

## TÜRKİYE VE BELÇİKA'NIN ATIK YÖNETİMİ POLİTİKA VE UYGULAMALARININ KARŞILAŞTIRMALI ANALİZİ\*

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### Öz

Belçika; idari olarak Flamen, Waloon ve Brüksel olmak üzere 3 ayrı bölümden oluşan federal bir yapıya sahiptir. 30,518 km<sup>2</sup> yüzölçümü, %97'lik kentleşme oranı , 10,839,905 nüfusu, 340 kişi/km<sup>2</sup> nüfus yoğunluğu ve 25,329 Euro kişi başına milli geliri ile Avrupa Birliği'nin önemli ülkelerinden biridir. Belçika evsel atıkların %73'ünü geri dönüştürerek Avrupa'nın en yüksek geri dönüşümünü sağlayan ülkeleri arasında yer almaktadır. Bu nedenle bu çalışmada Türkiye ve Belçika'daki atık yönetim politikaları ve uygulamada elde edilen sonuçlar karşılaştırmalı olarak analiz edilerek her iki ülke için Atık Yönetimi Performans Puanları (APP) hesaplanmıştır. Böylece her iki ülkenin atık yönetimi politikaları ve uygulama başarıları karşılaştırmalı olarak değerlendirilmiştir. Analiz sonuçlarına göre; her iki ülkenin atık yönetimini konu alan idari ve yasal düzenlemeleri karşılaştırıldığında Belçika'nın Türkiye'den daha başarılı olduğu (Belçika=26, Türkiye=21 puan) görülmüştür. APP puanları açısından 0.04 puan elde eden Belçika, 0.17 puan elde eden Türkiye'ye göre daha başarılı bulunmuştur.

**Anahtar Kelimeler:** Atık, Atık yönetimi, Atık yönetimi performans skoru, Türkiye, Belçika,

### COMPARATIVE ANALYSIS OF TURKISH AND BELGIAN WASTE MANAGEMENT POLICIES AND IMPLICATIONS

#### Abstract

Belgium has a federal structure administratively consisting of three separate regions which are Flanders, Walloon and Brussels capital region. Belgium is one of the important countries within European Union with a surface area of 30,518 km<sup>2</sup>, an urbanization rate of %97, a population of 10,839,905, a population density of 340 person/km<sup>2</sup> and 25,329 Euros of national income per capita. Belgium which recycles 73% of her household wastes is among the countries with highest recycling rate in

\* This study was adopted from the proceeding which was presented at **2nd** International Congress on Urban and Environmental Issues and Policies in Trabzon in 2012 .

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Europe. On this account, in the present study, waste management performance scores (WPS) were calculated for both countries by comparatively analyzing waste management policies and waste figures of Turkey and Belgium. Thus, waste management policies and the rate of implementation success of both countries were evaluated comparatively. According to the results of the analysis of administrative and legal structure of Belgium and Turkey's waste management policies, Belgium has been more successful than Turkey (Belgium=26, Turkey=21). In terms of total waste figures, Belgium is also more successful than Turkey. The average WPS scores were calculated as -0.04 for Belgium and as -0.17 for Turkey.

**Keywords:** Waste, Waste management, Waste management performance score, Turkey, Belgium

### Introduction

Belgium is one of the important countries within European Union with a surface area of 30,518 km<sup>2</sup>, an urbanization rate of %97, a population of 10,839,905 and 25,329 Euros of national income per capita.<sup>1</sup> Belgium which recycles 73% of her household wastes is among the countries with highest recycling rate in Europe.<sup>2</sup> So, this research aimed to compare waste management policies and implementations of Belgium and Turkey.

The wastes were classified as 51 different items in the Regulation No 2150/2002 of The European Parliament and The Council of The European Union dated 25 November 2002 on waste statics.<sup>3</sup> The terms related wastes which used in this article are defined as following:

Waste: Means any substance or object which the holder disposes.<sup>4</sup>

<sup>1</sup> "2011 Survey of resource efficiency policies in EEA member and cooperating countries Country Profile: Belgium", European Environment Agency (EEA), Retrieved on 07.09.2011, <http://www.eea.europa.eu/.../resource-efficiency/belg...%E2%80%8E>.

<sup>2</sup> Marleen Van Steertegem, "Flanders Environment Report Indicator Report 2010", Retrieved on 03.06.2012,

[http://www.milieurapport.be/Upload/main/rapport\\_TW\\_def.pdf](http://www.milieurapport.be/Upload/main/rapport_TW_def.pdf).

<sup>3</sup> "2002 Regulation of The European Parliament and The Council Of The European Union", European Commission (EC), Retrieved on 03.09.2010, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:332:0001:0036:EN:PDF>.

<sup>4</sup> "Council Directive 75/442/EEC of 15 July 1975 on Waste", The Council of the European Communities, Retrieved on 02.06.2012, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31975L0442:EN:HTML>.

Municipal wastes: Municipal waste is a mixed stream consisting of not only household waste but also similar waste from commerce which blurs the ability to link the waste generation to household related parameters.<sup>5</sup> Biodegradable municipal waste (BMW): Biodegradable waste from households consists of food and garden waste, paper and cardboard, textile and any other waste capable of undergoing aerobic or anaerobic decomposition.<sup>6</sup>

The first waste management legislation was introduced by the EU 37 years ago. According to Fisher and Davidsen<sup>7</sup> the main characteristics of this legislation summarized as following:

- Introduction of emissions standards for treatment plants,
- Restriction of the quantity of biodegradable municipal waste allowed ending in landfills in the period 2006 to 2016,
- Introduction of a huge range of recycling initiatives and targets in different directives (Figure 1)



**Figure 1.** EU waste management legislation outlook<sup>8</sup>

<sup>5</sup> Mette Skovgaard, et al., "Outlook for waste and material flows. Baseline and alternative scenarios Copenhagen: European Topic Centre on Resource and Waste Management". Retrieved 01.03.2014. [http://www.risoe.dtu.dk/rispubl/SYS/syspdf/ETC-RWM\\_working\\_paper\\_2005-1.pdf](http://www.risoe.dtu.dk/rispubl/SYS/syspdf/ETC-RWM_working_paper_2005-1.pdf)

<sup>6</sup> Mette Skovgaard et al. p. 25.

<sup>7</sup> Christian Fischer Claus Davidsen, "Europe as a Recycling Society, The European Recycling Map", *European Topic Centre on Sustainable Consumption and Production*, Retrieved on 01.03.2014, [http://scp.eionet.europa.eu/publications/WP2010\\_5\\_The%20European%20Recycling%20Map/wp/WP2010\\_5](http://scp.eionet.europa.eu/publications/WP2010_5_The%20European%20Recycling%20Map/wp/WP2010_5).

## Waste management Policies of Belgium

Belgium has a 118.2 points (EU25=100) of national income per capita in PPS (purchasing power standards) and €295,214 million GDP (Gross Domestic Products) as of 2009 nominal prices. 28% of the GDP composed of economical and financial services of Belgium. 56.9% of total land is agricultural land, 60% of total population lives in densely populated areas (500 inhabitant/km<sup>2</sup> and more), 2.5 persons live in each independent dwelling unit and rural population ratio is 97.4%.<sup>9</sup>

In Belgium, both Federal and Regional Governments are responsible from the environmental management and related issues. But, Regional Governments undertake more duties than Federal Government and these duties are identical. In order to evaluate all three regions of Belgium in terms of waste management policies of the federal government should examine separately.

*Federal Government:* Federal government is responsible of nuclear wastes, waste transit through Belgium, determining taxes, control and tracking, environmental penalties.<sup>10</sup> The most important current regulation at federal level is packaging waste regulation dated 29<sup>th</sup> December 2008.

*Brussels capital region:* Although remaining within the boundaries of the capital region of Brussels French-speaking region of Flanders is structured as a separate region. Effective waste prevention and management policies are defined in regional policy statement 2009-2014 of Belgium. Regional waste management and prevention plan is the most important waste management plan. Since 1992, the plan has been updated in every five years. As described in the 4<sup>th</sup> March 2010 Plan, performing some environmental assessments was

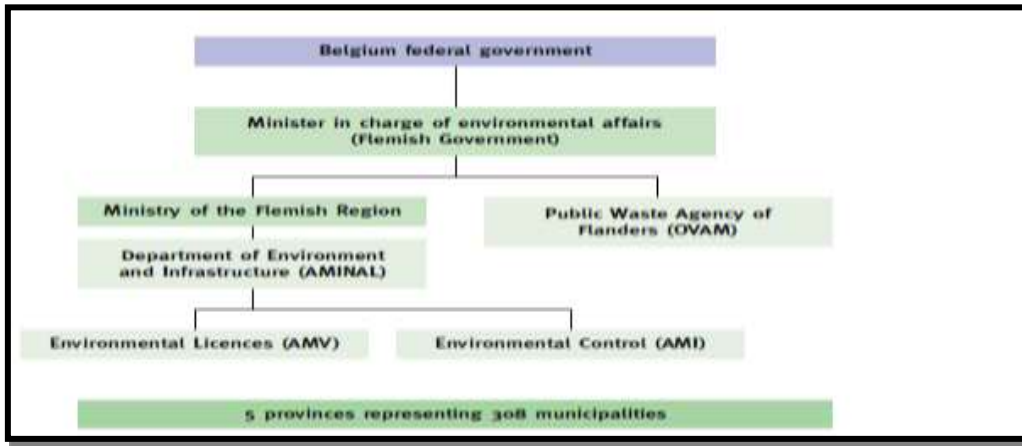
<sup>8</sup> Fisher and Davidson, p.7.

<sup>9</sup> "Factsheet for Belgium 2009 Edition", European Topic Centre on Sustainable Consumption and Production, Retrieved on 01.06. 2012, [http://scp.eionet.europa.eu/facts/factsheets\\_waste/2009\\_edition/factsheet?country=BE](http://scp.eionet.europa.eu/facts/factsheets_waste/2009_edition/factsheet?country=BE).

<sup>10</sup> Julie Hill at al., *Creative Policy Packages for Waste: Lessons For The UK*, Retrieved on 03.03.2014, <http://www.green-alliance.org.uk/uploadedFiles/Publications/CreativePolicyPackagesforWasteOverview.pdf>.

decided to be controlled in two years.<sup>11</sup> According to this plan, the targeted levels of the types of waste produced by 2020 were also defined. Accordingly, on an annual basis, reduction of food waste would be five kg/inhabitant, household paper waste six kg/inhabitant, recycling of 90% industrial wastes.<sup>12</sup>

*Flanders region:* Flanders region has a land area of 13,521 km<sup>2</sup> and a population of 5.9 million, a population density of 437 inhabitants per square kilometer, and is the most important region of Belgium. The first decree related waste management was put in force in 1981. In this region, the Public Waste Agency of Flanders (OVAM) is the only competent authority on waste management. Other important units of OVAM are Environmental Licences (AMW) and Environmental Control Departments (Figure 2)



**Figure 2** Flanders competent authorities responsible of environmental matters.<sup>13</sup>

In Flanders region local authorities, interurban communities, professional companies etc. take an important part to meet regional waste prevention objectives locally. Local authorities are also responsible for the prevention, separate collection and treatment of household waste.<sup>14</sup> Six kinds of Waste Management Implementation Plans have been introduced in Flanders region and they are in force.<sup>15</sup>

<sup>11</sup> Country Profile: Belgium, p 13.

<sup>12</sup> Factsheet for Belgium 2009 Edition, p 6..

<sup>13</sup> Julie Hill et al. p. 4.8.

<sup>14</sup> Factsheet for Belgium 2009 Edition, p 4.

<sup>15</sup> Factsheet for Belgium 2009 Edition, p 5

Flanders has adopted some important targets to prevent and reduce waste production. For example, the amount of waste incinerated will be 150 kg/per inhabitant and the rest of wastes will be recycling or reusing.<sup>16</sup> by 2020. Many examples of waste prevention policy in the Flanders region have been launched. Developing reuse centers, MAMBO (less waste – more revenue), Ecolizer (instruments to promote ecodesign) and Ecodesign Awards (for students) are the most important ones of waste prevention policies.<sup>17</sup>

The Flemish government has adopted three different policies for biodegradable waste. Namely composting at home, separate collection of waste and green wastes. The aim of this policy is to motivate the families to compost more wastes at home.

*Walloon region:* The Walloon waste management policy mainly aims the prevention, composting, recycling and landfilling of industrial and municipal wastes. For this purpose, four different regulations came into force in 2003-2004. In addition, Waste Management Plan covering the years of 1998-2010 was presented. In this plan it was aimed to prevent, compost, recycle and landfill of municipal and industrial wastes. A new plan which is “Waste Plan 2020” is in preparation. This plan aims to reduce the greenhouse gas emissions and contribute actively to the reduction of environmental impact of waste generation and treatment.<sup>18</sup>

### **Waste management Policies of Turkey**

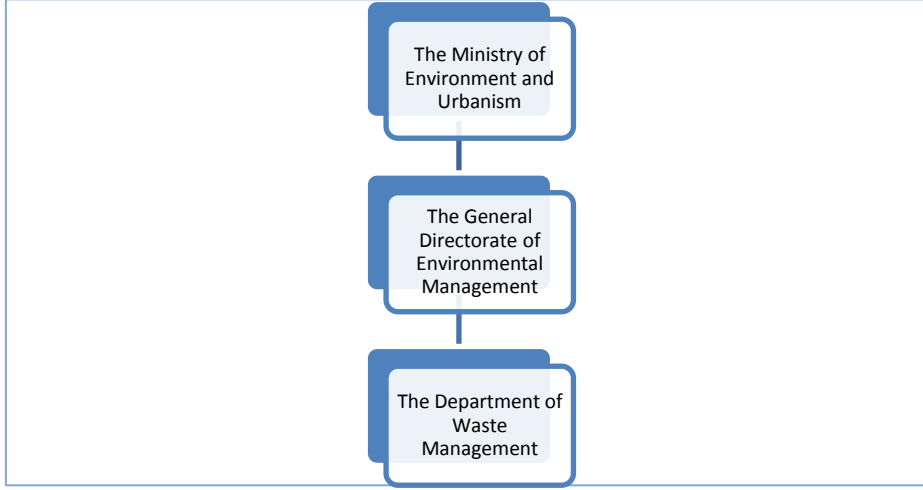
The department of waste management which is affiliated to the General Directorate of Environmental Management under the Ministry of Environment and Urbanism is the competent authority solely dealing

<sup>16</sup> Country Profile: Belgium, p 4.

<sup>17</sup> Waste Prevention Fact Sheet, “Waste Prevention & Management Plan (Flanders)”, Retrieved on 02.06.2012, [http://ec.europa.eu/environment/waste/prevention/pdf/Flanders\\_Factsheet.pdf](http://ec.europa.eu/environment/waste/prevention/pdf/Flanders_Factsheet.pdf).

<sup>18</sup> Factsheet for Belgium 2009 Edition, p 3.

with waste management (Figure 3). However, in practice, the municipalities are responsible for regular waste collection and dispose.



**Figure 3** The position of waste management department in Turkey<sup>19</sup>

In addition, five different ministries are partially responsible of waste management. Turkish waste management policy bases on 21 different laws and regulations. Among them, two regulations come forward determining Turkey's waste management policy. Namely the Regulation on Solid Waste Control dated 1991 and the Regulation on General Principles of Waste Management dated 2008. In addition, waste management takes place as a subsection in the Environment Law No. 2872, in the Metropolitan Municipality Law No. 5216 and in the Municipality Law No. 5393 etc.

Turkey adopted the concept of integrated waste management which is recognized at international level as general waste management policy. This understanding of waste management comprises waste prevention, waste reduction, reusing, recycling, pre-processing and disposing respectively.

The wastes were categorized in 20 different groups by Turkish government in the 'Regulation on General Principles of Waste Management' dated 5<sup>th</sup> July

<sup>19</sup> Republic of Turkey Ministry of Environment and Urbanism, Retrieved on 03.06.2012, <http://www.csb.gov.tr/db/cygm/ustmenu/ustmenu46.pdf>

2008.<sup>20</sup> Later, in the current Waste Management Action Plan (2008-2012), objectives are defined nationally and locally. Accordingly, the 40% of glass, plastic, metal, and paper/cardboard wastes will be recovered by 2012. In Turkey, two famous private organizations are dealing with waste recycling, one is ÇEVKO (The Foundation for Environment Protection and Reappraisal of Packaging Wastes) and the other is TAP (Foundation of Transportable Battery Producers and Importers).<sup>21</sup>

### Material and Method

This study is a review article and primary material consists of secondary data. For this purpose the data obtained from Eurostat, World Bank, the European Commission, administrative units responsible for environment and waste at Brussels Federal Regions, TUIK (TurkStat) and other resources were used.

While calculating the Belgium and Turkey's waste management performance scores, countries' waste management parameters were evaluated in two different groups. In the first group, total performance points were calculated by evaluating whether the countries have an independent unit regarding waste management, their laws and regulations which are still valid and their implementation plans. And in the second group, quantitative results obtained in the waste management implementations of the countries were recalculated by finding their difference from the EU-27 countries' averages. In this calculation, with respect to the formula below, WPS's were calculated for each analyzed parameter of each country.

$$1- WPS = \text{Country score} - \text{EU27 score} / \text{EU27 score}$$

(When the absolute value has positive significance)

<sup>20</sup> Turkish Regulation on General Principles of Waste Management, dated 5<sup>th</sup> July 2008.

<sup>21</sup> *Waste Management Act Plan (2008-2012)*, Ankara: Republic of Turkey Ministry of Environment and Forestry (Formerly), 2008. Available at <http://www.cygm.gov.tr/CYGM/Files/EylemPlan/atikeylemlani.pdf>.



$$2- WPS = \frac{EU27 \text{ score} - \text{Country score}}{EU27 \text{ score}}$$

(When the absolute value has negative significance)

At the last step, by adding group WPS's, total WPS values in terms of analyzed parameters for each country were calculated and compared.

### Results and Discussion:

Waste management policies and practices in Turkey and Belgium were analyzed on the basis of two fundamental categories.

**1. Institutional and legal framework:** In this section while comparing the institutional and legal framework of both countries, only the Flemish Region was considered. Comparison of administrative and legal structure of both countries was made as three separate subsections.

**1.1. Institutional framework:** In this section, the parameters such as 'the foundation date of the Environmental Ministry' and 'the degree of affiliation of the department responsible for waste management' were evaluated. It was seen in this study that the organization responsible for waste management is at the third level of affiliation in Turkey and was founded in 1991 (Figure 2). However, the organization responsible for waste management (OVAM) of Belgium, which was founded in 1981, is at the second level and directly affiliated to the Ministry of Environment (Figure 1). As a result of the comparison of the administrative structures of Turkey and Belgium, the total scores were calculated as 0 and 2 respectively (Table 1).

**Table 1.** Administrative structure of Belgium and Turkey on waste management

Variables	Values		Scores	
	Belgium	Turkey	Belgium	Turkey
Affiliation level of waste management unit*	2. level	3. level	1	0
Foundation year of Environmental Ministry**	1981	1992	1	0
Total			2	0

\*First level assumed as 0

\*\*First founder country point

**1.2. Complementary legislation:** In this section, the regulations and directives which are not related to wastes directly, but includes as an article or section, were evaluated comparatively. After all, Turkey has gained four points and Belgium two points, due to lack of identical law to 'Turkish Law on Metropolitan Municipalities' and 'Law on Environment'.

**Table 2.** Comparison of complementary legislations of Turkey and Belgium

Complementary Legislations		Points	
Belgium	Turkey	B	TR
N/A	Law on Environment no. 2872	0	1
Environmental Agreement with Municipalities (2002-2004)	Municipality Law no. 5393	1	1
Environmental tax on residual waste Flanders-Household and industrial waste: landfilling and incineration	Law on Municipal Revenues no. 2464	1	1
N/A	Law on Metropolitan Municipalities no.5216	0	1
Total		2	4

**1.3. Legislations concerning waste:** This section comparatively describes the legislations regulating the waste management of two countries. In Belgium, there are a total of 18 regulations related wastes in force, but 16 in Turkey. Six of them (Landfill Directive, Construction/demolition waste, Take Back Obligation-Used cooking fats and oils, waste prevention and management, Hazardous materials, Waste Decree) are identical for both of the countries. The other regulations are partly identical, some of them are not. As a result, Belgium took in the first place with 16 points and Turkey took the second with 15 points (Table 3).

**Table 3.** Legislations concerning wastes in Belgium and Turkey<sup>22</sup>

Belgium	Turkey
1.Landfill Directive	1.Regulation on Landfill of Waste. No 27553
2.BMW (Bio-degradable municipal waste)	2.Regulation on Excavated Soil, Construction and Demolition Waste Control,.No.25406
3.Construction/demolition waste	3.Regulation on Control of Waste Vegetative Oils. No.26952
4.Environmentally sound material use and waste management in the building 5.trade'	4.Regulation on Separate collection of waste vegetative oils.No.25791
5.Take Back Obligation-Used cooking fats and oils	5.Regulation on General Principles of Waste Management.No.26927
6.Flemish regulations relating to waste prevention and management. VLAREA.	6.Regulation on Hazardous Waste Control No.25755
7.Hazardous materials	7.Regulation on Solid Waste Control. No. 20814
8.Waste Decree of 2 July	8.Regulation on Control of Package and Packaging Wastes.No.28035
9.Decree of 15 June 1994- environmental policy agreements	9.Regulation on Control of The Waste Electric and Electronic Equipment.No.26891
10.Waste decision of 17 December 1997	10.Regulation on Control of Used Batteries and Accumulators.No.25569
11.Ministerial Decision of 18 July 2005	11.Regulation on the Control of Tires that have Completed their Lifetime.No.26357
12.Recycled granules from construction and demolition waste	12.Regulation on the Control of Medical Wastes. No.(25883
13.Incineration of biological waste	13.Regulation on the control of life vehicles. No. 27448
14.Separate collection of waste streams	14.Regulation on Ships Waste Collection and Waste Control No.25682
15.Waste prevention plan_ Legislative (active 1981)	15.Regulation on Urban Waste Water Treatment. No.26047
16.The Waste Shipment	
Total: 16	Total: 15

**1.4. Implementation/act plans:** In this section, the present waste implementation plans of two countries were investigated. As a result, it was seen that while Belgium had seven operative implementation plans, Turkey

<sup>22</sup> Mette Skovgaard et al., "Evaluation of Waste Policies Related to the Landfill Directive-Flanders", Retrieved on 10.03.2014, <http://warr.org/id/eprint/109>.

had two. So, Belgium took the first place with seven points and Turkey took the second with two points (Table 4).

**Table 4** Comparison of Belgium and Turkey's implementation plans<sup>23</sup>

BELGIUM	TURKEY
Implementation plan wood waste	Waste Management Act Plan (2008-2012)
Implementation plan Environmentally responsible household waste management	Solid Waste Master Plan Project
Implementation plan biological waste	
Implementation plan separated collection small company industrial waste	
Implementation plan sludge	
Implementation plan high-calorie waste	

As a result of administrative and legal structure comparison of the two countries, Belgium's score was calculated as 26, and Turkey's score as 21. So, Belgium is accepted more successful than Turkey in terms of administrative and legal structure.

**2. Waste figures:** In this section, Belgium's and Turkey's WPS scores were calculated based on average values of the EU-27 countries. The calculation method of WPS scores is described in material and method section. Thus, quantitative results obtained in the waste management implementations of the countries were recalculated by finding their difference from the EU-27 countries' averages. The points obtained for Belgium and Turkey have given the opportunity to compare the numerical results of the implementation of

<sup>23</sup> *National Reporting To The Eighteenth Session Of The Commission On Sustainable Development, Turkey, United Nations: April 2010, Available at [http://www.un.org/esa/dsd/dsd\\_aofw\\_ni/ni\\_pdfs/NationalReports/turkey/Full\\_text.pdf](http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/turkey/Full_text.pdf).*

waste management. In order to compare the results accurately, the per capita values have been used where the figures are appropriate. Only 17 common parameters for EU-27, Belgium and Turkey were evaluated in comparison. The parameters which cannot be found for EU-27, Turkey and Belgium commonly were eliminated. The negative WPS score indicates worse than the EU-27 average and the positive score indicates adverse effect. To prevent excessive deflection of the WPS scores, the maximum and minimum values were eliminated and the mean values of remaining 15 scores were calculated. Thus, Belgium's and Turkey's success rank was determined comparing to EU-27 average scores. As shown in Table 5, the amount of municipal waste in EU-27, Belgium and Turkey were found as 514, 491 and 392 kg/inhabitant respectively<sup>24</sup>. Due to the fact that the present situation of urban waste generation of Turkey is less than Belgium, score of Turkey (0.24) was found higher than Belgium (0.04).

The high rate of landfilling of municipal waste leads to a negative outcome. Therefore, the higher absolute value of the country was calculated as lower score of the WPC. As of the waste landfilled values 192, 25 and 332 kg/inhabitant for EU-27, the WPC scores were calculated as -0.73 and 0.87 for Turkey and Belgium. Belgium was found more successful than Turkey due to less landfilling amount of wastes.

The amount of total waste from economic activities and households are 5.41 and 0.88 kg/per inhabitants for Belgium and Turkey respectively. So, Turkey was more successful than Belgium in terms of wastes from economic and households. In addition, Belgium's WPC score was calculated as a negative value, due to the fact that Belgium's waste amount is above the average EU-27 value (-0.06).

The quantities of hazardous waste generated in the EU-27, Belgium and Turkey are 3.72, 9.94, 1.58 kg/inhabitant/year respectively. Belgium's WPC score was found negative (-1.67), due to having a higher hazardous waste generated value than EU-27 countries. So, Turkey was more successful in terms of generating hazardous wastes.

<sup>24</sup> Europe in Figures, Retrieved on 31.03.2012. <http://epp.eurostat.ec.europa.eu/>.

Recycling is the best alternative for sustainable waste management policy. All countries are trying to promote recycling amount of the household wastes. Among them, plastics have a very important place. Plastics production has been growing fast because of their wide range of applications due to versatility and low cost. In addition, untreated plastics wastes are creating a serious environmental problem. It is estimated that plastics consumption reached up to 130 kg/y per capita in North America and Western Europe in 2010. Plastics make up 7–9% of the total municipal waste by weight and 20-30% of by volume (Panda et al., 2010). In this research, plastics recycling were calculated as year/per capita basis 0,014 kg for EU-27, 0,009 kg for Belgium and 0,005 kg for Turkey. Because of the EU-27 score is higher than Belgium and Turkey, the two countries WPS scores were found -0.37 and -0.67 respectively. In five of the total seven parameters related recycling and recovering wastes, Belgium had higher scores than Turkey. As a result, Belgium, with the mean WPS score of -0.04 was more successful than Turkey which had a -0.17 WPS score in terms of evaluated parameters.

**Table 5.** Comparison of waste figures Belgium and Turkey based on EU-27<sup>25</sup>

Variables	Values (kg/per capita)	WPS Scores			
	EU-27	BEL	TR	BEL	TR
A.NEGATIVE EFFECT					
1.Municipal waste generation-2009	514	491	392	0.04	0.24
2..Municipal waste landfilled	192	25	332	0.87	0.73
3.Packaging waste generation-2008	163.5	157.8	41	0.03	0.75
4.Non-mineral waste generation-2008	1843	2413	829	-0.31	0.55
5.Waste from economic activities and households-2008	5277	5582	918	-0.06	0.83

<sup>25</sup> EUROSTAT, Retrieved on 01.06.2012, <http://epp.eurostat.ec.europa.eu/>.

6.Hazardous waste generated(% of total waste generated)-2008	3.72	9.94	1.58	-1.67	0.57
B.POSITIVE EFFECT					
8.Waste treatment (non-hazardous) recovery other than energy recovery-2008					
8.1.Metallic waste	0.148	0.243	0.021	0.64	-0.86
8.2.Glass waste	0.025	0.034	0.004	0.35	-0.85
8.3.Paper and cardboard waste	0.076	0.052	0.014	-0.32	-0.82
8.4.Rubber waste	0.003	0.001	0.002	-0.59	-0.23
8.5.Plastic waste	0.014	0.009	0.005	-0.37	-0.62
8.6.Wood waste	0.050	0.051	0.002	0.03	-0.97
8.7.Textile waste	0.002	0.001	0.001	-0.59	-0.46
9.Population connected to urban waste water treatment(% of total)-2007	0.00	60.00	42.00	0.60	0.42
10. Public sector environmental protection expenditure. (% of GDP)-2006	0.47	0.63	0.41	-0.35	0.12
11.Collected Large Household Waste Electrical and Electronic Equipment <sup>1</sup> -2008	4	3.56	0.05	-0.11	-0.99
12. Recycling rates of Packaging Waste (% of total generating)	74.40	95.20	80.98	0.28	0.09
<b>AVERAGE SCORES</b>				-0.04	-0.17

<sup>1</sup>EU-27 value assumed EU-27 target value

### Conclusion

According to the results of the analysis of administrative structure in Belgium and Turkey, Belgium is more successful than Turkey (Belgium=2, Turkey=0), due to fact that Belgium founded the Ministry of Environment before Turkey. In terms of complementary regulation Turkey is found more successful than Belgium (Turkey=4, Belgium=2), since Belgium has two legislations less than Turkey. The number of legislation related to wastes is 16

for Belgium and 15 for Turkey. So, Belgium is more successful than Turkey in terms of this parameter. The final parameter of institutional and legal framework analysis is the comparison of the implementation plans. The results of this comparison show that Belgium's score is four points higher than Turkey (Belgium=6, Turkey=2). In terms of total scores of Institutional and legal framework, Belgium with 26 points is more successful than Turkey with 21 points (Table 6).

**Table 6.** Total points of administrative structure of and waste figures

Parameters	Scores/WPSs	
	Belgium	Turkey
1.Institutional and legal framework		
1.1.Administrative structure	2	0
1.2.Complementary regulations	2	4
1.3.Legislation concerning wastes	16	15
1.4.Implementation plans	6	2
Total	26	21
2. Average waste figures (WPSs)	-0.04	-0.17

According to average WPSs of waste figure point, Belgium's And Turkey's average WPS scores were calculated as -0.04 and -0.17 for Belgium and Turkey respectively. So, Belgium is more successful than Turkey in terms of waste production and waste recycling policies. The minus WPS scores should be interpreted as the average waste WPS of Belgium and Turkey are below the EU-27 countries level.

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