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PACKAGING WASTE RECYCLING EFFICIENCY IN BUCHAREST

Alin DANCA[1]

Scientific Coordinator: Assoc. Prof. PhD. Eng. AugustinaTRONAC[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, 011464, Bucharest, Romania, Phone: +4021.318.25.64, Fax: + 4021.318.25.67

Corresponding author email: danca.alin@gmail.com

Abstract

The paper aims to present the present situation and trends for evolution of packaging waste recycling in the town of Bucharest, as a model for the entire urban waste management system in Romania. The statistical data for our country and European ones entitle me to propose some simple solution to improve the process.

Key words*: Bucharest, packaging waste, recycling.*

INTRODUCTION

The recycling of reusable materials drastically reduces the consumption of natural resources(oil, water, energy) and the level of harmful emissions into the air.
Waste management involves the collection, transport, recovery and disposal, including landfill monitoring after closing.
In Romania, in Bucharest, the responsibility for waste management belongs to the local government, which by themselves or by leasing sanitation service by a licensed operator must ensure collection(including separate collection), transportation, treatment, recovery and disposal of the waste.
Nationwide, there are currently ten (10) transfer organizations (OTRs) that are licensed to operate, taking responsibility for achieving annual targets for recovery and recycling of packaging waste.
'Waste packaging' is the packaging or packaging materials which do not meet the requirements and the purpose for which they were designed and manufactured and remain after being used as packaged product.

MATERIALS AND METHODS

The quantities of waste reported as recycled/recovered in Bucharest are not representative because the packaging waste generated in other counties comes to Bucharest, caused by the fact there were no waste recyclers.
The data are obtained from the National Environmental Protection Agency and are corresponding to the period 2009-2012.
In the following I will compare the values of packaging waste recycled in Bucharest with average values of major European countries, finding causes and proposing solutions for improvement.

RESULTS AND DISCUSSIONS

In Romania, the rate of municipal waste generation per capita is 272kg, what we can say it's a little (relative to others countries).
Waste collected in biodegradable part composition and materials that can be used are shown in table no.1.
Unfortunately Romania has managed to recycle only 4.5% of municipal waste in 2012, the remaining waste reaching landfills.
Bucharest inhabitants 'produce' annual about 318 kg of household waste per capita or 0.87 kg/capita per day (Ecoteca, 2015).
According to previous researches, in Bucharest the waste collection process is determined and influenced by:
-the existence of waste containers near homes 31%
-the level of information and education made through media 24%
-the example of other people 18%

Table 1. The composition of the material on household waste collected - 2012. (ANPM-APMB, 2015)

MATERIAL	PERCENTAGE
Paper and Cardboard	12.56
Glass	4.67
Metal	2.55
Plastic Materials	11.01
Biodegradable	46.07
Wood	1.23
Others	21.91
Total	100%

The evolution of packaging waste collected in Bucharest in the period 2009-2012 (Figure 1) shows that the collection has grown in absolute terms, but the significant percentage increase was between 2009 and 2010.
In addition, dangerous fraction of packaging waste has been eliminated since 2011.

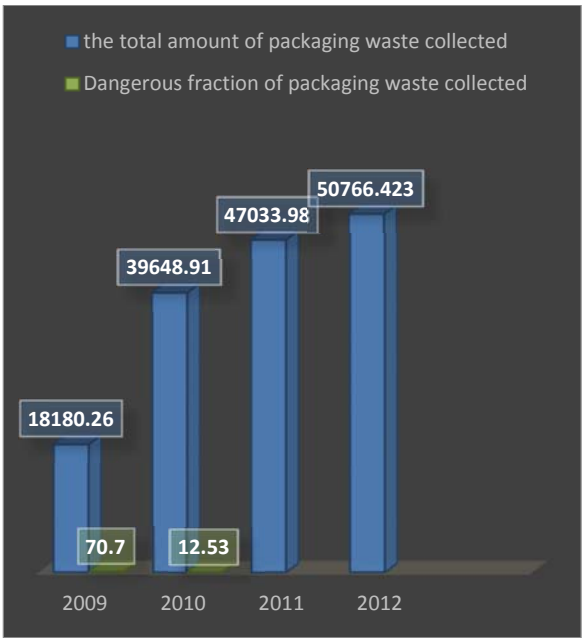

Figure 1. Quantities of packaging waste collected (t) in Bucharest 2009-2012

The packaging collecting evolution by type of material in Bucharest for 2009-2012 period shows that the majority is made up of paper and cardboard, which increased dramatically from 2009 in 2012, meaning that in 2009 the existence of collecting this type of packaging was virtually invisible (ANPM-APMB, 2015).
Only 4% of waste collected across Bucharest is recycled/recovered, the remaining 96% is sent to the dedicated landfill.
The municipal waste disposal in Bucharest is done in the selected landfills positioned near the municipal area (Chiajna, Vidra, Glina).

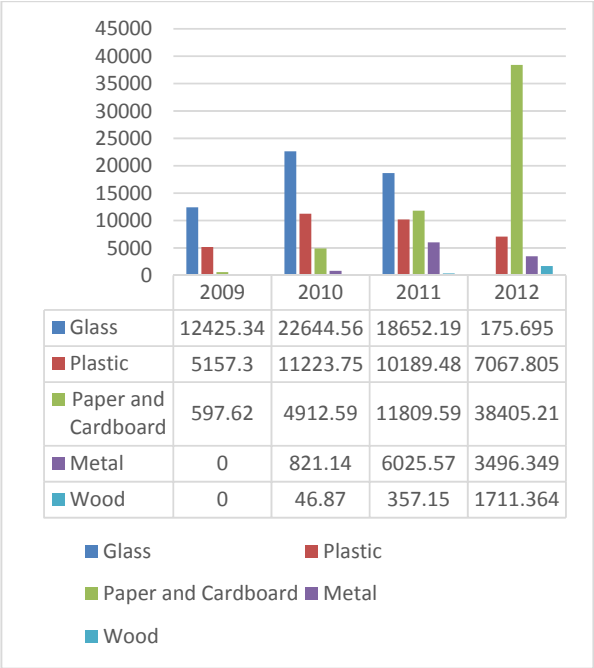

Figure 2. Quantities of waste collected (t) in Bucharest by the type of the material

In parallel, they were made sorting and transfer stations (Figure 3). There are currently in operation, serving the city, 3 waste plants for sorting, selection and transfer.
They are excluded from receiving in the mentioned stations the sludge from the urban wastewater treatmentplant and the construction residues.
Currently, there is no municipal waste incinerator to operate for Bucharest.
EU countries have generated an average amount of municipal waste of 481 kg per capita in 2012. An average of 43% was recycled or composted (Eurostat, 2015).
The quantity of generated waste fell by 8.7 % compared with the peak of 527 kg per capita in 2002. Since 2007, municipal waste generation in the EU has been decreasing steadily in the mid-90s.
Of the 481 kg municipal waste generated per person in the EU within 2012, 470 kg per capita were treated as following: 31% disposed in landfills, 28% recycled, 26% incinerated and 15 % composted.
The ratio of municipal waste recycled or composted in the EU has risen steadily in the past 60 years, from 18% in 1955 to 43% in 2012.

Figure 3. Waste sorting and transfer plant

For example: Slovenia leads the leaderboard with a degree of recycling 55% of municipal waste; Germany ranks second after Slovenia with a 47% recycling rate and preserving the performance of 0 percent for disposal in landfills (alongside Switzerland) (Ecoteca, 2015).

It's worth mentioning that Romania has the lowest rate of municipal waste generation, 272 kg per capita, while the opposite is Denmark with an amount of 747 kg per capita.

In Bucharest, there is a municipal waste generation of 318 kg per capita (Metropotam, 2014).

Until 2025 in Bucharest it will be dropped the use of the inside building housing waste throwing, and it will be adopted a long-term strategy of public sanitation.

According to a mayoralty resolution draft already submitted to public debate, it could remain in use only a waste designated room placed at the ground floor, accordingly designed for this operation.

Also, by the year 2025 it is mandatory to set up within Bucharest's districts some 'islands' of waste separate collection. It will also be implemented the collection process and separate transportations for municipal waste and waste from commercial activities (like industry, institutions), including separately collected fractions without causing prejudice to the flow of electrical waste and electronic equipment, electrical piles and accumulators.

The resolution draft stipulates as well that municipal waste should be sorted in waste sorting stations.

The proposed measures would reduce by 15% the amount of waste disposed in landfills; the implementation of separate collection system directly from owners (tenants/individual houses/ residential complexes) would reduce too the disposed waste quantity.

CONCLUSIONS

In Bucharest, municipal waste production per inhabitant is fairly lowcompared to EU countries. Likewise, the percentage of recycling of those wastes is shallow. That is caused to the inefficiency of waste collection per categories. So far, there is not a dedicated well made program, so the majority of waste packaging is thrownout in the dumpsters mixed with others materials then the waste is transported to the main landfill outside the city.

The general public should be more informed by the importance of waste recycling because, for example, in 2012 just a small proportion of

total municipal waste (4%) was exploited(recovered, recycled, reused); that means the rest of it was lost forever.

I propose for the near future, in order to transform Bucharest in an efficient city regarding the recycling activity,to place dedicated dumpsters in special assigned areas for each city block and to assess the process. Beside, people must be educated and understand the importance of this step for the mankind and the environment. Building an incinerator and a compost station for Bucharest would greatly help the city to get rid of organic waste and/or to make compost and use it as fertilizer.

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