010).

The Romanian WEEE collection system is based on three collection channels, namely: "one day collection" actions, buy-back system and municipal collection centers (Ciocoiu and all, 2011). The three channels are briefly described below:

#### ***"One day collection" actions***

These actions are organized at fixed previous established data; the main aim is to takeover the WEEE from the households. The secondary purposes of this type of action are to inform and educate citizens about the adequate management of WEEE. The most well known action of this type, initiated in 2007 at national level, is "The Big Get Rid of Waste".

#### ***Buy – back system***

This system is on a one-for-one basis only, meaning the appliance being returned must be of a similar type or have performed the same function as the new item purchased. Some retailers, in order to increase their sales, offer also a discount of 10- 15% or even 20% at the purchasing of a new equipment from the same range of products with the old one.

#### ***Municipal collection centers***

Consumers can get rid of their WEEE, free of charge, by giving it directly to the municipal collection centers. The infrastructure of WEEE collection through the municipal collection centers is in an ongoing development. One noteworthy fact refers to the fact that Romanian citizens have free access to an online map<sup>6</sup> which includes all the collection and recycling centers of WEEE existing at national level, as a result of the "Green Corner" project.

However, Romania is quite far from attaining the WEEE collection target, mainly because: once the economic conditions have deteriorated and access to credit was severely restricted, the quantity of WEEE collected began to diminish; in Romania the average operation duration for large appliances is 13-17 years comparatively with the EU average; in some rural areas there still exist 50 years old household electrical appliances; awareness of population about the organizations specialized in recycling electrical and electronic equipment (EEE) is quite low and so on.

#### **2.4. The packaging waste collection system**

In Romania there are authorized five collective organizations for packaging waste such as: Eco Rom Ambalaje, Eco X, Intersemat, Sota Group and Ecologic 3R. These organizations took responsibility for achievement of annual recovery and recycling objectives of packaging waste. The most well known

<sup>6</sup> <http://www.coltverde.ro/locatii.php>

organization of the five mentioned above is Eco- Rom Ambalaje, who has introduced in Romania the "Green Dot" system. Through this system the packaging producers can transfer by contract their responsibilities concerning both the packaging waste recycling and recovery to Eco-Rom Ambalaje. In addition, the "Green Dot" symbol certifies to the consumer that the producer/importer of the packaged products pays a financial contribution for the recovery and recycling of the packages.

According to the Eco-Rom Ambalaje report, the organization not only met, but surpassed the recycling and recovery objectives for 2010, for all the 1809 companies affiliated to the system (Ecorom 2010, pp.6).

Also, at the end of 2010, Eco-Rom has supported selective collection in systems (group of localities/municipalities organized in a nucleus). Thus selective collection schemes were implemented in 72 towns and 78 municipalities. Further, EcoRom has established partnerships for selective collection of recyclable materials from household waste (paper, cardboard, glass, metals, plastics) with authorities from Bucharest's District 1, Constanta, Ploiesti, Targu Mures, Satu Mare and Pitesti (BiPRO 2011).

Although they are less known by the public (excepting the population from the operating area) also the other four collective organizations contribute actively to the achievement of the packaging waste collection and recycling targets by developing the selective collection infrastructure.

In order to achieve the recycling objectives on packaging waste, Romania has adopted the Law no. 132/2010 on selective waste collection in public institutions. Thus, both public institutions and institutions in which the state is majority shareholder are obliged to organize within it, a selective collection system for the following types of waste: paper, cardboard, plastic, metal, glass.

The implementation of the selective collection system in public institutions can be made directly by representatives of the public institution or by delegating the responsibility to others (usually salubrity firms).

Currently, there are no official data regarding waste quantities collected as result of implementation of selective collection within public institutions.

### **2.5. The collection system for glass waste, biodegradable waste and construction and demolition waste is very poorly developed**

In 2009 only 4,42% from the total amount of packaging waste collected was glass. The low rate of glass waste collection could be explain by the fact that: (1) there is an insufficient number of special containers at national level, in some cities have been placed only containers for paper/ cardboard and plastics – according to the study carried out by Larive Romania IBD (2011) in order to meet the collection targets approximately 1500 special containers are needed; (2) there is little capacity for processing and recycling – there is only one

large glass manufacturer in Romania - Stiom, which has limited processing capacity namely 20 - 25% of the total necessary quantity (Larive Romania IBD 2011, pp.16).

At present in Romania both for biodegradable waste and for construction and demolition waste there are only pilot projects. For instance, for construction and demolition waste, in Medias was set up through a project funded by the Norwegian Cooperation Programme (Norway Grants), a platform for collection, processing, recovery and temporary storage of construction and demolition waste.

Although in average 50% of household waste composition is biodegradable (according to 2008 data) and in spite the fact that Romania have to reduce the quantity of biodegradable municipal waste deposited annually, as compared with 2001 to 35% till 2017 through recycling, currently only in two cities, namely Piatra Neamt and Ramnicu Valcea is implemented a collection system for the biodegradable fraction of municipal wastes.

However, is it important to mention that authorities from almost all development regions have started to elaborate projects in order to develop an adequate collection system for biodegradable waste.

### 3. SELECTIVE COLLECTION OF MUNICIPAL WASTE IN ROMANIA. CHALLENGES

The **main challenges** regarding the selective collection system in Romania refers to the:

- ***recycling targets***

Annually by 2013, in Romania, the selective collection and recycling targets for packaging waste increase gradually to reach European standards in force. For instance, the targets for recycling of the packaging waste are 19% higher than in 2010. Taking into account that 60% of the packaging waste is produced by households, the target cannot be met without a significant progress made in the selective collection, consequently both local authorities and sanitation companies have to invest considerably in the municipal waste collection network and recycling facilities. Also the target on WEEE collection of 4 kg per capita per year is a great milestone taking into account that in 2010, the Romanian authorities reported only 25-30% of the envisaged target, about 1-1.5 kg WEEE per capita. In addition challenging recycling targets are defined also for biodegradable waste, construction and demolition waste, used oils etc.

- ***population's accessibility to the collection infrastructure***

According to the Ecorom Report (2010) 4.000.000 inhabitants (approx. 19% of the total population) have access to the selective collection system. Selective waste collection from population is proving particularly challenging mainly due to underdeveloped collection system, the relatively poor road infrastructure (especially in rural areas) and the lack of education.

- ***informal sector***

Currently, in Romania there is no database regarding the informal sector in the field of selective collection of municipal waste, although the informal sector is a special category of the municipal waste management process. The intervention of the informal sector in Romania is visible in waste collection (mixed, separated or purchased from people interested) as well as in the waste treatment and final disposal. In general, people in the informal sector go from house to house and collect WEEE and other recyclable wastes before these type of municipal waste enter into the formal waste management system. Informal sector activities are very effective, people in the informal sector have the ability to react to the market and to adapt quickly to changes of the system. For instance, the study "Economic Aspects of Informal Sector Activities in the Waste Management" carried out in 2008 at Cluj-Napoca revealed that the informal sector recycles 10% of waste collected, representing twice the amount of waste recycled by the formal sector. Consequently the integration of the informal system in the selective collection system might increase the process of municipal waste recycling.

- ***illegal export of WEEE in poor countries***

According to unofficial sources (statements of WEEE collection organizations staff), the quantity of WEEE trafficked by the Romanians into the Third World countries through its ports has reached to 10,000 tons annually. In order to mitigate this phenomenon, manufacturers and importers of electrical and electronic equipment will have to keep track of quantities of products sold.

#### **4. CONCLUSIONS**

Selective collection of municipal waste is an essential component of municipal waste management process without which Romania can not achieve the objectives assumed in the field.

Currently the selective collection of municipal waste system is implemented very slowly due to the difficulties in setting up logistics infrastructure.

Proper implementation of the selective collection of municipal waste means for Romania not only the attainment of targets but also opportunities to innovate and to have access to valuable secondary raw materials.

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