

## WASTE MANAGEMENT AS COMMITMENT AND DUTY OF CITIZENS

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**Abstract:** This study is part of the waste management domain and refers to the involvement of the citizens in the waste management issue. It aims to prove that, despite that although don't have a special training and a special knowledge about the waste management, citizens know a lot about the waste problem and have a desirable practical behavior. Using the direct observation, meta-analytical method, and assessing Romanian legal norms and official statistics (2012, 2013, 2014), we emphasize that:

a) the citizens' involving has two aspects: one concerning the citizens' common sense and the other related to the obligations led by the law; thus, the common people see the waste management as a commitment and as a civic duty;

b) the generations coming up the year 2000 feel the waste management in a more powerful way than the former ones. Therefore, it can be said that there it is a waste management generation.

The conclusion is that the waste management is not only a civic duty, but also an honest practice and a commitment in the current waste management.

**Key words:** waste management, duty of citizens, commitment of citizens, honesty

### Introduction

As citizens, we know that waste is generally what a possessor discards of. We have the intention or the obligation to do it. Usually, waste is last life stage of a product's life cycle (time period between the manufacturing moment and the moment when it becomes waste). In this moment, the citizens are informed that waste management manifests more acutely because its quantity and diversity has grown a lot lately, as well as their growing impact on the environment (Tchobanoglous et al., 1993; Bai and Sutanto, 2002). Waste storage on soil without respecting a minimum standards limits, discharging it into watercourses, and uncontrolled burning is a series of major risks both for the environment and population's health. That is why the European legislation enforced by acts has imposed a new point of view regarding waste management, starting from performing the necessity of saving the natural resources, reducing costs management, as well finding out efficient solutions to reduce its impact on the environment (Ulfik and Nowak, 2014).

Waste management comprises several activities such as collecting, transporting, treating, evaluating and discharging, also monitoring these operations and monitoring waste deposits after their closing up (Clift et al., 2000; Bystrzejewska-

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Piotrowska et al., 2009). Their main objectives of waste management are preventing and reducing waste production by:

- developing clear technologies, having a low consumption of natural resources;
- developing product technology and trade which, through their manufacturing, use or discharge have no impact upon waste volume, or including on waste pollution;
- developing efficient technologies through a final discharge of the hazardous substances out of all waste destined to valorize them;
- materially and energetically harnessing of the waste, by transforming them into recycles, or including waste use as energetically source.

Thus they ensure natural resources protection by using waste recycles and, in this way, environmental pollution is diminished (Winkler and Bilitewski, 2007; Kot and Brzezinski, 2015).

### **Romanian standards for Waste Management**

The national documents regularize waste management comprising two main components: The National Strategy and The National Plan for Waste Management, representing the basic instruments which ensure the implementation of the European Union politics regarding waste management also, in Romania (Șchiopu et al., 2007; Vasile et al., 2012).

At the end of 2006 Waste Management Regional Plans (Romanian abr. PRGD) have been developed by the Regional Agencies for the Environment Protection, in collaboration with all the representatives' local and county authorities, using their data. Waste Management Regional Plan has been approved through the Common Order of the M.M.A.G. no. 1364/14.12.2006 and of M.I.E. no. 1499/21.12.2006.

Developing and approving of Waste Management Regional Plan has major benefits in all regions, thus: it ensures the necessary frame for developing waste management projects with European funding; optimizing municipal investments and operational costs for waste at the county and regional level; ensuring on long and medium period performing, developing integration of waste management systems, having positive effects on the environment, as well on population's health.

Waste Management Regional Plan is in conformity to the European and Romanian Environment Legislation, and the objectives and targets proposed are those comprised in The National Strategy and The National Plan for Waste Management. The most important objectives focused on Waste Management Regional Plan are:

- extending waste collection from the rural areas which have not yet been managed by the sanitary services;
- developing separate waste collecting systems, in order to reach the recycling targets for the wrapping waste, electrical and electronically waste equipment, out of use vehicles;
- building up waste treating installations in order to reach the targets of quantity reduction of the recycling waste already stored;

- solving the incompliant waste stores and rehabilitating ecologically all the waste locations;
- building up and operating new accordingly stores.

Starting with 2005, The National Agency for The Environment Protection in collaboration with The National Statistics Institute and The County Agencies for Environment Protection every year collect data previous year regarding generating and management waste, both for the internal reporting to The European Commission and the EUROSTAT. This activity establishes both the general legal provisions for the environment protection, as well waste specific regulations. Other kind of data and specific information connected to generating and managing waste flows are collected by The National Agency for The Environment Protection more or less frequently and concerning the legal and reporting requests. The below situation shows the amounts of waste generated in the years 2012, 2013, 2014 (Table 1, 2 and 3).

**Table 1. Waste generated on main categories, in 2012** (*The National Agency for The Environment Protection and The National Statistics Institute*)

Generated waste	Quantity billion	Percentage
Generated waste by mining industry	199.25	62.15%
Generated waste by another industrial activities	112.49	35.09%
Municipal waste	8.87	2.76%
<b>TOTAL</b>	<b>320.61</b>	<b>100%</b>

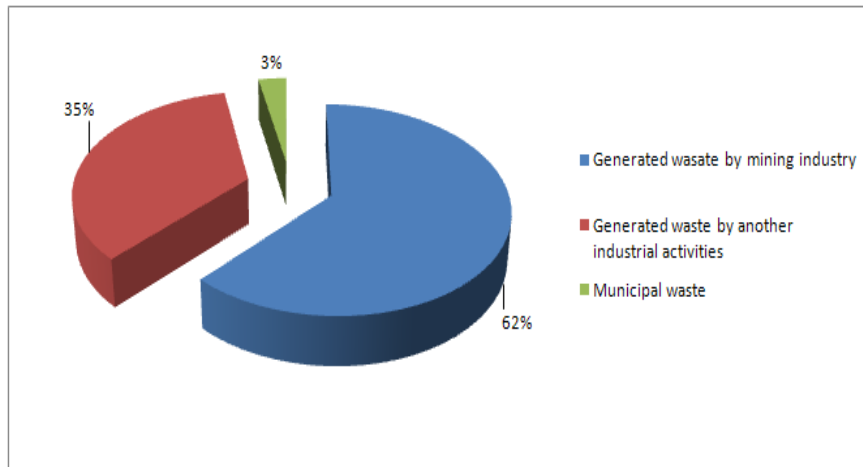
**Table 2. Waste generated on main categories, in 2013** (*The National Agency for The Environment Protection and The National Statistics Institute*)

Generated waste	Quantity billion	Percentage
Generated waste by mining industry	198.03	62.18%
Generated waste by another industrial activities	111.33	34.96%
Municipal waste	9.10	2.86%
<b>TOTAL</b>	<b>318.46</b>	<b>100%</b>

**Table 3. Waste generated on main categories, in 2014** (*The National Agency for The Environment Protection and The National Statistics Institute*)

Generated waste	Quantity billion	Percentage
Generated waste by mining industry	197.5	62.42%
Generated waste by another industrial activities	110.01	34.77 %
Municipal waste	8.9	2.81%
<b>TOTAL</b>	<b>316.41</b>	<b>100%</b>

The below Figure 1 illustrates the share of municipal waste in total waste generated in Romania, 2012-2014.



**Figure 1. Generated waste in period 2012-2014** (*The National Agency for The Environment Protection and The National Statistics Institute*)

From the previously presented data it was noted an increase of recycled waste in the total waste generated in Romania in conditions there was an economic growth. According to 211/2011 Law regarding waste regime, law republished in 2014 and taking into account the established objectives regarding the collection system expansion and implementation of selective collection, there were estimated quantities of waste to be collected and quantities of waste to be separately collected. Municipal waste is a solvable technical issue only after the society will assume the important role in the separation, reuse, recycling and their composting, and the industry will give adequate attention for design, so that products can be reused or recycled. The amount of municipal generated waste will increase due to increased consumption of goods to the population.

As a result of made investments at national level it was found that in the period 2013-2014, there was an improvement in the collection and recycling of waste from industrial and municipal level, compared with the 2012 situation. Environment Sector Operational Programme (POSM) 2007-2013 has brought a significant contribution to the development of environmental infrastructure for waste management sector. Most of the investment projects are still under implementation. Their implementation shall continue until their completion, by fulfilling the indicators proposed by the project. Planned investments for the period 2014 - 2020 will continue the projects aimed towards waste management implementing. Funding priorities of POSM aims to develop waste management systems.

### Tendencies regarding Waste Generation

Citizens know that all kind of waste, generated from multiple human activities represents a huge problem nowadays, due both to the continuous raise of the quantities and diversity (which thorough their degradation and expanding represent a real danger to the environment and population's health), and to the large quantities of raw materials, which recycles and energy be used and reintroduced in the economic circuit.

Applying a long-lasting waste management system implies major changes of the present practices. Implementing all these changes will surely need a good participation of all the society's segments: single individuals as consumers, industries, social-economical institutions, as well as public authorities (McDougall et al., 2008; Vlăduțescu, 2013; Smol et al., 2015).

The concept of "waste management" refers to the operations that need to be done after the waste have appeared. However, generally speaking, this concept refers also to activities of preventing the appearance of waste and decreasing the costs.

There are different types of waste, and according to the Law 211/2011, they can be dangerous (explosive, oxidant, flammable, irritant, harmful, toxic, cancerous, corrosive, infections and mutations provokers, toxic for reproduction, eco-toxic) and not dangerous (bio-degradable, packing and household waste). Even the classification and codification of waste must be done according to the law. Methods of waste management consist of choosing of authorized collectors and frequency establishing for collecting, the adequate means of transport, and also concluding contracts with them, endowing with vessels for selective collecting for paper, plastic, metal and household waste, concluding contracts with Ecorom or Ecologic3R, the main organisms which have the responsibility of waste collecting. The lack of these contracts for selective collecting of paper, glass, plastic, metal and household waste can lead to delay the economic agent in waste management.

The main objective of the waste management seems to be their taking off. The conferences about the waste management present some other interesting ways of transforming and using the waste. Some people would say this is the natural course of things. As a start, we have to accept that waste exist, come from somewhere and those who are responsible with them try to keep them far from our sight.

Waste management is, first of all, a reaction to waste. Let's have the ordinary citizen as an example. It is the duty of local authority to provide the town with containers. The citizen drops his garbage there, and the problem disappears. He might complain about dirty places and smell. After some time, when the containers are too full with garbage bags, the citizen can accuse the authorities of neglecting the duty. After the moment of dropping the litter in container, the citizen starts suffering from amnesia, and he forgets the problem can be in relation with these noxious things.

In 60's and 70's, the amounts of garbage were considered a sign of prosperity. But, in the last 40 years we have started feeling the effects of polluted air. "*We have known our enemies and, they are ourselves*", says one of Walt Kelly' cartoon

characters. This doesn't mean that we could live at high standards without creating these garbage mountains.

Waste generation is the best way to analyze the interaction between human activities and the environment (Grabara, 2013; Danciulescu and Colhon, 2014; Grabara and Dima, 2014). It generally follows some over consumption and production tendencies. For example, housekeeping waste level raises at the same time with living standards. A greater production and an inefficient resources management carry out big quantities of waste generation (Ulfik and Nowak, 2014). The basic forecast takes into consideration the following factors: population evolution; economy evolution; jointing up to sewage systems; a building up forecast; some changes in the consumers' behavior; ecological education; living standards (Kot and Ślusarczyk, 2013). Although, on the long and medium run storage is the main option for waste management, the target is to promote superior waste management options in accordance to the European standards, avoiding as much possible final discharge solutions (storage, incineration). Municipal waste represent a problem which can technically be solved after the society has assumed its crucial role in separating, recycling, reusing and dating waste, while the industry has given the corresponding attention to projection, so that the products are reused or recycled (Grabara and Man, 2014; Grigoraş et al., 2014). Municipal generated waste quantity will grow because of large goods consumption by the population, i.e. 0.8% per year/inhabitant. Regarding slime quantity generated by the sewage systems, all population connected to water supply and sewage systems has been taken into account and, so it has been foreseen a yearly growth with a 25% of the connected population, so raising up also the generated slime quantity. Construction and demolishing generate waste; it has been foreseen with a growth of a 0.8%.

Starting from the probable generated waste quantities and the main targets, there have been estimated waste quantities which will be collected, as well waste quantities which are to be collected separately (Stan, 2008; Starostka-Patyk and Grabara, 2010). However, it is rather difficult to make an accurate forecast of the generated waste quantities, but we can still be waiting for a value decrease of the industrial waste, as long as clear technologies to prevent, reduce and control pollution. It will definitely be necessary for the dangerous waste management to change, namely:

- changing raw material generating the dangerous waste and/or changing and modifying the used technology BAT;
- giving up using the product waste generating;
- finding out some valorize modalities, and replacing permanent storage with temporary storage in order to evaluate the generated waste;
- promoting the development of the treating systems, including physical and chemical treatment, and if there is no dangerous waste, it should be stored on stores for not dangerous waste;
- storing dangerous waste which cannot be valued or incinerated, will be realized in conformity to the EU requests.

The necessary investments for treating/ discharging dangerous waste will be done by the economical operators which generate waste or, in private, by the specialized operators who will carry out these activities for the third parties in exchange.

### **Improving Waste Management quality through citizens**

By the implementation of the legal provisions in the current activity of the economic operators and the public local administrations it is provided that the impact of waste management on the environment, as well of the population`s health will be significant reduced (Modrak et al., 2014; Smarandache and Vlăduțescu, 2014; Vlăduțescu et al., 2015). By the implementation of the legal provisions in the current activity of the economic operators and the public local administrations it is provided that the impact of waste management on the environment, as well of the population`s health will be significant reduced.

In order to reach the highest standards, it is absolutely necessary to involve the whole society: public authorities, waste generators, professional associations, citizenship.

The specific objectives for waste management are the following:

- finding out some valorize modalities, for a rational transport and collection of the waste;
- preventing uncontrolled slime waste discharge on soil and on the water surface;
- adopting and implementing measures in order to prevent wrapping generated waste;
- putting into practice The National Plan for Waste Management.

The projects on related theme will include rural and urban areas, locally and regionally. Step by step, extending the recycling systems over the whole country will be presented and implemented the main objective of the projects.

### **Summary**

As a practice, waste management is a commitment and a duty of each citizen. People have to raise consciousness on that. If citizens will not recycle effectively, not only will they pay a material price for buying new products made out of the same material, but planet health will be affected, as the pollution is affecting the environment. People and local authorities in the whole world become more and more concerned with waste management. Because of throwing away the waste in inadequate places, for a long period of time, the environment represents a serious issue at the moment. Thus, the introduction of some systems of waste management is not just an economic problem, but it also becomes a health issue for both people and environment. This kind of problem cannot be avoided anymore. Waste management has the goal the saving of natural resources, by reuse the recovering parts.

In Romania, due to the investments made through the Sector Operational Programme Environment (2007-2013) has increased selective waste management

activity, decreased progressively waste and decreased the hazards of waste. In connected mode, investments have had the effect of protecting natural resources through the use of secondary raw materials from waste, thereby reducing environmental pollution caused by their removal.

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## GOSPODAROWANIE ODPADAMI JAKO ZAANGAŻOWANIE I OBOWIĄZEK OBYWATELI

**Streszczenie:** Badanie to jest częścią domeny zarządzania odpadami i odnosi się do zaangażowania obywateli w kwestię gospodarowania odpadami. Ma ono na celu udowodnić, że pomimo braku specjalistycznego szkolenia i specjalistycznej wiedzy na temat gospodarki odpadami, obywatele wiedzą dużo o problemie odpadów i wykazują pożądane praktyczne zachowanie.

Korzystając z bezpośredniej obserwacji, metody meta-analitycznej, oceny norm prawnych Rumunii i oficjalnych danych statystycznych (2012, 2013, 2014), podkreślamy, że:

a) udział obywateli ma dwa aspekty: jeden dotyczący zdrowego rozsądku obywateli i drugi związany ze zobowiązaniami wynikającymi z przepisów prawa; w ten sposób, zwykli ludzie postrzegają gospodarowanie odpadami jako zaangażowanie i jako obywatelski obowiązek;

b) pokolenia, które weszły w rok 2000 odczuwają gospodarowanie odpadami w bardziej potężny sposób, niż wcześniejsze. Dlatego też, można powiedzieć, że jest to pokolenie gospodarowania odpadami.

Wniosek jest taki, że gospodarka odpadami jest nie tylko obywatelskim obowiązkiem, ale również szczerą praktyką i zaangażowaniem w obecną gospodarkę odpadami.

**Słowa kluczowe:** gospodarka odpadami, obywatelski obowiązek, zaangażowanie obywateli, uczciwość.

## 廢物管理的承諾公民和佔空比

**摘要：**本研究是廢物管理域的一部分，是指公民對廢物管理問題的參與。它的目的是證明，儘管雖然沒有專門的培訓和對廢物管理的專業知識，公民知道了很多關於垃圾問題，並有理想的實際行為。

採用直接觀察，元分析方法，並評估羅馬尼亞法律規範和官方統計（2012年，2013年，2014年），我們強調的是：

一）公民參與有兩個方面：一個是關於公民的常識和其他相關領導的法律義務；因此，老百姓看到了廢物管理的承諾，作為一個公民的義務；

二）代即將到來的2000年感到廢物管理比以前那些更強大的方式。因此，可以說，有它是一個廢物管理的產生。

得出的結論是，廢物管理不僅是公民的義務，也是一種誠實的做法，在目前的廢物管理的承諾。

**關鍵詞：**廢物管理，公民的義務，公民的承諾，誠信為本