

## WEEE MANAGEMENT IN ROMANIA IN THE CONTEXT OF THE EUROPEAN WASTE MANAGEMENT POLICY

**Associate Professor Ph.D. Laura MARCU**  
"Valahia" University of Târgoviște, Romania  
E-mail: laura\_marcu\_uvt@yahoo.fr

***Abstract:** Our paper aim to present waste management situation regarding electrical and electronic equipment (WEEE) in Romania in relation to the situation in European Union and with the legislation. First we will review the Romanian law in the light of European legislation that sets European goals and measures to achieve them. Then Romania's situation is presented in comparison with other European countries regarding the quantity of WEEE collected, the mains categories of DEEE collected, the DEEE treatment as well as the evolution of collection rate. We highlight causes of delay that characterize Romania's situation in terms of WEEE management and difficulties currently facing Romania in this field.*

***Keywords:** collection, WEEE, legislation, Romania, statistics.*

***JEL Classification:** M2, Q53, Q58.*

### **1. The European and national legislation on WEEE**

WEEE is the name that bring together waste electrical and electronic equipment, as they were defined by European legislation transposed into national law. According to Romanian GD 1037/2010, the WEEE category includes ten groups of electrical and electronic equipment, such as: household appliances large and small; consumer equipments, lighting and IT and telecommunications equipments; electrical and electronic tools (except large stationary industrial tools); toys, leisure and sport equipments; Medical devices (except implanted and infected products); monitoring and control instruments and vending machines. Provided that such equipment can be waste is, besides belonging to the class, to not be a part of another type of equipment that does not fall within the scope of this law. Military equipment is not covered by WEEE legislation for reasons of national interests protection, this exception being extended to all equipment that helps to protect national interests.

These products have an important influence on the environment, on the one hand by the amount of resources (especially metals, including rare earth metals) and energy used to produce, transport and use them. On the other hand, EEE can have harmful effects on people and environment if their waste is not properly managed. Thus, many of these products have become waste can produce toxins if incinerated or deposited in dumps waste. Also, recycling of WEEE is an opportunity to create jobs, if protecting rules for workers are created, because they are exposed to contact with a number of metals that can become toxic or hazardous. This situation has forced formulation of common rules at European level and its integration into acts applicable in all Member States.

At European level, the legal framework in this area include reference documents such as Directive 2002/96/EC on WEEE, and Directive 2002/95/EC on the hazardous substances contained in EEE (also called RoHS Directive). The purpose of these rules is to specify the conditions for placement of EEE products on the market, as well as the management framework of DEEE. Thus, Directive 2002/96/EC sets out the categories of products covered by EEE group and criteria underlying the classification of products in these categories, outlines the responsibilities of MS on selective collection and treatment of WEEE, the rules on recovery of WEEE (reuse, recycling), the ways of financing WEEE management, information to be transmitted to users and also information that MS centralize from EEE producers. Directive 2002/95/EC lays down the rules to be followed to limit the use of hazardous substances in carrying EEE (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls-PBB, polybrominated diphenyl ethers-

PBDE). The two acts were completely revised by Directive 2011/65/EU of 8 June 2011 (known as RoHS II Directive) and Directive 2012/19/EU of July 4, 2012 (called WEEE II Directive).

In Romania, Directive 2012/19/EU was transposed into national legislation by Government Decision no. 1037/2010 on waste electrical and electronic equipment and Directive 2012/19/ EU is transposed by Government Emergency Ordinance no. 5/2015 on waste electrical and electronic equipment. The general national legislation on waste is provided by Law no. 211/2011 on waste regime, as amended.

GD 1037/2010 established obligations of local authorities and producers in selective collection. The national average of WEEE collection established by law is at least 4 kg/ inhabitant/year, similar to the objective set out in the European Directive. The executive authorities of administrative and territorial units are required to organize, manage and coordinate the separate collection of WEEE or WEEE collection entrust to an economic operator collector, authorized by the Environmental Protection Agency, if WEEE collection is not covered by sparse sanitation services. Also, local authorities have the obligation of returning WEEE collected to producers or their collective organizations, in order to achieve treatment/recycling of WEEE collected, and the obligation to provide evidence of WEEE entering and leaving the collection points and annually report data to the county agencies for environmental protection. Another requirement stipulated by law is to ensure the existence and operation of at least one point of collection of WEEE from private households to 50,000 people, but not less than a collection point in each locality; This point must take WEEE both from holders and distributors.

Regarding distributors, they are obliged, when deliver a new product, to take a WEEE in one to one system, without requiring payment. Producers (defined by law as people who manufacture/sell/resell EEE with their own branded, imports or exports EEE) can organize and operate individual or collective take-back of WEEE from private households and they are required to transport them to authorized treatment facilities. To perform operations of WEEE collection, collective organizations should be authorized by the Ministry of Environment and Forests.

Funding management of WEEE from private households (collection, treatment, recovery, environmentally sound disposal) is supported by individual producers or through collective organizations. For WEEE from users other than private households, the financing of waste management is supported by producers.

Also, for each category of WEEE are established minimum rates of recovery (Rv) and reuse / recycling (Rr) as a percentage of the weight of the device: Rv = 80% and Rr = 75% for large household appliances and vending machines, Rv = 75% and Rr = 65% for computer equipment, electronic communications equipment, consumer electrical appliances, Rv = 70% and Rr = 50% for the other categories of products (excluding medical devices).

All manufacturers are responsible for informing EEE users of private households on compulsory WEEE sorting, WEEE effects on the environment and human health, as well as the European symbols on sorting WEEE.

Five years later, GEO no. 5/2015 clarify the entities that are involved in sorting and treatment of WEEE and their obligations. Manufacturers remain the only responsible for collecting WEEE from other sources than private households. Instead, they are set out three categories of entities that can provide separate collection of WEEE from private households:

- public service of WEEE collection;
- suppliers;

- collection centers organized by authorized economic operators to collect WEEE. These centers sign a contract with EEE producers, with their collective organizations or with operators carrying out treatment operations of WEEE on behalf of producers/collective organizations.

Producers can set up and operate individual or collective take-back of WEEE. At the same time, administrative units are specified to have an obligation to ensure the collection of WEEE from private households, based on at least one of the three ways proposed by law:

- fixed centers for collecting, at least one in 50,000 people, but not less than one center in each administrative unit;
- mobile collection points;
- regular collection with designated operators at least once a quarter.

Regarding distributors, the law maintain the obligation when selling a new product to take back an old equipment of equivalent type, without requiring payment. But, in addition, distributors with retail space of at least 400m<sup>2</sup> are required to ensure the free collection of very small WEEE from end users, in the stores or in the vicinity thereof without obligation to buy EEE of an equivalent type (except for contaminated WEEE that presents a risk to health and safety of staff).

The average rate of WEEE collection from private households required to producers through GEO 5/2015 is kept at 4 kg /inhabitant/year. Instead, according to GD 1037/2010, EEE producers and collective organizations had an obligation to collect an amount of WEEE established based on annual percentage rates calculated by the Ministry of Environment and Forests; this rate was calculated as the ratio between the amount of WEEE (from private households) collected annually per inhabitant and the amount of EEE placed on the national market in the last two years. According to GEO no. 5/2015, from January 1, 2016 the calculation of the annual collection rate is set for the producers as a ratio between the total weight of WEEE collected in that year and the average weight of the total amount of EEE placed on the market in the last three years. This percentage is at least 40% for 2016, 45% for the period 2017 to 2020 and 65% since 2021.

For measures of WEEE treatment, operators concerned are still obliged to hold an environmental permit. Regarding recovery of WEEE, targets set by GEO no. 5/2015 is characterized by a gradual increase to the previous law. So:

- a) for large household appliances and vending machines, R<sub>v</sub>=80% and R<sub>r</sub>=75% up to August 14, 2015, the percentage increase to R<sub>v</sub>=85% and R<sub>r</sub>=80% up to August 14, 2018;
- b) for computer equipment, electronic communications equipment, electrical consumption and photovoltaic panels, R<sub>v</sub>=75% and R<sub>r</sub>=65% up to August 14, 2015, the percentage increase to R<sub>v</sub>=80% and R<sub>r</sub>=70% up to August 14, 2018;
- c) for other products categories R<sub>v</sub>=70% and R<sub>r</sub>=50 up to August 14, 2015, the percentage increase to R<sub>v</sub>=75% and R<sub>r</sub>=55% up to August 14, 2018;
- d) for gas discharge lamps, R<sub>r</sub> = 80%, the rate held constant until 14 August 2018.

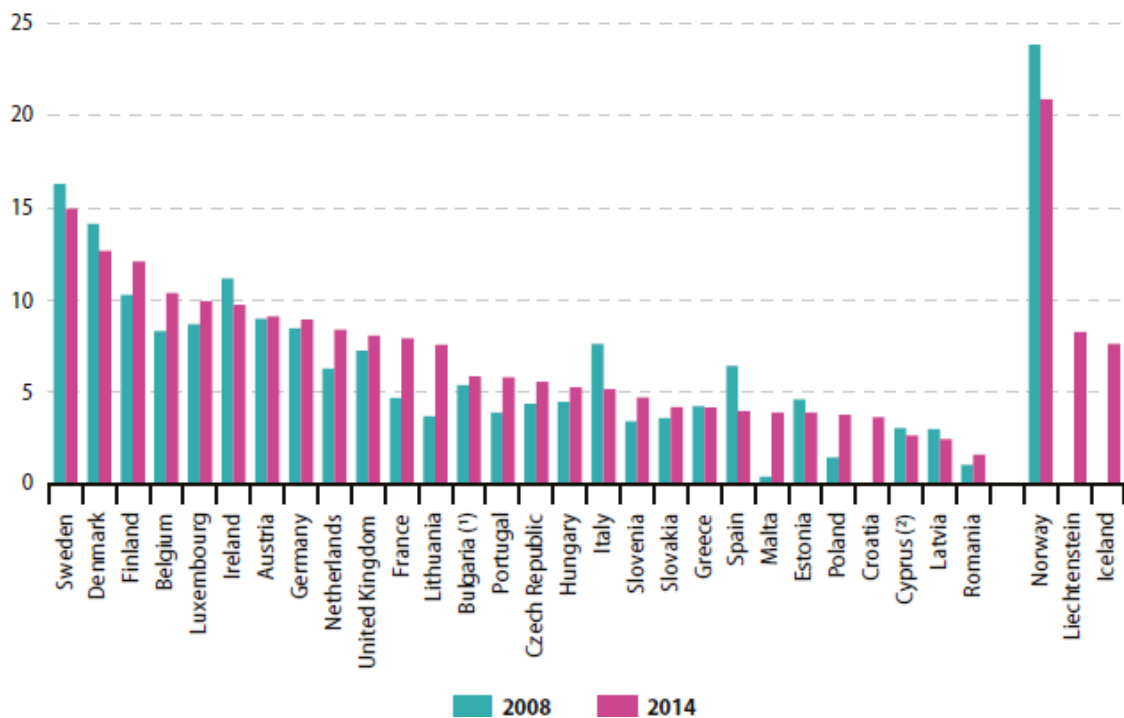
For the period after August 15, 2018, the minimum rates required for recovery and reuse/recycling targets are specified by regrouping types of products in 6 categories (compared to 10 categories mentioned in the previous periods), as follows:

- a) heat exchange equipment (1<sup>st</sup> category) and large-scale equipment (category 4): R<sub>v</sub>=85% and R<sub>r</sub>=80%;
- b) Screens, monitors, and equipment containing screens with a larger area of 100 cm<sup>2</sup> (2<sup>nd</sup> category): R<sub>v</sub>=80% and R<sub>r</sub>=70%;
- c) Small equipment, including IT and telecommunication equipment (no external dimension more than 50 cm) (categories 5 and 6): R<sub>v</sub>=75% and R<sub>r</sub>=55%;

d) For lamps (category 3), the rate remains similar to previous periods: Rr = 80%.

## 2. Developments on WEEE management in the EU and Romania

The amount of WEEE is growing worldwide, from 39.8 million tons of WEEE in 2013 at 41.8 million tonnes in 2014, ie 44.7 million tonnes in 2016. This trend is encouraged by the growth rate of the population equipping with various types of EEE. For example, statistics show that in 2016, 53.6% of the world population use the Internet. At the same time, the average amount of WEEE per inhabitant increases also, from 5.8 kg /inhabitant in 2014 to 6.1 kg /inhabitant in 2016. Countries which have generated the highest amount of WEEE in 2016 are China (7, 2 million tons), USA (6.3 million tons), Japan (2.1 million tonnes), while in Europe, the amount of WEEE is estimated at 12.3 million tons in 2016, of which only 37% are collected (planetoscope.com).

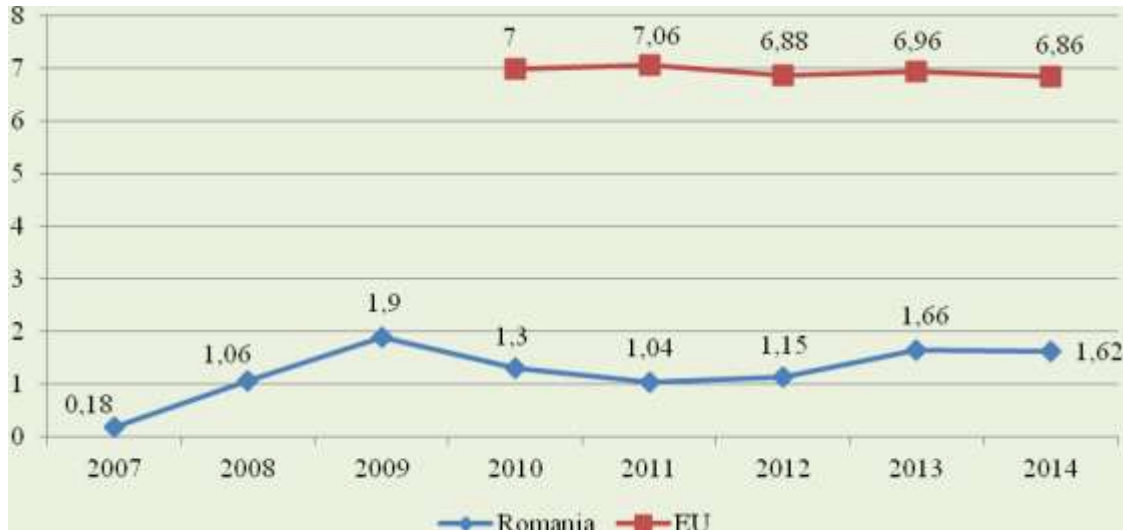


**Figure no. 1. DEEE collected in European countries (kg/inhabitant), in 2008 and 2014**  
Source: Eurostat, 2017, Energy, transport and environment indicators, p. 179.

In order to present the evolution of the waste collection in Romania, compared to other EU countries, we used statistical data provided by Eurostat and Eurostat reports on environmental indicators.

In the latest report of Eurostat on indicators of energy, transport and environment, published in 2017, it presented the amount of WEEE collected per inhabitant, in 2008 and 2014, allowing us to see that Romania ranks last among all European countries analyzed (Figure no. 1). The amount of WEEE collected in Romania is 1.6 kg/inhabitant. The countries with the largest quantities of WEEE collected are, in descending order, Norway (where the amount reached 20.9 kg/inhabitant), Sweden, Denmark, Finland, Belgium, Luxembourg, Ireland, Austria, Germany, Netherlands, UK, France, Lithuania (Eurostat, 2017, p.179). It should be noted, however, that Romania could not meet annual collection target of 4 kg of WEEE/ inhabitant due to lower quantities of EEE sold; for this reason, Romania requested and obtained a special exemption from the WEEE collection rates (Orban, 2015).

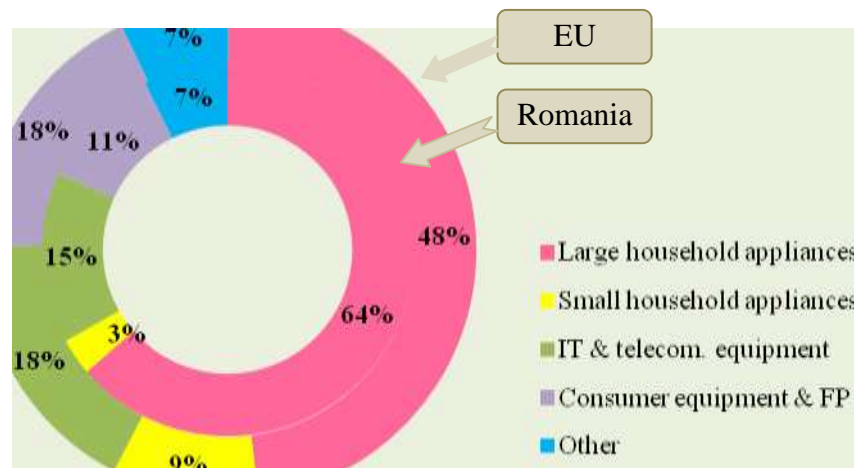
A closer analysis of the data allows us to observe that, in Romania, the amount of WEEE collected per inhabitant grew noticeable in the first year after EU accession (1.06 kg/ inhabitant in 2008 to 0.18 kg/inhabitant in 2007, an increase of 489% ... even though in absolute terms the figure is small). Subsequently the amount collected has evolved variable. Note, however, that the EU average amount of WEEE collected stagnate around 7 kg / inhabitant.



**Figure no. 2. Evolution of the quantity of WEEE collected (kg/inhabitant) in Romania and UE**

Source: author, according to data published by Eurostat.

Nationally, the total quantity of WEEE collected in Romania increased from 3685 tons in 2007 to 32,159 tons in 2014, while the quantity of WEEE collected in the EU reached 3,483,352 tons in 2014.



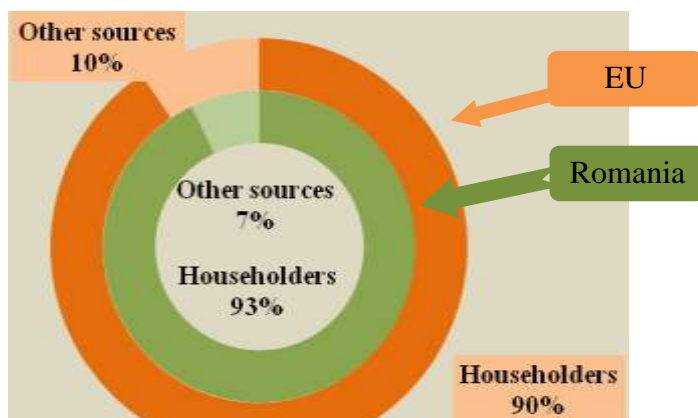
**Figure no. 3. WEEE collected in Romania and EU, by equipment categories (2014)**

Source: author, according to data published by Eurostat.

The main equipment categories collected in 2014, in Romania, were large household appliances (64% of collected WEEE), IT and telecommunications equipment

(15%), consumer equipment and photovoltaic panels (11%), small household appliances (3%). In EU, we observe that higher percentages are obtained by consumer equipment and photovoltaic panels (18%) and small household appliances (9%) (Figure no. 3).

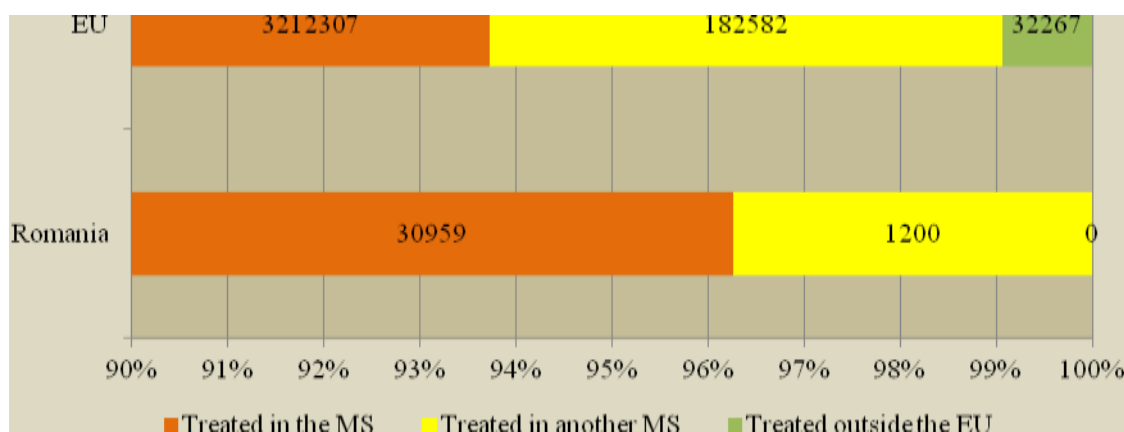
Regarding sources of WEEE collection in 2014, the situation is quite similar in Romania and EU: private households is 90% in the EU and 93% in Romania and other sources accounted for 10% in EU and 7% in Romania (Figure no. 4).



**Figure no. 4. DEEE collected in Romania and UE, by source (2014)**

Source: author, according to data published by Eurostat.

Of the treated waste, Romania treated 96.3% nationally and 3.7% in another EU Member State. Instead, in the EU, only 93.7% of the treated waste was treated in the state in which it was collected, 5.3% were treated in another MS, and 1% out of the EU (Figure no. 5).

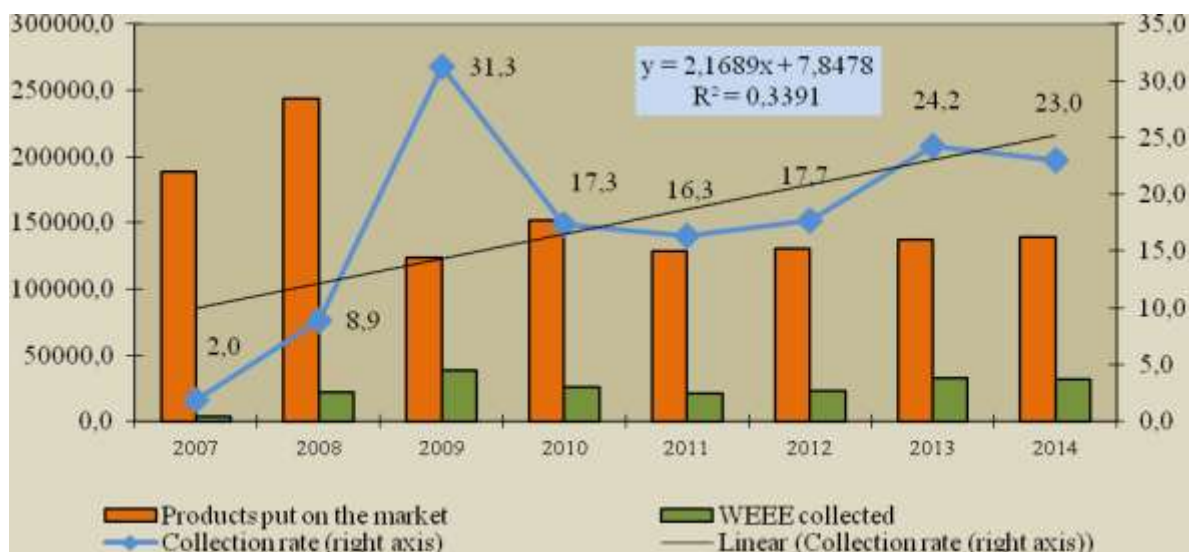


**Figure no. 5. Treatment of WEEE in 2014: Romania-EU comparison (tons)**

Source: author, according to data published by Eurostat.

The rate of waste collection, which we calculated it as the ratio of annual quantity of waste and quantity of products from EEE group placed on the market in the same year, indicates a linear and positive evolution in Romania: from the very low level of 2% in

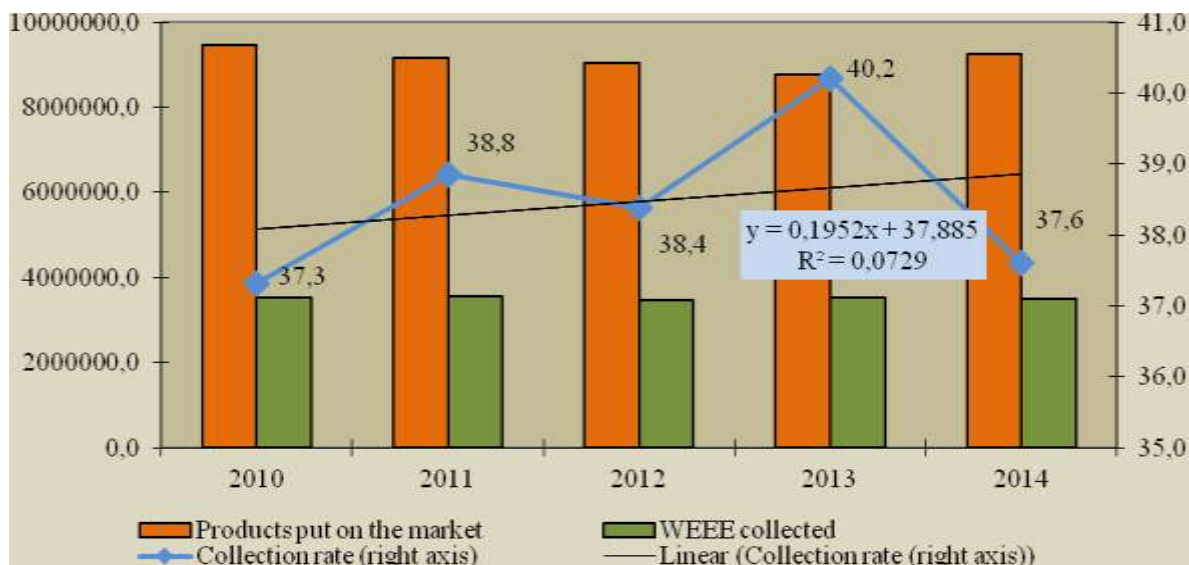
2007 to 23% in 2014 (Figure no. 6). Instead, in the EU, the regression line drawn on the collection rates calculated indicate an increase in very low quantity (Figure no. 7).



**Figure no. 6. WEEE collection rate developments in Romania (%)**

Source: author calculation based on data published by Eurostat.

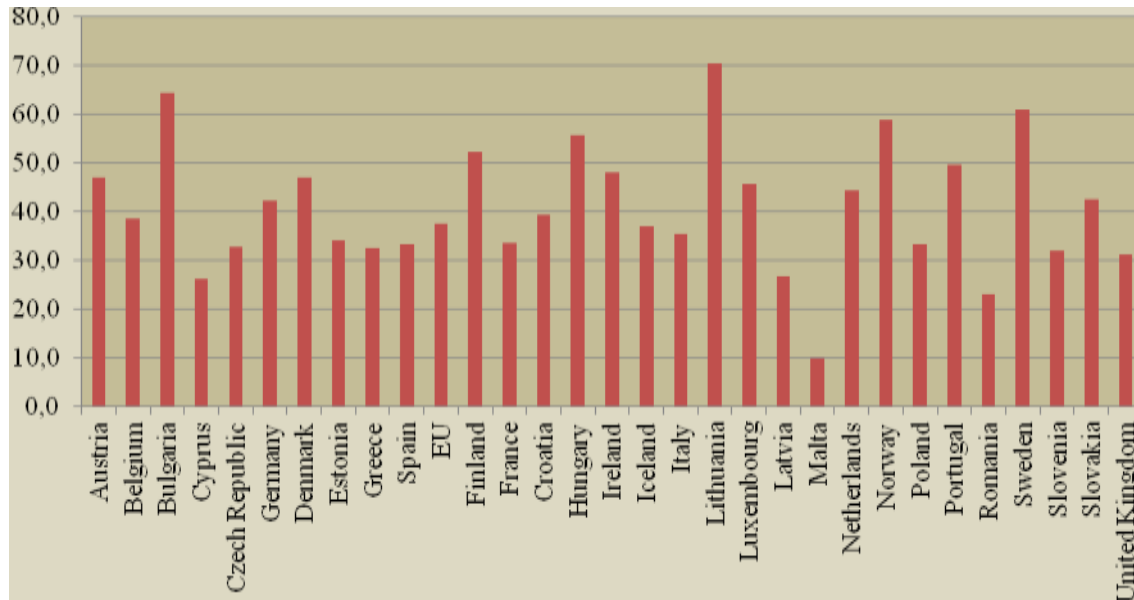
If in Romania, when the quantity of EEE placed on the market increase by one unit (tonne), the amount of WEEE collected increase by 2.168 units (tonnes), for the EU growth is only 0.195 units. Also, graphs 6 and 7 indicate there is a direct link, with low intensity, between the quantity of EEE placed on the Romanian market and the amount of WEEE collected in Romania, while this association can not be established between the two EU phenomena.



**Figure no. 7. WEEE collection rate developments in EU (%)**

Source: author calculation based on data published by Eurostat.

It must be said that the collection rate, as ratio of new product entrants on the market and collected waste is very different between Member States as shown in chart no. 8. Among the countries with the highest rates obtained by data reported in 2014 are Lithuania (70.4%), Bulgaria (64.5%), Sweden (60.9%), Norway (58.8%), Hungary (55.6%) and Finland (52.3%).



**Figure no. 8. Collection rate of WEEE in 2014 in EU and member States (%)**

Source: author, according to data published by Eurostat.

### 3. Problems and opportunities for improvement of WEEE management

Romania registered a significant increase in waste collection rate, more pronounced than in the EU; however, this rate not allowed Romania to be placed on a higher position in the hierarchy of European countries, so it remains the second lowest in 2014. The reasons for this are related of the delays in the implementation of European legislative changes, the management of waste collection, the population behavior regarding the collection of WEEE. Thus, Directive 2012/19/EU on WEEE was implemented only in 2015, through an emergency ordinance of the Government in the context that European Commission launched, in March 2014, the procedure prior to the action for infringement, under art. 258 of the Treaty on European Union. Emergency Ordinance was adopted when European Commission accomplished all stages of this procedure and would ask the Court of Justice of the EU. Even so, the legislative framework remains incomplete, so the degree of implementation and control.

Practically, the low rate of recycling waste in Romania is explained by specialists by poor waste management, lack of payment system which encourages waste collection (as happens in other countries) (Tatu, 2017), reduced access to the public collection system (in 2014, for example, about 35% of the country's rural population still do not have access to sanitation) (Orban, 2015). Lack of fixed and mobile centers of the WEEE collection, provided by law, lack of recyclable waste traceability and of WEEE collection campaigns organized at least once every three months are other factors that explain the low rate of collection (Orban, 2017). We should add a poor information and low awareness of population about the beneficial effects of selective collection.



Policies created by EU to reduce the impact of waste on the environment and health cover, on the one hand, the reducing of waste amount generated and, on the other hand, when waste production is unavoidable, the use of waste as a resource, the recycling or safe disposal. Prevention is therefore an option on waste, being mentioned since the Framework Directive 2008/98/EC revised. Prevention is declared as a priority, followed by reuse, recycling, and other forms of recovery, while the removal is regarded as a last resort. Concrete preventive measures are, however, less manifest, while the rate of production of new electrical and electronic equipment is constantly increasing. According to the study of United Nation University, WEEE is expected to grow in 2018 with 21% worldwide, which is explained by increasing the amount of products sold and reducing the lifecycle of EEE (Date, 2015).

The best solution of the problem of the WEEE management is still far to be found both in Romania and in Europe. The increasing of recycling costs, while decreasing prices of material obtained mitigate legislative and administrative efforts in the collection.

However, educating consumers about the impact of increased consumption and the effects that lack of separate WEEE collection has on the environment can bear fruit in Romania so that people begin to sort waste and support actions for the collection and reuse of WEEE.

#### References:

1. Date, W., 2015. *WEEE arising increasing globally*. UN report finds, 20 April, [online] Available at: <<https://www.letsrecycle.com/news/latest-news/weee-arising-increasing-globally-un-report-finds/>> [Accessed 16 March 2018].
2. European Parliament, 2012. *Directive 2012/19/UE du Parlement européen et du Conseil du 4 juillet 2012 relative aux déchets d'équipements électriques et électroniques (DEEE)*. JO L197/38 du 24.7.2012.
3. European Parliament, 2011. *Directive 2011/65/UE du Parlement européen et du Conseil du 8 juin 2011 relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques, consolidée*. JO L 174 du 1.7.2011, p.88.
4. European Parliament, 2003. *Directive 2002/95/EC of the European Parliament and of the Council, of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment*. OJ L37/19, 13.2.2003.
5. Eurostat, 2018. *Waste electrical and electronic equipment (WEEE) by waste operations*. [online] Available at: <<http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>> [Accessed 16 March 2018].
6. Eurostat, 2017. *Energy, transport and environment indicators*. EU Luxembourg, 2017 edition.
7. Orban, A., 2018. Gestionarea DEEE între presiunea pentru atingerea țintelor, lipsa deșeurilor și asigurarea trasabilității. *Environ.ro*, [online] Available at: <<http://environ.ro/index.php/ro/pagina-media/528-interviu-andrei-orban-gestionarea-deseurilor-de-echipamente-electrice-si-electronice-intre-presiunea-pentru-atingerea-tintelor-lipsa-deseurilor-si-asigurarea-trasabilitatii>> [Accessed 16 March 2018].
8. Planetoscope, 2018. *Déchets électroniques DEEE produits dans le monde*. [online] Available at: <<https://www.planetoscope.com/dechets/1881->

- dechets-electroniques-deee-produits-dans-le-monde.html> [Accessed 16 March 2018].
9. Romanian Government, 2010. *HG 1037/2010 privind deșeurile de echipamente electrice și electronice*. Monitorul Oficial nr. 728/2.11.2010.
  10. Romanian Government, 2015. *Ordonanța de Urgență a Guvernului României OUG nr. 5/2015 privind deșeurile de echipamente electrice și electronice*. Monitorul Oficial nr. 253/16.04.2015.
  11. Tatu, S., 2017. România este pe ultimul loc în UE la capitolul reciclare. Doar 5% din deșeuri ajung să fie refolosite. *Ziarul Financiar*, 7 April 2017. [online] Available at: <<http://www.zf.ro/eveniment/romania-este-pe-ultimul-loc-in-ue-la-capitolul-reciclare-doar-5-din-deseuri-ajung-sa-fie-refolosite-16224648>> [Accessed 16 March 2018].