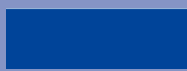




European  
Commission

# Municipal Waste Compliance Promotion Exercise 2014-5

*Executive Summary*



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## **Abstract**

This report presents the findings of the 'Municipal Waste Compliance-Promotion Exercise 2014-2015' project, which forms part of a broader strategy aiming to improve the compliance and implementation of EU waste legislation and supporting member states in achieving compliance. Following on from a previous study which involved a screening exercise of waste management practices in all member states and reviews of ten of the countries experiencing some difficulties complying with the EU acquis, this study undertakes detailed country reviews of a further eight EU member states (Ireland, Malta, Cyprus, Portugal, Spain, Slovenia, Hungary and Croatia). Country factsheets summarising each country's performance with regards to legal compliance and their ability to meet targets, followed by a series of workshops with stakeholders, culminated in the production of eight roadmaps identifying the key challenges faced by each of the countries. The roadmaps further presented the member states with a list of actions required to improve their performance. The final stage of the project involved a high-level workshop with representatives from all the eight member states to discuss the findings from the project and to share best practice.

## Executive Summary

### Background

Successful implementation and enforcement of EU waste legislation across all Member States is key to maximising the benefits from environmentally sound waste management. However, current implementation progress varies greatly from country to country - and there is a considerable gap in many Member States between national waste policy and actual waste management practices, and the results achieved.

The Commission recently adopted a Circular Economy Package<sup>1</sup> which proposes actions to stimulate Europe's transition towards a circular economy, whereby greater recycling and re-use are the main actions contributing to closing the loop. The proper implementation and enforcement of EU waste legislation is therefore a key priority of the European Commission; it is also vital for the growth of the waste and recycling industry. However, with increasing waste amounts, and large discrepancies in waste management practices across Member States, additional measures are required across the EU to improve implementation and related waste management systems.<sup>2</sup> The need for close monitoring of national implementation and enforcement was highlighted in the Commission's report on the Thematic Strategy on the Prevention and Recycling of Waste.<sup>3</sup> The same report also stressed the importance of supporting Member States in designing strategies and policies that would help countries achieve compliance. Furthermore, the 7<sup>th</sup> Environment Action Programme also recognises the implementation gap by including as a priority objective 'to maximise the benefits of Union environment legislation by improving implementation' and foreseeing a number of actions.

### Introduction to the project

The current project is part of a broader strategy aiming to improve the compliance and implementation of EU waste legislation, thereby supporting Member States in achieving compliance. It follows the 'Support to Member States in improving waste management based on assessment of Member States' performance' project which was completed in 2013, which aimed at assisting the Commission in the practical implementation of the conclusions of the 'Report on the Thematic Strategy on the Prevention and Recycling of Waste'. This three-phase project involved a screening of waste management practices in all Member States. The ten Member States identified to have the largest implementation gaps were then subjected to in-depth assessments of their situation, identifying challenges in complying with EU requirements. Based on these assessments, individual roadmaps with country-specific recommendations were developed. A high level seminar was subsequently organised to discuss actions already taken and to exchange best practice. The 'Municipal Waste Compliance-Promotion Exercise 2014-2015' follows on from the previous exercise, by undertaking similar

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<sup>1</sup>COM(2015)/0614final available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614>

<sup>2</sup> BiPRO (2013): Support to Member States in improving waste management based on assessment of Member States' performance. Report prepared for the European Commission, DG ENV, May 2013, Accessed 27<sup>th</sup> June 2016, Available at: [http://ec.europa.eu/environment/waste/framework/pdf/Final%20Report%20\\_130507.pdf](http://ec.europa.eu/environment/waste/framework/pdf/Final%20Report%20_130507.pdf)

<sup>3</sup> Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Thematic Strategy on the Prevention and Recycling of Waste (SEC(2011) 70 final, 19.1.2011)

comprehensive assessments of municipal waste management policy in a further eight Member States identified as requiring support from the screening exercise.

## **Method**

The method employed in this project closely follows that of the previous exercise. The screening phase undertaken in the first project was relied upon to identify the Member States most requiring support, and was not repeated. Detailed country analysis was undertaken for the following eight Member States in the current study:

- Croatia;
- Cyprus;
- Hungary;
- Ireland;
- Malta;
- Portugal;
- Slovenia; and
- Spain.

## **Detailed Country Analysis**

A thorough review of municipal waste management policy was compiled into a factsheet for each of the eight Member States, summarising each country's performance with regards to compliance with legislation and technical content as well as their ability to meet targets. Based on these factsheets, eight separate workshops bringing together key stakeholders in each Member State were carried out. Measures to improve the waste management situation were discussed during these workshops. A particular focus of both the workshops and the performance reviews was a consideration of the practical implementation and enforcement of the legislation contained within the Waste Framework Directive and Landfill Directive, and a critical analysis of whether policies and strategies developed by the Member States were sufficient to deliver the required changes on the ground. The output from the workshops - along with the factsheets and further reviews of national and regional waste management plans and other relevant documentation - was used to develop the roadmap for each country, taking into account the comments provided by the authorities of each Member State. The roadmaps identified the actions required in each Member State to improve their performance.

The last stage of the project included a final workshop with representatives from all of the eight Member States studied. The final workshop presented the key points that the Member States should take away from the process, and provided a forum in which to exchange best practice.

## **Results**

A key feature of this exercise compared with the previous one is the greater difference between Member States with regards to performance against the targets. While the previous study focussed on the ten poorest performing Member States, this exercise includes some Member States that are performing well together with some that still have some way to go. However, with regards to the potential problems and

challenges, the project established that there were many similarities across the countries studied.

### **Key achievements**

The analysis established that the Directives in question have generally been transposed into national law. However, while some of the Member States studied appear to be on track to meet the Waste Framework Directive and Landfill Directive targets, others still appear to be facing serious challenges. The study found that sensible and appropriate policies are often envisaged, although the timescales for implementation are in some cases rather long.

**The introduction of separate collection services for dry recyclables is now largely complete:** There has been considerable improvement in the coverage of separate collection services in recent years, with some of the Member States in this study also having introduced requirements to sort recyclables. However, although the separate collection services have now been introduced, the proportion of separately collected waste remains low in many of countries included within the analysis. Performance in this respect also varies across the countries under consideration; whilst Ireland recorded a recycling rate of 45% in 2012, Croatia's recycling rate was only 23% in 2013. Legislation requiring the separate collection of bio-waste has also been introduced by some, but only a small fraction of biowaste is separately collected in most of the Member states.

**Economic instruments have been successfully used by some Member States:** Landfill taxes have been introduced in some of the studied Member States, and this has been successful in driving performance in certain countries, including Ireland, although tax rates are relatively low in other cases (such as Slovenia) There has also been some development of pay-as-you-throw (PAYT) schemes, including a basic PAYT scheme in Slovenia, and trials in Portugal and Spain. In Ireland, the PAYT legislation has recently been revised.

**Other achievements** noted include the closure of illegal landfills, which still remain a problem for some, the improvement of waste statistics in some countries, and some progress on waste prevention by a few of the Member States such as Ireland.

### **Main findings of the problem analysis at national level**

**Policy implementation is sometimes lacking:** Although the directives have generally been transposed, some of the eight countries are facing very long implementation timescales. There also appears to be too much emphasis on 'compliance checks' and a lack of enforcement in some of the Member States, with policies not always being translated into actions. In some cases, this is due to a lack of clarity with regards to who is responsible for delivery, and with respect to the insufficient level of penalties of non-compliance. There are also challenges surrounding data reporting and verification.

**Lack of implementation of the waste hierarchy:** Waste prevention policies are lacking or underdeveloped in several of the Member States studied in this project, and there is often no financial incentive for undertaking recycling activities. Simultaneously, landfill taxes and fees are often set too low to have a significant impact. Additionally, there is no devolution of targets to a local level, and, linked to this, no sanctions in place for failing to meet these targets.

**Over-emphasis on residual waste treatment in some member states:** The study established that some countries are relying too heavily on Mechanical Biological

Treatment (MBT) in their strategy, which renders it difficult to meet the targets. MBT does yield some recyclables; it also produces a lower grade compost, which often struggles to find a market. The End-of-Waste (EoW) standards developed by Member States on compost and digestate differ. The lack of agreement means compost from MBT counts towards recycling targets in some countries but not others, depending on the various EoW standards in place.

**Centralised funding for waste infrastructure does not always follow the waste hierarchy** and it is not clear that funds have always been used to the greatest effect with regards to ensuring performance against the targets in the Directives.

**Lack of integration of producer responsibility:** Separate collection of packaging via producer responsibility schemes is sometimes provided separately from other waste services run by the municipalities. Where this is the case, it is not always well-integrated with other aspects of the system, resulting in key policy mechanisms, such as the landfill tax, having little or no impact on recycling activities. Some of the Member States remain overly reliant on bring systems which results in easy pickings for the informal sector.

### **Main recommendations to improve national waste management systems**

While the actions recommended to each of the eight Member States included in this study vary depending on their level of performance, the recommendations from this exercise typically comprised the following:

- **Further update the National Waste Management Plans**, including strategies for future management of municipal waste, taking into account future targets and consideration of approaches to collecting food waste.
- **Ensure clear devolution of responsibilities down to the local level**, including the establishment of a framework for monitoring performance, as well as a framework providing incentives for regions and/or municipalities to meet targets.
- **Introduction of programmes to support municipalities and educate householders**, aimed at raising the level of awareness of householders and businesses in respect of the need for recycling and waste reduction.
- **Reform of funding mechanisms**, including a review of the existing Extended Producer Responsibility (EPR) scheme to confirm the extent to which costs of recycling are covered by the fees from producers.
- **Undertake activities to support waste prevention and re-use**, such as integrating reuse activities into the existing EPR scheme.
- **Roll out/expansion of pay-as-you-throw systems**. This requires well managed separate collection services to be in place.
- **Measures to improve data quality and transparency**.



# 1.0 Factsheet – Croatia

This factsheet analyses the situation regarding waste management policies and practices in Croatia, the focus being on **municipal solid waste (MSW)**. The aim of the factsheet is to identify key issues in respect of waste management currently confronting the country, in particular against targets set out in the Landfill Directive and the Waste Framework Directive.

The following table presents some basic data and information related to current waste generation and management in Croatia, which the following analysis was based upon.

**Table 1-1: Basic waste management data for Croatia**

Population / Households	
Total inhabitants (2013)	4,262,140
Decrease since 1991	About 8% <sup>1</sup>
Data on households	1 534 148 private households (with a reported average size of 75 m <sup>2</sup> )
Data on urbanisation	56% on average City of Zagreb 94.5% Zagreb metropolitan area (City of Zagreb and Zagreb County) 76.4%
<b>Municipal Waste Generation</b> (source: AZO, the National EPA in its recent Report on Municipal Waste 2013 <sup>2</sup> )	
Total (tonnes in 2013) <sup>3</sup>	1 720 758
Total (kg/cap/annum)	404
<b>Household Waste Composition</b> (source: AZO in the draft final national Waste Management Plan 2015 – 2021)	
Food (kitchen waste)	30.9%
Garden	5.7%
Paper & cardboard	23.2%
Plastic	22.9%
Glass	3.7%
Metal	2.1%
Textiles	3.7%
Other	7.8%
<b>Municipal Waste Management</b> (data from 2013, source: AZO)	

<sup>1</sup> The Croatian Bureau of Statistics via [https://en.wikipedia.org/wiki/Demographics\\_of\\_Croatia](https://en.wikipedia.org/wiki/Demographics_of_Croatia).

Same source – to which also data on households and urbanization refer to – predicts that the country's population may undergo the 4 million-line within 2030.

<sup>2</sup> Published in March 2015 and available in Croatian only  
<http://www.azo.hr/lzvjesceOKomunalnomOtpaduZa2013>

<sup>3</sup> Remaining numbers in this table refer to the source AZO and its 2013 Report on Municipal Waste (refer to above footnote). The given number for generated MSW adds to reported amounts (1 477 991 tonnes) amounts from the population not served by a collection system, estimates for municipalities for which no data was submitted, amounts coming from the service sector and a few other corrections. For data per county refer to **Error! Reference source not found.**

MSW collection rate	98% (up from 80% coverage in 2000)
Recycling	258 056 tonnes
Composting	29 366 tonnes <sup>4</sup>
<b>MBT</b>	8,728 tonnes <sup>5</sup>
Landfilled	1 413 133 (household) + 365 657 (non-hazardous industrial) tonnes
<b>Performance Against Targets</b> (all information gathered from above quoted AZO report)	
Waste Framework Directive:	22.6 % Recycling for 2013 accounted against method 2 (2011/753/EU). (Note that using method 4 would result in a figure of 15.0%).
Landfill Directive:	With 115% BMW <sup>6</sup> compared to 1997 <sup>7</sup> , the 2013 target (75%) was clearly missed. In weight terms, the target was exceeded by 303 303 tonnes: 870 434 tonnes landfilled in 2013 against a target of 567 131 tonnes to be reached 31.12.2013.
<b>Waste Management Infrastructure</b> , available at present or within end of 2016	
Bring sites for recycling	52 recycling yards
Sorting facilities	Two public (Krk and Čakovec), plus some private material recovery facilities
Compost and biogas facilities	Ten compost plants for green and biowaste (with three in Zagreb) and a few biogas facilities.
Mechanical biological Treatment (MBT) <sup>8</sup>	Varaždin (private, in operation since end of 2011): Capacity 90 000 t/a Rijeka (Marišćina) in trial period: Capacity 100 000 t/a Pula (Kaštijun) under construction (80% completion): Capacity 90 000 t/a
Thermal treatment	None (Up until 2005 a small hazwaste incinerator was operated in Zagreb.)
Landfills	147 operational, and 164 closed facilities, on 311 locations. Out of the operational facilities, 57 can be classified as engineered landfills.

The specific generation of municipal waste of about 400 kg/cap/yr comprises also tourism,<sup>9</sup> which accounts for around 200,000 population equivalents<sup>10</sup>. Due to the country's nature as

<sup>4</sup> This value is difficult to square with other information (e.g. the information contained in **Error! Reference source not found.**). It is very low when considering the number, and capacity, of compost and AD (anaerobic treatment) plants referred to in **Error! Reference source not found.**

<sup>5</sup> The plan indicates the remainder of the 1.7 million tonnes consists of material that is temporarily stored, together with an amount estimated to account for households that are not budgeted as being part of the formal system

<sup>6</sup> Biodegradable Municipal Waste

<sup>7</sup> Reason for 1997 as reference year for the respective calculation (as in all other EU member states) might be recent European history (with a war in Croatia that followed the break-up of former Yugoslavia until 1995). 1997 parts of Croatia were still under jurisdiction of Republika Srpska Krajina (a de-facto regime which controlled up to a third of today's Croatia) and this is assumed in here to be the reason that the Aquis EU – Croatia contains a later reference year than for other countries.

<sup>8</sup> Only those operating or under construction are listed. For data on projects refer to **Error! Reference source not found.**

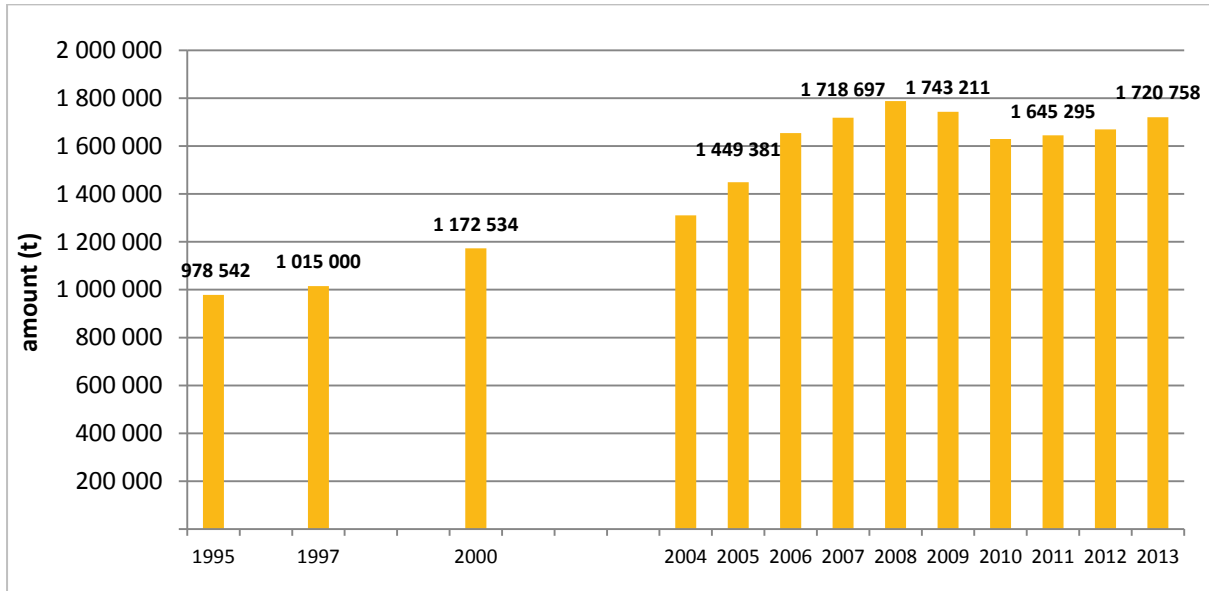
<sup>9</sup> The Croatian definition for municipal waste – laid down in Article 4 of the Act on Sustainable Waste Management ([http://mzoip.hr/doc/act\\_on\\_sustainable\\_waste\\_management.pdf](http://mzoip.hr/doc/act_on_sustainable_waste_management.pdf)) – reads “waste generated by households or any other waste comparable in nature and composition to household waste, ...”.

<sup>10</sup> 66.5 million overnight stays in 2014, refer to <http://www.iztg.hr/UserFiles/file/institut/Hrvatski-turizam-u-brojkama-2014-Broj-04.pdf>, Table on page 5.

a seasonal (mainly summer) tourist destination, this figure has to tripled or quadrupled when, for example, considering the need for capacity to manage waste at the peak of the tourist season.

The timewise development of Municipal Waste over the last two decades is shown in Figure 1.1. The curve may be interpreted as a strong increase after a war which ended in 1995 followed by some stagnation (which is reflected by general economic data).

**Figure 1.1: Municipal waste generation over the last 20 years**



Source: AZO in its recent Report on Municipal Waste 2013

For a country breakdown by districts of the generated municipal waste refer to Table 1.2.

**Table 1.2: Croatia's districts: Data on population and MSW generation<sup>11</sup>**

<b>Županija (district)</b>	<b>Population (2011 census)</b>	<b>MSW generation (tonnes) in 2013. Source: AZO</b>
<b>1 Zagrebačka</b>	317 606	80 164
<b>2 Krapinsko-zagorska</b>	132 892	27 626
<b>3 Sisačko-moslavačka</b>	172 439	50 473
<b>4 Karlovačka</b>	128 899	38 815
<b>5 Varaždinska</b>	175 951	32 910
<b>6 Koprivničko-križevačka</b>	115 584	21 247
<b>7 Bjelovarsko-bilogorska</b>	119 764	26 330
<b>8 Primorsko-goranska</b>	296 195	130 661
<b>9 Ličko-senjska</b>	50 927	24 528
<b>10 Virovitičko-podravska</b>	84 836	23 948
<b>11 Požeško-slavonska</b>	78 034	13 797
<b>12 Brodsko-posavska</b>	158 575	45 597
<b>13 Zadarska</b>	170 017	95 118
<b>14 Osječko-baranjska</b>	305 032	73 716
<b>15 Šibensko-kninska</b>	109 375	48 202
<b>16 Vukovarsko-srijemska</b>	179 521	42 352
<b>17 Splitsko-dalmatinska</b>	454 798	201 460
<b>18 Istarska</b>	208 055	110 611
<b>19 Dubrovačko-neretvanska</b>	122 568	64 942
<b>20 Međimurska</b>	113 804	20 708
<b>21 Grad Zagreb</b>	790 017	304 706

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<sup>11</sup> Source: AZO, Report on Municipal Waste 2013.

<b>Total</b>	<b>4 284 889</b>	<b>1 477 911</b>
<b>Additionally considered<sup>12</sup></b>		<b>242 847</b>
<b>Total overall amount</b>		<b>1 720 758</b>

## 1.1 Roles and Responsibilities of Key Actors

Municipalities (in legal terms, usually referred to as ‘local government units’) are responsible for waste collection. The Law on Sustainable Waste Management 2013 defines the request of establishing both services for mixed municipal waste and biowaste (designated as biodegradable municipal waste), as well as separate collection of waste paper, metal, glass, plastics, textiles and bulky waste. Furthermore the municipal level retains the obligation to remove fly tipping and perform communication (education and information) activities in its territory. Finally, and in the context of the present study with a view on the country’s institutional set-up, perhaps most importantly, the municipal level is also responsible for preparing and implementing waste management plans, which have to be in line with the *national* waste management plan (a new version of which, to start from 2016, has just been published).

Municipalities are also responsible for organising disposal services. As in other successor states of Yugoslavia the service of waste collection is physically performed by companies owned by the Municipality (with *Čistoća*, Croatian for *cleanliness*, as a typical company name). These companies are entitled to set fees for their services, and also collect them.

Croatia’s new system for residual waste management (which was decided “top down” and is sketched out in the new National Waste Management Plan) divides the country into 17 catchment areas with one centre (designated as the Regional Waste Management Center, or RWMC) in each area. It is understood that the 2013 Waste Act removed the regional competence for developing WMPs, although as is indicated above, municipal plans will continue to be in place (there are more than 500 of these). The mechanism through which Croatia will ensure coherence between the national and municipal plans is unclear.

These *Regional Waste Management Centers* are owned and will be operated by public companies owned by the county, or counties connected to a center. They comprise also a system of transfer stations (usually located at present landfills, so there will be no changes for the municipalities in terms of transport efforts). Transfer (i.e. transport between transfer station and treatment center) is also under the control of the RWMCs and usually outsourced to the private sector.

The *Croatian Environment Agency* (CEA-AZO) encourages environmental protection and promotes sustainable development in the Republic of Croatia by providing the required environmental data and information to decision-makers and the general public.

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<sup>12</sup> Amounts from the population not served by a collection system, estimated quantities for three municipalities for which data was not submitted, amounts coming from the service sector, and a few other corrections.

## 1.2 Summary of Legislative Framework for Waste Management

The main legislation for Waste Management in Croatia is the Law on Sustainable Waste Management (OG 94/13), which has been in force since 23.07.2013.

It transposes into the legal system of the Republic of Croatia the following Directives of the European Union (note that the validity of *Regulations* which are listed further down is connected to the previous Waste Management Plan, the validity of which ends at the end of 2015):

- Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives (OJ L 312, 22. 11. 2008)
- Directive 2010/75/EC of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17. 12. 2010)
- Council Directive 1999/31/EC on the landfill of waste (OJ L 182, 16. 7. 1999)
- Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 (OJ L 140, 5. 6. 2009)
- Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266, 26. 9. 2006)
- Directive 2004/12/EC of the European Parliament and of the Council of 11 February 2004 amending Directive 94/62/EC on packaging and packaging waste (OJ L 047 18/02/2004)
- Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles (OJ L 269, 21. 10. 2000)  
Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24. 7. 2012).

This Act establishes the framework for the implementation of the following acts of the European Union:

- Regulation (EC) No 1013/2006 of the European Parliament and of the Council on shipments of waste (OJ L 190, 12.7.2006), as last amended by Commission Regulation (EU) No 255/2013 amending, for the purposes of adaptation to scientific and technical progress, Annexes IC, VII and VIII to the Regulation (EC) No 1013/2006 of the European Parliament and of the Council on shipments of waste (OJ L 79, 21.3.2013)
- Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (SL L 226, 6.9.2000)
- Commission Decision 2011/753/EU establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council (OJ L 310, 25.11.2011).

Related regulations include:

- Act on Sustainable Waste Management (OG No. 94/13)
- Waste Management Strategy of the Republic of Croatia (OG No. 130/05)

- Ordinance on waste tyre management (OG No. 40/06, 31/09, 156/09, 111/11, 86/13)
- Regulation on the criteria, procedure and manner of determining compensation to real estate owners and local self-government units (OG No. 59/06, 109/12)
- Ordinance on waste oil management (OG No. 124/06, 121/08, 31/09, 156/09, 91/11, 45/12, 86/13)
- Ordinance on waste batteries and accumulators management (OG No. 133/06, 31/09, 156/09, 45/12, 86/13)
- Ordinance on the management of end-of-life vehicles (OG No. 136/06, 31/09, 156/09, 86/13, 91/13)
- Ordinance on the method and procedures for managing waste containing asbestos (OG No. 42/07)
- Ordinance on methods and requirements for thermal treatment of waste (OG No. 45/07)
- Ordinance on the methods and conditions for the landfill of waste, categories and operational requirements for waste landfills (OG No. 117/07, 111/11, 17/13, 62/13)
- Ordinance on construction waste management (OG No. 38/08)
- Ordinance on management of wastewater treatment sludge when used in agriculture (OG No. 38/08)
- Instruction on handling waste containing asbestos (OG No. 89/08)
- Ordinance on managing waste from research and mining of mineral raw materials (OG No. 128/08)
- Decision on Environmental protection and energy efficiency Fund's procedures for implementing measures for the improvement of waste containing asbestos' management system (OG No. 58/11)
- Regulation on border crossings on the territory of the Republic of Croatia which are allowed for the import of waste to the European Union and the export of waste outside of the European Union (OG No. 6/14)
- Ordinance on waste management (OG No. 23/14, 51/14)
- Ordinance on the management of waste electrical and electronic equipment (OG No. 42/14, 48/14, 107/14, 139/14)
- Ordinance on the management of polychlorinated biphenils and polychlorinated terphenils (OG No. 103/14)
- Ordinance on management of waste from the titanium dioxide industry (OG No. 117/14)
- Ordinance on by-products and end-of-waste status (OG No. 117/14)
- Ordinance on medical waste management (OG No. 50/15)

International treaties include the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel 1989) Published in OG–IT No. 3/94; this came into force with respect to the Republic of Croatia on 9 May 2000.

### 1.3 Status of Waste Management Plan(s)

As well as a plan on the *national level*, as noted above, the Croatian Law on Sustainable Waste Management of 2013 foresees a waste management plan *for each municipality* (referred to in the law as a “local self-government unit”)<sup>13</sup>. That is a change compared to the previous situation, which foresaw the development of 21 regional plans (by county/županija, plus the City of Zagreb). Now, there are more than 500 municipal plans (the 20 counties are subdivided into 127 towns and 429 municipalities<sup>14</sup>) with plans valid until end of 2015.

It can be assumed that about half of the Croatian municipalities maintain such a plan which, we understand, is drafted by licenced engineering consultancies (as a rule)<sup>15</sup>.

A *draft National Waste Management Plan 2015 – 2021* was published on September 21 2015<sup>16</sup> for public consultation (1 month) with some delay (it should actually have been adopted by 31 December 2014<sup>17</sup>). The adoption of the plan requires a public hearing and acceptance of the parliament. However, at the time of the plan’s publication, no parliament was in place, and the technical government that was in place until February 2016 did not have the power to adopt the most recently issued plan. Although a parliament has now been set up, no further announcement regarding the plan had been made at the time of writing. It is therefore unclear at the time of writing as to when the plan will be formerly adopted.

### 1.4 Summary of the Key Objectives of the Plans

#### 1.4.1 Waste Management Plan

The newly issued National Plan describes the current situation with regards to waste management and also indicates some future plans with regard to the future investment in infrastructure and service development. However, it contains relatively little in the way of firm policy commitments.

The plan indicates it foresees the implementation of a series of measures, policies and activities (investments), which will be provided to establish a comprehensive and effective system of waste management, while integrating existing systems already in place, and waste management facilities provided and constructed under the previous planning period. General measures for waste management covering MSW are largely limited to the following:

- The plan indicates there is a need to continue to pursue improvements to systems for the separate collection of municipal waste. It is indicated this will be achieved primarily through:

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<sup>13</sup> [http://mzoip.hr/doc/act\\_on\\_sustainable\\_waste\\_management.pdf](http://mzoip.hr/doc/act_on_sustainable_waste_management.pdf), article 21/1

<sup>14</sup> [https://en.wikipedia.org/wiki/Croatia#Administrative\\_divisions](https://en.wikipedia.org/wiki/Croatia#Administrative_divisions)

<sup>15</sup> Source: Danko Fundurulja, IPZ Uniprojekt Terra d.o.o., Zagreb

<sup>16</sup> [http://www.mzoip.hr/doc/nacrt\\_plana\\_gospodarenja\\_otpadom\\_republike\\_hrvatske\\_za\\_razdoblje\\_2015-2021.pdf](http://www.mzoip.hr/doc/nacrt_plana_gospodarenja_otpadom_republike_hrvatske_za_razdoblje_2015-2021.pdf)

<sup>17</sup> Refer to [http://mzoip.hr/doc/act\\_on\\_sustainable\\_waste\\_management.pdf](http://mzoip.hr/doc/act_on_sustainable_waste_management.pdf), Article 181



- the development of infrastructure and procurement of equipment;
  - educating and informing stakeholders of the system; and
  - the revision of the tariff system in such a way that costs vary by quantity of waste produced.
- The plan further indicates there will be improvements to systems used to collect the waste from containers on the "doorstep", as well as an increase in the number of 'green islands', and their appropriate spatial distribution. A network of recycling yards will be established, as well as sorting infrastructure.
  - With regards to biodegradable waste, this type of separate collection is to be set up "where possible" on the doorstep. The plan foresees the introduction of containers for biowaste in the recycling yards and makes a general commitment to improve the collection of organic waste at a local level. Additional treatment infrastructure is also to be provided (composting and biogas facilities). Home composting will also be promoted.
  - In addition to the activities in the Waste Management Plan for the period 2007 to 2015, activities relating to the development and establishment of 13 RWMCs for waste management will be undertaken (relating to landfills, MBT plant required for the operation of the RWMCs, transfer stations, etc.).
  - An increase in energy from waste infrastructure is also assumed, with the planning process expected to consider energy recovery from sludge, the co-incineration of refuse-derived fuel and energy recovery from mixed municipal waste (in Zagreb).
  - There is a general commitment to improve data quality although no detail is provided.

In general, the plan is lacking in any other detail as to how the above "measures" will be put into place, and how the objectives will therefore be achieved. Other measures that had previously been understood (through consultation with industry) to be included within the plan - such as landfill taxes or other financial means of incentivising performance – were not included.<sup>18</sup> The plan also does not address how important targets such as that contained in the landfill directive for 2016 are to be achieved.

## 1.4.2 Waste Prevention Programme

There is no stand-alone Waste Prevention Programme in Croatia, waste prevention is dealt with as a part of the (both former and recently published) national Waste Management Plan.

Whilst the former NWMP refers to prevention very generally in two short chapters<sup>19</sup> (in the 2013 Report on Municipal Waste the term "prevention" cannot even be identified), the

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<sup>18</sup> On a meeting held within this project with national representatives in October 2015 in Zagreb it was communicated that an ordinance defining details of a landfill tax will be issued very soon.

<sup>19</sup> See subchapter '5.1.1. Waste Generation Prevention' and '5.1.4. Prevention and Minimization of Waste from Production Processes' contains even more general content (such as "In existing production processes it is necessary to introduce improvements aiming at the reduction of waste amounts") and therefore it is refrained from further quoting herein.

2013 Act on Sustainable Waste Management defines, in Article 18, elements of a waste prevention plan which – amongst a few elements to be assessed in a comparatively straightforward manner (eg. a request to organise training courses for competent authorities, and the promotion of eco-design and creditable eco-labels) – includes also the setting of targets as regards waste prevention.

*(1) A waste prevention plan shall form a constituent part of the [Waste Management] Plan and shall contain, in particular:*

*1. waste prevention targets,*

*2. measures required to attain waste minimisation or waste prevention targets, which relate to:*

*– planning or other economic instruments promoting efficient use of source materials and resources,*

*– the promotion of research and development in cleaner technologies and products and the promotion and implementation of the results of such research and development,*

*– the development of effective and meaningful indicators of environmental pressures associated with waste generation with a view to contributing to waste prevention at the level of local and regional self-government and at national level,*

*– the promotion of eco-design (the systematic integration of environmental aspects into product design with the aim of improving the environmental performance of the product throughout its whole life-cycle),*

*– the provision of information on waste prevention techniques with a view to facilitating the implementation of best available techniques in industry,*

*– organisation of training courses for the competent authorities as regards the insertion of waste prevention requirements in permit issuance procedures,*

*– inclusion of measures for waste prevention in installations which are exempt from environmental permit requirements under the act governing environmental protection – those measures may include assessments or plans for waste prevention,*

*– organising awareness campaigns or the provision of financial, decision-making or other support to persons,*

*– conclusion of voluntary agreements, organising consumer/producer panels or sectoral negotiations in order that the relevant businesses or industrial sectors set their own waste prevention plans or targets or correct wasteful products or packaging,*

*– promoting credible environmental management systems (EMSs), including EMAS and ISO 14001,*

*– economic instruments such as incentives for cleaner purchases involving the purchase of products with less packaging,*

*– organising awareness campaigns and information provision directed at the general public or a specific set of consumers,*

*– the promotion of creditable eco-labels,*

– agreements with industry, such as the use of product panels such as those being carried out within the framework of Integrated Product Policies, or with retailers on the availability of waste prevention information and products with a lower environmental impact,

– in the context of public and corporate procurement, the integration of environmental and waste prevention criteria,

– the promotion of the reuse and/or repair of appropriate discarded products or of their components, notably through the use of educational, economic, logistic and other measures.

*(2) Appropriate specific qualitative or quantitative benchmarks shall be determined for waste prevention measures adopted in order to monitor and assess the progress of the measures, and specific qualitative or quantitative targets and indicators may be determined.*

The recently published NWMP includes the following measures aimed at increasing waste prevention activity:

1. Encourage the reuse of materials from demolition but establishing an incentive fee for these materials.
2. Organise an educational campaign on the prevention of food waste generation.
3. Work on improving data collection relating to food waste
4. Promotion of sustainable construction by developing a guide to sustainable construction.
5. Establish a system of food donations.
6. Organise communications campaigns influencing the consumption behaviour of citizens.
7. Promotion of home composting.
8. Encouraging the exchange and re-use of products through development of a framework and guidelines for undertaking reuse activities in Croatia.

Although some detail is provided on some of these measures, the current version of the plan does not include a timetable of when these measures will be implemented.

In the past, an initiative on waste prevention was launched by an NGO, Zelena Akcija (<http://zelena-akcija.hr/en>). They launched a 'Zero Waste Manual' in December 2007, providing practical advice and tips to maximize prevention, reuse and recycling efforts. A new edition of this manual was announced for 2010,<sup>20</sup> but could not be identified. In addition, Zelena Akcija has signed agreements with a number of municipalities (including Ljubljana, Vrhnika, ...) to join the Zero Waste network.

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<sup>20</sup> [http://ec.europa.eu/environment/waste/prevention/pdf/Zero\\_Waste\\_Factsheet.pdf](http://ec.europa.eu/environment/waste/prevention/pdf/Zero_Waste_Factsheet.pdf)

## 1.5 Progress towards the Fulfilment of Targets

### 1.5.1 Landfill Directive Targets

Croatia has a four-year derogation on the due date for achievement of the biodegradable tonnage targets, so the relevant target years are 2010, 2013 and 2020.

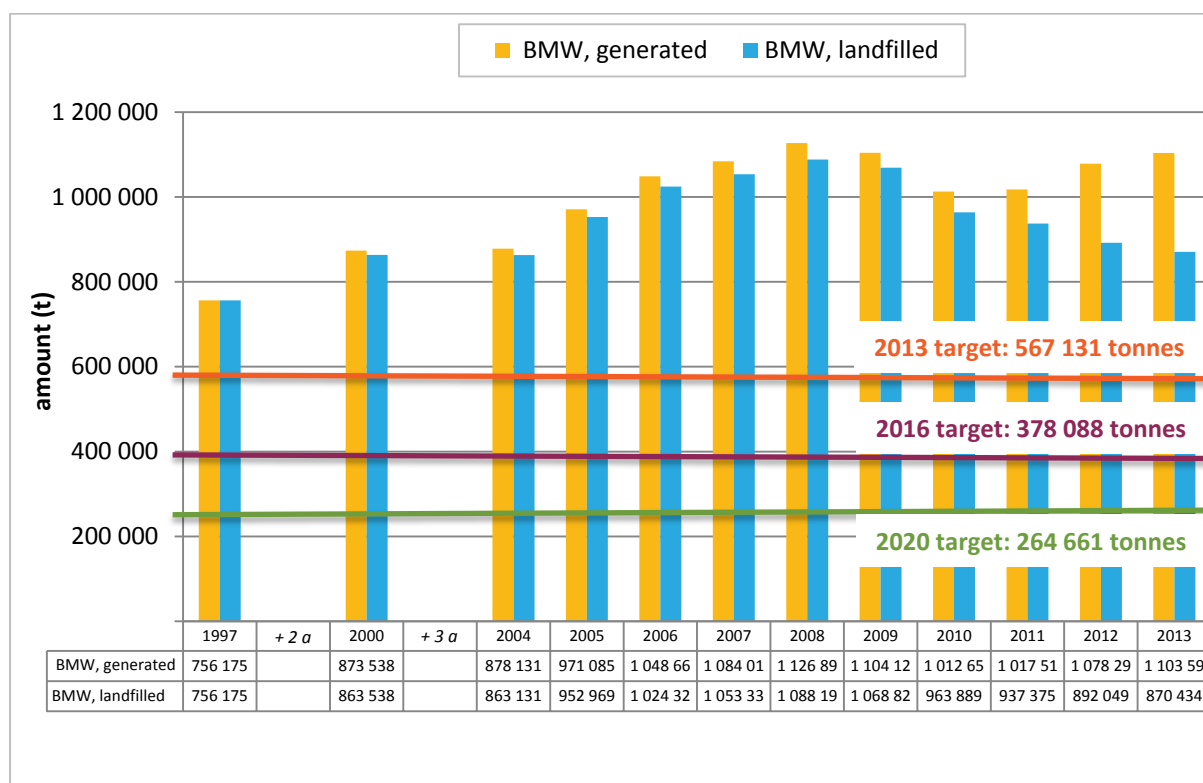
Figure 1.3 shows the current status of compliance with the Landfill Directive. As already outlined in the overview table introducing to this report, the 2013 target has been missed by around 300 000 tonnes (in percentage terms, the amount of landfilled biodegradable municipal waste compared to the reference year 1997<sup>21</sup> is 115% as compared with the target figure of 75%).

It can be assumed that the 2016 target will be missed by a similar magnitude since it is unlikely that the reduction of landfilled BMW will continue in the period 2014 to the end of 2016 at the same rate as was observed for the period 2009 until the end of the reporting period. Such a reduction could be achieved by the beginning of 2016 only by separate collection (no new treatment facilities are planned to be operational in the interim), with a reduction potential to be estimated below the 200 000 tonnes reported for the period 2009 – end of 2013. Residual waste treatment as reduction method will be only available after 2016 for about 100 000 tonnes BMW in this year (two MBT facilities, for details refer to the table introducing this country report). Considering this amount plus another 100 000 tonnes diverted via increased separate collection and composting the 2016 target will also be missed by about 300 000 tonnes (in percentage terms: slightly below 100% of the 1997 level, and at best 85%, as set against the target level of 50%).

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<sup>21</sup> The reason for the reference year 1997 – instead of 1995 as for the other EU member states – is referred to in Table 1-1, section “Performance against targets”. Furthermore might be pointed at this occasion at a country-specific “unfairness” of the Landfill Directive which sets targets against a reference year 1997 with a waste yield having been low in Croatia by obvious reason: A war which ended two years before, and the related low economic activity (example tourism: < 10% of the overnight stays compared to 2014) thus waste generation.

**Figure 1.3: Compliance with Landfill Directive: Biodegradable Municipal Waste amounts generated versus landfilled 1997 – 2013**



Source: AZO in its recent Report on Municipal Waste 2013

### 1.5.2 Waste Framework Directive Targets

Croatia has opted for calculation method 2 to report progress against the WFD targets, and was achieving a rate of 22.6% against this method in 2013.

Interestingly the new WMP 2015 – 2021, published at the end of September 2015, presents data from the same year (2013) as in its previous version, but with previously “additionally considered amounts” allocated to single counties (for details refer to Table 1.3) and broken down by five regions and by county. The respective calculation results in an overall value of 15%, herein gathered according to calculation method 4 – which might be due to doubts concerning calculation method 2.<sup>22</sup>

<sup>22</sup> The Report on Municipal Waste 2013 – published March 2015 by AZO, the National EPA – reads on page 15 (English translation further below):

Nepostojanje preporučene jedinstvene metodologije za određivanje sastava komunalnog otpada, a time i neprovođenje sustavnog praćenja sastava komunalnog otpada u najvećem broju gradova/općina dovodi u pitanje vjerodostojnost opisanog izračuna posebno za one općine i gradove koji izdvajaju biorazgradivi otpad iz komunalnog otpada.

The absence of the recommended uniform methodology for determining the composition of municipal waste, and thus the non-implementation of systematic monitoring of the composition of municipal waste in most towns / municipalities calls into question the credibility of the described calculations especially for those municipalities and cities that stand out separate biodegradable waste from municipal waste.

It seems that the North-Western part of the country shows better performance in separate collection than the Eastern and Southern parts (Dalmatia), whereas the Northern part of the coast (including Istria) is around the country average level of performance.

With the amounts of separate collection having almost doubled in the three years from 2010 to 2013, it can be said that progress is in the right direction. Even so, the country seems have better prospects for to meeting this target than the 2016 targets for Biodegradable Municipal Waste set out in the Landfill Directive.

For end of the year 2018 national legislation sets the target to treat all municipal waste prior to landfilling. The Ordinance on Packaging and Packaging Waste sets, for the year 2013, targets for shares of returnable packaging which seem to be very ambitious – 60% for wine, 90% for beer, and 60% for mineral water and milk beverages<sup>23</sup> – however no respective confirmation could be gathered.

Issues with recycling data collected from the producer responsibility organisations are outlined in Section 1.7.

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<sup>23</sup> <http://www.bottlebill.org/assets/pdfs/legis/world/croatia2005.pdf> provides a provisional translation

**Table 1.3: Waste Framework Directive: Compliance Results per county<sup>24</sup>**

Županija (county)	Total amount of MW Municipal Waste (t)	Directly sent for recovery (t)	Percentage of MW sent for recovery (%)
<b>Eastern Croatia</b>			
16 Vukovarsko-srijemska	49 311	4 857	9.8
14 Osječko-baranjska	85 829	11 273	13.1
11 Požeško-slavonska	16 064	1 993	12.4
12 Brodsko-posavska	53 089	7 685	14.5
10 Virovitičko-podravska	27 883	4 581	16.4
6 Koprivničko-križevačka	24 738	4 992	20.2
3 Sisačko-moslavačka	58 766	6 288	10.7
7 Bjelovarsko-bilogorska	30 656	3 609	11.8
<b>North-Western Croatia</b>			
1 Zagrebačka	93 337	17 437	18.7
2 Krapinsko-zagorska	32 166	6 562	20.4
4 Karlovačka	45 193	5 428	12
5 Varaždinska	38 318	8 453	22.1
20 Međimurska	24 111	8 734	36.2
<b>City of Zagreb</b>			
21 City of Zagreb	354 775	61 610	17.4
<b>Coastal and Mountain Croatia</b>			
8 Primorsko-goranska	152 131	30 279	19.9
18 Istarska	128 786	18 519	14.4
9 Ličko-senjska	28 559	4 323	15.1
<b>Dalmatia</b>			
13 Zadarska	110 748	11 301	10.2
15 Šibensko-kninska	56 123	6 145	10.9
17 Splitsko-dalmatinska	234 564	22 567	9.6
19 Dubrovačko-neretvanska	75 613	11 423	15.1
<b>Total</b>	<b>1 720 758</b>	<b>258 056</b>	<b>15</b>

Source: AZO in its recent Report on Municipal Waste 2013

<sup>24</sup> For a geographical overview showing counties and regions it is referred to page 10.

## 1.6 Implementation of Specific Waste Framework Directive Articles

### 1.6.1 Article 4: Application of the Waste Hierarchy

Article 7 of the Waste Management Act 2013 essentially reads as a transposition of Article 4, but the basis for implementing the hierarchy is not well-defined, still less, reflected in the approach, within the Article itself. The measures currently being used to implement the waste hierarchy in policy and law appear to be limited to:

- Article 8, regarding recovery, which defers responsibility in respect of outlining the principles and methods to the waste management plan
- Article 11(7), regarding separate collection
- Article 27 – a charge on landfilling of excess over quota (though we understand this has not yet been implemented)
- Article 29 – an incentive charge for reducing amount of mixed MSW
- Article 35, regarding the form which separate collection systems should take in local self-governing units

Article 35 has not, perhaps, been sufficiently specific regarding how ‘separate collection’ infrastructure is defined.

Article 169, which would allow for enforcement of Article 35, does not appear to have been pursued with vigour: we understand that there is a desire to work constructively with local self-governing units, but equally, there might be difficulty in enforcing the wording of Article 35 in the way that might have been intended. In any event, where local self-governing units are being relied upon to meet targets, and where these are legally binding, then given the apparently slim margin for error, the sanction for non-compliance (as per Article 169) ought to be credible.

Article 27 appears to define an incentive to encourage compliance with landfill quotas for biodegradable municipal waste, but our understanding from the workshop is that the instrument foreseen has not yet been implemented. The same appears to apply to the instrument foreseen under Article 29.

The Draft Plan includes a waste prevention programme, which is a positive step, but could be further developed, not least, to reflect the 2013 Act.

### 1.6.2 Article 10: Recovery

Article 8 of the Waste Management Act 2013 begins by stating that waste shall be recovered, in accordance with the principles and methods of waste management set out in the Act. The Act itself contains relatively little information on these principles and methods, referring instead to guidance being provided in the waste management plan, although the need for products to be developed with recovery in mind, and the need for product producers to encourage recovery options. It further confirms that waste need not be recovered in the following cases:

1. *technical know-how does not allow waste recovery,*
2. *the costs of waste recovery are several times higher than the costs of waste disposal,*



3. further use of the waste or its components is not possible,
4. the disposal of waste creates less environmental burden than its recovery, in particular as

regards:

- the emission of substances and energy into the air, sea, water and soil,
- the utilization of natural resources,
- the energy to be expended or the energy which can be reclaimed, or
- hazardous substances contained in the waste generated by waste recovery.

At the time of writing Croatia has two public sorting facilities at Krk and Čakovec, together with some private material recovery facilities.

### 1.6.3 Article 11: Reuse and Recycling

As was indicated in Section 1.6.1, the Waste Management Act is lacking some detail with regard to enforcing the introduction of separate collections within the country. Despite the relatively weak legislative requirements, a further achievement of Croatia relative to other countries in South East Europe is its significant yield of recyclables and biowaste (see Figure 1.5). This can be explained by a number of factors:

- *A certain tradition*; reutilization of secondary raw materials enjoyed generally high attention in the economically higher developed state entities of former Yugoslavia;
- *Industries with a constant demand for recyclables (apart from plastics) available in the country*<sup>25</sup>, and a vital trade sector connecting to nearby countries maintaining such industries (Slovenia, Austria, Italy)
- *Zagreb*, in particular, can be assessed as “ahead” compared with neighbouring metropolitan areas; door-to-door collections schemes for paper and biowaste – formally still pilot projects – have been introduced since 1995 (Figure 1.4 shows a typical set-up), although it is unclear how many such schemes have been introduced.

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<sup>25</sup> There is a container glass factory in the north (Hum na Sutli), paper mills in Zagreb and Belišće (Slavonia), and steelworks in Split and Sisak. Despite of the latter two facilities being recorded as bankrupt, scrap iron generally finds markets available, although prices may be depressed at present.

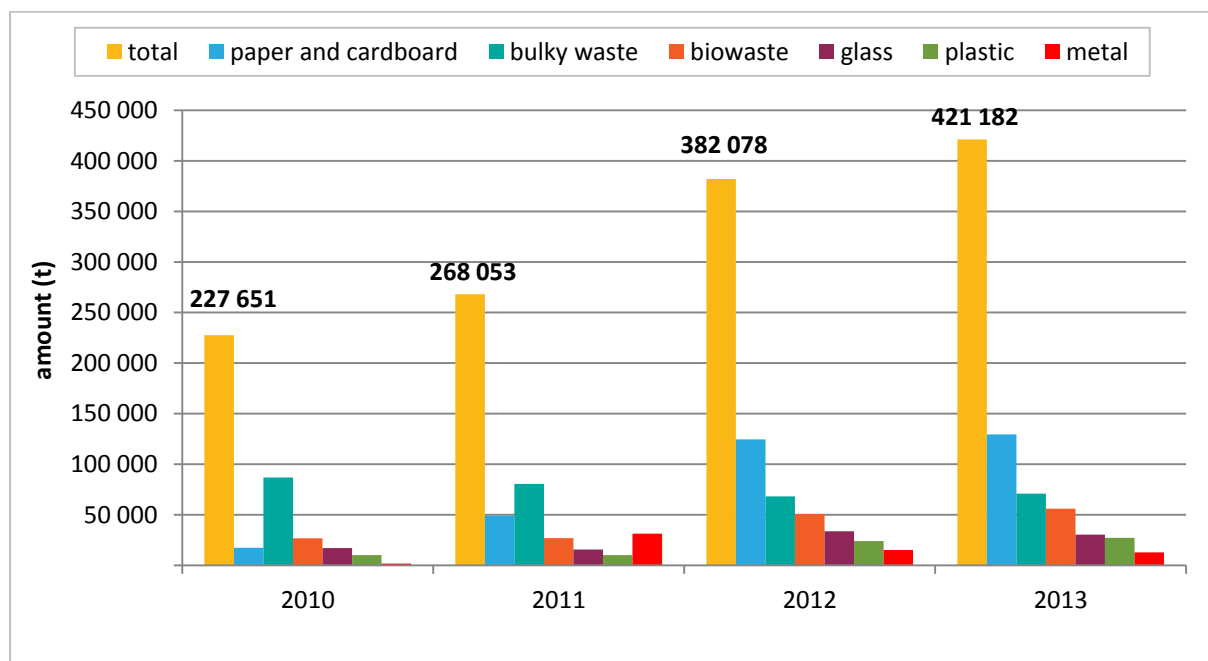
**Figure 1.4: MSW collection scheme in Zagreb introduced in an affluent area**



Photo: M. Steiner

- *The country's status in respect to packaging management; Croatia is one of the small number of European countries which has a deposit for disposable beverage packaging in place. Note that this practice, introduced in 2006 for non-refillable beverage packaging with volumes > 0.2 l,<sup>26</sup> is less important in terms of yields (measured by weight) than it is on the appearance of public space, with a generally perceived reduction of littering in, and beyond, touristic areas.*

**Figure 1.5: Recovery of biowaste and recyclables 2010 – 2013**



<sup>26</sup> [https://en.wikipedia.org/wiki/Container\\_deposit\\_legislation#Croatia](https://en.wikipedia.org/wiki/Container_deposit_legislation#Croatia)

Source: AZO in its recent Report on Municipal Waste 2013

A good example of a more advanced Croatian municipality is Čakovec, a town of 15 000 population (30 000 including suburbs) and capital of Međimurje, Croatia's most northern county bordering Slovenia and Hungary. Through its efforts in respect to public awareness, offering customized services, and by giving incentives for separate collection (e.g. by automatically monitoring the frequency of emptying residual waste bins and integrating the frequency of collection in the waste fee),<sup>27</sup> there has been a 30% fall in residual waste in the last 5 years.<sup>28</sup>

Krk, the Adriatic's largest island can be seen as Čakovec's analogy in the tourism sector. The island has a resident population of about 20 000, with 10 000 beds offered to tourists.<sup>29</sup> Since 2005, separate collection for paper and cardboard, glass, metals, PET, and biowaste has been introduced by a combination of door-to-door collection and seven recycling yards (one per municipality). The island's public provider of waste management services reports the proportion of separate collection as 40%, and there is a goal to increase this rate by 2 – 3% annually<sup>30</sup>.

#### 1.6.4 Article 14: Costs of Waste Management

Croatia's approach to developing recycling infrastructure is unusual in that there is a heavy emphasis on the role of the Environmental Protection and Energy Efficiency Fund. Although local self-government units have the freedom to make decisions to 'do more' by way of recycling, the fund plays a very significant role in allocating funds for recycling. The current approach, therefore, seems to be to support the provision of recycling through financial disbursements rather than giving a clear incentive to prevent and recycle waste through increasing the costs of disposal of residual waste.

The cost for implementing the RWMCs will be borne by the *Environmental Protection and Energy Efficiency Fund* which is established under the provisions of the Act on the Environmental Protection and Energy Efficiency Fund for the purpose of financing of the preparation, implementation and development of programmes and projects and similar activities in the field of conservation, sustainable consumption, protection and improvement of the environment, and in the field of energy efficiency and use of renewable energy sources. The Fund is established as an extra-budgetary fund, in the capacity of a legal person with public authority, set out in the aforementioned Act. Its revenues – for 2014, reported at € 176 million<sup>31</sup> – come from the EPS Extended Producer Responsibility schemes

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<sup>27</sup> The website of Čakom, the Municipality's public utility for waste management and related services <http://www.cakom.hr/usluge/cistoca.html#> provides also to the non Croatian speaker a comprehensive overview on services and activities. ,

<sup>28</sup> Presentation "Waste management in the city of Čakovec" given by Mr Saša Avirović, Head of Technical Department of Čakom on a workshop performed within the present project October 2015 in Zagreb.

<sup>29</sup> <http://www.krkadria.com/de/reiseziele/>

<sup>30</sup> <http://www.ponikve.hr/sustav-prikupljanja-i-zbrinjavanja-otpada>

<sup>31</sup> Source: Presentation "Current waste management situation in Croatia" held by Ms Irena Relić, Head of Office of the Minister of Environmental and Nature Protection on a workshop performed within the present project October 2015 in Zagreb.

(fees are collected for so called “special categories of waste”<sup>32</sup>), and other license fees. The Fund’s rights and duties are exercised by the Croatian Government on behalf of the Republic of Croatia which, has joint and unlimited liability for the obligations of the Fund.

Gate fees at the RWMCs are reported in feasibility studies (in which the respective projects have been defined) at a level around €50 / t<sup>33</sup> which might turn out to be an underestimate when compared with gate fees in other countries (although it is not always clear whether these gate fees are intended to apply to the MBT process itself, or the costs of the process, as well as the costs of managing with the outputs from the facilities).<sup>34</sup>

Table 1.6 lists charges for packaging waste to be paid to the Environmental Protection and Energy Efficiency Fund by producers or importers to cover the costs of managing packaging waste.

**Table 1.6: Charges for packaging waste by packaging material**<sup>35</sup>

Material		Charge per t (ca.)
PET		€ 54
Aluminium cans		€ 54
Iron cans		€ 30
Paper, cardboard		€ 50
Multi-layered packaging with dominant paper/cardboard component	For beverages:	€ 54
	For other purposes:	€ 99
Plastic bags		€ 198
Wood		€ 20
Textile		€ 20
Other polymer materials		€ 99
Glass		€ 20

As was indicated in Section 1.1, waste collection is physically performed by companies owned by the Municipality. These companies are competent to set fees for their services,

<sup>32</sup> At present packaging waste, End of Life Vehicles, WEEE, waste oils, waste tyres, and waste batteries / accumulators, for details refer to section 1.6.

<sup>33</sup> Source: Danko Fundurulja, IPZ Uniprojekt Terra d.o.o., Zagreb

<sup>34</sup> Example Austria with about 25% of its population connected to MBT systems reports a range of about € 140 – 160 / t for catchment areas connected to MBT:

[https://www.tirol.gv.at/fileadmin/themen/umwelt/abfallwirtschaft/downloads/tirol\\_ph3\\_062010.pdf](https://www.tirol.gv.at/fileadmin/themen/umwelt/abfallwirtschaft/downloads/tirol_ph3_062010.pdf), page 10

<sup>35</sup> Source: <http://www.bottlebill.org/assets/pdfs/legis/world/croatia2005.pdf>, with exchange rates HRK/€ from October 2015

and also collect them. Fees are usually dependent on the size of waste containers and the frequency of their collection.<sup>36</sup> In Zagreb, the waste fee depends on floor space.

€ 7 per month for a household is a typical fee level for collection and management of municipal waste. Čakom, as the operator of a system perceived as one of the most advanced ones in the country (Čakovec, North Croatia), reported € 10 per household per month. For Zagreb 1 kn per square meter and month is reported, resulting in € 10 per month for a flat with 75 m<sup>2</sup>, the average dwelling size available to a private household according to national statistics.

Gate fees for landfill are shown in Table 1.7. The data shows a north-south divide, observed also for other development indicators (regarding gate fees to be expected for future treatment systems, please refer to the description of the related technical infrastructure below). In Čakovec, the example with the highest gate fee, some charges are added to the quoted cost (one designated “for investments in environmental protection”), raising the cost for disposing of MSW to about € 90 per tonne. This level of disposal cost provides significant incentive for increasing recycling.

**Table 1.7: Examples for landfill gate fees for household and commercial waste**

Municipality	Gate fee per ton (rounded, excluding VAT)
Čakovec <sup>37</sup>	€ 49,90
Zagreb <sup>38</sup>	€ 42,35
Karlovac <sup>39</sup>	€ 39,25
Split <sup>40</sup>	€ 26,25

### 1.6.5 Article 22: Encouraging the Separate Collection of Biowaste

There is no legislation covering the introduction of separate collection for biowaste. The current plan notes the high quantity of kitchen waste in the residual waste stream, indicating that the introduction of such collection services should be a priority if the intention was to reduce biodegradable waste being landfilled and if the intention was to pursue the hierarchy. However, although door to door separate collections for biowaste were introduced in Zagreb in 1995, these are understood to be introduced only in few areas of the country. At the workshop, Croatia indicated an intention to follow the Austrian model

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<sup>36</sup> Collection frequencies for residual waste vary strongly, from weekly (continental part) to daily (Dalmatia in summer). In Zagreb residual waste is collected three times a week. Biowaste is usually collected weekly and paper (where door-to-door systems are applied) fortnightly.

<sup>37</sup> <http://www.cakom.hr/images/stories/dokumenti/cjenik-komunalnih-usluga.pdf>

<sup>38</sup> <http://www.zgos.hr/default.aspx?id=21>

<sup>39</sup> <http://www.cistocaka.hr/index.php/cjenik.html>

<sup>40</sup> <http://www.cistoca-split.hr/Usluge/Cjenikusluga/tabid/69/Default.aspx>

in respect of waste management, but there is no evidence of separate collection of biowaste being actively pursued, as it has been in Austria, at the time of writing.

Table 1.8 lists the capacity of compost plants presently available: altogether, this amounts to about 65 000 tonnes annually. The same source mentions also eight biogas plants, three of them licenced, with a capacity of 45 000 t/yr. It is assumed that the stated capacity refers to the licenced plants.

**Table 1.8: Compost plants in Croatia and available capacity in 2015<sup>41</sup>**

Municipality	Location	Capacity (t/a)
Prelog		5 005
Čakovec		10 000
Koprivnica		3 570
Imbriovec		6 990
Krk		6 000
Perušić		500
Kloštar Ivanić		2 000
Zagreb	Jakuševac	10 000
	Markuševac	10 000
	Jankomir	10 000
<b>Total</b>		<b>About 65 000</b>

Compost quality out of these facilities is good according to local sources, and meets the demand of the market.

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

### Legal/Economic instruments

A system of Extended Producer Responsibility is in place and applies (apart from packaging and packaging waste) to End of Life Vehicles, WEEE, waste oils, waste tyres, and waste batteries / accumulators. It is intended to extend the system to asbestos and C&D Waste. For packaging waste a collection rate of 68% is recorded for 2014 (133,100 t from 195,400 t put in the market). However, a yearly amount of 200,000 t of packaging waste generated seems to be far too low when looking at MSW composition, eg. a share of 23% each for paper/cardboard and for plastic from 1.7 million t municipal waste reported for 2013 (Table 1-1).

A deposit on non-refillable beverage packaging has been in place since 2006. From the consumer's perspective it applies for volumes > 0.2 l and amounts to 0.5 kuna (= ca. €0.07)

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<sup>41</sup> Source: AZO in the recent national Waste Management Plan 2015 – 2021, page 28

per item. Deposits can be reclaimed in larger stores, or via automatic reverse vending machines.

The return rate of bottles is given as 94%, with more than 70% of the returned bottles being PET.<sup>42</sup>

A non-compliance fee for landfill is discussed. This would apply not as an amount payable for each tonne of landfilled waste, but in the form of a levy applied when yearly amounts of waste allowed to be landfill are exceeded).

## 1.8 Investment in Waste Management Infrastructure

Comprehensive data on investments in waste management infrastructure - including related activities - is reported as expenditures managed by the Fund for Environmental Protection & Energy Efficiency. The data for 2015 and the two years before are presented in **Table 1.9**. The Fund covers the bulk of waste management related investments in this period. The key point is that the centrally managed Fund covers – together with support from the EU – the investment expenditures of the RWMCs, whilst the remaining investments (in collection equipment, recycling yards, remediation of landfills) are funded to the tune of 40 – 60% by the Fund depending on the financial status of the municipalities (and in some cases, municipalities may contribute 10% only).<sup>43</sup>

Together with the two RWMCs Mariščina and Kaštljun presently under implementation, and to be supported with € 35 million each,<sup>44</sup> the total investment in waste related activities and infrastructure in Croatia from 2013 to date can be estimated at around € 130 million, or €10 per inhabitant and year.

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<sup>42</sup> Same source as given in footnote **Error! Bookmark not defined.**

<sup>43</sup> Appraisal provided by Danko Fundurulja, IPZ Uniprojekt Terra d.o.o., Zagreb

<sup>44</sup> Consultant's estimate

**Table 1.9: Recent expenditures referring to Waste Management disbursed by the Fond for Environmental Protection & Energy Efficiency<sup>45</sup>**

Component	Expenditures (Mio. €)			2013 - 2015
	2013	2014	2015	
<b>“Soft support”</b> , 100 projects supporting awareness and R&D activities <sup>46</sup>				<b>0.8</b>
<b>Collection containers</b> including some minor equipment for composting	0.7	5.7	4.5	<b>10.9</b>
<b>Collection vehicles, landfill operation equipment, mobile recycling yards</b>	2.2	8.7	8.0	<b>18.8</b>
<b>Recycling yards</b> , 87 units approved, the majority under implementation				<b>1.1</b>
<b>Remediation and closure of 300 out of 301 landfills</b> , (no agreement with Zagreb)	-	6.9	4.4	<b>11.3</b>
<b>Total</b>				<b>About 43.0</b>

The capital – Zagreb counts slightly less than 20 % of Croatia’s population – seems to benefit less than the remaining country from investments disbursed by the Fond (refer to last column of Table 1.8) which might be explained by the fact that relevant investments have been initiated before 2013.

Until now, *waste treatment* has been heavily reliant on waste disposal. Treatment other than landfill for residual waste is currently in place in the form of a single MBT facility with undefined treated amounts.<sup>47</sup> Two other facilities – which form part of Regional Waste Treatment Centres – will be available in the course of 2016. Others are in the planning

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<sup>45</sup> Source: Presentation “Investments in waste management system in Republic of Croatia” held by Mr Saša Pupovac (Environmental Protection and Energy Efficiency Fund) on a workshop performed within the present project October 2015 in Zagreb.

<sup>46</sup> Not limited to waste management but environmental protection in general

<sup>47</sup> Varaždin MBT, in operation since 2012, a private investment in difference to the country’s remaining MSW treatment structure organized in public RWMCs Regional Waste Treatment Centres was implemented after about 100 000 tonnes of municipal waste originating from the Varaždin catchment area had been stored in bales in the facility’s vicinity since 2005. For a more detailed description of this case and facility which seems not to be reflected in official documents (as the former and recent Waste Management Plan) refer to [http://www.ig-iut.at/download/iut\\_view\\_2013.pdf](http://www.ig-iut.at/download/iut_view_2013.pdf).



phase: an overview of the proposed capacity of treatment for different regions is provided in Table 1.10.

What is striking, when looking at both proposed and realized technologies, is the frequent combination of *bioreactor landfills* with *MBT facilities*: in four of the 10 cases of MBT plants, the specific proposal is for a *biodrying technology* linked to bioreactor landfills: this is a strange combination, not least since the use of bioreactor landfills would suggest the waste is not stable when placed in the landfill, implying that little would have been done to move towards landfill Directive targets.

What also was perceived during the visit of the two MBT facilities under construction (Mariščina/Primogorje and Kaštijun/Istria<sup>48</sup>, both furnished with biodrying technology) are the difficulties to be expected in respect of the marketing of SRF<sup>49</sup> as the plant's main output. It is understood that the local cement industry (a key target for the marketing of the produced SRF) maintains legal approvals for only small amounts (around 5 000 tonnes annually) for a waste stream in question which can be expected to be, for each of the two sites, in the range of rather 50 000 t/yr.

Both facilities show generous, spacious layouts and contain equipment perceived as the "high end" of Mechanical-Biological Treatment Technology, suggesting that a considerable amount of over-engineering may have occurred.

57 of the 147 operational *landfills* can be classified as engineered landfills. Considerable public attention is paid to "hot spots" (dumpsites, either in operation, or under remediation).

There was considerable concern raised at the workshop regarding the capacity for residual waste treatment being planned at the regional waste management centres. Furthermore, the total treatment capacity of about 1 300 000 tonnes/year is extremely high given the current level of MSW generation (of 1.7 million tonnes). Even allowing for waste growth as projected in the revised plan (the basis of the projections or which are not entirely clear), this level of treatment will make it extremely difficult for the levels of recycling now being proposed in the revised legislative proposal in the circular economy package to be met. It should be considered that the existing Waste Framework Directive, whilst it sets recycling targets which Croatia might meet (under method 2), also requires Member States to implement the waste hierarchy as a priority order in policy and law.

The authorities indicated that the capacities had been carefully planned so as to allow for recycling targets to be achieved, but it is understood that the target being planned for is essentially that of meeting 50% recycling, as measured using Method 2. This would effectively lead to a recycling rate of the order 30% (or less) of all municipal solid waste (MSW). Given that the Commission has ambitions to increase recycling targets to 65% of all MSW, the capacity planning that has taken place would appear to have the potential to limit the scope for recycling in the coming years, so raising questions as to whether new recycling targets could be met, as well as regarding the value for money of the planned investments.

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<sup>48</sup> Extensive information available at <http://mariscina.eu/mariscina.php> and <http://www.kastijun.hr/>.

<sup>49</sup> Solid Recovered Fuel

In addition, as was previously indicated, Croatia's infrastructure system has been designed very much using a top-down approach, as is reflected in the new plan. It is not clear, however, that this is the correct approach for ensuring there is appropriate infrastructure to allow prevention, preparation for reuse, and recycling activities to flourish (i.e. separate collection) at the local level.

**Table 1.10: Overview on the status of Croatia's MSW treatment infrastructure<sup>50</sup>**

Name(s) of county(ies) the catchment area is composed of, with name of district where RWMC is located set in italics.	Number of population	Capacity (t/yr)	Data on RWMC (Regional Waste Management Centres)			
			Location	Main elements (defined in feasibility studies))	Status	Full operation to expected in
<b>1 Zagrebačka županija (ž.)</b>	317 606	?	To be defined in feasibility studies		Pending	?
<b>2 Sisačko-moslavačka ž.</b>	132 892	?	To be defined in feasibility studies		Pending	?
<b>3 part of Sisačko-moslavačka ž.</b>	p.o. <sup>51</sup> 172 439	60 000	Babina Gora	MBT (biodrying plus bioreactor landfill)	Under tendering	Dec. 2018
<b>4 Karlovačka ž.</b>	128 899					
<b>9 Ličko-senjska ž.</b>	50 927					
<b>2 Krapinsko-zagorska ž.</b>	132 892	150 000	Piškornica	MBT (biodrying plus bioreactor landfill)	Under tendering	Dec. 2018
<b>5 Varaždinska ž.</b>	175 951					
<b>6 Koprivničko-križevačka ž.</b>	115 584					
<b>20 Međimurska ž.</b>	113 804					
<b>7 Bjelovarsko-bilogorska ž.</b>	119 764	40 000	Doline	MBT	Pending	Dec. 2019
<b>10 Virovitičko-podravska ž.</b>	84 836					
<b>8 Primorsko-goranska ž.</b>	296 195	100 000	Mariščina	MBT (biodrying plus bioreactor landfill)	Operating – test phase	Jan. 2016
<b>9 part of Ličko-senjska ž.</b>	p.o. 50 927					

<sup>50</sup> All data according to various local sources (Mr. Fundurulja from IPZ Uniprojekt Terra d.o.o. as the most valuable one) and/or the Consultant's best guess.

<sup>51</sup> p.o.: part of.

Name(s) of county(ies) the catchment area is composed of, with name of district where RWMC is located set in italics.	Number of population	Capacity (t/yr)	Data on RWMC (Regional Waste Management Centres)			
			Location	Main elements (defined in feasibility studies))	Status	Full operation to expected in
<b>3</b> part of <b>Sisačko-moslavačka ž.</b> <b>12 Brodsko-posavska ž.</b> <b>11 Požeško-slavonska ž.</b>	p.o. 172 439 158 575 78 034	40 000	Šagolje	MBT	Pending	Dec. 2019
<b>9</b> part of <b>Ličko-senjska ž.</b> <b>13 Zadarska ž.</b>	p.o. 50 927 170 017	100 000	Biljane Donje	MBT - composting	Under tendering	Dec. 2018
<b>10 Virovitičko-podravska ž.</b> <b>11</b> part of <b>Požeško-slavonska ž.</b> <b>12 Brodsko-posavska ž.</b> <b>14 Osječko-baranjska ž.</b> <b>16 Vukovarsko-srijemska ž.</b>	84 836 p.o. 78 034 158 575 305 032 179 521	90 000 80 000	Orlovnjak (MBT, thermal treatment in županje N° 16)	MBT Thermal treatment (grate combustion)	Pending	Dec. 2019
<b>15 Šibensko-kninska ž.</b>	109 375	50 000	Bikarac	Sorting & composting	Under tendering	June 2018
<b>17 Splitsko-dalmatinska ž.</b>	454 798	110 000	Lečavica	MBT - composting Thermal treatment	Design & tendering	Dec. 2018
<b>18 Istarska ž.</b>	208 055	90 000	Kaštijun	MBT (biodrying plus bioreactor landfill)	Under construction	May 2016
<b>19 Dubrovačko-neretvanska ž.</b>	122 568	60 000	Lučino Razdolje	MBT	Design & tendering	Dec. 2018
<b>21 City of Zagreb</b>	790 017	300 000	Zagreb	Thermal treatment (grate combustion)	In discussion (since the 1990s)	Unlikely within present decade

Figure 1.6: Regions, counties, and MW treatment infrastructure available 2016



## 2.0 Summary

Croatia has joined the European Union relatively recently, and compliance with the legislation has therefore required significant changes to the country's waste management systems and legislation in recent years.

In comparison with other south eastern European countries, separate waste collection enjoys a reasonably extensive tradition. Some areas such as Čakovec are performing well in respect of separate collection, whilst in Zagreb, the separate collection schemes in some parts of the city have been in operation since 1995. Progress also been made in respect of

ensuring coverage of waste collection services, and in tackling non-compliant landfills. The country also has in place a deposit refund scheme for non-refillable beverage packaging which has been operating since 2006.

Despite recent progress, there are a number of potential issues with the approach being taken in the country, which will need to be addressed to ensure future compliance with the targets in the directives.

- The basis for implementing the waste hierarchy is neither well defined in the current legislation or the recently issued waste management plan. There appears to be no mechanism for implementing the hierarchy as a priority order for waste management in line with Article 4;
- The waste prevention programme that has been developed lacks ambition even to the extent that the Waste Management Act indicated it might be;
- Although some areas are performing relatively well with regard to recycling, many are not, such that the waste framework directive recycling targets are also at risk of being missed. Related to this, recycling targets have not been devolved to the municipalities.
- Despite food waste forming a significant proportion of the waste stream, there is no firm commitment in the legislation or in the recently issued plan to introduce source segregated biowaste collection schemes.
- There are inconsistencies in the data on recycling reported through the producer responsibility schemes: in particular the amount of packaging reported as being placed on the market appears extremely low in comparison to the amount of municipal waste and its composition. This implies that Croatia's actual performance in respect of packaging recycling is likely to be considerably lower than that indicated in the data returns currently being submitted to Eurostat.
- Much of the investment to date in waste management in Croatia has been focused on the lower tiers of the waste hierarchy.
  - In 2016, two EU supported projects (MBT facilities at Zagreb and Zadar) will become operational. Despite this significant investment, however, the related targets set out in the Landfill Directive will not be met even in the medium term. In addition, these investments seem to have been specified in ways which appear, at first sight, to be unusual from a technical perspective. Overcapacity for residual waste treatment is also likely to be a future problem, given the higher targets included within the Circular Economy package, and the proposed MBT capacity.
  - Waste infrastructure is financed from centrally from the Environmental Protection and Energy Efficiency Fund. The process of obtaining this funding appears to be relatively bureaucratic and inflexible, as it is run through a tendering system. Despite this finance coming via the fees of producer responsibility schemes, funding does not seem to be available for other activities higher up the hierarchy such as the operation of separate collection services.
- The newly issued plan lacks detailed policy statements that could be expected to assist Croatia in making the required progress to meet the above targets.
- More importantly, future progress in moving waste management up the hierarchy may be compromised by the development of what appears to be an excessive

amount of residual waste treatment capacity. Although there is some flexibility in terms of the technical configuration, it should be of some concern that the capacity being developed would, if fully utilised, make it difficult to meet recycling targets in excess of 30% or so. Given the legislative proposal in the revised circular economy package, both the rationale for, and the likely value for money of, the waste treatment infrastructure being planned deserve to be scrutinised urgently;

- There are no incentives in place – such as landfill taxes, or sanctions applied to local authorities attached to targets – which would provide an economic incentive to drive performance at a local level towards the activities at the upper tiers of the hierarchy. The new plan gives little confidence that such measures will be introduced in the near future.

## 3.0 Information Sources

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Information for compiling this report has been generally referenced by footnotes. The most relevant sources are listed below.

Croatian Act on Sustainable Waste Management<sup>52</sup>

[http://mzoip.hr/doc/act\\_on\\_sustainable\\_waste\\_management.pdf](http://mzoip.hr/doc/act_on_sustainable_waste_management.pdf)

Waste Management Strategy of the Republic of Croatia (2005)<sup>53</sup>

[http://mzoip.hr/doc/waste\\_management\\_strategy\\_og\\_130-205.pdf](http://mzoip.hr/doc/waste_management_strategy_og_130-205.pdf)

Waste Management Plan for the Republic of Croatia for the period from 2007 to 2015<sup>54</sup>

[http://mzoip.hr/doc/waste\\_management\\_plan\\_og\\_85-207.pdf](http://mzoip.hr/doc/waste_management_plan_og_85-207.pdf)

Waste Management Plan for the Republic of Croatia for the period from 2015 to 2021 (available in Croatian language only):

[http://www.mzoip.hr/doc/nacrt\\_plana\\_gospodarenja\\_otpadom\\_republike\\_hrvatske\\_za\\_razdoblje\\_2015-2021.pdf](http://www.mzoip.hr/doc/nacrt_plana_gospodarenja_otpadom_republike_hrvatske_za_razdoblje_2015-2021.pdf)

AZO, the National EPA (03/2015): Report on Municipal Waste 2013 (available in Croatian language only): <http://www.azo.hr/IzvjesceOKomunalnomOtpaduZa2013>

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<sup>52</sup> Original version (in Croatian language):

Zakon o održivom gospodarenju otpadom [http://narodne-novine.nn.hr/clanci/sluzbeni/2013\\_07\\_94\\_2123.html](http://narodne-novine.nn.hr/clanci/sluzbeni/2013_07_94_2123.html)

<sup>53</sup> Original version: Strategija gospodarenja otpadom Republike Hrvatske Narodne novine [130/05](#)

<sup>54</sup> Original version: Plan gospodarenja otpadom u Republici Hrvatskoj za razdoblje 2007. – 2015. godine Narodne novine [85/07](#), [126/10](#), [31/11](#), [46/15](#)



# 1.0 Summary of Recommendations

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Recommendations for Croatia can be summarised as follows:

1. Further updates to the National Waste Management Plan, including
  - a. A clearer specification of what is required in respect of separate collection at the local level
  - b. A clear strategy for the management of municipal waste in the future, taking into account future higher targets
  - c. A consideration of approaches to collecting food waste
  - d. The introduction of a plan to extend the roll out of door to door collection systems
2. Ensure a clear devolution of responsibilities down to the local level, including the establishment of a framework for monitoring performance Reform of funding mechanisms, including consideration of the introduction of a residual waste tax as a replacement to the current EPEEF
3. Activities to support waste prevention and re-use
4. Roll out of PAYT systems
5. Programme to support municipalities and educate householders
6. Improvements in data quality and transparency

## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Ambiguity in waste legislation and national planning documents and lack of measures to move waste up the hierarchy	The basis for implementing the waste hierarchy is not well defined in legislation such as the Waste Management Act 2013, whilst the most recent national waste plan (issued in 2015) lacks specificity in respect of the detail behind the measures that are outlined in the document. This is likely to make it more difficult for Croatia to make progress in moving waste up the hierarchy.	<p>As described in the factsheet, the wording of some Articles in the Waste Management Act lacks specificity, whilst others appear to foresee legislation that has not as yet been put into place or fully implemented.</p> <p>The recent national plan appears to have been issued in some haste, linked to recent political changes.</p>
2	To date funding on waste management has not been focused at the right levels of the waste hierarchy	Although Croatia has invested in improvements to its waste management services, to date, most of the investment has been focussed on residual waste treatment. At the lower levels of the hierarchy, and at the local level, however, there is insufficient funding available to develop and operate source segregated collection services.	<p>As indicated in issue 1, the basis for implementing the hierarchy is not well defined in the current legislation and the recently issued updated plan.</p> <p>There is also heavy reliance on the Environmental Protection and Energy Efficiency Fund, which appears to be relatively bureaucratic and inflexible in its operation. This supports recycling through financial disbursements, but does not provide a clear incentive to prevent and recycle waste, and it is not clear to what extent the operation of separate collection services may be funded through this system.</p>

Number	Potential issue	Description	Reasons for the issue
3	Low levels of dry recycling across the country as a whole	Recycling performance varies considerably at a local level. Some areas such as Čakovec are performing very well, in this case driven in part by a relatively high landfill gate fee. However, this is not reflective of typical performance. Although door to door collection is used in the better performing areas including Zagreb, in many places the collection system is dependent upon bring services, which do not perform as well as the door to door systems.	Lack of clarity in national legislation (issue 1). Low incentives for separate collection and recycling. No targets are set for municipalities, and there is no landfill tax or residual waste tax in place. As indicated in issue 2, it is not clear to what extent the Fund allocates finance for the operation of separate collection systems.
4	Almost non-existent separate collection of food waste and other organic waste	Croatia has identified food waste as a significant component of the waste stream, and also needs to decrease the quantities of waste disposed in landfills in order to comply with the Landfill Directive Target for landfilling of biodegradable municipal waste. Further composting or anaerobic digestion would be aligned with the waste hierarchy, but this is likely to require separate collection in order to obtain quality outputs for which there is a demand. At present very little biodegradable municipal waste is collected separately.	The introduction of these systems will ensure waste moves up the hierarchy. A quality and convenient system for collecting biowaste separately is a pre-requisite for PAYT with the possibility for the individual to influence the waste fee. However, there is no firm commitment in the legislation or in the plan to introduce such collection systems.  There also appears to be a lack of market for compost. This could hinder a large-scale implementation of source separation of organic waste.
5	The data quality	There are inconsistencies in the data on recycling reported through the producer responsibility schemes: in particular the amount of packaging placed on the market appears very low in comparison to the amount of, and composition of, municipal waste as set out in the Plan. This implies that Croatia's actual performance in respect of recycling is likely to be lower than that indicated in the data returns currently being submitted.	This is likely to relate to issues in respect of the implementation of the producer responsibility scheme, and notably, the checks around the systems through which data is reported to the authorities.
6	Likely overcapacity in respect of residual waste treatment infrastructure	Croatia is planning to develop a network of regional waste management centres to meet a 50% recycling target using Method 2, which effectively leads to a national recycling rate of 30% or so. This may make it more difficult for the future higher recycling targets proposed by the Commission to be met.	Funding has not been focused at the right levels of the hierarchy (see issue2).

Number	Potential issue	Description	Reasons for the issue
7	Weak legislation on waste prevention	There is currently no stand-alone waste prevention plan in Croatia; prevention is dealt with as a part of the national Waste Management Plan. The recently issued plan does not appear to address the requirements of the 2013 Act on sustainable waste management in key elements such as there being a need for targets.	As with issue 1, the recent national plan appears to have been issued in some haste, linked to recent political changes.

## 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>1) Further updates to the National Waste Management Plan</b>					
Building on other work being undertaken by the Ministry elsewhere, the plan should include a clearer specification of what is required in respect of separate collection at the local level. The scope of materials covered should also be considered, and food waste (see below) given the prominence it deserves.	Administrative / legal	MZIOP	Low cost	N/A	Tackles issue 1, and also puts in place the framework for tackling other issues.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<p>The plan should include a clear strategy for the management of municipal waste in future that is sufficiently flexible to allow future higher recycling targets (65% in 2030 as a % of all MSW) to be met. In doing so, the Plan needs to indicate how:</p> <ol style="list-style-type: none"> <li>1) Waste generation is expected to change over time;</li> <li>2) How the management of waste which is generated is expected to change over time;</li> <li>3) How this is translated into: <ol style="list-style-type: none"> <li>a. Compliance with Landfill Directive targets; and</li> <li>b. Recycling rates as measured under Method 2 and as a percentage of all MSW.</li> </ol> </li> </ol> <p>Point 2 should take into account the infrastructure to treat source segregated biowaste (as required). The basis for the waste generation projections in the Draft Plan should also be clearly spelt out.</p>	Administrative / legal	MZIOP	Relatively low cost (significant investment already made in infrastructure)	EU funding available for the capital elements if required	Ensure there is sufficient infrastructure available to treat the additional biowaste that will result from the separate collection. Ensure compliance with Malagrotta ruling (if required). Ensure there is not overcapacity of residual treatment, which would tend to act against future increases in recycling.
<p>The Plan should consider approaches to collecting food waste in particular, and consider how to optimise collection systems in such a way as to capture food waste of high quality (purity). Furthermore, appropriate systems of standards and quality assurance for compost / digestion residuals might require development if these are not already being developed. It might also be worth considering approaches to market development to increase demand for compost, as has been undertaken in Flanders (by Vlaco) and in the UK (by WRAP).</p> <p>Put in place a plan to extend the roll out of door to door collection systems so that this covers at a minimum all households in the densely populated areas.</p>	Administrative	MZIOP / municipalities	Potential high cost	EU funding available for at least the capital elements	<p>Recycling rates will improve without the necessity to rely on MBT to meet the Directive targets. This will also result in better quality recyclate and compost / digestate.</p> <p>Although collection costs may increase, treatment costs will be reduced. The introduction of such schemes will help ensure the good performance of PAYT schemes.</p>

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
Ensure that every target in the NWMP is linked to a clear strategy of indicating who is responsible for monitoring and implementation at the local level.	Administrative	MZIOP	Low cost to government	n/a	Greater accountability, increasing the likelihood of action taken at the local level.
<b>2) Ensure clear devolution of responsibilities down to the local level</b>					
Establish a framework for monitoring performance and consider introducing sanctions for not meeting targets devolved down to the local level. This is likely to be particularly important if the total cost of landfilling remains low to incentivise change (see recommendation 4).	Legal/ Administrative	MZIOP	Low cost to government	n/a	Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market.
<b>3) Reform of Funding mechanisms</b>					
Undertake a review of the producer responsibility scheme considering the system costs and its fees to confirm the extent to which costs of recycling are covered by the fees from producers. Ideally the fees should be sufficient to cover the full cost of managing the un-recycled packaging. The fees set should be linked to the recyclability of the material; this requires a dialogue between the packaging industry and those running the scheme.	Legal / administrative	MZIOP	Low cost to government. Fees for producers may increase.	n/a	Greater incentives for packaging waste prevention. Increase in recycling of packaging through improvements in scheme funding and associated infrastructure.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<p>Consider the introduction of a residual waste tax as a replacement to the current EPEEF. Lower levels of tax should be set for the stabilised output from MBT systems. The tax should also apply to waste sent for incineration (including that sent for export). Levels should be dictated in advance and should be set at a sufficient level to incentivise an increase in recycling – such as in the case of Greece. Alternatively, Croatia could consider the introduction of a well-designed version of the type of measure considered under Article 29 of the Waste Management Act 2013 (an incentive charge for reducing the amount of mixed MSW).</p>	Fiscal	MZIOIP	<p>Low cost to government. Fees for waste producers may increase.</p>		<p>Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market as is the case in Čakovec.</p>
<b>4) Actions to increase re-use and waste prevention activity</b>					
<p>Government should consider integrating re-use activities into the existing EPR scheme. Other activities that should be reflected in the forthcoming waste prevention plan include actions tackling plastic bottles and food waste. Croatia could also consider developing re-use centres – such as those introduced in Slovenia, supported by developing a system of re-use credits helping to finance the activities of the third sector.</p>	Administrative / fiscal	MZOIP	Moderate cost to government	Funding available for capital items	<p>Will assist in the achievement of future targets, as well as contribution to landfill directive and waste framework directive targets.</p>
<b>5) Roll out of PAYT systems</b>					

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
This should commence once well managed collection systems – using door to door services rather than bring based systems - are in place. It should build on the existing PAYT system for residual waste already in operation in parts of the country, but be extended to cover recyclables and organic waste collection.	Fiscal	MZIOP / municipalities	Dependent on the system to be implemented.	May be able to use structural Funds	To be considered but not introduced until waste collection and management systems further developed, so as to avoid fly tipping and associated issues.
<b>6) Programme to support municipalities and educate householders</b>					
Develop a programme aimed at raising the level of awareness of householders and businesses in respect of the need for recycling and waste reduction. This could be based on examples of campaigns undertaken in other countries with good recycling performance. The programme should be launched alongside the changes to collection systems.	Informative	MZIOP / CEA-AZO	Medium cost	Potentially, such as that from the ENPI CBCMED Programme.	Alongside improvements in recycling collection system, will improve recycling rates.
<b>7) Improve data quality and transparency</b>					
Undertake a review of calculation methods, including the definitions used when undertaking the calculations. Associated documentation should ensure transparency of calculation methods, and that there is read across between the different systems subject to the differing reporting requirements. The reasons for the low reported figure for the quantity of packaging waste generated needs to be investigated, and more realistic figures developed for the amount of packaging waste placed on the market. The calculations regarding the recycling rate for packaging waste also need to be reviewed.	Administrative, informative	MZIOP / CEA-AZO	Low	n/a	Addresses issue 5.



### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
<b>Updates to the NWMP</b>		Announcement	In place			
<b>Devolve responsibilities to the local level</b>		Announcement	In place			
<b>Review of producer responsibility scheme</b>		Announcement			In place	
<b>Residual waste tax</b>		Announcement			In place	
<b>Review data</b>		Complete				
<b>Support programme</b>		Announcement		In place		
<b>Actions to increase re-use / prevention</b>		Announcement			In place	
<b>Roll out of PAYT systems</b>			Announcement			In place

## 1.0 Factsheet – Cyprus

This factsheet analyses the situation regarding waste management policies and practices in Cyprus, the focus being on municipal solid waste (MSW). The basic aim of the factsheet is to identify potential deficiencies in waste management practice implemented in the Country that could lead to non-compliance with EU waste legislation, in particular the waste hierarchy and the EU waste management targets.

The following table presents some basic data and information related to current waste generation and management in Cyprus, which the following analysis was based on.

**Table 1-1: Basic waste management data for Cyprus<sup>1</sup>**

Parameter	Value
<b>Population</b>	
Total (inhabitants)	868.940
<b>Waste generation</b>	
Total (tn)	541.520
Total (kg/cap/y)	623,20
<b>Waste composition (%)</b>	
Organics	41,47
Paper	25,70
Plastic	14,77
Metal	3,25
Glass	2,66
Wood	2,08
Other	10,07
<b>Waste management</b>	
Waste treated (% of MSW in 2013)	9%
Waste recycled (% of MSW in 2013)	12%
Waste landfilled (% in 2013)	79%
<b>Existing waste management infrastructure</b>	

<sup>1</sup> Data referring to 2014 unless otherwise stated

Parameter	Value
MBT plant in Larnaca	Waste input: 110.000 tn/y (capacity 160.000 tn/y)
2 composting plants	Total Capacity: ~28.000 tn/y
10 anaerobic digestion plants (2 of them may accept municipal organic waste)	Total Capacity: ~70.000 tn/y (corresponding to the 2 units currently accepting municipal organic waste)
20 sorting facilities	Total Capacity: ~130.000 tn/y
Transfer station in Pafos	Capacity: 5.400 tn/y
Transfer station in Larnaca	Capacity: 10.000 tn/y
Sanitary landfill in Pafos	Capacity: ~25.000 tn/y
Sanitary landfill Larnaca	Capacity: ~50.000 tn/y
2 non compliant landfills in Nicosia and Limassol	-

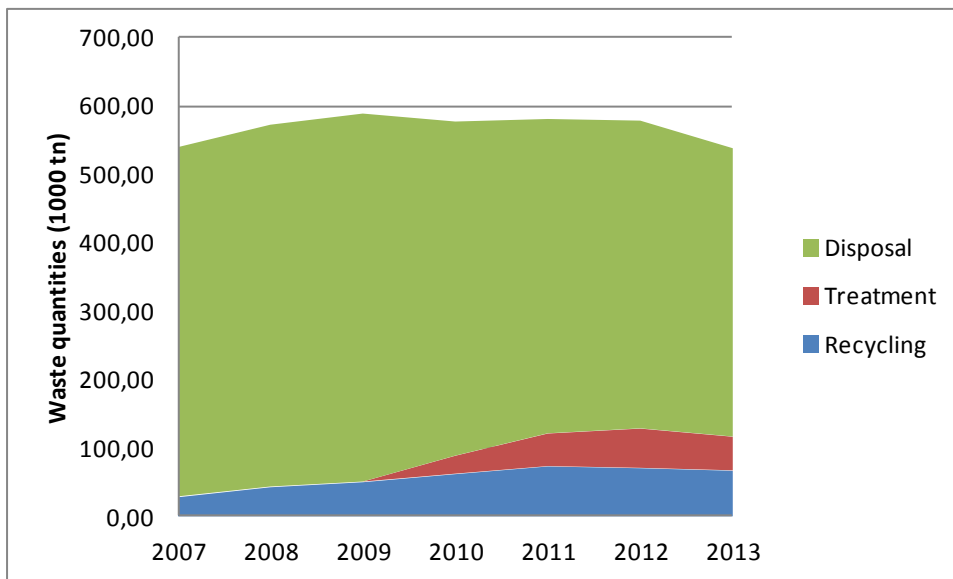
According to the table above it can be derived that waste generation in Cyprus is rather high (623 kg/cap/y) compared to areas with similar GDP, such as Spain, Greece, Portugal or Malta (which is around 500 kg/cap/y). This can be attributed mainly to the very touristic nature of the country. It is noted that Cyprus has the special characteristic that each year the number of tourists arriving in the country are more than 3 times higher than the permanent population (more than 2,5 million tourists arrive on annual basis). Moreover it is noted that the figure of 623 kg/cap/y includes the total municipal waste generation, including:

- Mixed and separately collected municipal waste,
- Similar waste from commerce industry and institutions
- Waste from parks and gardens
- Other municipal waste

Waste management relies heavily on waste disposal and this is not in line with the EC and national legislation and targets. There is only one waste management (MBT) facility in operations, while a second one is in the process of Construction. Currently only in 2 districts exist sanitary waste disposal facilities, while in Nicosia and Limassol waste is disposed in non compliant landfills.

The following graph presents the evolution of waste management in practices over time.

**Figure 1.1: Evolution of waste management in Cyprus**



(Source: Eurostat (2014) [http://www.mof.gov.cy/mof/cystat/statistics.nsf/index\\_gr/index\\_gr?OpenDocument](http://www.mof.gov.cy/mof/cystat/statistics.nsf/index_gr/index_gr?OpenDocument))

The graph illustrates that even though since 2009 there has been increase in the rate of recycling and treatment, this increase is insufficient as the rate of disposal remains at very high level, around 80%.

## 1.1 Roles and Responsibilities of Key Actors

The main legislation that sets the framework for waste management in Cyprus is the waste law N.185(I)/2011 and its subsequent amendments.<sup>2</sup> According to this legislation, the main competent Authority for waste management is the Ministry of Agriculture, Rural Development and Environment (MARDE). However, in relation to specific waste streams, including mixed municipal waste, specific roles and responsibilities are attributed to the Ministry of Interior (MoI), especially in relation to the recycling, treatment and disposal activities of these waste types.

The development of waste management policy is the responsibility of the MARDE and this policy is adopted by the cabinet. The waste Law establishes the Advisory Committee for Waste Management (ACWM), which consists of representatives from:

- MARDE (chair)
- MoI
- Ministry of Labour, Welfare and Social Insurance (MLWSI)
- Ministry of Energy, Commerce, Industry and Tourism (MECIT)
- Ministry of Transport, Communications and Works (MTCW)
- Ministry of Health (MoH)
- Union of Municipalities (UoM)

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<sup>2</sup> Waste legislation for Cyprus can be found at <http://www.moa.gov.cy/moa/environment/environment.nsf/All/21274605411443E5C22578D300382CEA?OpenDocument>

- Union of Communities (UoC)
- Federation of Environmental Organizations (FEO)
- Scientific Technical Chamber (STC)

Amongst its responsibilities, this committee provides advisory services to the competent authority for the development of waste policy and legislation, the approval of waste management systems and the issuance of permits.

The new plan especially for municipal waste management covering the period 2015-2021 (expected to be adopted in 2015<sup>3</sup>) sets clearer responsibilities for the local authorities (municipalities and communities, or complexes of municipalities / communities), which, until now, were generally responsible for waste collection within their territories, but had no specific requirements or targets to be met.

With respect to the responsibilities of the main stakeholders, these are summarized in the following table, as they derive from both the existing and forthcoming waste legislation.

**Table 1-2: Basic responsibilities of main stakeholders for waste management in Cyprus**

Stakeholder	Basic responsibilities
<b>MARDE</b>	<ul style="list-style-type: none"> <li>• Development of waste management policy and legislation</li> <li>• Permitting of waste management activities (excluding mixed municipal waste and other waste streams)</li> <li>• Control, and monitoring, of waste management activities (excluding mixed municipal waste and other waste streams)</li> <li>• Monitoring of the fulfilment of waste management targets</li> <li>• Reporting to international organizations (EUROSTAT, EC, etc)</li> </ul>
<b>Mol</b>	<ul style="list-style-type: none"> <li>• Permitting of waste management activities for mixed municipal waste (and other waste streams)</li> <li>• Control, and monitoring, of waste management activities for mixed municipal waste (and other waste streams)</li> <li>• Construction of municipal waste management infrastructure</li> </ul>

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<sup>3</sup> Can be found at [http://www.moa.gov.cy/moa/environment/environment.nsf/all/94A873EA43FADC92C2257D940041A604/\\$file/1SXEDIO%20DIAXEIRISHS.pdf?openelement](http://www.moa.gov.cy/moa/environment/environment.nsf/all/94A873EA43FADC92C2257D940041A604/$file/1SXEDIO%20DIAXEIRISHS.pdf?openelement)

Stakeholder	Basic responsibilities
<b>Local Authorities</b>	<ul style="list-style-type: none"> <li>● Promoting waste hierarchy as set in the existing national waste management plan and the new regulations for the municipal waste management plan (MWMP) – still under approval</li> <li>● Provision of municipal waste services (as it is set in the Municipalities Law and the Communities Law)</li> <li>● Development, implementation and operation of systems for separate collection of paper, metals, plastics and glass – Reaching of recovery / recycling targets (as set in the new regulations for the municipal waste management plan (MWMP) – still under approval)</li> <li>● Development, implementation and operation of systems separate collection organic waste (as set in the new regulations for the municipal waste management plan (MWMP) – still under approval)</li> <li>● The District Councils for the operation of waste disposal and utilization sites are responsible for the operation of municipal waste management facilities within their territory (district)</li> <li>● Reporting to MARDE (as set in the new regulations for the municipal waste management plan (MWMP) – still under approval)</li> </ul>
<b>Collective systems for packaging waste</b>	<ul style="list-style-type: none"> <li>● The collective system for packaging waste (Green Dot Cyprus) is responsible for managing packaging waste (development of separate collection schemes and recovery/recycling activities)</li> <li>● Reporting to MARDE</li> </ul>
<b>Private sector</b>	<ul style="list-style-type: none"> <li>● Provision of collection services for municipal waste following contracts with local authorities, especially in remote areas</li> <li>● Provision of collection services for packaging waste following contracts with Green Dot</li> <li>● Operation of waste management facilities following contracts with the Mol/District Councils</li> <li>● Provision of collection services to business producing waste (paper, plastic, metal, glass or other)</li> </ul>

It is noted that the co-competency between MARDE and Mol in relation to the management of mixed MSW may generate “grey areas” regarding the responsibilities of each organization in relation to the implementation and monitoring of the policy and the fulfilment of the targets. It is considered that this co-competency between the ministries generates

uncertainties and reluctance in the further development of the waste management market, as it was stated by the recyclers' representatives.

According to the discussions with the representatives of MARDE, currently, there is a shift of responsibilities from MoI to MARDE in order to establish a clearer framework on the roles that each stakeholder should play with respect to MSW management. In fact on 3rd November 2015 a piece of legislation was introduced into the Parliament, which transfers all competencies for waste management from the MoI to MADRE. This piece of legislation is expected to be adopted very soon.

## 1.2 Summary of Legislative Framework for Waste Management

Directive 2008/98/EC was transposed into national legislation with the waste law N. 185(I)/2011 and its subsequent amendments (laws 6(I)/2012, 32(I)/2014 and 55(I)/2014).

Currently, 2 new pieces of legislation are due to be officially adopted (in 2015), referring to the adoption of the municipal waste management plan, and waste prevention plan, which implement the provisions of the Waste Framework Directive (WFD).

The landfill directive was transposed into national law as Regulations and a Ministerial Decree, under the Solid and Hazardous Law. The Regulations carry the title "The Solid and Hazardous Law Regulations (Landfills) Regulations of 2003" (562/2003 and the amendments 618/2007 and 14/2014) whilst the decree is entitled "Setting of Criteria and procedures for the acceptance of waste at Landfills decree of 2007" (282/2007).

## 1.3 Status of Waste Management Plan(s)

The current national waste management plan is somewhat outdated and was officially adopted in 2004,<sup>4</sup> and the new plan and the respective regulation especially for municipal waste management are expected to be adopted in the 2015. The same applies for the waste prevention plan.<sup>5</sup>

The currently elaborated waste management plan is restricted to municipal waste, whilst separate waste plans for other waste streams (Waste tires, Waste oils and all the rest) are under development.

The Cypriot legislation foresees the development of a waste management plan, which it was decided to be developed at a national level while no plans are expected to be developed in lower tiers of administration (e.g. districts). However, as concluded during the discussions with the MARDE representatives, and as foreseen in the new regulations of MWMP, each municipality / community should develop a local waste management plan, in which each local authority will need to describe how it will contribute in achieving the objectives and targets included in the national plan. These local plans may be developed either at the

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<sup>4</sup> Can be found at <http://www.moa.gov.cy/moa/environment/environment.nsf/All/7CEEC67A28F7173CC2257A8B003121EE?OpenDocument>

<sup>5</sup> Can be found in <http://www.moa.gov.cy/moa/environment/environment.nsf/All/722D5D0744768878C2257D9400415658?OpenDocument>

municipal / communal level, or at the level of municipal and/or communal complexes. This process is expected to be completed in the first semester of 2016.

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plan(s)

This section describes the main elements of the national waste management plan that is currently in the process of being adopted (since the extant national waste management plan is outdated).

The plan refers explicitly to Municipal Solid Waste (MSW), namely:

- Mixed and separately collected municipal waste (European Waste Catalogue (EWC) Code – 20 01, 20 03 and 15 01);
- Similar waste from commerce industry and institutions (EWC Code 15 01 and 20);
- Waste from parks and gardens (EWC Code 20 02); and
- Other municipal waste (EWC Code 20 03).

In principle, the plan includes the main elements requested under article 28.3 of the WFD, as follows:

- Type, quantity and source of waste generated within the territory: information is included in the plan, both for the country total, and the distribution across the districts of Cyprus (Nicosia, Limassol, Paphos, Larnaca and Famagusta);
- Waste shipment: as the plan focuses on MSW, there is no waste shipped to and from the country;
- Projection of future waste generation: there are projections for total waste generation until 2030 (the model of European Topic Centre / Resource and Waste Management was used for the projections);
- Existing waste collection schemes: the plan describes the existing collection schemes for mixed municipal waste and packaging waste;
- Major disposal and recovery installations: the plan presents all existing recovery, treatment and disposal facilities;
- Special arrangements for waste oils, hazardous waste or waste streams addressed by specific Community legislation: the plan refers to MSW, so there are only some dispersed information on other waste streams such as WEEE, batteries and accumulators, hazardous waste, etc;
- Assessment of the need for new collection schemes: the plan introduces new concepts in relation to waste collection in line with WFD, including:
  - Separate collection of glass, paper, metals and plastics from MSW (currently, such systems are restricted to packaging waste, but this will be extended to cover non-packaging waste);
  - Separate collection of biodegradable waste;
  - Introduction of “green points” for collection of various waste streams (described in more detail in Section 1.6.2); and
  - Establishment of the responsibility of local authorities to develop the separate collection schemes;
- Closure of existing waste installations: it is indicated that non-compliant landfills in Pafos district have been rehabilitated, whilst the rehabilitation of the non-compliant



landfills in Larnaca and Famagusta districts are expected to be finalized by the end of the year. Currently there are 2 operating non-compliant landfills (in Nicosia and Limassol) which are expected to cease their operation as soon as the new central waste management facility in Limassol and the new landfill in Nicosia, commence operation. All other non-compliant landfills in the 2 districts have ceased their operation and will be rehabilitated, together with the 2 active ones;

- Additional waste installation infrastructure: the plan includes provisions for the development of one central waste management facility in Limassol (consisting of MBT and landfill) and a sanitary landfill in Nicosia;
- Economical instruments/schemes, financial aids (subsidies/"de minimis") that will prompt the private sector to get more actively involved (extra capacity/investment seems to be needed in plastic treatment, composting or other treatment of organic waste and energy recovery)
- Capacity of future disposal or major recovery installations: the plan includes information on the future capacities of the recovery, treatment and disposal installations;
- General waste management policies: the plan includes the policy priorities, technologies and methods for all elements of waste management. The priorities in relation to each waste management stage include:
  - Waste collection: separate collection of recyclables and biodegradable waste;
  - Waste collection: Development of green points;
  - Waste treatment: Recovery of recyclables and pre-treatment of waste prior to disposal;
  - Waste disposal: development of a network of sanitary landfills for waste and residues;
  - Waste disposal: cessation of operation and rehabilitation of all non-compliant landfills.

The intention of the Country is to move up the waste hierarchy promoting waste prevention and recycling instead of mixed waste treatment and disposal. Particular focus is put on the separate waste collection, in line with the provisions of the WFD, and LAs are becoming fully responsible in this respect. Several instruments will be implemented in order to serve this priority, including the establishment of landfill tax, the ban of disposal of certain waste streams, the extension of EPR, the promotion of PAYT systems, development of waste management fund etc. The plan also foresees the promotion of voluntary agreements and implementation of specific motives (awards, financing of activities, fees for certain products, etc) to further ensure the maximization of waste prevention and recycling.

The plan contains no specific reference to location criteria for site identification. In discussion with the authorities it was claimed that such criteria are covered by the legislation for Town Planning and urbanization. Moreover, all scheduled waste management facilities (the ones in Nicosia and Limassol) already have environmental permits and their location has been established. However, it is noted that the national waste management

plan that was developed (however, not adopted) in 2012<sup>6</sup> includes such criteria which could be easily incorporated in the new plan.

The plan introduces specific quantitative and qualitative targets for waste management, which are in line with, and in some cases, exceed, the requirements of the WFD and landfill directive. These targets include:

- Key objectives:
  - Environmental protection
  - Supply the economy with secondary raw materials and energy sources (circular economy)
  - Increase the contribution of waste management to sustainable material flow and resource management (resource efficiency)
  - Increase the degree of utilization of recyclables, as raw materials, locally in Cyprus (reduction of CO<sub>2</sub> emissions)
  - Training and capacity building
  - Strengthening of collection and recovery systems and improvement of waste disposal (green growth economy)
  - Encourage desirable treatment channels through economic incentives
  - Generation of a recycling society – increase in public participation in waste management
  - Promotion of the design and use of products in line with preservation of resources
  - Development of a reliable, operational and flexible data collection and processing system
- Quantitative targets
  - 50% of MSW to be collected separately by 2021, corresponding to approximately 295.000 tn of MSW
  - 50% of recyclables (paper, metals, plastic and glass) to be reused / recycled by 2020, corresponding to approximately 137.000 tn of recyclables;
  - 15% of MSW to be collected separately as organic material by 2021, corresponding to approximately 88.000 tn of organic material;
  - No more than 95.000 tonnes of biodegradable waste to be disposed in landfills by 2016;
  - No more than 20% of MSW to be disposed in landfills by 2021, corresponding to 472.000 tn of MSW diverted from disposal.

The most significant measures that will allow the implementation of the proposed policy and reaching of the respective targets include:

- Maximization of the capacity of the central waste management facility (consisting of one MBT facility and a sanitary landfill for the residues) in Larnaca up to 160.000 tonnes per annum(tpa) (from 110.000 tpa which is the current waste input);

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<sup>6</sup> Can be found at <http://www.moa.gov.cy/moa/environment/environment.nsf/All/D1CF07F7EB83735EC2257A9100270099?OpenDocument>

- Construction and operation of the central waste management facility in Limassol with capacity of 140.000 tpa;
- Construction and operation of a sanitary landfill in Nicosia;
- Finalization of the construction of green points in all districts;
- Finalization of the closure and rehabilitation of all non compliant landfills;
- Examination of the need to develop transfer stations;
- Adoption of legal provisions that will foresee:
  - Role and responsibilities of local authorities in separate waste collection and recovery/recycling (legal act to be adopted in 2015);
  - Setting up of separate collection systems (legal act to be adopted in 2015);
  - Banning of certain waste types (e.g. green waste) from entering into landfills (legal act to be adopted in 2016);
  - Establishment of landfill tax / levy (legal act to be adopted in 2015);
  - Establishment of extended producer responsibility (EPR) in streams other than packaging waste, such as non packaging paper and plastic (legal act to be adopted in 2017);
  - Creation of a waste management fund to promote waste hierarchy and the reaching of waste management targets (legal act to be adopted in 2017);
- Strengthening of inspections and monitoring
- Assessment of the possibility for the existing cement plant to receive waste fractions deriving from MSW (e.g. residual waste, secondary fuel - SRF, etc).
- Development and implementation of capacity building programs, for public servants handling waste management issues, for LAs personnel and for the producers of the biggest waste quantities
- Promotion of voluntary environmental agreements with public sector for implementation of waste prevention activities, separate collection activities, preparation for recycling, development of guideline for good practices, etc
- Promotion (within 2015) of Pay as you Throw (PAYT) systems
- Provide resources (know how, training, collection equipment etc) to the local authorities for the development of separate collection systems
- Elaboration of a study to assess the opportunities to utilize increased quantities of recycled material in Cyprus
- Develop donation programs for the private sector to enhance the current waste management and utilization infrastructure. These donation programs will refer to:
  - Support new or existing waste recovery units in order to be developed, upgraded or expanded
  - Support industries to incorporate secondary products (recovered recyclables) in their process line
  - Support industries in implementing waste prevention and separate collection within their process
- Elaboration of a national plan for biowaste management
- Development of pilot programs for home composting and separate collection of kitchen and garden waste
- Adoption and implementation of waste prevention programme
- Development and implementation of raising of public awareness programs
- Development of waste database

- Development of end-of-waste criteria
- Establishment of motives for sustainable waste management:
  - Prizes for waste management
  - Financial Aids
  - Environmental tax for selected products

### 1.4.2 Waste Prevention Plans

The waste prevention plan has been under elaboration and the respective piece of legislation is expected to be adopted in 2015.

The plan covers the period 2015 – 2021 and includes measures for prevention of the generation of the following waste streams:

- Organic waste;
- Paper / cardboard;
- Plastic (bags, toys, bottles);
- WEEE;
- Hazardous waste;
- Clothes / textiles;
- Bulky waste; and
- Construction and Demolition Waste.

The general objectives set by the plan include:

- Change in consumption patterns related to waste generation;
- Reduction of waste generation for specific streams;
- Promotion of reuse;
- Reduction of organic waste that is landfilled; and
- Reduction in the generation of hazardous waste.

Specific quantitative targets will be included in a future regulation (expected in 2016) issued by the MENRA.

The following table presents the main activities and measures already implemented and planned as they are described in the National Waste Prevention Plan (NWPP) for Cyprus (the focus is on MSW and especially biodegradable waste).

**Table 1-3: Waste prevention activities and measures**

Activity / measure	Target material
<b>EXISTING</b>	
Green procurement	<ul style="list-style-type: none"> <li>● Paper</li> <li>● Plastic</li> <li>● Packaging</li> </ul>
Centres for maintenance and repair	<ul style="list-style-type: none"> <li>● Products that may be repaired</li> </ul>
e-Procurement	<ul style="list-style-type: none"> <li>● Paper</li> </ul>

Activity / measure	Target material
Life project WASP <sup>7</sup> in Municipality of Paralimni	<ul style="list-style-type: none"> <li>● Organic waste</li> </ul>
PAYT Pilot System in Aglantzia Municipality	<ul style="list-style-type: none"> <li>● MSW</li> </ul>
Eco-labeling / Environmental management programs in Companies and organizations as well as products and services	<ul style="list-style-type: none"> <li>● MSW</li> </ul>
Programs for reuse and exchange of products	<ul style="list-style-type: none"> <li>● Food waste</li> <li>● Paper</li> <li>● Books</li> <li>● CDs</li> </ul>
Raising public awareness for waste prevention	<ul style="list-style-type: none"> <li>● MSW</li> </ul>
<b>PLANNED</b>	
<ul style="list-style-type: none"> <li>● Raising public awareness and training activities</li> <li>● Legislative initiatives: <ul style="list-style-type: none"> <li>○ Landfill tax</li> </ul> </li> <li>● Program for the reduction of food losses in households (guide for good practices, food recipes used food remaining, voluntary agreements)</li> <li>● Program for the reduction of food losses in agriculture (information campaigns for producers, guide for good practices)</li> <li>● Promotion of home and school composting</li> </ul>	<ul style="list-style-type: none"> <li>● Organic waste</li> </ul>
<ul style="list-style-type: none"> <li>● Raising on public awareness and training activities</li> <li>● Green procurement</li> <li>● Prizes</li> <li>● Submission in electronic form of applications, studies, etc</li> <li>● Environmental management systems (EMAS)</li> <li>● Legal establishment of Extended producer responsibility for paper</li> </ul>	<ul style="list-style-type: none"> <li>● Paper / cardboard</li> </ul>
<ul style="list-style-type: none"> <li>● Raising on public awareness and training activities</li> <li>● Reduction of the use of plastic bottles for water</li> <li>● Voluntary agreements for the use of reused bags, exchange or sale of goods</li> <li>● Development of repair and sale centres for toys</li> </ul>	<ul style="list-style-type: none"> <li>● plastic</li> </ul>

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<sup>7</sup> «Development and Demonstration of a Waste Prevention Support Tool for Local Authorities – WASP Tool» Information can be found at <http://wasptool.hua.gr/>

Activity / measure	Target material
<ul style="list-style-type: none"> <li>• Raising on public awareness and training activities</li> <li>• Reduction of the use of plastic bottles for water</li> <li>• Voluntary agreements for exchange or sale of goods</li> <li>• Development of repair and sale centres</li> </ul>	<ul style="list-style-type: none"> <li>• Clothes / textiles</li> </ul>

It is considered that the plan under adoption includes sufficient level of analysis on the existing and planned interventions that are necessary in order to achieve the general objectives described earlier. It is noted however that specific quantitative targets have not been set and will be established in the future. The measures proposed are detailed and specific at a satisfactory level, the responsible authorities are also specified, while the timetable for implementation is also part of the plan

## 1.5 Progress towards the Fulfilment of Targets

### 1.5.1 Landfill Directive Targets

The targets for the diversion of biodegradable waste from landfill have been set for years 2010, 2013 and 2016 in line with the Regulations “The Solid and Hazardous Law Regulations (Landfills) Regulations of 2003” (562/2003 and the amendments 618/2007 and 14/2014) which transpose the landfill directive and the national waste management plan. The following box presents the targets and the extent to which they have been met (the data regarding the latter refer only to year 2010, according to the Cypriot Questionnaire on the transposition and implementation of the landfill Directive).

#### Box 1.1: Targets for the diversion of biodegradable waste from landfills

	2010	2013	2016
Target for disposal tn:	203.500	135.650	95.000
Actual disposal tn:	332.900	no data	no data
Gap (%):	64%	-	-

From this it can be seen that the 2010 target for the diversion of biodegradable waste from landfills was not met, and the minimum quantity allowed to be disposed was exceeded by 64%. This is also likely to be reflected in the year 2013, and to an even greater extent, since, as stated in the national plan, no developments in infrastructure and collection systems took place that would divert biodegradable waste from disposal. Given the current situation this will remain the case for 2016, since the planned initiatives (development of treatment facility in Limassol, implementation of selective collection for paper and organic waste) will not have been completed until 2016. The target for 2016 is expected to be achieved late, with at least a couple of years’ delay.

The main reasons for this non-compliance are the lack of waste treatment infrastructure (only the MBT facility in Larnaca operates with an operation capacity of 110.000 tpa for mixed waste) and the complete absence of an organized system separate collection of organic waste.

The measures foreseen in the national waste management plan in order to reach the targets for 2016 (with a certain delay) are:

- Construction of the MBT facility in Limassol with capacity of 140.000 tpa;
- Utilize the maximum operation capacity of the MBT facility in Larnaca which is a capacity of 160.000 tn/y. Also, utilize the maximum operation capacity of the mechanical unit (for separation of recyclables) that reaches almost 200.000 tn/y;
- Elaboration of a national plan for biodegradable waste management;
- Completion of the green points network;
- Assessment of the possibility for the existing cement plant to receive waste fractions deriving from MSW (e.g. residual waste, secondary fuel - SRF, etc).
- Promotion of the implementation of separate collection for organic waste;
- Training of local authorities and waste producers on separate collection of organic waste;
- Voluntary agreements for raising of awareness and implementation of separate collection of organic waste;
- Technical and financial support to the local authorities for development of systems of separate collection of organic waste;
- Promotion of home composting;
- Development of plans for upgrade of organic waste treatment plants;
- Raising of public awareness;
- Banning of certain waste types (e.g. green waste) from entering into landfills;
- Establishment of a landfill tax.

It should be noted that the national plan does not set out how the target of maximum disposal of 95.000 tpa of biodegradable municipal waste will be achieved with the proposed infrastructure. More specifically, as no waste treatment facilities are foreseen for Nicosia and Pafos districts, in order for the target of diversion of biodegradable waste from disposal to be met, a significant amount of waste, at least from Nicosia (which generates around 40% of the total municipal waste), will need to be treated at the MBT plant in Limassol. It is also noted that in order for the targets of diversion to be met without additional mixed waste treatment capacities, the target of separately collecting and treating organic waste (15% of MSW, or more than 30% of organic waste needs to be separately collected and treated) will need to be fulfilled much earlier than 2020 (it is expected for the LFD targets to be met a couple of years after 2016, which is the target year).

Concerning data reliability, the information presented in the national plan derives from:

- Statistical Service of Cyprus;
- Weighing of the waste in Pafos landfill and Larnaca central waste management facility;
- Annual reports of Green Dot Cyprus (referring to collection of packaging waste);
- Annual reports of recyclers
- Studies elaborated at national level.

While the data for the districts of Larnaca and Pafos are considered to have a low level of uncertainty, as they are derived from actual weighing of the waste in the facilities or by Green Dot and recyclers, the data of Nicosia and Limassol are based on general estimates (trucks entering the dumpsites, assumptions on per capita generation etc).

With respect to waste composition the data may be considered reliable as in the districts of Larnaca and Pafos frequent composition measurements take place, while in Nicosia and Limassol a recent (2011) waste characterization study was elaborated in which sample and analyses were carried out for one year period.

### **1.5.2 Waste Framework Directive Targets**

As described in the Cypriot Questionnaire on the implementation of the WFD, the Calculation method 2 was selected for calculation of the WFD targets on recycling.

Currently recycling activities are restricted to packaging waste and printed paper recycling, this is carried out by Green Dot Cyprus. According to the national plan, Green Dot Cyprus serves approximately 78% of the total population.

The overall recyclable collection is approximately 26% of the total recyclables out of which 85% (or 22% of total recyclables) is actually reused / recycled (including waste recycled by Green Dot, in the waste treatment plant in Larnaca and by private recyclers).

This value (22% of recycling) is considered a good starting point with the view to meet the target of 50% in 2020, taking into account the fact that up until this point, the local authorities had no responsibility whatsoever to implement separate collection systems for recyclables. The new waste management plan, and the respective regulation that will shortly be adopted, define clearly the responsibility of the authorities to develop separate collection systems, making them responsible for meeting the respective targets. The central government will support technically and financially the local authorities in the development of these systems.

The measures foreseen in the national waste management plan in order to reach the targets of 2020 are:

- Completion of the green points network;
- Implementation of separate collection for recyclables;
- Training of local authorities and waste producers on separate collection of recyclables - MARDE will be responsible for the implementation of the training activities and will collaborate with the Union of Municipalities and Communities, NGOs, Universities, etc.
- Voluntary agreements for raising of awareness and implementation of separate collection of recyclables;
- Technical and financial support to the local authorities for development of systems of separate collection of recyclables;
- Raising of public awareness;
- Establishment of landfill tax; and
- Establishment of EPR for certain materials.

In any case in order to report some progress in recycling, the plan has to be adopted and implemented. Hence, additional progress is not expected prior to 2017.



One issue that is not completely clear in the waste plan is whether the strategy of the authorities is to meet the 50% recycling target mainly via separate collection of recyclables with minor contribution by the waste treatment facilities, or whether it is expected that the existing and new waste treatment facilities to substantially contribute in reaching the aforementioned targets.

With respect to the data, the figures on the recycling derive from Green Dot Cyprus, the treatment unit in Larnaca and the annual reports of the recyclers and are considered to be reasonable, notwithstanding the issues presented in the previous section regarding the lack of reliable arisings data for Nicosia and Limassol (since these 2 districts generated more than 65% of the total MSW, these inaccuracies are not insignificant).

## **1.6 Implementation of Specific Waste Framework Directive Articles**

### **1.6.1 Article 4: Application of the Waste Hierarchy**

As presented in the Cypriot Questionnaire on the implementation of the WFD, the waste hierarchy is laid down in Article 9(1) of the national legislation (law N.185(I)/2011). In this respect, the authorities are required to take any necessary measures to implement the waste hierarchy within the boundaries of technical feasibility and financial viability. The new piece of legislation, via which the new plan will be adopted, reaffirms the need to respect waste hierarchy.

Prior to the adoption of the plan, given the lack of legal and other instruments (bans, obligations for separate collection, landfill tax, etc), there has been no real responsibility or motivation for people and stakeholders involved in waste management to actually move waste management up the hierarchy.

The new waste management plan seeks to change this through the instruments that will be implemented together with the new waste prevention plan. Both plans will promote the priorities of the waste hierarchy, mainly prevention and reuse/recycling.

Some of the instruments to be adopted in this respect include:

- Obligation for local authorities to implement separate collection;
- Introduction of landfill tax (legal act to be adopted in 2015)
- Banning of the disposal of certain waste streams
- Extension of EPR in various waste streams
- Promotion and implementation of PAYT systems

The national plan includes a commitment of the authorities to reach an overall target of 50% of MSW for separate waste collection, which confirms the strategic intent to implement waste hierarchy at local level.

### **1.6.2 Article 10: Recovery**

As presented in the Cypriot Questionnaire on the implementation of the WFD, the provisions for waste recovery are laid down in Article 12 of the national legislation (law N.185(I)/2011). In this respect, the authorities should take any necessary measure to ensure that the waste produced follows the waste hierarchy during its management cycle, with recovery taking precedence over disposal.

Moreover, the national legislation that transposes the packaging directives promotes recovery of packaging waste (laws 32(I)/2002, 133(I)/2003), 58/(I)/2012 and 59/(I)/2012).

The separate collection system adopted by Green Dot Cyprus for packaging waste, which is going to be expanded for all recyclables, consists of a system of 3 bins for:

- Paper / cardboard;
- Glass; and
- Plastic, metals, tetrapak (PMD stream)

The collection of recyclable material is carried out as follows:

- The glass is collected via bring systems;
- The paper and PMD is collected via a door-to-door system (77% of the waste recovered is collected via this system) as well as bring systems (mainly in household complexes and blocks of flats).

The national waste management plan to be adopted, as already described, imposes, upon local authorities, the responsibility to implement separate collection for recyclables and organic waste. The municipal waste will be collected in the following 5 fractions:

- Paper / cardboard;
- Glass;
- Plastic, metals, tetrapak (PMD stream);
- Organic fraction; and
- Residual fractions.

This system will be supplemented by a network of green points already under development which will further enhance separate waste collection and recovery. The network will consist of several points in each district where citizens may return numerous waste materials.

According to the design of the green points, the following streams are expected to be separately collected (depending on the type and size of each green point, different streams may be collected):

- Expired cleaning materials, detergents, etc
- Paints
- Thermometers
- Medicine
- lamps, bulbs, etc
- Batteries
- Plastic containers,
- Metal objects (scrap, radiators, etc)
- Toys
- Furniture
- Mattresses
- Cardboard
- Green waste
- Recyclables (paper, plastic, metal and glass)
- Clothes and textiles
- Carpets
- Wood

- Do it Yourself material
- Residues
- Inert – Construction and demolition waste

The network of green points will consist of 30 points (9 Nicosia District, 8 in Limassol District 8 in Larnaca/Famagusta Districts and 5 in Pafos District). Depending on the location, size (large, medium or small) and the materials to be collected in each Green Point (not all aforementioned material are collected in all Green Points), the served population varies between 2.500 – 83.500 (on average approximately 16.000 citizens will be served by each green point).

Currently waste at local level is collected in a mixed manner. Separate collection is implemented by Green Dot Cyprus only in packaging waste and printed paper, while private recyclers (in collaboration or not with Green Dot) serve businesses and industries. Currently 78% of the total population is covered by separate collection of packaging waste and printed paper.

Following the implementation of the new system the target for separate collection of 50% of MSW is set (by 2021), which refers to separate collection of:

- Paper, plastic, metal and glass
- Organic waste
- Streams collected in green points

As already mentioned, the new plan establishes for the first time the responsibility for the local authorities to develop separate collection systems and meet specific targets for recycling. As the plan and respective legislation is not adopted yet, the separate collection systems are expected to be in place no earlier than the end of 2016. With respect to collection scheme, the current system relies heavily on door to door collection (77% of the waste is collected via such system) and this practice will be maintained, as it is considered suitable for reaching the targets. .

The following arrangements are already implemented and will continue to be in place in with regards to the separate collection of recyclables (excluding packaging waste and printed paper carried out by Green Dot), and the separate collection of organic waste:

- Collection is carried out by the collection services of the local authority itself;
- Collection is carried out by complexes (unions) of local authorities pooling their equipment and staff;
- Contracting an authorized private collector using the equipment of the local authority; and
- Contracting an authorized private collector using its own equipment

Authorities are also responsible for collection of Green and bulky waste (Door-to-door collection, Pick-up service, central collection point systems are used in this respect).

Usually private collectors are used in small communities that do not have the necessary personnel to execute the collection services and they also serve businesses producing waste (paper, plastic, metal, glass or other).

With respect to packaging waste, collection is already carried out by Green Dot, and there are authorized private collectors that are active in recyclables collection, both with and without collaboration with Green Dot.

It is intended that the local authority separate collection system be set up in collaboration with the existing Green Dot collection system.

The costs for the development and operation of the packaging waste collection system as well as for the downstream management (recovery, etc) of the packaging waste are covered by the Green Dot scheme (in the frame of EPR); Green Dot also collects (by arrangement) the printed paper fraction within the same fraction, but the local authorities must meet the cost of this part of the collection.

Via the implementation of this collection system, the need for comprehensive material recycling facilities is reduced, since the sorting facilities (currently operated by private sector) are used today only for the separation of the PMD stream and the separation of the residues from the main stream.

In addition, the promotion of the separate collection of organic waste is foreseen - the target is by 2021 more than 30% of the organic waste to be collected and treated. In this respect, development of treatment plants (composting and anaerobic digestion plants) is expected, mainly by the private sector, in order to treat the separately collected organic waste for energy recovery and for uses in agriculture. Currently there are 10 anaerobic digestion plants, treating mainly manure and animal waste, which could be expanded to treat also the separately collected organic waste. In this respect they will need to be equipped with pasteurizers (2 of these plants already possess such equipment). There are also three composting plants currently treating agricultural, and parks and gardens waste, which may also be expanded to receive separately collected organic waste.

### **1.6.3 Article 11: Reuse and Recycling**

According to the 2013 report of Green Dot Cyprus<sup>8</sup>, approximately 46.000 tonnes of material were collected and 43.000 tonnes were recycled. The overall recycling rate is 22% (including waste recycled by Green Dot, in the waste treatment plant in Larnaca and by private recyclers). The new plan includes very significant changes in the collection of municipal waste which is expanded to several streams other than packaging waste (such as separate collection of organics, recyclables other than packaging, materials in green points).

The overall target set for reuse and recycling, in line with WFD is 50% of recyclables (paper, metals, plastic and glass) to be reused / recycled by 2020 (using calculation method 2 for calculation of the WFD targets on recycling).

With regards to the EPR, this is currently applied in packaging waste and other waste streams (WEEE, batteries and accumulators and tires). However, according to the new plan, EPR will be expanded to non-packaging paper, plastics, etc.

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<sup>8</sup> Found at

[http://www.greendot.com.cy/cmslikethis/uploadedContent/downloadsFiles/gdc\\_annual\\_report\\_2013\\_web\\_file\\_red1404727129.pdf](http://www.greendot.com.cy/cmslikethis/uploadedContent/downloadsFiles/gdc_annual_report_2013_web_file_red1404727129.pdf)

With respect to the support and training of the local authorities for the implementation of their obligations in relation to separate waste collection, the plan foresees technical and financial strengthening of the capacities of the local authorities, via:

- Training of the staff
- Technical assistance contracts
- Provision of equipment (bins, trucks, etc)
- Information material
- Organization of awareness campaigns

An important issue for Cyprus, being a small Country (and an island) is the lack of a market for the absorption of the secondary material that is recovered, as a result most of the recovered material (paper, metals, plastic and glass) is exported.

#### 1.6.4 Article 14: Costs of Waste Management

The costs for municipal waste management are borne by the citizens in the form of fees paid to the local authorities. For packaging waste (and other streams, like WEEE, batteries and accumulators and tires), EPR schemes apply and the costs are borne from the producers/distributors of the products. In this case, the producers and distributors of the goods are responsible only for the take back of the waste within their territories. The producers of the product are responsible for paying a fee to the collective management system according to the quantity of product placed on the market.

The EPR scheme for packaging waste is as follows:

A collective system for the management of packaging waste (Green Dot Cyprus) has been established and authorized, under the initiative of the Cypriot Trade and Industrial Chamber. Green Dot Cyprus is responsible to develop, implement and operate an integrated system (collection, recovery, treatment) of packaging material and waste. The cost for the development and operation of these activities is covered by the producers/distributors (members – shareholders of Green Dot Cyprus) via a fee they pay to the collective system (the fee is approved by the Competent Authority under the Packing Law). According to the discussions with the representatives of Green Dot and MADRE the fees of the producers/distributors covers the overall management cost for packaging waste, while fees of are imposed on the LAs for the management of printed paper. The determination of the fee depends on:

- The type of material (paper, plastic, metal, glass, etc)
- The respective quantities per source
- The cost of transport and treatment
- The revenues of the system
- Other operation costs of the system

The current fees imposed by Green Dot are the following.

**Table 1-4: Fees of Green Dot**

	Domestic PW (€/tn)	Industrial/Commercial PWs (€/tn)
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	Domestic PW (€/tn)	Industrial/Commercial PWs (€/tn)
Glass	29,06	
Paper	47,14	43,31
Plastic		37,94
Ferrous metals	95,39	
Aluminum	21,38	
PET	105,89	
HDPE	105,89	
Wood		12,41
Paper packaging for liquids	122,75	
Other recoverable material	131,05	
Other non recoverable material	157,27	
Other		50,27

It is noted that the cost for the packaging waste collected within the mixed waste fraction is covered by the Local Authorities and the producers/distributors have no contribution whatsoever.

The national waste management plan that was developed (though not adopted) in 2012 includes some information on the costs associated with waste management in each district as presented below.

**Table 1-5: Waste Management Costs in Cyprus**

	Nicosia District	Limassol District	Larnaca and Famagusta District	Pafos District
<b>Collection cost</b>	45 – 125€/HH/y (includes disposal in non-compliant landfill)	45 – 125€/HH/y (includes disposal in non-compliant landfill)	50 – 100 €/HH/y	50 – 100 €/HH/y
<b>Waste treatment / disposal</b>			55€/tn (for mixed waste treatment)	21 €/tn (for mixed waste)
<b>Transfer station cost</b>			25 -50€/tn	
Packaging waste recycling	27€/tone or 22€/HH	27€/tone or 22€/HH	27€/tone or 22€/HH	27€/tone or 22€/HH

	Nicosia District	Limassol District	Larnaca and Famagusta District	Pafos District
<b>Total cost</b>	80 – 150€/HH/y	80 – 150€/HH/y	240 – 300 €/HH/y	120 – 190 €/HH/y

As already mentioned the national plan foresees the adoption of legislation expanding the EPR to other materials such as non-packaging paper, plastics and metal.

With respect to PAYT system, currently this is implemented only on a very small pilot scale in Aglantzia Municipality. In this pilot system, a microchip is installed in each bin which corresponds to a certain household. The waste truck is equipped with a weighing system in order to register the weight of each bin of each participating household, which is then charged to the respective household (it is noted that the households are not actually charged according to this system, as the current legislation does not allow such charges).

The plan foresees the promotion of PAYT systems on a broader scale. According to the discussions with the representatives of MARDE, PAYT is scheduled to be implemented very soon in areas covering around 300.000 citizens (more than 30% of the total population of the Country). It is noted that the plan does not include clear commitment of the development of PAYT systems.

In general, the charging of the waste management costs to the citizens is included in the overall municipal fees and is not related to the generated waste quantities. Different fees apply to different municipalities, as well as different charging methods and the variation is significant. Hence, the system does not fully respect the “polluter pays” principle and the development of more fair systems (e.g. PAYT) will contribute to better calculation and monitoring of the waste management costs.

### 1.6.5 Article 22: Encouraging the Separate Collection of Biowaste

The new plan introduces the responsibility for the local authorities to separately collect 15% of the total MSW as organic waste, by 2021. This target corresponds to more than 30% of the organic waste that needs to be separately collected. Specific measures are proposed to be implemented in order to support the authorities to develop the systems foreseen. These measures include:

- Elaboration of a national plan for biodegradable waste management
- Completion of the green points network.
- Promotion of the implementation of separate collection for organic waste
- Training of local authorities and waste producers on separate collection of organic waste
- Voluntary agreements for raising of awareness and implementation of separate collection of organic waste
- Technical and financial support to the local authorities for development of systems of separate collection of organic waste
- Promotion of home composting
- Development of plans for upgrade of organic waste treatment plants
- Raising of public awareness
- Banning of certain waste types (e.g. green waste) from entering into landfills;

- Establishment of landfill tax.

However the plan does not include a timetable for the progressing reaching of the aforementioned targets as it does for other similar targets (e.g. collection of MSW, or recyclables). Moreover the plan refers to the responsibility of the authorities to promote rather than implement separate collection of organics. This fact may allow some LAs not to comply with the need to implement separate collection of organics.

The recovered biowaste, following treatment may be used in the form of compost in agriculture or for other purposes. In this respect it might be critical to establish quality criteria in order to govern the use of compost and potential increase the respective revenues from its utilization. These elements should be addressed in the national plan for biodegradable waste management

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

The targets included in the national waste management plan of Cyprus require additional efforts in order for them to be met, both in relation to the separate collection and treatment of organic waste (15% of MSW or more than 30% of organic waste needs to be separately collected and treated) or the overall separate waste collection (50% of MSW needs to be separately collected).

The plan includes a series of instruments and measures to support and ensure the accomplishment of the objectives and targets foreseen in the plan as follows:

### Legal instruments

Appropriate legal initiatives will be taken in order to further define the framework, and the roles and responsibilities of all stakeholders. These initiatives will include:

- Legal provisions aiming at local authorities
  - Development of local waste prevention and management plans
  - Development of infrastructure of separate collection of paper, glass, metal, plastics and organic waste
  - Separate collection of 50% of MSW by 2021
  - 50% of recycling by 2020
- Legal provisions aiming at producers
  - Extension of EPR to products such as non-packaging paper, plastic etc.
  - Environmental tax on selected products for which their negative environmental effect, when they become waste, has been well documented
- Legal provisions aiming at reduction of disposal
  - Establishment of a landfill tax
  - Banning the disposal of certain waste streams (e.g. green waste, high calorific value waste, etc)

These instruments are not yet in place and no timeline for their introduction is included within the plan. In any case according to the plan,, the respective legal acts introducing these instruments will be in place in the period 2015-2017

### Financial instruments



The government intends to finance the development of the following infrastructure to support the local authorities in delivering the targets:

- Central waste management facility in Limassol, consisting of MBT plant and landfill for the disposal of residues (expected to be completed in 2016)
- Network of green points (expected to be completed in 2016)
- Sanitary landfill in Nicosia (expected to be completed in 2017)
- Utilization of the material disposed in the non-compliant landfills in Nicosia and Limassol
- Rehabilitation of all non-compliant landfills
- Utilize the full operational capacity of the Central waste management facility in Larnaca
- Development of the necessary transfer stations following assessment of the actual needs

Other economic instruments to be used in order to motivate the stakeholders include:

- Instruments aiming at local authorities
  - Co-financing of PAYT systems
  - Co-financing of measures promoting the implementation of separate collection (e.g. provision of equipment)
  - Co-financing of activities for integrated waste management in isolated areas (zero waste approach)
  - Co-financing for technical assistance contracts aiming at capacity building, raising of awareness etc
- Instruments aiming at the private sector
  - Financial support for companies of specific size and personnel, that are big producers of waste, for the implementation of a waste prevention and separate waste collection program in their operation cycle
  - Financial support for existing or new waste management facilities that seek to expand, upgrade or be equipped
  - Financial support for industries for the utilization of recycled material in their production processes
- Instruments aiming at the public sector
  - Financial support in the public sector for the promotion of waste prevention and separate waste collection
- Instruments aiming at horizontal activities
  - Donations – competitions – establishment of prizes for best performance in waste prevention and separate collection systems

#### **Administrative and information instruments**

The following practical measures are foreseen:

- Establishment of a reliable, operational and flexible system for data collection and processing including the development of a database ;
- Improvement of the website of the Environmental Department of MARDE
- Development of an electronic platform for exchange of information, opinion and know-how between the stakeholders and among the public
- Implementation of awareness-raising campaigns

- Implementation of capacity building programs for local authorities and other stakeholders
- Issuance of guidelines, brochures, leaflets, books and FAQ for waste prevention and management for households and institutions
- Establishment of communication line for guidance and support to the citizens in relation to waste prevention and management

With respect to sanctions, the waste law N.185(I)/2011 foresees sanctions which are mainly related to the performance of the waste management operators (e.g. perform waste management activities without permit, or failing to fulfil the permit conditions, or failing to protect the environment during waste management services, etc). The sanctions for such cases may include imprisonment up to 3 years and fines up to 500.00 €.

However there are no clear sanctions for the local authorities in case they fail to implement the foreseen separate collection systems or fail to meet the collection and recycling targets.

With respect to the objectives and targets of the landfill directive it has to be noted that current situation indicates that the system fails to meet the requirements of the Directive especially in relation to:

- Diversion of biodegradable waste from disposal: the amount of biodegradable municipal waste disposed is well above the maximum allowed quantities;
- Disposal of treated waste: Most of the waste generated in Nicosia, Limassol and Pafos districts is disposed without prior treatment
- Operation of non-compliant landfills: Nicosia and Limassol districts are still served by non-compliant landfills.

The new plan seeks to close these gaps by:

- The introduction of separate collection for recyclables and organic waste
- The development of a waste treatment facility in Limassol
- The development of sanitary landfills in Nicosia and Limassol
- Closure and rehabilitation of all non-compliant landfills
- Setting the necessary motives/tools for private sector get actively involved in the promotion of separate collection

Given past experience the implementation of the plan should be monitored very closely in terms of timetable, as well as the performance of the stakeholders, and appropriate sanctions in the event of poor performance should be established, in order to avoid, once again, the situation where, by the year 2020, it is acknowledged that the targets are not met or the systems are not implemented.

## 1.8 Investment in Waste Management Infrastructure

According to the national waste management plan, and some rough calculations based on the targets that have been set for 2020 (total MSW generated in 2020 is approximately 590.000 tpa), the following requirements for waste treatment arise from the plan:

- Recycling of paper, plastic, metals and glass (50% of paper, plastic, metals and glass): 137.000 tpa

- Diversion of biodegradable waste (according to landfill directive): 301.000 tpa (total biodegradable waste generated 396.000 tpa, of which, 95.000 tpa is allowed to be sent for disposal)
  - Separate collection and treatment of organic waste (15% of total MSW): 88.000 tpa of organic material separately collected
  - Recycling of paper: 76.000 tpa of paper
  - Treatment by MBT of mixed waste: 137.000 tpa of biodegradable waste, or 204.000 tpa of mixed/residual waste.

The existing and scheduled waste management infrastructure to meet these targets includes:

- Waste Treatment facilities
  - Existing MBT plant in Larnaca with existing input of 110.000 tpa – New plan foresees utilization up to 160.000 tpa, which is the full capacity of the plant
  - Scheduled MBT plant in Limassol with existing capacity of 140.000 tpa
  - 2 existing composting plants of total capacity of 28.000 tn/y – New plan foresees expansion in order to receive preselected organic material from MSW
  - 2 out of the 10 existing anaerobic digestion plants of total capacity to accept organic waste up to 70.000 tn/y – New plan foresees expansion and upgrade in order to receive preselected organic material from MSW
- Sorting facilities
  - 20 existing facilities for the sorting of recyclable material
- 2 existing transfer stations in Larnaca and Pafos Districts (one more transfer station will be constructed along with the MBT unit at Limassol) – the new plan foresees assessment on whether additional transfer stations are needed
- Waste disposal:
  - 2 existing sanitary landfills in Larnaca and Pafos
  - 2 scheduled sanitary landfills in Nicosia and Limassol
  - Scheduled closure of all non compliant landfills

There is also a cement plan which receives waste (tires, sludge, etc) to be used as alternative fuels and which may be utilized in the future for streams deriving from MSW (e.g. residual waste, secondary fuel - SRF, etc).

## 2.0 Summary

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The new waste management plan introduces a new concept for waste management in Cyprus, sets new targets, and for the first time, makes local authorities responsible for implementing separate collection systems and reaching specific targets.

The current situation reveals that moderate progress has been made in relation to MSW management, especially in relation to recycling of packaging waste, while the Country still lacks sufficient infrastructure for waste treatment and disposal, and the separate waste collection (apart from packaging waste) has not been developed.

Whilst the legal framework seems to be complete, having transposed all European Directives, the results of the system are relatively poor, especially in relation to waste treatment (most waste is landfilled without prior treatment) and separate waste collection (which is currently restricted to packaging waste). The main reason for this fact is the lack of the necessary installations, which have been delayed for several years, and the absence of clear responsibilities placed on local authorities in terms of developing separate collection systems and meeting of the respective targets. In fact, prior to the forthcoming adoption of the new plan, local authorities were only responsible for waste collection, without any responsibilities/obligations to develop separate collection systems or meet specific targets

The new waste management plan seeks to address these problematic issues and its most significant elements include:

- The constitution of local authorities as responsible for the implementation and operation of separate collection for recyclable and organic waste and for reaching of the collection and recycling targets.
- The establishment of very new waste management targets:
  - 50% of MSW to be separately collected by 2021
  - 50% of paper, plastic, metals and glass to be recycled by 2020
  - 15% of MSW (or more than 30% of organic waste) to be separately collected as organic waste by 2021
  - No more than 20% of MSW to be disposed in landfills by 2021
- Development of green points networks for separate collection of several waste streams
- Establishment of a reliable, operational and flexible system for data collection and processing
- Provision of expansion of Extended Producer Responsibility to materials such as non-packaging paper and plastic
- Commitment to adopt legally the introduction of landfill tax and restrictions in disposal of certain waste streams: this is a measure expected to contribute significantly to the diversion of waste from disposal.

The adoption of the national waste management and prevention plans has been delayed by almost one year and this fact delays the adoption and implementation of all measures foreseen in these plans. It is considered that the plan will be adopted in 2015. It is noted that as the plan has not yet been officially adopted its performance cannot be evaluated. However, given the experience from the efficiency in the implementation and meeting of the targets of the previous plan (which was adopted in 2004) as well as the elements presented in this report there are some issues that may generate concerns in relation to the actual implementation and success of the plan, in view of reaching the targets imposed by the EC legislation:

- The local authorities become key players in waste management, especially in relation to separate waste collection. The whole success of the system will rely upon the performance of the local authorities in delivering services, and encouraging households to engage with them. Hence it is critical for them to have the necessary technical and financial resources to deliver. The plan foresees some support for local authorities in their new responsibilities by MARDE (which will be responsible for the implementation of the training activities and will collaborate with the Union of

Municipalities and Communities, NGOs, Universities, etc). This support is urgently needed and will need to be very closely monitored, while sufficient funds should be available.

- Currently, Cyprus is some distance from meeting the targets for diversion of biodegradable waste from disposal. The plan introduces targets for separately collecting organic waste (and its treatment), relying equally to separate collection and mixed waste treatment in order to meet the respective targets (the capacity of the MBT facilities will be around 50% of waste generated). Without the achievement of the targets on separate organic waste and treatment there will be a problem in reaching the landfill directive targets, hence this has to be closely monitored. Moreover the plan refers to the need for LAs to promote rather than implement separate collection of organics. This statement may give the possibility for LAs not to comply with the need to develop separate collection schemes for organic waste and this will result in big risk of failing to meet the respective targets deriving from the LFD.
- The national plan foresees the disposal of maximum 20% of MSW into landfills. It has to be ensured that this amount of waste will have undergone pre-treatment prior to disposal in order to be in line with the LFD. In this respect it is necessary on one hand to maximize the efficiency and success of the separate collection systems in order to minimize the quantity of untreated waste and on the other hand to ensure that treatment capacities will be sufficient and not overestimated to treat all residual waste.
- Pay-as-you-throw systems are foreseen in the new plan. Such schemes currently exist only at a very small pilot scale at present, and no information is available with regard to their performance, while some future expansion of these schemes is foreseen to be implemented in 300.000 citizens until 2021 (approximately 30% of the population). Managed effectively, these systems are known to contribute to waste prevention and diversion from disposal. However, evidence suggests that they need to be introduced against the backdrop of quality, convenient recycling services, including networks of green points (which ought to implement such charges too), in order to avoid the negative consequences of such systems.
- The market on waste management is currently underdeveloped due to:
  - mixed competencies between MADRE and MoI and unclear framework and policies (delay in the adoption of the new waste management plan)
  - underdevelopment of separate collection schemes
  - lack of necessary infrastructure

These uncertainties generate reluctance especially for the private sector to invest in waste management.

- There appears to be no common quality standards and requirements for waste collection (especially in relation to separate waste collection) and each local authority (or cluster of authorities) sets the collection practices to be implemented within their territory (usually by the authorities themselves or in some cases via contracts with the private sector). This results in significant variations in the costs of the collection system between the authorities and problematic monitoring and control of the collection activities, which may result in not acceptable environmental standards.

- Current data on waste generation are unreliable for the Districts of Nicosia and Limassol where no facilities exist to weigh the waste. This may result in improper dimensioning of the waste collection system and waste management facilities or miscalculation of the waste management targets that need to be met. With the new facilities foreseen, this issue should be overcome; however this will also require clear procedures for waste reporting to be developed along with appropriate tools for data processing (although these requirements are already foreseen in the plan they need to be developed very quickly).
- The plan foresees the adoption of a landfill tax. However, there is no indication as to the level of the tax that will be set, and no timeline for its introduction is provided.
- The plan also indicates a commitment to restrict the disposal of certain waste streams to landfill, although, again no timeline is given, and little detail regarding the streams to be restricted, or the method of enforcing the restriction, is provided. Experience from other countries suggests that these restrictions are not the best way to drive diversion of waste from landfill due to the difficulties of enforcing such legislation.
- With respect to the EPR, the plan focuses on the expansion (currently EPR is in place for packaging waste, WEEE, batteries and accumulators) of the principle to additional material (e.g. paper or plastic), although, as with the landfill tax no timeline is given with regard to these changes. However, attention should be given to additional elements that may strengthen the implementation of the EPR in meeting its objectives such as:
  - Promote different fees for each material or product that corresponds to its actual management cost at the end of its life. This would further motivate producers to design their products in a more eco-efficient manner
  - Public awareness activities should allow the citizens to become aware of the fees of each product associated with its management at the end of its life.
  - Establish proper system of monitoring and enforcement system for EPR

Also it is noted that ideally the EPR scheme should cover 100% of the cost of separately collected packaging waste and also contribute to the management of packaging waste collected as residual waste, especially in the areas not covered by separate collection system. Currently, while the cost of separately collected packaging waste is covered by Green Dot, the LAs must meet the total cost of the packaging waste collected within the mixed waste stream.

- These measures acquire particular significance given that there are no clear sanctions applied to the local authorities for failing to meet the targets that are to be implemented, or for failing to implement the proper system. This may limit the extent to which the system being envisaged is actually implemented.
- Cyprus being a small island county depends heavily on the export of the materials recovered (metals, plastics, glass and paper) and this has an impact on the costs of the waste management system. However this issue is difficult to be tackled as it is not possible to have such industrial activity in Cyprus that would be able to utilize all the material recovered from waste, In any case the plan foresees the elaboration of a study to assess the opportunities to utilize increased quantities of recycled material in Cyprus, which is combination with well functioning EPR system may result in reduction in the needs to export the recovered material.

## 3.0 Information Sources

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EEA, Municipal waste management in Cyprus, ETC/SCP, 2013

Eunomia et al., European Reference Model on Municipal Waste Management, Member State Consultation Questionnaire – Cyprus, 2013

European Commission, Detailed evaluation report for assessing the waste management plan of Cyprus – National, BIPRO, 2015

Green Dot Cyprus, annual report 2013

Law N.185(I)/2011 on waste and subsequent amendments

MARDE – Environment Department, interview with representatives of the waste department on 7/5/2015

MARDE, Draft Law on Municipal Waste Management Plan 2014 – 2020

MARDE, Draft Law on National Waste Prevention Program for 2015 – 2021

MARDE, Final Draft of management plan for municipal and similar waste, 2012

Questionnaire on the implementation of Directive 2008/98/EC (2010 – 2012)

Questionnaire on the transposition and implementation of Directive (99/31/EC) on the landfill of waste (2010 – 2012)

Solid and Hazardous Regulation 562/2003 on (Landfills) and subsequent amendments 618/2007 and 14/2014)

Statistical Service of Cyprus, 2014

Workshop in Cyprus, 4/6/2015

# 1.0 Summary of Recommendations

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Recommendations for Cyprus can be summarised as follows.

- 1) Consider the introduction of a landfill tax
- 2) Revisions to the EPR scheme
- 3) Establishment of a framework of monitoring of performance and sanctions
- 4) Consider mandating the introduction of organic waste collections
- 5) Capacity building for LAS (including training and development of local expertise and capacity) in order in order to support the LAs in relation to their responsibility to develop the separate collection schemes and fulfil the respective targets,
- 6) Establishment of a reliable data collection and processing system
- 7) Activities to support waste prevention and re-use
- 8) Introduce PAYT systems



## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Lack of technical and financial capacity of the Local Authorities to implement and operate separate collection systems	<p>The new legislation that will be adopted foresees that Local Authorities (LAs) are responsible for developing separate collection systems for paper, metal, plastic glass and organic material.</p> <p>Since this responsibility for the local authorities to develop separate collection systems and to meet targets is clearly introduced for the first time, the authorities will need support and time in order to adapt to the new systems.</p>	<p>Until today LAs were generally responsible for waste collection within their territories but without specific requirements and targets to be met. Most of them have never implemented such systems, since the organization of the separate collection of packaging waste was previously the responsibility of Green Dot.</p>
2	Difficulty in ensuring compliance with LFD in relation to the targets for diversion of biodegradable waste from disposal	<p>According to the data reported by the authorities, the Country is already well behind meeting the targets for diversion of biodegradable waste from landfill. These targets were not met for the years 2010 and 2013 and are unlikely to be met in the next target year (2016).</p>	<p>The plan introduces targets on separate organic waste and treatment (e.g. more than 30% of the organic waste needs to be separately collected and treated), relying equally on separate collection and mixed waste treatment in order to meet the respective targets. Without the achievement of the targets on separate organic waste and treatment, there will be a problem in reaching the landfill directive targets. The plans do not require local authorities to introduce systems for the separate collection of biowaste and services for the separate collection of organic material have yet to be implemented.</p>

Number	Potential issue	Description	Reasons for the issue
3	Lack of motivation to increase waste recycling	<p>There are no legal (e.g. landfill tax), financial (e.g. PAYT systems) or administrative (e.g. sanctions) arrangements in place that will provide strong incentives to increase waste recycling. The current system is currently based on the voluntary willingness of the waste producers to recycle.</p> <p>Without proper motivation of the waste producers, or waste managers, recycling targets cannot be met.</p>	<p>The plan foresees the adoption a landfill tax, but there is no specific timeline for its introduction and no detail on the level of the tax is provided.</p> <p>Local authorities will be responsible for meeting the targets under the revised plan but no sanctions appear to be in place if the targets are not met.</p> <p>Pay-as- you -throw systems are foreseen in the new plan although a widespread roll-out of these schemes is not anticipated.</p>
4	Waste management full cost not covered by original waste producer	Waste charges are not directly connected with the actual waste generated (e.g. in households or stores) or with the actual waste management cost associated with each type of product	<p>Waste fees for households are not directly connected to the quantities and consequently to the full costs associated with the generated waste by each polluter</p> <p>In the EPR schemes fees paid by producers / distributors are connected with the quantity and type of material put on the market and not on the actual waste management cost associated with the product. Also the cost for managing packaging waste that is not separately collected is borne by the LAs while the producers / distributors are responsible only for the PW separately collected</p> <p>PAYT systems or extension of EPR is foreseen but not on full scale.</p>
5	Low environmental and cost efficiency of separate collection	There are no common quality standards and requirements for separate waste collection	At present each local authority (or group of authorities) sets the collection practices to be implemented within their territory, either using their own staff and equipment or in some cases via contract with the private sector. There is no common standard determining how waste should be separated and collected, and this results in costs variations between LAs and poor environmental performance, related also to the quality of the recovered material

Number	Potential issue	Description	Reasons for the issue
6	Unreliable data	Current data on waste generation (quantity and composition) are unreliable especially in the Districts of Nicosia and Limassol where no facilities exist to weigh the waste. This may result in improper dimensioning of the waste collection system and waste management facilities or miscalculation of the waste management targets that need to be met	<p>The data for the districts of Larnaca and Pafos are considered to be reliable as it derives from actual weighing of the waste in the facilities or by Green Dot, the data of Nicosia and Limassol are based on general estimates (trucks entering the dumpsites, assumptions on per capita generation etc) being associated with a significant level of uncertainty.</p> <p>The new plan intends to tackle this issue via the new facilities and weighbridges installed in Nicosia and Limassol as well as via the establishment of a reliable, operational and flexible system for data collection and processing including the development of a database. however this will also require clear procedures for waste reporting to be developed very quickly along with appropriate tools for data processing</p>

## 3.0 Recommended Measures

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Measure	Type of instrument	Responsibility	Estimated costs and available EU funding	Anticipated impact
<p><b>1) Make a firm commitment to introduce a landfill tax</b></p> <p>The new plan foresees the introduction of a landfill tax. A specific timeline for the introduction of the landfill tax should be established and the level of the tax set appropriately. The tax needs to be sufficiently high to act as a motivational factor for waste diversion, particularly given the relatively low gate fees for landfill of around 20€/tonne. As an example, Greece has set a tax of 35€/tonne, along with an escalator of €5 per year until the tax reaches €60. A differential (lower) rate for pre-treated biowaste is also recommended. If it is considered that RDF might be produced for export, then a tax on the export of RDF for incineration might be appropriate.</p> <p>It is proposed to increase the tax progressively to allow businesses to plan for the changes. It is proposed to have a no more than 2 years of transitional period until the tax becomes valid, in order to allow the affected stakeholders.</p> <p>The legal act that will implement the landfill tax should also include specific provisions for monitoring and sanctions.</p>	Fiscal	MANRE	<p>Waste producers will bear the costs</p> <p>Funding from EU not available</p>	<p>This measure is expected to contribute significantly in the diversion of waste from disposal, as well as result in higher recycling rates and the fulfilment of the respective waste management targets (issues 2 and 3)</p>

Measure	Type of instrument	Responsibility	Estimated costs and available EU funding	Anticipated impact
<p><b>2) Extension of EPR</b></p> <p>Extend EPR to material other than packaging waste, which would require the following actions:</p> <ul style="list-style-type: none"> <li>• Establish timeline for expansion of EPR system</li> <li>• Inclusion of additional streams to EPR (printed paper, plastics, metals, etc)</li> <li>• Make sure that the EPR systems covers the full cost for the management of the separately collected waste (ideally the costs of collecting the non-recycled fraction would also be covered for all streams)</li> <li>• Establish fees corresponding to the management cost of each material or product</li> <li>• Establish proper system of monitoring and enforcement system for EPR</li> <li>• Inform the public for EPR and corresponding fees</li> <li>• Ensuring proper monitoring and enforcement in order to identify and punish potential free riders. The collective schemes should support the authorities in identifying the free-riders and appropriate sanctions should be imposed by the authorities</li> </ul>	<p>Administrative /Legal/ Information and educational campaigns</p>	<p>MANRE</p>	<p>Cost to be borne by producers</p> <p>Funding from EU not available</p>	<p>Promote recycling and implement the principle of full cost coverage by waste producers helping to gather the necessary funding for separate collection (issues 2 and 4)</p>
<p><b>3) Establishment of a framework of monitoring of performance and sanctions for not meeting waste management targets</b></p> <p>It is proposed to establish a clear process for the monitoring of the performance of the local authorities and other stakeholders responsible for meeting the targets.</p> <p>In this framework, specific sanctions should be introduced at appropriate levels for failing to meet waste management targets. This measure will be particularly important if the cost of disposal remains low (i.e. if no landfill tax is introduced).</p>	<p>Legal/Administrative</p>	<p>MANRE in consultation with LAs</p>	<p>To be borne by LAs and other responsible for meeting the targets</p> <p>Funding from EU not available</p>	<p>Ensure the reaching of waste management targets (issue 2)</p>

Measure	Type of instrument	Responsibility	Estimated costs and available EU funding	Anticipated impact
<p><b>4) Consider mandating the separate collection of organic waste streams from waste producers</b></p> <p>The plan foresees the restriction of certain material from disposal, such as green waste. Experience from other European countries indicates that it is more effective to mandate the introduction of separate collection schemes if the aim of the policy is to divert waste from landfill and into recycling services. Such a policy would be expected to be particularly beneficial in Cyprus as the current plan does not impose a requirement on local authorities to introduce organic waste collections.</p>	<p>Administrative /Legal/ Information and educational campaigns</p>	<p>MANRE</p>	<p>Cost to be borne by producers Funding from EU not available</p>	<p>Promote recycling and diversion of waste from disposal (issues 2 and 3)</p>
<p><b>5) Establishment of data collection system</b></p> <p>The plan foresees the development of a database for collection and processing of waste management data. It is foreseen that waste management data will be imported in the database directly by the waste producers / managers via web</p> <p>An administrative order (or other legal act) should be adopted which will set clearly the responsibilities and procedures for reporting, deadlines, type of data to be reported and sanctions for non-reporting, rules/frequency for monitoring of enforcement</p>	<p>Legal</p>	<p>MANRE</p>	<p>No costs</p>	<p>Collection of reliable data that will allow the monitoring of the waste management activities and the level of fulfilment of the waste management targets</p>

Measure	Type of instrument	Responsibility	Estimated costs and available EU funding	Anticipated impact
<p><b>6) Support for and capacity building within the Local Authorities</b></p> <p>Put in place a programme to support local authorities, to provide guidelines and support on the efficient operation of kerbside collections at the local level, including:</p> <ul style="list-style-type: none"> <li>• Materials to be collected</li> <li>• Frequencies of collection</li> <li>• Good practice when issuing contracts for collection services including the interface with the EPR system</li> <li>• Good practice on minimising collection costs</li> <li>• Information campaigns aimed at both local authorities and waste producers</li> </ul> <p>It is important that the programme makes use of knowledge from the private sector and waste services operating in other countries. The remit of the programme should also include provision of advice to government on the appropriate level of support required by local authorities to deliver the services, including the provision of sufficient financial and human resources at a local level to ensure appropriate service operation.</p>	Administrative	MANRE and LAs	Structural Funds or ERDF funding may be available	<p>The measure is expected to support the LAs in fulfilling their responsibilities in relation to the development of the separate collection system, thereby tackling issue 1.</p> <p>Will help with standardization of the separate collection system, helping to address issue 5 and will support tackling issue 6.</p> <p>The implementation of proper separate collection system as a result of the guidelines will also ensure the fulfilment of waste management targets (thus tackling issue 2)</p>
<p><b>7) Actions to increase re-use and waste prevention activities</b></p> <p>Government should consider integrating re-use activities into the existing EPR scheme. Other activities that should be reflected in the forthcoming waste prevention plan include actions tackling plastic bottles and food waste. Croatia could also consider developing re-use centres – such as those introduced in Slovenia, supported by developing a system of re-use credits helping to finance the activities of the third sector.</p>	Administrative / fiscal	MANRE	Funding available for capital items	Will assist in the achievement of future targets, as well as contribution to landfill directive and waste framework directive targets.

Measure	Type of instrument	Responsibility	Estimated costs and available EU funding	Anticipated impact
<p><b>8) Introduce PAYT systems in an organized manner</b></p> <p>PAYT systems should only be introduced once the appropriate revisions have been put in place to improve the efficiency and operation of separate collection. It is recommended that this is only rolled out to municipalities once the other activities in the roadmap have taken place, and when it can be confirmed that the door to door collection systems are working effectively at a local level.</p>	Administrative /Legal/ Fiscal	MANRE in consultation with LAs	Dependent on the system to be implemented. Maybe be able to use structural Funds	Improve waste charging, which will be directly connected with waste generation. This way recycling will be promoted while at the same time waste producers will cover full cost for the management of the waste they generate. This measure will help tackling issues 2, 3 and 4. Moreover, more reliable data on waste generation will be collected, thus addressing issue 6

### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
<b>Introduction of a landfill tax</b>		Announcement		In place		
<b>Revisions to the EPR scheme</b>		Announcement		In place		
<b>Framework for monitoring</b>		Announcement	In place			
<b>Mandate organic waste collection</b>		Announcement		In place		
<b>Capacity building for LAs</b>		Announcement	In place			
<b>Introduce data collection system</b>		Announcement	In place			
<b>Actions to increase re-use / prevention</b>		Announcement			In place	
<b>Introduce PAYT systems</b>				Announcement		In place





# 1.0 Factsheet – Hungary

This factsheet analyses the situation regarding waste management policies and practices in Hungary with regard to municipal solid waste (MSW). The factsheet seeks to identify factors that could make it difficult for Hungary to comply with EU waste legislation. The identified deficiencies provide pointers to measures identified in the Roadmap following this factsheet.

The table below presents data on the Hungarian waste generation and management.

**Table 1.1: Basic waste management data for Hungary**

<b>Population (Hungarian Central Statistical Office 2015)</b>	
<b>Total inhabitants</b>	9 856 000
<b>Dwelling stock</b>	4 415 000 Occupancy rate 88.5 %
<b>Municipal waste generation 2013 (Hungarian Central Statistical Office 2014)</b>	
<b>Total (tn)</b>	3 712 000
<b>Total (kg/cap/y)</b>	377
<b>Waste composition (The Ministry of Agriculture 2015)</b>	
<b>Organic</b>	22,6 %
<b>Plastic</b>	14,5 %
<b>Paper</b>	12,9 %
<b>Glass</b>	3,5 %
<b>Metal</b>	2,2 %
<b>Other</b>	44,3 %
<b>Recovery rates for packaging waste<sup>1</sup> 2013 (Eurostat)</b>	
<b>Paper and Cardboard</b>	87 %
<b>Plastics</b>	55,5 %
<b>Metal</b>	94,6 %
<b>Glass</b>	32,4 %

<sup>1</sup> Rate of recovery or incineration at waste incineration plants with energy recovery' for the purposes of Article 6(1) of Directive 94/62/EC means the total quantity of packaging waste recovered or incinerated at waste incineration plants with energy recovery, divided by the total quantity of generated packaging waste

<b>Total recovery rate of packaging</b>	60,3 %
<b>Municipal waste management (Eurostat 2013)</b>	
<b>Waste treated</b>	3 738 000 t
<b>Material recycling (% of treated MSW)</b>	21 % (799 000 t)
<b>Composting and Digestion (% of treated MSW)</b>	5 % (188 000 t)
<b>Incineration (% of treated MSW)</b>	9 % (336 000 t)
<b>Waste landfilled (% of treated MSW)</b>	65 % (2 415 000 t)
<b>Existing waste management infrastructure</b>	
<b>Residual treatment plants</b>	1 waste incinerator plant, capacity 420 000 t/year (2014)  70 landfills, free capacity 84 056 700 t (2013)  Approximately 23 MBT plants in operation, 7 out of order. Capacity 1 193 125 t/year (2014)
<b>Sorting facilities for recyclables</b>	6000 public collection facilities <sup>2</sup> , 800 000 t (2014)
<b>Organic waste treatment facilities</b>	Approximately 70 composting plants in operation. 8 out of order <sup>3</sup> (2014) Capacity 250 00-300 000 t/year (2013)
<b>Compliance with Targets</b>	
<b>Data on compliance with landfill directive targets, or distance to target remaining (if target not met)</b>	App. 944 000 t of Biodegradable Municipal Waste landfilled in 2014 <sup>4</sup> . To comply with the target (35 % of the amount of BMW landfilled in 1995) the amount should be 820 000 t or less by the year 2016. A reduction of 124 000 t is needed to comply with the target. <sup>5</sup>

<sup>2</sup> Holdonner P et. al. (2014)

<sup>3</sup> Department for Environmental Development , Ministry of Agriculture, 2015-10-27

<sup>4</sup> Estimation of number

<sup>5</sup> European Commission (2015) Detailed evaluation report for assessing the waste management plan of Hungary, p. 12

**Data on compliance with waste framework directive targets or distance to target remaining (if target not met)**

Target 50%  
799 000 t went to material recycling in 2013. The Hungarian EEOP states that the rate was 38.5 % in 2013. Distance to target 11.5 %.  
Hungary uses Method 2 to calculate the target and expects to fulfill the target by 2020.

The data on landfilling includes material that has been through the MBT system, as no distinction is made in the data between treated and untreated material in the statistics.

## 1.1 Roles and Responsibilities of Key Actors

### 1.1.1 The State

As Hungary has no separate Ministry of Environment the environmental responsibilities are divided between several Ministries:

- The Ministry of Agriculture (FM) has the responsibility for waste management. The Ministry has four departments dealing directly with environment and nature protection: Environmental Development, Environmental Conservation, Nature Conservation and Nature Parks. Issues regarding waste management are foremost handled at the Department of Environmental Development. According to the National Waste Management Plan there are two Deputy State Secretaries that have the responsibility to lead and monitor the national waste management system. These Secretaries also develop the general strategy and to prepare regulations to be approved by the parliament.
- The National Council of Environmental Protection is defined as an advisory and consultant body of the Government. The Committee on Sustainable Development of the Hungarian Parliament is the advisory body of the Parliament.
- The Herman Otto Institute (HOI) carries out background studies for waste policy.
- The National Inspectorate for Environment and Nature (OKTF) has the role of regional administration and monitoring/inspection, together with the 11 environmental departments of government offices that issue permits for waste treatment, collection and transportation.
- The National Waste Management Directorate (OKTF-NHI) is a separate unit within the National Inspectorate for Environment and Nature (OKTF) and it has replaced the National Waste Management Agency (Országos Hulladékgazdálkodási Ügynökség, OHÜ) since the first of January 2015. The name has changed, but not the function. The OHÜ was given the executive right to coordinate and control the selective waste management in Hungary in 2012, according to the Law LXXXV of 2011 on the Environmental Product Fee. The main obligations of the new Directorate are still to work to contribute to waste reduction and to organise and manage the waste collection and recycling of those waste streams which fall under product fee

regulation. The Directorate receives state support for the promotion of selective waste management, with the goal to achieve higher proportions and quantities of separately collected municipal solid waste. The Directorate sign contracts with public service providers and give them financial support to contribute to the fulfilment of targets, through public procurements it signs contracts with the industrial partners, recyclers to ensure that the collected materials are treated properly. Further, they carry out waste management campaigns, compile the National Collection and Recovery Plan and are in charge of regional planning.

- The National Tax and Customs Administration is responsible for the registration and control of the companies that are obliged to pay product fees.<sup>6</sup>
- The Hungarian Energy and Public Utility Regulatory Authority recommends national fees for collection of municipal waste from households and these fees are defined by the Minister responsible for National Development.
- The Minister responsible for the environment – the head of the Ministry of Agriculture – operates the Unified Waste Management Information System (EHIR) as the part of the National Environmental Information System OKIR). Data is entered by companies down to site level. The system was established by the former Ministry of Rural Development in order to improve the accuracy of data. Before the system was introduced there were several agents to report to. Data are published annually and are available in Hungarian via <http://web.okir.hu/en/ehir>.

### 1.1.2 The regions

Regional plans have to be prepared for the jurisdiction area of regional environmental authorities. These regions are not identical with the 7 statistical regions (see Figure 1.1).

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<sup>6</sup> <http://www.szelektivinfo.hu/en/about-us>

**Figure 1.1: The statistical planning regions<sup>7</sup>**



### **1.1.3 The municipalities**

The municipalities and associations of municipalities are the key bodies responsible for organising the collection and treatment of municipal waste. The 3,155 municipalities<sup>8</sup> were given a more important role when the Act on Waste was adopted in 2012. However, the municipalities lack adequate tools and infrastructure to be able to carry out this task according to the Environmental and Energy Efficiency Operational Programme 2014-2020.<sup>9</sup>

The operation of collecting and treating municipal waste is pursued by waste-collecting companies which can be public, semi-public or private. From the early 1990s, the municipal waste collection and treatment system of Hungary has gradually been divided between subsidiaries of private companies, a few big municipal companies, small municipal companies owned by towns, villages or cooperatives and joint-ventures between multinationals and municipal companies.<sup>10</sup> Since 2013 exclusively public service companies with a minimum of 51 % ownership by the state or municipal are allowed to carry out the collection services. It was intended this would improve the monitoring of waste quantities.<sup>11</sup>

The service providers procured by the municipalities choose how the collection is to be carried out, sometimes together with the municipality. Since January 1st 2015 compulsory door-to-door separate collection should be introduced by the public service providers for paper, glass, plastic, metal and green waste. There is one exclusion: if it is not economically

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<sup>7</sup> Hungarian Central Statistical Office (2015), [https://www.ksh.hu/regional\\_atlas\\_counties](https://www.ksh.hu/regional_atlas_counties)

<sup>8</sup> Hungarian Central Statistical Office (2015), [https://www.ksh.hu/docs/hun/xstadat/xstadat\\_eves/i\\_wdsd005.html](https://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_wdsd005.html)

<sup>9</sup> The Hungarian Government (2014) Environmental and Energy Efficiency Operational Programme 2014-2020 p 30

<sup>10</sup> Cotta, B. (2015), p 23

<sup>11</sup> Eunomia et al. (2013), European Reference Model on Municipal Waste Management, Member State Consultation Questionnaire p 3, 11

feasible other possibilities could be used to ensure the access to everyone. Waste yards and waste islands are just additional solutions. Based on last year's assumption 445,000<sup>12</sup> inhabitants still do not have access to separate waste collection; this should be solved gradually. There is no central regulation. If the service is not working the Disaster Management Body takes over operational control.

#### 1.1.4 The non-state stakeholders

- The Association of Public Service Providers (Köztisztasági Egyesülés) represents municipal waste-collecting companies since 1972.
- The Hungarian packaging manufacturers, distributors and enterprises established the Hungarian Association of Packaging and Material Handling (Csomagolási és Anyagmozgatási Országos Szövetség, CSAOSZ) in the 1990s.
- The packaging producers and fillers are members of the Association of Environmental Enterprises (Környezetvédelmi Szolgáltatók és Gyártók Szövetsége, KSZGYSZ). They can also be members of business associations representing specific packaging materials such as the Beverage Carton Environmental Services Association (in Hungarian: Italos Karton Környezetvédelmi Szolgáltató Egyesülés, IKSZ).
- In 1995 the Hungarian recycling companies started the Hungarian Waste Management Federation (Hulladékgazdálkodók Országos Szövetsége, HOSZ).
- Non-Governmental Organizations such as the Reflex Environmental Protection Society in Győr, the Green Circle in Hajdúböszörmény, Emisszió and Csemete<sup>12</sup> and the national Humusz Waste Prevention Alliance<sup>13</sup> (HUMUSZ) have devoted their activities to waste issues since the mid-1990s.

## 1.2 Summary of Legislative Framework for Waste Management

Hungary started to establish measures aimed at aligning national legislation with that of Europe as they adopted the Act on Waste Management in 2000 (Act XLIII of 2000).

Today the waste management tasks in Hungary are regulated by:

- The Act on Waste (Act CLXXXV of 2012)
- The Act on Environmental Protection (Act LIII of 1995/2015)
- The Environmental Product Fee Act (Act LVI of 1995)

### 1.2.1 The Act on Waste

The updated Act on waste was adopted by the parliament in November 2012. The former Act on Waste Management (Act XLIII of 2000) was considered outdated, both from a national perspective but foremost because of the need to add obligations derived from the 2008/98/EC Waste Framework Directive (WFD) into the national enactment. The deadline for implementing the obligations set by EU was December 2010, and as Hungary did not succeed to transpose the EU Waste Framework Directive into national law until 2012 the EU Court imposed penalty payments on the country. The new Act of Waste of 2012 was

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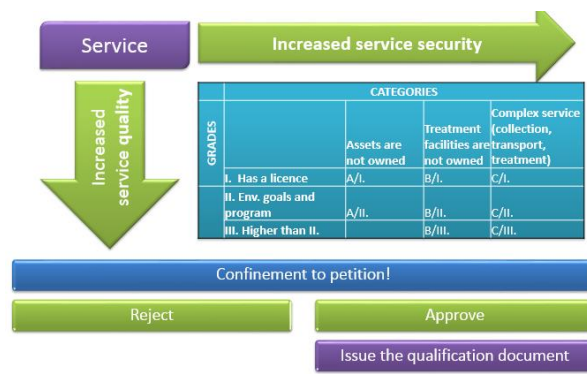
<sup>12</sup> Rác A (2015) A hulladékgazdálkodás és a hulladékgazdálkodási közszolgáltatás jövője

consolidated in 2013 and the latest version entered into force on 23 December 2015. The revision process was slowed down because of lack of proper databases and reliable data.

The aim of the new Act of Waste was mainly to adopt the WFD regulations and concept such as life-cycle thinking, re-use and preparing for re-use, extended producer responsibility, precaution and prevention into national law. The former waste hierarchy had three steps and two more were added in the new enactment. According to the new Act separate waste collection is compulsory from 2015. Since January 1st 2015 compulsory door-to-door separate collection should be introduced by the public service providers for paper, glass, plastic, metal and green waste.

Besides including the obligations of the WFD the new Act on Waste was meant to give the municipalities and other local entities greater responsibility over the waste management. One step towards this goal was to restrict private companies to manage municipal waste. Only non-profit companies with the majority of ownership in municipality were allowed to compete in public procurements after the adoption of the new enactment. The increased rate of state ownership was an important element of the new legislation.<sup>13</sup>

Between 2012 and 2014 the collector companies also have to be recorded and qualified by the National Waste Management Agency (NWMA).



Since 1<sup>st</sup> January 2015 the system of qualification has changed. It is now the responsibility of the National Inspectorate of Environment and Nature, and a new concept was introduced: the qualification permit. The permitting is now directly linked to qualification as an authority function.

Further changes related to specific tasks that the public municipal waste management companies had to carry out regarding public relations. They have to have procedure for customers' complaints, notifications for fees, data and schedules on service area, procedure of service and a webpage with this information. They also need to have an updated waste management plan every 3 years. The plan should focus on the aims of the regulations in the presentation of the activities for collection, transportation and treatment.

<sup>13</sup> Dienes T (2012). Environmental assessment and policy options for solid waste systems and technologies in Budapest with EASEWASTE



Another change in the new Act on Waste was that the fees for municipal services were to be defined by the Minister responsible for National Development, after recommendation from the Hungarian Energy and Public Utility Regulatory Authority.<sup>14</sup> The landfill fee was introduced after the adoption of the new Act and according to the Hungarian Government and the Environmental and Energy Efficiency Operational Programme 2014-2020; this led to diversion of waste from landfills to other treatment methods.<sup>15</sup>

### **1.2.2 The Act on Environmental Protection**

The last version of the Act on Environmental Protection entered into force on 1<sup>st</sup> January 2016. The law specifies the responsibilities for the effects produced on the environment and aims to harmonize State activities with the requirements of environmental protection. It implements six Directives. The Directives implemented in the law are not related to treatment of MSW in particular but are important when it comes to environmental protection in waste related activities.<sup>16</sup> Public participation in environmental decision and draft-making was institutionalised in the Hungarian Environmental Protection Act of 1995.<sup>17</sup>

### **1.2.3 The Environmental Product Fee Act**

The Environmental Product Fee Act (Act LVI of 1995) is another enactment of relevance to the waste management of Hungary. This Act established the environmental product fee that had to be paid by the producers of specific waste streams such as batteries, packaging and tyres. According to the Product Fee Law at least 7 % of the budgetary allocation (through the OKTF NHI yearly budget) must be spent on environmental awareness raising.<sup>18</sup>

### **1.2.4 Regulations for Bio-waste**

The legal background for the treatment of bio-waste is the Bio-waste regulation Nr 23/2003 and the Fertilizer Regulation Nr 36/2006. These regulations include the technical requirements of composting and the distribution of the compost product.<sup>19</sup>

## **1.3 Status of Waste Management Plan(s)**

The Waste Framework Directive requires member states to establish one or more Waste Management Plan/s that cover the entire geographical territory. Hungary adopted the first National and Regional Waste Management Plans in 2003.

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<sup>14</sup> István, Z., Chrabák, P. (2012) The new “Act on Waste” in Hungary

<sup>15</sup> The Hungarian Government (2014) p 15

<sup>16</sup> FAOLEX legislative database of FAO Legal office

<sup>17</sup> Cotta, Benedetta (2015). Wasted compliance strategies? The policy-making styles of Hungary and Poland in the implementation of European environmental directives. p 22

<sup>18</sup> Department of Environmental Development, Ministry of Agriculture. 2015-10-27

<sup>19</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

Currently, the medium and long-term tasks are defined by the National Environmental Programme 2015-2020 and by the associated National Waste Management Plan (NWMP) 2014-2020.

The NWMP was drafted by the Ministry of Rural Development in cooperation with the National Waste Management Agency. The first National Waste Management Plan 2003-2008 was meant to be replaced by a second NWMP 2009-2014, but this plan was postponed as the adoption of the new Waste Management Act was delayed until 2012. The NWMP 2014-2020 was declared legally adopted 31 December 2013 (according to the requirement of EU), but is still under conceptual revision in 2015.

Other relevant strategies and plans that complement the NWMP:

- The National Collection and Recovery Plan 2015 is mostly a financial plan that explains the planned cost for the collection, pre-treatment and recycling of material with product fees. The plan makes reference to data in respect of waste quantities for certain streams (packaging, WEEE, tyres and batteries), but there is no real analysis of the situation. Still, these waste streams are explained more detailed in this plan than in the NWMP. An increase in collected packaging, WEEE, and tyres are foreseen while the amount of collected batteries is expected to decline. The budget for 2015 is 12,747 billion HUF (40 billion EURO). The budget for 2016 is set to 12,750 billion HUF. The budget is based on the income from the product fees, and is supposed to cover the expenses for collection, pre-treatment and recycling of the material.
- The Strategy for the Management of Biodegradable Waste in Municipal Solid Waste Management 2004-2016.
- The Development Strategy for Municipal Solid Waste Management 2007-2016.
- The Municipal Solid Waste Management Support Strategy 2007-2015.

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plan(s)

According to the National Waste Management Plan (NWMP) the total waste generation has decreased in recent years, as a result of the economic crisis. Following this trend, the quantity of deposited as well as incinerated municipal solid waste has decreased. The recycling rates are said to have increased. The NWMP 2014-2020 adopts the position that more has to be done to the national waste management system in order to comply with the Directives. National policies and targets are set in accordance with the EU waste targets. Sustainable development is one of the basic elements of the NWMP and the main principle is to follow the waste hierarchy. The NWMP states that the role of the State and municipality in public service has to be strengthened.

The NWMP lists the activities to focus on to achieve the overall objectives:

- Increase recovery and recycling rates
  - the recycling rate for metal, paper, plastic, glass and organic waste must be increased above 40 %

- the recycling rate for metal, paper, plastic, glass and organic waste from households must be 35 % by 2014, and 50 % by 2020.
- Reduce waste
- Decrease landfilling
  - The rate of municipal waste going to the regional landfill sites should decrease to below 60 % by 2014
- Design and develop separate collection
  - the necessary infrastructure must be established for all the households
- Separate reusable components of waste products to enable preparation for reuse

When the NWMP 2003-2008 was analyzed by Orosz and Fazekas in 2008, the review identified there was a need to increase the capacity of landfills, to develop infrastructure for separate waste collection and to build new composting plants. Incineration was deemed as too costly in comparison to landfilling. The lack of a reprocessing industry for plastic and glass packaging waste was considered to hinder the rapid development into a more recycling-oriented society. One question at that time was how the quantity of illegally dumped waste could be reduced. This problem is still on the agenda 2015 in the current NWMP. The prevention of waste was not in focus. This has changed as waste prevention has a whole chapter in the current NWMP. Hungary is one of the coordinating beneficiaries of European Week for Waste Reduction, and this is being worked on with gradually increasing results seen every year.<sup>20</sup>

#### 1.4.2 Waste Prevention Plan

The Waste Prevention Plan (WPP) is part of the NWMP 2014-2020 and covers the national level.<sup>21</sup>

The WPP covers the sectors, Construction and infrastructures, Manufacturing, Sale, Retail, Households and Public services. It does not cover Mining, Raw Material Processing and Private Service Activities/Hospitality.

The waste types covered are Food/organic, C&D waste, Hazardous waste, Household/municipal waste, and other. Paper, Manufacturing waste and Bulky waste are not included.

The WPP does not contain specific quantitative targets. The overall objective of the plan is to:

- promote the decoupling of resource use from economic activity;
- reduce material use and waste generation;
- contribute to the realisation of a more efficient resource management system;
- promote the application of solutions that have the lowest impact on the environment during their life-cycle; and
- promote job creation.<sup>22</sup>

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<sup>20</sup> See <http://www.ewwr.eu>

<sup>21</sup> Eunomia et al. p 235

The WPP plans the introduction of prevention measures grouped by five areas of action<sup>23</sup>:

**Table 1.2: Prevention Measures**

Areas of Action	Measures
<b>Reuse</b>	<ul style="list-style-type: none"> <li>• establishment of technical working groups to analyse the general framework of reuse</li> <li>• elaboration of the accreditation system for reuse centres</li> <li>• establishment of reuse centres</li> <li>• ensure financial sources for the establishment and development of the reuse network</li> <li>• establishment of conditions for the social-based distribution of products suitable for reuse</li> <li>• communication campaign and coordination.</li> </ul>
<b>Green Public Procurement</b>	<ul style="list-style-type: none"> <li>• draft a regulation on green public procurement</li> <li>• introduce a gradual tightening of the regulation in order to meet the criteria of the EU GPP Toolkit</li> </ul>
<b>Environmental friendly production and management</b>	<ul style="list-style-type: none"> <li>• support research and development in eco-innovation and eco-design</li> <li>• enable the use of food for charitable purposes which is impeccable in food security point of view but are with expired “best before date”</li> </ul>
<b>Awareness rising</b>	<ul style="list-style-type: none"> <li>• incorporate prevention into environmental education, vocational training, corporate policies, public education and into the everyday life of citizens.</li> <li>• encourage the development of relations among experts, to provide information to the public on the current situation of waste prevention and on the related opportunities and to transfer knowledge on waste prevention.</li> </ul>

The European Environment Information and Observation Network (EIONET) has identified the Hungarian WPP as mostly in line with the 98/2008 Annex IV (1-16). One measure that goes beyond the activities suggested by the EU is the one regarding to food waste (enable the use of food for charitable purposes which is still safe to eat but where the “best before date” has expired). The WPP points out the need to measure the indicators for waste

<sup>22</sup> NWMP p. 249

<sup>23</sup> NWMP p. 250-265

prevention annually in order to monitor and to keep track of the implementation of the programme but lacks description about the responsibility for monitoring the indicators.<sup>24</sup>

The general indicators proposed in the WPP are:

- the amount of annually generated municipal waste (t); and
- the increase of the amount of separately collected municipal waste compared to the total amount of generated municipal waste (this is not, strictly speaking, a waste prevention indicator).

The specific indicators concerning MSW are:

- number of accredited reuse centres;
- the size of population provided by the reuse centres (number of individuals)
- amount of second-hand products transferred to accredited reuse centres;
- the proportion of marketed second-hand products compared to the amount transferred to accredited reuse centres;
- the proportion of 'green' elements compared to all other criteria (%) of public procurements;
- number of students participating in courses on waste prevention;
- number of events related to waste prevention

The WPP includes the expected costs of the measures and the minimum financial resources needed for municipal waste management. The costs of the implementation of the programme are financed partly by the EU and other international grants, and related national co-financing, including revenues from the landfill tax and product fees.<sup>25</sup>

## 1.5 Progress towards the Fulfilment of Targets

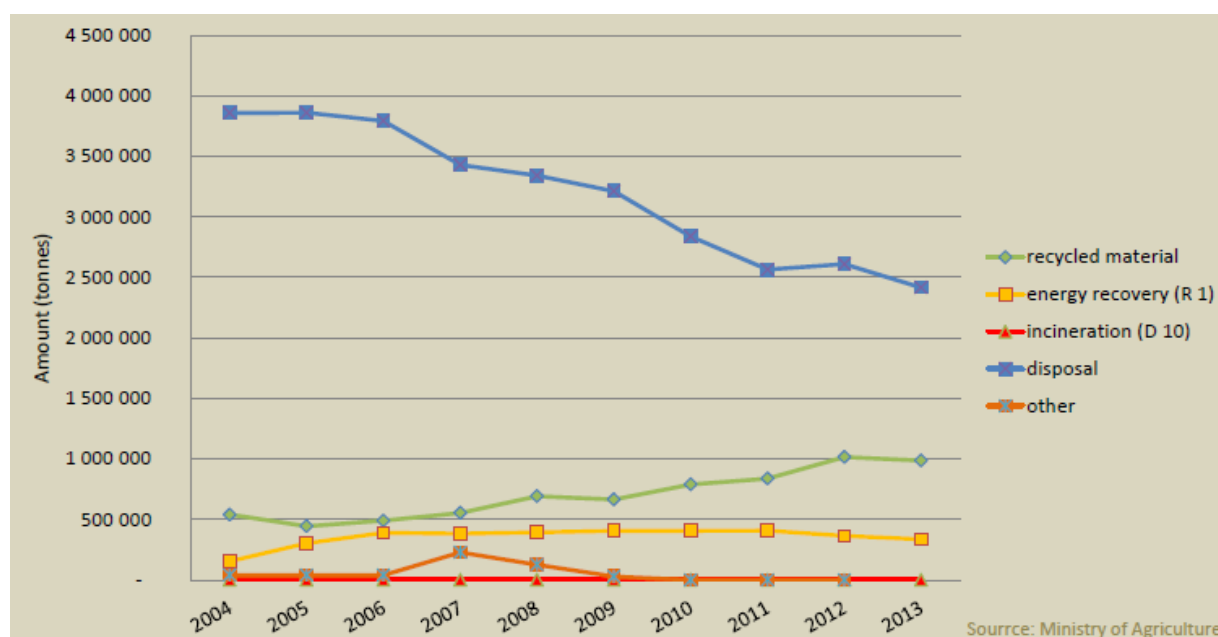
Some progress has been seen towards fulfilment of targets as material recovery and energy recovery has increased, and as landfilling as well as waste generation has decreased in recent years (see Figure 1.2). However, the amount of landfilled waste is still high and the levels of recycling and biological treatment are low.

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<sup>24</sup> <http://scp.eionet.europa.eu/facts/WPP/hungary>

<sup>25</sup> NWMP p 268 f

**Figure 1.2: Treatment of municipal waste 2004-2013<sup>26</sup>**



The national objectives are the same as those in the EU Directives; 50 % recycling of MSW, separate collection of glass/metal/plastics/paper and reduction of landfilled biodegradable waste.<sup>27</sup>

### 1.5.1 Landfill Directive Targets

The objective of the Landfill Directive is to prevent or reduce negative effects on the environment and on human health by introducing stringent technical requirements for waste and landfills. In order to comply with the Directive Hungary closed or updated all non-compliant landfills by the year 2009.

The Directive sets targets for reduction of biodegradable municipal waste going to landfill. The target for 2016 is to reduce the amount of BMW to 35 % of the amount landfilled in 1995. The interim targets for 2006 and 2009 were to reduce the biodegradable municipal waste to 75 and 50% of the waste produced in 1995. The Hungarian legislation initially set the targets two years ahead of the Landfill Directive Targets, which means they were to achieve 35% of the 1995 level already by the year 2014. This was revised in 2007 so that the targets are due to be met on the same date as in the Directive.

In 1995 Hungary generated almost 2 million tonnes of BMW (approximately 40% bio-waste and 40% paper). Hungary introduced a ban on the landfilling of untreated waste in 2002. This has led to establishments of MBT facilities and composting facilities.<sup>28</sup> The pre-

<sup>26</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

<sup>27</sup> EEA (2013) p 10

<sup>28</sup> EEA (2013)

treatment of municipal waste in the MBT facilities are supposed to reduce the organic content going for landfills. Bans were also introduced on tyres and shredded rubber.

The quantity of landfilled biodegradable waste has been estimated at 841 000 t in 2012<sup>29</sup> and 944 000 t in 2014<sup>30</sup>. A maximum of 820 000 t can be landfilled in 2016 in order to comply with the 35% reduction target. The EEOP suggests that there is a need for investments in central composting, as the 250 000 tons of current capacity has to rise to 470 000 t by 2020. According to the Ministry of Agriculture, the quantities are only estimates and new data will be presented when the Waste Management Plan is revised.<sup>31</sup>

According to the European Environment Agency, Hungary is on the way on fulfilling the target of the Landfill Directive. The interim targets of 2006 and 2009 were met thanks to an increase in material recovery, MBT and improved paper collection system.<sup>32</sup> The introduction of separate collection schemes for biodegradable packaging waste (paper, cardboard and wood packaging) has helped initiate the diversion of biodegradable waste from landfills. Hungary has worked in recent years to extend the separate waste collection service to the whole population and to improve the performance of these collections where in use. These actions are thought to make it feasible to reach the objective of 35% percent reduction by 2016. The Packaging Directive (1994) has, besides the Landfill Directive, been an important EU instruments to reduce landfilling.<sup>33</sup> Performance data on these directives is shown in Figure 1.3.

Besides the challenge of establishing central composting capacity, as referred to above, the separate collection of green waste should be set up by 2015. An obstacle to further improvement towards the landfill directive target could be that the market for waste-derived compost is limited. Landfill sites with composting facilities are having difficulties finding markets for their products. The capacity of the facilities is only used to 50 percent and only a small amount of the compost is sold on the private market.<sup>34</sup> There are problems collecting the organic waste, treating it and utilising the final product.

A recent report suggests there is a MBT-capacity of 750 000 tonnes/year, as new facilities have been constructed.<sup>35</sup> According to the Ministry of Agriculture the capacity was 1 193 125 tonnes/year in 2014 there were approximately 23 MBT plants in operation (7 were out of order temporarily).<sup>36</sup>

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<sup>29</sup> The Hungarian Government (2014)

<sup>30</sup> European Commission (2015)

<sup>31</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

<sup>32</sup> EEA (2013), 8-9, 15

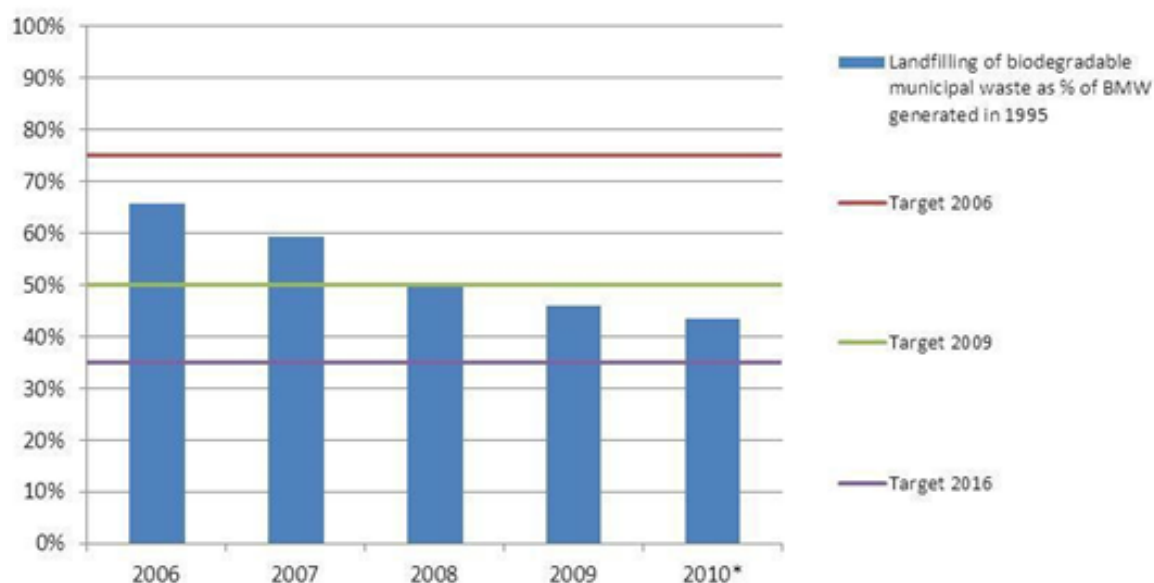
<sup>33</sup> EEA (2009), Diverting waste from landfills

<sup>34</sup> Ibid.

<sup>35</sup> European Commission (2015) Detailed evaluation report for assessing the waste management plan of Hungary

<sup>36</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

**Figure 1.3 Landfilling of Biodegradable municipal waste 2006-2010<sup>37</sup>**



Data on pre-treatment and sorting of waste (incl. MBT) are not covered as categories in the waste data reporting to Eurostat. In practice, the amounts delivered to mechanical biological treatment or sorting should be reported on the basis of the subsequent final treatment steps. However, the way these amounts are allocated to the four treatment categories (incineration, landfilling, recycling and composting) varies significantly. In the case of Hungary there is no official data on the treatment of the BMW and other waste streams going through MBT-facilities and thus it is not clear how this is accounted for in the statistics.

Figures show that 26 000 tonnes of the RDF output from MBT goes to cement kilns.<sup>38</sup> The rest is landfilled. The biostabilised material from MBT is intended to be used, but it is not clear to what extent this currently happens in practice. The landfill fee for these residues is lower than for municipal solid waste that has not gone through treatment.

The landfill fee was introduced in January 2013. The fees are paid by the landfill operators and the revenue is supposed to go to support of waste prevention systems and increase of recycling rates and awareness-rising activities. The fee was set at 10.7 EUR in 2013 with the plan to increase the fee radically within four years. The fee is the same for municipal waste, demolition waste, hazardous waste and sludge, while the fee for treatment residues is set at a lower level.

The treatment residues are divided into non-recoverable and recoverable fractions of residual waste from the production of products from waste. The fee for the recoverable fractions is not included in the table above, but was set to 19 EUR in 2014. The fees

<sup>37</sup> EEA (203)

<sup>38</sup> There is the potential for more material to be used at cement kilns. However, the Ministry's data is not sufficient to confirm how much of the remaining material could be used in this way, or the location of other kilns that could also receive this material.



representing 2014 above were still in use November 2015.<sup>39</sup> The landfill fee is calculated according to the following formula (based on data returns for each quarter):

$$\text{Landfill fee in Forint} = \sum [H_i (\text{tonne}) \times E_i (\text{Forint/tonne})]$$

Where

H<sub>j</sub>: payable landfill fee

H: weight of waste of payable landfill fee

E: unit price of waste of payable landfill fee

i: type of waste of payable landfill fee

It is intended that this fee will cover the cost of the treatment, although there is no data to confirm that this is the case.

## 1.5.2 Waste Framework Directive Targets

The WFD emphasises the importance of waste minimisation, the protection of the environment and human health as priorities, and advocates the waste management hierarchy. The objective of the Directive is to reach the whole population by selective waste collection. Article 11.2 of the Directive requires Member States to get the level of preparation for re-use and recycling of waste materials (including at least paper, metal, plastic and glass from households and the same kind of waste from similar origin) to increase to a minimum of overall 50 % by weight by 2020. The rules and four different calculation methods for verifying compliance with the targets set in Article 11.2 are laid down in Commission Decision 2011/753/EU.

The four calculations methods imply substantial differences in the effort that the member state needs to put into the national improvement of recycling.

Hungary has selected method 2 to calculate the rate of recycling. This method means that the recycling rate of household and similar waste is calculated through dividing the recycled amount of paper; metal; plastic; glass waste (and other single waste streams from households or similar waste streams) with these fractions' total generation. This is the most commonly chosen method. It is noted that this method would allow Hungary to meet the target by recycling considerably less than 50% of MSW in total.

All policy and legislation in Hungary has been aligned to the principles of the waste management hierarchy.

The plan is to establish a network of re-use centres aimed at preparation for reuse, with three centres to be available by 2022. The packaging collection system and separate collection of MSW was introduced in 2001.<sup>40</sup> Ensuring all settlements have access to separate collection, and improving the performance of existing separate collection systems, are among the main goals of the NWMP. Hungary has made separate collection legally

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<sup>39</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

<sup>40</sup> EEA (2013), p 15

binding for 100 % of households from 2015. According to the NWMP 5 million inhabitants had access to separate collection system for packaging in 2009. Two years later 6.2 million were served and 2012 9.1 million could use the system. This means that over 90 % of the population had access to separate collection in the form of bring systems in 2012. The numbers presented in Table 1.5 show that approximately 30 % of all household in Hungary had access to waste collection and separate collection in 2011; it is assumed that this relates to bring systems rather than door to door collection, although this is not always clearly indicated in the information provided by the authorities. There is no punishment for the authorities if the separate waste collection continues on a low level; it is not clear whether any sanctions would be applied in the event that coverage is not complete, and if so, on which body (the authorities or the EPR body) these would fall.<sup>41</sup>

The separate collection comprises three different collection systems; door-to-door, waste yards and waste islands. Door-to-door collection started in 2006, the first waste-yard was opened 2001 in Budapest and the first waste island was opened in 2004, also in Budapest.

Since January 1st 2015 compulsory door-to-door separate collection should be introduced by the public service providers for paper, glass, plastic, metal and green waste. There is one exclusion: if it is not economically feasible other approaches could be used to ensure the service is accessible to everyone. Waste yards and waste islands are just additional solutions. Based on last year's assumption 445.000 inhabitants still do not have access to separate waste collection, this should be solved gradually.<sup>42</sup>

The current ratio of "recovery of the four fractions of communal waste" was according to the Hungarian Government 38.5 % when the EEOP was written in the end of 2014. In the EEOP the term recovery is used instead of preparation for re-use/recycling, which raise the question of how the ratio is calculated and if more treatment methods are included in the numerator. The EEOP takes the view that once the whole country is covered by well-functioning separate collection, it will be feasible to reach the goal of 50% of the material going to preparation for reuse and/or recycling by 2020.<sup>43</sup> It is not clear what method or data they have used to for these calculations. According to the review by the European Environment Agency it is possible to reach 47% by 2020 if the rate of recycling from the last 5 years is maintained; MSW recycling was 20% in 2010 and 21% in 2011.<sup>44</sup> According to the "Detailed evaluation report for assessing the waste management plan of Hungary" it is possible to fulfil the recycling target when using Method 2 for calculation. The Hungarian estimation in the NWMP is 62%.<sup>45</sup> As the terms recovery and recycling sometimes seem to be used with no distinction there is a need to clearly specify the actual activities. Calculation method 2 may also include "other single waste streams from households or similar waste streams", which makes it difficult to know how the result is derived.

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<sup>41</sup> Dienes T (2012)

<sup>42</sup> Rácz A (2015) A hulladékgazdálkodás és a hulladékgazdálkodási közszolgáltatás jövője

<sup>43</sup> Hungarian Government (2014)

<sup>44</sup> EEA (2013), p 10

<sup>45</sup> European Commission (2015)

## 1.6 Implementation of Specific Waste Framework Directive Articles

This section summarises how the Waste Management Plan indicates that the articles from the Waste Framework Directive have been implemented in law and how policies are supporting the implementation.

### 1.6.1 Article 4: Application of the Waste Hierarchy

Article 4 requires the application of the waste hierarchy as a priority order in waste prevention and management legislation, encouraging the best environmental outcome.

The Hungarian Waste Management Act is based on the system of waste hierarchy and in the first section of the NWMP the steps of the hierarchy are explained. The concept and approach in accordance with the implementation of the EU waste hierarchy is clearly defined. The objectives of the NWMP are the same as those in the EU Directives; 50% recycling of MSW, separate collection of glass/metal/plastics/paper and also reduction of biodegradable waste landfilled to 35% by 2016. Important aims in the NWMP are to prevent waste and increase recycling, to view waste as a resource, to increase the use of EPR and only to landfill non-recoverable waste.

Progress in the management of MSW between 2004 and 2012 include:<sup>46</sup>

- Material recovery increased from 12 % to 25 %
- Energy recovery remained 8-10 %
- Landfill rate reduced from 84 % to 65 %

To make the waste management and use of resources more sustainable, Hungary has introduced:

- Product fees in 1995 - the system was revised in 2011;
- A landfill fee (referred to as a tax in some sources) in 2013;
- A ban on the landfilling of untreated waste in 2003; and
- Mandatory separate collection of dry recyclables by 2015.

Other instruments in order to be able to climb the waste hierarchy are proposed and planned in the NWMP, but there is no evidence how and if these instruments have been implemented. The deposit scheme for glass bottles is one of these instruments where information regarding the implementation is vague.

There is a part of the NWMP devoted to Waste Prevention and, as mentioned above, there are intentions to establish a network of re-use centers for preparation for reuse, with three planned to be available by 2022.<sup>47</sup> The EEOP discusses the importance of awareness-rising activities and informed shopping and the use of more durable products is mentioned as parts of a solution to reduce waste generation.<sup>48</sup>

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<sup>46</sup> European Commission (2015) p 16

<sup>47</sup> Ibid p 13

<sup>48</sup> The Hungarian Government (2014) p 65, 68

Although Hungary has highlighted the waste hierarchy in the NWMP and has introduced some important mechanisms that aim to change the waste management system in line with the waste hierarchy, the rate of landfilling is still high and the recycling levels low. The Ministry of Agriculture has started to work with the idea behind Circular Economy<sup>49</sup>, which is a step in the right direction.

### 1.6.2 Article 10: Recovery

Article 10 states that Member States should take necessary measures to ensure that waste undergo recovery operations in accordance with Articles 4 and 13: waste shall be separately collected where technically, environmentally and economically practicable to facilitate recovery.

Separate collection was introduced in 2006 and the idea is that door-to-door collection will increase the levels of recycled material. The separate collection system of municipal waste is mandatory by 2015 and it is understood that door-to-door collection is preferred, although rural areas will still be served by the bring-system. There is no official data on the proportion of door-to-door collection yet, but there will be in 2016. The coverage of bring-sites, or waste islands, has decreased as the door-to-door collection has increased. Glass is still collected from the waste islands, however, as it is not part of the door-to-door collection scheme. The waste islands in Budapest have decreased from 900 to 245 in recent years.<sup>50</sup>

Table 1-4 shows the number and rate of households with separate collection up until 2011. The coverage of regular collection of municipal waste has increased in recent years and is now practically 100%.

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<sup>49</sup>Department of Environmental Development, Ministry of Agriculture. 2015-10-27

<sup>50</sup>Department of Environmental Development, Ministry of Agriculture. 2015-10-27

**Table 1.4: Households covered by waste collection and source separation<sup>51</sup>**

Year	Number of households covered by regular waste collection	Number of households covered by regular waste collection with source separation	Total number of households	Households covered by regular waste collection (%)	Households covered by regular waste collection with source separation (%)
2001	3,524,781		4,077,410	86.45	
2002	3,624,544		4,104,019	88.32	
2003	3,778,719		4,133,975	91.41	
2004	3,800,568		4,172,787	91.08	
2005	3,813,261		4,209,472	90.59	
2006	3,893,453	212,220	4,238,452	91.86	5.01
2007	3,939,517	270,752	4,270,497	92.25	6.34
2008	3,974,678	553,986	4,302,827	92.37	12.87
2009	3,994,914	742,373	4,330,681	92.25	17.14
2010	4,012,061	993,822	4,348,955	92.25	22.85
2011	4,021,121	1,269,911	4,358,858	92.25	29.13

Today the amount of coverage is obviously higher than showed in the table above. A system with two bins or a bin and bag system is the typical method for door-to-door collection; one for mixed waste and one for recyclables. In Budapest the system is based on three bins; as there is an additional bin for used oils, batteries and hazardous waste. In some areas collection of garden waste is also possible.

The Ministry of Agriculture presents the results of collected dry recyclables from the city of Miskolc. Miskolc is the fourth largest city in Hungary and has approximately 161,000 inhabitants. The data shows that the monthly collected material has increased between 2014 and 2015. Taking into consideration the size of the city this would mean a collection rate of 2.76 kg paper, 1.32 kg plastic and 0.24 kg metal per inhabitant and year. The Ministry is also presenting data from Municipal Public Services Nonprofit Inc. representing collected material in Budapest.<sup>52</sup> Based on this data and calculations made by the project team every inhabitant (1.74 millions) would contribute with 12.6 kg paper and 6 kg of mixed plastic and metal to the separate collection scheme. There seems to be a discrepancy between the statistics reported to Eurostat and the data presented by the Ministry of Agriculture as the Eurostat has higher amount of generated and treated packaging material (see Table 1.5).

The above data can also be compared with the national data on waste generation. For plastics, for example, composition data indicates that waste plastics should account for

<sup>51</sup> Eunomia et al. (2013), European Reference Model on Municipal Waste Management, Member State Consultation Questionnaire

<sup>52</sup> Department for Environmental Development. Ministry of Agriculture. 2015-10-27

14.5% of 377 kg, or close to 55 kg. By comparison, the amount of waste plastic packaging according to the Eurostat data is only 27.9 kg per capita.

**Table 1.5: Recovery and Recycling rates of paper, plastic and glass in selected Member States (2012)<sup>53</sup>**

	Paper and cardboard packaging				Plastic packaging				Glass packaging			
	Generated kg/cap	Total recovery rate	Material recycling	Energy recovery	Generated kg/cap	Total recovery rate	Material recycling	Energy recovery	Generated kg/cap	Total recovery rate	Material recycling	Other recovery
Belgium	60.3	97%	89%	8%	29.5	91%	39%	52%	35.9	100%	100%	0%
Bulgaria	18.5	89%	89%	0%	13.3	41%	41%	0%	10.2	61%	61%	0%
Czech Republic	37.9	92%	88%	4%	20.5	72%	60%	12%	18.8	75%	75%	0%
Hungary	39.3	87%	78%	9%	27.9	56%	31%	25%	10.3	32%	32%	0%
Austria	61.1	98%	84%	13%	34.1	100%	34%	66%	32.2	89%	85%	4%
Sweden	54.5	78%	78%	0%	23.2	100%	46%	54%	20.6	89%	89%	0%
United Kingdom	60.3	102%	89%	13%	35.2	46%	32%	15%	37.4	68%	68%	0%

The Hungarian recovery rate of all waste streams, not only packaging material, was approximately 45 percent in 2012.<sup>54</sup>

### 1.6.3 Article 11: Reuse and Recycling

Article 11 confirms the need for measures to promote reuse and high quality recycling, including the need for separate collection for (at least) paper, metal, plastic and glass, with a minimum of 50% of these materials to be collected for recycling by 2020.

Hungary introduced product fees in 1995 as a result of discussion between the Hungarian Ministry of Environment and the Hungarian Packaging and Filling Industry. This was in line with the polluter pays principle, which gives producers incentives to make products easier to recycle and gives them responsibility for the recycling of the collected material. The State income from the fees was intended to be used for improving collection and recycling.

The collection, recovery and recycling of packaging waste on behalf of the producers were carried by the first recovery organisation established in Hungary, Öko-Pannon, founded in 1996.

<sup>53</sup> Eurostat 2015

<sup>54</sup> European Commission (2015) p 28

The packaging waste directive was implemented in the Hungarian law in 2002 and in 2012 there were important changes to the system. A state-owned agency (National Waste Management Agency – OHÜ) was created to coordinate and finance the collection and recycling. This Agency replaced earlier recovery schemes funded by industry. Another change was that the product fee had to be paid by the producers of the packaging material instead of by the agents filling the packages. The product fees were increased.

In 2015 the National Inspectorate for Environment and Nature - National Waste Management Directorate took over the responsibility from the NWMA.

The low recycling of glass in Hungary in particular needs to be addressed. Glass is, in general, collected from the waste islands and is not part of the door-to-door collection. It could be included if the service providers decide to include it. According to the National Collection and Recovery Plan the product fee for glass is too low and is not covering the cost of the management.<sup>55</sup>

Hungary collected 44 000 tonnes of WEEE in 2013<sup>56</sup> and all was sent for recycling.

#### 1.6.4 Article 14: Costs of Waste Management

Article 14 indicates that the costs of waste management should be borne by the original waste producer in accordance with the polluter pays principle, although costs can also be borne partly by the producer of the product, through product charges. Economic instruments can play a significant role in diverting waste from landfill if they manage to change the behaviour of households, waste companies and producers.

The Municipal Solid Waste Management Support Strategy (A Települési Szilárdhulladékgazdálkodás támogatási Stratégiája) for the period 2007-2015 has the following assumptions:

- treatment capacities will be established by the end of 2015;
- the amount of waste to incineration will not change (approx. 420.000 tons/y);
- separate waste collection must be increased;
- the organic fraction should be composted (with focus on home composting); and
- landfilling need to be decreased (by using mechanical biological treatment)<sup>57</sup>

The Hungarian Energy and Public Utility Regulatory Authority defines the prices for the collection of municipal residual waste from households. The waste fee is regulated by the Municipal Council and depends of the size of the city. Public service companies are carrying out the collection to households, while businesses have their municipal waste collected either by public service companies or other companies. The cost for the collection from businesses is defined by individually negotiated contracts, not by the Hungarian Energy and

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<sup>55</sup> The National Waste Management Directorate (OKTF-NHI), A 2015. Évre vonatkozó Országos Gyűjtési és Hasznosítási Terv

<sup>56</sup> Eurostat, <http://ec.europa.eu/eurostat/web/waste/key-waste-streams/weee>

<sup>57</sup> Illés, Z. (2009) Hungarian Waste Management Policy,

Public Utility Regulatory Authority.<sup>58</sup> In Budapest in 2012 the property owners paid the full price for the collection and disposal of the residual waste.<sup>59</sup>

In many areas, a pay per bin-system for residual waste has been used for decades, with the bins usually being 120 or 1100 litres.<sup>60</sup> The nationwide applied Pay-as-You-Throw (PAYT) system for municipal residual waste is to be organised and maintained by the public service/municipality. It is not clear whether the full cost of disposal is charged.

In addition to the above system, in some areas there is a parallel system with pre-paid residual waste bags, for example in Budapest and in touristic regions. This system is also a pay-as-you-throw system as the collection is based on the fees paid for every bag in advance and no extra fee is charged at pick-up.

The separate collection of packaging waste is financed through the EPR-system since 1995 (Extended Producer Responsibility), and is thus based on the extra fees for certain products paid by the customers. Hence, there is no extra charge for the service of the separate collection. The cost for the management of packaging waste in 2015 was expected to be 8,628 billion HUF.<sup>61</sup> The fee is determined centrally. Hazardous and non-recyclable products have a higher fee than non-hazardous and recyclable products. A packaging with light material has lower fee than a heavy packaging. The civic amenity sites for bulky waste etc. are financed by the local authorities.

There is no compulsory deposit system in use, but some sources indicate the intention is to implement this for bottles and cans in 2016 (although in other cases the year 2014 is mentioned). There are voluntary systems in some chains of supermarkets. Another way of using the deposit scheme is with electronics; if a TV is returned when buying a new one there is a reduction of the price for the new TV.

The total cost of the waste management in the regions is shown in Figure 1.4.

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<sup>58</sup> Eunomia et al. (2013) p 9, 16-18

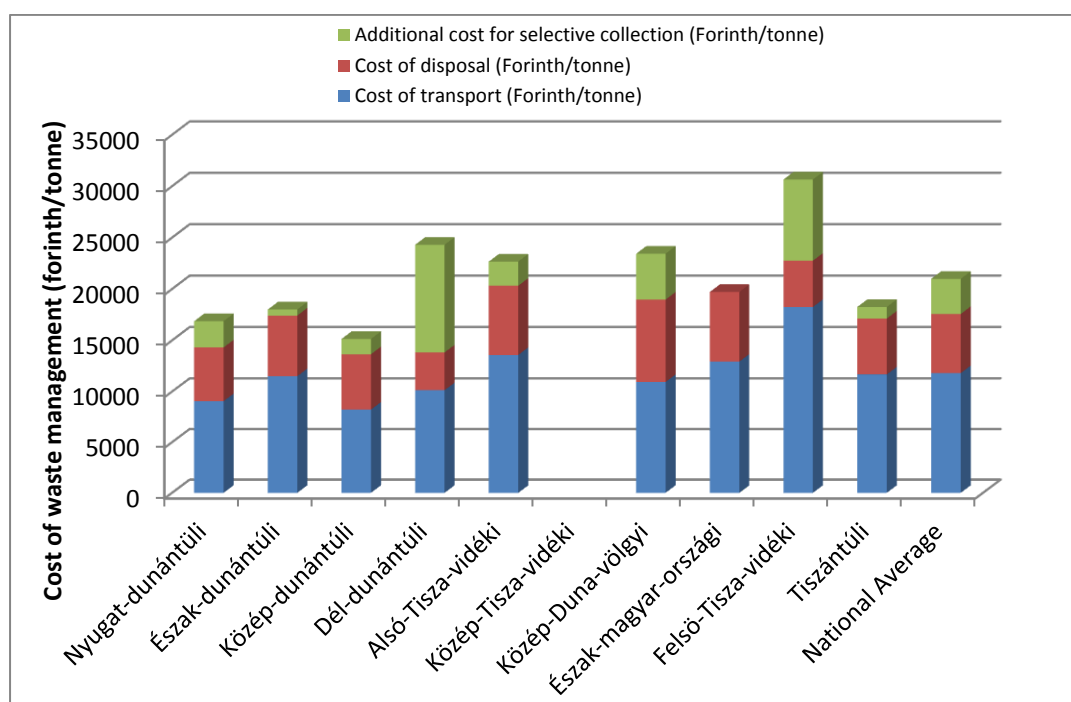
<sup>59</sup> Dienes T (2012) p 197

<sup>60</sup> Dienes T (2012)

<sup>61</sup> The National Waste Management Directorate (OKTF-NHI), A 2015. évre vonatkozó Országos Gyűjtési és Hasznosítási Terv



**Figure 1.4: Total cost of the waste management in the regions<sup>62</sup>**



The national average cost for the different steps of the waste management is presented in Table 1.6.

**Table 1.6: The unit cost of household waste management (€/tonne)<sup>63</sup>**

Regional Environment, Nature and Water Inspectorate	Cost of transport	Cost of disposal	Cost selective collection treatment	Revenue from selective collection	Additional cost for selective collection	Total cost of waste management	Transport cost (€/tkm)
National Average	39.98	19.47	15.41	4.31	11.57	71.72	0.3045

### 1.6.5 Article 22: Encouraging the Separate Collection of Bio-waste

The management of bio-waste is regulated by the provisions of the Landfill Directive, obliging Member States to reduce the amount of biodegradable municipal waste that they landfill to 35 % of 1995 levels by 2016. This target means that by the year 2016 Hungary needs to decrease the amount of untreated landfilled bio-waste to less than 820 000 t/year.

The NWMP states that the bio-waste quantities will increase with the introduction of the new system; there is no detail on how this is expected to happen. A working group was

<sup>62</sup> Eunomia et al. (2013), European Reference Model on Municipal Waste Management, Member State Consultation Questionnaire

<sup>63</sup> Eunomia et al. (2014), “Development of a Modelling Tool on Waste Generation and Management” Appendix 1: Baseline Report

drafting a new Bio-waste legislation which was due by the end of 2015. The new legislation will not regulate food waste and there is no plan to collect food waste. Instead, the Ministry of Agriculture is working on preventing food waste and they are encouraging cooperation with food-banks. Later on the collection of food waste might be an issue. Increased source separation of green waste will be implemented as part of door-to-door collection by 2015. Home composting and communal compost in villages will be encouraged for the green waste.<sup>64</sup> In 2013 the collection was only 4% of the generated waste, but it is assumed that this will increase to 10 % in 2015, when collection is changed to door-to-door, and to further increase to 15% in 2020.<sup>65</sup>

The Ministry of Agriculture is aware that there are data gaps in respect of organic waste. Discussion at the workshop confirmed there was a lack of data for food waste specifically; this an area where further assistance on calculation methods would be welcomed. The percentage of biodegradable waste in the MSW was 31 percent (1 250 000 t) in 2010. The total amount of MSW is expected to increase until 2020 and with the percentage of BMW being constant, the biodegradable waste will increase from 1 271 000 t in 2014 to 1 364 000 t 2020.

All of the separately collected bio-waste (200 000 tonnes) is composted or treated through bio gasification. The majority of the generated BMW in the mixed waste is landfilled (944 000 t) or incinerated with energy recovery (127 000 t). Up to 750 000 tonnes of waste is sent to MBT facilities; some of the waste sent to MBT facilities is also included within the landfilled and incinerated figures.<sup>66</sup>

Only 820 000 tonnes of biodegradable waste can be disposed of in landfills during 2016 to fulfil the target of the Landfill Directive.<sup>67</sup> Provided the waste is treated through a biostabilisation process, the increased MBT capacity will help in meeting these targets, but in future years some material will also need to be treated using composting or anaerobic digestion, and this, in turn requires the introduction of separate collection systems for this material.

Biological composting was only used for 0.5-3 % of the waste in the Hungarian regions in 2013.<sup>68</sup> To start a well-functioning central composting facility there is a need for a stable waste stream, and this implies the more widespread introduction of separate collection systems.

The compost has to be accepted and used in agriculture to get a logistic functional system. In order to get the compost clean and safe there is a need to develop quality standards on this material, which is mentioned in the NWMP. The NWMP also states that developing sorting plants is a concern to reach the target.<sup>69</sup>

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<sup>64</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

<sup>65</sup> Eunomia et. al. (2014) p 239

<sup>66</sup> European Commission (2015) p 18

<sup>67</sup> European Commission (2015)

<sup>68</sup> EEA (2013) p.10

<sup>69</sup> European Commission (2015) p 14

It is further understood that there is a strategy document for the Management of Biodegradable Waste in Solid Waste Management 2004-2016, but the project team has not been able to obtain this document.

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

The National Waste Management Plan lists the different types of planned activities and measures that will increase source separation and make Hungary follow the waste hierarchy, in order to comply with EU targets. Some activities will, when fully implemented, work to fulfil both the Landfill Directive and the Waste Framework Directive.

### Economic instruments

- The landfill fee was introduced in 2013, with the intention to divert waste to other treatment options. The values were intended to increase sharply up to 2015, but the fee has not been raised as planned.
- The Environmental product fees were implemented in 1995.
- The NWMP is discussing the role of Green Public Procurement as a mean to change the waste streams.
- Plans for deposit-refund system for bottles and cans by the year 2016 are mentioned in various sources, there appears to be no official system implemented yet. Some supermarkets have their own deposit-system and PET-bottles are worth 1 HUF and aluminium cans 2 HUF.<sup>70</sup>
- Waste pricing and PAYT are discussed in the plan, and have been implemented to some extent.

### Legal instruments

- There are quantitative targets stemming from EU Directives implemented in laws and plans.
- Hungary has adopted mandatory separate collection of dry recyclables in 2015, although this appears to be based on bring systems, and does not cover organic materials.
- Extended Producer responsibility (EPR) is used for batteries/accumulators, WEEE and End-of-Life Vehicles.
- Hungary is planning to develop quality standards for compost but these are not yet in place.

### Administrative instruments

There is no sign of this kind of instruments in use for municipal waste.

However, there are information exchange tools and monitor/tracking schemes for industrial waste and for Construction and Demolition waste. There is also a waste management information system database which provides data on waste treatment in Hungary.

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<sup>70</sup> Dienes T (2012) p 204

## Information

The EEOP and NWMP are listing awareness-rising activities as important to achieve the objectives of the waste management. The target group are mainly households and producers of certain waste types. There is no evidence of activities that have been carried out yet.

## 1.8 Investment in Waste Management Infrastructure

Approximately 80% of the waste management projects carried out between the entrance in EU and the year 2009 was financed by EU.<sup>71</sup> The Hungarian Environment and Energy Efficiency Operation Programme 2014-2020 claims that the state of the current infrastructural facilities are not in compliance with the expectations laid on the municipalities and public organisations to carry out professional waste management. These bodies have got an increased role according to the legislation, but they need investments in infrastructure to deliver results. Hungary has had waste related development projects funded by ISPA (Instrument for Structural Policies for Pre-Accession) and the CF (Cohesion Fund) but there are still regions in the country that need to put a lot of effort to develop their waste management systems.<sup>72</sup>

### Landfilling

In 2005 there were 178 landfills.<sup>73</sup> Today there are 70 operating official landfills. In 2009 Hungary closed or upgraded landfills that did not comply with the technical rules of EU. 41 landfills were upgraded and 29 passed the control and could carry on their operations. 60 of these are majority-owned by the municipality, 8 are owned by foreign private companies and 2 are owned by Hungarian private companies.<sup>74</sup> It is understood the facilities are mainly co-financed by financial support from EU. There is also low capacity in some regions and higher in others, as a result of improper geographical distribution.<sup>75</sup> There are no plans to establish new landfills.<sup>76</sup> If landfill deposit rates remain the same, landfill capacities presently provide adequate capacity for more than 25 years. However, the amount of landfilled waste has been decreasing since 2005.<sup>77</sup>

There are approximately 1000 illegal dumps according to the NWMP. Mostly demolition waste is dumped. The municipality is responsible and the authorities are seldom involved. There are awareness programs at kindergarten and grassroots' voluntary programs for clean-up. Sites are cleared and new ones appear all the time. However, this problem has decreased recently as citizens are becoming more aware.

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<sup>71</sup> Illés, Z. (2009)

<sup>72</sup> The Hungarian Government (2014) p 66, 30

<sup>73</sup> Dienes T (2012)

<sup>74</sup> The National Waste Management Plan p 46

<sup>75</sup> Dienes T (2012)

<sup>76</sup> Eunomia et al. (2013) p 236

<sup>77</sup> Holdonner et al (2014)

## Incineration

There is one incinerator plant in Hungary, located in Rákospalota, Budapest. It was built in the late 1970s and modernized 2003-2005 to meet the standards set by the EU Waste Incineration Directive. The capacity is 420 000 tonnes and the capacity used for MSW is 400 000 tonnes. 52 percent of the waste from Budapest is treated in this facility. The combined heat and power functionality was added in 1981 and the plant rebuilt between 2002 and 2005. The generated waste is used by 25 000 citizens in a district heating system. Electricity is forwarded to 140 000 citizens.<sup>78</sup> An additional 70 000 tonnes is incinerated in cement kilns.<sup>79</sup> There is no official plan to build additional incinerators or to expand the capacity in the existing plant, but as the waste infrastructure is reviewed the path is not clear.

## Mechanical Biological Treatment (MBT)

To enable a diversion of BMW from landfills the Hungarian Government sees the need for investments in new or enlarged MBT-facilities.<sup>80</sup> There are 23 MBT plants in operation with 7 out of order. The capacity is 1 193 125 t/year. The output from MBTs is primarily landfilled; it is not clear to what extent this material has been stabilised. The extracted RDF-output of the MBT facilities will continue to be treated in cement kilns, not in the incinerator plant.<sup>81</sup> It is understood that historically many MBT facilities have faced a shortage of demand of their RDF.<sup>82</sup> Cement kilns are said to prefer to import waste from Italy instead of burning RDF from the Hungarian MBT plants. 35 % of the waste going into the MBT is coming out as RDF and the treatment plants have to pay to get rid of this output.<sup>83</sup>

## Central composting

In order to use central composting there is a need for separately collected bio-waste. As the amount of collected bio-waste is low composting as treatment method is not widely used. In 2009 the compost facilities in Hungary operated at less than 50 % of their capacity.<sup>84</sup> There are plans to expand door-to-door collection to include separate collection of biological waste and in some cases there is collection of food waste in separate pre-paid bags. The collected amount may rise if Hungary chooses to prioritise this. Another important obstacle seems to be that the scepticism towards the composted soil. If no one will accept this resource on their fields there will be no market for the material. A quality standard on the compost is under discussion and listed as an activity in the NWMP.

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<sup>78</sup> Dienes T (2012)

<sup>79</sup> CEWEP (2013)

<sup>80</sup> The Hungarian Government (2014) p 15

<sup>81</sup> Eunomia et al. (2013) p 236

<sup>82</sup> EEA (2013) p.13

<sup>83</sup> Eszter Tanka, National Inspectorate For Environment and Nature - National Waste Management Directorate, 2015-10-27

<sup>84</sup> EEA (2009)

## Recycling

In 2013 there were 1 022 362 tons of generated packaging waste and 502 755 was material recycled.<sup>85</sup> According to the NWMP the capacity was expected to be 400 000 tons by the year 2014. This collection system is solely financed by the product charges from the EPR-scheme. In 2013 there were approximately 5,000 public collection facilities (waste islands) and 130 civic amenity sites (waste yards).<sup>86</sup>

As the separate collection is now mandatory there is a need for more sorting capacity. There are plans to open additional facilities in 2016.<sup>87</sup>

## 2.0 Summary

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The Hungarian accession to the EU led to updated legislation according to the goals of EU. The policies and plans are, according to the Hungarian Government, set up to follow the waste hierarchy, and in recent years the country has made reasonable progress towards meeting the targets in the directive. Yet there is still work to be done to improve the waste management situation. According to official data returns to Eurostat, Hungary is some way behind the average performance of the EU-28 in respect of packaging recycling. Under the European Commission's Circular Economy package, the targets will increase in the future, further increasing the challenges in the future.

The Hungarian system is very much state-controlled with relatively little private sector involvement. However the current waste management plan is under revision, and as such there is an opportunity now to tackle some of the deficiencies in the existing systems. A review of waste infrastructure will also take place before 2017.

The positive aspects in the policies put in place to date include the following:

- The separate collection of dry recyclables and green waste is being implemented across the country.
- A landfill fee was put in place in 2013. The initial idea was to raise the fee radically in a few years' time. However, the fee has not been changed since 2014 and is at 21.4 EUR/tonne for MSW.
- Some households appear to be being directly charged for the collection of residual waste although it is not clear to what extent this covers the actual cost of collection and treatment, and the proportion of population covered by this system is also not clear.
- According to the NWMP, there are ambitions to create reuse centres and to hold information campaigns to spur waste prevention activities. There is an extensive National Waste Prevention Plan, although quantitative targets are absent.

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<sup>85</sup> Department for Environmental Development, Ministry of Agriculture, 2015-10-27

<sup>86</sup> EEA (2013) p 14

<sup>87</sup> Nyilas, Krisztina, National Inspectorate For Environment and Nature - National Waste Management Directorate, 2015-10-27

There is, however, still work to be done to make sure that Hungary is able to meet the targets in both the Landfill Directive and the Waste Framework Directive. The main deficiencies of the waste management situations are listed below:

- The status of the ban on landfilling of untreated waste is unclear, raising questions concerning enforcement capability / capacity. Although the data suggests a substantial reliance on landfilling, it is important to note that some of this material has been treated by an MBT system, and this does not appear to be accounted for in the data. However, the performance of these systems is unclear, and much material appears to be landfilled without going through the MBT systems.
- It is not clear whether the landfill fee covers the full cost of landfilling, and there still appear to be problems with illegal dumping. No landfill tax is in place.
- The extent of the coverage of separate collection for households is not entirely clear. However, there is an apparent reliance on bring-based systems for source segregated materials in some areas, and no clear plan yet in place with regard to the roll out of door to door collections. Bring systems deliver poor quality recyclables, and reliance on this approach makes it difficult to introduce other policies such as PAYT systems which drive high recycling performance.
- Particularly given the previous point, and the apparent frequency of the collection points (which seems to be low according to the available data), the stated performance of the separate collection systems seems very high, suggesting there may be issues with the data collated on the performance of these systems. There are also discrepancies between the national datasets and the calculations sent to Eurostat.
- There is very little collection of food waste or other organic material, and no clear plans are in place to introduce these systems; without this, it is likely to be difficult for Hungary to meet future landfill directive targets. The existing composting facilities appear to have difficulty in finding markets for the product, suggesting work on market development is required, along with the introduction of further collection systems.
- There appears to be relatively little involvement of the private sector and there seems to be a lack of technical and financial capacity in government bodies at the local level to carry out their obligations.
- The quantities of collected and recycled glass is extremely low and as the National Collection and Recovery plan is stating that the fees from the producers are too low to cover the cost of management.

The identified weaknesses will feed into the roadmap of the Hungarian waste management, which includes recommendations to improve performance thereby ensuring compliance with the EU Directives.

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The National Waste Management Directorate (OKTF-NHI), A 2016. Évre vonatkozó Országos Gyűjtési és Hasznosítási Terv

# 1.0 Summary of Recommendations

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Despite some progress made over the last 10 years, recycling and composting remain at a low level and the large majority of municipal waste is still landfilled. In view of existing obligations in EU waste legislation and the targets proposed in the new legislative package on waste, further measures are needed to improve municipal waste management in Hungary.

Recommendations for Hungary can be summarised as follows:

- **Governance:** Ensure there is a clear **devolution of responsibilities** down to the local level:
  - Ensure every target in the NWMP is linked to a clear strategy indicating who is responsible for monitoring and implementation at the local level
  - Establish a framework for monitoring performance and consider the introduction of sanctions for not meeting the targets set at the local level.
- **Separate collection:**
  - Put in place a programme to support municipalities to provide guidelines and support on the efficient operation of kerbside collections at the local level, including guidance on collection system operation.
  - Improvements to the separate collection service
    - Extension of the door to door collection service.
    - Introduce collections of source segregated biowaste (collecting food waste as well as garden waste).
    - Development of quality standards for compost.
- Undertake a review of **waste treatment infrastructure requirements**, taking into account the need to significantly step up collection and recycling, to phase out landfilling and to avoid overcapacity in residual waste management (incineration and MBT).
- Consider applying **economic instruments** to increase the cost of residual waste treatment and disposal
  - Review the level of landfill fee to ensure it covers the full cost of treatment for landfills compliant with the landfill directive.
  - Consider the introduction of a residual waste tax covering waste sent to landfill and MBT systems (including outputs sent for incineration).
  - Roll out of pay-as-you-throw (PAYT) systems once the above improvements to the collection systems have been made.
- Undertake a review of the governance and performance of EPR schemes.
- Undertake a **review of data capture systems** including the performance of the MBT systems as well as the recycling data.
- Actions to increase re-use and waste prevention activity.

Further detail is provided in the tables that follow.

## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	The roles, responsibilities and financial means at the regional/local level are not clearly defined in the NWMP	<p>The NWMP lacks detailed information about the authorities' and actors responsibilities for meeting the targets. In order to realise the objective of key policies, those actors responsible for delivering the outcome need to be clearly identified. Without this information the plan will not have the intended effect on the waste management system.</p> <p>There seems to be a lack of financial means to deliver an efficient waste management system. 80 % of projects have been financed by the EU, according to a reviewed source.</p>	The NWMP 2014-2020 was declared legally adopted 31 December 2013 (according to the requirement of EU), but is under conceptual revision in 2015. The targets and policies have been established without enough research and consultation, which led to a lack of clarity regarding how to make sure the targets and policies would be implemented.
2	Information transfer to and from municipalities	There is no direct way to municipalities and there is no feedback as well. A lot of information is lost. It means that most of the municipalities want to do something but they do not know what and how. They definitely need information about their tasks.	Primarily municipalities are not environmental organizations. They have a lot of other obligations. Individual action is not expected and thus does not happen.. Governmental engagement is necessary to change the situation. The Herman Ottó Institute (HOI) is able to carry out this task. It should be a "bridge" towards municipalities.

Number	Potential issue	Description	Reasons for the issue
3	The data quality	<p>There are discrepancies between the different data sources (for example between Eurostat and the national datasets used for planning purposes). It is also not clear how Hungary's performance against the WFD recycling target has been calculated. On recycling, performance data for some materials (such as plastics) appears relatively high given the types of system in place to collect the recyclables, based on a comparison between composition data and data submitted to Eurostat.</p> <p>Data clarity could also be improved regarding the waste streams going to landfills, including how much of this material is un-treated and how much is stabilised; on the mass flow information through the MBT facilities; and on the extent to which door to door collection schemes are now in place across the country.</p>	<p>The waste management Information System database was established by the Ministry of Agriculture in order to improve the accuracy of data on waste treatment. There still appear to be some gaps and inaccuracies in the data collected; calculations are not always transparently reported, and definitions are not always clearly indicated.</p>
4	Almost non-existent separate collection of food waste and other organic waste	<p>Hungary needs to decrease the quantities of waste disposed in landfills in order to comply with the Landfill Directive Target for landfilling of biodegradable municipal waste. Further composting or anaerobic digestion would be aligned with the waste hierarchy, but this is likely to require separate collection in order to obtain quality outputs for which there is a demand. Referring to the data supplied in 2014 20% of the biodegradable municipal waste was collected separately.</p>	<p>It is understood that the prevalence of door-to-door collection of dry recyclables is increasing although the authorities are unable to confirm the coverage of such schemes at present. A quality and convenient system for recycling is a pre-requisite for PAYT with the possibility for the individual to influence the waste fee.</p> <p>According to reviewed sources there is a lack of market for compost. This could hinder a large-scale implementation of source separation of organic waste.</p>

Number	Potential issue	Description	Reasons for the issue
5	Low levels of dry recycling, particularly glass	<p>The recycling of packaging waste is financed by the EPR. This scheme is now state run, with fees centrally determined by the government. Separate collection systems are run locally by non-profit organisations responding to government contracts.</p> <p>Historically low levels of door to door collection, although it is understood this situation is changing. There is currently one “Waste Island” per every 2000 inhabitants. The prevalence of glass collection points has recently decreased but in many areas there is no door to door collection of this material. The rate of material recycling is reported as 21 % of MSW.</p>	<p>Low incentives for separate collection and recycling – no targets are set for municipalities.</p> <p>Fees charged by the EPR system are not sufficient to cover the cost of the recycling system, particularly for glass. The state-run system is relatively inflexible as funding levels are dependent on central budgets and are not known in advance, which is likely to act as a disincentive for further investment in collection infrastructure. Despite of increasing collected amount, overall EPR-financing has not much changed for years.</p>
6	There is too much residual waste, and much of this is landfilled without treatment	<p>64 % of the MSW is landfilled. According to the regulation on landfill it is not allowed to landfill waste without pre-treatment. The pre-treatment is mostly MBT systems.</p>	<p>Reasons include the relatively poor separate collection of dry recyclables and almost non-existent separate collection of organic waste.</p> <p>The landfill fee is centrally determined, and is currently at €21 / tonne, with no plan to increase this in the immediate future. There are no plans to introduce a landfill tax. As such the cost of landfilling is relatively low.</p>

## 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>1) Ensure clear devolution of responsibilities down to the local level</b>					
Ensure that every target in the NWMP is linked to a clear strategy of indicating who is responsible for monitoring and implementation at the local level.	Administrative	FM	Low cost to government	n/a	Greater accountability, increasing the likelihood of action taken at the local level, thus tackling issue 1.
Establish a framework for monitoring performance and consider introducing sanctions for not meeting targets devolved down to the local level. This is likely to be particularly important if the total cost of landfilling remains low to incentivise change (see recommendation 5).	Legal/ Administrative	FM	Low cost to government	n/a	Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market. Deals with issues 4 and 5.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>2) Improve data quality and transparency</b>					
Undertake a review of calculation methods, including the definitions used when undertaking the calculations. Associated documentation should ensure transparency of calculation methods, and that there is read across between the different systems subject to the differing reporting requirements. The database should also be extended to cover the inputs and outputs from the MBT systems, including the quantities of stabilised waste (this will require mass balance studies on the MBT facilities to be undertaken).	Administrative, informative	FM / Hungarian Central Statistical Office	Low	n/a	Addresses issue 2.
<b>3) Improvements to separate collection schemes</b>					
An increase the coverage of source segregated organic material collections is required to ensure Hungary meets the landfill directive requirements. The authorities should consider therefore consider mandating source segregation of bio-waste (collecting food waste as well as garden waste) - at a minimum - in the more densely populated areas alongside the current legislation which mandates the provision of source segregation for dry recycling.	Administrative	FM	Potential high cost	EU funding available for at least the capital elements	Recycling rates will improve without the necessity to rely on MBT to meet the Directive targets. This will also result in better quality recycle and compost / digestate.
Alongside the introduction of organics collection schemes, put in place a plan to extend the roll out of door to door collection systems so that this covers at a minimum all households in the densely populated areas. As an interim measure, an increase in the number of recycling points (bring sites) should also be considered – particularly for glass, where current collection levels are low.	Administrative	FM / municipalities	Potential high cost	EU funding available for at least the capital elements	Although collection costs may increase, treatment costs will be reduced. The introduction of such schemes will help ensure the good performance of PAYT schemes. Addresses issues 3, 4 and 5.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
Work on the market development for compost and develop the quality standard mentioned in the NWMP. Protocols for compost quality can be developed based on work which has been undertaken in other countries.	Administrative / informative	FM / OKTF	Low cost to government	n/a	Increased incentive for the implementation of bio-waste collection systems, thus helping to improve recycling rates. Helps to address issue 3.
<b>4) Review of waste treatment infrastructure requirements</b>					
Alongside agreeing proposals for improved collection systems have been agreed, undertake a review of treatment infrastructure requirements, focusing particularly on organic treatment capacity but also considering residual waste treatment requirements. This should take into account the increased recycling rate resulting from the improved systems, and the potential need to ensure there is sufficient MBT capacity to allow the ban on untreated bio-waste to be introduced and enforced. The review should also ensure there is sufficient treatment capacity to cover the increase in source segregated bio-waste.	Administrative	FM	Low cost	n/a	Ensure there is sufficient infrastructure available to treat the additional bio-waste that will result from the separate collection. Ensure compliance with Malagrotta ruling (if required). Ensure there is not overcapacity of residual treatment, which would tend to act against future increases in recycling. Assists with issues 3 and 5.



Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>5) Measures to increase the cost of residual waste treatment and disposal</b>					
At a minimum, review the landfill fee to ensure it covers the full cost of treatment for landfills that are compliant with the landfill directive.	Fiscal / administrative	FM	Low cost to government, although costs will rise for producers	n/a	Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market. Will assist in dealing with issues 3, 4 and 5.
Once the data systems have been improved, undertake a review of the performance of the landfill fee in driving improved recycling performance. Outcome of the review should be used (in conjunction with recommendation 4) to consider whether the current fee levels are sufficient to ensure change.	Fiscal / administrative	FM	Low cost to government, although costs will rise for producers	n/a	Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market. Will assist in dealing with issues 3, 4 and 5.
Based on the above review, consider the introduction of a residual waste tax. Lower levels of tax should be set for the stabilised output from MBT systems. The tax should also apply to waste sent for incineration (including that sent for export). Levels should be dictated in advance and should be set sufficient to incentivise an increase in recycling – such as in the case of Greece.					

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>6) Review governance and performance of the Extended Producer Responsibility scheme</b>					
<p>The review should consider whether continued state-run governance of the scheme is appropriate, or whether a private sector scheme could be reintroduced, provided associated data systems are improved. In particular, the need to ensure continual improvement and long term investment in collection infrastructure should be addressed. The review should also include consideration of the system costs and its fees to confirm the extent to which costs of recycling are covered by the fees from producers. Ideally the fees should be sufficient to cover the full cost of managing the obligations following the producer responsibility, also taking into account the revenue from sold secondary raw material. The fees set should be linked to the recyclability of the material - this requires a dialogue between the packaging industry and those running the scheme with a view to increasing the involvement of producers. Consideration should also be given to expanding the scheme to other waste streams.</p>	Legal / administrative	FM / OKTF-NHI	Low cost to government. Fees for producers may increase.	n/a	Greater incentives for packaging waste prevention. Increase in recycling of packaging through improvements in scheme funding and associated infrastructure. Will assist in dealing with issue 4.
<b>7) Programme to support municipalities and educate householders</b>					
<p>Develop a programme aimed at raising the level of awareness of householders and businesses in respect of the need for recycling and waste reduction. This could be based on examples of campaigns undertaken in other countries with good recycling performance. The programme should be launched alongside the changes to collection systems.</p>	Informative	FM, municipalities	Medium cost	Potentially, such as that from the ENPI CBCMED Programme.	Alongside improvements in recycling collection system, will improve recycling rates.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<p>Put in place a programme to support municipalities to provide guidelines and support on the efficient operation of kerbside collections at the local level, including:</p> <ul style="list-style-type: none"> <li>• Materials to be collected</li> <li>• Frequencies of collection</li> <li>• Good practice when issuing contracts for collection services including the interface with the EPR system</li> <li>• Good practice on minimising collection costs</li> <li>• Information campaigns aimed at both local authorities and waste producers</li> </ul> <p>It is important that the programme makes use of knowledge from the private sector and waste services operating in other countries. The remit of the programme should also include provision of advice to government on the appropriate level of support required by local authorities to deliver the services, including the provision of sufficient financial and human resources at a local level to ensure appropriate service operation.</p>	Administrative	FM	Medium cost	Structural Funds or ERDF funding may be available	<p>The measure is expected to support the municipalities in fulfilling their responsibilities in relation to the development of the separate collection system, once issue 1 is addressed.</p> <p>The implementation of proper separate collection system as a result of the guidelines will also ensure the fulfilment of waste management targets. This will help to address issues 3, 4 and 5.</p>

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>8) Actions to increase re-use and waste prevention activity</b>					
Government should consider integrating re-use activities into the existing EPR scheme. Other activities that should be reflected in the forthcoming waste prevention plan include actions tackling one-way plastic bottles and food waste. Hungary could also consider developing re-use centres – such as those introduced in Slovenia, supported by developing a system of re-use credits helping to finance the activities of the third sector.	Administrative / fiscal	FM	Moderate cost to government	Funding available for capital items	Will assist in the achievement of future targets, as well as contribution to landfill directive and waste framework directive targets.
<b>9) Roll out of PAYT systems</b>					
This should commence once well managed collection systems – using door to door services rather than bring based systems - are in place. It should build on the existing PAYT system for residual waste already in operation in parts of the country, but be extended to cover recyclables and organic waste collection.	Fiscal	FM / municipalities	Dependent on the system to be implemented.	May be able to use structural Funds	To be considered but not introduced until waste collection and management systems further developed, so as to avoid fly tipping and associated issues. Will assist with issues 3, 4 and 5.

### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
<b>Framework for monitoring performance at a local level</b>		Announcement		In place		
<b>Improve data systems</b>		Announcement	In place			
<b>Improve separate collection schemes</b>		Announcement	In place			
<b>Review waste treatment infrastructure requirements</b>		Announcement			In place	
<b>Review of landfill fee</b>		Complete				
<b>Introduction of residual waste tax</b>			Announcement			In place
<b>Review of EPR scheme</b>		Announcement		In place		
<b>Support programme</b>		Announcement	In place			
<b>Actions to increase re-use / prevention</b>		Announcement			In place	
<b>Roll out of PAYT systems</b>			Announcement			In place

# 1.0 Factsheet – Waste Management in Ireland

This factsheet analyses the situation regarding waste management policies and practices in Ireland, the focus being on municipal solid waste (MSW). The basic aim of the factsheet is to identify potential deficiencies in waste management practice implemented in the country that could lead to non-compliance with EU waste legislation, in particular the waste hierarchy and the EU waste management targets.

The following table presents some basic data and information related to current waste generation and management in Ireland, which the following analysis was based on.

**Table 1-1: Basic waste management data for Ireland**

Population / Households (CSO)	
Total inhabitants (2013)	4,620,306
Dwelling stock (2013)	1,658,243
Municipal Waste Generation	
Total (tonnes in 2013)	2.7 million tonnes (including commercial waste)
Total (kg/cap/annum)	587 (EPA 2012) including C&I waste Household waste 344 kg / capita / annum
Performance Against Targets (EPA)	
Waste Framework Directive: Recycling accounted against calculation method 1	45% (2012)
Landfill Directive	Target for 2013 was met, thought to be on track for 2016
Existing Waste Management Infrastructure	
Mechanical biological Treatment (MBT) / Pre treatment	Authorised capacity: Connacht 584 ktpa; East Midlands 5,251 ktpa; Southern 732 ktpa
Engineered landfills	6 sites (confirmed by DECLG)
Thermal treatment	Carranstown – 200ktpa currently operating; Poolbeg 600ktpa due to operate from 2017

## 1.1 Roles and Responsibilities of Key Actors

Overall responsibility for waste policy in Ireland has been delegated to the Department for the Environment, Community and Local Government (DECLG). The main policy statement of current relevance in Ireland was published by DECLG in July 2012, and is entitled *A Resource Opportunity – Waste Management Policy in Ireland*.<sup>1</sup> The policy set out in this (and previous

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<sup>1</sup> Department for Environment, Community and Local Government (2013) A Resource Opportunity: Waste Management Policy in Ireland, July 2012, <http://www.environ.ie/en/Environment/Waste/PublicationsDocuments/FileDownload,30729,en.pdf>

policy documents of 1998, 2002 and 2004), intended to deliver the objectives of the European Directives, is implemented through relevant statutory instruments (such as landfill levy regulations, packaging regulations etc.).

However, much of the responsibility for planning and implementation has effectively been devolved to the regional and local levels. Three regional authorities have been developed, with a lead authority in each case being made responsible for developing the regional plan in conjunction with other local authorities.

An indication of the split of responsibilities as far as implementation is concerned is shown in Table 1-2, which shows the actors responsible for the delivery of some of the key legislative actions called for within the regional plans. In addition to the local and regional authorities, other key actors include the:

- DECLG, responsible for developing the policy and legislative framework for waste management in Ireland.
- National waste collection permit office (NWCPO), responsible for the administration and management of the collection permit system.
- The Environmental Protection Agency (EPA).
- Producer Responsibility Organisations (PROs) – for packaging (of specific relevance to the MSW targets) the scheme is operated by Repak Ltd.
- National Transfrontier Shipment Office (NTFSO), competent authority for the administration and enforcement of waste exports and imports.

Local authorities have a wide range of roles covering a wide range of activities including responsibility for ensuring the hierarchy is respected, issuing collection permits, ensuring the targets are met, as well as conducting enforcement activities. In most cases, they are not responsible for actually delivering waste collection and treatment services, this being done through private contractors.

The table confirms that the contractors do not have direct responsibility for delivery of the targets included within the plans, this being managed by the local authorities. Contractors are instead obliged to provide services meeting certain standards (such as two or three bin collection systems) through their permit conditions. In discussing the development of the waste sector in Ireland in recent years at the expert seminar held in Dublin in April, workshop participants confirmed that efforts by the private sector have played a key role in the improved performance of the country in respect of waste management during this period.

**Table 1-2: Policy and Legislation Actions within the Regional Plans**

Policy area	Policy action (Objective)	Targets (Approach)	Responsibility
Applying the <b>waste hierarchy</b> to the management of waste streams	Move waste further up the hierarchy by <b>eliminating</b> the <b>direct disposal</b> of unprocessed residual municipal waste to landfill.	Consult with the EPA and recommend <b>new collection permit conditions</b> for issue to NWCPO.	Regional Lead Authority, EPA, and NWCPO
<b>Implement the polluter pays principle</b> across all waste services and regulatory activities in a manner appropriately	<b>Review the application fee structures related to regulatory activities</b> for local authority facility authorisations.	Complete review and issue suggested changes to the DECLG.	Regional Lead Authority, DECLG, and local authorities

reflecting the risk to the environment and human health	Review and <b>implement</b> (if appropriate) <b>charging structures</b> in place for wastes accepted <b>at local authority civic amenity and other</b> local authority waste <b>facilities</b> .	Complete review and implement appropriate charges.	Local authorities
Improve management performance through the implementation of policy actions and <b>monitoring progress</b> towards national targets	<b>Prepare an annual report</b> reporting on the progress of policy actions and the implementation of mandatory and waste plan performance targets.		Lead Authority , EPA, NWCPO, PROs and Local Authorities
Improve regional and national <b>self-sufficiency</b> in accordance with the proximity principle	<b>Monitor and report on planned, authorised and utilised capacity</b> on a regional and national basis (building on the work done for the waste plan)	Establish and maintain <b>capacity database</b>	Lead Authority, local authority, NWCPO ,EPA and DECLG

## 1.2 Summary of Legislative Framework for Waste Management

The Waste Framework Directive (WFD) is transposed through the “*European Communities (Waste Directive) Regulations 2011 (Statutory Instrument No. 126 of 2011)*”, as amended by the “*European Communities (Waste Directive)(No. 2) Regulations 2011 (Statutory Instrument No. 323 of 2011)*”.<sup>2&3</sup> As is acknowledged within the Irish questionnaire return on the implementation of Directive 2008/98/EC,<sup>4</sup> much of the provisions of the 2008 WFD were already enshrined in national primary legislation by the 1996 Waste Management Act and associated Regulations made thereunder.

The Landfill Directive (LFD) is enshrined in the national legislative framework through the “*Waste Management (Licensing) Regulations [WMLR] 2004 (Statutory Instrument 395 of 2004)*”, complemented on various aspects by the Waste Management Act and the “*Waste Management (Landfill Levy) Regulations 2015 (Statutory instrument No. 189 of 2015)*”.

The definition of municipal waste in Ireland is similar to that used in the Waste Framework Directive. The concept is defined in Section 5 of the Waste Management Act 1996 which states that municipal waste is “household waste as well as commercial and other waste which, because of its nature or composition, is similar to household waste”.

In May 2015, the DECLG also issued further legislation in the form of Waste Management (Collection Permit) (Amendment) Regulations 2015, Waste Management (Facility Permit and Registration) (Amendment) Regulations 2015, European Union (Household Food Waste and Bio-Waste) Regulations 2015, Waste Management (Food Waste) Amendment Regulations 2015, Waste Management (Landfill Levy) Regulations 2015. Changes to primary “piece” of

<sup>2</sup> <http://www.environ.ie/en/Legislation/Environment/Waste/WasteManagement/FileDownload,25856,en.pdf>

<sup>3</sup> <http://www.irishstatutebook.ie/pdf/2011/en.si.2011.0323.pdf>

<sup>4</sup> Questionnaire on Implementation of Directive 2008/98/EC, C(2012) 2384 final



waste legislation within the Waste Management Act has been enabled by the Environmental Miscellaneous Provision Act also came into effect at the end of August 2015.

### 1.3 Status of Waste Management Plan(s)

Three regional waste management plans were legally adopted in May 2015, covering the period 2015-2021.<sup>5</sup> These replaced the ten outgoing non-hazardous Regional Waste Management Plans adopted in 2005 and 2006, and in so doing reach compliance with the requirements of the Revised Waste Framework Directive 2008/98/EC. Public consultation on the three regional plans ran from November 2014 to the end of January 2015. The current Waste Management Plans are configured into the following three regions:

1. Eastern-Midlands Region;
2. Southern Region; and
3. Connacht/Ulster region.

Extensive consultations were held during the development of the plans including a pre-consultation seeking written submissions in relation to forthcoming preparation of the plans from October 2013 to December 2013, a Public Consultation period on the draft plans from November 2014 to January 2015 and Consultation Meetings held with the Waste Collection Industry throughout 2015.

### 1.4 Summary of the Key Objectives of the Plans

#### 1.4.1 Waste Management Plan(s)

The reduction from 10 Regions to 3 Regions was a significant change in waste management planning in Ireland considering that the Regions are now more varied (e.g. in population density) and include a greater number of local authorities in each regional configuration. The three Regions worked together closely in the preparation of the three regional waste management plans and the plans have been developed on a common basis. The consultation drafts have a broadly similar structure and much of the content is shared.

Each of the plans has the same following three overarching performance targets:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Preparing for reuse and recycling target of 50% of municipal waste by 2020; and
- “Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.”

In particular, the following key elements are identical in all three waste management plans:

- 8 Strategic Policy Objectives
- 27 Infrastructural Policy Statements
- 62 Policy Actions

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<sup>5</sup> Plans available via: <http://www.environ.ie/en/Environment/Waste/WasteManagementPlans/>

Some of the more significant policy actions in the plans include:

- Support for the development of additional capacity – up to 300,000 tonnes additional thermal recovery capacity for non-hazardous waste on a national basis and additional biowaste treatment capacity per region, development of civic amenity (CA) sites and bring centres as well as collection infrastructure.
- The designation of lead authorities, who are expected to co-ordinate actions regionally and nationally. The lead authorities in each region will take responsibility for delivering the majority of policy actions over the course of the plan, working with the local authorities in the region and other stakeholders.
- Move waste up the hierarchy through eliminating direct disposal of un-processed MSW to landfill.
- Review the application fee structures for local authority facility authorisations.
- Review charging structures for CA and other similar sites.
- Produce an annual report on progress in relation to policy actions.
- Monitoring on capacity regionally and nationally.
- Prioritise waste prevention.
- Actions on the circular economy, e.g. establish reuse, repair and preparation for reuse activities.
- Implement a consistent and co-ordinated system for the regulation and enforcement of waste activities (there are a whole range of policies here).

The obligatory elements of Article 28.3 for waste management plans for the most part appear to have been incorporated. Waste quantities are fully explored. Current waste collection systems are given due attention. The draft plans propose an overarching performance target on local authorities of 50% recycling and composting of MSW (WFD calculation method 4). This is slightly different to the adopted national target which is 50% recycling of household paper, metal, plastic and glass (WFD calculation method 1). The plans acknowledge the objective for local authorities is broader than the national target, and in practice this is likely to be a more ambitious target (given that performance for 2012 under calculation method 1 was 45%, compared to 40% under method 4). The need for changes to the collection regime to accommodate the desired performance improvement is not discussed in any detail, but rather is subject to supplementary legislation discussed further below.

In the plans, the forthcoming Poolbeg incinerator (600,000 tpa) and the Carranstown 235,000 tpa incineration facility which has been operational since late 2011 are taken into consideration nationally as the policy statement in the Plans considers only the national need for thermal recovery. The Eastern-Midlands Region plan raises the issue that planned treatment capacity for some waste streams is insufficient, while for others capacity is over-provided. However, DECLG has indicated this to be a legacy issue, and confirmed that the three regions are in close discussion in respect of planning for treatment capacity going forwards. The plans also discuss the closure of landfills.

#### **1.4.2 Waste Prevention Plans**

Although activities, policies and targets relating to waste prevention are identified in the non-hazardous regional waste management plans and the national Hazardous Waste Management Plan, the prevention requirements of the 2008 revised Waste Framework

Directive are intended to be delivered through the EPA's Prevention Plan for 2014-2020. The EPA has now published a fourth iteration of the National Waste Prevention Plan (NWPP) "*Towards a Resource Efficient Ireland*" which will run until 2020 (this plan supersedes the information summarised by the EEA on the previous plan).<sup>6</sup> The aim of the NWPP is to deliver substantive results with regards to hazardous and non-hazardous waste prevention and minimisation and to integrate a range of initiatives addressing awareness raising, technical and financial assistance, training and incentive mechanisms.

The NWPP saw the introduction of the National Waste Prevention Committee (NWPC) which includes a broad group of stakeholders who meet periodically to provide strategic direction to the EPA with respect to the implementation of the NWPP. Within this Framework, Outline Work Plans for the NWPP were established for the periods 2004 to 2008 and from 2009 to 2012. In addition, Annual Reports on the activities of the NWPP are available for the years between 2004 and 2012.<sup>7</sup>

Resource efficiency and waste prevention activities are funded through the Environment Fund. Work is focused on a series of measures that comprise a programme of funded activities and projects to support communities and businesses in making well-informed choices on waste prevention and resource efficiency. The emphasis is intended to be on activities with greatest potential to reduce waste and deliver savings, based on review of project performance by the National Waste Prevention Committee.

The 2013 annual report reports on a number of resource efficiency / waste prevention activities, of which the following are the more relevant to municipal waste:

- The "**Local Authority Prevention Network**", co-ordinated by the EPA, which draws together local authority personnel engaged in the practical application of resource efficiency with communities, businesses and other organisations across the country. Recent activities have included training events on food waste prevention, the development of good practice guides on greener gardening and greener cleaning, development of a video on food waste aimed at households etc.
- The "**Stop Food Waste Programme**" is a national platform to inform, and engage with consumers, communities and businesses on how to avoid food waste and compost unavoidable food waste at home.
- "**Freetrade Ireland**" facilitates re-use for households and businesses across Ireland. With 14,000 items re-used through the service during 2013, it is estimated the service diverted approximately 200 tonnes of materials away from landfill and saved members of the service over €1.4 million during the year.
- "**Community Re-use Network Ireland**" is an all island umbrella for community-based social enterprises specialising in both direct re-use and preparing for re-use activities while providing training and employment for excluded people.
- "**Green Home Programme**" is a framework to support and advise householders on ways to save money on their household bills while protecting the environment. The

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<sup>6</sup> EPA (2014) *Towards a Resource Efficient Ireland – A National Strategy to 2020*, <http://www.epa.ie/pubs/reports/waste/prevention/TowardsAResourceEfficientIreland.pdf>

<sup>7</sup> Environment Protection Agency, Ireland (2013) *National Waste Prevention Programme (NWPP)*, Date Accessed: 15 October 2013, Available at: [www.epa.ie/waste/nwpp/](http://www.epa.ie/waste/nwpp/)

programme focuses on the themes of waste, energy, water and transport. 26,000 households are now registered as participating in the programme.

- The **“Green enterprise”** scheme challenges organisations and companies to produce goods and provide services in more environmentally friendly ways and to minimise emissions through cleaner production methods. The programme aimed to support prevention, and re-use, projects in line with key EU and Irish strategic policies (such as “A Resource Opportunity - Waste Management Policy in Ireland” and “Delivering Our Green Potential”, both published in 2012). From 44 applications, 14 projects receiving funding up to a maximum of €60,000. These represented a number of sectors and types of organisations, including manufacturing, agri-food, community groups, public sector organisations and charities.
- The **“Green business initiative”** which includes a packaging prevention project with Repak.

Concerning targets, all projects undertaken in the National Waste Prevention Programme have built-in metrics. Indicators are quantitative where possible and qualitative where appropriate.

Further initiatives are contained within the National Hazardous Waste Management Plan.

## 1.5 Progress towards the Fulfilment of Targets

### 1.5.1 Landfill Directive Targets

A report published in November 2014 assesses Ireland’s progress towards targets.<sup>8</sup> This clarifies that Ireland secured a four year derogation from the first two landfill directive targets, meaning that the target years are 2010, 2013 and 2016. The data given in the report is reproduced as follows, with the projected figure for 2016 representing the actual tonnage of BMW consigned to landfill in 2013, as reported by landfill operators to the Environmental Protection Agency using its approved measurement system for BMW:

- 75% of the 1995 landfilled tonnage of biodegradable waste by 2010;
  - Target: 916,000 tonnes
  - Achieved: 860,000 tonnes
- 50% of the 1995 landfilled tonnage of biodegradable waste by 2013;
  - Target: 610,000 tonnes
  - Achieved: 589,000 tonnes for 2012, thought to be on track for 2013.
- 35% of the 1995 landfilled tonnage of biodegradable waste by 2016.
  - Target (max to LF): 427,000 tonnes
  - Projected: 381,000 tonnes but it is noted that at the time of publication it is *“a preliminary figure and is liable to change”*.

It may be noted in this context that MSW generation in Ireland was reported in the 2013 NWPP annual report to have decreased by 17% since it peaked in 2007, though much of this is likely to relate to the economic downturn which hit Ireland particularly hard.

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<sup>8</sup> EPA (2014) *EPA’s National Statistics - Progress towards EU waste recycling, recovery and diversion targets*. Updated November 2014 <http://www.epa.ie/pubs/reports/waste/stats/Progress%20EU%20targetsNov.pdf>

The 2013 NWPP annual report gives the following commentary in relation to landfill directive targets:

*“Ireland’s continued reliance on landfill means that we are at risk of not reaching strict biodegradable waste diversion targets by 2016. Efforts in waste prevention, diversion to recovery, the development of necessary supporting infrastructure and the enforcement of the 2009 and 2013 Food Waste Regulations will underpin the achievement of future targets.”*

The European Union (Household Food Waste and Bio-Waste) Regulations 2015 [S.I. No. 191 of 2015] should help to divert biowaste up the hierarchy. In addition, the landfill levy (recently increased to €75/tonne) and subsequent closure of many landfill facilities (a decrease was seen from 28 in 2009 to 11 in 2013, whilst current numbers are around 5 or 6), the export of waste for thermal treatment in Europe, and the operation of the forthcoming Poolbeg incinerator are all likely to have a significant effect on reducing biowaste disposal to landfill, and thus enable compliance. Covanta achieved the final step of executing its project agreement with Dublin City Council and agreed financial close on the 600,000 tpa Poolbeg incinerator in 2014. Construction has started and commencement of operation is targeted for late 2017. Gate fee costs for the new facility are not currently published, but gate fees for the Carranstown facility have reportedly been a competitive €83-93 per tonne in recent years, and the concluding remark of the recent “Dublin Waste To Energy Waste Market Assessment” is that the Poolbeg facility gate fee will need to compete with the export market.<sup>9</sup> It should also be noted that previous plans for an incineration tax were not proceeded with in 2011. In addition to municipal incineration capacity, there is a potential national capacity for 340,000 tonnes of waste to be used as a fuel at cement kilns, though the collapse of the cement market means that current capacity is limited and RDF producers have instead been seeking capacity abroad. Finally, a reported 550,000 tonnes of biological waste treatment capacity is also thought to be available.<sup>10</sup>

The EPA reports that, in relation to the biodegradable municipal waste landfill diversion targets, the 2009 Technical Guidance Document ‘*Municipal Solid Waste: Pre-treatment and Residuals Management*’ has played a key role in promoting a reduction in the amount of biodegradable waste being sent to landfill.<sup>11</sup> This document includes associated information in support of its formal sectoral guidance notes on the determination of national Best Available Techniques (BAT) for the waste sector (Landfill BAT, Waste Transfer BAT, Composting BAT, etc.). In particular, this guidance addresses aspects of municipal solid waste pre-treatment for waste landfilling, waste incineration and waste treatment industries. The requirements set out in this Technical Guidance Document have been incorporated into the licence conditions that apply to individual landfill sites and incineration plants.

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<sup>9</sup> RPS (August 2014) *Dublin Waste To Energy Waste Market Assessment*, <http://www.indymedia.ie/attachments/oct2014/rpsreportfinal.pdf>

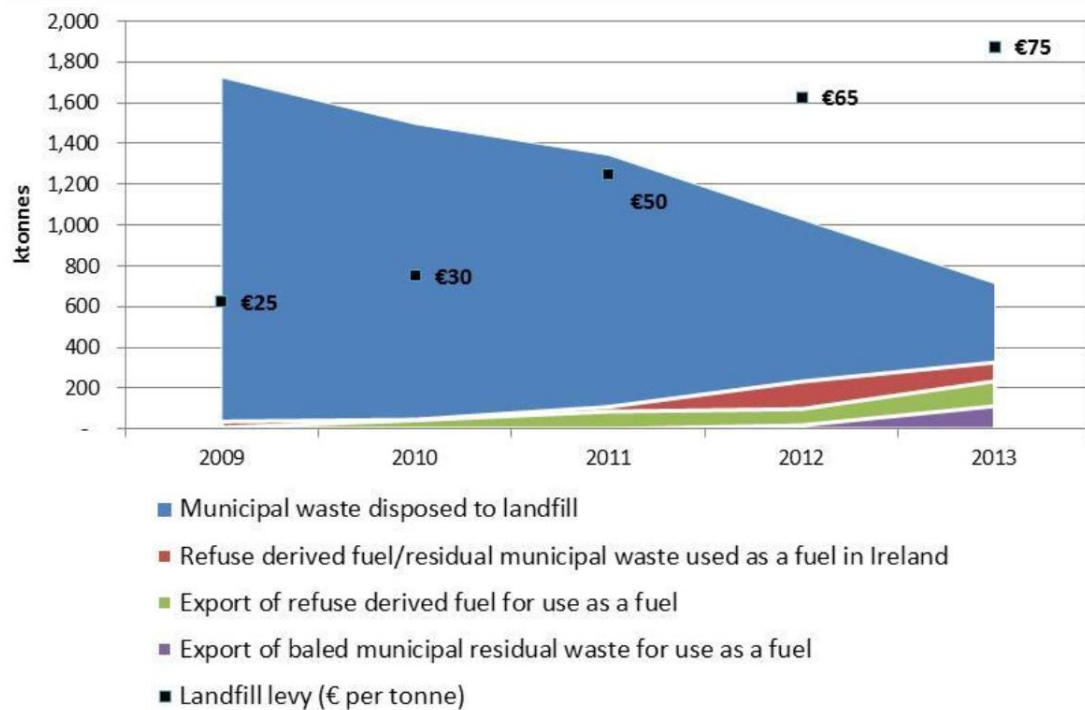
<sup>10</sup> Source: <http://www.epa.ie/irelandsenvironment/waste/#.VRu8Y-H2qPV>

<sup>11</sup> Environment Protection Agency, Ireland (2009) *Municipal Solid Waste: Pre-treatment and Residuals Management*, [www.epa.ie/pubs/advice/waste/municipalwaste/](http://www.epa.ie/pubs/advice/waste/municipalwaste/)

It is clear that there continues to be rapid change in how waste is managed in Ireland. Management of residual waste from 2009 to 2012 is shown in Figure 1-1. This shows a considerable decline in waste sent to landfill over the years 2011-13, driven by the recent increases in the cost of the landfill levy.

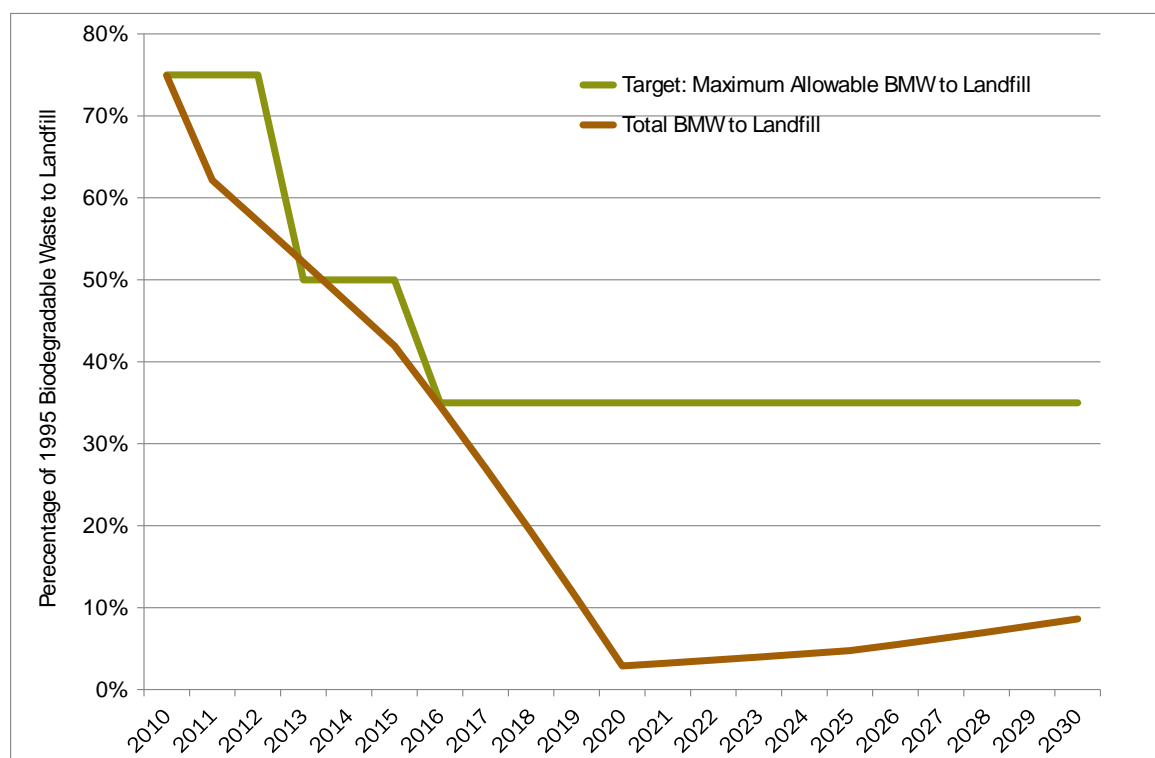
Within the work produced for the European Commission by Eunomia in 2013 (produced prior to the three new regional plans), the projections of performance against the landfill directive targets indicates Ireland meeting their LFD targets. The scenario with the Poolbeg incinerator going ahead is reproduced in Figure 1-2.

**Figure 1-1: Management of Residual Waste in Ireland in Recent Years**



Source: EPA (2014) Bulletin 3: Residual waste treatment trends 2009 to 2013  
[http://www.epa.ie/pubs/reports/waste/stats/residual\\_waste%202013.pdf](http://www.epa.ie/pubs/reports/waste/stats/residual_waste%202013.pdf)

**Figure 1-2: Projection of possible Performance against LFD Targets for Ireland**



Given that the Poolbeg incinerator (which represents such a large proportion of residual waste in Ireland) is currently expected to be in operation in 2017, only the 2016 target is expected to present any challenge, and the rapid evolution of pre-treatment processes observed in Figure 1-1 looks set to make an encouraging contribution to meeting the target. In years subsequent to 2016, performance can be expected to far exceed the target maximum allowable BMW to landfill.

### 1.5.2 Waste Framework Directive Targets

Ireland is set to use calculation method 1 to report progress against the WFD targets, meaning that the 50% target applies to paper, metal, plastic and glass only within household waste. In practice, this will be one of the least challenging of the four possible approaches.<sup>12</sup> At the workshop the EPA indicated that this method has been chosen as it focuses solely on household waste.

The November 2014 EPA report (*EPA's National Statistics - Progress towards EU waste recycling, recovery and diversion targets*) confirms that in recent years Ireland has made considerable progress towards delivering the WFD target for recycling 50% of MSW.<sup>8</sup> As of 2012, the national recycling rate under calculation method 1 was reported to be 45%, up from 40% in 2011. This value includes metal and plastic estimates from household WEEE.

<sup>12</sup> For 2012 Ireland reports its performance under calculation method 1 to be 45%, compared to calculation method 4 for which the overall MSW recycling and composting rate is 40%.

Although not fully documented in the plans themselves, there are intentions to improve waste collection and thus aid meeting the WFD recycling target through tightening the regulatory system. The DECLG consulted on the regulation of household waste collection from November 2013 to end Jan 2014. Taking stakeholder feedback into account, as was indicated in Section 1.2 new legislation issued in May 2015 reformed the regulation of household waste collection, through strengthening the existing regulatory structure. This includes a move to a pay per weight system of charging, introduction of on-the-spot fines through fixed payment notices.

This suggests that, providing the plans and policies are successful in delivering the additional change necessary to close the gap, Ireland should achieve this target. It is not clear, however, whether the proposed changes in the systems will be sufficient such that the possible future higher targets – i.e. 60-70% recycling by 2030 which are proposed as a long term aspirational goal in the regional plans - can be achieved.

Recycling rates are calculated accounting for a 13% reject rate applied to collected dry recyclables due to the co-mingled approaches used. There is a centralised national system for recording waste tonnages through the annual reporting of waste collection data by waste collection permit holders into an online reporting system hosted and managed by the National Waste Collection Permit Office (NWCPO). The data reported includes details of waste source (by Local Authority Area), EWC code, tonnage and destination. Secondary movements are also reported but separately. Collectors of household waste provide additional information on the service they provide. The Environmental Protection Agency uses this dataset for household kerbside collection data (tonnages collected and number of households served) in particular. Since its establishment in 2012, the NWCPO has validated the household kerbside datasets prior to handover to the Environmental Protection Agency.<sup>13</sup>

## 1.6 Implementation of Specific Waste Framework Directive Articles

### 1.6.1 Article 4: Application of the Waste Hierarchy

The Irish questionnaire return to the European Commission on the WFD lays out a detailed explanation of how the waste hierarchy has been reflected in national legislation. Key elements are as follows:

- The waste hierarchy is implemented through the amendment made to the 1996 Waste Management Act (S.I. No. 126/2011 - the “European Communities (Waste Directive) Regulations 2011”), where Section 21A (2)(a) states:  
*“When applying the waste hierarchy referred to in subsection (1), the Minister, the Agency and the local authorities, in carrying out their respective functions under this Act, shall take measures to encourage the options that deliver the best overall environmental outcome.”*

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<sup>13</sup> Confirmed in discussion with Brendan O’Neill, Department of Environment



- Section 32(1) of the Waste Management Act, as amended, then sets out a general duty on waste producers and holders to apply the waste hierarchy in management decisions so that waste treatment operations are in accordance with the Section 21A statement above.
- The 2012 policy statement “A Resource Opportunity” clarifies that responsibility for ensuring compliance with the waste hierarchy has been assigned to the relevant regulatory authorities:
 

*“Decisions in relation to the application of the waste hierarchy in matters of licensing and enforcement will be the responsibility of the appropriate regulatory authorities on a case by case basis, and determinations in relation to such matters will take account of the Waste Framework Directive, European Commission Guidance on the implementation of the Directive, national policy and regional waste management plans.”*
- A long list of regulatory requirements are then identified which seek to give effect to the waste hierarchy in the management of waste, including:
  - A landfill levy, which as of 2015 is €75/tonne. This dis-incentivises the bottom tier of the hierarchy.
  - A plastic bag levy, a measure designed to promote prevention and reuse of plastic bags, currently set at €0.22/bag.

Concerning waste prevention, the first National Waste Prevention Programme (NWPP) was published in 2004, and much activity has occurred since, with most recently a new plan being published in 2014 which runs until 2020. Detail is provided in Section 1.4.2.

Current recycling rates are above average compared to the broad cross section of European countries, and considerable efforts appear to have been dedicated to prevention through the NWPP and its many faceted activities.

The plans include an aspirational goal to reach higher recycling targets beyond 2020 of 60-70% recycling, providing an indication of increased ambition in the future, though these objectives are likely to be revised in line with future adopted EU policy. However, these cannot yet be considered as statutory targets. The targets that are devolved locally are for 50% recycling of MSW, which is notably a broader and more stringent target than is obliged to meet the WFD recycling target under the selected calculation method 1; this could be taken as an indication of application of hierarchy at the local level.

## 1.6.2 Article 10: Recovery

Again, a thorough response to the WFD recovery objectives is provided in the Irish questionnaire return to the European Commission on the WFD. This clarifies that the recovery objectives of the WFD are implemented by the 1996 Waste Management Act, as amended by S.I. No. 126/2011 (the “European Communities (Waste Directive) Regulations 2011”), including:

- A legal duty imposed on waste producers to recover their waste in accordance with the requirements of the waste hierarchy.
- A requirement for the EPA and local authorities to apply ‘measures’ to ensure waste undergoes recovery.

In addition, further regulations are relevant in that they oblige collection systems that facilitate recovery of various material streams. This includes the following, with evidence associated with their impact provided as sub-bullets:

- The European Union (Household Food Waste and Bio-Waste) Regulations 2015 (S.I. No. 191 of 2015) provide for producer responsibility at commercial food facilities to segregate food waste and send for recovery.
  - The National Waste Report 2011 records that 25% of the available commercial food waste was collected in 2011, though the 2012 report suggests that the tonnage decreased slightly in the subsequent year.
- The European Union (Household Food Waste and Biowaste) Regulations 2015 (S.I. No. 191 of 2015) also provides for producer responsibility at households to segregate food waste and send for recovery.
  - Feedback received by DECLG during the course of this project confirm that in 2014 570,000 houses (out of a total of 1.2 million) had been provided by a brown bin (the data was provided via a survey of waste management companies).
- Regulation 20(2)(g) of the Waste Management (Waste Collection Permit) Regulations 2007 (S.I. No. 820 of 2007), steers local authorities to attach conditions to waste collection permits to oblige collectors to introduce arrangements for source segregation and separate collection of dry recyclables.
  - The 2011 National Waste Report records that 98% of households provided with a waste collection service have at least a separate collection for dry recyclables. The dry recyclables collection would typically include the co-mingled collection of at least paper, metal, aluminium and plastic. Glass packaging from households is collected both through separate kerbside collection and via bring banks and civic amenity centres.

As highlighted in the first policy measure in Table 1-2, the current lack of control exerted over where residual waste is taken, is to be addressed in the coming period. It is proposed to be addressed through a revised coordinated approach to permit conditions for waste collectors.

The three plans all support the development of additional capacity for biowaste treatment (155ktpa across the three regions which looks to be an approximate doubling of the current level of biowaste treatment taking into account some reserve capacity not currently being utilised).

Each of the three plans states that it supports the development of up to 300,000 tpa of additional thermal treatment capacity nationally for the treatment of non-hazardous waste (totalled from the three plans). This is in addition to the 600,000 tpa of thermal capacity agreed and now under construction at Poolbeg. It is also acknowledged in each of the three plans that there is a significant quantity of unused treatment capacity in the regions. In 2012, from the 11.4 million tpa of local authority authorised treatment capacity across the nation, only 3.1 million tpa (27%) was used. It appears that much of this overcapacity relates to mechanical pre-treatment activities and also land improvement activities. The plans state that any future authorisations to be granted by the local authorities, the EPA and An Bord Pleanála (the body that decides on appeals from planning decisions made by local

authorities in Ireland) must take account of the scale of existing treatments in the market prior to making a decision on additional capacity.

### 1.6.3 Article 11: Reuse and Recycling

As outlined in Section 1.6.2, the 2007 Waste Collection Permit Regulations, the 2009 Food Waste Regulations, and the 2013 Household Food Waste and Biowaste Regulations do much to encourage systems that separate and recycle (or compost) waste. The 2012 policy statement “A Resource Opportunity” outlines the intention for mandatory service standards for household waste collection to progressively increase the degree of segregation of household waste.<sup>1</sup> Initially, mandatory service standards will provide for a minimal national standard of segregated collections of residual waste and dry recyclate. Mandatory service standards are intended to address the frequency of collections as appropriate. Separate organics collections are also to be phased in as obligated through the 2013 Household Food Waste Regulations (see Section 1.6.5).

The lack of uniformity in approach to waste collection in Ireland has resulted in varying levels of success. Market structure and variances in approach to enforcement have resulted in households being given freedom to select from a wide number of waste collectors marketing the service, or not availing of collection at all, provided that the waste is managed in an environmentally acceptable manner. The 2012 *‘Regulatory Impact Analysis on Household Waste Collection’* considered, but denied, the introduction of competitive tendering for household waste collection. It recommended instead that Government preserve the current household waste collection market structure and that it strengthen the regulatory regime to address areas of weakness. The document “A Resource Opportunity” announced the intention to strengthen the enforcement of permit conditions relating to segregated collections, with appropriate financial penalties being specified for breaches of conditions, and a possible withdrawal of permits in cases of serious breaches. This approach of a strengthened regulatory framework for household waste collection is therefore reflected in the policies included within the plans.

New regulations on household waste were adopted in 2015 and are expected to enhance the regulatory and enforcement role of local authorities to address issues such as poor service provision and uncollected waste. The potential impact of this will be discussed during the subsequent stages of the analysis. A summary of the intended regulatory measures are provided within the National Waste Report for 2012, published in August 2014:

***“Regulation of Household Waste Collection:*** *The performance of the household waste collection market will be crucial in achieving overall waste policy objectives and meeting national targets on landfill diversion as set out in “A Resource Opportunity - Waste Management Policy.” The July 2012 policy document set out a range of proposals to significantly revise the existing regulatory regime to ensure, inter alia, that waste collected is managed in accordance with the waste hierarchy; that mandated service levels are delivered, that pricing structures are put in place to incentivise waste reduction and source segregation by households and that Customer Charters are put in place by all*

waste collection providers. The Department of Environment, Community and Local Government (DECLG) published a discussion paper<sup>14</sup> in November 2013 and there was a public consultation process on the environmental regulation of household waste collection to inform the detailed development of the new regulatory regime to strengthen the regulation of household waste collection. Ninety-one submissions were received from a range of stakeholders, the significant majority indicating support for the measures proposed in the consultation document. This highlights the progressive relationship between the numerous private operators, regulators and those setting policy, illustrating leadership through progressive engagement. Work is now underway on preparation of a package of legislative measures to give effect to a wide range of changes to the existing regulatory structure including measures such as:

- A move to a pay per weight (by kilogram) system of charging, with standing charge to cover administration/provision of bins;
- Introduction of a range of on the spot fines/fixed payment notices for operators;
- Introduction of a three strike/one strike approach for serial offenders (operators);
- Increase in the number of mandatory conditions to be applied to all collection permits (eg customer charters [these being information set out for customers in relation to issues such as charging structures, operational procedures etc.]);
- Application of household waste collection standards to pay to use (PTU) units [these being 'bring type' receptacles / compactors].

*Drafting legislation to implement these changes is underway and stakeholder consultation is ongoing by DECLG."*

Appendix M of the 2012 national waste report provides estimate of unmanaged household waste.<sup>15</sup> The estimate for 2012 of 214,200 tonnes is included within the national statistics for MSW, and represents 8% of the national quantity of generated waste, and is only slightly less than the 9% (or 265,000 tonnes) figures for the previous two years.

How free-riders are dealt with, and what enforcement measures are to be used will be pivotal in the success or otherwise of dealing with this issue. It is understood that no absolute obligation will be placed on the householder to contract with an authorised collector under the new system. Householders will, however, be required to demonstrate that where they have not contracted with an authorised collector, they are nonetheless managing their waste in an environmentally acceptable manner in accordance with legislation and the provisions of the waste management plans.<sup>16</sup> Provided the free-rider issue is tackled, the majority of households in Ireland should be on a waste collection service that includes the collection of the key recyclables targeted by the WFD. Schemes are largely based on a co-mingled collection service. The performance of these schemes is discussed in Section 1.5.2.

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<sup>14</sup> <http://www.environ.ie/en/Environment/Waste/PublicConsultations/>

<sup>15</sup> EPA (2014) *Appendices to the National Waste Report 2012*,  
[http://www.epa.ie/media/EPA\\_NWR12\\_Appendices.pdf](http://www.epa.ie/media/EPA_NWR12_Appendices.pdf)

<sup>16</sup> Confirmed in discussion with Brendan O'Neill, Department of Environment

Other than the introduction of bio-waste systems which is proposed at the household level, the plans do not specifically identify the need for further changes in collection system in the future. The plans include the aspirational goal to meet higher targets of 60-70%, and indicate that the authorities should be aiming towards this, though such moves can be considered be the subject of future waste plans and policies beyond the current planned period.

#### **1.6.4 Article 14: Costs of Waste Management**

Section 75 of the Waste Management Act (as amended by the Protection of the Environment Act 2003) lays out that a local authority charge for provision of any waste service by, or on behalf of, that authority. Through this power, local authorities operate pay as you throw systems where the waste producer funds the costs associated with waste collection and recovery or disposal. There is an open market for collection at a local level. Costs have been reduced in recent years, with a 26% decrease from 2004 to 2011 being cited by one source, taking the average annual cost for the householder for all waste collection services down to €262.<sup>17</sup> Legislation has now been enacted such that the future charges will be applied on a pay-by-weight basis, with lower prices being levied for recycling services in comparison to residual collections. Further enforcement activity is intended to ensure that all householders are connected to the system or are otherwise managing their waste in an environmentally acceptable manner.

Concerning producer responsibility in Ireland, the draft plans inform that the national packaging compliance scheme, Repak, provides subsidy payments to fund the recovery of waste packaging that is sourced by service providers. Rates are agreed between Repak and the waste management industry based on the material type and source, recovery activity for that material, landfill levy, the market value of that material and the recycling and recovery target that Repak is committed to meet. The 2012 policy document “A Resource Opportunity” announced the intention to review producer responsibility initiatives and examine the financial mechanisms within which producers seek to comply with their obligations. The Producer Responsibility Initiatives review was intended to consider the most efficient and effective manner to progress this issue in relation to the relevant waste streams. Further information is contained in the report published in 2014.<sup>18</sup> The scheme does not fund whole recycling system costs, but provides a contribution to recycling operators who collect and recycle packaging waste either from industry’s back door or from households via bring and kerbside collection systems. This is discussed in more detail in Section 1.7.

#### **1.6.5 Article 22: Encouraging the Separate Collection of Biowaste**

The National Strategy on Biodegradable Waste launched in 2006 reaffirms the Landfill Directive targets and the move towards recycling and recovery. In 2009, the first Food

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<sup>17</sup> IWMA (2011) IWMA Submission to DECLG in relation to ‘Altering the Structure of Household Waste Collection Markets – a discussion document – June 2011’

<sup>18</sup> DECLG (2014) *Review of the Producer Responsibility Initiative Model in Ireland*, Report produced for DECLG by RPS, ESRI, BIO IS, Phillip Lee Solicitors, <https://www.repak.ie/files/documents/PRI-Review--Main-Report-2014.pdf>

Waste Regulations introduced producer responsibility at commercial food facilities to segregate food waste and send for recovery, which led to 25% of available commercial food waste being collected by 2011, as is identified in Section 1.6.2. The 2012 policy statement “A Resource Opportunity” then outlined the intention for regulations on food waste designed to promote segregation and recovery through composting and other forms of treatment. It intends to align to the Waste Framework Directive objectives of maximising the resource which can be extracted from waste and minimising disposal, as well as facilitating the achievement of the Landfill Directive targets.

The Minister signed the European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015) in 2015, commonly referred to as **the 2013 Food Waste Regulations**.

The Regulations impose obligations on both householders and waste collectors:

- Most **householders** will be obliged to segregate their food waste and make it available for separate collection when availing of a collection service. Alternatively householders are intended to demonstrate the appropriate alternate management – i.e. composting the food waste at home, or bringing it to authorised treatment facilities (such as civic amenity sites or anaerobic digestion sites). Where a source-segregated collection for food waste is available, householders are not allowed to dispose of food in the residual waste collection service. The new draft plans announce a policy to allocate resources for monitoring and inspection at household levels.
- **Waste collectors** are required to provide a separate collection service for household food waste. This is intended to be controlled through collection permits issued under a strengthened permitting system.

In accordance with the regulatory impact assessment prepared for these regulations, the roll-out of the brown bin is being phased in on a progressive basis, beginning on 1st July 2013. The timetable for when the regulations take effect is as follows:<sup>19</sup>

- 1st July 2013 for population centres greater than 25,000 persons;
- 31st December 2013 for population centres greater than 20,000 persons;
- 1st July 2014 for population centres greater than 10,000 persons;
- 1st July 2015 for population centres greater than 1,500 persons, and
- 1st July 2016 for population centres greater than 500 persons.

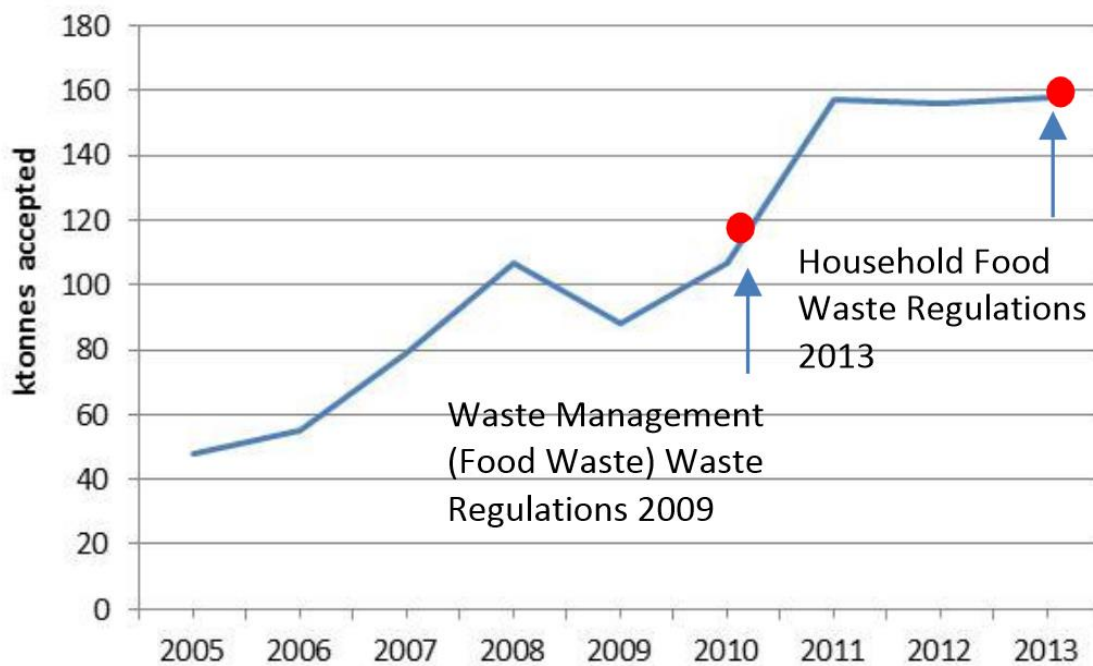
By July 2016, brown bins will be rolled out to most towns and villages. Only very small population areas, or small islands, will be exempt, because it is not technically, environmentally or economically practical to separately collect such waste in these areas.

Recent tonnage data for composting and AD is reproduced in Figure 1-3. This shows a considerable increase in the tonnage composted / digested since 2005 even prior to the introduction of the household food waste regulations.

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<sup>19</sup> It is understood (through discussion with the Department of the Environment) that local authorities could impose more onerous requirements under a Waste Management Plan, or via the Waste Collection Permits or through by-laws.

Figure 1-3: MSW Accepted for Composting/Anaerobic Digestion, 2005 to 2013



Source: EPA

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

### Legal instruments aimed at local authorities

The regional plans indicate that Irish local authorities are committed to achieving a 50% recycling target for all MSW. This may be a somewhat harder target to meet than the 50% recycling target required to meet the Waste Framework Directive target under calculation method 1, and should also assist in ensuring the country meets the Landfill Directive target.

The plans indicate that local authorities have set out long term goals which seek to ensure that they will be prepared for the higher targets that may be put into place in 2030, although there is no detail as yet on these preparatory measures.

The approach to promoting recycling is to ensure that collectors provide systems including a recycling collection stream, and for improved enforcement of households (and collectors) in future – the latter also being undertaken by local authorities. There appear to be no sanctions imposed in the event that a local authority fails to meet the target.

### Legal instruments aimed at waste producers

There is legislation aimed at ensuring **food waste collection**, thus helping Ireland achieve its Landfill Directive targets:

- 2009 Food Waste Regulations already imposes an obligation on producers of commercial food waste. These regulations have reportedly led to 25% of the available commercial food waste being collected in 2011, though the tonnage fell slightly for 2012.
- The 2015 Food Waste Regulations impose obligations on waste collectors and householders to provide and participate in food waste collection services.

With regard to enforcement of these regulations, the regional plans announce a policy action for individual local authorities and the lead authority for waste enforcement to *“Allocate resources to the systematic monitoring of household compliance with the segregation of waste with a particular focus on prioritising the reduction of contamination”* in order to *“increase the level of monitoring and inspection at household levels”*. It is intended that this policy will be extended such that it will cover the take-up of food waste collection.<sup>20</sup> Specific provision has been made in the RWMPs to prioritise the enforcement of the Household Food Waste Regulations, in particular through an enforcement Policy Action to *“allocate resources to monitor the schedule for the roll-out of brown bins to households in accordance with the Regulations”* which has been included.

The performance of the household waste collection market will be crucial in achieving overall waste policy objectives and meeting national targets on landfill diversion as set out in *“A Resource Opportunity - Waste Management Policy.”* A package of legislative measures giving effect to a wide range of changes to the existing regulatory structure including measures such as a move to a pay per weight system of charging, increased mandatory conditions applied to collection permits, and introduction of a range of fines / fixed payment notices for households and operators is now in place and will be effective by 1 July 2016.

Packaging producers in Ireland either attempt to self-comply with their packaging directive obligations, or comply collectively through membership and satisfactory participation in Ireland’s packaging waste compliance scheme which is operated by Repak Ltd. This is the only compliance scheme to have been approved for packaging waste since the regulatory system commenced.

The 2014 *“Review of the Producer Responsibility Initiative Model in Ireland”* provides an in-depth assessment and makes a range of recommendations for improving the current systems. DECLG has since been tasked with tackling the compliance issues raised in the report.

Concerning costs, Repak provides subsidy payments through the Repak Payment Scheme to fund the recovery of packaging that is sourced by the service providers. Rates are agreed between Repak and the waste management industry, based on the material type and source, the market value of material and the recycling and recovery target that Repak is committed to meeting. These subsidies are paid to waste recovery operators (i.e. it does not fund whole recycling system costs, but provides a contribution to recycling operators who collect and recycle packaging waste either from industry’s back door or from households via bring and kerbside collection systems). The 2014 review states *“The cost to producers who are members of a compliance scheme was €35.6 per tonne in 2012, a decrease of €10 per tonne since 2010. When compared with other European countries, these costs are in the lower end of the spectrum.”* The Repak strategy is to target the heavier packaging waste and most cost-effective sources to meet targets. In 2012, the average support provided by Repak to household packaging waste recovery was €58.50/tonne.

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<sup>20</sup> Confirmed in discussion with Brendan O’Neill, Department of Environment



## **Legal instruments aimed at waste companies**

New collection permit conditions in the coming plan period are intended to ensure that waste collectors provide acceptable recycling services. Given that household waste recycling collection services in Ireland are largely co-mingled, and assuming the new conditions improve the quality of recyclate collected by waste collectors, this may assist Ireland in meeting the waste framework directive targets by reducing the level of contamination in the collected material streams. , The plans state the local authorities should:

*“...work with NWCPO to standardise Waste Collection Permit conditions with standard mandatory conditions and local discretionary conditions”.*

This policy will enable the NWCPO to agree with representatives of all local authorities on agreed, harmonised conditions that should be applied to individual collection permits by the NWCPO.

Similarly, the plans also announce a policy action for individual local authorities, the lead authority for waste enforcement and the NWCPO to:

*“Allocate resources to the national systematic monitoring of waste collectors including on site audits of waste collection data and random roadside checks for compliance with permit conditions”*

and

*“To conduct at least one strategic review meeting with each major household waste collector a region annually and to complete at least one waste collection permit audit per county annually.”*

It is understood that contamination is taken into account using deductions derived from a 2008 MSW characterisation study, with the deduction being applied to the whole of the mixed recyclable stream rather than to the specific segregated streams.<sup>21</sup> It is not clear to what extent this data matches reality given the age of the data and the EPA is proposing to carry out an updated MSW Characterisation Study in 2016.

## **Financial instruments**

In recent years, a key financial instrument aimed at improving waste and recycling performance in Ireland has been the landfill levy, introduced at €15/t in 2002, and then increased over the 13 subsequent years until it reached €75/t from July 2013. This has been instrumental in diverting waste from landfill to date. No detail on any subsequent future increases is provided in the plans.

Local authorities are charged with ensuring that the levy is paid. A database has been developed in conjunction with the EPA and it is proposed that waste enforcement officers also work with police officers to deal with criminal activities. A key element of the plans is the additional effort anticipated to be expended on enforcement activities: for example, an Action Plan to deal with fuel laundering and waste arisings from criminal activities is also proposed and the newly-established Waste Enforcement Regional Lead Authorities (WERLAs) have established enforcement efforts on fuel laundering as a national priority in

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<sup>21</sup> This was confirmed in discussion with Brendan O’Neill, Department of Environment. RPS (2008) Municipal Waste Characterisation Surveys 2008, Final Report for EPA, March 2008

their Work Programme for 2016. Since the Action Plan has not yet been developed and the waste plans are not yet implemented, the effectiveness of these measures cannot yet be evaluated.

However, it is clear that landfill will become much less significant as a method of treating waste throughout the duration of the plan; this is further discussed in Section 1.8 (which deals with investment in infrastructure). Although this is arguably indicative of the success of the levy, it also suggests that its effectiveness as a means to drive further increases in recycling in the future will be reduced.

No detail on any subsequent future increases is provided in the plans, however, future policy is set out in A Resource Opportunity and states that “the rate of charge of the levy will be kept under review by reference to diversion rates and the consumer price index to ensure the dissuasive effect of the levy as an economic instrument is maintained.

### **Administrative instruments**

There is a centralised national system for reporting waste data as is set out in Section 1.5.2.

### **Informational instruments**

As part of its role in managing the packaging waste compliance scheme, the plans confirm that Repak is obliged to run national waste awareness campaigns annually to help drive a change in behaviour of waste producers towards packaging recovery.

Much activity has also been seen regarding The National Waste Prevention Programme since its inception in 2004. The new prevention plan published in 2014 runs until 2020, and reports on a number of resource efficiency / waste prevention activities – some of which are summarised in Section 1.4.2.

## **1.8 Investment in Waste Management Infrastructure**

The Carranstown incinerator outside Duleek, County Meath has been operational since late 2011, treating 230,000 tpa.

Forthcoming investments in infrastructure include the following:

- The Poolbeg incinerator Dublin, under construction and due to be complete in 2017. Facility size is 600,000 t.p.a. Total municipal waste generation in Ireland (including both commercial and household waste) is around 2.7 million t.p.a, with an estimated 1.33 million tonnes of residual waste being projected for 2018.<sup>22</sup>
- Figures provided by DECLG during consultation in the development of this factsheet indicate that biological treatment capacity is currently estimated by industry to be about 230Kt/a, for brown bin waste, sludges and organic fines plus another c.150Kt/a capacity in open windrow composting for green/garden waste. Industry estimates that there is an additional 474Kt/a biological treatment capacity planned, including two 90,000 t/a Wet AD plants planned by Stream Bioenergy in Dublin and Cork.

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<sup>22</sup> SLR (2015) Overview of Municipal Solid Waste Market in Ireland, draft report April 2015

Landfills numbers are plummeting: nationally there were 28 in 2009 to 6 at the time of writing. The quantity of residual wastes exported for energy recovery also increased from 117 k in 2012 to 347 kt in 2013 and c.550kt in 2014; as has been previously indicated there is a growing trend to export baled municipal residual waste which has not undergone mechanical treatment. The draft plans warn against future planned investments/permitting for other treatment capacity (MBT, land restoration) since significant overcapacity is identified in the plans. Workshop participants were keen to stress, however, that at a national level, planning for infrastructure had been undertaken on the basis of the number of facilities treating both commercial and household wastes.

It should also be noted that there is a potential national capacity for 340,000 tonnes of SRF combustion at cement kilns, though the collapse of the cement market means that current capacity is limited. It is for this reason that RDF producers have instead been seeking capacity abroad.

DECLG indicates that Ireland has adequate material sorting capacity for the recyclables that are currently collected and can quite easily increase that capacity in a relatively short time period, if and when supply of mixed recyclables increases. After sorting, most recyclables are exported to many countries in Europe and in Asia, depending on the market. Development of reprocessing capacity for materials in Ireland is difficult due to the global nature of the market and the small size of the Irish Economy. In the last decade or two Ireland has experienced the closure of a major steel mill, paper mill and glass bottling plant due to their lack of competitiveness in an international context.

## 2.0 Summary

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Impressive progress towards the targets has been made in recent years, although there is still a little way to go to achieve the 50% WFD recycling target by 2020. The high landfill levy and suite of regulations on household waste collection currently in place (as well as the current reforms being undertaken to strengthening the existing regulatory structure), have driven change and have potential to enable compliance with the current EU directive targets. Efforts by the private sector have also played a key role in the improved performance of the country in respect of waste management in recent years.

The strengths of the plans, policies and strategies put in place to date include the following:

- There is now a relatively detailed legislative framework in place which has been put together remarkably quickly and has had significant effect on national waste management in a short amount of time. In addition, a landfill levy has had considerable impact in driving waste out of landfill. In conjunction with new policies on food waste collection together with additional residual waste treatment infrastructure, Ireland should have no difficulty in meeting the landfill directive targets even in the event that the economy continues to improve and waste quantities therefore increase.
- The plans include a 50% target that is passed down to the local authorities, and also include an aspirational goal to reach higher recycling targets of 60-70% by 2030, although no details have yet been developed of the additional policies or system changes that will be required to achieve this performance, and whether or not these

aspirations are pursued is very likely to depend on the policy coming from the European Commission.

- Changes in the regions and organisation which have been brought about as part of the process of developing the new plans should help improve the effectiveness of policy making and implementation, and will assist in ensuring national standards are maintained.
- Pay as you throw systems have been in place at a household level for some time, although these have not operated optimally, resulting in free-riders. The new pay by weight systems should ensure an appropriate differential is maintained between the cost of recycling and residual services. These should provide a financial incentive for householders to participate in recycling services.
- The NWCPO now has centralised control over the permits issued to contractors via the local authorities, and through this mechanism should be able to ensure that the services offered by the private sector meet required performance standards.

Given the above, Ireland is on track to meet the targets in both directives, particularly given the recent progress and that the plans have not yet been implemented. The principle weaknesses in the current systems and policies include the following:

- It is clear that historic performance improvements have been driven in large part by the landfill levy. This will become far less important as waste is moved out of landfill and into other forms of treatment. Future performance improvements in respect of recycling for commercial waste in particular will therefore be dependent to a certain extent on there being a continued differential in cost favouring recycling activities over residual treatment. This is of increased importance as there are otherwise no financial sanctions in place to ensure that local authorities meet the recycling targets that have been passed down to them.
- There remains an open market for waste collection in Ireland as the current plans have not substantially changed this part of the system. Historically not all households have been connected to the system and the new enforcement regime is intended to tackle this, though challenges are expected to remain as households can avail of waste collection in different ways (i.e. through door to door collection, pay-to-use receptacles/compactors, CA sites etc.), as long as the household waste is being managed in an environmentally acceptable manner. Households without a kerbside collection service may be less likely to participate in recycling services such that future performance increases in recycling may be slowed. The fragmentation of the market may also make it more difficult to control the actions of a large number of players, thereby making it more challenging to bring about further change at a local level. The distinctive approach taken by Ireland in comparison to other member states relies on enforcement activities to ensure the success of policies. It is not entirely clear how successful current measures to oblige households to use formal waste management systems have been, or how effective the forthcoming regulatory mechanisms will be.

## 3.0 Information Sources

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DECLG (2014) Review of the Producer Responsibility Initiative Model in Ireland, Report produced for DECLG by RPS, ESRI, BIO IS, Phillip Lee Solicitors

Department for Environment, Community and Local Government (2013) A Resource Opportunity: Waste Management Policy in Ireland, July 2012

Eastern – Midlands Draft Regional Waste Management Plan, 2015-2021

Environment Protection Agency, Ireland (2009) Municipal Solid Waste: Pre-treatment and Residuals Management

Environment Protection Agency, Ireland (2013) National Waste Prevention Programme (NWPP)

EPA (2014) Appendices to the National Waste Report 2012

EPA (2014) Appendices to the National Waste Report 2012

EPA (2014) Bulletin 3: Residual waste treatment trends 2009 to 2013

EPA (2014) EPA's National Statistics - Progress towards EU waste recycling, recovery and diversion targets

EPA (2014) Towards a Resource Efficient Ireland – A National Strategy to 2020 <http://www.epa.ie/pubs/reports/waste/prevention/TowardsAResourceEfficientIreland.pdf>

European Communities (Waste Directive) Regulations 2011 (Statutory Instrument No. 126 of 2011)", as amended by the "European Communities (Waste Directive)(No. 2) Regulations 2011 (Statutory Instrument No. 323 of 2011)

Questionnaire on Implementation of Directive 2008/98/EC, C(2012) 2384 final

RPS (August 2014) Dublin Waste to Energy Waste Market Assessment

Southern Draft Regional Waste Management Plan, 2015-2021

Waste Management (Licensing) Regulations [WMLR] 2004 (Statutory Instrument 395 of 2004)", complemented on various aspects by the Waste Management Act and the "Waste Management (Landfill Levy) (Amendment) Regulations 2013 (Statutory instrument No. 194 of 2013)

Waste Management (Landfill Levy) Regulations 2015 (S.I. No.189 of 2015)

European Union (Household Food Waste and Bio-Waste) Regulations 2015 (S.I. No. 191 of 2015)

# 1.0 Summary of Recommendations for Ireland

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Recommendations included in the roadmap for Ireland can be summarised as follows:

1. Undertake a critical evaluation of the success of the revised regulatory regime for the household waste collection market two years after its implementation. In the event that the currently proposed legislation and associated enforcement efforts are deemed to be insufficient in securing delivery of Irish household waste management objectives – in particular with regard to ensuring there is full compliance with the requirement for separation, or in respect of meeting future higher targets – Ireland should consider what further regulatory or policy options are available to address identified weaknesses, taking into account suitability and effectiveness of the current statutory and regulatory arrangements particularly when compared against best practice in other member states.
2. Consider introducing a fiscal incentives that are sufficient to encourage the application of the waste hierarchy by ensuring the existing cost differential between landfill disposal and recycling is maintained when residual waste is directed for treatment at other residual waste treatment facilities (including pre-treatment facilities and waste sent directly to incineration).

## 2.0 Potential Issues with Approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Fragmentation of the household waste collection market	There are a relatively large number of household waste collectors in Ireland, including a significant contribution from smaller collection organisations along with that of the larger national players.	The waste services market in Ireland remains relatively open – local authorities do not have exclusive right to provide the service of household waste collections. Greater controls will be put in place during the forthcoming reforms of the household collection market. The plans confirm that the emphasis in the future will be on increased enforcement, and control of the private contractors via more stringent permit conditions. If enforcement is not successful, introduction of Pay-by-Weight systems may result in more fly tipping / evasion.
2	Households not subscribing to a kerbside collection system.	Under the new system, no absolute obligation will be placed on the householder to contract with an authorised collector. The onus will be on the regulator (in this case the local authority) to ensure householders are managing waste in an environmentally acceptable manner. Where waste is not treated via a kerbside collection service, international experience has shown that materials may not be so successfully segregated and recycling may be lower. Other methods for treating waste include civic amenity sites and bring site services, although it is intended the use of these systems will be brought under control, with costs applied to the use of civic amenity sites by householders. Backyard burning and other illegal waste disposal activities can also occur where waste is not treated using formal systems.	<p>An estimated 28% of households did not subscribe to any kerbside collection in 2012. There is a requirement under national legislation that a holder of waste is required to treat or have waste treated in line with the waste hierarchy, including through organising for the treatment or collection of waste by an authorised establishment / collector, but individual householders may still be able to slip through the net if the enforcement regime is not sufficiently robust.</p> <p>A review of enforcement measures is currently taking place. Although additional measures are expected to improve the situation in the future, the effectiveness of these actions cannot yet be determined. It is clear, however, that the success of the system will depend in part on there being sufficient budget available to ensure effective enforcement.</p>

Number	Potential issue	Description	Reasons for the issue
3	Weakening influence of the landfill levy	This has driven the recent improvements in recycling performance to a large extent but this trend is not expected to continue. No such tax is currently applied to residual waste subjected to other treatment methods, including waste exported for incineration.	Ireland is well on track to meet its landfill directive targets, as a result of very substantial increases in the amount of waste being diverted from landfill. As such the landfill levy is expected to decline in its importance as a driver of future improved recycling rates.



## 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>Undertake future review of recent collection market reforms</b>					
<p>Experience from other European countries indicates that it is difficult to specify the charging system without understanding the detailed functioning of collection systems (particularly collection frequency), the latter being separately dictated by the permit system in Ireland. The future success of the PAYT systems is also likely to be dependent on effective enforcement, and on the interface between the proposed charging system and the collection system. Updates to the regulatory regime have not yet taken place, and these are expected to improve the performance of the current system once implemented. However, some uncertainties remain.</p> <p>It is therefore recommended that Ireland undertake a critical evaluation of the success of the revised regulatory regime for the household waste collection market when data for two years after its implementation is available (the review should therefore commence in 2019). In the event that the currently proposed legislation and associated enforcement efforts are deemed to be insufficient in securing delivery of Irish household waste management objectives – potentially also in respect of meeting future higher targets – Ireland should consider what further regulatory or policy options are available to address identified weaknesses, taking into account the suitability and effectiveness of the current statutory and regulatory arrangements particularly when compared against best practice in other member states.</p>	Legal / administrative	DECLG / local authorities	Dependent upon approach taken	N/A	Will address potential issues 1 and 2.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>Reforms to waste taxation</b>					
<p>In line with national policy, consider the introduction of fiscal incentives as necessary to encourage application of the waste hierarchy in order to ensure the cost of disposal through other treatment routes is no less than the landfill cost. Past recycling performance has been driven in large part by the landfill levy, but the impact of this on future increases in recycling rates is expected to decrease as very substantial increases have already occurred in the amount of waste that has been diverted from landfill. This is likely to be of greater significance in Ireland given there is no direct financial incentive on Irish local authorities to meet the recycling targets that have been passed on to them.</p> <p>The fiscal incentives should take account of the tonnage of material entering Irish pre-treatment facilities as well as materials exported to residual waste treatment facilities outside Ireland (excluding waste that is recycled at all these plants).</p>	Fiscal	DOEHLG	Costs to fall on waste producers	N/A	Will act as a further check to ensure that the cost differential remains in favour of recycling over residual waste treatment, thereby tackling issues 3 and 4.

### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
<b>Introduce fiscal incentives</b>		Announcement of analysis	Outcome of Analysis		Fiscal incentives In place	
<b>Review recent collection market reforms and undertake further reform (if necessary)</b>				Announcement of Performance Review		Outcome of Review

# 1.0 Factsheet – Malta

This factsheet analyses the situation regarding waste management policies and practices in Malta, the focus being on municipal solid waste (MSW). The basic aim of the factsheet is to identify potential deficiencies in waste management practice implemented in the country that could lead to non-compliance with EU waste legislation, in particular the waste hierarchy and the EU waste management targets.

The following table presents some basic data and information related to current waste generation and management in Malta, which the following analysis was based on.

**Table 1-1: Basic waste management data for Malta**

Population / Households (National Statistics Office)	
Total inhabitants (2011)	417,546
Dwelling stock (2011)	Total: 223,850
	Occupancy rate 68.2%: 152,770 Plus secondary use / seasonal properties 13.3%: 29,848
Municipal Waste Generation (Source: National Statistics Office data)	
Total (tonnes in 2015)	246,251
Total (kg/cap/annum, 2013)	579
Household Waste Composition (Source: Waste Management plan)	
Food	52%
Paper & cardboard	18%
Plastic containers	12%
Glass	6%
Metal	4%
Textiles	2%
Hazardous	0.5%
Other	7%
Municipal Waste Management (Eurostat 2013 data)	
Recycling	19,425 tonnes or 7.9%
Composting	12,092 tonnes or 4.9%
Waste landfilled	196,354 tonnes or 79.7%
Difference between waste generation and waste treatment	17,690 tonnes or 7.2%
Performance Against Targets	
Waste Framework Directive: Recycling accounted against calculation method 1	22% for 2013
Landfill Directive	119,452 tonnes of biodegradable waste to landfill for 2013 against target of 106,019 tonnes biodegradable waste for that year

Existing Waste Management Infrastructure	
<b>Mechanical biological Treatment (MBT)</b>	Sant' Antnin: Maximum permitted throughput: 71,000tpa AD capacity: 35,000 tonnes/annum A second similar (slightly larger) facility currently in development at Maghtab
<b>Engineered landfills</b>	Both within the Maghtab Environmental Complex: Ta' Zwejra landfill operating since 2004 Ghallis landfill operating since 2006
<b>Thermal treatment</b>	Marsa incinerator capacity 13,000tpa currently used for clinical and hazardous waste
<b>Bring sites for recycling</b>	400 sites operated by packaging complianceschemes plus 430 operated by private operators (i.e. one per 500 inhabitants, or one per 184 occupied households)
<b>Civic amenity sites</b>	6 (i.e. one per 69,600 inhabitants, or one per 25,500 occupied households)
<b>Sorting facilities</b>	A 36,000 tpa sorting facility at Sant' Antnin operated by WasteServ plus currently 10 private sorting facilities for collected recyclables

From the data in Table 1-1, municipal waste<sup>1</sup> generation in Malta is rather high (580 kg/cap/y), though this may in part be due to the touristic nature of the country. In 2013 Malta received almost 1.6 million tourists to the islands, with a calculated average tourist population of around 23,000 at any one time (i.e. over 5% of the national population).<sup>2</sup>

Waste management relies heavily on waste disposal and this is not in line with the EC and national legislation and targets. There is currently only one waste management (MBT) facility in operation for municipal waste, while a second one is due to be operational by the end of the year. Untreated residual waste plus non-recycled outputs from MBT are disposed in Malta's managed landfill.

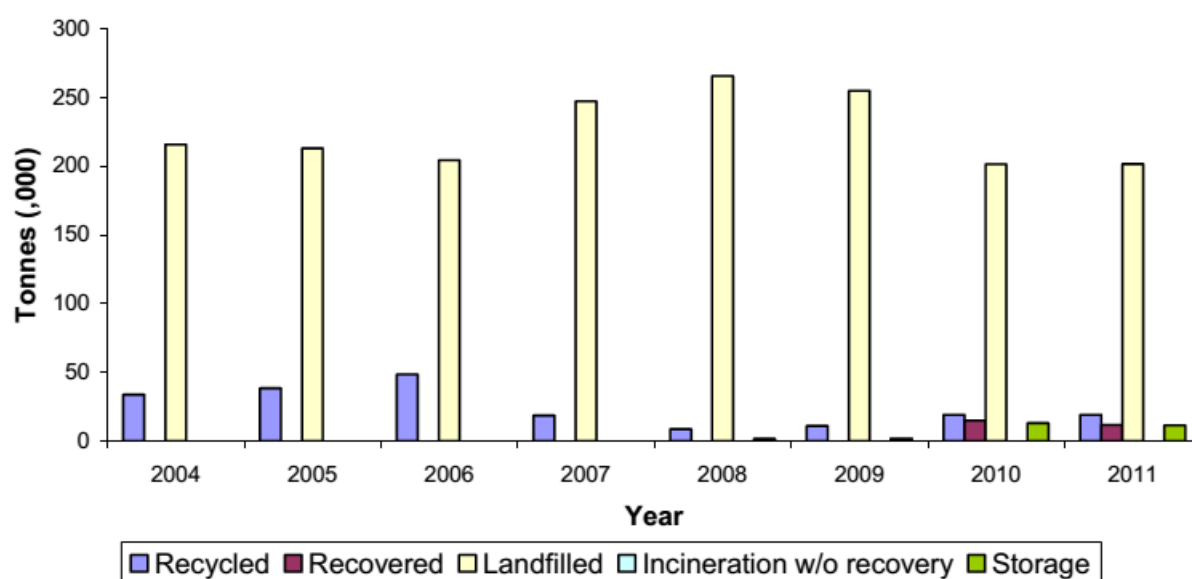
Figure 1.1 presents the evolution of waste management practices over time. The more recent data from 2012 and 2013 shows very little change from the situation in 2011.

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<sup>1</sup> The Maltese definition of MSW, and inclusion of specific waste sources, matches the current EU intended definition of MSW. The definition is laid down in Article 4 of the Waste Regulations 2011 (L.N. 184 of 2011), where Malta defines MSW as "waste from households, as well as other commercial, industrial and institutional wastes which, because of its nature or composition, is similar to waste from households".

<sup>2</sup> Malta Tourism Authority (2014) *Tourism in Malta – Edition 2014*,  
<http://www.mta.com.mt/loadfile.ashx?id=35826ea6-5e00-4f64-8ad7-c5de2cc2c31d>

**Figure 1.1: Evolution of Municipal Waste Management in Malta 2004 - 2011**



Source: Malta WMP 2014-2020

## 1.1 Roles and Responsibilities of Key Actors

The “Ministry for Sustainable Development, the Environment and Climate Change” (MSDEC) holds overall responsibility for waste policy. This remit has been transferred to MSDEC from the Ministry for Resources and Rural Affairs who previously produced the 2010 policy statement “A Solid Waste Management Strategy for the Maltese Islands: First Update - December 2010”. The MSDEC recently authored the “Waste Management Plan for the Maltese Islands 2014 – 2020” (WMP) declaring that this supersedes the previous strategy, and brings together the policy statement, waste management plan and prevention plan into the one document.<sup>3</sup> In addition to this, within the MSDEC, the Directorate for the Environment and Climate Change also plays a monitoring role in the implementation of environment and climate related strategies and action plans.

As part of reforms to comply with requirements in joining the EU, the “Malta Environment and Planning Authority” (MEPA) (which falls under the remit of the Office of the Prime Minister) was established through the merger of the former Planning Authority and Environmental Protection Department in 2002, and operates under the mandate of Chapter 504 of the Laws of Malta (the Environment and Development Planning Act). MEPA is the competent authority responsible for environmental regulation and land use planning in Malta. Its responsibilities include land use planning, licensing, permitting, environmental monitoring, enforcement, as well as providing input to the Office of the Prime Minister and the MSDEC on waste plans and policies. The government has programmed to separate the planning and environmental protection remits of MEPA through splitting the organisation into two separate public authorities, though this has yet to be implemented.

<sup>3</sup> Ministry for Sustainable Development, the Environment and Climate Change (2014) Waste Management Plan for the Maltese Islands: A Resource Management Approach 2014-2020, Final Document January 2014

The separation of the planning and environmental protection remits of MEPA has been discussed and passed through Parliament in the last quarter of 2015. This separation also includes an administrative reconstruction which places the environmental protection authority under the same administrative remits of the MSDEC. This should alleviate resources issues and render the services more efficient, especially in their enforcement actions and data collection. The Ministry is confident that with the instruction of new measures and new MBT plants, performance will improve significantly in a relatively short period of time, given the size of the islands and its population.

In addition, under the responsibility of the MSDEC, "WasteServ Malta Limited" was set up as a private company in 2002 to provide facilities and services in relation to waste management. The Maltese Government owns 99.999% of the share-holding of the company (the balance is held by the Malta Investment Management Company Ltd), with management and administration of the company vested in an independent board of directors. The intention is thus to separate the government's function as legislator and regulator from its role as an operator.

WasteServ's remit is to organise, manage and operate integrated systems for waste management. This is intended to include minimisation, collection, transport, sorting, reuse, recycling, treatment and disposal of solid and hazardous waste, as well as operating systems for the export of waste. There is a current drive to outsource waste operations to the private sector as much as is possible, leaving WasteServ as an "operator of last resort". It was understood from discussions within the workshop that the company does not currently have the power to set the prices for treatment costs, although it is nonetheless expected that WasteServ should make a profit. Through its board of directors, WasteServ does, however, have the remit to make the necessary recommendations for pricing which take into account investment and potential profit margin.

The function of waste collection and street cleaning has been decentralised to local councils. The 68 councils in Malta and Gozo have individual responsibility for setting up separate collections in law, and in turn contract these services out to the private sector through publicly awarded contracts. Responsibility for delivery of the targets does not seem to have been devolved to councils in the legislative sense. However local councils are considered key to the success of the WMP by virtue of their role in collection and management of MSW. The WMP also encourages councils to band together into regions and to jointly procure waste services, though it is not clear how this will work in practice. Local councils have in many cases collaborated with WasteServ and the compliance schemes for the provision of "bring in" recycling sites. Representing the interests of local councils at the national level is the "Local Councils Association". The "Department for Local Government" under the "Ministry for Justice, Culture and Local Government" takes the centralised responsibility for local councils as well as offering management and administrative support together with statutory funding.

Additional public bodies with a remit which touches upon municipal waste include:

- The National Statistics Office (NSO), the Competent Authority responsible for the Waste Statistics Regulation, hence charged with compiling data and reporting on waste.<sup>4</sup>
- The Ministry for Finance, to whom all public administrations are answerable.
- The Ministry for European Affairs and Implementation of the Electoral Manifesto, who deal with relations with the European Union, as well as EU funds and programmes.
- The Managing Authority within the “Planning and Priorities Coordination Division” of the “Ministry for European Affairs and Implementation of the Electoral Manifesto” has a scope which includes EU funding for the waste sector.

In addition to WasteServ, the private sector is also involved with the delivery of waste collection and management services under contract with the local authorities.

The WMP confirms there are also responsibilities placed on householders, including the requirement to separate dry recyclables, separate biowaste, to co-operate with councils and to ensure that their waste is managed by a person in possession of a permit. The responsibility of the householder ends at the point of collection by the waste carrier.

No allocation of responsibility for meeting targets has been placed upon local authorities or other body, meaning that the national government (or the department with lead responsibility for waste - MSDEC) holds the responsibility for delivery of the targets set out at a European level.

## 1.2 Summary of Legislative Framework for Waste Management

The relevant laws implementing the European Directives in relation to MSW are:

- The Waste Framework Directive (WFD) is enacted through the Waste Regulations, 2011.
- The Landfill Directive is enacted through Waste Management (Landfill) Regulations 2002.

Related regulations include:

- The Packaging and Packaging Waste Directive is enacted through the Waste Management (Packaging and Packaging Waste) Regulations, 2006.
- The Eco-Contribution Act 2004 has also been enacted to encourage the separate collection and recycling / recovery of packaging waste. The Eco-Contribution is a charge intended to be paid to the VAT department when a product is sold, transferred, disposed of, or changes its nature (it is not clear how the charges are applied and returned to the VAT department in these latter cases).

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<sup>4</sup> NSO’s reporting obligations with Eurostat include the bi-annual reporting for the Waste Statistics Regulation and the annual reporting for the Municipal Waste Indicator. Other waste related reporting obligations fall under the remit of MEPA.

## 1.3 Status of Waste Management Plan(s)

The new national Waste Management Plan for the nation state of Malta was completed and legally adopted in January 2014. As identified above, this replaces the previous plan and also the previous strategy document (last updated in December 2010), thereby bringing the policy direction function of a strategy within one unified national waste management plan. The aim is that the 2014 plan is revisited and revised every three years (the plan states that it is to be evaluated and revised as appropriate and where relevant by 2016).

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plan(s)

The WMP proposes the following initiatives:

- A review of collection systems to increase recycling, provide source separated organic waste, and reduce residual waste. This was due in 2015 to coincide with the completion of the North MBT plant so that source separated organics can be treated as a clean stream within the anaerobic digestion element of the plant;
- The introduction of organic waste collection to improve Malta's MBT operations (where the 'biological' component of MBT is used for source separated waste) and to reduce biodegradable municipal waste to landfill. This is intended to be piloted in five localities in the first phase, followed by a further four localities in the second phase;
- The regulation of commercial entities, who are obliged to have their own waste carrier, but most of whom have, to date, illegally added waste to local council collection systems to the detriment of public finances;
- Removal of the eco-contribution legislative framework on EEE in order to reduce administrative burden and encourage the setting up of more producer responsibility schemes;
- Ongoing national information and awareness campaigns to accompany the implementation of the plan;
- Enhancing the enforcement capabilities;
- Independent auditing of producer compliance schemes.
- In addition, the following are also proposed:
  - A cost benefit analysis to establish the most economically and financially feasible option between local thermal treatment and the export of waste for energy recovery;
  - Increased involvement of the private sector further in the waste management sector;
  - Consideration of the setting up of a Waste Management Stakeholders Group in order for Government to regularly engage interested stakeholders on the achievements and proposals being contemplated such that constant feedback may be sought from those directly involved in the sector;



Aspects of the plan are thought to be dependent on a number of other documents or work programmes (some of which are expected to currently be in development), specifically the:

- Review of collection systems;
- Review of the strategy for the reduction of biodegradable waste from landfill;
- The regulation of commercial entities to counter the abuse of household collection systems;
- Review of polluter pays principle;
- Cost benefit assessment relating to thermal residual waste treatment.

Malta is small geographically and by population and as such there are no regional plans to consider.

The WMP has been evaluated by BiPRO in a recent project for the European Commission where it is rated to be legally compliant with the minimum mandatory requirements included in the WFD.<sup>5</sup> Overall, the WMP is rated by the BiPRO report as follows, with a small number of strengths and weaknesses identified:

*“The WMP is generally well worked out and compliant with the WFD. Information about all waste streams is included, however some information could be elaborated in more detail. Therefore the WMP is rated as “Adequate”.*

Strengths:

- *WMP is complete in the sense of the WFD.*
- *MSW generation prognosis until 2020 included in the WMP based on average change in the waste generation of 0.33% and demographic growth of 0.41%.*
- *All waste streams are included.*

Deficiencies:

- *Information about targets/requirements is included for most issues, however not complete for biodegradable waste going to landfills.*
- *Some missing information for waste streams, e.g. trends of last years, specific collection system.”*

The WMP itself states that it will be evaluated and revised as appropriate and where relevant by 2016. Additionally, the WMP commits to annual (or periodic in the case of percentage biodegradability of MSW) monitoring the relevant waste streams, infrastructure capacities and performance so as to aid in determining the success of the plan.

## 1.4.2 Waste Prevention Plans

The waste prevention plan has been integrated within the 2014 WMP. It may be noted that within the national law, the 2011 Waste Regulations (L.N. 184 of 2011) allow for waste prevention programmes to be integrated into the waste management plans (no later than

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<sup>5</sup> BiPRO (2014) Detailed evaluation report for assessing the waste management plan of Malta – National, report the European Commission, 3 December 2014

12 December 2013) provided that prevention measures are clearly identified. The WMP was, however, issued slightly later than this in 2014.

The European Topic Centre on Sustainable Consumption and Production (ETCSCP) has completed a review of the waste prevention element of the WMP.<sup>6</sup> This confirms that the prevention programme describes specific targets, particularly in food waste prevention, including a specific target to lower food waste from 22% to 15% over a period of five years (these percentages relating to the amount of purchased food being wasted and sent to the solid waste stream).

Prevention measures include the following:

- Working with businesses to become waste champions;
- Discouraging unwanted mailings by encouraging operators to examine opportunities for using virtual marketing media, and encouraging catalogue companies to favour online distribution of catalogues;
- Various educational initiatives, including training for public administration employees and working with schools, and engagement of the media (including television programme producers) to develop television programmes on cooking with leftovers.

The waste prevention plan (within the WMP) concludes by stating that “Government is considering setting an appropriate governance framework for the implementation of this Plan”. In this regard, it can be considered that although a number of waste prevention areas and activities are identified, ownership of the initiatives and responsibility to deliver the objectives are not yet properly assigned.

## 1.5 Progress towards the Fulfilment of Targets

### 1.5.1 Landfill Directive Targets

Following accession to the EU in 2004, Malta closed its unmanaged landfills and, supported by EU funding, has put in place two engineered landfills within the one site in the north of the main island (the Magtab Environmental Complex), these being the Ta’ Zwejra and Ghallis landfills.

Malta has a four-year derogation on the due date for achievement of the biodegradable tonnage targets, so the relevant target years are 2010, 2013 and 2020. The 2014 WMP indicates that the reference year against which landfill tonnages are to be measured is 2002. The tonnage of biodegradable waste against which Malta’s performance is measured is 141,360 annual tonnes, meaning that the 2010, 2013 and 2020 targets are 106,019, 70,679 and 49,476 tonnes respectively.

The latest data from the NSO (in turn referenced to WasteServ) on the generated quantity of MSW was 246,251 tonnes for 2015. Eurostat data indicates that 196,354 tonnes of municipal waste were landfilled in 2013, confirming the current reliance on landfill in Malta.

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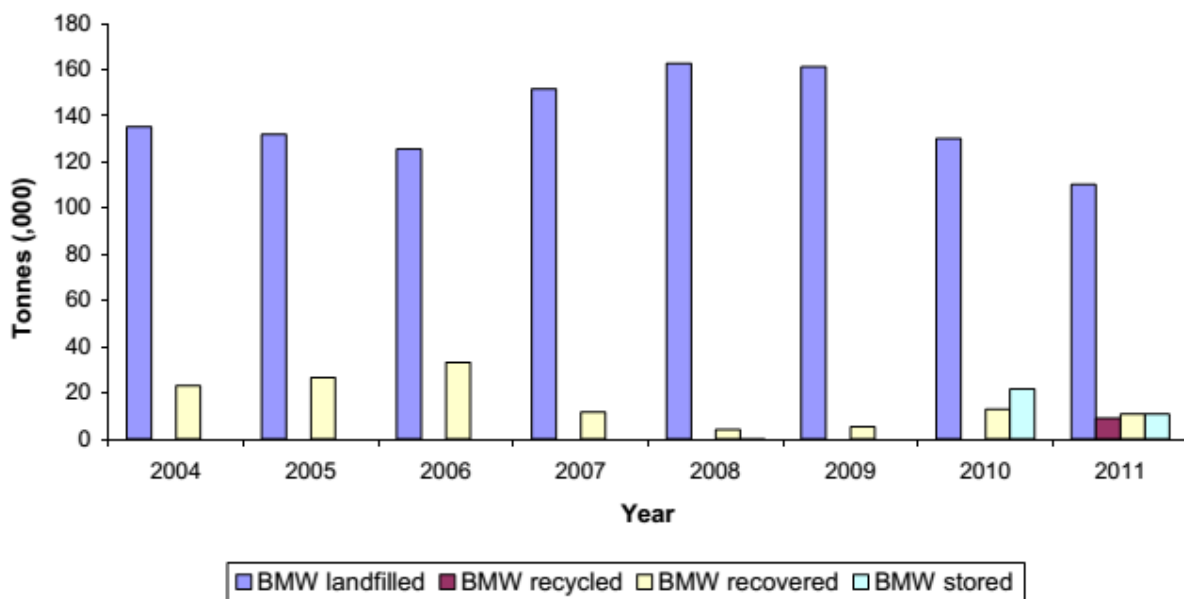
<sup>6</sup> ETCSCP (2014) *Full country abstracts on waste prevention programmes: Malta*, <http://scp.eionet.europa.eu/facts/WPP/malta>

The WMP suggests that 66% of mixed MSW is biodegradable (food waste alone represents 52% of the household waste composition). Data on biodegradable waste in the WMP (also shown in Figure 1-1) indicates that 130,198 and 110,253 tonnes of biodegradable waste were landfilled in 2010 and 2011, respectively, and additional data provided from an information request for this the current study suggests the quantities were 120,773 and 119,452 tonnes for 2012 and 2013, respectively.<sup>7</sup> This confirms that Malta has already contravened its obligations under the Directive for both the first and second target years.

Although the second MBT facility and any forthcoming improvements from separate collection reforms could help improve the situation, waste is projected in the WMP to grow by around 25,000 tonnes between 2013 and 2020 within the WMP presenting a further challenge to the upcoming targets.

Furthermore, the intention is effectively to split the MBT operations into effectively two separate components - anaerobic digestion of source separated organics and mechanical separation of residual waste (with non-recycled content to landfill). Given this, the biowaste diversion capability of the overall waste management systems are consequently reliant on very effective biowaste collection systems being put in place.

**Figure 1-1: Historic Biodegradable Waste Management in Malta**



Source: 2014 WMP

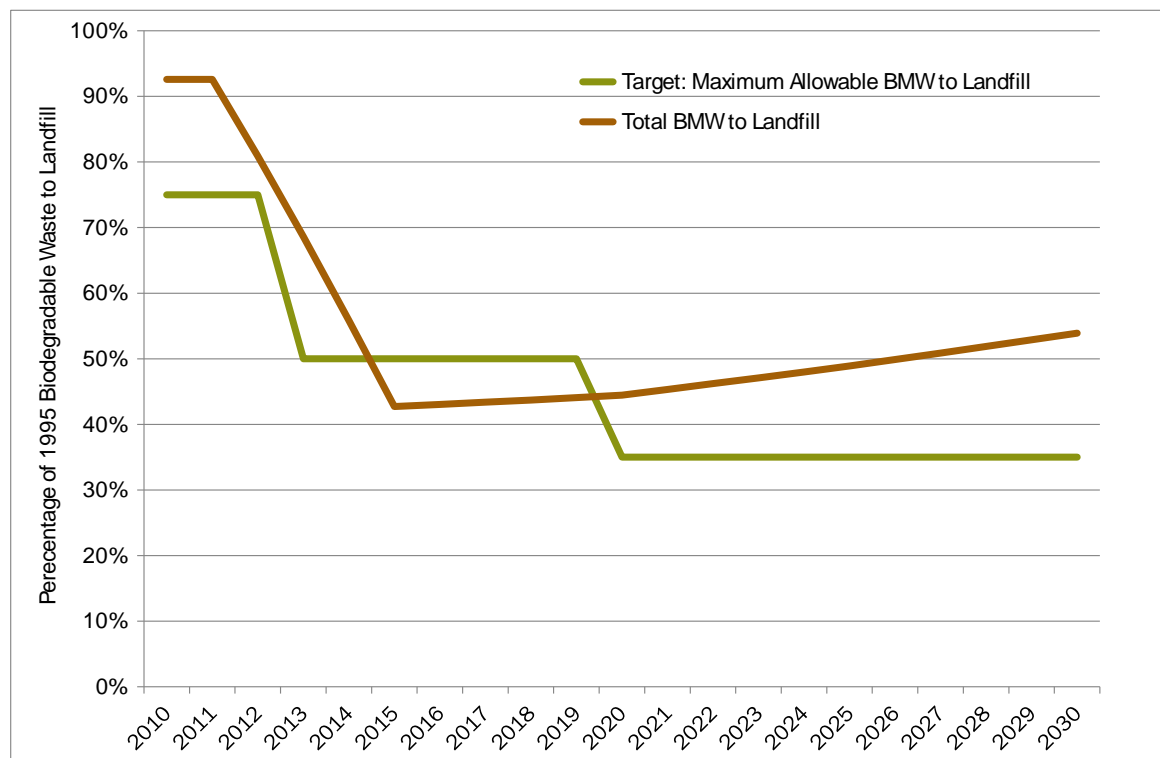
Concerning data quality, the tonnage to landfill quantities might be expected to be better than the wider data on waste (discussed further in Section 1.5.2) as they are compiled by landfill operators WasteServ.

Eunomia previously reviewed Malta’s performance against the LFD target for DG Environment during the development of the waste model. Two baselines were modelled,

<sup>7</sup> EU Secretariat for the Ministry For European Affairs And Implementation Of The Electoral Manifesto, personal communication, 8<sup>th</sup> June 2015

one assuming that the MBT North facility comes online in 2015. This projection is shown here in Figure 1-2, and suggests that the achievement of the highest (3<sup>rd</sup>) target will be problematic although the 50% target might be reached once the North treatment plant is operational. This projection was made before the launch of the WMP and the further detailed information gathered as part of this exercise, and assumed that take-up of bio-waste services is relatively low, and similarly poor performance for recycling collection. The situation could improve if the forthcoming collection reforms present binding and effective improvements to municipal waste management in the coming years. However, given that current proposals suggest the MBT facilities will not be performing a biological function on residual waste, if the non-recycled output stream is landfilled, this issue could worsen the outlook.

**Figure 1-2: Projection of Performance against Landfill Directive Obligations**



Source: Eunomia (2013) for European Commission as reported within: Eunomia Research & Consulting / Copenhagen Resource Institute (2014) Development of a Modelling Tool on Waste Generation and Management – Appendix 1: Baseline Report, Final Report under Framework Contract ENV.C.2/FRA/2011/0020

### 1.5.2 Waste Framework Directive Targets

Malta has opted for calculation method 1 (the proportion of reused and recycled paper, metal, plastic and glass to the generated quantity in household waste) to report progress against the WFD targets. Due to opting for calculation method 1, it is not possible to quantify performance directly from the data reported to Eurostat, but data in the WMP for 2011 and further data provided to us by MEPA and the NSO do reveal Malta’s recent performance.

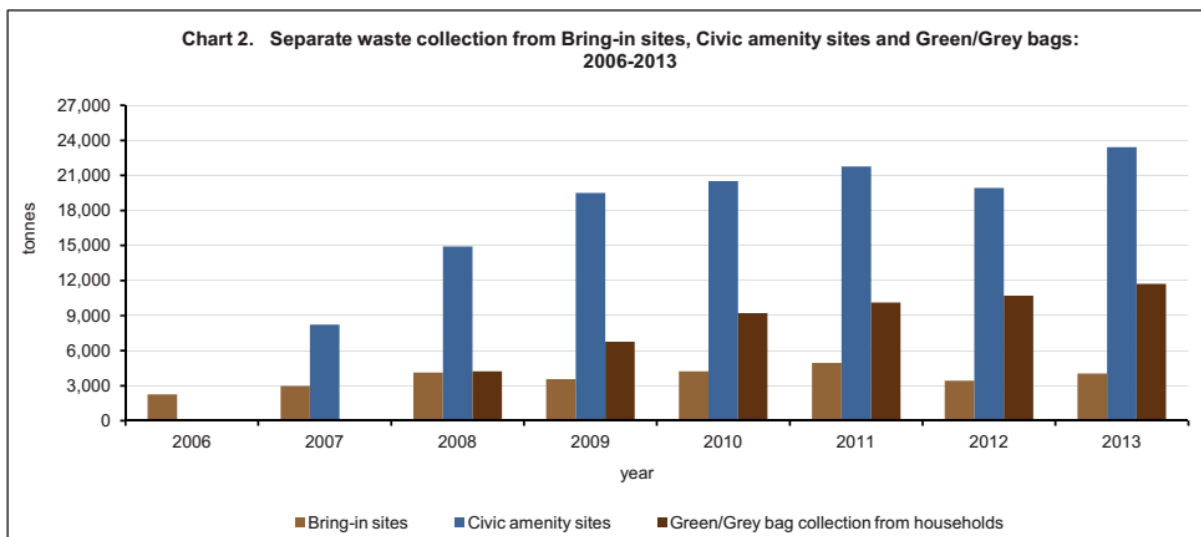
Although recycling has increased over the past decade due to the introduction of kerbside recycling and civic amenity sites (in addition to ‘bring-in’ recycling sites provided in previous years), information from the National Statistics Office, reproduced in Figure 1-3, reveals that

very little change in separately collected waste has occurred within the current decade. From information provided by MEPA following a data request as part of this project, the overall household waste recycling rate (as intended to be calculated for the 2020 Waste Framework Directive target) has stagnated at 23%, 23% and 22% for 2011, 2012 and 2013 respectively.<sup>6</sup> Malta thus continues to be some way from the 2020 target, with at least double this rate of recycling needed by 2020.

Concerning these statistics, we are also told that *“In the method used both the amount of waste generated and the amount of waste recycled include a percentage of commercial waste”*, indicating some issues inherent to the data collection and management. It was understood from the workshop that WasteServ and MEPA provide data on tonnages to the NSO. All waste facilities are required to report this information to MEPA as a condition of the operating permit. However, participants in the workshop indicated that not all facilities have weighbridges, reducing the quality of the information returns.

The WMP identifies that commercial businesses are known to put waste out for collection by household collection services in spite of being obliged to contract for the service separately. To what extent this practice also occurs for recycling is not known. With such practices occurring, the calculated statistics for household recycling lose some accuracy.

**Figure 1-3: Separate Waste Collection Data**



Source: NSO (January 2015) News Release: Solid Waste Management 2013, [https://nso.gov.mt/en/News\\_Releases/View\\_by\\_Unit/Unit\\_B3/Agricultural\\_and\\_Environment\\_Statistics/Pages/Solid-Waste-Management-in-Malta.aspx](https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_B3/Agricultural_and_Environment_Statistics/Pages/Solid-Waste-Management-in-Malta.aspx)

Indeed, there appears to be limited certainty with regards to the national waste statistics. The BiPRO evaluation report identifies that data from the WMP and EUROSTAT do not compare, with data for recycling and recovery showing discrepancies greater than 20%.<sup>8</sup>

<sup>8</sup> It is understood that differences in definitions and methodologies which arise from the different European reporting obligations are the main reason why there seems to be a discrepancy in results; NSO and MEPA apparently use the same source data for their respective reporting obligations.

There are also discrepancies in the data within the WMP with the data provided in the NSO annual statistical release on solid waste management, making it difficult to have good certainty on the real situation in Malta.

A number of data quality deficiencies were identified in the (repealed) 2010 waste strategy:

*“The scope and quality of data and information about wastes and waste management activities have improved to some extent in recent years, but there are still some major gaps and weaknesses, notably:*

- *insufficient or inadequate data and information about some waste streams e.g. the quantities and types of hazardous wastes; the composition of MSW;*
- *insufficient or inadequate data and information about some waste producers, transporters and facilities; and*
- *the lack of a comprehensive system and procedures for classifying, collecting, processing, analysing and disseminating data and information on wastes and waste management activities in a consistent and standardised format.*

*[...] The Malta Environment and Planning Authority is responsible for developing and managing a national waste management information system. This entails a high level of cooperation and input from the National Statistics Office (NSO) [...]. Implementation requires the establishment of a national computerised database for data storage, processing and retrieval, supported by integrated systems and procedures for data gathering, verification and reporting. This information system should also cater for dissemination to the public of waste management information and data. MEPA shall also compile a Waste Management Register, which would provide the public with information about all permitted waste facilities and activities. This register shall be made available online on the MEPA website.*

*[...] Little progress has been registered on actually developing waste management data and information systems. This issue needs to be given higher priority during the lifetime of the revised strategy.*

*The NSO has a major role to play in advising on the methodologies that need to be employed for data collection as well as to identify the best way in which the data can be collected. The NSO also has a determining role in transmitting and making that data available to all interested parties.*

An accessible waste register remains unavailable at MEPA (or NSO). However, the National Statistics Office 2014 Annual Report states that *“In the past year, the [Agriculture and Environment] Unit improved the existing data collection programmes in respect of specific requirements for waste statistics and energy statistics.”*<sup>9</sup> Feedback provided by the authorities during the development of this factsheet indicates that waste management data has improved considerably in recent years with the consolidation of existing administrative data sources (e.g. WasteServ, trans-frontier shipments of waste) and the development of new data sources (e.g. private facilities).

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<sup>9</sup> National Statistics Office (2015) Annual Report 2014, ISBN: 978-99957-29-53-0, [nso.gov.mt/en/nso/About\\_NS0/Documents/Annual\\_Reports/AnnualReport2014.pdf](http://nso.gov.mt/en/nso/About_NS0/Documents/Annual_Reports/AnnualReport2014.pdf)

The WMP notes that there is currently no requirement for local authorities (charged with collecting the waste) to record and report collected waste quantities, although, as was indicated above, facility operators are charged with reporting this information. Further progress is thus needed on allocation of responsibilities for collecting and reporting waste data, as well as advancement in accessible systems for data management to more conveniently and robustly compile waste data. There are also difficulties in obtaining data in a timely fashion from the operators.

The new plan has only recently been adopted, and collection system reforms (discussed further in Section 1.6.3) are yet to be finalised, so the full influence of forthcoming changes are yet to be felt. There remains a risk that intentions announced through the collection reform package will take some time to be implemented, and that changes in performance may be slow to occur.

Additionally, compliance and enforcement activity has been identified in the WMP to have been particularly weak and ineffective in Malta. The WMP announces the intention to review the existing enforcement resources and also to strengthen enforcement activity to ensure waste systems operate as intended. The identified measures include financial penalties for delayed reporting of waste activity/data, certification against free-riders (anticipated to tackle businesses not paying for waste), a shift away from enforcement reports triggered only in writing, and Local Councils to be the legal holders of waste collected from their communities. A strong focus on specific issues and the intended enforcement measures to tackle them, backed by sufficient resources, will be necessary in the coming years.

Further aspects relevant to collection systems and hence the impact on achievement of targets is discussed in Section 1.6.3.

## **1.6 Implementation of Specific Waste Framework Directive Articles**

### **1.6.1 Article 4: Application of the Waste Hierarchy**

The waste hierarchy is implemented through Schedule 5 of the Waste Regulations in Malta which stipulates the priority order to be followed as is contained in the Directive (the WMP refers to the Regulations to confirm this). The Regulations state this is to be applied by the “competent authority”. It is not entirely clear which body has ultimate responsibility for this: the Regulations direct the reader to the Environment and Development Planning Act for the definition of the “competent authority” which, in turn, suggests the body to be MEPA (in its current form, though the planning function is programmed to be split from the environmental protection one) or another authority to which power has been delegated. The latter could therefore presumably include local councils although this is not explicitly stated.

Malta’s response in the implementation report for the Directive on this issue does not explicitly indicate that this responsibility has been devolved to either local authorities or waste collectors; it indicates that the Maltese government has, through WasteServ, established the infrastructure necessary to meet the requirements stipulated by application of the hierarchy but does not provide further details. It is difficult to accept this as a sound justification for application of the waste hierarchy since establishment of infrastructure does

not in itself facilitate activities at the top of the hierarchy (prevention, recycling etc.). Furthermore, as noted above, the intention is for WasteServ to become less prominent over time as activities are delivered, progressively, by independent private sector companies.

Current recycling rates in Malta are relatively low and with very low landfill gate fees (€20/tonne as identified in Section 1.6.4 below) there is still a strong reliance on landfill, indicating that the waste hierarchy is not respected at present. The authorities signalled at the workshop that there were national constraints to significantly increase the charges associated with landfilling, although the Commission understands that there is a desire to establish inter-municipality services so as to reduce costs and increase efficiency.

## 1.6.2 Article 10: Recovery

Article 10 of the Waste Framework Directive (requiring Member States to take measures to ensure that waste undergoes recovery operations) does not appear to have been directly transposed into the Waste Regulations. However, the implementation report for Malta on the WFD says the following on the subject:

*In accordance with paragraph 11 of Schedule 5 laid down in the Waste Regulations (LN184/11; as amended), measures to ensure that waste undergoes recovery operations in accordance with the waste hierarchy and to safeguard human health and the environment are to be addressed in Malta's National Waste Management Plan, which is currently under review.*

*Having said so, dry recyclables such as metal, plastic, paper/cardboard and glass are collected separately, either through the use of bring-in sites or through door-to-door collection of comingled paper, plastic and metal. Dry recyclables are then sent to local material recovery facilities. These waste streams are sorted both mechanically and manually. The latter operation is intended to remove contaminants and to separate recyclable streams collected together.*

Door-to-door collection of dry recyclables now takes place across all Malta at least one day per week, and in certain localities even two days per week. These collection systems complement the network of bring-in recycling sites. However, in spite of this, and with food waste collection not introduced, the national recycling rates are low and the rate of landfilling is very high, suggesting that the measures taken to ensure recovery are not sufficiently effective.

More information is needed to understand the extent to which separately collected and sorted materials reach reprocessors for recycling, and which are managed by other means (i.e. energy generation, secondary market applications or landfill disposal).

Concerning the residual treatment infrastructure, until this time the Sant' Antnin MBT facility has used a mechanical treatment plant to separate organic waste for treatment in an anaerobic digestion facility, where other source separated biodegradable waste is also digested. Some recovery of metals etc. is achieved from the remaining residual waste, with the remainder being landfilled. Operational issues and a mechanical breakdown of the AD component of the Sant Antnin MBT facility has prompted the plan for source separation of biodegradable waste (which appears a crucial development for better integrated waste management), though this is currently set to be put in place only slowly, following trials in one region only in the first instance. A second, larger, MBT plant at Maghtab is expected to



come on stream during 2015 (as indicated within the 2014-20 WMP), intended to follow the same modified approach as for Sant' Antnin (i.e. a materials sorting facility for residual waste with outputs to recycling and landfill, and a separate biological treatment facility for source separated wastes only). However, in the absence of established separate food waste collection systems, how this is intended to operate from the outset is not clear.

A small incinerator (13,000tpa capacity, recent annual average 6,600tpa) is also present, though this has so far been used almost exclusively for waste from animal by-products, clinical and hazardous waste. The NWP announces the intention to undertake a cost benefit analysis to decide between local thermal treatment and export of waste for energy recovery.

### 1.6.3 Article 11: Reuse and Recycling

The separate collection requirement is laid down in national law within the 2011 Waste Regulations, where it is stated that local councils should *“set up separate collection (which includes comingled collection) for at least (a) paper, (b) metal, (c) plastic and (d) glass, in order to promote high quality recycling.”* The duties in the regulation are said to apply only where they are technically, environmentally and economically practicable, and appropriate to meet quality standards necessary for recycling.

Local councils in Malta are charged with organising waste collection. In collaboration with local councils, the packaging waste compliance schemes manage networks of bring sites for recycling, as well as a number of civic amenity sites around the islands. Within recent years kerbside recycling has been introduced widely across the country, with financing provided by packaging compliance schemes (it appears that the intention is that the full costs of this service are funded by the compliance schemes: further detail is provided in Section 1.6.4). Waste collection has been transitioning from a daily residual collection to less frequent residual, and recycling collection on certain days of the week.

The door to door recycling collection systems are a bag collection for mixed paper, plastic and metal containers. This complements the bring-in recycling networks where those materials can also be deposited alongside glass (in some instances glass is also collected door-to-door on a monthly basis). In this respect Malta appears to be complying with the separate collection requirement, though we do not have compiled information on recycling collection frequencies across the 68 local councils.

With levels of household waste recycling having stagnated at just over 20% in this decade, there is a recognition that improvements in waste collection and separation are needed. The WMP states, for instance, *“It cannot be overemphasized enough that the success of the implementation of this Plan and the correct operation of current and projected facilities will depend upon a heightened separation of waste generated at source.”*

Refinements to collection systems are identified in the plan, though these are generally quite weak with no binding obligations made (e.g. *“The frequency of collection of mixed waste can be reduced also as a disincentive towards those who do not commit themselves to separating their waste at source.”*). The WMP describes a *“possible measure that will be considered to improve the existing waste collection systems”*, this being a once weekly residual waste collection, a twice weekly ‘where feasible’ recycling collection, and a two to three times weekly collection of organic waste. Such an approach would be a good step

forwards, but government needs to take decisive action to ensure this is put into place in practice in a sensible timeframe, rather than considering it merely as a possibility.

As is discussed further in Section 1.6.5, the proposed introduction of household food waste collection is intended to tie in with delivery of the second MBT facility at Maghtab. This is to be trialled in 5 localities in the south of Malta and subsequently extended to a further 4 localities, with collected food sent to the anaerobic digester within the Sant' Antnin MBT facility.<sup>6</sup> It was noted in the workshop that the first set of trials are to be rolled out shortly and that WasteServ is now in charge of the project that will take this forward. It would be preferable to de-couple, as far as possible, the move to high quality separate collection systems from the development of facilities designed, in essence, to treat residual waste, rather than seeing separate collection simply as a means to make residual waste treatment facilities operate more smoothly.

The plan suggests that the grouping of local councils into a more regional approach could create better economies of scale. Aggregated collection catchments, together with reforms related to frequency and timing of collections (more evening and night time collection to alleviate congestion issues) are suggested as means to generate savings (presumably in addition to intended recycling performance improvements).

A specific problem identified in the plan is the abuse of the household waste collection system by commercial entities: *“Whilst municipal waste collection is aimed to serve only households, it is known that small commercial and industrial establishments, who are not entitled to have their waste collected under current local council contracts, are inherently abusing the system by ‘piling’ their waste along that of nearby residents.”* This is also stated to cause an issue for councils as their waste budgets are set based on expected levels of household waste generation, so any commercial waste in the system risks being landfilled by WasteServ without the disposal cost being covered from appropriate fees from the commercial companies using the service. The WMP outlines measures that *“will be considered”* including co-collection of commercial and industrial waste with household waste against a fee reflecting the waste arisings, and separate collection of biowaste from restaurants / caterers / retail premises / food processing plants – possibly in colour coded bags to differentiate between commercial and household waste.

The plan states that government will also consider the potential for introduction of a deposit refund scheme on selected recyclables. The latest update on this is that government intends to issue a request for proposals to develop schemes and incentives to recover packaging waste through deposit refund systems. In line with the 2015 budget commitments, Government is also committed to issue a request for proposals for the introduction of a deposit refund scheme for plastic bottles. Preparations on this matter are still underway.

It is not possible to anticipate the effect of the collection system reforms currently intended since there is an absence of certainty and detail as to what will happen (if anything), how they are to be enacted (i.e. within binding regulations), if and when schemes will go national and be implemented on the ground (i.e. through revision to existing collection contracts etc.) and also what enforcement measures will be used.

#### **1.6.4 Article 14: Costs of Waste Management**

##### **Liabilities for the Costs of Waste Management**

There is no PAYT legislation in place at present in Malta and there appear to be no plans to introduce it, although the WMP does state that waste charging is under review. Under the current system, local councils pay for costs for waste management through public funds allocated by Government, these funds being provided, in turn, through general taxation. The collection and management of dry recyclables is funded by packaging producers (as discussed below). Civic amenity sites and bulky waste collection services are also available and free of charge at the point of delivery for households (with WasteServ operating the civic amenity sites, and local councils providing bulky collection services).

Information collected from the authorities during the development of Eunomia's waste model suggests that householders could be dis-incentivised from participating in dry recycling collections as in some areas, a charge is levied for the sacks (it is not clear by whom), but no charge is levied for disposal.

The WMP itself does confirm that small commercial and industrial establishments are adding their waste to that of householders, despite the local councils having no obligation to collect this waste. WasteServ covers the costs where the councils do not have the money to fund the cost of collecting this waste, and thus these costs are ultimately passed back on to government.

Similarly, the plan also talks about the issue of hotel waste. Hotels are obliged to have their own contractor. In general, the local authority is not responsible for collecting this waste, but the need for specific arrangements in areas deemed as tourism areas with large numbers of hotels is foreseen, and under such circumstances the local authority is identified as having a role to play in organising collection of these wastes, provided it is not responsible for funding it.

### **Cost Levels**

It is noted in the WMP that the true cost of waste management is not known, and that *"This is spurned by issues such as the lack of factoring of true operational costs in the gate fees for the various facilities currently in operation. The lack of precise quantitative and qualitative data on waste and its composition may not be accurately known."* Relatively little information on costs is provided in the WMP.

The cost of disposal to landfill is currently €20/tonne plus VAT (18%) – this being at the lower end of disposal fees in Europe. This fee is a government set figure with no landfill tax currently applied; the cost is laid down in The Deposit of Wastes and Rubbles (Fees) Regulations and is adjusted periodically only to reflect changes to the retail prices index. It may also be noted that the same 'Fees' Regulations fix the MBT gate fee also at €20/tonne, and the charge levied for recyclables is €0.50/tonne. This charge for sorting recyclables may have given rise to the reasonably large number of private sorting facilities in Malta (currently 10).

The WMP proposes that in order to implement the polluter pays principle there will be a review of *"existing landfill gate fees at public facilities to determine whether they are fully reflective of the real cost of operating the landfill (including environmental costs)"*. It is not clear how soon any proposed modification to disposal fees will be enacted, nor what the rates may be. This should be considered a priority as waste will continue to gravitate to disposal so long as the costs are low compared to the economics associated with recycling.

It should be noted that significant increases in disposal cost can have unintended consequences if not backed by effective monitoring and enforcement systems. Efforts will need to be made to prevent disposal in inappropriate locations. Enforcement activities should ensure businesses are subscribing to waste services, incidents of fly tipping are investigated, and relevant waste operators are inspected regularly.

### Producer Responsibility Systems

Work previously undertaken by Eunomia in 2011 considered the costs associated with managing metal packaging. This confirmed that the EPR schemes in Malta were operated at the time by Greenpak and Green.mt (the latter being a subsidiary of the Maltese Chamber of Commerce, and, at the time of writing, operating mainly a bring bank based system). Two separate compliance schemes can be seen as an advantage as this allows for competition in the market. The country also had a separate charge imposed by the Maltese authorities for products (including packaging) placed on the market – the Eco-Contribution. Businesses producing packaging were exempt from the Eco-Contribution if they were contracted to a recycling scheme that met its recovery targets (they can apply for a refund). Local authorities were required to register with Greenpak or Green.mt.

The review of Eco-Contribution is now complete and it is currently intended that other waste streams will follow the same approach now established for packaging – this being that self-complying producers or those subscribing to producer responsibility schemes will be exempt from the eco-contribution (the next sector to be exempt is electronic and white goods, by September 2015, in order for local businesses to compete on a level playing field with other EU Member States).<sup>5</sup>

Greenpak and Green.mt charge fees for their members to support the recycling service. Only fees for the Greenpak scheme were publicly available; these are presented in Table 1-2.

**Table 1-2: Membership fees for Greenpak**

Material	Fees €/tonne (excluding VAT)	
	Consumer packaging (household waste collection)	Store and transport packaging (commercial / industrial waste collection)
Steel	133.00	64.60
Aluminium	61.75	28.50

**Note: There is a minimum charge of €150**

Source: PRO Europe (2011) Participation Costs Overview, January 2011

Although PRO Europe has since published more recent information, the later version of the document does not provide a breakdown of the costs of managing the waste broken down by the tonnage of material; instead, the total annual participation cost is provided.<sup>10</sup>

The WMP indicates that the full costs of collection (via bring-in sites or through door-to-door collections) is charged to the producer responsibility organisations. The costs of

<sup>10</sup> PRO Europe (2013) Participation Costs Overview, January 2013

collection services may be charged according to the proportion of time spent collecting recyclables compared to that collecting residual waste (i.e. on 'Recycling Tuesdays' as opposed to other days of the week when residual waste is collected). It is possible that this could act as a barrier to more frequent and widespread recycling collection if there is insufficient money in the system.

The WMP confirms that the private sector is of the opinion that enforcement of the EPR system is relatively weak, with a large number of free riders being seen to compromise the system. It is understood that the regulator currently has limited resources to ensure enforcement of the regime. Workshop participants confirmed that it is intended that MEPA's capacity to enforce the system will be strengthened in future years- EPR measures are being rolled out to cover waste streams like WEEE, batteries and packaging. The authorities explained that there is no recycling re-processing treatment capacity on the islands and that all waste separately collected is exported for recovery.

### **1.6.5 Article 22: Encouraging the Separate Collection of Biowaste**

Historically bio-waste has not been separately collected at kerbside, although some collection of garden waste through CA sites occurs.

At present there are no confirmed plans to introduce specific regulations regarding the separate collection of food waste. Although only limited details on the intended reforms to collection services are included within the WMP, the intention to introduce separate collection of biowaste three times weekly is identified as an objective, and these "*may be accompanied by legislative measures*". The implementation report for the WFD similarly confirms there will be introduction of a separate collection system for household biowaste. The WMP itself confirms there will be a responsibility placed on householders to separate bio-waste, though how this is to be enacted and what the consequences of non-compliance will be, are not identified.

The Malta National Reform Programme describes a separate waste collection bag which will cater for the collection of household organic waste. It was confirmed in the workshop that this is intended to be piloted during the latter part of 2015, before being rolled-out nationwide in advance of the launching of the North Mechanical Biological Treatment (MBT) plant<sup>11</sup> (where construction is expected to be completed October 2015<sup>12</sup> and the facility operational by the end of 2015<sup>5</sup>). Alongside this, the frequency of collection of mixed household waste will be reduced from four times a week to twice a week. The pilots will be accompanied with education campaigns on food waste. The necessary infrastructure (mainly anaerobic digestion) to treat the waste will soon be available (see Section 1.8).

There is no evidence of other actions and legislation supporting separate biowaste collection, such as standards for compost and / or digestion residues. Malta's limited land mass is noted in the plan, and this may act, to a certain extent, to limit the development of

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<sup>11</sup> Malta Ministry for Finance (April 2015) *Malta National Reform Programme*, [ec.europa.eu/europe2020/pdf/csr2015/nrp2015\\_malta\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2015/nrp2015_malta_en.pdf)

<sup>12</sup> [http://ec.europa.eu/regional\\_policy/en/projects/malta/mechanical-and-biological-treatment-plant-to-treat-mixed-municipal-waste](http://ec.europa.eu/regional_policy/en/projects/malta/mechanical-and-biological-treatment-plant-to-treat-mixed-municipal-waste)

the use of compost, although this is not identified as a threat in the SWOT analysis. The outputs from the anaerobic digestion facilities (once treating source segregated biowastes) are intended to be used on land.

A recent Ministry for Finance document stated that MSDEC launched an education and communications campaign in 2014 to addressing priorities outlined in the Waste Prevention Plan, including prevention, handling and management of food waste.<sup>9</sup>

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

### Economic instruments

There is a differential between cost of landfill, and fee charged on recycling (presumably intended as a sorting facility gate fee at the Sant' Antnin facility); this is stated in the implementation document. These fees are applied to the waste contractor who is, in turn, employed by the local authority. Fees are €0.50 / tonne for recycling plant and €20 / tonne (plus VAT) for landfill. The cost differential is unlikely to be sufficient to stimulate recycling. Consultation undertaken with private sector representatives during the project confirmed there is strong support from this quarter for an increase in the cost of landfilling as the fees do not cover the full cost, although there was resistance from workshop participants to the introduction of a landfill tax. There is also no cost differential between waste treated at the MBT plant in comparison with that directly disposed to landfill.

As was discussed previously, the authorities are reluctant to introduce a landfill tax.

### Legal instruments

Extended producer responsibility ensures some packaging is recycled; there are legally binding targets in the Packaging and Packaging Waste Regulations for recycling packaging out to 2013. Some detail on the current scheme is provided in Section 1.6.4. The review of Eco-Contribution is now complete and it is currently intended that other waste streams (e.g. WEEE) will follow the same approach now established for packaging – this being that self-complying producers or those subscribing to producer responsibility schemes will be exempt from the eco-contribution and this scheme is due to be removed.<sup>13</sup>

The WMP confirms responsibility for delivering household collection is with the local authority. Previous work by Eunomia confirmed through interview with the Ministry that dry recycling collection is funded by authorised recovery schemes which are funded in turn via an agreement between the scheme and the council for the relative cost contribution – it is not clear how this operates in practice. It is intended that this is 100% of the recycling collection cost, potentially with this system sharing vehicles and staff with the residual collection on the other days of the week. This suggests there should be a financial incentive to local authorities for recycling (since recycling days do not incur collection costs to local authorities and all collected recyclables reduce the need for waste disposal); however, given the above cost structures (€20 for disposal against €0.50 for sorting of recycling in public facilities), the incentive is not thought to be a very strong one.

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<sup>13</sup> Plastic bags are also due to be removed from the Eco-contribution scheme

There do not appear to be any sanctions aimed at local authorities in the event that the targets are not reached. In addition, the WMP also confirms there are currently no reporting requirements on local councils, although it is suggested these may be introduced in future.

The WMP suggests a key focus of enforcement activity is on ensuring there are no free riders in the EPR system. Throughout the document though it is confirmed that there is currently a very weak enforcement regime due to insufficient human resource capacity.

### **Information**

The need for education is identified in the plan; the imperative to work with local councils is stated and there is identification of the educational tools that might be required. The intention to undertake further work on education was confirmed by MSDEC in the workshop. It is clear then, that responsibility for this lies with the government; it is not clear how information will cascade down to the councils and others involved in collection / implementation.

A certification scheme for collectors is also proposed in the WMP. This is intended to involve formal training by a competent educational institution. It is noted that MEPA has drafted a syllabus although there is no indication of when this might be put into place.

### **Data**

The plan notes there is currently a lack of precise quantitative and qualitative data on waste and its composition. There appear to be no plans at present to introduce a centralised data reporting system.

### **Compliance with LFD**

Malta has failed to achieve its LFD targets to date according to Eunomia's previous assessment undertaken as part of the European Waste Model project, although it has potential to achieve the second (2013) target shortly when the MBT North becomes operational, so long as effective stabilisation of the biowaste content is achieved.

## **1.8 Investment in Waste Management Infrastructure**

In addition to Malta's two operational landfills at the Maghtab complex, Malta currently operates the Sant' Antnin Solid Waste Treatment Plant in the south of the island of Malta, originally commissioned in 1993.<sup>14</sup> This mechanical and biological treatment facility has historically attempted to separate the biological fraction of MSW from mixed waste (maximum input of 71ktpa) and treat this in an anaerobic digester. Due to ineffective separation and incompatibility of the AD with mixed waste, the digestion plant has suffered mechanical breakdowns, and operates with a much reduced annual throughput (averaging 17ktpa for 2011 and 2012). A composting plant / shed is also present at Sant' Antnin for processing the output from the anaerobic digester, though currently, practically all of this ends up as landfill-cover material (in some years this material has been landfilled). Of the remaining residual waste not sent to the digester, some metals are extracted and a refuse

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<sup>14</sup> Malia E. et. al. (2013) The Sant' Antnin Waste Treatment Plant in Marsascala - Review of operations, July 2013, <https://environment.gov.mt/en/Documents/Downloads/WBRU/Exec%20+%20Full%20Report.pdf>

derived fuel (RDF) output is produced. Although this RDF is said to have good energy potential that may be used as a fuel in waste to energy plants, this material is currently also landfilled. The intention going forwards is to dedicate the AD capacity to source separated organic waste. The intention for the mechanical part of the plant is not clear, though it could tie in with any future options on thermal utilisation of residual waste.

A small existing incinerator, capacity 13,000 tonnes per annum, with no energy recovery is in operation in Marsa. This facility is labelled a hazardous waste incinerator, and is primarily used for animal by-products.

On 22 April 2013, the Malta Environment and Planning Authority approved the planning permits for the development of a new MBT / anaerobic digestion plant in the north of Malta. The facility is expected to be completed and operational in October 2015. It broadly follows the same design of the Sant' Antnin facility, with a mechanical treatment plant and a separate AD based biological treatment plant. The permitted capacity of the plant is:

- 100,000 tonnes per annum of mixed MSW; and
- 47,000 tonnes per annum of bulky waste.
- 39,000 tonnes per annum of organic waste for anaerobic digestion – intended to be source separated organic waste from households plus cow and chicken manure.

Facilities in planning include a waste transfer station in Gozo. Future infrastructure plans noted in the WMP also include the rehabilitation of several landfills and upgrading of the Marsa thermal facility to include RDF capacity.

A sorting facility at Sant' Antnin, Marsascala, is used for sorting, processing and sale of kerbside collected, bring site and other segregated recyclables. The part of the wider Sant' Antnin site is permitted for 36,000 tonnes per annum of mixed recyclables. A public register available at the MEPA website identifies a number of additional facilities permitted for the sorting and bailing of separately collected recyclables.<sup>15</sup>

It is understood that Malta is also considering whether there is a need to develop an incineration facility, or whether additional treatment requirements can be met through the export of RDF.

## 2.0 Summary

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Malta may be commended for putting in place the legal frameworks for waste according to the EU Aquis, for closing its non-compliant landfills replaced by engineered facilities, and starting the journey of putting in place integrated systems for effective waste management. However, the slow pace of service development, disjointed interaction between the waste systems, and lack of regulations and economic drivers mean that these systems are not performing to their potential and Malta is in real risk of continuing to miss the primary targets of the main European Directives on waste.

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<sup>15</sup> <https://www.mepa.org.mt/wastemanagementfacilities>



The strengths of the policies and plans announced to date, together with the effective institutional arrangements for waste management include:

- An existing regulatory framework enshrining the EU law into the national legislation;
- A widespread network of bring-in recycling facilities. Door-to-door recycling collection in place. Civic amenity sites available with opportunities for recycling of materials not collected through door-to-door / bring-in services;
- An 'operator of last resort' (WasteServ) and compliant facilities for the treatment and disposal of residual waste in place. A second MBT facility due to be delivered in the coming months. Non-compliant incinerators and dump sites closed;
- A general intention to reform collection systems, though a lack of firm actions, policies and progress on this issue is a concern;
- Producer responsibility systems in place, though the issue of free-riders appears to be an ongoing problem.

Issues hampering waste management in Malta appear to relate to the following:

- Financial incentives poorly aligned with the waste hierarchy;
- Low cost of waste disposal;
- No food waste collection systems currently being operated, and no current regulations to oblige it to be collected (although trials of collection systems are now taking place);
- Fragmentation of the collection systems with 68 local councils with individual responsibility for waste collection.
- No targets placed on local authorities or collectors currently.
- 'MBT' infrastructure which does not appear to be functioning well;
- Lack of enforcement resources, capabilities and obligations. This is giving rise to the polluter pays principle not being upheld:
  - Free-riders within producer responsibility systems;
  - Businesses free-riding on local authority waste collection systems;
  - Fly tipping of waste.
- Deficiencies in the data on waste.
- Institutional and administrative arrangements convoluted and can impede progress to reforming waste systems and policies.

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# 1.0 Summary of Recommendations

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Recommendations intended to be included in the roadmap for Malta can be summarised as follows:

1. Further reforms of door to door waste collection systems are recommended.
  - a. Following the trials currently taking place on food waste collection, integrated waste collection service standards and obligations could be introduced.
  - b. Responsibility for waste collection should be moved from the local authority level to a much smaller number of regional waste authorities.
  - c. Concerning producer responsibility systems, clarity on costs is needed. Ideally the full costs of management the packaging waste would fall on producers and not the general tax-payer.
  - d. Particularly if no landfill (or residual waste) tax is introduced, local authorities (or on the regional authorities where responsibility has been moved) should be assigned recycling targets so that those responsible for waste collection can ensure that the service delivery, and the structure of incentives, is of a standard that delivers the required performance. It is suggested that sanctions are needed to give substance to the targets.
2. Adaptation of the treatment systems:
  - a. Anaerobic digestion operations at Sant' Antnin and Maghtab to treat source segregated organics.
  - b. With the anaerobic digestion element of the current MBT facilities dedicated to source separated waste, the operation of the mechanical treatment plants needs to be reviewed.
3. A significant increase to the cost of disposal of mixed / active waste at landfill, and also MBT, ensuring the full cost of treatment (including aftercare) is covered. Further residual waste cost increases via a residual waste tax should be planned and announced for a period of years ahead.
4. Strengthening and empowerment of enforcement capability / capacity, including Inspection and enforcement of commercial organisations to ensure they are subscribing to collection services.
5. Improvements to data capture and management systems.
6. Institutional reforms. Decision making and implementation processes for waste management to be streamlined to allow projects that are in the interests of moving waste up the hierarchy to be put into practice more quickly and efficiently.
7. Pay-as-you-throw for household waste should be introduced only once all other aspects of waste management have been addressed and systems are functioning as intended.

## 2.0 Potential Issues with Approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Waste management currently failing to implement the waste hierarchy - significant dependence on landfilling	<p>Convenient and zero cost waste disposal routes for households (frequent door-to-door collections, free bulky waste collection and civic amenity site services).</p> <p>Ability for commercial enterprises to dispose of waste for free through household collection systems.</p> <p>High share of biodegradable waste disposed of in landfills. Missing separate collection of the biowaste fraction.</p>	<p>Historic daily residual waste collection service provided, with (typically) only one day per week dedicated to recycling.</p> <p>A very large number of Local Councils in Malta (68 in total), each with responsibility for waste collection, leading to inefficiency and difficulties in administration. Enforcement ineffective.</p> <p>Recycling targets (and sanctions) are not in place for local authorities or collectors. Therefore, those involved in the management of waste are not obliged or incentivised to meet the national targets, and seemingly assert limited control over waste collection service provision.</p> <p>Disposal costs paid by local authorities, but from public funds allocated by government. If budget not available to settle all disposal costs, the cost can go unpaid and is picked up by WasteServ (also supported by government funds). Hence, dysfunctional budgetary accountability for waste.</p> <p>Low cost of waste disposal. Disposal fees set within the 1997 Deposit Of Wastes And Rubble (Fees) Regulations (as subsequently amended), which only intends for fees to be adjusted in line with the retail price index and not to reflect the costs of operating facilities or to account for any non-monetary impacts (such as environmental costs). Landfill and MBT treatment at €20/tonne + VAT. Economic rationale not present to drive waste up the waste hierarchy.</p> <p>Limited financial benefit in local authorities taking decisive action to stimulate recycling due to the low disposal cost (and seemingly optional budgetary accountability).</p> <p>No pay-as-you-throw for households, and ability for commercial business to misuse the household collection system.</p> <p>Due to the low disposal price, legitimate commercial waste collection charges are unlikely to be sufficient to properly incentivise recycling.</p>

Number	Potential issue	Description	Reasons for the issue
2	Incompatibility of collection systems and treatment technologies currently employed	Malta's currently operational MBT plant has previously suffered mechanical breakdown of the AD facility due to incompatible feedstock. Also, apart from some limited recyclate recovered from residual waste, all outputs from both the mechanical treatment facility and AD facility continue to be landfilled.	Poor operational management of the existing facility. No separate collection of organics currently, which would allow the AD facility to switch to purely source segregated feedstock. No known local market for thermal treatment of refuse derived fuel (or inadequate processing capability to produce an internationally marketable output).
3	Incomplete coverage of costs with regard to MSW management, polluter pays principle not being upheld	Businesses not subscribing to commercial waste collection services and placing waste out for collection alongside household waste.  Free riders within EPR systems.	Lack of centralised systems to understand if businesses are contracting for waste services. Lack of enforcement. Lack of prerogative or incentive for collectors to distinguish between household and commercial waste, other than the potential fraudulent taking of payments to collect commercial waste as household.  Packaging producers exempt from Eco-contribution. Producers should self-comply or subscribe to GreenPak or Green MT, but some may do neither. Imported packaging (Amazon type products) likely to be a problem. Lack of monitoring and transparency.
4	Poor data on waste	Data has reportedly been improving, but is sourced from a number of different sources which are difficult to tally to get the full picture on waste generation and management.	Non-harmonized waste database and insufficient reporting system/routines in frequent data collection.  No requirement for local authorities or collectors to record and report collected waste quantities. Historically it has been difficult to check collected waste quantities against managed wastes, although there have been recent improvements in this respect.

Number	Potential issue	Description	Reasons for the issue
5	Policy, planning and implementation can be a convoluted process and take a long time to be delivered.	The institutional arrangements for decision making and putting plans into action appear to be overly drawn out and convoluted, resulting in a very gradual development of waste systems and no big-bang / high impact reforms (which arguably are more acutely needed in a small island environment where there is such a direct link from generated waste to the local treatment and recovery operations).	<p>Small island population, with a large number of public departments each with a wide remit and limited staff.</p> <p>Strategic intentions such as those within the WMP lack firm commitment and allocation of responsibilities.</p>

## 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>Collection Reforms</b>					
<p>Following the trials currently taking place on food waste collection, integrated waste collection service standards and obligations could be introduced. For household waste, this might place a requirement on local authorities (or regional authorities if responsibility is moved to this level) for the following (as is outlined in the WMP):</p> <ul style="list-style-type: none"> <li>• Minimum frequency for separate food waste collection from households - three times per week;</li> <li>• Minimum frequency for kerbside recycling collection from households - twice per week;</li> <li>• Maximum residual waste collection frequency - once per week as standard;</li> </ul> <p>Service standards for businesses could also be introduced:</p> <ul style="list-style-type: none"> <li>• An obligation for all commercial businesses to subscribe to waste collection services, and to keep evidence for a fixed period of time (i.e. to keep collection contract, bills etc. going back up to four years ready for inspection);</li> <li>• An obligation for commercial businesses producing in excess of 5kg of food waste per week to participate in and present food waste for separate collection.</li> </ul>	Regulatory requirement on local authorities and businesses.	OPM / MSDEC: policy developments. Local authorities and waste collectors: implementation . MEPA: Enforcement	Likely to be cost negative over a reasonable timeframe once environmental costs taken into account.	Unknown.	<p>Food waste and recycling diverted from landfill, helping to address issue 1.</p> <p>Benefits from AD treatment of source segregated biowaste, thus helping to tackle issue 2.</p> <p>Combatting of businesses free riding within local authority waste collection, helping to tackle issue 3.</p> <p>Innovation in private sector encouraged.</p>

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
Delivery of comprehensive awareness raising and communications campaigns aimed at the general public on separate collection as indicated in recent budget statements. Proper waste management should be initiated alongside the above reforms.	Educational	Local Councils Association	Unknown.	Potentially , such as that from the ENPI CBCMED Programme.	To provide understanding of the new services and how waste needs to be presented, and to encourage participation and compliance. Helps to address issue 1.
<p>Formalise the regionalisation of waste collection:</p> <ul style="list-style-type: none"> <li>Facilitate the establishment of regional territorial units or similar entities for coordinated procurement of waste collection services.</li> <li>Guidance and training on skills in procurement should also be provided.</li> <li>These regional waste authorities would also be responsible for data collection and reporting.</li> </ul>	Institutional / organisational	Multi-level co-operation needed	Potential cost savings on reformed service delivery	n/a	Waste management costs can be reduced, while providing legal certainty for private operators. This will help address issue 5
Transparency in accounting for the costs of producer responsibility systems is needed (for example, the expected change in costs where recycling collection moves from once to twice per week should be identified). Ideally the full waste system costs for packaging (including that treated within the residual as well as recycling) should fall on producers and not the general tax-payer. Free riders should be tackled.	Fiscal				Promote recycling and implement the principle of full cost coverage by waste producers helping to gather the necessary funding for separate collection, helping to tackle issue 3.



Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
Particularly if no landfill tax is introduced, recycling targets should be placed on local authorities (or the regional authorities with responsibility for waste collection), set at a level to ensure Malta to meet its overall directive target obligations. Interim targets should be introduced alongside the key target years to encourage performance, alongside sanctions for non-compliance.	Recycling targets	Government imposed targets on local / regional authorities	Unknown	n/a	Those responsible for collection are incentivised to ensure services are operated well, and recycling objectives are met. Would help to address issue 1.
Consider the reintroduction of deposit refund schemes (DRS)	Fiscal, administrative	MSDEC	Potential cost recovery	For capital items	Increase the quantities of high quality recycle, helping with issue 1, and also assisting with issue 3.
<b>Treatment System Reforms</b>					
Anaerobic digestion elements of MBTs should treat source separated organics. This could be facilitated through the purchase of de-packaging equipment at the front end of anaerobic digestion facilities to deal with packaged food coming from business sector, as well as bagged food waste from households. Digestate can be used on land. This should be linked to a review of future treatment requirements for source segregated organic waste.	Operational. Potential compost standards.	WastServ with co-operation at all levels	Overall system change costs linked to other reforms	Funding potentially available for equipment	Waste moved up the hierarchy, addressing issue 1. Better functioning of the treatment systems (addressing issue 2).
With the anaerobic digestion element of the MBT facilities dedicated to source separated waste, adaptation of the mechanical component (through additional plant development) is needed. The leading possibilities are to redesign the facilities as either aerobic stabilisation facilities or biodrying RDF production facilities. A study is needed to develop the best strategic solution. This study should be linked to the option appraisal for thermal solutions or RDF outlets currently in progress.	Strategic appraisal	Wasteserv	Unknown	Unknown	A strategy for functional residual treatment facilities for the future, tackling issue 1.
<b>Economic Reforms</b>					

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
The true costs of disposal to be reviewed with a view to immediately increasing disposal charges. Currently the costs charged for landfilling and MBT are not sufficient to cover the full operational costs (nor the financing of capital or aftercare costs in the long term) for these facilities. Nor are the costs high enough to encourage waste away from disposal.	Fiscal	MSDEC	Cost recovery measure	n/a	Separation for recycling stimulated due to increased cost for residual waste disposal, thus helping to tackle issue 1. Waste prevention also encouraged.  Stimulation of the private sector. Private sector investment in systems to support recycling.
If recycling targets are not devolved to local authorities as described above, in addition to increasing the costs of disposal (as recommended above), a residual waste treatment tax should also be introduced, announced for a period of years ahead, at increasing levels. Tax rates should be lower for the stabilised outputs from MBT systems. Tax should also be applied to the outputs from thermal treatment.	Fiscal	OPM / MSDEC	Effectively a monetary cost placed on environmental damage. Tax revenues available for subsequent investment.	n/a	Alongside the previous message, will assist with issue 1.
<b>Further General Reforms</b>					
Strengthening and empowerment of enforcement capability / capacity. Inspection and enforcement is needed to enforce against fly tipping, producers complying with packaging regulations and commercial organisations not subscribing to collection services (among other things).  Fixed penalty notices should be awarded for breaches. A warning system prior to penalisation may be appropriate for commercial organisations not contracting for waste collection or packaging compliance schemes etc.	Enforcement	MEPA under direction from MSDEC	Difficult to quantify especially during transition periods, potentially significant.	Unknown	A more level playing field within EPR schemes by better monitoring and more transparency.  Businesses not free-riding within household collection services.  Deterrent to fly tipping.  Activities will help to address issues 3 and 4.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<p>Improvements to data management:</p> <ul style="list-style-type: none"> <li>Requirement for local / regional authorities charged with collecting household waste to record and report collected waste quantities.</li> <li>Requirement for collectors collecting business waste to separately record and report business waste from local authority waste. This obligation should oblige customer tracking through on-vehicle weighing, customer logging etc.</li> </ul>	Regulatory obligation plus electronic reporting system development	MEPA	Unknown	Unknown	<p>Better data.</p> <p>Better ability for collectors to quantify collected commercial waste and set prices to incentivise business to separate waste and reduce quantities disposed.</p> <p>Contribution to efforts to reduce commercial waste free riding within household collection.</p> <p>Activities will help to address issue 4.</p>
Simplify administration of waste management by administrative / institutional reforms. Suggest that, under authorisation from OPM, MSDEC to expand its capacity to deal with waste issues in the short to medium term, and to take the lead role to more autonomously progress the policy developments needed to take waste management forwards.	Institutional reform	OPM, and MSDEC in turn	Unknown	n/a	Centralised decision making, regulations to be put in place more efficiently, changes in waste sector can be expedited. Will help tackle issue 5.
Pay-as-you-throw for household waste should be considered once high performing collection systems are in place alongside effective enforcement mechanisms.	Fiscal	MSDEC	Cost recovery measure if introduced	n/a	To be considered but not introduced until waste collection and management systems further developed, so as to avoid fly tipping and associated issues. Important to consider when tackling issue 1.

### 3.1 Timeline for Introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
<b>Integrated collection standards</b>		Announcement	In place			
<b>Awareness and communications programme</b>		Announcement	In place			
<b>Regionalisation of waste collection</b>		Announcement		In place		
<b>Review of producer responsibility costs</b>			Announcement		In place	
<b>Targets placed on local authorities</b>		Announcement		In place		
<b>Consider re-introduction of DRS</b>		Announcement		In place		
<b>Adaption of MBT system equipment</b>		Announcement	In place			
<b>Review of disposal costs</b>		Complete				
<b>Residual waste tax</b>			Announcement		In place	
<b>Enhance enforcement capabilities</b>			Announcement	In place		
<b>Improvements to data management</b>		Complete				
<b>Administrative / institutional reform</b>			Announcement	In place		
<b>Roll out of PAYT systems</b>				Announcement		In place

# 1.0 Factsheet – Portugal

This factsheet presents an assessment of Portugal’s waste management sector, with a specific focus on municipal solid waste (MSW). This assessment includes an analysis of the level of compliance in Portugal with EU waste legislation and targets, and identifies the strengths and potential deficiencies in terms of the approach to waste management.

The following table presents some basic information about current waste generation and management in Portugal.

**Table 1-1: Basic Waste Management Data for Portugal, 2013**

Parameter	Mainland	Azores	Madeira	Total
<b>Population</b>				
Total (inhabitants)	9,947,599	247,495	262,202	10,457,295
<b>Waste generation</b>				
Total (thousand tonnes)	4,363	128	108	4,598
Total (kg/capita/year)	438.6	514.3	410.6	439.7
<b>Waste composition (%)</b>				
Organics	39	36	NA	NA
Paper and cardboard	13	14	NA	NA
Plastic	10	12	NA	NA
Glass	6	10	NA	NA
Metals	2	3	NA	NA
Wood	1	1	NA	NA
Other	29	24	NA	NA
<b>Type of MSW collection (% by weight)</b>				
Separate collection	13	12	14	13
Undifferentiated collection	87	88	86	87
<b>Separate collection (% by weight)</b>				
Biodegradable municipal waste (BMW)	16.6	0	0	15.9
Paper and cardboard	31.5	37	37	31.7
Packaging (made of plastic, metals, and cardboard)	17.9	29	29	18.4
Glass	34.1	33.9	33.9	34
Batteries	0.01	0.03	0.06	0.01
<b>Waste management (% of MSW)</b>				
Recycling (multi-material)	13	12.7	8.3	12.9
Recycling (organic)	13.4	5.4	0	12.9

Parameter	Mainland	Azores	Madeira	Total
Energy recovery	22.8	0	90.4	23.7
Landfill	50.8	81.9	1.3	50.5

Source: INE (2015), INE (2014a), INE (2014b); Data for waste composition of the mainland territory was obtained from the MSW management plan for the mainland territory (PERSU 2020), and refers to 2012.

Notes: Data for the Azores refers to undifferentiated (or residual) waste; “NA” means not available; Autonomous Regions of Madeira and Azores sent part of their waste to the mainland. Available data for the Azores indicates a total of 11,957 tonnes shipped in 2014.

The current General Regime for Waste Management (“Regime Geral de Gestão de Resíduos” – RGGR) expressed in the Decree Law (“Decreto-Lei”) No 73/2011 of 17 June,<sup>1</sup> defines MSW (“Resíduos Urbanos” – RU) as “waste from households, as well as other waste which, because of its nature or composition, is similar to waste from households”. In addition to general household waste, this includes specific waste streams like packaging waste, batteries and accumulators, waste from electric and electronic equipment (WEEE), and used edible oils (UEO) (“Óleos alimentares usados” – OAU). MSW corresponds to the waste generated by households, as well as small waste producers (daily production lower than 1,100 litres), and big waste producers (daily production equal or higher than 1,100 litres) from commerce, service and industry sectors.<sup>2</sup>

Portugal generated 4.5 million tonnes of MSW in 2013. This equates to approximately 440 kg/capita/year, which is below the EU average (480 kg/capita/year). Nevertheless, it is important to note that the value for the Autonomous Region of Azores was higher than the EU average, at 514.3 kg/capita/year<sup>3</sup>.

The three main components of MSW in 2013 were organic waste, paper and cardboard, and plastic. At the national level, separately collected waste had only reached 13% of the total, and consisted of glass (34% captured), paper and cardboard (31.7% captured), packaging made of plastic, metals, or cardboard (18.4% captured), biodegradable waste (15.9% captured), and batteries (0.01% captured).

With regards to waste management, the majority of MSW generated nationally (50.5%) was sent to landfill. However, the Autonomous Regions had different performances as the Azores sent approximately 82% MSW to landfills, whereas Madeira sent only 1.3%. For the latter region, 90.4% MSW was treated through energy recovery processes. This type of treatment was not available in the Azores in that year, but accounted for the treatment of approximately 23% MSW on the mainland of Portugal. Furthermore, the mainland area

<sup>1</sup> [http://www.apambiente.pt/\\_zdata/Politicar/Residuos/DL\\_73\\_2011\\_DQR.pdf](http://www.apambiente.pt/_zdata/Politicar/Residuos/DL_73_2011_DQR.pdf).

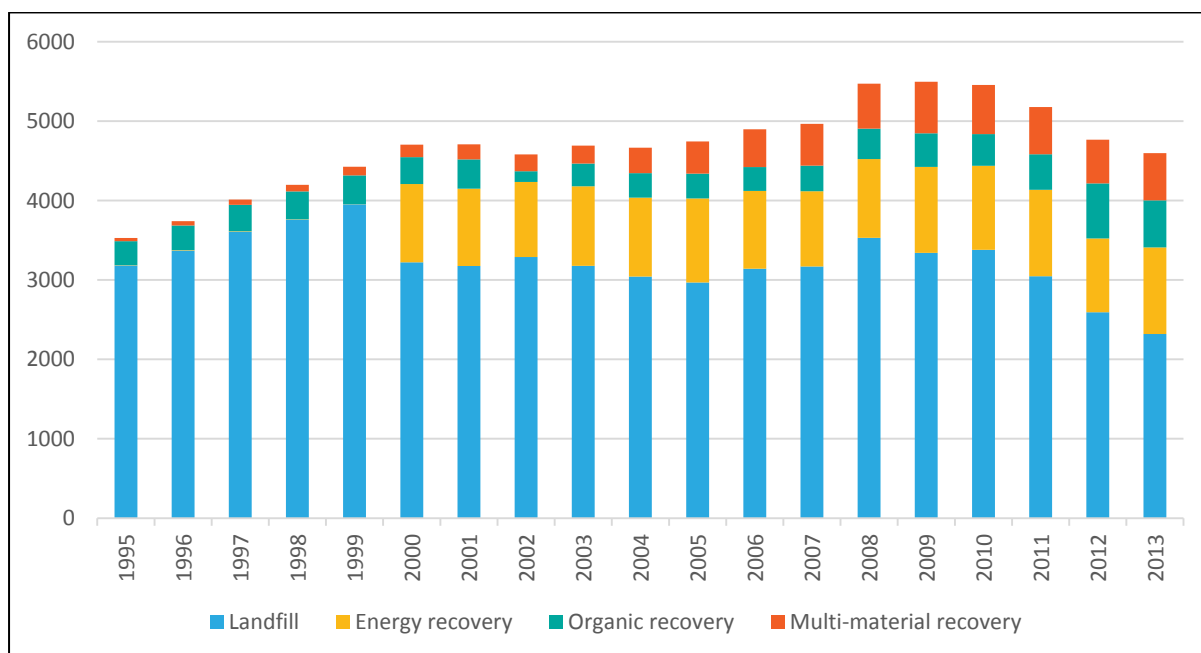
<sup>2</sup> According to APA, MSW corresponds to the 3 categories. However, MSW data only refers to waste collected under the responsibility of the municipalities, i.e. waste generated by households and small producers, with exception of the Azores which also includes big producers.

<sup>3</sup> Azores has a different data collection system. We believe these data include all MSW including MSW from large producers which are not accounted in Mainland and Madeira Territory.

registered the highest figure for recycling (multi-material and organic waste), with approximately 26%. No recycling of organic waste took place in Madeira.<sup>4</sup>

Figure 1-1 presents the types of MSW management implemented since 1995 on a national basis. After 1999, a decline in the quantity of waste sent to landfill is demonstrated, due to an increase in the use of energy recovery and multi-material recovery facilities. Since 1995 the level of organic recovery has remained consistent, although in 2012 and 2013 the level increased slightly.

**Figure 1-1: Management of MSW in Portugal, 1995-2013, thousand tonnes**



Source: INE (2015a).

Table 1-2 identifies the number and type of MSW management infrastructure operating in the mainland and the archipelagos of Madeira and Azores, including landfills, energy recovery facilities, organic recovery facilities, transfer stations, mechanical treatment (MT) stations, and so on. Organic recovery facilities available in the mainland accept residual waste, and previously sorted fractions of BMW and of green waste. As for the type of technology, they comprise anaerobic digestion (AD), composting, a combination of AD and composting, and green waste composting. MBT facilities represent a significant part of organic recovery infrastructure. These unities receive residual waste, following a separation of the organic portion from other materials, which is then sent for composting or AD. In the latter option, the digestate that is produced is consequently composted.

<sup>4</sup> Both Table 1-1 and Figure 1-1 are based on results obtained from Statistics Portugal IP (INE). The methodology is different from the one used by APA. For instance, APA presents the results for the direct destination of waste. Accordingly, in 2013, 43% of MSW was directly sent to landfill, and 7% was sent to MT stations in the mainland territory.

**Table 1-2: Waste management infrastructure**

Regional unit	Infrastructure
Mainland <sup>1</sup>	<ul style="list-style-type: none"> <li>• 32 landfills</li> <li>• 18 organic recovery facilities, including 13 MBT facilities, 2 facilities for the treatment of BMW collected separately, and 3 facilities for the treatment of green waste.</li> <li>• 2 energy recovery facilities (incineration)</li> <li>• 4 Mechanical Treatment (MT) stations</li> <li>• 81 transfer stations</li> <li>• 27 waste sorting facilities</li> <li>• 1 unit for the preparation of refuse derived fuel (“Combustíveis derivados de resíduos” – CDR)</li> </ul>
Azores <sup>2</sup>	<ul style="list-style-type: none"> <li>• 4 landfills</li> <li>• 3 processing centres integrating a recycling centre, an organic recovery facility, and a transfer station</li> <li>• 1 processing centres integrating a recycling centre and an organic recovery facility</li> <li>• 2 processing centres integrating a recycling centre, an organic recovery facility, a sorting unit, and a transfer station</li> <li>• 1 bailing unit for waste streams of paper and cardboard, plastic, and glass</li> <li>• 2 sorting, bailing, and storage units for waste streams of paper and cardboard, plastic, and glass</li> <li>• 3 sorting and bailing units for waste streams of paper and cardboard, plastic, glass, metals, composites, and woods.</li> <li>• 2 organic recovery facilities</li> <li>• 1 recycling centre</li> </ul>
Madeira <sup>3</sup>	<ul style="list-style-type: none"> <li>• 1 MSW treatment station (“Estação de Tratamento de Resíduos Sólidos” – ETRS) integrating 2 energy recovery units (incineration), 1 organic recovery unit, 1 landfill, and 1 platform for storage, grinding and packaging of waste stream of woods</li> <li>• 1 transfer and sorting station and recycling centre</li> <li>• 1 transfer station and recycling centre</li> <li>• 1 MSW processing centre integrating an recycling centre, sorting and transfer units, and landfill</li> </ul>

Source: <sup>1</sup> APA (2014), <sup>2</sup> Governo Regional dos Açores (2014), <sup>3</sup> ARM (2014).

Notes: <sup>1&2</sup> Data refers to 2013, <sup>3</sup> Data refers to 2014.

Table 1-3 compares the amount of waste sent for organic recovery, incineration, or to landfills, and the overall capacity of these treatment options for the year 2013. With regard to waste going to landfill (including MSN and non-MSW) and to incineration, there was a high approximation to the total capacity, notably of 80% and 89%, respectively. As for organic recovery, there was a lower use of the total capacity as only 46% of waste was treated through this option.

**Table 1-3: Waste treatment capacity and performance, mainland, 2013**

Type of service	Waste treated (tonnes/year)	Capacity	% treated
Landfill	2,857,523 MSW + 33,988 non-MSW	3,594,315 <sup>1</sup>	80%
Organic recovery	377,714 <sup>2</sup>	829,000 <sup>3</sup>	46%
Incineration	927,886	1,042,000	89%

Source: ERSAR (2014)

Notes: <sup>1</sup> Associated with the annual licensed capacity to receive waste; <sup>2</sup> Refers to waste subject to organic recovery; <sup>3</sup> Refers to the treatment capacity of BMW defined in the PERSU II (Strategic Plan for Municipal Waste, in Portuguese “Plano



Estratégico para os Resíduos Urbanos), implemented during 2007 and 2014. These numbers might be slightly different in the present time.

## 1.1 Roles and Responsibilities of Key Actors

The Ministry of Environment, Spatial Planning and Energy (“Ministério do Ambiente, Território e Energia” – MAOTE) is the main governmental entity responsible for the definition, coordination and implementation of the national waste management policy.

The MAOTE integrates, under indirect administration, the Portuguese Environment Agency (“Agência Portuguesa do Ambiente” - APA), which is the National Waste Authority (“Autoridade Nacional de Resíduos” - ANR). APA is responsible, among other competences, for the development, implementation, follow-up, and revision of the general and sector waste management plans (WMPs), in cooperation with other agencies.

Another organisation that is integrated into the MAOTE, is the Water and Waste Service Regulation Authority (“Entidade Reguladora dos Serviços de Águas e Resíduos” - ERSAR). ERSAR is an independent administrative entity responsible for the regulation of municipal waste management services, as well as water supply services, and urban wastewater management services at the national level. ERSAR’s regulatory model is divided in three areas of application:

- 1) the structural regulation of waste and water sectors;
- 2) the regulation of the operator’s behaviour; and
- 3) additional activities such as delivering information to all actors of the sector (including the general public), and technical assistance to operators.

In addition to the ANR, there are several Regional Coordination and Development Committees (“Comissão de Coordenação e Desenvolvimento Regional” – CCDR) performing as Regional Waste Authorities (“Autoridades Regionais de Resíduos” – ARR). These comprise of five CCDRs corresponding, at the mainland level, to the following regions:

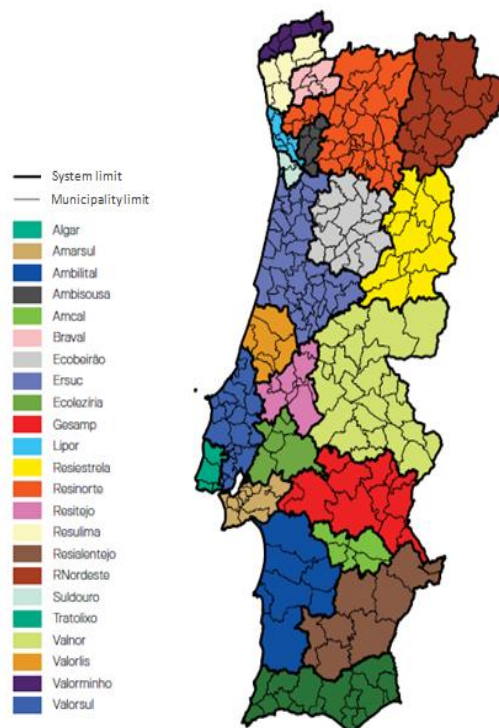
- “Norte”;
- “Centro”;
- “Lisboa e Vale do Tejo”;
- “Alentejo”; and
- “Algarve”.

CCDRs are responsible for ensuring the coordination and implementation of policies at their area of intervention. This involves licensing, control, and follow-up of various waste management operations (e.g. collection, sorting, recycling, and disposal).

The municipalities are in charge of the management of MSW generated by households and small producers, whereas big producers are responsible for managing their own waste. There are currently 23 MSW management systems (“Sistemas de Gestão de Resíduos Urbanos” – SGRU) for the whole mainland area, which are mainly responsible for separate

collection, sorting and treatment of MSW (known in Portugal as “Serviços em alta”).<sup>5</sup> These are divided into 11 inter-municipal systems and 12 multi-municipal systems (see Figure 1-2).<sup>6</sup> Inter-municipal systems can integrate one or more municipalities which are directly in charge of waste management or that allow a concession of this service to public or private organizations. Multi-municipal systems comprise of a minimum of two municipalities and are associated with a relevant public investment. Eleven of twelve multi-municipal systems (i.e. with the exception of Braval) are operated under the management of EGF (“Empresa Geral de Fomento”), a former holding company of “Águas de Portugal” – AdP, SGPS, S.A. (in English Waters of Portugal), which recently was sold to the company “SUMA (Serviços Urbanos E Meio Ambiente)”, and has been operated by SUMA since the end of July. EGF managed approximately 64% of the MSW generated in 2013.<sup>7</sup> At the time of writing, no information has been forthcoming in respect of changes to the company’s operation as a result of the privatisation process.

**Figure 1-2: Urban waste management systems of mainland Portugal (“high services”), 2013**



Source: ERSAR (2014).

There were several systems presenting values of waste generation per capita above the national average in 2013. Examples comprise Algar for the region of Algarve, Valorsul and

<sup>5</sup> For the purpose of simplification these will be referred as “high services” throughout the text.

<sup>6</sup> Inter-municipal systems include: Lipor, Ambisousa, Resíduos Nordeste, Ecobeirão, Ecolezíria, Resitejo, Amtres (Tratolixo), Amde (Gesamb), Amagra (Ambital), Amcal, and Resialentejo. Multi-municipal systems include: Valorminho, Resulima, Braval, Resinorte, Suldouro, Valorlis, ERSUC, Resiestrela, Valnor, Valorsul, Amarsul, and Algar.

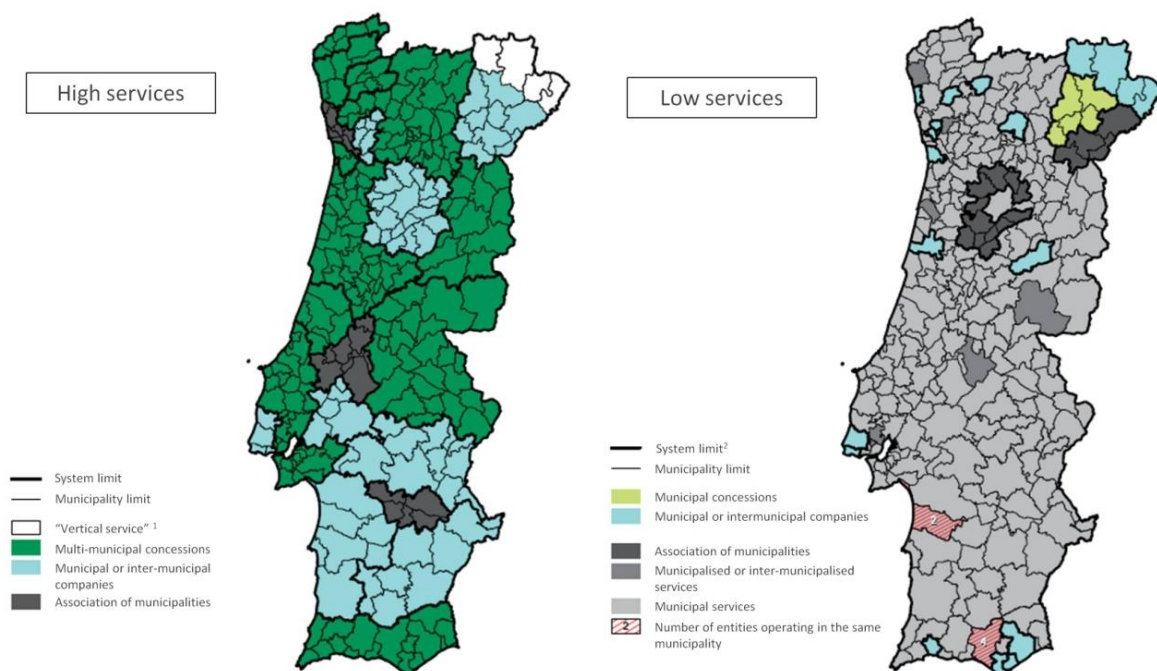
<sup>7</sup> [http://apambiente.pt/\\_cms/view/page\\_doc.php?id=1166](http://apambiente.pt/_cms/view/page_doc.php?id=1166)

Amarsul for Lisbon area, Lipor for Oporto, and Ambital, Amcal, Resialentejo, and Gesamb corresponding to the region of Alentejo.

The municipalities are represented at the national level by the National Association of the Portuguese Municipalities (“Associação Nacional dos Municípios Portugueses” – ANMP). Furthermore, the majority of inter-municipal systems are also grouped in the Portuguese Association of Waste Treatment Management Systems Companies (“Associação de Empresas Gestoras de Sistemas de Resíduos” – ESGRA).

As for residual waste collection and urban cleaning (known in Portugal as “Serviços em baixa”)<sup>8</sup>, there are currently about 260 entities responsible for these services in the previous 23 MSW management system. From these, only 27 are also responsible for separate collection, especially in the metropolitan areas of Lisbon and Oporto. These services are mainly developed by the municipalities, although the private sector is gradually increasing its participation.<sup>9</sup> Figure 1-3 characterize the management entities responsible for high and low services in terms of their management model.

**Figure 1-3: Waste management model in the municipalities according to high and low services, mainland, 2012**



Source: ERSAR (2014).

Notes: <sup>1</sup> “Vertical service” refers to the municipalities where high and low services are operated by the same entity. <sup>2</sup> “For the purpose of simplification, areas covered by each management entity of municipal and municipalised services are not presented in this map. For the municipalities covered by more than one entity, it is represented the management model that covers more population”.

For the majority of the country, residual and separate collection is made by a different entity. This could represent organizational constraints to reach, for instance, a higher

<sup>8</sup> For the purpose of simplification these will be referred as “low services” throughout the text.

<sup>9</sup> <http://www.scielo.br/pdf/esa/v14n2/a16v14n2.pdf>

efficiency of the system as there are different routes, and separate fleets and workforce. This system configuration requires a high cooperation among entities in order to develop their competences in terms of collection, considering that a variation in the service associated with one type of collection may affect the quality of the other.<sup>10</sup>

Regarding specific waste streams, there are several Producer Responsibility Organization (PRO) (“Entidades Gestoras de Fluxos Específicos de Resíduos”) licensed by the ANR that operate in Portugal, namely: “Sociedade Ponto Verde” (Green Dot Society) for packaging; VALORMED for medicine packaging waste generated by households; “Ecopilhas” and “Gestão e Valorização de Baterias” (GVB) for batteries and accumulators; and Amb3E and European Recycling Platform (ERP) for batteries, accumulators and Waste from Electric and Electronic Equipment (WEEE). As for UCO, the municipalities, or the entities recognized by these, are responsible for its collection with regard of quantities equal or lower than 1,100 litres per producers.

Decree Law no 267/2009 of 29 September, **foresees** that the network of municipal selective collection **may** receive UEO in amounts above 1.100 litres, by establishing voluntary agreements between the producer (including the hospitality sector) and the municipality.

### **The specificities of the autonomous regions of the archipelagos of Azores and Madeira**

The regional governments of Madeira and Azores (“Governo Regional da Madeira” and “Governo Regional dos Açores”) are the main entities responsible for waste management policy. The Regional Authorities for waste management (“Autoridade Regional de Resíduos” – ARR) of both regions are the Environmental and Spatial Planning Regional Directorate (“Direção Regional do Ordenamento do Território e Ambiente” – DROTA) for Madeira, and the Environmental Regional Directorate (“Direção Regional do Ambiente” – DRA) for Azores.

Concerning the region of Azores, there is a Regional Regulation Authority (“Entidade Reguladora dos Serviços de Resíduos da Região Autónoma dos Açores” – ERSARA), which operates under the supervision of the national government. For Madeira, ERSAR is the entity responsible for regulation of the waste management sector, although the program of the XII regional government, elected in March 2015, considers the development of a specific regulation authority for this region.<sup>11</sup>

The municipalities are directly responsible for waste management in terms of the development, organisation, and operation of the urban waste management systems in the Azores. Exceptions include the Islands of “Pico” and “São Miguel” as municipal associations are responsible for this service, namely the “Associação de Municípios da Ilha de São Miguel” – AMISM, and the “Associação de Municípios da Ilha do Pico” – AMIP. As for Madeira, waste management is implemented through the exclusive concession to the company “A.R.M. - Águas e Resíduos da Madeira, S.A.”.

The waste management policy for both these regions requires compliance with the guiding rules of the national waste management plan, under articulation between the regional

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<sup>10</sup> Bases on information provided by SPV.

<sup>11</sup><http://www.alam.pt/images/stories/XI-LEGISLATURA/I-LEGISLATIVA/fotos-noticias/PDF%20Prog%20Governo/Programa%20do%20XII%20Governo%20Regional%20da%20Madeira.pdf>

authorities (ARR) and the MAOTE and APA. APA cannot impose targets on the two autonomous regions, and thus intends to reach the national targets by slightly overachieving the targets on the mainland. Calculations in PERSU 2020 assume the autonomous regions will make the same contribution to the targets in 2020 as is currently the case.

### **Responsibility for the delivery of the targets set out at a European level**

The delivery of EU targets falls under the responsibility of urban waste management systems as these are responsible for the implementation of the WMPs. Targets which are set at the national level are cascaded down to the urban waste management systems, not all of which are faced with having to meet the same target. APA, as the National Waste Authority, has responsibility for monitoring of compliance with the targets.

## **1.2 Summary of Legislative Framework for Waste Management**

The European Waste Framework Directive (WFD) 2008/98/EC of the European Parliament and of the Council of 19 November 2008 is currently applied at the national level through the Decree Laws (“Decreto-Lei”) No 67/2014 of 7 May,<sup>12</sup> and No 165/2014 of 5 November,<sup>13</sup> which amended the Decree Law No 73/2011 of 17 June.<sup>14</sup> These Decree Laws amended the General Regime for Waste Management (“Regime Geral de Gestão de Resíduos” – RGGR), previously established in the Decree Law No 178/2006 of 5 September,<sup>15</sup> which represented the first transposition of the previous version of the European Waste Framework Directive 2006/12/EC.

Although the previous Decree Laws are valid for the mainland and the autonomous regions, Azores also transposed the WFD through the Regional Decree Law (“Decreto Legislativo Regional”) No 29/2011-A of 16 November,<sup>16</sup> which revoked the Regional Decree Law No 20/2007/A of 23 August.<sup>17</sup> The autonomous region of Madeira indirectly adopts the WFD through the national law, without a specific transposition.<sup>18</sup>

Furthermore, the Decree Law No 183/2009 of 20 August implemented the Landfill Directive (LFD) No 1999/31/CE.<sup>19</sup> Landfill operations regulated by this Decree Law are integrated in the RGGR approved with the Decree Law No 178/2006 of 5 September.

## **1.3 Status of Waste Management Plans**

The current National Plan for Waste Management (“Plano Nacional de Gestão de Resíduos” - PNGR) was approved by the Council of Ministers through Resolution (“Resolução do

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<sup>12</sup> <https://dre.pt/application/dir/pdf1sdip/2014/05/08700/0267002692.pdf>

<sup>13</sup> <https://dre.pt/application/conteudo/58752835>

<sup>14</sup> [http://www.apambiente.pt/\\_zdata/Políticas/Resíduos/DL\\_73\\_2011\\_DQR.pdf](http://www.apambiente.pt/_zdata/Políticas/Resíduos/DL_73_2011_DQR.pdf)

<sup>15</sup> [http://www.azores.gov.pt/NR/rdonlyres/FE0FC2F9-725B-428F-968F-082B94CB8C7A/615502/DL\\_178\\_2006.pdf](http://www.azores.gov.pt/NR/rdonlyres/FE0FC2F9-725B-428F-968F-082B94CB8C7A/615502/DL_178_2006.pdf)

<sup>16</sup> [http://www.dgap.gov.pt/upload/legis/2011\\_dl\\_29\\_a\\_01\\_03.pdf](http://www.dgap.gov.pt/upload/legis/2011_dl_29_a_01_03.pdf)

<sup>17</sup> [http://www.igfse.pt/upload/docs/2011/DLR\\_20\\_2007.pdf](http://www.igfse.pt/upload/docs/2011/DLR_20_2007.pdf)

<sup>18</sup> Information provided by the Environmental and Spatial Planning Regional Directorate, in Portuguese “Direção Regional do Ordenamento do Território e Ambiente” – DROTA. 9 June 2015.

<sup>19</sup> [http://www.ecopark.pt/portal/legislacao/ambiente/residuos/decreto-lei-n-o-183-2009-10-agosto-deposicao-de-residuos-em-aterro/at\\_download/file](http://www.ecopark.pt/portal/legislacao/ambiente/residuos/decreto-lei-n-o-183-2009-10-agosto-deposicao-de-residuos-em-aterro/at_download/file)

Conselho de Ministros”) No 11-C/2015 of 16 March,<sup>20</sup> and is applicable for the period 2014-2020. The PNGR covers all types of waste and applies to both the mainland and the Archipelagos of Madeira and Azores territory. Furthermore, it establishes the guiding rules for the regional and sectoral plans.

The mainland area is under the scope of the Strategic Plan for Municipal Waste (“Plano Estratégico para os Resíduos Urbanos” – PERSU 2020), which was approved by Legal Ordinance No 187-A/2014, of 17 September,<sup>21</sup> and followed the previous PERSU (1997-2006) and PERSU II (2007-2016). The PERSU 2020 covers the period between 2014 and 2020.

The regions of Azores and Madeira have specific WMPs that cover all types of waste. The Waste Management Strategic Plan for Azores (“Plano Estratégico de Gestão de Resíduos dos Açores – PEGRA) was adopted for the period 2007-2014, and is currently under revision. The new plan, designated as PEPGRA, recently ended the public consultation stage and it is expected to be approved during 2015, and covers the period 2014-2020.<sup>22</sup> The Waste Management Plan for Madeira (“Plano Estratégico de Gestão de Resíduos da Região Autónoma da Madeira” – PERRAM) was approved in 1999 and defines strategic options for waste management for a horizon of 20 years. Operational interventions are developed for five year periods, after which they may be revised.<sup>23</sup> However, this plan may be substituted by a new plan in a near future as it is considered in the program of the XII regional government.<sup>24</sup>

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plans

The general vision for waste management (as described in the PNGR) is the “*promotion of waste prevention and management considering the product life cycle; moving towards a circular economy, while assuring a higher efficiency in the use of natural resources*”.

PERSU 2020 (for the mainland territory) includes a total of 107 measures aiming to support the implementation of the following objectives:

- Municipal waste prevention.
- Increasing preparation for re-use, recycling, and the quality of recyclables.
- Reduction of waste going to landfill.
- Economic valorisation and flow of recyclables and other materials obtained from municipal waste treatment.

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<sup>20</sup> <https://dre.pt/application/file/66763015>

<sup>21</sup> [http://www.apambiente.pt/\\_zdata/DESTAQUES/2014/Portaria\\_PlanoEstrategico\\_PERSU2020\\_final.pdf](http://www.apambiente.pt/_zdata/DESTAQUES/2014/Portaria_PlanoEstrategico_PERSU2020_final.pdf)

<sup>22</sup> For the purpose of elaboration of the factsheet it will be used information from the last draft version of the PEPGRA available for online consultation in: [http://www.azores.gov.pt/Gra/srrn-residuos/conteudos/livres/PEPGRA\\_1Consulta.htm](http://www.azores.gov.pt/Gra/srrn-residuos/conteudos/livres/PEPGRA_1Consulta.htm). According to information provided by the Regional Government of the Azores, the approval of the plan is contingent on the decision of the Government Council and the Regional Legislative Assembly.

<sup>23</sup> <http://www.netresiduos.com/Handlers/FileHandler.ashx?id=341&menuid=110>

<sup>24</sup> Information provided by the Environmental Regional Directorate, in Portuguese “Direção Regional do Ambiente” – DRA.

- Enforcement of economic and financial instruments.
- Improvement in the effectiveness, and institutional and operational capacity of the sector.
- Reinforcement of research, technological development, and innovation in the sector.

PEPGRA (for the Autonomous region of Azores) includes the following strategic objectives:

- Prevention of waste production and reduction of the negative impacts associated with waste management.
- Promotion of integrated and sustainable waste management.
- Environmental requalification of non-controlled landfill sites.
- Promotion of information, communication, and environmental education initiatives.
- Development of a legal and institutional framework that recognises the potential contribution to be made by waste management in the sustainable development of the region.

PERRAM (Autonomous region of Madeira) presents the following strategic objectives:

- Reduction and re-use of waste.
- Definition of recycling targets.
- Definition of the strategy for the collection of MSW and recyclables.
- Specification of waste treatment solutions, including the definition of size and location of the different waste facilities and equipment.
- Identification of the management instruments required for the effective promotion of the implementation of waste policy measures.
- Consideration of alternative institutional schemes for waste management.

Not all of the previous WMPs integrate Article 28.3 of the WFD in the same way. PERSU 2020 is the WMP that most reflects the spirit of this article, followed by PEPGRA and PERRAM. Table 1-4 shows how the points of Article 28.3 were considered in the WMPs.

## 1.4.2 Waste Prevention Plans

### Mainland Portugal

The Urban Waste Prevention Programme of Portugal (“Programa de Prevenção de Resíduos Urbanos” - PPRU) was published in the Portuguese Official Gazette, second series - No 36 - 22 de February de 2010.<sup>25</sup> The main objective of the PPRU is the identification of necessary measures and monitoring procedures for waste prevention. The programme includes the whole national territory and is defined for the period of 2010-2016. Currently, the prevention plan was integrated into PERSU 2020. The main differences in terms of the waste prevention targets for the two implementation periods are described as follows:

- **PPRU (2010-2016)** - according to the moderate scenario, waste production *per capita* by 2016 should be 10% lower than that of 2007.
- **PERSU 2020** - assumes the national target for 2016 (421 kg *per capita*), considering 2012 as the reference year (456 kg *per capita*). In addition it defines a new target for 2020, of 410 kg *per capita*, which represents a 10% decrease compared to 2012.

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<sup>25</sup> [www.apambiente.pt/\\_cms/view/page\\_doc.php?id=146](http://www.apambiente.pt/_cms/view/page_doc.php?id=146)

PERSU 2020 includes several measures for waste prevention in the context of industry and commerce (e.g. promotion of eco-design, adoption of green purchasing policies, promoting a reduction in the use of plastic bags), and for the general consumer (e.g. promotion of responsible consumption, and enforcement of the application of the polluter pays principle through mechanisms such as Pay-As-You-Throw: PAYT).



**Table 1-4: Information about Article 28.3 of WFD provided by the WMPs**

WFD (Article 28.3)		PERSU 2020	PEPGRA	PERRAM
a)	Type, quantity and source of waste generated within the territory	- The WMP indicates household waste as the main source of MSW, although it does not specify the distribution of waste through the different sources. - The methodology for the characterisation of MSW is not explained in the WMP; instead it is included in the Ordinance No 851/2009. <sup>26</sup>	- The different sources of MSW are not specified. - The WMP does not describe the methodology for the characterisation of MSW but it refers to the legal document that includes this information, namely Ordinance No 28/2012 of 1 March, <sup>27</sup> associated with the Regional Decree Law No 29/2011/A of 16 November.	- The WMP does not specify the different sources of MSW or the methodology for the characterisation of the MSW.
	Waste likely to be shipped from or to the national territory	- Information is not provided. Data can be found in the PNGR about all types of waste being shipped from or to Portugal, with no disaggregation of this data in terms of municipal and non-municipal waste.	- The WMP does not provide information about the quantity exported despite referring to some waste that is shipped to the mainland territory.	- Provides information about the quantities of paper and cardboard sent to the mainland territory for the period 1992 - 1996.
	Evaluation of the development of waste streams in the future	- Information provided under scenarios for 2020, including the waste streams of paper and cardboard, plastic and metals, biodegradable waste (BMW), and others. Scenarios refer to the mainland and the Autonomous regions.	- Information is provided for the total amount of MSW expected to be produced per year during the period 2015-2020, as well as the expected production of specific waste streams (e.g. WEEE, batteries and accumulators, and UEO) in 2020.	- Information includes total expected production of MSW and specific waste streams (e.g. paper and cardboard, glass, metals) by 2016.
b)	Existing waste collection schemes and major disposal and recovery installations, including any special arrangements for waste oils, hazardous waste or waste streams addressed by specific Community legislation.	- Information is provided, although it is necessary to be complemented with the PNGR, mainly in terms of the specific waste streams.	- Information is provided specifying the separate and undifferentiated collection systems. It also specifies the type of treatment for UEO, hazardous waste, and other waste streams.	- Information is not updated.
c)	An assessment of the need for new collection schemes, the closure of existing waste installations, additional waste installation infrastructure in accordance with Article 16, and, if necessary, the investments related thereto.	- A list of investment priorities is presented. This includes the transformation of some of the existing infrastructure (e.g. MT to MBT facilities).	- Information about the estimated number and type of new installations is provided, although the amount of investment is not specified.	- Information about the estimated number and type of new installations is provided, although the amount of investment is not specified.
d)	Sufficient information on the location criteria for site identification and on the capacity of future disposal or major recovery installations, if necessary;	- The need for accessibility to waste management services is specified, although there is no information about specific criteria for site identification. This decision is the responsibility of urban waste management systems. - Information on the capacity is provided for new MT and MBT facilities.	- Information about the capacity of future installations is not provided.	- Information is provided, for instance, about the criteria considered for the location of MSW treatment stations (e.g. proximity with waste production, space availability, impacts in the population).
e)	General waste management policies, including planned waste management technologies and methods, or policies for waste posing specific management problems.	- All WMPs include specific sections for these points, although the information provided in the PERRAM is not updated, for instance, regarding the planned waste management technologies.		

<sup>26</sup> <http://www.legislacao.org/primeira-serie/portaria-n-o-851-2009-residuos-amostragem-urbanos-caracterizacao-182752>

<sup>27</sup> <http://www.azores.gov.pt/JO/Operations/DownloadDiplomaPDF/?pID={74053530-91A4-4A08-B9FB-C8959691D6CB}>

Moreover, the same WMP includes an extensive list of municipal waste prevention measures for *inter alia*, producers, industry, distributors, retail sector, and individual and collective consumers. In addition, a list of measures is also included for specific waste streams. Regarding biodegradable municipal waste (BMW), some of the key measures include the promotion of home and community composting, reduction of food waste, and supporting the development of food banks.

### **Azores and Madeira**

The PEPGRA integrates the first plan for waste prevention in the Azores. This plan covers all types of waste and will be under implementation in the period 2014-2020. Amongst its objectives, it includes the promotion of product life cycle extension, product re-use, and the reduction of waste. In terms of the measures and targets for municipal waste prevention, particular attention is given to incentives that aim to reduce the use of non-recyclable packaging and plastic bags. The integration of waste prevention initiatives is foreseen at the local level, notably through reducing the amount of residual waste and increasing the number of municipalities with specific prevention plans. Regarding BMW, PEPGRA does not specify any particular objectives or measures. Nevertheless, one measure referred to under the strategic objective “Promotion of integrated and sustainable waste management” is the promotion of home composting.

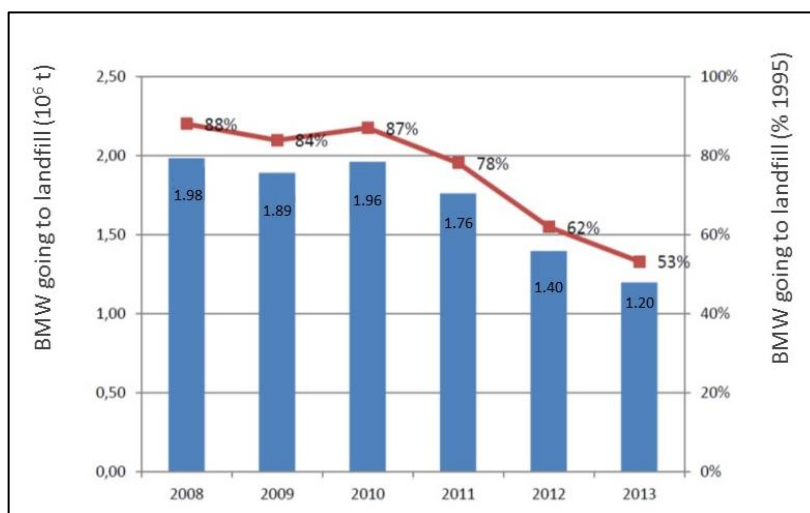
The Madeira region includes few references to waste prevention in its WMP. This objective is integrated through activities such as the promotion of awareness campaigns in schools and for the general public, as well as the development of feasibility studies for the reduction of waste generation.

## **1.5 Progress towards the Fulfilment of Targets**

### **1.5.1 Landfill Directive Targets**

This directive specifies the necessary reduction in the amount of biodegradable municipal waste (BMW) allowed to be sent to landfill until 2020. Following Article 5 of the LFD, Portugal took up the option of derogation for the targets referring to the years 2009 and 2016, effectively deferring these to 2013 and 2020. Accordingly, in these years, the quantity of BMW going to landfill must be no more than 50% and 35% of the 1995 level (approximately 2.2 million tonnes of BMW produced), respectively. According to an APA report evaluating the progress towards EU targets, the goal was almost achieved for 2013, as 53% of the BMW was sent to landfills (see Figure 1-4). This reduction was mainly explained by new MT and MBT infrastructure in operation. The APA report suggests that achieving the 2020 target depends greatly on whether new infrastructure is built in the manner anticipated.

#### **Figure 1-4: Biodegradable Municipal Waste Sent to Landfill**



Source: APA (2014).

With regard the 23 urban waste management systems of the mainland , the best performance observed in 2013 was achieved by Lipor (Oporto area), followed by ERSUC, Valnor, Resistrela, Tratolixo, and Valorsul, all of them having less than 25% of MSW sent to landfill. On the contrary, the remaining 17 systems send more than 50% of MSW to landfill.<sup>28</sup>

The PERSU 2020 presents various scenarios for the implementation of the LFD target. For a business-as-usual (BAU) scenario, which includes infrastructure under construction or consideration, estimates indicate that Portugal will reach the exact target level (35%) by 2020. This considers 17 MBT and 5 MT in the mainland, which represents an increase in 4 and 1 additional unities, respectively, in comparison with 2013 (see Table 1-1). The total capacity for the BAU scenario is of 1.5 million tonnes for MBT and 0.5 million tonnes for MT. This scenario was developed for the whole country (mainland and the archipelagos), and was based on the results of a questionnaire sent to the 23 urban waste management systems of mainland territory, Madeira, and the Municipal Association of the Island of “São Miguel” (Azores). For both autonomous regions, an important contribution is foreseen for the fulfilment of the national targets, with estimates of 8% and 32% of BMW going to landfill in 2020, respectively.

Based on the BAU scenario, PERSU 2020 developed another scenario, namely “Scenario for the definition of targets”, which integrates three priorities for compliance with the EU targets: an increase in separate collection; greater efficiency in terms of waste sorting and mechanical treatment; and an increase in capacity or composting / anaerobic digestion. For this latter goal, it is assumed that the as well as the organic recovery facilities envisaged in the BAU operating at full capacity, there is also the introduction of three new MBT facilities with a total capacity of 240 kt of BMW per year. This represents a capacity of 1.74 million tonnes for the total MBT under this scenario. On this basis, the production of compost is

<sup>28</sup> These results should not be directly compared to the 2013 landfill target because this is a national target, which is an outcome of different contributions obtained from the urban waste management systems. Also the 50% landfill target refers to 1995 BW generated and this values concerns only to 2013.

expected to increase from 56 kt in 2012 to 220 kt in 2020, whereas material recovered for the production of refuse-derived fuel is expected to increase from 33 kt to 490 kt in the same period.

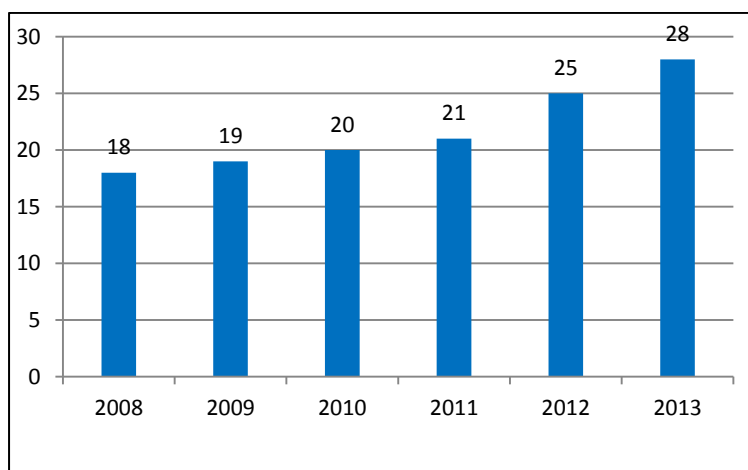
These actions would allow the urban waste management systems to reduce BMW sent to landfill to a greater extent. The results obtained with the “Scenario for the definition of targets” show a performance of 26% of BMW being sent to landfill, or nine percentage points below the required EU-target.

In terms of the autonomous regions, only the Azores provides information about the LFD target, in accordance with what is specified in the Article No 238 of the Regional Decree Law No 29/2011/A of 16 November. Considering the reference year of 1995, when BMW generation was at 46,330 tonnes, the quantity of BMW going to landfills in 2013 was around 80% of the 1995 value (or 30 percentage points above the target). Nevertheless, the PEPGRA makes reference to the fact that if the strategy defined in PEGRA is followed, notably the operation of waste processing centres and energy recovery facilities in the bigger islands of the Azores archipelago, LFD targets will be fulfilled by 2020.

### 1.5.2 Waste Framework Directive Targets

Portugal adopted calculation method 2 for showing compliance with the WFD targets as referred to by the Commission Decision 2011/753/EU, Annex I. This target includes at least the waste streams of paper and cardboard, packaging, glass, metals, woods, and BMW. On this basis, preparation for re-use and recycling should reach a minimum of 50% by weight by 2020. In 2013, preparation for re-use and recycling of municipal waste had only reached 28% (see Figure 1-5).

**Figure 1-5: Preparation for re-use and recycling (%), 2008-2013<sup>29</sup>**



Source: APA (2014).

Only 3 of 23 systems of the mainland obtained recycling rates above 50% in 2013, namely ERSUC (81%), Valnor (80%), and Resistrela (72%). The remaining systems observed recycling

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<sup>29</sup> “Considering the differences in data collection methodologies, the applied formula was slightly changed when data for the autonomous regions was included, mainly for the period before 2012”. Source: APA (2014).

rates lower than 50%, with some systems registering a very weak performance (e.g. Ambisousa and Ecoléziria with 8% and 6%, respectively).<sup>30</sup>

Based on the BAU scenario defined in PERSU 2020, Portugal will only achieve 44% of this target by 2020. However, if the “Scenario for the definition of targets” is considered, the expected performance would be of 53% (3 percentage points above the target).

Regarding the archipelagos, estimates from the BAU scenario presented in the PERSU 2020 indicate a performance of 18% and 17% for Madeira and Azores respectively. Regarding the latter region, information is also presented in the PEPGRA. The compliance of this region with the WFD is considered to be on a crucial stage. Considering that the level of preparation for re-use and recycling had only reached 23% in 2013 (4 percentage points above the estimate indicate in the BAU scenario), the fulfilment of the target will depend on the full operation of the Waste Processing Centres (“Centros de Processamento de Resíduos” – CPR). These integrate a recycling centre, an organic recovery facility, and in some cases sorting and transfer units.

## 1.6 Implementation of Specific Waste Framework Directive Articles

### 1.6.1 Article 4: Application of the Waste Hierarchy

Article 4 of the WFD is addressed in the General Regime for Waste Management under Article 7 of the Decree Law No 73/2011 of 17 June, and is considered as a fundamental principle for waste management policy. The previous Decree Law and Article 24 of the Decree Law No 67/2014 of 7 May indicates that the waste hierarchy principle may not be considered if it can be justified for technical and economic feasibility, and environmental protection reasons.

Regarding the autonomous regions, the Regional Decree Law No 29/2011/A of 16 November of Azores states that the waste hierarchy is the general principle for waste prevention and management policies.

The Questionnaire on Implementation of Directive 2008/98/EC, C (2012) 2384 completed by the Portuguese authorities also provides information about the application of Article 4. Specifically, it presents some key policy objectives considered in the Decree Law No 73/2011 of 17 June, for instance:

- Promotion of the full operation of the Waste Stock Exchange (“Mercado Organizado de Resíduos” – MOR), as a way to stimulate the transaction of all types of waste considered in the General Regime for Waste Management (Decree Law No 73/2011 of 7 June) with recovery potential, as well as recycled materials and by-products. MOR operates through the use of online negotiation platforms developed by APA. Participants include waste, recycled materials and by-products producers or holders as well as the entities that carry out recovery operations. According to APA, this instrument contributes to the reduction of waste sent to landfill, the promotion of

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<sup>30</sup> These results should not be directly compared to the 2020 WFD target because this is a national target, which is an outcome of different contributions obtained from the urban waste management systems.

new industries for waste recovery operations, and the reduction in the use of natural resources (e.g. raw materials, energy sources). Table 1-5 provides a general characterization of MOR for the year 2014.

**Table 1-5: General information about Waste Stock Exchange (MOR), 2014**

<b>Number of participants</b>	104
<b>Type of participants</b>	15% from diverse manufacturers 56% from waste collection and treatment sector 21% from wholesale commerce sector 8% from other activities
<b>Type of waste traded</b>	Mainly packaging coming from separate collection
<b>Number of waste transactions</b>	1,891
<b>Waste traded (tonnes)</b>	372,229
<b>Total value traded (million Euros)</b>	32.5

Source: Information provided by APA.

- Clarification of key concepts, for instance, waste, prevention, and re-use, and promotion of waste prevention plans and targets for preparation of re-use and recycling and other forms or material recovery for 2020.
- Introduction of the Extended Producer Responsibility mechanism, considering the whole life cycle of products and materials.

Furthermore, results from the same questionnaire also refer to the application of the Waste Management Fee (“Taxa de Gestão de Resíduos” – TGR), as it is considered in Article No 58 of the General Regime for Waste Management. This is considered to be an incentive which is consistent with moving waste away from the lowest tier in the hierarchy.

The regulation for the application of this instrument (Ordinance No 1127/2009 of 1 October<sup>31</sup>) considers that part of the revenues obtained from the TGR would be used in activities aimed at contributing to the compliance with the national objectives, thus working as an incentive for the promotion of this principle. In fact, one of the criteria for the selection of potential funding initiatives is the “application of the Waste Hierarchy Principle in waste management operations that gives priority to waste prevention, re-use, recycling, and other recovery forms, in that order”.

The application of the Waste Hierarchy is also considered in the WMPs as a general principle for the development and implementation of waste management (with the exception of the WMP of Madeira, which does not include any reference to this aspect). However, even taken together, the above actions are not felt to be representative of a strong enforcement of the waste hierarchy, particularly given the relatively low level of the TGR.

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<sup>31</sup> [http://www.apambiente.pt/\\_zdata/Divulgacao/Concursos\\_TGR/P\\_1127\\_2009.pdf](http://www.apambiente.pt/_zdata/Divulgacao/Concursos_TGR/P_1127_2009.pdf)

## 1.6.2 Article 10: Recovery

The legislation that establishes the General Regime for Waste Management makes several references to the need to guarantee recovery operations. The Decree Law No 73/2011 states under Article 7 that waste producers must ensure source separation of waste materials in order to facilitate its recovery. Article 8 of the same Decree Law entitled “Citizen Responsibility Principle” states that all citizens should adopt waste prevention practices as well as actions that facilitate re-use and recovery.

Specific regulations that apply to recovery operations in the context of specific waste streams include the following:

- The Decree Law No 366-A/97<sup>32</sup> of 20 December defines the implementation of the Extended Producer Responsibility (EPR) for packaging waste. For this waste stream, particularly packaging, the Green Dot Society (“Sociedade Ponto Verde” - SPV) is the PRO responsible for financing the selective collection of packaging waste and assuring namely by launching over the years awareness campaigns addressed to general population, that deposition sites for packaging separate collection are correctly used and optimized. According to the information presented in the PERSU 2020, the recovery of packaging waste increased from 288 to 393 thousand tonnes between 2007 and 2011, followed by a slight decrease to 356 thousand tonnes in 2012.
- The revision of the Decree 73/2011 under the Decree Law 67/2014 states in Article 4 that electric and electronic equipment must be designed in order to facilitate dismantling and recovery operations. In terms of waste batteries and accumulators, the Decree Law No 6/2009 of 6 January, amended by the Decree Laws No 266/2009 of 29 September and 73/2011 of 17 June, obliges producers of batteries and accumulators to ensure their separate collection, treatment, recycling or elimination, supporting the costs of these and other operations (e.g. transport, sorting). This Decree also promotes the separate collection of batteries and accumulators by defining a minimum collection target of 45% by the end of 2015 (this is 13 percentage points higher than that observed in 2012).
- Regarding UEO, the Decree Law No 267/2009<sup>33</sup> of 29 September stresses the need to develop municipal systems for the collection of UEO produced by the industrial sector, hotels and restaurants, and households. A total of 4,718 collection spots were available in 2013, with a higher concentration in the Districts of Lisbon, Oporto, and “Viana do Castelo”. Nevertheless, the PNGR states that 20% of the municipalities did not report any information about the separate collection units of UEO, and 139 of the municipalities reporting this information did not reach the target established for 2015. Targets are defined according to the number of inhabitants in the municipalities. <sup>34,35</sup>

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<sup>32</sup> [http://www.apambiente.pt/\\_zdata/Politic/Residuos/FluxosEspecificosResiduos/ERE/DL366.pdf](http://www.apambiente.pt/_zdata/Politic/Residuos/FluxosEspecificosResiduos/ERE/DL366.pdf)

<sup>33</sup> [http://www.ecopark.pt/portal/legislacao/ambiente/residuos/decreto-lei-n-o-267-2009-de-29-setembro-oau/at\\_download/file](http://www.ecopark.pt/portal/legislacao/ambiente/residuos/decreto-lei-n-o-267-2009-de-29-setembro-oau/at_download/file)

<sup>34</sup> [http://apambiente.pt/\\_zdata/Politic/Residuos/FluxosEspecificosResiduos/OAU/PerguntasFrequentes.pdf](http://apambiente.pt/_zdata/Politic/Residuos/FluxosEspecificosResiduos/OAU/PerguntasFrequentes.pdf)

<sup>35</sup> This information refers only to the mainland as the Azores and Madeira have their own legislation and targets regarding UEO.

- Decree Law No 206/2008<sup>36</sup> of 23 October that amended the Decree Law 62/2002 of 21 March also constitutes relevant legal steps towards the promotion of biofuel production by using UEO as raw material. This piece of legislation introduced the possibility for local governments, associated entities, and local companies to obtain the status of small dedicated producers (maximum quantity of 3,000 tonnes per year for internal use or for use in the municipal fleet, without any charges). Biofuel production can be used in municipal transport fleet vehicles, without any charges. Despite the fiscal incentives for the recycling of UCO, only two municipal waste management system obtained such status.

PERSU 2020 presents information about waste recovered through various operations including sorting, mechanical treatment, mechanical and biological treatment, and incineration. In 2012, a total of 396 thousand tonnes of recyclables was recovered. Target for 2020 is fixed in 690 thousand tonnes.

Furthermore, a report from APA provides information about the quantities of packaging waste sent to landfill and incineration. This gives an indication of the potential material that can be recovered in the future. In 2013, a significant portion of packaging integrating the total MSW was sent to landfill and incineration, notably of 387,081 tonnes (22% of MSW sent to landfill) and 207,760 tonnes (23% of MSW sent to incineration), respectively.<sup>37</sup>

### 1.6.3 Article 11: Re-use and Recycling

In 2013, all urban management systems from the mainland had levels of separate collection below the threshold of 20%, with exception of Algar (Region of Algarve), which scored 24.3%. Separate collection is mainly applied through bring systems, deploying drop-off containers that are distributed along public areas. The recycling points (“ecopontos”) commonly consist of three large grouped containers for the waste streams of the following, and packaging made of, paper and cardboard (blue container), light packaging (plastic and metals, yellow container), and packaging made of glass (green container), and in some cases a small container for batteries. Other options considered in the bring system include the use of recycling points for only two or one of the previous waste streams and recycling centres. The latter type of units are characterised as being bigger areas that receive higher quantities and greater diversity of waste streams (e.g. WEEE, woods, and furniture). Furthermore, according to the PNGR, door-to-door collection is also implemented. In 2010, door-to-door represented only 4.4% of the total separate collection, and consisted of paper and cardboard (67%), packaging (25%), batteries (8%), and other types of waste such as WEEE, woods, and bulky household waste (1%). Door-to-door collection was mainly implemented in the MSW management systems of Valorsul and Amarsul (Lisbon area) with about 66% of the total collected through this source, followed by Lipor (Oporto area) with approximately

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<sup>37</sup> [http://www.apambiente.pt/\\_cms/view/page\\_doc.php?id=1166](http://www.apambiente.pt/_cms/view/page_doc.php?id=1166)



19%, and Resinorte (North) with 9%. The remaining part included five MSW management systems which represented about 6%.<sup>38</sup>

The PRO (“Sistema Integrado de Gestão de Embalagens” – SIGRE) is managed by the Green Dot Society (“Sociedade Ponto Verde” – SPV) since 1997. Producers transfer the responsibility of packaging waste management to SPV through the payment of a management fee (Green Dot Fee, in Portuguese “Valor Ponto Verde” – VPV). Separate collection and sorting are assured by the MSW management systems (“Sistemas de Gestão de Resíduos Urbanos” – SGRU), who are paid for this service (“Valor de Contrapartida” paid by SPV). Finally, packaging waste managers operating in the waste market pay a take-back value (“Valor de Retoma”) to SPV for the waste they collect from the facilities of the urban waste management systems, which then recycle or send to recycling.<sup>39</sup> The funding of separate collection infrastructure is supported by the municipalities and the SPV.<sup>40</sup>

Separate collection of biodegradable waste is only implemented for green waste from public and household gardens (“Resíduos verdes de produção municipal”), and for food waste generated by big producers (restaurants, hypermarkets, markets). Information provided by APA indicate that in 2014 there was a total of 114,308 tonnes of BMW collected in this manner in the mainland, which represents 2.5% of the total waste collected. The total collected is a sum of 104,061 tonnes (91%) associated with the collection made by the high and low systems, and 10,247 tonnes (9%) made by big producers or other private entities. Regarding the management of UEO, the municipalities are responsible for the implementation of separate collection systems adjusted to the number of residents.<sup>41</sup>

PERSU 2020 explores the reasons why, in the case of BMW there has not been much development of separate collection, as was planned in the previous PERSU II. Possible causes mentioned include low economic feasibility, high dispersion of the large biowaste producers, and the high quantities required for the operation of organic recovery facilities. In comparison with the objectives of PERSU II, some facilities that were initially planned for the treatment of separate collection ended up operating with residual waste.

Rodrigues et al. (2015) assesses the possible implementation of separate collection of BMW of restaurants and canteens in the municipality of Aveiro (in “Centro Region”, mainland). One of the objectives of this study is to provide a comparison between collection costs associated with residual waste sent to MBT unities and door-to-door collection of BMW sent to a private waste operator. Results indicate collection costs of 81.12 €/tonne for the first option, and 79.46 €/tonne for the second option. This study indicates that the reliance on MBT facilities for the treatment of BMW could contribute to lower quality compost, which may be more difficult to commercialize.<sup>42</sup> Moreover, it also states that one of the main

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<sup>38</sup> [http://apambiente.pt/\\_cms/view/page\\_doc.php?id=971](http://apambiente.pt/_cms/view/page_doc.php?id=971)

<sup>39</sup> [http://www.pontoverde.pt/assets/docs\\_publicacoes/pub201506021433265257.pdf](http://www.pontoverde.pt/assets/docs_publicacoes/pub201506021433265257.pdf)

<sup>40</sup> [http://www.pontoverde.pt/en/quem\\_somos.php](http://www.pontoverde.pt/en/quem_somos.php)

[http://www.spvnet.pt/cpanel/assets/documentos/Despacho%2025590-2008,%2014%20de%20Outubro\\_Verdoreca.pdf](http://www.spvnet.pt/cpanel/assets/documentos/Despacho%2025590-2008,%2014%20de%20Outubro_Verdoreca.pdf)

<sup>41</sup> Information based on the Questionnaire on Implementation of Directive 2008/98/EC, C (2012) 2384 filled by the Portuguese authorities.

<sup>42</sup> According to information provided at the Portuguese workshop held in Lisbon in the 10<sup>th</sup> of July 2015, MBT facilities can produce good quality compost, despite not working with separate collection of BMW. It was also mentioned the recent

challenges for the implementation of door-to-door collection is the lack of adapted facilities to handle separate collection of BMW. The adaption of the system will represent additional costs to those already assumed when developing new MBT facilities.

Table 1-6 presents information about the production of compost in the mainland. This analysis covers the period of 2010 to 2013 and specifies the source of the compost, i.e. waste obtained from separate or residual waste collection. Results show a higher portion of compost produced from waste coming from separate collection. Information provided by APA indicates that approximately 34,362 tonnes of compost were sold in 2014, which represents 54% of the total produced in that year. Moreover, according to PERSU 2020, targets for 2020 imply an increase in the production to 690 thousand tonnes.

**Table 1-6: Production of compost according to collection source (tonnes), mainland, 2010-2014**

Source	2010	2011	2012	2013	2014
Separate collection	13,093	11,817	13,005	13,273	14,737
Residual waste collection	35,607	54,718	43,488	47,558	48,427
<b>Total</b>	<b>48,701</b>	<b>66,535</b>	<b>56,493</b>	<b>60,831</b>	<b>63,164</b>

Source: APA (2014).

APA (2014) and the PNGR both suggest that despite the high increase in the number of separate collection containers (e.g. the number of recycling points escalated 325% for the period between 2000 and 2012), there was not a proportional correspondence in terms of the quantity collected. Indeed, the insufficient level of separate collection is identified as a weakness of the waste management sector in the PNGR, even though SPV has been largely exceeding its overall take back quota since a few years ago. Potential reasons for the low efficiency may include: an unbalanced ratio of recycling points (“ecopontos”) per inhabitant, varying between 138 and 360 inhabitants per recycling point in the mainland MSW management systems;<sup>43</sup> lack of recycling culture<sup>44</sup>; and high levels of waste sent to landfills, which are supported by the low incentives for changing this situation.<sup>45</sup> Information provided by SPV also identifies other critical points, notably: lower quality of the separate collection service in comparison with residual waste collection during the economic crisis; lack of accountability for other waste producers not included in data systems; “lack of enforcement both at regional and national levels”; lack of alternative separate collection methods in addition to recycling points (“ecopontos”), which must not be considered as an “universal fix-it-all collection approach”.

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Decree Law No 103/2015 of 15 June [<https://dre.pt/application/conteudo/67485179>], which specifies the rules for the introduction of fertilizers in the market.

<sup>43</sup> MAOTE (2014b) PERSU 2020 – Plano Estratégico para os Resíduos Urbanos

<sup>44</sup> SPV has a different position on this matter stating the high performance of packaging waste. “SPV has always largely exceed its take back quotas (“taxas de retoma”), with the exception of glass packaging waste”.

<sup>45</sup> Niza S, Santos E, Costa I, Ribeiro P, Ferrão P (2014). Extended producer responsibility policy in Portugal: a strategy towards improving waste management performance. *Journal of Cleaner Production* 64:177-287.

Nevertheless, the promotion of separate collection is an important objective of PERSU 2020, which defines several measures, including:

- the optimisation and expansion of the separate collection system, particularly in terms of the packaging, WEEE, batteries and accumulators, and UEO waste streams.
- Promotion of good practices within the general public, services and commerce sectors.
- Assessment of the potential expansion of the door-to-door collection system, mainly in areas with higher density population.
- An obligation for buildings to have separate collection facilities under the Legal Regime of Urbanisation and Construction (“Regime Jurídico de Urbanização e Edificação”).
- Promotion of eco-design principles in the conception of new products, such as packaging, as a means to enhance its future reuse and increase its recycling potential.
- Promotion of efficient recycling processes.
- Considering the optimisation and expansion of sorting and mechanical treatment (MT) facilities.
- Definition of technical specifications for products recovered from MT and MBT facilities.
- Increase in the quantity and quality of the separate collection of BMW.

The PEPGRA also makes reference to several measures and indicators that aim to improve the preparation for re-use and recycling, such as:

- Implement separate collection of at least the waste streams of paper, metals, plastic, glass, WEEE, and batteries and accumulators in all municipalities by 2016.
- Optimising separate collection of UEO in the municipalities. Quantities are expected to increase 5% in 2017 and 10% in 2020, in comparison with the reference year 2013.
- Promotion of separate collection of other less common waste streams. This involves the development of 2 campaigns per year in the period between 2017 and 2020.

The PERRAM includes various activities under the operational intervention “Collection and recycling of materials”, for instance:

- Awareness campaigns for the general public regarding the promotion of separate collections.
- Identification of the most suitable areas for the implementation of separate collection systems, and the evaluation of door-to-door collection systems.
- Establish sorting systems and support facilities for recycling in transfer stations.

#### 1.6.4 Article 14: Costs of Waste Management<sup>46</sup>

The polluter pays principle is present in the Legal Regime for Environmental Responsibility (“Regime Jurídico da Responsabilidade Ambiental”), specifically in the Decree Law No 147/2008<sup>47</sup> of 29 July, which transposes the Directive 2004/35/CE of the European Parliament and the Council of 21 October. The Legal Regime for Environmental Responsibility establishes several obligations including those referring to waste management activities (e.g. collection, transport, disposal, supervision of several operations), considered in the Decree Law No 178/2006 of 5 September changed by the Decree Law No 73/2011 of 17 June, which transposed the WFD.

The Decree No 178/2006 of 5 September established the development of the Waste Management Fee (“Taxa de Gestão de Resíduos” – TGR). This Decree was modified with the Law No 64-A/2008 of 31 December,<sup>48</sup> the Decree Law 73/2011 of 17 June, and the Law No 82-D/2014 of 31 December (Green Tax reform – “Reforma da Fiscalidade Verde”).<sup>49</sup>

The TGR is intended as a behaviour-oriented fee with the objectives of reducing waste production, ensuring higher levels of waste management efficiency, internalizing the environmental costs, and promoting the fulfilment of national targets. TGR is divided in two fractions. First, the value that has to be paid annually by management entities responsible for, inter alia, specific waste streams, incineration, co-incineration, and landfill facilities to the National Waste Authority (Portuguese Environment Agency – APA). Its value is set according the waste destination as considered in the Law No 82-D/2014, and it is expected to increase in the following years (see Table 1-7).

**Table 1-7: Value of the Waste Management Fee (TGR), 2015-2020**

Year	Value (€/tonnes of waste)
2015	5,5
2016	6,6
2017	7,7
2018	8,8
2019	9,9
2020	11,0

Source: APA. <http://www.apambiente.pt>

The definition of the value of the TGR takes into account the principle of the Waste Hierarchy as it depends on the type of treatment. Accordingly, the 100% of its value is paid if the waste is sent to landfills, followed by 70% of its value when waste is eliminated by incineration (without energy recovery), and 25% if it goes to energy recovery. Second, according to Law No 82-D/2014, MSW management systems have to pay an extra TGR if they do not comply with their individual targets established by Communication No 3350/2015 of 1 April and PERSU 2020. This fraction will be applied in 2016, 2018 and 2020 by a gradual increase factor. Another aspect of the TGR already mentioned in Section 1.6.1

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<sup>46</sup> This section was partly based on the results obtained from the Questionnaire on Implementation of Directive 2008/98/EC, C (2012) 2384, as well as from other sources.

<sup>47</sup> <http://www.seguramos.pt/Portals/2/Files/Legislacao/DL147-2008de29-07.pdf>

<sup>48</sup> [http://www.dgap.gov.pt/upload/legis/2008\\_l\\_64\\_a\\_31\\_12.pdf](http://www.dgap.gov.pt/upload/legis/2008_l_64_a_31_12.pdf)

<sup>49</sup> <https://dre.pt/application/file/66014833>

is the possible application of the revenues obtained with this fee into activities aiming the improvement of the waste management sector. Decree-Law 233/2015 also establishes that a fraction of the TGR revenues paid by SGRU reverses annually to these taxpayers that have good performance with regard to the recycling effort, in order to encourage their best performance relating the achievement of MSW national targets.

Figure 1-6 presents a comparison between landfill charges, including landfill tax and gate fee, in EU-countries presenting similar values GDP PPS.<sup>50</sup> Portugal presents the second lowest aggregated value (summing landfill tax and gate fee), notably of 14 €/tonne. A possible negative relation between landfill costs and MSW landfilled is not so evident in the group of analysis, although it is possible to identify some countries with low landfill charges and high amounts of MSW landfilled (e.g. Malta and Slovakia).

A report by the EEA also presents the relation between landfill tax and recycling level of MSW in 2012.<sup>51</sup> Results for Portugal show a weak effect associated with an increase of the tax from 2€/tonne to 4€/tonne verified for this country between 2007 and 2011. Possibly, and even despite the increase in the TGR observed with the Green Tax Reform, values are considered as too low to be a strong incentive for the promotion of waste diversion from landfill, as this type of treatment is still affordable in comparison with the other options.<sup>52, 53</sup>

In addition, Extended Producer Responsibility (EPR) schemes for MSW operate through a collective pooled take back approach. The first license for MSW management under EPR was established in 1997 for general packaging, followed by medicine packaging (2000), batteries and accumulators (2002), and WEEE (2006). The implementation of EPR schemes in Portugal is considered as being positive in terms of the increase in the recovery and recycling quantities, reduction of environmental impacts, and better organization of the sector (e.g. development of a specialized network of producers, management entities, recyclers, etc.). Nevertheless, EPR schemes still operate with low quantities of waste (6% of all waste produced in 2010), in a context of a poor recycling culture, and the maintenance of low incentives for the diversion of waste from landfill and incineration.<sup>54</sup>

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<sup>50</sup> GDP PPS index is fixed at 100 for the EU area. In addition to Portugal, the figure includes ten countries that are distributed equally above and below Portugal in terms of the GDP PPS values.

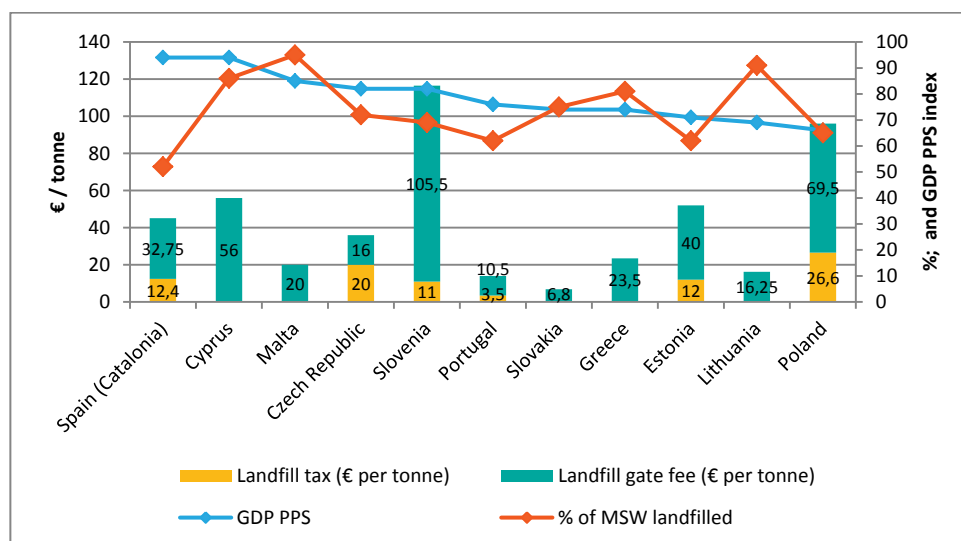
<sup>51</sup> <http://www.eea.europa.eu/publications/managing-municipal-solid-waste/portugal-municipal-waste-management>

<sup>52</sup> Niza et al. (2014). Extended producer responsibility policy in Portugal: a strategy towards improving waste management performance. *Journal of Cleaner Production* 64:177-287.

<sup>53</sup> According to information provided at the Portuguese workshop held in Lisbon in the 10<sup>th</sup> of July 2015, a higher increase of the Waste Management Fee was proposed, although it was not approved.

<sup>54</sup> Idem.

**Figure 1-6: Comparison between landfill charges and MSW landfilled in similar EU countries in terms of GDP PPS, 2012**



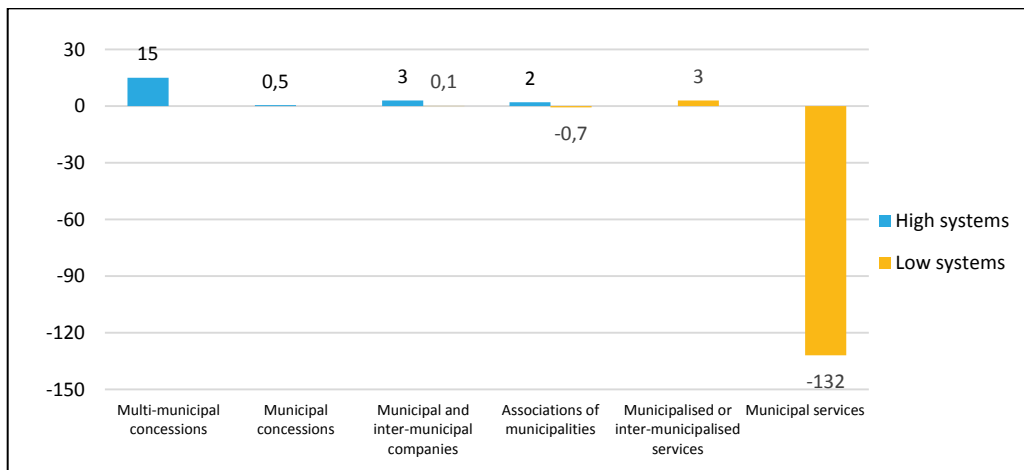
Source: EEA (2013) and EUROSTAT (2015).

Notes: GDP Data for Spain correspond to the whole country, while the remaining variables correspond to the autonomous community of Catalonia.

The application Pay as You Throw (PAYT) schemes has been recommended by the Resolution of the Republic Assembly No 8/2013 published in the Republic Gazette No 22, Series I of 31 February 2013. The Resolution suggests the application of this instrument as a way to promote waste reduction, increase recycling, and reduce the cost of waste to households. Nevertheless, PAYT are far from being widely applied as only a few have been implemented in some municipalities (e.g. Maia, Portimão, and Óbidos) (Pires, 2013). Regarding the WMPs, both the PERSU 2020 and PEPGRA indicate the need to promote PAYT systems. The Region of Azores intends to implement a pilot PAYT project in the municipality until 2020.

Figure 1-7 presents the net income of different management models integrated in high and low systems. The municipalities present a high deficit as costs of waste management are not compensated by the charging system, which suggests the need to develop other sources of income or a better control of costs. The majority of the population is charged through the household water bill. The price paid by the population under this option depends on the level of water consumption. This is considered to generate inequality among consumers as higher levels of water consumption do not necessarily correspond to quantities of waste generated. In addition, the system does not promote waste reduction or differentiates producers in terms of separate collection performance.

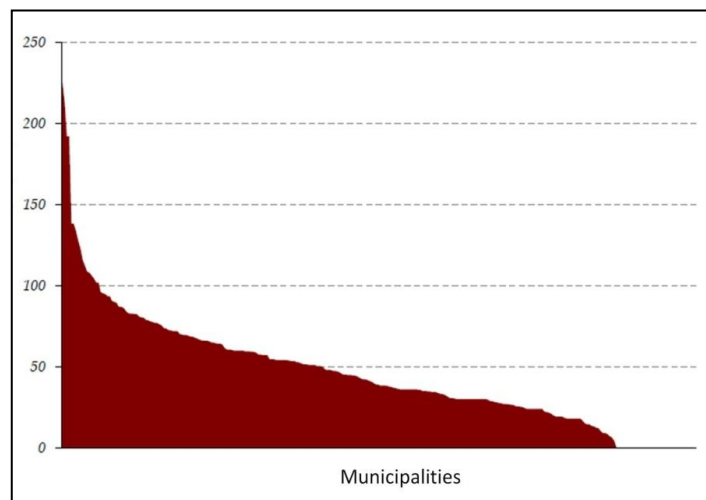
**Figure 1-7: Net income of high and low systems (million Euros), mainland, 2012**



Source: ERSAR (2014).

Figure 1-8 shows the high heterogeneity of the costs charged to the households in the municipalities. According to information provided by the SPV, it is necessary to promote PAYT as well as household charges in the municipalities that correspond to the real cost of the residual waste collection. “This point is particularly relevant in the cases where the municipality is responsible for both residual and separate collection. In the light of a high deficit associated with the residual waste collection, the quality of the service of separate collection ends up being affected.”

**Figure 1-8: Costs paid by in the municipalities (Euros/household), 2010**



Source: Pires, J. S. (2013)

### 1.6.5 Article 22: Encouraging the Separate Collection of Biowaste

The Questionnaire on Implementation of Directive 2008/98/EC, C (2012) 2384 completed by the Portuguese authorities indicates several measures for the encouragement of separate collection of BMW as presented as follows:

**a) Legal measures**

- Waste producers are obliged to perform source separation collection (Article 7 of the General Regime for Waste Management).
- Local authorities are responsible for compliance with the target for preparation for re-use and recycling (including BMW), as specified in Article 58 of General Regime for Waste Management.
- The value of the Waste Management Fee (“Taxa de Gestão de Resíduos” – TGR) to be paid by the entities responsible for the management of specific waste streams, incineration and co-incineration of waste facilities, as well as landfills, aims to move from incineration to recycling as described in section 1.6.4. However, the low value of the TGR fails to promote that purpose.

**b) Awareness measures**

- Communication of good practices regarding various types of waste collection and separation (e.g. door-to-door collection). This also applies to communicating the permission of the use of waste stowage facilities by big producers (e.g. restaurants, large supermarkets).

**c) Mechanical sorting of residual waste in licensed facilities.**

**d) Financial incentives**

- European funds used in the context of the National Strategic Reference Framework 2007-2013 (“QREN”) for the support of the construction of new, and improvement of, organic compost facilities, as well as MBT facilities that include the separation of BMW.
- Article 58 of the General Regime of Waste Management states that part of the income obtained from the Waste Management Fee is to be used in the financing of activities that contribute to the compliance of the national objectives. Ordinance No 1127/2009 of 1 October, changed by the Ordinance No 1324/2010<sup>55</sup> of 29 December, includes as possible actions: the development of projects that contribute to the diversion of recyclable/recoverable waste from landfills; projects for door-to-door collection systems; and raising awareness regarding recycling and other forms of waste recovery, especially BMW. Information provided by APA refers that the previous Ordinances are under revision, although without cancelling the use of the income obtained from the TGR in the financing of activities. Furthermore, it is also under consideration the possibility of MWS management systems to receive financial incentives under the condition of a good performance regarding recycling.

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

Several policy instruments that have already been adopted have a direct or indirect relationship with the promotion of the compliance with the EU targets, for instance:

**a) Legal instruments:**

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<sup>55</sup> [http://www.confagri.pt/legislaca/Portaria\\_1324\\_2010.pdf](http://www.confagri.pt/legislaca/Portaria_1324_2010.pdf)



- Establishment of the General Regime for Waste Management, transposing the Waste Framework Directive into the national legislation (as indicated in Section 1.2).
- Landfill management regulations, which transpose the Landfill Directive into national legislation (as indicated in Section 1.2)
- Regulations for waste management systems include Law No 10/2014 of 6 March that approves the statuses of the Water and Waste Service Regulation Authority (ERSAR)<sup>56</sup>; Decree Law No 92/2013 of 11 June,<sup>57</sup> and Decree Law No 294/94 of 16 November,<sup>58</sup> both of which establish the regulation of waste management by multi-municipal systems; and Decree Law No 90/2009 of 9 April that establishes the partnership between the State and the local governments for the management of municipal waste systems.<sup>59</sup>
- Regulation for the management of specific waste streams. This covers the implementation of the Extended Producer Responsibility (EPR) for the waste streams of packaging, batteries and accumulators, WEEE (as indicated in Section 1.6.2).
- Establishment of technical and operational requirements of waste management infrastructure under the Decree Law No 183/2009 of 10 August (transposes the LFD as indicated in Section 1.2).
- Regulation for the development of the “Organized Waste Market” under the Decree Law No 210/2009 of 3 September, altered by the Decree Law No 73/2011 of 17 June.<sup>60</sup>
- Definition of the regulation for refuse-derived fuel.

**b) Economic and financial instruments:**

- Development of the Waste Management Fee (“Taxa de Gestão de Resíduos” – TGR), and its consequent revision under the context of the Green Tax Reform.
- Development of a Plastic Bag Tax (“Taxa sobre plásticos leves”) under the context of the Green Tax Reform.
- Development of the Organized Waste Market (“Mercado Organizado de Resíduos” – MOR).

**c) Administrative instruments:**

- Implementation of waste prevention and management plans for the whole territory, (mainland and the Archipelagos of Madeira and Azores).
- Implementation of specific plans and strategies associated with targets identified in the WFD and LFD in the past years. These include, for instance: the National Strategy for the Reduction of Biodegradable Waste Sent to Landfill (“Estratégia Nacional para a Redução dos Resíduos Urbanos Biodegradáveis destinados aos Aterros” – ENRRUBDA); and the Intervention Plan for Municipal Waste (“Plano de Intervenção para Resíduos Sólidos Urbanos e Equiparados” – PIRSUE). These are considered as emergency plans developed in the past with the aim of solving the delay with the

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<sup>56</sup> <http://dre.pt/pdf1sdip/2014/03/04600/0173301746.pdf>

<sup>57</sup> <http://dre.pt/pdf1sdip/2013/07/13200/0403904043.pdf>

<sup>58</sup> <http://www.egf.pt/files/164.pdf>

<sup>59</sup> <http://www.legislacao.org/primeira-serie/decreto-lei-n-o-90-2009-parceria-entidade-estado-gestao-181645>

<sup>60</sup> <http://www.dre.pt/util/getpdf.asp?s=diad&serie=1&iddr=2009.171&iddip=20092347>

compliance with the EU targets for preparation for re-use and recycling. Both WFD and LFD targets were still not achieved, which implies the need for the development of new measures.

- Modification to the statutes of the Water and Waste Service Regulation Authority (ERSAR) promotes a higher autonomy regarding the Portuguese Government, as well as strengthening its regulatory roles.
- Development of a specific regulation authority for the Autonomous Region of Azores, namely “Entidade Reguladora dos Serviços de Resíduos da Região Autónoma dos Açores” – ERSARA.
- Development of a Supporting Group for the Management of PERSU 2020 (“Grupo de Apoio à Gestão” – GAG), integrating members from APA, CCDRs, Portuguese Government, etc.
- Development of an electronic registration systems for waste data (e.g., “Sistema Integrado de Registo Eletrónico de Resíduos” – SIRER).

**d) Informative instruments:**

- Informative and educational campaigns developed by several actors (e.g. APA, ERSAR, specific waste streams management entities, urban waste management systems), regarding different topics (e.g. reduction of food waste, practice of organic compost, promotion of recycling), and different contexts (e.g. campaigns developed at schools, television campaigns, informative sessions integrated in specific events such as the “European week for waste prevention”, workshops).

Furthermore, the PERSU 2020 identifies several instruments for the implementation of the waste management policy considering the horizon of 2020, notably:

**a) Legal instruments:**

- Introduction of the legal obligation for buildings to have facilities that ease the practice of separate collection.
- Re-evaluation and possible revocation of current authorizations for the disposal of non-hazardous municipal waste in landfill.
- Enforcement of the regulation of the use of compost, for instance, in the wine industry and forestry sectors, and in geographical areas experiencing desertification. PERSU 2020 refers that the use of compost is of great importance as 66% of the national soil is classified as being of low quality.
- Enforcement of the legal framework for the use of biogas throughout the natural gas distribution system, and for the operation of the cement industry.
- Revision of instruments and legal harmonization, clarification of concepts and estimation of targets.
- Promotion of legal harmonization regarding the clarification of rules for future concessions to private entities.
- Consideration of the inclusion of objectives and targets in the waste management contracts associated with a scenario of efficiency and compliance with the PERSU 2020.

**b) Economic and financial instruments:**

- Introduction of incentives in the form of an “eco-value” for new licenses attributed to specific waste stream management entities, according to criteria such as the introduction of eco-design principles and reduction of packaging material.
- Enforcement of the application of the polluter pays principle according to the production and destination of waste (e.g. through the application of PAYT or variable payments according to produced quantities).
- Increase in the Landfill Fee included in the Waste Management Fee (“Taxa de Gestão de Resíduos” – TGR). Consideration of the application of different values according to the type of waste and treatment, as well as its gradual application based on the compliance of the PERSU 2020 objectives and targets for each waste management system. The TGR is earmarked and used for the improvement of the waste management sector.
- Follow-up and potential reinforcement of the incentives for the compliance of the waste hierarchy principle included in the waste fiscal regulation.
- Evaluation of new payment systems for waste management in substitution of the cost indexing in the water consumption bill.
- Promotion of the implementation of charging systems that ensure that all costs are covered under the consideration of economic accessibility to the service, and income levels and dimension of the household.
- Promotion of a clear assessment of costs and benefits associated with the waste management services under the responsibility of ERSAR.
- Promotion of the resolution of inter and multi-municipal systems’ debts.
- Assessment and promotion of macroeconomic benefits associated with waste management.
- Identification of the priority investments to be considered under the European Union funding programming period 2014-2020.
- Promotion the recycling of used cooking oil by the municipalities, used as raw material for biodiesel production.

**c) Administrative instruments:**

- Optimization and enforcement of separate collection infrastructure that promotes the proximity with the user, especially in terms of the waste streams of packaging, WEEE, batteries and accumulators, and UEO.
- Promotion of a better control of the WEEE stream, especially during the collection stage (e.g. through the implementation of a good practice guide).
- Assessment of the potential of door-to-door systems, especially in areas with high population density.
- Establishment of intermediate targets for urban waste management systems, notably in the preparation for re-use and recycling, and the deposition of BMW in landfills.
- Consideration of the optimisation and the expansion of the MT and MBT facilities.
- Limitation of the construction of new cells in already existing landfills to justified situations and with the agreement of APA.
- Ensure quality of the data reported by urban waste management systems, for instance, in terms of the characterisation of municipal waste.

- Ensure that the objectives included in the PERSU 2020 are integrated in the Action Plans of the different urban waste management systems and municipalities.
- Ensure the existence of the correct instruments for the protection of the consumers.
- Evaluation of synergies regarding the integration of separate and residual waste collection and sharing of infrastructure and services.

**d) Informative instruments:**

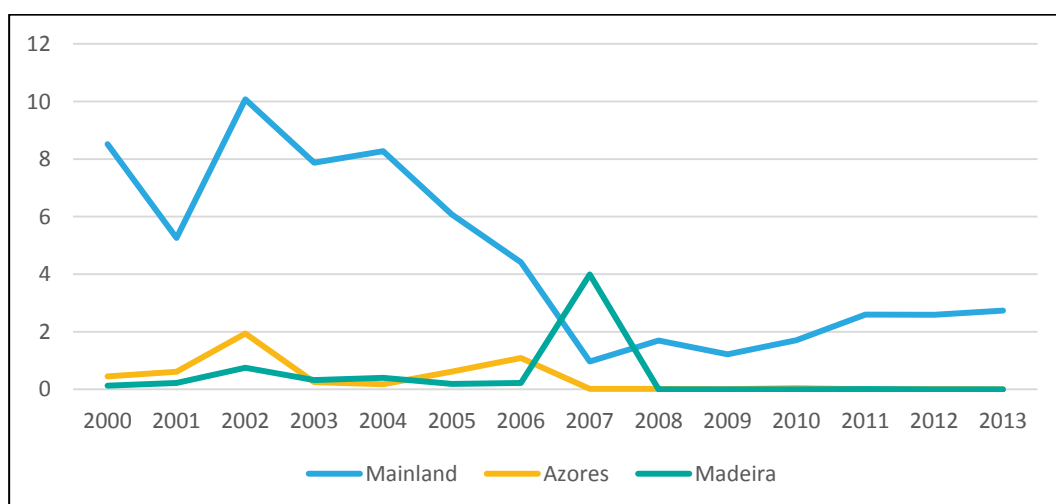
- Awareness campaigns aimed at promoting increased separate collection of WEEE, UCO, and batteries and accumulators.
- Awareness campaigns regarding the phasing-out of the use of plastic bags, and the reduction of food waste.
- Promotion of home composting.
- Promotion of a better articulation regarding the information publicly available in the webpages of APA, CCDRs, ERSAR, etc.

## 1.8 Investment in Waste Management Infrastructure

Figure 1-9 presents the total amount of investment made by the municipalities in waste infrastructure in the mainland, Madeira, and Azores between 2000 and 2013. Data for the mainland shows that after a period of relatively high investment (2000-2004), marked by up and downs, there was a constant decrease in the investment until 2007, followed by a soft increase and consequent stabilization around 2.5 million Euros per annum for the last three years of analysis.

The highest level of investment, just above 10 million Euros, was in 2002. This was also a significant year for the regions of Azores and Madeira, with investment at approximately 1.9 and 0.7 million Euros, respectively. In addition, 2007 registered the most significant investments in the region of Madeira (approximately 4 million Euros). This period coincided with the opening of one MSW processing centre in Porto Santo (2006), one transfer station and recycling centre in Ribeira Brava (2007), and one transfer and sorting station and recycling centre (2007) (Valor Ambiente, 2008).

**Figure 1-9: Investment made by the municipalities in waste infrastructure, 2000-2013 (million Euros)**



Source: INE (2015). URL: [www.ine.pt](http://www.ine.pt). Accessed in 8 June 2015.

The previous figure focus on the municipalities, thus it excludes important investments made by other entities. This is the case of the multi-municipal systems in the mainland, where, for instance, the investment made by the EGF in the period of 2011 to 2013 almost reached 200 million Euros. Moreover, in the autonomous region of Madeira, there is also a significant part of investment made by the Regional Government.<sup>61</sup> With regard to the Azores, estimates of the investment made or planned between the last ten years and 2020 are of 186.5 million Euros.<sup>62</sup>

Regarding future investments, the priority for the mainland territory is the increase in the number of organic recovery facilities through construction of new facilities and transformation of MT into MBT units (including composting plants). The overall aim is to encourage waste diversion from landfill. According to PERSU 2020, these are some of the priority investments that can be considered for co-funding under the EU Cohesion Fund.

As for the Autonomous regions, the Azores considers (in the PEPGRA) the development of two new waste management and energy recovery units as well as one processing centre. Although there is not an indication of the estimated amount of investment in the PEPGRA, the Regional Annual Plan of Azores for public investment in 2015 indicates the amount of investment associated with the categories of “Processing centres and promotion of good waste management practices” (130,000 €) and “Sealing and rehabilitation of landfills” (3,594,452 €), over a total amount of public investment of approximately 731 million Euros.<sup>63</sup>

Finally, the region of Madeira expects to finish the third stage of construction of a landfill in 2015.<sup>64</sup> It appears that other projects are not being considered in the near future according to the Plan and Program of Investments and Expenses for the Development of the Autonomous Region of Madeira for 2015 (“Plano e Programa de Investimentos e Despesas de Desenvolvimento da Região Autónoma da Madeira para 2015” – PIDDAR).<sup>65</sup>

**Table 1-9: Expected future investments in waste management infrastructure**

Regional area	Type of investment	Estimated value (Million €)
Mainland territory <sup>1</sup>	Increase in separate collection	120
	Increase in the efficiency and productivity of the current facilities	50
	Conversion of current facilities: adaptation of MT to MBT facilities for the preparation for re-use and recycling of MSW, including organic recovery	90

<sup>61</sup> Information provided by EGF.

<sup>62</sup> Information provided by the Regional Government of the Azores.

<sup>63</sup> [http://www.azores.gov.pt/NR/rdonlyres/B17C3D46-7303-4899-902A-6BDE5C7B2D09/833995/Plano\\_Regional\\_Anuual\\_2015.pdf](http://www.azores.gov.pt/NR/rdonlyres/B17C3D46-7303-4899-902A-6BDE5C7B2D09/833995/Plano_Regional_Anuual_2015.pdf)

<sup>64</sup> <http://www.gov-madeira.pt/joram/1serie/Ano%20de%202015/ISerie-022-2015-02-05sup.pdf>

<sup>65</sup> <http://www.alram.pt/images/stories/IV-LEGISLATIVA/ordens-trabalho/OT-18/OT-18-PIDDAR-2015-Proposta.pdf>

Azores <sup>2</sup>	Island "Terceira"	- Unity for waste management and energy recovery (1 energy recovery facility, 1 organic and compost recovery facility, 9 recycling centres, 1 landfill)	Na
	Island "São Miguel"	- Unity for waste management and energy recovery (1 energy recovery facility, 1 organic and compost recovery facility, 1 sorting centre, 1 landfill)	Na
	Island "Santa Maria"	- Processing centre (1 recycling centre, 1 organic and compost recovery facility, 1 transfer station)	Na
Madeira <sup>3</sup>		- Third stage of the Landfill construction in the area of the MSW treatment station.	Na

Sources: <sup>1</sup> PERSU 2020; <sup>2</sup> PEPGRA; <sup>3</sup> Governo Regional da Madeira (2015).

Notes: "NA" means not available. For the case of the Azores, although there is an estimate of the potential investment (already included in text sections above), this information is not presented according to the type of infrastructure.

## 2.0 Summary

Portugal has made some improvement in terms of the reduction of the BMW quantities sent to landfill, and it is expected to reach the EU target for 2020 in a BAU scenario (35% of the level of 1995), based on an anticipated increase in the number and efficiency of organic recovery infrastructure. Regarding the "scenario for the definition of targets", Portugal expects to accomplish 26% of BMW sent to landfills by 2020. Nevertheless, this requires an extra effort in comparison to what is considered in the BAU scenario. In particular, the increase in separate collection, higher efficiency in terms of waste sorting and mechanical treatment, and the increase in the organic recovery capacity through the full operation of facilities considered in the BAU scenario plus three new facilities. These improvements characterize the "scenario for the definition of targets".

In terms of the targets set for the preparation for re-use and recycling, in 2012, the level achieved was only 25%, that is, half of the target established for 2020. This target is not expected to be accomplished under a BAU scenario (44%). For the "scenario for the definition of targets", Portugal is expected to have 53% of MSW sent for preparation for re-use and recycling. Nevertheless, the gap would not be so high (3 percentage points more than required) in what is considered the most positive scenario. This might suggest that the level of aspiration is not yet sufficiently high, but it also indicates that significant changes are likely to be needed for the fulfilment of this target.

The following paragraphs summarize the main strengths and weakness of the waste management plans and strategies implemented in the past, and currently set in place, or planned, aimed at the fulfilment of the EU targets.

### Strengths:

- Important changes in the national waste legislation including, amongst others, the transposition of WFD and LFD Directives, and the regulation for the operation of waste municipal systems, and specific waste streams.
- Recent approval of the PNGR and PERSU 2020, as well as the soon expected approval of the PEPGRA for the Autonomous Region of Azores. These plans cover the exact period of the EU targets, and establishing scenarios and measures for its fulfilment.

- Improvement of the waste management service coverage with significant investment in infrastructures (e.g. organic recovery facilities) and other equipment (e.g. recycling points).
- Introduction of various economic and fiscal instruments, for instance: the Waste Stock Exchange (“Mercado Organizado de Resíduos” – MOR); the status of “small biofuel producers” for local governments, associated entities, and local companies that produce fuel through the use of refuse-derived fuel; the Green Tax Reform leading to changes in the Waste Management Fee and the implementation of a Plastic Bag Tax, etc.; and the implementation of the ERP schemes.

#### **Weaknesses:**

- Weak links between the various WMPs, and the non-inclusion of EU targets in the regional plan of Madeira (PERRAM).
- Complexity of the collection system with several different entities responsible for separate and residual waste collection. This acts as a barrier to further development of separate collection systems, as the benefits – in terms of reduced disposal costs – are not transferred through to those operating the separate collection system.
- Low levels of separate collection with the scheme still dependent on bring schemes, and with the largest fraction of the waste stream, i.e. BMW, not adequately targeted by collection services.
- Over-reliance on the operation of MBT facilities to comply with targets. This could represent a bottleneck for future improvement of the sector, whilst the lack of biowaste collection services will reduce the effectiveness of PAYT systems if these are introduced in the future.
- The fact that MBT produces compost, mainly obtained from BMW coming from residual waste collection, may determine a lower quality of the product, and therefore result in potential constraints to its trade. Although the material is suitable for use in viticulture in accordance with the quality protocols developed in Portugal, it would not normally be safe for use in all agricultural applications. Elsewhere, stakeholders have expressed concerns regarding the use of such material for some agricultural uses.<sup>66</sup> In contrast, it is expected that compost produced from a properly managed source segregated biowaste system could be used in the full range of agricultural applications.
- The new incineration facilities in the Azores will allow diverting waste from landfills but will not open space for the improvement in terms of multi-material and organic recovery.
- MSW charging system presents some problems, for instance: the significant use of charges indexed to the household water bill does not give space for the development of price incentives for waste reduction through other types of fees; the high deficit of the local governments regarding the waste management operations (PIRES, 2013; MAOTE, 2014b); and the fact that households do not realize what

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<sup>66</sup> Eunomia (2009) OAV024 – Frameworks for Use of Compost in Agriculture in Europe, report for WRAP

services they are paying for, thus may have high resistance to pay higher tariffs, especially in a period of economic crisis.<sup>67</sup>

- Lack of recycling culture based on the low levels of separate collection over the total waste collected, and little consideration of waste as a resource.
- Lack of landfill tax, and the waste management fee set at a level which is too low to encourage behavioural change.

## 3.0 Information Sources

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<sup>67</sup> The latter idea was referred in the workshop held in Lisbon (Portugal) on the 10<sup>th</sup> of July 2015.



<http://www.alram.pt/images/stories/XI-LEGISLATURA/I-LEGISLATIVA/fotos-noticias/PDF%20Prog%20Governo/Programa%20do%20XII%20Governo%20Regional%20da%20Madeira.pdf>

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## 1.0 Summary of Recommendations

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Recommendations for Portugal can be summarised as follows:

1. Changes to charging systems and incentives
  - a. Undertake a review of charges currently paid by householders with a view to gradually increasing the overall contribution; removing the indexation to water bills with a view to making these charges fairer.
  - b. Increase the level of the waste management fee for landfill and incineration to ensure the full cost of treatment should be covered.
  - c. Consider the introduction of a residual waste tax to be applied to waste treated in residual waste treatment systems, set to gradually increase until it is at a level such that the introduction of improved recycling services will be driven by the market.
  - d. Increase the value of the waste management fee associated with non-compliance of the MSW management systems with targets
2. Changes to separate collection services and recycling
  - a. Integration of recycling and residual waste collection systems
  - b. Government could mandate the expansion of door to door source segregated collection systems for household waste, in a first stage at main urban areas and for the HORECA sector, to cover both organic waste as well as dry recyclables.
  - c. Introduce national standards for door to door collection systems on collection frequency, to ensure good take up of the recycling services.
  - d. Put in place a programme to upskill local and regional authorities, so that these can be informed on best practices from other Member States.
3. Undertake a review of treatment infrastructure requirements, taking into account the changes in waste collection. If additional infrastructure or conversion of existing infrastructures is required, the review should consider funding possibilities.
4. Undertake a comprehensive review of data quality. This should cover, in particular, regions other than the mainland, as well as investments in infrastructure, and collection quantities, as well as composition.
5. Updates to existing plans and targets
  - a. In addition to the expected approval of the waste management plan for the Azores (PEPGRA), the region of Madeira should revise the current plan (PERRAM), integrating information on the compliance of EU-targets with what will be done to ensure these are met. Coordination between all MSW management plans should be assured.
  - b. Consider the increase of recycling rate targets for waste management systems from big urban areas such as Valorsul (Lisbon) and Lipor (Oporto) by revising the targets presented in PERSU 2020.
6. Develop a programme aimed at raising the awareness householders and business in respect of the need for recycling and waste reduction, to be rolled out alongside any changes in collection systems.
7. Actions to increase re-use and waste prevention activity.

8. Introduce Pay as you Throw systems when the transition away from bring-site based collection systems is complete, and the door to door collection services (including biowaste collection systems) can be seen to be operating effectively.

## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Deficiencies in the waste management charging system	The significant use of charges indexed to the household water bill does not give space for the development of price incentives for waste reduction and recycling. Another problem is the deficit of local governments regarding waste management operations. Costs of waste management are high in comparison with the revenues obtained from the household bills as well as other sources of revenues (e.g. recycling). Moreover, the values of the Waste Management Tax ("Taxa de Gestão de Resíduos" - TGR) are likely to be too low to generate sufficient incentives. This still represents a point of concern even though a progressive increase of the tax is envisaged in the Green Tax Reform ("Fiscalidade Verde") until 2020. The application of more substantial penalties to those systems not complying with targets should be considered, as well as the establishment of incentives, via the use of revenues from the tax, in the improvement of the sector.	<ul style="list-style-type: none"> <li>- Few sources of income for municipalities in order to cover the high costs of waste management.</li> <li>- Low values of the Waste Management Tax (TGR) do not represent a real incentive to change the behaviour of waste management entities, even considering the escalator of this value towards 2020 (e.g. in the diversion of waste from landfill and incineration, and the compliance with EU targets). Although additional TGR payments are required to be paid in the event that MSW systems do not comply with the individual recycling targets, the additional payments envisaged are unlikely to be sufficient to drive substantive change.</li> </ul>

Number	Potential issue	Description	Reasons for the issue
2	Low levels of separate collection and recycling	<p>Despite the implementation of EPR schemes for MSW streams of packaging, batteries, and WEEE during the past two decades, and the higher coverage of this service (e.g. in terms of equipment, and geographical coverage), there is still a low quantity of separate collection of MSW (13% in 2013). Moreover, the separate collection of biodegradable waste (BMW) is far from being implemented at the national level. BMW is the most important fraction of MSW (in terms of weight), and could be an important contribution for the compliance with LFD target.</p>	<ul style="list-style-type: none"> <li>- Lack of recycling culture based on the low levels of separate collection over the total waste collected, and little consideration of waste as a resource.</li> <li>- Low incentives for separate collection and recycling.</li> <li>- For the majority of the country, separate collection for recycling, and the collection of residual waste, are operated by a different entity, under contracts arranged through different authorities. This acts as a barrier to further development of separate collection systems, as the benefits – in terms of reduced disposal costs – are not transferred through to those operating the separate collection system. It also results in constraints on the efficiency of the system as there are different routes, and separate fleets and workforce.</li> <li>- Separate collection system has given priority to bring systems (recycling points), which result in relatively high levels of contamination in comparison to door to door collection services, might not be so successful in capturing recyclables, and make it more difficult to apply incentives (such as PAYT). The situation is further exacerbated by the reliance on MBT systems to deliver against recycling targets.</li> </ul>

Number	Potential issue	Description	Reasons for the issue
3	Deficiencies of waste management infrastructure	<p>This has to be considered for some systems strongly relying in incineration (e.g. Lipor in Oporto, Valorsul in Lisbon area) as well as those relying in landfill disposal (e.g. Region of Alentejo). Despite representing only around 2.9% and 2.5% of total MSW generated, the Azores and Madeira strongly rely in waste management treatment options at the bottom of the waste hierarchy. In 2013 around 90% of the MSW was treated through incineration (with energy recovery) in Madeira. With regard to the Azores, approximately 82% of MSW was sent to landfills during that year. The new strategy considered in the PEPGRA seems to give more importance to energy recovery, diverting waste from landfill to incineration in the Azores.</p>	<ul style="list-style-type: none"> <li>- Mechanisms to enforce the hierarchy in policy in law are inadequate.</li> <li>- Priority given in some cases to landfill and incineration. An example is the consideration of new investment in incineration facilities in the Azores.</li> <li>- Not clear if current infrastructure system is enough to manage an increase in separate collection and recycling of BMW and other materials, or if there is an overcapacity in some MSW management systems. There is an over-reliance on MBT facilities to comply with targets (which is supported by end of waste criteria allowing the use of compost from MBT facilities provided some quality criteria are met). Elsewhere, stakeholders have expressed concerns regarding the use of use of this material for agricultural purposes (indeed, it is predominantly used for viticulture, rather than agriculture, in Portugal). Other solutions such as developing separate collection of BMW and assure its treatment by adequate facilities have received less encouragement. This could represent a bottleneck for future improvement of the sector.</li> </ul>



Number	Potential issue	Description	Reasons for the issue
4	Problems with data quality and availability	<p>Some key indicators of the waste management sector are not available, difficult to access, or do not deliver the same values when different sources are consulted as a result of, <i>inter alia</i>, methodological differences. This includes: data on MSW composition and treatment; source of waste generated; waste likely to be shipped from, or to, the national territory; investments made in infrastructure and equipment (e.g. type, value of investment, and expected capacity); and composition of the sector (e.g. entities responsible for the collection of waste). Consistency between data sources (e.g. National Statistical Institute, Portuguese Environment Agency – APA, ERSAR) and transparency of methods, are important if the values presented are to be considered reliable.</p>	<ul style="list-style-type: none"> <li>- Different data sources and calculation methods.</li> <li>- MSW in Portugal corresponds to the waste generated by households, as well as small waste producers (daily production lower than 1,100 litres), and big waste producers (daily production equal or higher than 1,100 litres) from commerce, service and industry sectors. MSW data is only available for households (including some large producers collected on behalf of the municipalities) and small producers, with exception of the Azores which also has information about big producers.</li> </ul>

Number	Potential issue	Description	Reasons for the issue
5	Weak links between the various WMPs, problems with the report and delivery of EU targets	<p>Portugal has recently approved the National Plan for Waste Management (PNGR) and the Strategic Plan for Municipal Waste of the mainland territory (PERSU 2020). Moreover, the Autonomous region of Azores were due to approve the Waste Management and Prevention Strategic Plan (PEPGRA) during 2015, although this has not yet been confirmed. The Waste Management Plan for Madeira (PERRAM) was approved in 1999, and may be substituted during the mandate of the XII regional government elected in 2015, according to information provided by the Regional Government. The approval of PEPGRA and the revision of PERRAM are important steps in order to maintain consistency with the PNGR and PERSU 2020, both covering the exact period of EU targets.</p> <p>The fact that there are various WMPs covering different territorial scales and waste streams may enhance difficulties of coordination in terms of the data consistency and availability (e.g. characterization of waste management sector), policy coordination between plans, and report of the compliance with EU targets. For this latter point, it is important to note that the PERRAM does not have information on this matter, and it is not totally clear how PERSU 2020 includes the data for the Azores and Madeira.</p>	<ul style="list-style-type: none"> <li>- The fact that Portugal is divided in mainland area and two autonomous regions justifies the existence of different WMPs.</li> <li>- Development and approval of the PNGR and the WMPs for the main regions (mainland, Azores, Madeira) in different periods.</li> <li>- PERRAM is relatively outdated.</li> </ul>

## 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>1. Revision of the charging system and incentive schemes</b>					
1.1 Review the charges currently paid by householders. Consider a gradual substitution of charges indexed to the household water bill by other charging mechanisms. The aim should be to make household charges fairer and (in due course) more directly linked to amounts of waste produced.	Fiscal	APA, ERSAR, high and low systems	Low cost to Government, although costs may rise for some householders	n/a	Increase in the funding available for separate collection systems. This will allow for improved collection systems to be funded.
1.2 Review the level of the waste management fee for landfill and incineration. At a minimum, the fees should be set at a level to ensure that the full costs of treatment are covered (including landfill aftercare).					
1.3 Consider the introduction of a residual waste tax to be applied to waste sent for residual waste treatment. The tax should be set at a level such that improved recycling services are driven by concerns to reduce costs. For example, Portugal could consider setting the fee at a similar level to the proposed landfill tax escalator in Greece which will gradually rise from €30 in 2014 in annual increments of €5 until it reaches €60. The tax should apply to incineration (including exports), with a reduced level applicable to stabilised outputs from MBT facilities.	Fiscal	APA, ERSAR	Low cost to government, although costs will rise to producers	n/a	Introduction of a greater financial incentive that will drive future increases in recycling. This should make improved recycling systems more financially viable. If fee is set at the right level, it may not be necessary to mandate separate collection, as this could be driven by the market.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
1.4 Increase in the value of the Waste Management Fee associated with the non-compliance of MSW management systems with EU targets.	Fiscal	APA, ERSAR	Low cost to government, although costs will rise to producers	n/a	
<b>2. Improvement of the separate collection service and recycling</b>					
2.1 Undertake a review of contractual arrangements for waste collection at a local level with a view to establishing the best method for ensuring that responsibility for contracting both residual and recycling collection systems lies with the same entity in each area across the country. Ideally recycling targets would also be set at this level.	Legal, administrative	APA, ERSAR	Potential to mitigate some of the costs of measure 2.2	Unknown	Benefits resulting from increased recycling associated with reduced residual collection and treatment are more clearly identified. Increased opportunities for improving collection system efficiency.
2.2 Government could mandate the introduction of door to door source segregated collection systems for waste from households for – at a minimum – the bigger urban areas, above a certain population density, and for the HORECA sector at the national level. This should cover organic waste (food / garden) as well as the core dry recyclables.	Legal, administrative	APA	Potential high cost	EU funding available for at least the capital elements, as well as	Recycling rates will improve without the necessity to rely on MBT to meet the Directive targets. This will also result in better quality recycle and compost / digestate. Source segregated organic collection systems are also a key element in ensuring the effective performance of PAYT systems.
2.3 Introduce national standards for the door to door waste collection for household waste collections covering collection frequency. Residual collections should be less frequent than the dry recycling and food waste collections to encourage the take-up of these systems by residents and small businesses.	Legal, administrative	APA, ERSAR	Potential to mitigate some of the costs of measure 2.2	Unknown	Although collection costs may increase, treatment costs will be reduced – this will be more clearly seen once measure 2.1 is undertaken.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
2.4 Building on the national standards, put in place a programme to upskill municipal and local authorities with regard to good practices in respect of minimising collection costs. Programme to be informed by information gained from experiences of other member states with high recycling rates (e.g. using existing guidance documents on how to extend separate collection, optimising collection frequencies).	Informative	APA	Medium cost	Structural Funds or ERDF funding may be available	
<b>3. Improvement of waste management infrastructure</b>					
3.1 Alongside agreeing proposals for improved collection systems have been agreed, undertake a review of treatment infrastructure requirements. This should take into account the increased recycling rate resulting from the improved systems. A particular focus of the review should be on ensuring there is sufficient treatment capacity to cover the increase in source segregated biowaste. This could consider the conversion of existing MBT facilities to those treating solely source segregated biowaste.	Administrative , informative	APA, waste management systems	Low cost	n/a	Ensure there is sufficient infrastructure available to treat the additional biowaste that will result from the separate collection. Ensure compliance with Malagrotta ruling (if required). Ensure there is not overcapacity of residual treatment, which would tend to act against future increases in recycling
3.2 Evaluation of funding possibilities in the event that further treatment facilities or conversion of the current ones are required.	Administrative	APA, waste management systems	Low cost	n/a	

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>4. Improve of data quality and availability</b>					
4.1 Better data about the different sources of MSW, including waste coming from households, and small and big producers of similar waste; about the waste composition of the of Madeira and Azores; and about waste shipments from Portuguese geographical territories.	Administrative , informative	National and regional waste authorities, National Statistical Institute , high and low systems	Low cost	n/a	<ul style="list-style-type: none"> <li>- MSW is generated by households, and small and big producers from commerce, service, and industry sectors. Although it will be difficult to disentangle the part of waste corresponding to household and other sectors that use the same waste containers (e.g. service, commerce), a better knowledge of the parte of waste generated by these will allow defining specific policies according to the source.</li> <li>- Better knowledge of specific waste streams, allowing developing better prevention and management policies.</li> <li>- Better traceability of imported and exported waste, with benefits for a better management of specific waste streams.</li> </ul>
4.2 Better data on the types of investments made and planned in waste infrastructure and equipment, including the entities responsible for investment, the amount, and capacities of the infrastructure.	Administrative , informative	National and regional waste authorities, National Statistical Institute , and high and low systems	Low cost	n/a	<p>Reduces the risk of overcapacity, which would tend to act against future increases in recycling. Depending on funding method for infrastructure, reduced need for government spending on this</p>

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>5. Approval and revision of waste management plans of Madeira and Azores/coordination between WMPs</b>					
5.1 Revision of the target of preparation for re-use and recycling for waste management systems included in PERSU 2020 and covering the urban areas of Lisbon and Oporto.	Administrative , legal	APA, waste management systems	Low cost	n/a	
5.2 Approval of PEPGRA (Azores) and revision of the PERRAM (Madeira), integrating information about EU targets as well as the coordination with the PNGR and PERSU 2020.	Administrative	For the Regional Government of Madeira: Environmental and Spatial Planning Regional Directorate ("Direção Regional do Ordenamento do Território e Ambiente" – DROTA	Low to medium cost	n/a	Compliance with EU legislation and targets, and coordination and consistency with the remaining WMPs.
<b>6. Education campaigns aimed at householders and businesses</b>					
Develop a programme aimed at raising the level of awareness of householders and businesses in respect of the need for recycling and waste reduction. This could be based on examples of campaigns undertaken in other countries with good recycling performance. The programme should be launched alongside the changes to collection systems.	Informative	APA, waste management systems	Medium cost	Potentially, such as that from the ENPI CBCMED Programme.	Alongside improvements in recycling collection system, will improve recycling rates.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>7. Actions to increase reuse and waste prevention activity</b>					
Government should consider integrating re-use activities into the existing EPR scheme. Other activities that should be reflected in the forthcoming waste prevention plan include actions tackling plastic bottles and food waste. Portugal could also consider developing re-use centres – such as those introduced in Slovenia, supported by developing a system of re-use credits helping to finance the activities of the third sector.	Administrative / fiscal	APA	Moderate cost to government	Funding available for capital items	Will assist in the achievement of future targets, as well as contribution to landfill directive and waste framework directive targets.
<b>8. Introduce PAYT systems</b>					
Pay-as-you-throw for household waste should be introduced but only once high performing collection systems (including biowaste collection systems) are in place alongside effective enforcement mechanisms: in particular, once a move away from bring-bank systems has taken place. These systems should build on the good practice in areas such as Maia.	Fiscal	ERSAR	Dependent on the system to be implemented.	May be able to use structural Funds	To be considered but not introduced until waste collection and management systems further developed, so as to avoid fly tipping and associated issues.



### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
Review householder charges and update as required		Announcement				
Gradual increase in landfill and incineration fees		Announcement				
Integration of recycling and residual collections systems		Announcement				
Introduce more door to door source segregated collections		Announcement				
Introduce door to door collection standards (frequency)						
Upskilling of local authorities						
Review of treatment infrastructure requirements						
Review of data quality						
Updates to existing plans and targets						
Programme of waste producer awareness						
<b>Actions to increase re-use / prevention</b>		Announcement			In place	
Introduction of PAYT systems				Announcement		In place

# 1.0 Factsheet – Slovenia

Table 1-1: Basic waste management data for Slovenia

Parameter	Value
<b>Population</b>	
Total (inhabitants)	2,059,114
<b>Waste generation (2014)<sup>1</sup></b>	
Total (tn)	891,708
Total (kg/cap/y)	433
<b>Waste composition (%)</b>	
Organics- kitchen waste	24,66%
Paper	19,2%
Plastic waste	11,10%
Textile	1,94%
Composites	1,30%
Oils	0,05%
Metals	4,68%
Glass	6,85%
Wood	7,01%
Hazardous waste	0,05%
Inert waste	22,91%
<b>Recycling data</b>	
Paper	43%
Plastics	2%
Metal	0,4%
Glass	3%
Total recycling	48,4%
<b>Waste management</b>	
Treatment of Residual Waste (% of MSW in 2014)	20% (est) tbc

<sup>1</sup> Republic of Slovenia Statistical Office, see <http://www.stat.si/StatWeb/en/field-overview?idp=70&headerbar=8>

Parameter	Value
Waste recycled (% of MSW in 2014)	59% (est) tbd
Waste landfilled (% in 2014)	23% (est) tbd
<b>Existing waste management infrastructure</b>	
Type of Facility	Capacity
Residual treatment plants (MBT capacity, 2013)	61,500 t/y
	<b>Data on MBT capacity- (permitted) end of 2015: 352.600 t/y</b>
	Simbio (Celje): 61,500 t/y
	Snaga (Ljubljana): 175,500 t/y
	Cero Puconci (Prekmurje): 27,500 t/y
	Kocerod (Slovenj Gradec): 16,600 t/y
	Ceroz (Hrastnik): 13,000 t/y
	Komunala Slovenska Bistrica (Styria): 10,800 t/y
	JK Komunala Laško (Savinja): 2,700 t/y
Kostak (Lower Sava): 45.000 t/y	
Sorting facilities for recyclables	77,920 t/y (tbc)
Organic waste treatment facilities	Data for 2014: -composting: 19 facilities, 145,670 t/y -biogas plants: 11 facilities, 464,650 t/y
<b>Compliance with Targets</b>	

Parameter	Value
Data on compliance with landfill directive targets, or distance to target remaining (if target not met)	<p>Slovenia achieved the target referred to in Article 5(2a) of the Directive before 2007; in 2010 it achieved the next target, i.e. a reduction in the amount of biodegradable municipal waste sent to landfill to below 50% of the total amount, by weight, of the biodegradable municipal waste produced in 1995 (it reduced it to 48%).</p> <p>Capacities for the mechanical biological treatment of mixed municipal waste (around 314,561 tonnes/year) and the treatment of separately collected biodegradable waste (around 108,500 tonnes/year from public services and 55,900 from restaurants) will be secured by the end of 2015 with the help of cohesion funds.<sup>2</sup></p>
Data on compliance with waste framework directive targets or distance to target remaining (if target not met)	Official data suggests Slovenia is already meeting the relevant WFD target

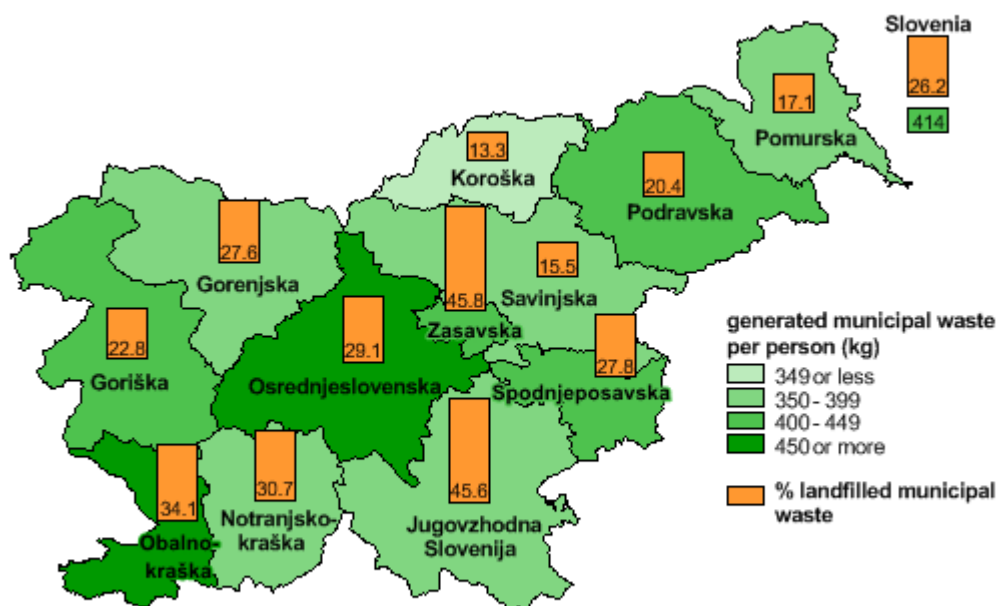
Slovenia's statistical regions exist solely for legal and statistical purposes. Both the amount of waste generated by municipalities and waste management performance in individual municipalities vary considerably. To a certain extent, they depend on the lifestyle and awareness of residents, on the available capacities for waste disposal, and on the willingness of municipalities to find new solutions. On average, 433 kg of municipal waste is produced per person, per year in Slovenia —more than one kg per day. However, large quantities of waste are not necessarily related to the urban way of life. More than 450 kg of waste per resident is generated in seven out of eleven city municipalities, but also in four municipalities with less than 2,000 residents.<sup>3</sup>

The variation in performance across regions in 2013 is shown in Figure 1.

### Figure 1: Municipal Waste per Capita and Proportion of Waste Landfilled by Region (2013)

<sup>2</sup> Report of the Republic of Slovenia on the implementation of Council Directive 1999/31/EC on the landfill of waste (2010–2012).

<sup>3</sup> See <http://www.balkwaste.eu/wp-content/downloads/deliverables/SLOVENIA.WASTE.pdf>



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Municipal waste is defined as household waste and other waste similar in nature and structure. There are a variety of possible types / streams: hazardous waste, packaging, bulky waste, biodegradable, and other types of waste. Household waste constituted only 61% of MSW in 2014, implying that there is a considerable amount of commercial waste effectively included within the definition used (the amount of household waste as a proportion of municipal waste is relatively low by EU standards).

Collection of waste is based on a combination of a bring system (people bring separate fractions of waste to collection points, or centres) and a 'door to door' waste collection system. The collection system was developed on the basis of European best practices aimed at the separation of waste. Only in this way can waste be moved up the waste hierarchy, and a significant reduction in landfilling be achieved.

## 1.1 Roles and Responsibilities of Key Actors

The Ministry of Environment and Spatial Planning is responsible for the review of operational programs and other measures to reduce quantities of waste, and is responsible leading Slovenia towards better waste management.<sup>4</sup>

### The Ministry of the Environment and Spatial Planning

The Ministry of Environment and Spatial Planning carries out tasks in the field of environmental protection, nature conservation, water management, climate change, public services, environmental protection, nature conservation public services, public services, water management, radiation protection, elimination of consequences of natural disasters, investment in environmental and water infrastructure, and tasks related to the area of

<sup>4</sup> See <http://www.arso.gov.si/en/soer/waste.html>

housing policy. The waste division falls under the Environmental Directorate of the Ministry.

The Ministry's tasks related to the management of municipal waste are carried out by multiple bodies. Information provided at the workshop in Slovenia indicates that the waste division of the Ministry is responsible for:

- Preparation and monitoring of the implementation of regulations;
- Monitoring the transposition of EU legislation into national law;
- Participation in the working bodies of the EU and international organizations;
- Monitoring and preparation of system solutions for waste management;
- Preparation of technical basis for law enforcement;
- Preparation and implementation of strategic documents and programs;
- Co-operation with governmental and non-governmental organizations.

Bodies falling under the Ministry include the Environment Agency and the Inspectorate of the RS for the Environment and Spatial Planning:

- The Environment Agency issues environmental permits to waste facilities, and is involved in data collection, analysis and the implementation of state monitoring;
- The Inspectorate supervises the implementation of environmental regulations.

### **Municipalities**

At a local level, municipalities are responsible for collection of municipal waste and treatment (including landfilling) of mixed municipal waste. At the time of writing there are 212 municipalities. In accordance with Article 149 of the Environmental Protection Act, specific responsibilities for the municipalities include the following:

- Collection of municipal waste.
- Handing over separate fractions of municipal waste for further treatment in accordance with the regulations.

Municipalities are free to associate as regards the implementation of mandatory municipal public services:

- treatment of mixed municipal waste; and
- disposal of residues from the recovery or disposal of municipal waste.

Infrastructure requirements at the local level encompass the subsequent sorting of waste; the transfer of fractions of municipal waste for further treatment in accordance (reuse and recycling of separately collected fractions of waste); waste treatment (composting, AD, MBT); the preparation of waste for thermal treatment, and landfilling of residues. The thermal treatment of waste residues takes place on the national level with energy recovery and disposal of residues after thermal treatment.

**The European Affairs Service** performs technical and coordinating tasks in the field of European affairs to appropriately promote, within the European Union, those Slovenian interests that fall within the competence of the ministry and are of strategic importance. The European Affairs Service participates in the development and formulation of positions in the procedure of adopting legislative proposals and other acts of the European Union falling within the competence of the ministry, and is responsible for their inter-ministerial coordination.

## **1.2 Summary of Legislative Framework for Waste Management**

At the workshop, the Ministry confirmed that the implementation of the Waste Framework

Directive for MSW currently occurs through the following legislative articles:

- Environmental Protection Act (Official Gazette of RS, no. 39/06 – UPB, 49/06 – ZMetD, 66/06 – odl. US, 33/07 – ZPNačrt, 57/08 – ZFO-1A, 70/08, 108/09, 108/09 – ZPNačrt-A, 48/12, 57/12, 92/13 and 56/15);
- Decree on waste (Official Gazette of RS, no. 37/15);
- Decree on biodegradable kitchen waste and garden waste management (Official Gazette of RS, no. 39/10);
- Decree on waste oils (Official Gazette of RS, no. 24/12);
- Decree on the treatment of biodegradable waste and the use of compost or digestate (Official Gazette of RS, no. 99/13 and 56/15);

The operation of separate collection services is also governed by the Order on the Management of Separately Collected fractions in the public service of urban waste management (Official Gazette of RS, no. 21/01). This defines minimum standards for the collection service organized as a local public service, including the frequency of the collection points for recyclables (at least one collection point for every 500 inhabitants) and collection centers (civic amenity sites) for all separated fractions of municipal waste. . The standard is at least one collection center in every municipality and in every settlement with more than 8,000 inhabitants, with exception of municipalities with less than 3,000 residents, if residents can bring their waste in at least one collection center in neighboring municipalities. Additionally, there have to be at least two collection centers in every settlement with more than 25,000 inhabitants and at least one collection center for every 80,000 inhabitants in every settlement of more than 100,000 inhabitants.

Implementation of the Landfill Directive for MSW is currently covered by the following:

- Decree on waste landfill (Official Gazette of RS, no. 10/2014 and 54/15);
- Operational programme on urban waste management (Government Decision, no. 35402-2/2013/7 dated 13.03.2013);
- Environmental Protection Act (Official Gazette of RS, no. 39/06 – UPB, 49/06 – ZMetD, 66/06 – odl. US, 33/07 – ZPNačrt, 57/08 – ZFO-1A, 70/08, 108/09, 108/09 – ZPNačrt-A, 48/12, 57/12, 92/13 and 56/15);
- Decree on waste (Official Gazette of RS, no. 37/15);
- Rules on the operational monitoring of underground water pollution (Official Gazette of RS, no. št. 49/06, 114/09 and 53/15);
- Decree on the emission of substances in the discharge of landfill effluent (Official Gazette of RS, no. 7/00, 41/04 – ZVO-1 and 62/08)
- Rules of tariff system for public service on the environmental field (Official Gazette of RS, no. 63/09 and 87/12);

In total around 50 acts have been issued at the national level covering the various aspects of waste management.

### 1.3 Status of Waste Management Plan(s)

A waste management plan (WMP) covering municipal waste *only* has been adopted and is in force. This plan, The Operational Programme on Municipal Waste Management (OP RKO), was adopted in March 2013, and is a national municipal waste management plan drawn up for the entire territory of Slovenia. It has been drawn up in accordance with the requirements of Directive 2008/98/EC. On the basis of an analysis of the current situation in the area of municipal waste management, the OP RKO defines the measures which have to be adopted to improve environmentally acceptable preparation for reuse, recycling,

recovery and disposal of municipal waste. Municipal waste management scenarios for the periods leading up to 2020 and 2030 have also been drawn up; these are intended to ensure that the targets referred to in Directives 2008/98/EC, 1999/31/EC, 94/62/EC, 2002/96/EC, 2012/19/EU and 2006/66/EC are met.

Because the first National Waste Management Plan covers only municipal waste, Slovenia is preparing another plan which covers all waste streams and which will replace the extant Operational Programme for MSW. The new plan is due to be completed in 2016.

The types of waste to be covered in the new plan include: municipal waste, paper, kitchen waste, plastic, glass, metals, bio-waste, textile, wood, oil, WEEE, non-biodegradable waste, hazardous waste (batteries), and others. However, a recent review of the draft WMP suggested this was not compliant with the WFD, as required information on waste shipments and special arrangements (waste oils and hazardous wastes) had not yet been included.<sup>5</sup>

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plan(s)

The Operational Programme on Municipal Waste Management (OP RKO), in accordance with Directive 2008/98/EC, includes an analysis of the current situation in the area of municipal waste management, and the measures aimed at improving environmentally acceptable preparation for the reuse, recycling, recovery and disposal of municipal waste. As noted above, municipal waste management scenarios for the periods leading up to 2020 and 2030 have also been drawn up as the basis for ensuring compliance with obligations under relevant waste Directives.

In the Operational Programme on Municipal Waste Management (OP RKO), the areas of the collection, preparation for reuse and recycling, treatment, energy recovery and disposal of municipal waste are addressed in relation to 12 regions across the entire country.

In accordance with the waste hierarchy and the objective of creating a recycling society, OP RKO measures are directed towards offering the lowest possible support to the landfilling of municipal waste. An order of priority of municipal waste management procedures has been drawn up which has deviated from the waste hierarchy only on account of the restrictions dictated by technical feasibility and economic practicability. The OP RKO places emphasis on the fact that the thermal treatment of solid municipal waste must be energy efficient to the extent that it is regarded as a recovery procedure.

The OP RKO included discussion of the following:

- Confirmation that household kitchen waste (20 01 08) and green garden cuttings (20 02 01), are to be collected together in a special container separately from other separately collected municipal waste and mixed municipal waste fractions as part of implementation of the compulsory public municipal waste collection service;

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<sup>5</sup> BiPRO (2014) Detailed evaluation report for assessing the waste management plan of Slovenia – National 3 December 2014, EC



- Packaging which is made from plastic, metal or composite materials and in household waste; in the handling process, this waste is separated into individual packaging materials (different plastic materials, iron and steel, aluminium, composite materials such as Tetrapak);
- Waste paper and small items of cardboard waste, including small items of waste paper or cardboard packaging;
- Owing to the characteristics of individual categories of electrical and electronic equipment (chiefly because of the presence of dangerous substances and the method of recovery), WEEE is collected separately in five different collection/recovery groups:
  - waste cooling and freezing appliances (20 01 23\*; EEE Categories 1 and 10),
  - waste television appliances, monitors and cathode ray tubes (20 01 35\*; EEE Categories 3 and 4),
  - waste large household appliances (20 01 36; EEE Categories 1, 5 and 10),
  - waste small EEE (20 01 36; EEE Categories 2–5 and 7–9),
  - waste gas lamps (20 01 21\*; EEE Category 5).

Pursuant to Article 149 ZVO-1, the government of Slovenia can define the mandatory scope of municipal public utility services in relation to communal waste, thus broadening the possibility for private investment in this sector. The Operational Programme for municipal waste establishes the need for additional infrastructure for the biological treatment of biowaste generated by households, as well as a new system of mechanical and biological treatment centres for the treatment of mixed MSW. Furthermore, the Programme establishes the need for new energy from waste treatment infrastructure.

In order to ensure Slovenia's self-sufficiency in the treatment and disposal of mixed municipal waste, the OP RKO defines a network of landfills and facilities for the disposal and treatment of mixed municipal waste, taking into account the geography and social circumstances, and the need for landfills and treatment capacities. The infrastructural municipal waste management network as defined provides Slovenia with self-sufficiency in the recovery and disposal of municipal waste.

Implementation of the OP RKO also ensures a reduction in greenhouse gas emissions resulting from the putting of municipal waste to landfill; in formulating the measures, due regard was also paid to the requirements laid down for Slovenia under the strategy to reduce the amount of biodegradable waste sent to landfill from Directive 1999/31/EC<sup>6</sup>.

Slovenia is currently preparing a WMP covering the whole area of the Republic of Slovenia, which will update the situation on MSW and will also cover other waste streams. This is due to be adopted at the beginning of 2016.

### 1.4.2 Waste Prevention Plan

A waste prevention plan has still not been adopted. In October 2014, the Ministry for Environment opened a public consultation on the matter.<sup>7</sup> In June 2015 a stakeholder meeting was held regarding green waste management, which included discussion of waste

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<sup>6</sup> Report of the Republic of Slovenia on the implementation of Directive 2008/98/EC of the European Parliament and of the Council on waste, 12 December 2010–31 December 2012

<sup>7</sup> [http://www.mkgp.gov.si/nc/si/medijsko\\_sredisce/novica/article//7707/](http://www.mkgp.gov.si/nc/si/medijsko_sredisce/novica/article//7707/)

prevention. However, we understand from the workshop that the waste prevention plan is currently in preparation and is due to be adopted at the beginning of 2016. The Ministry presented a draft waste prevention program on 21 December 2015, which is still open for public consultation at the time of writing. The Ministry held two public debates in January 2016. The debate was intended for stakeholders and municipal companies as well as non-governmental organizations and the wider interest public. The program is expected to commence at the end of April 2016.

## 1.5 Progress towards the Fulfilment of Targets

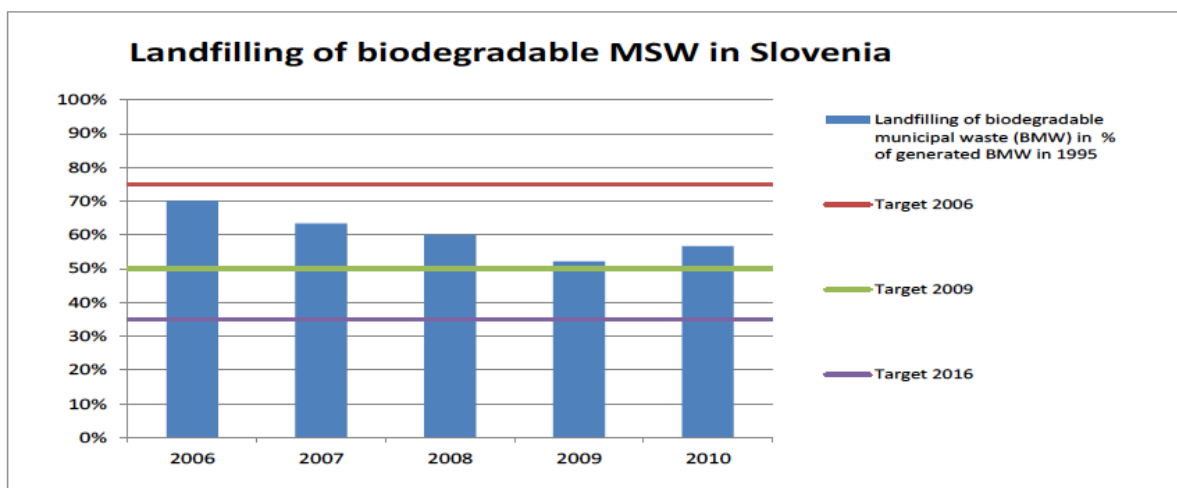
### 1.5.1 Landfill Directive Targets

According to the EU Landfill Directive, Member States have to reduce the amount of biodegradable municipal waste (BMW) landfilled progressively through the years 2006, 2009 and 2016. Targets are related to the amount of BMW generated in the baseline year of 1995: in that year Slovenia generated 445,000 tonnes of BMW.

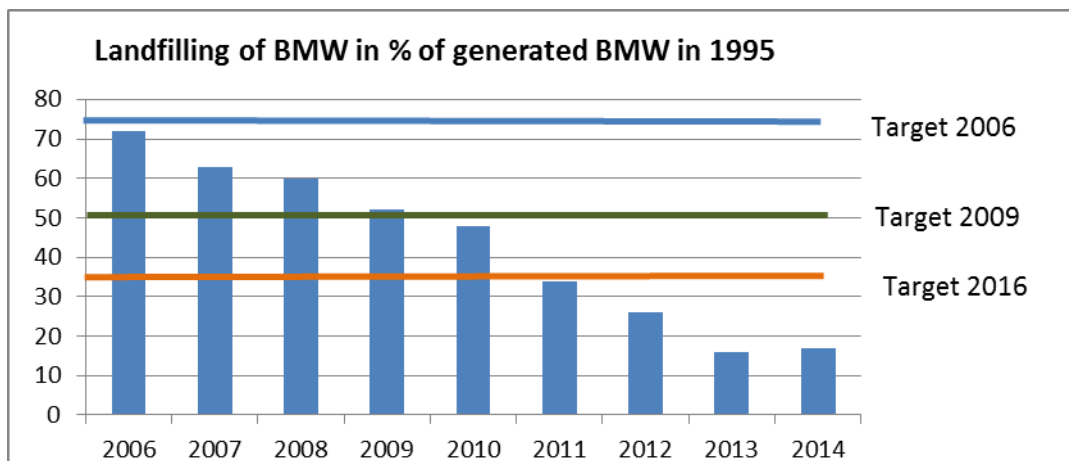
In 2006, the amount of BMW landfilled was 319,000 tonnes, or 72 % of the quantity generated in 1995. Therefore, the target value for 2006 was successfully reached. In 2009, 232,000 tonnes of BMW was landfilled, i.e. 52 % of the quantity generated in 1995, which means that the target for 2009 (50 %) was not fully reached. In 2010, 213.834 tonnes of BMW was landfilled, i.e. 48 % of the quantity generated in 1995, which means that the target for 2009 (50 %) was reached.

In July 2009 Slovenia applied for a derogation period of four years (a prolongation of the deadline for fulfilling the last of the 3 targets, so moving the target date back from 2016 to 2020) (SLO, SEA, 2012). Figure 2 indicates that Slovenia has improved its performance over time, but that some further progress will need to be made to fulfil the targeted value of 35 % by 2020.

**Figure 2: Landfilling of biodegradable MSW in Slovenia**



Source: EC, 2012 and Slovenia, 2012



In most of the period to 2015, the main contribution to meeting the landfill directive targets has come from recycling. By establishing a door to door system for the selective collection waste of municipal packaging, paper, glass and biowaste it has been possible to significantly reduce the amount of residual waste being landfilled. The development of door to door collection systems has also helped to reduce the amount of packaging waste, including paper and card, in residual waste.

More recently, and including through the Operational Programme for MSW, efforts are being made to ensure that residual waste is further reduced, and that more of the residual waste that is generated can be dealt with so that BMW landfilled is further reduced. The Operational Plan for municipal waste management provided for eight regional centres for waste management.

The Ministry of Environment and Spatial Planning is responsible for energy processing power fractions. Currently, there is only one location - Celje - where thermal treatment with energy recovery takes place<sup>8</sup>. The Court of Auditors has recently been critical of the Ministry for its performance in this regard, yet it may be the case that the slow pace of development in this regard has helped foster a more proactive approach to management of waste in the upper tiers of the hierarchy.

The Operational Programme provides for measures to reduce the share of biodegradable waste going to landfill<sup>9</sup>:

- Landfilled mixed municipal waste shall not exceed 18% TOC/kg dry substance.
- In 2020, the landfilled mixed municipal waste TOC content shall be approximately 14%/kg dry substance (the draft WMP foresees 15.49%/kg).
- An increase of MBT and composting/biogas installations to reduce biodegradable fractions in municipal waste.
- An increase in recycling of separately collected kitchen and green waste and the establishment of a market for good quality compost.
- Awareness raising on the proper handling of kitchen waste and home composting, and the provision of free composters.
- A possible raise of the landfill tax and the introduction of municipal taxes on mixed

<sup>8</sup> The operation is nevertheless classified as a disposal operation 'D10 – incineration on land'

<sup>9</sup> [http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo\\_okolja/operativni\\_programi/op\\_komunalni\\_odpadki.pdf](http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo_okolja/operativni_programi/op_komunalni_odpadki.pdf)

municipal waste.

Treated municipal waste may only be landfilled if it meets the prescribed conditions (calorific value does not exceed 6,000 kJ/kg of dry matter, TOCs do not exceed 18% of the weight of dry mechanically/biologically treated municipal waste and AT<sub>4</sub> does not exceed 10 mg O<sub>2</sub>/g of the dry matter of biodegradable waste).<sup>10</sup>

Exemption from the compulsory treatment of municipal waste (below the limit value referred to in the preceding Article) is, under Article 60 of the Decree, possible until no later than 2015 if the operator of the municipal waste management centre is also the operator of the municipal waste landfill site. In this case, the mechanical treatment or separation of the following types of waste shall be deemed to be the treatment of mixed municipal waste: waste metals, including waste metal packaging and waste plastics, including waste plastic packaging and other combustible fractions suitable for energy recovery.

Mixed municipal waste shall be deemed to have been treated if at least the following are separated and sent for recovery or disposal but not depositing 40% of the waste metals, including waste metal packaging, WEEE and waste batteries and 20% of the waste plastics, including waste plastic packaging, packaging from composite materials and other combustible fractions suitable for energy recovery relative to the proportion of these types of waste in the mixed municipal waste prior to treatment.

Following the treatment as described above, further biological treatment of the mixed municipal waste must be ensured to the extent that the annual quantity of the residual municipal waste sent for depositing is no more than 222 kg per inhabitant of the municipality for which the operator of the municipal waste management centre referred to in the first paragraph of this Article provides the public service of treatment of mixed municipal waste (which is in line with the quantities which the Republic of Slovenia is obliged to achieve in this period with regard to reducing the quantities of municipal waste put to landfill – Article 5(2) of Directive 1999/31/EC).

The quantity of biodegradable waste collected separately by public service providers has increased noticeably in the reporting period:

- 2010: 58 617 t (7% of municipal waste collected)
- 2011: 78 092 t (11% of municipal waste collected)
- 2012: 91 116 t (14% of municipal waste collected)
- 2013: 104 372 t (16% of municipal waste collected)
- 2014: 108 458 t (16% of municipal waste collected).

The operational programme also confirms that 26,000 tonnes of food waste was expected to be collected from restaurants in 2011; this material is not collected via the municipal collection service, and some of this is not composted due to animal by products regulations. The Ministry has confirmed that 45,000 tonnes of organic material was treated in total during that year, including material collected from other sources. A total of 48,000 tonnes of separately collected organic material was treated in 2014.

Slovenia achieved the target referred to in Article 5(2a) of the Directive before 2007; in 2010 it achieved the next target, i.e. a reduction in the amount of biodegradable municipal waste

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<sup>10</sup> Report of the Republic of Slovenia on the implementation of Council Directive 1999/31/EC on the landfill of waste 2010–2012

put to landfill to below 50% of the total amount, by weight, of the biodegradable municipal waste produced in 1995 (it reduced it to 48%). Capacities for the mechanical biological treatment of mixed municipal waste (around 340,000 tonnes/year) and the treatment of separately collected biodegradable waste (around 73,000 tonnes/year) will be secured by the end of 2015 with the help of cohesion funds.

Other measures which will support the meeting of targets include:

- Further promotion of the separate collection of biodegradable waste and paper, cardboard and their efficient recycling;
- The promotion of household composting;
- A prohibition on the depositing of separately collected municipal waste fractions, except for the residues produced by their recovery if these meet the conditions for the depositing of non-hazardous waste (with this also applying to packaging); and
- Compulsory treatment prior to depositing.
- The drafting of a waste prevention programme;
- Consistent adherence to the waste management hierarchy.

The Operational Programme on Municipal Waste (OP), which extends and tightens the conditions applying to the landfill of biodegradable substances, was adopted at the end of 2013. The measures contained within the Operational Programme were intended to ensure that the target for the depositing of biodegradable waste under Directive 1999/31/EC will be reached.<sup>11</sup>

Under Article 38 of the Decree on the Landfill of Waste, all landfill operators must take steps to reduce the spread of odours into the environment and prevent adverse impacts on human health due to:

- Emissions of odours, dust, organic and inorganic compounds and aerosols;
- Wind dispersal of light fractions of waste into the environment;
- Noise from the transfer of waste at or on the route to the landfill site;
- Birds, rodents and/or insects;
- Fires caused by spontaneous ignition.

Landfills must also be equipped with the means to prevent vehicles transporting waste from spreading dust and mud on public carriageways (Article 37(6) of the Decree on the Landfill of Waste).

It is during the procedure for the issuing of an environmental permit that the applicant is obliged to submit documentation proving that the disposal of waste will not cause excessive environmental pollution (points 1, 2 and 4 of Article 39(4) of the Decree on the Landfill of Waste make clear that the emission of pollutants to water, the air or the soil may not exceed the prescribed limit values; the procedures and methods of disposal of waste may not cause excessive environmental pollution and have adverse effects on the countryside; and that measures must be put in place to protect against uncontrolled events and to deal with and limit the consequences of ecological disasters). Requirements for the following are also checked: commencement of operation; waste disposal procedures and other conditions

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<sup>11</sup> Report of the Republic of Slovenia on the implementation of Council Directive 1999/31/EC on the landfill of waste (2010–2012)

of operation; the implementation of operational monitoring and other forms of control of environmental pollution; methods proposed for making regular checks of the landfill body and the operation of the landfill's technical facilities (points 3 to 6 of Article 40(1) of the Decree on the Landfill of Waste).

## 1.5.2 Waste Framework Directive Targets

### 1.5.2.1 Data Collection and Surveys

Through the regular survey under the **Annual Report on Collected Municipal Waste (KO-Z)**, the Statistical Office of the Republic of Slovenia (SURS), together with the Ministry of the Environment and Spatial Planning, collects data on the amounts of municipal waste collected, and its management.

Through the regular survey conducted under the **Annual Report on the Amount of Waste Brought to Landfill Sites (KO-U)**, SURS, together with the Ministry of the Environment and Spatial Planning, collects data on the amounts of municipal waste landfilled.<sup>12</sup>

With the Annual **Statistical Survey on Waste Generation in Production and Service Activities**, the collection of data on municipal waste and quantities of waste landfilled is carried out through a web application IJSVO. From 2014 onwards, the units responsible for reporting on waste collection and treatment have transmitted their data through the information system IS waste created by the Slovenian Environment Agency.

**The legal basis for the survey is provided by:**

- National Statistics Act (45/95 in 9/01)
- Annual Programme of Statistical Surveys (97/13)
- Decree on waste (37/15, 69/15)
- SI-STAT data portal, <http://pxweb.stat.si/pxweb/dialog/statfile1.asp>

Our understanding is that Slovenia has chosen to use Method 4 for reporting performance against the target under Article 11.

Slovenia, according to the National Statistics Office, has made **significant progress** in the field of the separate collection of waste: from 2010 to 2013, the recycling rate for packaging reported to Eurostat increased from 61% to 69%.<sup>13</sup>

Figure 3 shows the development of recycling of MSW in Slovenia in terms of total recycling, material recycling and organic recycling (compost and other biological treatment). The increase in recycling has been almost entirely linked to performance in respect of dry recyclables, which contributed 90% of the overall recycling performance.<sup>14</sup> In absolute terms, the increase in overall recycling was from 89,000 tonnes in 2001 to 364,000 tonnes in 2013.

Figures for the amount of packaging placed on the market are inconsistent with the amount of material appearing in the waste stream when calculated from the composition data – the latter being a much larger amount. Not all of the separately collected material is actually

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<sup>12</sup> See <http://www.stat.si/StatWeb/Common/PrikaziDokument.ashx?IdDatoteke=8092>

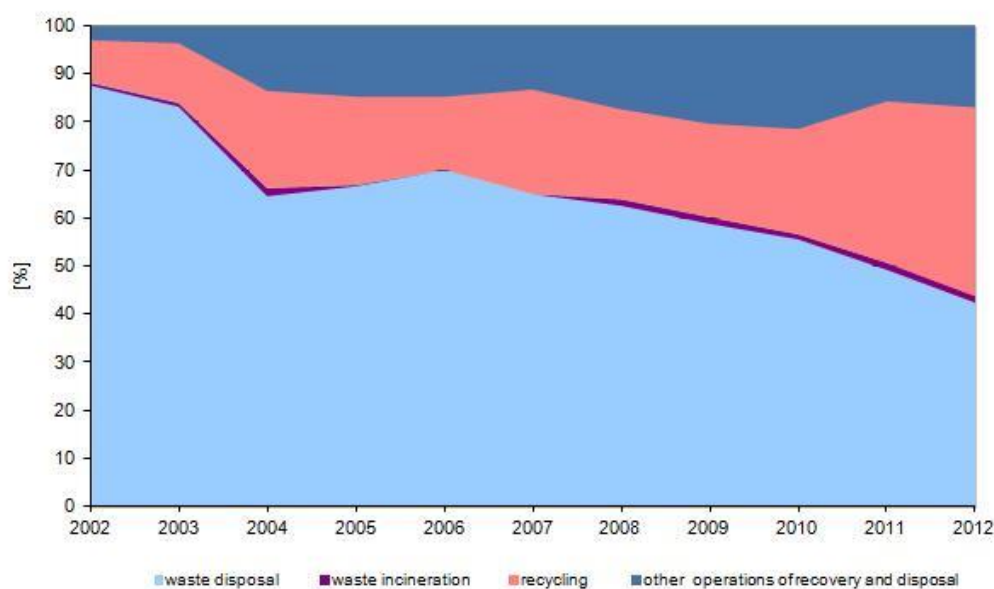
<sup>13</sup> Eurostat data available from <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=ten00063>

<sup>14</sup> <http://www.eea.europa.eu/publications/managing-municipal-solid-waste>

recycled material, and there appears to be a considerable gap between the quantities of waste generated and treated, which, in turn, affects the calculation of recycling rates. As a result the rates of plastic waste recycled also appear to be unrealistically high (consistent with this being calculated from the lower, “treated” figure). The Slovenian authorities are currently in discussions with the Court of Auditors with regards to the accuracy of the records kept by the Ministry; the final opinion of the Court has yet to be confirmed.

There is also a difference between the amount of waste generated, and the amount treated. In addition, different datasets report different amounts – the Eurostat data has a generation figure that is 20% higher than the internal dataset. In discussion at the workshop, the authorities confirmed that the latter difference was explicable in part because the higher amount to Eurostat also includes some commercial waste. The difference between treatment and generation relates to the Slovenian interpretation of the Eurostat methodology – it was further confirmed at the workshop that the ministry excludes pre-treated waste and recycling that is contaminated, as well as moisture loss from the MBT systems from the treatment figure.

**Figure 3: Management of Municipal Waste, 2002-2012 (%)**



Source: [http://kazalci.arso.gov.si/print?ind\\_id=653&lang\\_id=302](http://kazalci.arso.gov.si/print?ind_id=653&lang_id=302)

Notes – « other operations of recovery » include bulky waste management (where not recycled) and the recovery of specialist streams such as oils

## 1.6 Implementation of Specific Waste Framework Directive Articles

### 1.6.1 Article 4: Application of the Waste Hierarchy

In accordance with the waste hierarchy and the objective of creating a recycling society, measures in the Operational Programme (OP RKO) are directed towards offering the lowest possible support to the landfilling of municipal waste. An order of priority of municipal waste management procedures has been drawn up which only deviates from the waste hierarchy on account of the constraints of technical feasibility and economic practicability. Article 9 of the Decree on Waste states that the order of priority of the waste hierarchy

must be observed in the generation and management of waste. Any deviation from this order of priority is only possible for individual waste streams to which special regulations apply if due regard is paid to the entire lifecycle of the substances and materials and the requirement to reduce environmental burden.

The waste management programme is set out in Articles 11, 12 and 13 of the Decree on Waste. Article 11(2) states that measures are to be determined in the waste management programme, based on an analysis of the existing waste management situation, which are necessary for making improvements in environmentally sound preparation for the reuse, recycling, recovery and disposal of waste for the entire territory of the Republic of Slovenia.

Requirements regarding the preparation and the content of this programme are laid down in Article 12 of the Decree on Waste, with the first paragraph of this Article stating that the waste hierarchy is one of the bases for the preparation of a waste management programme. The Decree stipulates that in the drafting of operational environmental programmes for waste management, the following order of priority measures should be observed:

- preventing waste generation;
- preparing waste for reuse;
- recycling;
- other recovery processes; and
- waste disposal.

In accordance with EU legislation, there are prohibitions on the use of certain hazardous substances in batteries, electrical and electronic equipment, cars and packaging.

Instruments have been developed to introduce ecological design/ecodesign for these waste streams – for example, an environmental tax (which acts more like a non-compliance fee) has been introduced for: the use of lubricating oils, generation of end-of-life motor vehicles, generation of waste electrical and electronic equipment (with the generation of waste batteries and accumulators also included in this context), generation of packaging waste (with the generation of graveside candle waste also included in this context), generation of end-of-life tyres, and waste disposal.

The second paragraph of the Article lays down the measures that must be provided by this programme:

- Measures to promote preparation for reuse, in particular by promoting the establishment of and support for reuse and repair networks, the use of economic instruments, public procurement criteria, quantitative targets, or other measures;
- Measures to promote high-quality recycling and systems for the separate collection of waste adequate for achieving the required recycling quality standards, where this is technically, environmentally and economically practicable.

The waste prevention programme is referred to in Articles 15 and 16 of the Decree on Waste. Under Article 16, the waste hierarchy is also one of the bases for the preparation of this programme, which must be based on the principle of breaking the link between economic growth and environmental impact. The waste generation prevention programme should:

1. Set targets for preventing the generation of waste;
2. Describe and assess existing waste prevention measures from the point of view of achieving the targets referred to in the previous point;



3. Identify and assess the required additional measures for achieving the targets referred to in point 1 so that appropriate measures are selected to prevent waste;
4. Lay down measures to promote the reuse of products, in particular by promoting the establishment of and support for reuse and repair networks, the use of economic instruments, public procurement criteria, quantitative targets, or other measures;
5. Lay down qualitative and quantitative reference criteria, as well as targets and indicators for monitoring the implementation of measures and assessing the progress made in preventing the generation of waste.

The OP RKO aims to meet the requirements imposed by the environmental targets of at least 50% preparation for the reuse and recycling of municipal waste (at least for waste fractions of paper, metal, plastic and glass). The measures contained in the OP RKO are intended to minimise residual waste, with priority placed on preparation for reuse and recycling.

A tax on pollution caused by landfilling was introduced for waste disposal. Also a financial guarantee must be provided by landfill operators as part of the process of acquiring their environmental permit, which can be cashed in by the authority which issued the permit in the event of irregularities in the closure and after care of landfills.

In order to reduce quantities of biodegradable waste, at the same time as introducing a limit on the volume of biodegradable waste three more regulations have been adopted:

- Decree on biodegradable kitchen waste and garden waste management Official Gazette, No. 39/10 and changes);
- Decree on the treatment of biodegradable waste and the use of compost or digestate (Official Gazette, No. 99/13 and changes); and
- Decree on the management of waste edible oils and fats (Official Gazette, No. 70/08).

Through these measures, Slovenia became one of the first countries to have introduced compulsory operations in the treatment of biodegradable waste and conditions for its use, as well conditions for placing treated biodegradable waste on the market (Decree on biodegradable household waste management (Official Gazette, No. 62/08 and changes, expiry date 2010).

Amendments were also made to individual regulations in 2006 and 2007 which bring in the polluter pays principle and extended producer responsibility for the following waste streams: waste packaging; waste plant protection products containing hazardous substances; and waste electrical and electronic equipment. In 2008 regulations also introduced extended producer responsibility for: waste batteries and accumulators, grave side lights and waste medicines, and from 2009 for end-of-life car tyres. After the concession contracts, awarded in accordance with Decree on the manner, subject of and conditions for performing public utility service of the management of end-of-life vehicles, had expired in 2012, an extended producer responsibility scheme was introduced for end-of-life vehicles in accordance with Decree on end-of-life vehicles.

The Waste Prevention Plan is due to be adopted at the beginning of 2016. Waste prevention activity current takes place in the form of environmental campaigns, the implementation of programs in schools (Eco Schools) and the activities of environmental NGOs. Municipalities focus their efforts primarily on awareness raising campaigns directed towards public waste services users (promoting the collection of hazardous waste, textiles, etc.).

## 1.6.2 Article 10: Recovery

The recovery of waste is laid down in Article 22 of the Decree on Waste. Waste must be recovered, whereby recovery must be carried out in accordance with the requirements of the waste hierarchy, and the requirement to protect the environment and human health. Preparation for reuse has priority over recycling and other waste recovery procedures, while recycling has priority over other recovery procedures, except for preparation for reuse. Waste may, nevertheless, be disposed of, and not recovered, if:

- The State of the art recovery technology does not allow it;
- There is no possibility of the waste or its components being used further;
- The recovery of the waste would cause greater environmental burden or a greater threat to human health than its disposal in relation to:
  - emissions of substances and energy into the air, water or soil,
  - the use of natural resources,
  - the energy that the process requires or that it is possible to obtain,
  - or the level of hazardous substances remaining in the waste residue after recovery;
- The costs of waste recovery are disproportionately higher than the costs of disposal—which is not applied to the putting of waste to landfill in accordance with the Decree on the Landfill of Waste (OGRS, 61/11).

Article 18 of the Decree on Waste stipulates that paper, metal, plastic and glass waste, and waste for which a system of separate collection has been established under a special regulation governing the management of individual streams or types of waste, must be collected separately. The Decree also stipulates that other waste must also be collected separately where this is technically, environmentally and economically practicable and that it may not be mixed with other waste or other materials with different properties if this enables its recovery or if it is required in order to simplify or improve recovery. It is not explicitly determined when the separate collection of waste is not deemed practicable for the above reasons.

## 1.6.3 Article 11: Reuse and Recycling

The OP RKO aims to meet the requirements imposed by the environmental targets of at least 50% preparation for the reuse and recycling of municipal waste (at least for waste fractions of paper, metal, plastic and glass). Given the fact that waste, and particularly municipal waste, is still predominantly sent to landfill in Slovenia, the measures contained in the OP RKO are intended to redirect waste from landfills to other procedures, with priority placed on preparation for reuse and recycling.

The objectives of the OP RKO regarding preparation for the reuse and recycling of municipal waste are specified using two scenarios for waste paper, plastic, glass and metal and kitchen waste:

- 1) a scenario of the minimum amount that ensures achievement of the environmental objectives of Directive 2008/98/EC; and
- 2) a scenario of the practicable amount, where the proportion of separately collected kitchen waste is higher, which ensures a lower volume of mechanical/biological treatment of mixed municipal waste prior to its putting to landfill in order to achieve the environmental targets of Directive 1999/31/EC.

Under the guidelines of the OP RKO, a network of social enterprises must be established by 2020 charged with acting as intermediaries in the reuse and repair of used products (in particular, furniture, certain types of building fittings, and electrical and electronic equipment) which are no longer required by their holders but which they do not intend to discard. All separate fractions suitable for preparation for reuse must be directed to this network. The planned proportion of municipal waste to be delivered for preparation for reuse in 2020 will constitute approx. 0.5% of all collected municipal waste by volume (around 5,000 t/year).<sup>15</sup>

In the last few years a network of re-use and repair centres<sup>16</sup> has been established on a private initiative in Slovenia for the following material flows:

- Textiles
- Furniture
- Household equipment
- Other.

The network will contribute to reach the 2020 recycling targets compared to the 2011 status (minimum amount scenario). REUSE Network operates with the financial support of the EU program of employment of vulnerable groups. REUSE Network includes 9 centres, is a member of the international network RREUSE, and works as a social enterprise (excluding support programs without co-financing for waste reduction).

Reuse Centre Ltd. Social Enterprise is the first social enterprise in Slovenia. It was registered in 2012 and performs the activities of reuse. Reuse Centre Ltd. operates as a social enterprise of type B by integrating target groups conducting the activities of reconstruction of equipment and accessories and implementing upcycling, which creates value-added products. The primary activity of the social enterprise is training disadvantaged persons and assisting their integration into society. Reuse Centre Ltd. has developed a new model for the implementation of socially responsible entrepreneurship in Slovenia which connects municipalities and public waste management companies, allowing for the development of new green jobs and promoting resource savings in practice.

The 'Order on the management of separately collected fractions in the public service of urban waste management' determines the minimum scale and content of separately collected fractions, which have to be assured by the local public municipal waste treatment service. This ordinance determines the minimum standards for the system of separate waste collection, so municipalities have the option to intensify the standards and determine even wider scope for their separate collection activities. The remaining waste (i.e. beside that which is separately collected) is collected as mixed municipal waste. The ordinance established also the requirements on infrastructure for the separate collection of the hazardous fractions of municipal waste.

Under the minimum amount scenario in the operational programme, 59.8% of all municipal waste will be collected separately for the purpose of reuse and recycling by 2020; under the

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<sup>15</sup> Report of the Republic of Slovenia on the implementation of Directive 2008/98/EC of the European Parliament and of the Council on waste 12 December 2010–31, December 2012

<sup>16</sup> <http://www.cpu-reuse.com/>

practicable amount scenario, the proportion of municipal waste collected separately will rise to 63% by 2020.

In order to achieve the objectives applying to the preparation of municipal waste for reuse and recycling, the majority of municipalities exceeded the minimum standards for the infrastructure for the separate waste collection from the Ordinance on the 'door-to-door' waste reception system for the mixed packaging waste. Besides, public municipal waste collection services must receive bio-waste (kitchen waste and biodegradable garden waste from households) from waste producers under the 'door-to-door' waste reception system, waste paper and waste glass, including waste packaging at collection facilities and all separate municipal waste fractions at collection centres to which these waste can be delivered, including garden (e.g. branches) and bulky waste. The OP RKO also envisages an increase in the household composting of bio waste to around 8,000 tonnes/year by 2020.

The maximum frequency of collection for mixed packaging (paper, metal, plastic and composed packaging collected through a door to door system) is once every 2 weeks, with municipalities providing: a biowaste collection twice a week in small buckets; a weekly collection of plastic and cans in 60 l sacks; and a fortnightly collection of paper and card in a 140 l bin. There is a dense network of bring sites for the collection of glass containers and waste paper.

The municipal company which performs the public service of municipal waste collection has to assure that collection points are provided for the separate collection of:

- Paper and cardboard;
- Waste packaging glass;
- Waste packaging plastic and composites; and
- Waste packaging metals.

Collecting points for separately collected waste should normally be provided in residential areas, as well as at major stores and retail centers, health centers, hospitals, schools and kindergartens. Collection points should be organised for every 500 inhabitants in town areas and large housing settlements.

Recycling and composting together accounted in 2013 for 61% of waste treatment in Slovenia and 43% of waste generation<sup>17</sup>. Slovenia is on course to achieve the recycling target of 50 % by 2020. Also, it can be said to have established separate collection for paper, metal, plastic, glass (and other types of waste).

#### **1.6.4 Separate Collection in the Centres for Separate Waste Collection**

In accordance with the ordinance on the management of separately collected fractions in the public service of urban waste management, in the area of each and every municipality and settlement with more than 8,000 residents there has to be at least one collection centre. This is not true for those areas with less than 3,000 residents if the public service makes it possible that producers of municipal waste can deliver their waste to the collection centre of a nearby municipality. For settlements of more than 25,000 residents a minimum

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<sup>17</sup> Eurostat, March 2015. <http://ec.europa.eu/eurostat/documents/2995521/6757479/8-26032015-AP-EN.pdf/a2982b86-9d56-401c-8443-ec5b08e543cc>

of two collection centers have to be established, and for settlements of 100,000 residents or more, the number must be at least one for every 80,000 residents.<sup>18</sup>

The materials separately collected at these centres are:

- Paper and cardboard of all types and sizes, together with paper and cardboard waste packaging
- Glass of all sizes and shapes, together with glass waste packaging
- Plastic, together with plastic and composite waste packaging
- Waste metals, together with metal waste packaging
- Wood, together with waste wood packaging
- Clothing
- Textiles
- Cooking oil and grease
- Paints, inks, glues and pitches which do not contain hazardous substances
- Detergents without hazardous substances
- Batteries and accumulators, which are not classified in groups 16 06 01, 16 06 02 or 16 06 03
- Waste electric and electronic equipment without hazardous substances
- Bulky waste.

**Collection of bulky waste** is carried out at both collection centers and special collection spots.

**Municipal waste sorting** of at least sorting of paper, cardboard and other fractions—such as waste packaging and hazardous waste—must be established).

Municipal waste service companies have to ensure that waste packaging, which is treated separately in the centres for separate waste collection, or which comes from sorting plants, is regularly handed over to the company responsible for packaging and waste packaging handling. This is true also for packaging polluted with **hazardous waste**, which has to be separately collected in the centres and mobile collecting points or by sorting in the sorting plants. This service should be performed by the municipal company without compensation.

Separate collection of waste is increasingly carried out through a system of door to door collection, which has enabled a significant reduction in residual waste and an increase in the separately collected fractions.

#### 1.6.4.1 Collection of Packaging Waste for Recycling

In Slovenia, the field of packaging waste is regulated by the Decree on packaging and packaging waste handling,<sup>19</sup> which covers the requirements of Directive 94/62/EC on Packaging and Packaging Waste. Responsibility regarding the management of packaging waste is placed directly on manufacturers, packers, importers, distributors and end-users of products. In Slovenia, these can fulfil their obligations individually or through a collective compliance scheme.

These entities have to ensure the proper management of packaging waste and must meet prescribed environmental objectives. Packaging and packaging waste management in

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<sup>18</sup> <https://www.uradni-list.si/1/content?id=30158>, Article 15

<sup>22</sup> <http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV6416>

Slovenia is regulated in accordance with “The Producer Responsibility Principle”. It is obligatory for all packaging producers to take responsibility for the packaging waste resulting from all those products they place on the market.

Packaging producers are defined as:

- Manufacturers (meaning a person who manufactures raw materials for packaging);
- Packers/fillers (meaning a person who puts goods into packaging);
- Importers (meaning a person who imports packaging or packaging materials into Slovenia); and
- Distributors (meaning a person who supplies packaging to a user or a consumer of that packaging, whether or not filling of the packaging has taken place at the time of the supply).

In accordance with the Packaging and Packaging Waste directive and national Decree on packaging and packaging waste handling, these responsibilities are also supplemented with goals:

- To ensure the recovery of packaging waste, including energy recovery, for a minimum of 60% of the total weight of packaging waste;
- To recycle between 55% and 80% of the total weight of packaging waste;
- To ensure the following recycling shares for individual types of packaging materials included in the total weight of packaging waste:
  - 60% of weight for glass
  - 60% of weight for paper and cardboard
  - 50% of weight for metals
  - 22.5% of weight for plastic (only material which is recycled back into plastic is included)
  - 15% of weight for wood

Packaging producers can choose between two possibilities<sup>20</sup>:

- To organize their own system for collecting and recycling packaging waste (INDIVIDUAL SCHEME); or
- Join a collective compliance scheme, organized by a registered company, to ensure the collecting and recycling of packaging waste for multiple packaging producers.

The collective compliance schemes in place are: Interseroh d.o.o.; SLOPAK d.o.o.; Unirec d.o.o.; Recikel d.o.o.; Gorenje Surovina d.o.o.; and Embkom d.o.o.

The most recent performance data for packaging are given below. In our view, there are reasons to doubt the figures for packaging waste placed on the market / in the waste stream. The total quantity of packaging waste is reported as 202kt in 2012. Taking into account the composition of municipal waste, however, the reported figure appears to be lower than would be expected under reasonable assumptions regarding the packaging content of municipal waste. The plastic packaging recycling rate is, in particular, extremely high by EU standards: our estimates would suggest it is more likely to be around half the reported rate.

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<sup>20</sup> See <http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV6416>

### 1.6.5 Article 14: Costs of Waste Management

Article 25 of the Decree on packaging and packaging waste handling lays down the obligation to manage waste packaging. The receipt of waste packaging from public service providers, including the costs that a packaging waste management company is obliged to pay public service providers, the receipt of packaging waste directly from distributors or end-users, and the reuse, recovery or disposal of received packaging waste must be paid for by:

- Fillers, for packaging in which goods are packaged which they themselves use as end-users of the packaged goods or place on the market;
- Acquirers of goods, for packaging in which goods are packaged which they themselves use as end-users or place on the market;
- Packaging producers, for packaging not destined for the fillers referred to in the first indent which they place on the market or use themselves (service packaging);
- Acquirers of packaging, for packaging not destined for the fillers referred to in the first indent which they place on the market or use themselves (service packaging).

If the filler or acquirer of goods has not assumed the obligation of managing packaging waste for packaged goods, this obligation must be assumed by the trader supplying the goods to a distributor. The obligation to manage packaging waste does not apply to packaging exported to third countries or removed to Member States as packaging or as packaged goods.

Discussion at the workshop confirmed that the separately collected material is provided to the packaging companies free of charge – the public authorities are, for the most part not able to ask for money. An exception is the situation where the packaging company is not able to take the material for some reason, such that the authority would need to store it. Where the public utility is required to store such materials for more than 7 days the packaging company meets the cost of this storage. The packaging company also determines the revenue price obtained for the selling of the materials. Such a system means in effect that the local authorities are bearing a significant proportion of the costs of the packaging compliance scheme in Slovenia. Furthermore, there are indications that the packaging actors are not reporting the data correctly and that there is a considerable amount of packaging waste for which the producers are not contributing financially.

Other costs of waste management borne by the municipalities are regulated in accordance with the Decree of tariff system for public service on the environmental field.

Slovenian municipalities have introduced elements of variable charging for those on the door to door system:

- Some bin charges vary depending on the size of the receptacle – those opting to use smaller residual waste bins are charged less;
- Those opting for home composting are not charged for the biowaste bin.

It was also confirmed at the workshop that the cost of landfilling ranges from between €60-100 / tonne – this includes the cost of the pre-treatment at the MBT facilities. A tax of €11 / tonne is also applied to landfilled tonnages (discussed further in Section 1.7).

### 1.6.6 Article 22: Encouraging the Separate Collection of Biowaste

Under the Environmental Protection Act (ZVO-1), municipal waste is defined as waste from households or waste by nature or composition similar to it and generated by manufacturing, trade, service or other activities and from the public sector. Under point 1 of Article 3 of the

Decree on Waste, biological waste is defined as biodegradable waste from gardens and parks, food and kitchen waste from households, restaurants, catering activities and retail establishments, and comparable waste from food production establishments. Under point 2 of Article 3 of the Decree on waste landfill, biodegradable waste is any waste which may decompose aerobically or anaerobically, such as biodegradable kitchen waste and waste from parks and gardens, paper and cardboard and other municipal waste which decomposes when exposed to anaerobic or aerobic decomposition processes.

Under Annex 5 to the Decree on the Landfill of Waste, biodegradable waste includes:

- Waste paper, cardboard and textiles;
- Waste consisting of green biomass and natural wood generated as waste from gardens and parks;
- Waste food and organic waste;
- Waste from the processing of wood, and other waste consisting of wood, bark, cork and straw.

The Decree on biodegradable kitchen waste and garden waste management lays down the obligations and rules of conduct applying to biodegradable kitchen waste and green garden waste generated in households (municipal waste) and from the performance of a commercial activity. A household producer of biodegradable waste has the option of choosing household composting if they wish so or if they have the possibility of doing so; if they do household composting, their monthly biodegradable waste management fee is reduced. The compulsory public municipal waste collection service is obliged to encourage household producers of biodegradable waste to undertake household composting and to make them aware of the correct separate collection of biodegradable waste in accordance with the requirements of the above-mentioned decree. Biowaste is collected in general from households every fortnight in the winter, and every week in the summer.

A producer of non-household green garden waste must manage this waste in accordance with the Decree on waste; they may also compost it themselves. A producer of kitchen waste in the catering sector must separate this waste and deliver it to a waste collector. The collector must ensure that this waste is recovered in accordance with the Decree on the treatment of biodegradable waste and the use of compost or digestate. This Decree lays down requirements for the recovery of biodegradable waste into compost or digestate in a manner that is safe for the environment and for human health, and introduces a new procedure for defining end-of-waste (EoW) criteria, for the placing of compost or digestate on the market.

No measures were taken to promote the use of environmentally safe materials produced from bio-waste in the reporting period.

Obligatory treatment of biological household waste which originates from households, and kitchens or canteens from the industry, craft and service industries, is prescribed by the ordinance for the treatment of organic household waste. A producer of kitchen waste in the catering sector must collect waste food separately and deliver it to a waste collector, in accordance with the Decree on the treatment of biodegradable waste and the use of compost or digestate. The Decree lays down requirements for the recovery of biodegradable waste into compost or digestate in a manner that is safe for the environment



and for human health, and introduces a new procedure for defining end-of-waste (EoW) criteria, for the placing of compost or digestate on the market.

The Decree<sup>21</sup> determines the minimum scale of obligatory municipal public service for the collection and transportation of municipal waste in the field of household waste treatment. It also determines the content of treatment, which has to be ensured for separately collected fractions of municipal waste classified with number 20 01 08, according to the regulation on the waste treatment.

Article 3 of the Decree defines the term household composter (a box for the composting of waste plants from gardens and household waste in a garden which belongs to one or more households with a joint garden with the exact purpose of using the compost in this same garden). The public service of collection and transport of municipal waste is obliged to provide to households which do not possess their own composter separate collection and release of biodegradable household waste under the terms described above.

The Operational Programme provides for the following:<sup>22</sup>

- An increase in recycling of separately collected kitchen and green waste and the establishment of a market for good quality compost;
- An increase in composting/biogas installations to treat separately collected biowaste;
- Awareness raising on the proper handling of kitchen waste and home composting, and the provision of free composters.

According to the operational programme, the quantity of biodegradable waste collected separately by public service providers has increased noticeably in the reporting period:

- 2010: 58 617 t (7% of municipal waste collected)
- 2011: 78 092 t (11% of municipal waste collected)
- 2012: 91 116 t (14% of municipal waste collected)
- 2013: 104 372 t (16% of municipal waste collected)
- 2014: 108 458 t (16% of municipal waste collected).

As was indicated previously, almost 48 thousand tonnes of biowaste was treated in composting and biogas plants in 2014.

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

Environmental targets for waste management in Slovenia have been harmonised with EU targets.

As well as measures outlined above in respect of developing reuse networks, and prescribing minimum services for separate collection, Slovenia has a landfill tax. On the basis of Article 80 of the Environmental Act at the time (Official Journals of the RS No 32/93, 1/96, 9/99, 56/99, 22/00) the Government of the Republic of Slovenia in August 2001 adopted the *Decree on the waste disposal tax* (Official Journal of the RS 70/2001). The way

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<sup>21</sup> Waste Regulation, <https://www.uradni-list.si/1/content?id=121864>

<sup>22</sup> [http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo\\_okolja/operativni\\_programi/op\\_komunalni\\_odpadki.pdf](http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo_okolja/operativni_programi/op_komunalni_odpadki.pdf)

in which revenues are used was changed in 2004. The legal base for the revised tax was Articles 112 and 113 of the Environment Protection Act.

Until 2010, the tax was based on a formula which related to whether or not the waste was inert, non-hazardous or hazardous, and the potential of the waste to generate methane. It was also possible to gain a reduction in the tax rate where gas was collected for the purpose of generating electricity. In 2010, the tax was revised (Decree on environmental tax for environmental pollution caused by waste disposal (Official Gazette RS, No. 70/2010). The tax no longer takes into account the potential of waste to generate methane. Now, the tax simply assigns a number of 'units of environmental burden' to each of inert, non-hazardous and hazardous waste (the numbers are 1, 5 and 10, respectively) and multiplies this figure by a tax rate per unit of environmental burden of €0.022. Hence, for a tonne of non-hazardous waste, the tax rate was (in 2011) €11 per tonne. Figures do show an increase of recycling since the landfill tax was introduced.<sup>23</sup>

It was suggested to increase gradually the tax (it is envisaged that the unit load on the environment, which is used to calculate the tax rate, will be increased from existing 0.0022 € to 0,006 € in 2014 and to 0,008 € in 2015/2016 (which equates to €40 per tonne of non-hazardous municipal waste). Discussion in the workshop confirmed, however, that no firm plans had been put in place for increasing the tax, although this is something that will be further considered in 2016 when the current plan is updated.

Until 2010, the collected tax went into the state budget; since October 2010, the tax revenue from municipal landfills has gone to municipalities and the revenue from industrial landfills has gone to the state budget. The environmental tax on waste is gradually to be shifted from municipal to state funds and used to finance closure and rehabilitation of old dumpsites. There is the possibility of a raise in the landfill tax and the introduction of municipal taxes on mixed municipal waste.

## 1.8 Investment in Waste Management Infrastructure

In the Operational Programme on Municipal Waste Management (OP RKO), the areas of collection, preparation for reuse, recycling, treatment, energy recovery and disposal of municipal waste are addressed in relation to 12 regions across the entire country.

Slovenia's Operational Programme on Municipal Waste Management projects the quantity of municipal collected by municipalities for the period 2011 to 2020. The projection foresees the quantity of MSW collected by public services rising from 708,392 in 2011 to 726,027 tonnes in 2015 and 746,343 tonnes in 2020, as is shown in Table 1-2.<sup>24</sup> This reflects assumptions that the annual quantity of municipal waste collected during the period 2012–2020 within the public service will grow steadily, so that in 2020 it will be approximately 5.3 percent greater than the amount in 2011. It also provides for an increase in home composting of approx. 8,000 tonnes. For the period 2020–2030, an increase in municipal

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<sup>23</sup> <http://www.cms-cmck.com/Hubbard.FileSystem/files/Publication/06f2315d-88d6-4e74-9add-a0e2c57ac543/Presentation/PublicationAttachment/9172a666-e76f-408e-95ff-a62b69a429c7/Waste%20Management%20in%20Central%20and%20Eastern%20Europe.pdf>

<sup>24</sup> *Eunomia (2013) for European Commission as reported within: Eunomia Research & Consulting / Copenhagen Resource Institute (2014) Development of a Modelling Tool on Waste Generation and Management – Appendix 1: Baseline Report, Final Report under Framework Contract ENV.C.2/FRA/2011/0020*

waste of 3 percent is predicted. This calculation appears to be based on a forecast made by the European Commission in its report on the implementation of the Thematic Strategy for prevention and recycling of waste, although it is not clear as to why this rate has been applied to Slovenia.

**Table 1-2: Estimated Growth Collected MSW – Operational Plan**

Year	Quantity of MSW Collected by municipalities (tonnes)	
	Tonnes	% year on year change
2011	708,392	-
2012	713,351	0.70%
2013	717,341	0.56%
2014	721,818	0.62%
2015	726,027	0.58%
2016	729,801	0.52%
2017	732,882	0.42%
2018	736,003	0.43%
2019	741,155	0.70%
2020	746,343	0.70%

*Note: The above calculations refer only to MSW collected by Public services, and do not account for other MSW collected by private collection companies. In 2011, 170,649 tonnes of municipal waste were collected by such companies*

The Operational Programme on Municipal Waste Management presents two scenarios for municipal waste management in Slovenia by 2020, which vary in respect of assumptions regarding the effectiveness of the separate collection of dry recyclables and biodegradable waste. The municipal waste management infrastructure requirements are based on these, and a network of facilities is envisaged, designed to give Slovenia self-sufficiency in the recovery and disposal of municipal waste. It should be noted that the draft Slovenian WMP includes a prediction for MSW generation in 2020 of 930 kt.<sup>25</sup>

In order to ensure Slovenia's self-sufficiency in the treatment and disposal of mixed municipal waste, the OP RKO defines a network of landfills for the disposal of waste and of facilities for the treatment of mixed municipal waste, taking into account geographically conditioned social circumstances, and the need for landfills and treatment capacity.

It is intended that Slovenia would be self-sufficient in the treatment of mixed municipal waste. The Ministry confirmed at the workshop that Slovenia would have 322,000 tonnes operational permitted treatment capacity (including new MBT plants) by the end of 2015 and an additional 55,000 tonnes of capacity is permitted but is not yet built). 2014 data indicates that there was 314,000 tonnes of mixed MSW collected. The MBT plants produce RDF using an aerobic/anaerobic biological process and also stabilise output to landfill.

Regarding MSW management, Slovenia plans to increase MBT treatment capacity from 73.8 kt in 2011 to 298.3 kt in 2020 (+304%); accounting for 33% MBT treatment of municipal

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<sup>25</sup> BiPRO, 2014; Detailed evaluation report for assessing the waste management plan of *Slovenia – National 3* December 2014, EC

waste generated. The Table below shows planned and implemented MBT facilities in Slovenia; Figure 4 shows the location of the planned MBT sites. Two sites, in Nova Gorica and Leskovec, did not bring forward projects in the manner originally planned. We note, in passing, that the total amount of municipal waste in Slovenia has shown a tendency to decline from 2012 onwards, which is also confirmed by Eurostat<sup>26</sup>. Data on treatment capacity from the draft WMP is presented in Table 1-3. The plan also provided information on the projected generation treatment and capacity which is shown in Table 1-4.

**Table 1-3: Municipal Waste Treatment Capacity from 2014**

MBT LOCATION	Slovenia
	MBT capacity (tonnes/year)
Simbio d.o.o. (Celje)	61,500
Snaga d.o.o. (Ljubljana)	175,500
Cero Puconci d.o.o (Prekmurje)	27,500
Kostak d.d. (Lower Sava)	45,000
Kocerod d.o.o. (Slovenj Gradec)	16,600
Ceroz d.o.o. (Hrastnik)	13,000
Komunala Slovenska Bistrica d.o.o. (Styria)	10,800
JK Komunala Laško d.o.o. (Savinja)	2,700
Total capacity	352,600

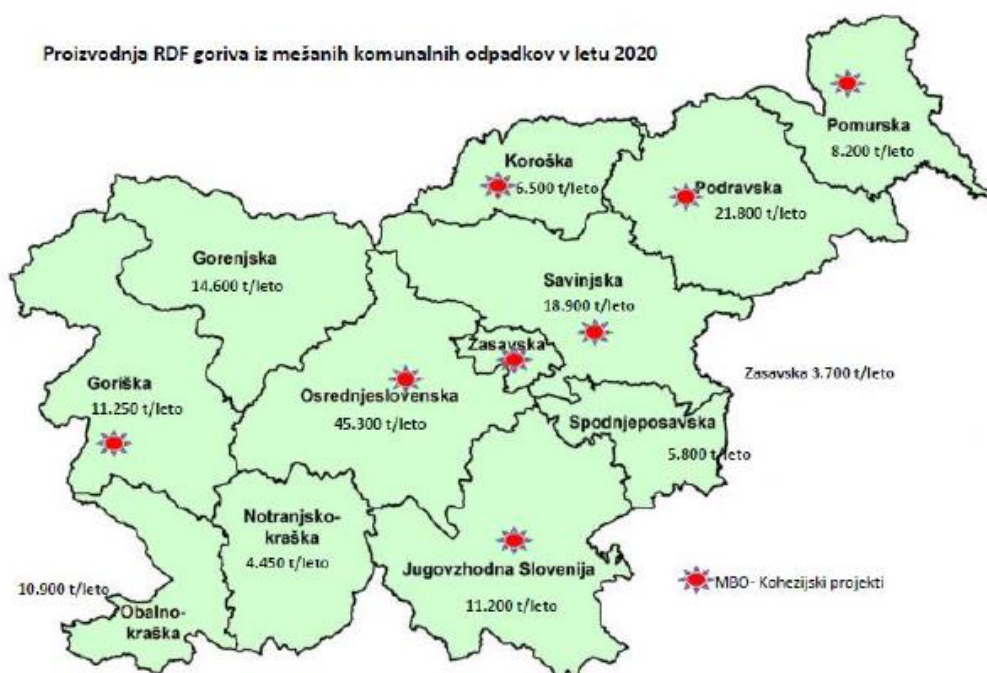
**Table 1-4: Projected generation**

	Projected generation of MW	MBT capacity needed (Scenario 1)	Incineration capacity needed (Scenario 1)
<b>2014</b>	891,708	314,760	
<b>2020</b>	903,625	261,340	78,631
<b>2030</b>	935,587	251,802	80,164

The operational program for municipal infrastructure amounted to around 491 million euros. To subsidize the investment in infrastructure for the processing and disposal of municipal waste during the period 2007–2013, 155 million euros was made available from EU cohesion funds. In the period 2014–2020, another 100 million euros of cohesion funding is expected in order to complete the projects. Other funds will come from state and municipal budgets. The operational program also provides for public-private partnerships.

<sup>26</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Municipal\\_waste\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Municipal_waste_statistics)

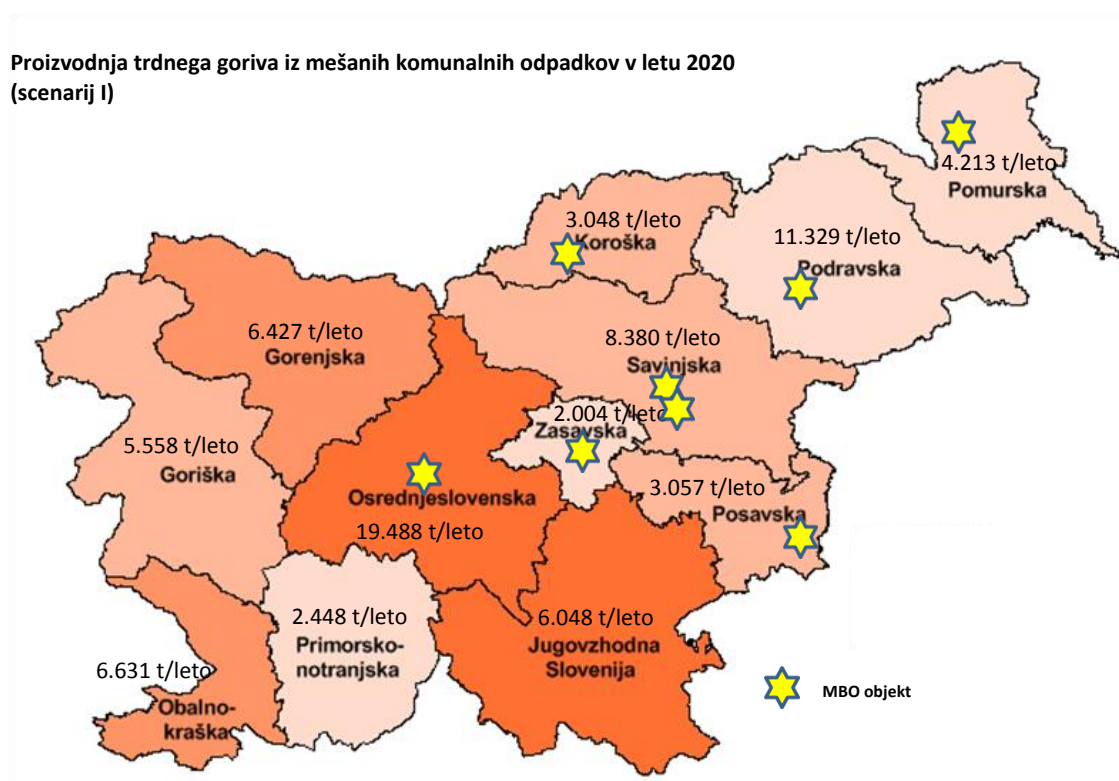
**Figure 4: Location of Proposed MBT Facilities in Slovenia**



Note: tonnages represent the projected quantity of RDF in 2020 under the 'extent practicable' scenario.

Source: Ministry of Agriculture and Environment Slovenia (2013) Operational Programme for Municipal Waste Management, 13 March 2013,

[http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo\\_okolja/operativni\\_programi/o\\_p\\_komunalni\\_odpadki.pdf](http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/zakonodaja/varstvo_okolja/operativni_programi/o_p_komunalni_odpadki.pdf)



As a result of the plan, the 'target on diversion of biodegradable waste' (50% reduction) will be fulfilled by 2020, and probably, by 2016 (so the application for the 4 year derogation may not have been necessary).

A number of composting facilities, with a total capacity of 138,000 tonnes/year by 2020, are under construction. The OP RKO also envisages, by 2020, an increase in the household composting of kitchen waste to around 8 000 tonnes/year. It is difficult to understand whether there is sufficient capacity for biowaste treatment at present because there are some discrepancies in the data such as that is reported in the operational programme and that reported to Eurostat. The relative amounts of food and garden waste are also not known with certainty – the Ministry confirmed at the workshop that these amounts are estimated - and as such it is also not possible to determine whether composting is the best treatment method for this material, or whether anaerobic digestion would be preferable.

## 2.0 Summary

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Considerable progress appears to have been made in recent years against the targets in the directives, such that Slovenia has a good chance of fulfilling the recycling target of 50% by 2020. In view of the amendments to legislation, the establishment of regional waste management centers, and the presence of a landfill tax, landfilled quantities of waste are expected to decrease.

Positive aspects of Slovenia's performance include the following:

- An updated waste management plan for Slovenia is due to be adopted early next year including the waste prevention plan which was not previously in place.
- Legislation to ensure separate bio-waste collection is in place and door to door collection systems have now been implemented in areas all municipalities. This dictates certain aspects of the collection system, such as the frequency of collection points. However, many authorities have put in place collection systems that exceed the requirements of the legislation, and some areas such as Ljubljana are performing very well. There is a very active NGO sector and as a result of this, a number of areas (including the city of Ljubljana) have developed Zero Waste policies, with more currently working towards the same achievement.
- There has been some introduction of pay as you throw systems, although the approach taken is a relatively simple one, focusing on the application of charges to the residual and biowaste bins.

Potential issues include the following:

- The governance of EPR schemes could be improved: local authorities bear a significant proportion of the cost of the EPR systems in respect of the separate collection system, and the EPR costs also do not cover the material collected through residual waste element or that which ends up as litter. Furthermore, there are indications that the packaging actors are not reporting the data correctly and that there is a considerable amount of packaging waste for which the producers are not contributing financially.
- There is a general lack of financial incentives to improve performance at a local level, with no fines or sanctions imposed at a local level if recycling targets are not met.
- Although a landfill tax is in place, the level of the tax is still relatively low, and there is no levy or tax on other forms of residual waste treatment, including thermal treatments or outputs from MBT systems other than those destined for landfill.

- Prices for key aspects of the system such as waste treatment are fixed by government, and local authorities do not have freedom in respect of setting charges for waste collection and treatment.
- There is a preparation for reuse target, but it is not clear what supporting measures have been put in place to ensure this is met.
- The data on waste management is lacking in clarity, and some work needs to be done to improve transparency. In some cases there are issues of consistency between different sources, it is difficult to interpret the approach undertaken when deriving the figures, and some definitions used by the statisticians are not clearly indicated. Following on from this, concerns about the quality of the recycling data have been raised by court of auditors. The performance data on biowaste collection systems is also unclear. This means it is difficult to be sure how good performance of the systems currently is, and thus the extent to which the targets have actually been met. It is also unclear how much treatment capacity will be needed in the future for the treatment of biowaste.

## 3.0 Information Sources

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BiPRO, 2014; Detailed evaluation report for assessing the waste management plan of Slovenia – National 3 December 2014, EC

Decree on the treatment of biodegradable waste (Official Gazette No.62/08 and99/13)

Decree on the treatment of biodegradable waste and the use of compost or digestate (Official Gazette, No. 99/13 and 56/15);

Decree on waste (Official Gazette, No. 37/15 and 69/15);

Decree on biodegradable kitchen waste and garden waste management (Official Gazette, No. 39/10);

EEA Report, 2013, Managing municipal solid waste. A review of achievements in 32 European countries. EEA Report, NO 2/2013

EEA Report, 2013, Managing municipal solid waste. A review of achievements in 32 European countries. EEA Report, NO 2/2013  
Environmental protection act (Ur.l. RS, št. 39/2006, 56/15) Official Gazette of the Republic of Slovenia No. 21/2001

*Eunomia (2013) for European Commission as reported within: Eunomia Research & Consulting / Copenhagen Resource Institute (2014) Development of a Modelling Tool on Waste Generation and Management – Appendix 1: Baseline Report, Final Report under Framework Contract ENV.C.2/FRA/2011/0020*

European Commission Detailed evaluation report – Slovenia – National (Final Version)  
Detailed assessment of Waste Management Plans – first batch, BiPRO, 2014

Municipal Waste Compliance-Promotion Exercise 2014-2015, Proposal to DG Environment of the European Commission under Framework ENV.C.2/FRA/2013/0023 SI-STAT data portal,

Waste Regulation (Ur.l. RS, št. 37/2015)



## 1.0 Summary of Recommendations

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Considerable progress appears to have been made in recent years against the targets in the directives, such that Slovenia has a good chance of fulfilling the recycling target of 50% by 2020. In view of the amendments to legislation, the establishment of regional waste management centers, and the presence of a landfill tax, landfilled quantities of waste are expected to decrease. However, issues with the waste management data mean that it is not possible to be sure as to the performance of the systems currently in place.

Recommendations for Slovenia – which should help ensure it meets the targets - can be summarised as follows:

1. Particularly if the cost of residual waste treatment remains relatively low, local authorities should be assigned recycling targets. Sanctions are suggested to give substance to the targets; as an alternative, Slovenia could introduce a residual waste levy such as is in place in Wallonia.
2. Particularly if targets are not devolved to the local level, Slovenia should act to increase the cost of residual waste treatment and disposal:
  - a. By increasing the current rate of landfill tax (leaving in place a lower rate of tax for the stabilised output from MBT systems)
  - b. By introducing a residual waste tax on the other non-recycled outputs from MBT systems (including outputs to thermal treatment).
3. Undertake a review of the performance of the producer responsibility scheme. This should cover the costs of the scheme, including consideration of whether the current centrally determined price structure is constraining investment in recycling. In addition, options should be explored to ensure quantities reported by producers match the quantities placed on the market and to reduce the amount of 'free riders'.
4. Increase the capacity of the Waste Division to ensure it has sufficient resources to fully implement the operational programme and associated plans as well as carry out related projects
5. Actions to support re-use activities, tackling such streams as food waste, plastic bottle waste, alongside credits for third sector organisations to support the activities of the re-use centres
6. Improvements to data capture and management systems
7. Review performance of biowaste collection systems
8. Nationwide roll out of PAYT schemes

## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Lack of financial incentives at a local level to improve performance	Although some municipalities are performing very well, the performance of waste management systems varies at a local level throughout the country with respect to levels of recycling.	<p>An active NGO sector has helped to create positive role models through promoting the take-up of zero waste policies. Other campaigns have also helped to raise awareness in the population with regard to waste issues. These activities have helped to significantly improve the performance in some areas.</p> <p>However, local authorities bear the brunt of the costs of implementing the producer responsibility system. The cost of the system is largely centrally determined as government sets the fees for the producer responsibility schemes. In addition, targets have not been devolved to the local authorities and local authorities do not have the freedom to invest in improving their systems. Furthermore, the level of landfill tax is relatively low (at €11 / tonne). There is currently no clear plan to increase this, and there are no plans to tax the other non-recycled outputs from the MBT systems.</p> <p>There is thus a lack of incentive to improve performance at a local level.</p>
2	Delays in responding to legislative requirements	Slovenia has received a letter from the European Commission relating to a formal notice for infringement of Directive 2008/98 / EC on waste, as it has not yet adopted a waste prevention program, although this is due to be in place in January 2016.	A relatively small division of the Ministry of Environment and Planning is responsible for many aspects associated with the development and implementation of waste planning and legislation, and appears to be somewhat under-resourced.

Number	Potential issue	Description	Reasons for the issue
3	Issues with data consistency, leading to a lack of accurate data on performance	<p>There are differences between the Eurostat data and the figures used in the Operational Programme.</p> <p>The Ministry is currently responding to a report by the Court of Auditors which indicates there are inconsistencies between the different datasets. Although not all of the issues raised in the report necessitate a change in the current approach (such as the need for additional incineration capacity), analysis undertaken in this project confirms data inconsistencies exist. Therefore it is difficult to be sure whether performance is as good as that indicated in respect of the performance against waste framework directive targets. The operational performance of biowaste collection systems is similarly unclear, making it difficult to ensure that future treatment capacity will be adequate.</p>	<p>Different definitions appear to be used in the different datasets, and the rationale for differences is not always clearly stated.</p> <p>Figures for the amount of packaging placed on the market are inconsistent with the amount of material appearing in the waste stream when calculated from the composition data – the latter being a much larger amount. Not all of the separately collected material is actually recycled material, and there appears to be a considerable gap between the quantities of waste generated and treated, which, in turn, affects the calculation of recycling rates. As a result the rates of plastic waste recycled also appear to be unrealistically high (consistent with this being calculated from the lower, “treated” figure).</p> <p>For biowaste, the authorities do not have a clear idea of the quantities of food and garden waste captured as no waste sampling appears to have been undertaken at a local level; current values used to assess performance are based on estimates.</p>
4	Cost of waste management not covered by the original waste producer	<p>Waste charges are not directly connected with the actual waste generated (e.g. in households or stores) or with the actual waste management cost associated with each type of product.</p>	<p>The extended producer responsibility (EPR) scheme is limited to the legally required waste streams and the scheme fees do not cover all the costs of managing the packaging (as above, local authorities bear the brunt of the cost). It is estimated that a considerable amount of packaging waste is not correctly accounted for (free riders, underestimation of packaging placed in the market).</p> <p>PAYT schemes are currently in place in some areas of the country, but are linked solely to the cost of the residual waste bin, based on its size.</p>

### 3.0 Recommended Measures

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>1) Increase capacity of the Waste Division</b>					
Increase the capacity of the waste division to ensure it has sufficient resources to fully implement the operational programme and associated plans, as well as carry out related projects.	Administrative	Government Republic Slovenia	Low cost	n/a	Will address issue 2.
<b>2) Provide increased incentives for local authorities to improve their recycling systems</b>					
Particularly if the cost of residual waste treatment remains relatively low, local authorities should be assigned recycling targets so that those responsible for waste collection can ensure that the service delivery, and the structure of incentives, is of a standard that delivers the required performance. It is suggested that sanctions are needed to give substance to the targets. An alternative is to put in place a residual waste levy, such as has been introduced in Wallonia.	Administrative	MOP	Low cost	n/a	Particularly if undertaken in conjunction with recommendation 3, will address issue 1, thereby improving recycling rates in those areas that are currently underperforming.
<b>3) Review of Extended Producer Responsibility System</b>					

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<p>Undertake a review of the performance of the EPR scheme. At a minimum the costs should cover the cost of the separately collected fraction; ideally the full costs of collecting the non-recycled fraction would be covered for all streams (including that within the litter and residual waste fractions). Options should be explored to ensure quantities reported by the producers match the quantities placed on the market and to reduce the amount of 'free riders'. The review should also consider whether the current centrally determined price structure is constraining recycling, taking into account the relative costs of sorting waste and the comparative cost of residual waste in different municipalities. If this is found to be the case, government should consider a redesign of the scheme to allow municipalities more control over the costs such that they have more freedom to invest to improve the system.</p>	Administrative /Legal	MOP / Company for management of packaging waste (DROE)	Low cost to government; costs for producers may increase	n/a	More funding for recycling schemes at a local level, thus helping to address issue 1. Will also tackle issue 4 by linking the cost of collection service more closely to the fees paid by the producer.
<b>4) Taxes applied to Residual Waste</b>					
<p>Particularly if recycling targets are not devolved to local authorities as described above, the current rate of tax applied to landfill should be progressively increased in future years, to a level sufficient to act as an appropriate financial incentive to recycling. Tax rates should be lower for the stabilised outputs from MBT systems. Tax levels should be announced a number of years in advance.</p>	Fiscal	MOP	Waste producers will bear the costs	n/a	Increased incentive for recycling activities through increasing the cost of alternatives, thus helping to address issue 1.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
A tax should also be introduced to cover the other non-recycled residual treatment outputs, announced for a period of years ahead, at increasing levels. This should cover waste sent to thermal treatment, including that sent overseas for treatment from MBT systems at incineration plant – this can be done by taxing the output from these systems.	Fiscal	MOP	Waste producers will bear the costs	n/a	Increased incentive for recycling activities through increasing the cost of alternatives, thus helping to address issue 2.
<b>5) Improvements to data capture and management systems</b>					
Undertake a review of calculation methods, including the definitions used when undertaking the calculations. Associated documentation should ensure transparency of calculation methods, and that there is read across between the different systems subject to the differing reporting requirements.	Administrative	MOP / Statistical office	Low cost to government	n/a	Clearer understanding of performance against national and European targets. Will address issue 3.
<b>6) Actions to support an increase in re-use and prevention activity</b>					
<b>Government should consider integrating re-use activities into the existing EPR scheme. Other activities that should be reflected in the forthcoming waste prevention plan include actions tackling plastic bottles and food waste – in the case of the latter, the recent work in Ljubljana provides a good case study.</b> The Re-use centres could be supported by developing a system of re-use credits supporting the activities of the third sector.	Administrative / fiscal	MOP	Low / moderate cost to government	Funding available for capital items	Will assist in the achievement of future targets, as well as contribution to landfill directive and waste framework directive targets.

Measure	Type of instrument	Responsibility	Estimated costs	Available EU funding	Anticipated impact
<b>7) Review performance of biowaste collection system</b>					
Undertake a review of performance of the biowaste collection system. This should cover collection system performance – including the capture rate of food and garden waste – as well as treatment infrastructure requirements. Performance should be benchmarked against schemes operating in other countries such as Italy.	Administrative	MOP	Dependent upon the outcome of the review	EU funding available for capital items if required	Improve performance against landfill directive targets.
<b>8) Nationwide roll out of PAYT schemes</b>					
PAYT schemes should be rolled out once the separate collection system (based on door to door collection schemes) is in place in each area and fully operational. Differential charges should be in place for residual waste, organic waste and recyclables. Government should provide guidance to the municipalities on how to structure the charging system, although municipalities should have freedom to set their own charges.	Administrative/Legal/ Fiscal	MOP in consultation with municipalities	Dependent on the system to be implemented.	Maybe be able to use structural Funds	Improve waste charging, which will be directly connected with waste generation. This way recycling will be promoted while at the same time waste producers will cover full cost for the management of the waste they generate. Will help to tackle issues 1 and 4.

### 3.1 Timeline for introducing the Proposed Measures

	2015	2016	2017	2018	2019	2020
Increase capacity of waste division		Complete				
Increased incentives for local authorities		Announcement	In place			
Review of Producer Responsibility scheme		Announcement		In place		
Taxes applied to residual waste		Announcement			In place	
Review of data systems		Complete				
Supporting re-use activities				In place		
Review performance of biowaste collection systems				In place		
Rollout of PAYT schemes			Announcement		In place	



# 1.0 Factsheet – Spain

## Summary Overview

Parameter	Value
<b>Population 2012 (INE)</b>	
<b>Total (inhabitants)</b>	47,265,321 (2012, INE)
<b>Waste generation 2012 (INE)</b>	
<b>Total (t)</b>	21,895,854
<b>Total (kg/cap/y)</b>	463.25
<b>Waste composition (%) 2012 (MAGRAMA)</b>	
<b>Organics</b>	42
<b>Paper</b>	15
<b>Plastic</b>	9
<b>Metal</b>	3
<b>Glass</b>	8
<b>Wood</b>	2
<b>Other</b>	21
<b>Waste management 2012 (PEMAR, page 24)</b>	
<b>Recycled from separate collection</b>	2,849,452t (13%)
<b>Recovered materials from MBT of mixed waste</b>	458,746 t (2%)
<b>Composting / Anaerobic digestion of separately collected organic waste</b>	480,267 t (2%)
<b>Composting / anaerobic digestion via MBT</b>	2,515,909 t (11%)
<b>Incinerated</b>	2,329,124 t (11%)
<b>Landfill of treatment rejects</b>	7,299,528 t (33%)
<b>Landfill untreated</b>	5,839,517 t (27%)
<b>Balance (unaccounted)</b>	123,311 t (1%)
<b>Total<sup>1</sup></b>	<b>21,895,854 t (100%)</b>

<sup>1</sup> Total refers to waste generated whereas the rest of categories refer to treated waste. The difference between waste treated and waste generated is due to data gaps in some treatment plants (personal communication with MAGRAMA).

Existing waste management infrastructure <sup>2</sup> (PEMAR page 23) <sup>3</sup>	
Residual treatment plants (only sorting)	5
Residual treatment plants (sorting + compost)	63
Residual treatment plants (sorting + compost + biometanisation)	23
Sorting facilities for recyclables	94
Organic waste treatment facilities	44
Compliance with Targets (Autonomous Communities and EUROSTAT)	
Data on compliance with landfill directive targets, or distance to target remaining (if target not met)	Target 2016: 4.2 Mt (35%) Performance 2012: 5.6 Mt (47%)
Data on compliance with waste framework directive targets or distance to target remaining (if target not met)	Target 2020: 50% (calc. method 4) Performance 2013: 32,5%

## 1.1 Roles and Responsibilities of Key Actors

The Waste and Contaminated Soils Act 22/2011<sup>4</sup> sets the legal framework for waste management and waste prevention at the national scale. The Act transposes Directive 2008/98/EC on waste<sup>5</sup> and outlines tasks and responsibilities across the three main administrative levels in Spain, namely the national government, the Autonomous Communities<sup>6</sup> (ACs), and local entities (municipalities).

### 1) At the **national** level:

The Ministry of Agriculture, Food and Environment (MAGRAMA) is responsible for implementing, amending and enforcing the Act at the national level. It is also responsible for developing a Prevention Program and National Waste Management Plans<sup>7</sup> which set out the policy orientation, minimum targets, objectives and measures.<sup>8</sup> Additionally, the

<sup>2</sup> There is not complete data on infrastructure capacities since the questionnaire sent by the MAGRAMA was not filled by most of the treatment facilities.

<sup>3</sup> For a detailed list of all infrastructures by regions, see:

[http://www.magrama.gob.es/es/ministerio/servicios/publicaciones/g\\_gestion\\_de\\_residuos\\_tcm7-347415.pdf](http://www.magrama.gob.es/es/ministerio/servicios/publicaciones/g_gestion_de_residuos_tcm7-347415.pdf)

<sup>4</sup> The Act came into force on 30<sup>th</sup> July 2011.

<sup>5</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312/3 of 22.11.2008), [http://ec.europa.eu/environment/waste/framework/framework\\_directive.htm](http://ec.europa.eu/environment/waste/framework/framework_directive.htm)

<sup>6</sup> There are seventeen autonomous communities located within the Iberian Peninsula plus two archipelagos and two autonomous cities. The Balearic Islands are located in the northwestern Mediterranean Sea and the Canary Islands are located off the northwest coast of Morocco and the Western Sahara. Ceuta and Melilla are located on the north and northeast coast of Morocco respectively, and are referred to as autonomous cities.

<sup>7</sup> The National Waste Management Plan titled "Plan Nacional Integral de Residuos (2008-2015)" (PNIR) has been replaced by the subsequent National Waste Management Framework titled "Plan Estatal Marco de Gestión de Residuos" (PEMAR), which was approved in November 6<sup>th</sup> 2015.

<sup>8</sup> Besides those outlined in the Directives of the European Commission.

MAGRAMA is responsible for authorizing and monitoring foreign trade of waste and for adhering to reporting requirements on the progress of waste management policies.

2) At the **Autonomous Communities (ACs)** level:

It is at the ACs level where most of the responsibility for planning and implementation lies. ACs are responsible for:

- The development of regional waste management and prevention plans, both general and sectorial (i.e. municipal waste). These plans must set specific regional targets, in line with, or exceeding, those set by the MAGRAMA. Moreover they outline which financial resources are available and how the budget will be allocated. Within some of the ACs there are also agencies and specific Departments focusing specifically on waste management (e.g. Catalan Waste Agency);
- Surveillance, authorization, inspection and the application of sanctions on waste management.
- Monitoring, recording and reporting data on waste management to the MAGRAMA; and
- Developing specific legislation on waste. Apart from the various Acts implementing the regional plans, 13 ACs have also developed and implemented regional legislation on waste. Figure 1.2 displays the current state of regional legislation on waste at the AC scale.

3) At the **local** level:

Municipalities are responsible for the collection, transport and treatment of municipal waste and they may choose to develop their own waste management and prevention programs. They generally perform these responsibilities by grouping themselves into associations of municipalities (Mancomunidades, Consorcios, etc).

At the **intersection** of these three administrative levels sits the Commission for the Coordination on Waste (Comisión de Coordinación en materia de residuos), which is formed by representatives from the three main administrative levels in order to trigger cooperation and collaboration between them. Its functions cover:

- Reporting and elaborating recommendations for collaboration;
- Analysing the application of regulation and their consequences;
- Ensuring knowledge on waste management is up to date and ensuring it is easily disseminated (particularly on packaging);
- Providing justifications in cases where the waste hierarchy is not followed
- Exchanging information and developing recommendations on authorisations regarding the collective systems of extended producer responsibility.

## 1.2 Summary of Legislative Framework for Waste Management

Directive 2008/98/EC on waste (hereafter referred to as the Waste Framework Directive or WFD) has been transposed by Act 22/2011 of July 28<sup>th</sup> on Waste and Contaminated Soils,

which repeals Law 10/1998 on waste and its subsequent modifications (Law 11/2012 of July 20<sup>th</sup> and Law 5/2013 of June 11<sup>th</sup>). These pieces of legislation set out the framework for planning, defining roles and allocating tasks regarding waste management at the national, regional and municipal level. Furthermore Directive 1999/31/EC<sup>9</sup> on the landfill of waste (hereafter referred to as the Landfill Directive) is transposed by Royal Decree 1481/2001, and its subsequent modifications (i.e. Royal Decree 1304/2009 of July 31<sup>st</sup> and Order AAA/661/2013 of April 18<sup>th</sup>). Waste incineration is regulated through Royal Decree 815/2013 of October 18<sup>th</sup> and Act 16/2002 of July 1<sup>st</sup>. The most recent regulation is Royal Decree 180/2015 on waste transfers between ACs.

The following Directives/provisions have been transposed by a series of legislation:

- **Directives 2011/65/UE and 2012/12/EC on waste electrical and electronic equipment (WEEE):**<sup>10</sup> Royal Decree 219/2013 of March 22<sup>nd</sup> and 110/2015 of February 20<sup>th</sup>.
- **Directive 94/62/EC on packaging and packaging waste:**<sup>11</sup> Law 11/1997 of April 24<sup>th</sup>, Royal Decree 782/1998 of April 30<sup>th</sup>, Order of April 27<sup>th</sup> 1998, Order of October 21<sup>st</sup> 1999, Order of June 12<sup>th</sup> 2001, Order of MAM/3624/2006 of November 17<sup>th</sup>, Royal Decree 252/2006 of March 3<sup>rd</sup>, and Order AAA/1783/2013 of October 1<sup>st</sup>.
- **Ban on landfilling tyres as outlined in the Landfill Directive:** Royal Decree 1619/2005 of December 13<sup>th</sup>.
- **Directive on waste batteries and accumulators:**<sup>12</sup> Royal Decree 106/2008 of February 1<sup>st</sup> and its subsequent modifications (Royal Decree 943/2010 of July 23<sup>rd</sup> and Royal Decree 710/2015 of July 24<sup>th</sup>)
- **Directive 2000/53/EC on end-of-life vehicles:**<sup>13</sup> Royal Decree 1383/2002 of December 20<sup>th</sup>, Order INT/624/2008 of February 26<sup>th</sup>, Order PRE/26/2014 of January 16<sup>th</sup>.

Most of the responsibilities regarding waste management have been transferred to the ACs. Most of them have also implemented regional legislation on waste management as outlined in Figure 1.2.

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<sup>9</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182/1 of 16.7.1999)

<sup>10</sup> Directive 2002/96/EC of the European Parliament and of the Council of 27th January 2003 on Waste Electrical and Electronic Equipment (WEEE) (OJ L 37/24 of 13.2.2003)

<sup>11</sup> European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (OJ No L 365/10 of 31.12.94)

<sup>12</sup> Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266 of 26.9.2006)

<sup>13</sup> Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on End-of Life Vehicles (OJ L 269 of 21.10.2000, p. 34)

Figure 1.1: Chronological View of Legislation on Waste at the National Scale

Issue	Regulation	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Waste	L 10/1998		Repealed																		
	L 22/2011																				
	L 11/2012																				
	L 5/2013																				
	RD 180/2015																				
WEEE	RD 208/2005																				
	RD 219/2013																				
	RD 110/2015																				
Batteries	RD 106/2008																				
	RD 943/2010																				
Packaging	L 11/1997		Specific Regulation referred to 11/1997																		
	RD 782/1998			Specific Regulation referred to 11/1997 on heavy metals																	
	O 21 oct 1999				Specific Regulation referred to 11/1997 on heavy metals, modified																
	O 12 Jun 2001					Modifies RD 78/1998 and O 12 Junio 2001															
	O MAM/3624/2006																				
	RD 252/2006																				
Treatment	O AAA/1783/2013																				
	RD 1481/2001																				
	RD 815/2013 and Act 16/2002																				
	RD 1304/2009																				

Source: Own elaboration.

Notes: Amends; L: Law; RD: Royal Decree; O: Order.

**Figure 1.2: Regional (Autonomous Communities) Legislation on Waste**

	General Law on Waste	Tires	Sanitary Waste	End-of-life Vehicles	Waste Infrastructure	Construction	Landfills	Incineration	Others	Others, detail
Andalusia	D								L	Integrated Environmental Quality
Aragon	L	O+D	D							
Asturias										
Balearic Is			D							
Canary Is	L		L							
Cantabria			D			D				
C-La Mancha				O						
C Leon		D	D		L					
Catalonia	D+L		D	D	L+D	D	D	D		
Extremadura			D							
Galicia	L		D				O		D	Management of data on waste, traceability
Madrid										
Murcia										
Navarra			D			D			D	Biowaste
Basque Country		D	D			D	D			
Rioja			D							

Source: Own elaboration.

Notes: D: Decree; L: Law; O: Order.

### 1.3 Status of Waste Management Plan(s)

At the national level, the National Framework Waste Management Plan (Plan Estatal Marco de Gestión de Residuos, PEMAR) for the period 2016-2022<sup>14</sup> was approved in November 6<sup>th</sup> 2015. It is subsequent to the National Integrated Waste Management Plan (Plan Nacional Integrado de Residuos), which was established in 2008, for the period 2008-2015

Additionally, the national waste prevention programme (Programa Estatal de Prevención de Residuos) was adopted<sup>15</sup> in November 2013 for the period 2014-2020, complementing the above mentioned plans in prevention issues.

At the regional level (ACs), most of the regions have waste management programs in force (except for the Balearic Islands, Murcia, Navarra, Ceuta and Melilla, which have outdated plans or are in the process of revising these).

<sup>14</sup> <https://www.boe.es/boe/dias/2015/12/12/pdfs/BOE-A-2015-13490.pdf> and <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/prevencion-y-gestion-residuos/default.aspx>

<sup>15</sup> <http://www.boe.es/boe/dias/2014/01/23/index.php?d=20&s=3>

Waste prevention programmes have been adopted only in some ACs (i.e. Andalusia, Aragon, Asturias, Cantabria, Castile La Mancha, Castile Leon, Catalonia, the Basque Country and Valencia). The other ACs are in the process of implementing their own plans (i.e. Balearic Islands, Madrid, Murcia, Navarra, Ceuta and Melilla).

## 1.4 Summary of the Key Objectives of the Plans

### 1.4.1 Waste Management Plan(s)

The goals included in the PEMAR for 2016-2022 for municipal waste are outlined below:

- Accomplishing with the Waste Frameworks Directive in terms of their quantitative targets, which implies 50% of preparation for recycling and reuse in 2020, of which 2% will correspond to the preparation for reuse of WEEE, bulky waste and textiles, among others;
- Implementing the waste hierarchy so that 10.7 Mt of waste are recycled in 2020;
- Energy recovery may reach 15% of municipal waste generated. Inputs to incineration and co-incineration will be limited to rejects from treatment plants and non-recyclable materials;
- Measures to boost biowaste separate collection with a view to the composting and anaerobic digestion to promote the use of environmentally safe compost in agriculture, gardening and degraded areas;
- Application of self-sufficiency and proximity principle: an integrated network of waste disposal installations and of installations for the recovery of mixed municipal waste must be established, including where such collection also covers similar waste streams from other producers, taking into account best available techniques. This network shall enable waste disposal or recovery of waste previously mentioned in one of the nearest appropriate installations, by means of the most appropriate technologies and methods to ensure a high level of environmental protection and public health;
- Accomplishing with the Landfill Directive in 2016;
- Eradicate the landfilling of untreated waste;
- By 2020, total landfill of waste must be reduced to 35% of total waste generated.

The plan refers to household and commercial waste (including bio-waste), packaging waste, WEEEs, used tyres, end-of-life vehicles, waste batteries and accumulators, construction and demolition waste, oil waste, sewage sludge, PCB & PCT, contaminated soils, non-hazardous industrial and agricultural waste, sanitary waste and end-of-life ship. Specific targets for waste streams are set according to EU Directives; For this report, only the first category has been considered.

The PEMAR has been developed at the same time as this report was being written, so not only the main requirements of the Waste Framework Directive and other Directives have been included, but also recommendations from the European Commission have been explicitly considered. In general, the plan establishes qualitative and quantitative objectives for every waste stream and orientations to achieve them. However, several aspects remain undisclosed:

- 1) The accounting of the shipments between Autonomous Communities is still a pending issue.
- 2) Waste treatment, disposal and recovery installations are detailed for every waste category, including the capacity for treatment of future waste streams except for mechanical biological treatment plans due to the underreporting of several Autonomous Communities.
- 3) According to the data included in page 29, in accounting terms the overall sorting efficiency of MBT plants in 2012 was of 26%. Efficiency from a mass balance point of view is assumed to be constant until 2020. In coherence to promote high quality compost from source separate of biowaste, and taking into account the low quality of biostabilized materials at MBTs, the PEMAR sets a 40% reduction in the use of biostabilised materials through R10 operations. Therefore the overall contribution of MBTs to the overall recycling rate will decrease by 2020. Consequently, their role in the fulfilment of the targets will be ultimately limited.
- 4) Although waste collection schemes are properly described, the identification of differences in their effectiveness and costs is not provided;
- 5) There is no specific identification of the most and less efficient waste treatment facilities, particularly mechanical biological treatment plants;

At regional level, ten of the nineteen regional plans have been approved after the WFD and cover in general the contents set out in Article 28.3 of the Directive. Regarding the regions that generate the largest amounts of waste (Andalusia, Catalonia, Madrid and Valencia), the only plan approved before the WFD is the Madrid Plan, approved in 2007 and currently under revision process.

The PEMAR fully addresses all the provisions of Article 28.3 of the Waste Framework Directive and specifies what the regional plans should consider in accordance with this Article. It also refers to some other mandatory content for the regions, outlined below (PEMAR, pages 14-15):

- The type, quantity and source of waste generated within their territory, which is expected to be shipped to other Member States, and where possible to and from other regions;
- An assessment of the future evolution of waste streams;
- Existing waste collection schemes and major disposal and recovery installations, including any special arrangements for waste oils, hazardous waste or waste streams addressed by specific legislation;
- Information on the location criteria for site identification and on the capacity of future disposal of major recovery installations
- An assessment of the need for: new collection schemes, closure of existing waste installations, additional waste treatment facilities and related investments;
- Waste management policies, including planned waste management technologies and methods and identification of waste that pose specific management problems.

Moreover, PEMAR suggest additional contents in coherence with law 22/2011:



- Organisational aspects related to waste management, including a description of the allocation of responsibilities between the public and private operators that deal with the management of residues;
- Awareness and information campaigns targeting the general public or a particular group of consumers; and
- Identification of historically contaminated waste disposal sites and measures for their rehabilitation.

According to PEMAR, in order to ensure the fulfilment of the national targets, the Autonomous Communities should meet at least, the same targets as those proposed at national level (PEMAR, page 15).

When targets refer to municipal waste, local authorities should make their best to fulfil the targets. In any case, the Regional Waste Management Plans may establish the contribution of local authorities to these targets either independently or associated.

Taking into account the recommendations of the EC, following the approval of the PEMAR, the Autonomous Communities should review their Regional Waste Management Plans to adapt their structure, targets, period of validity and frequency of revision to PEMAR, specifying the approach to biowaste management, in order to fulfil the targets.

### 1.4.2 Waste Prevention Plans

The National Waste Prevention Programme of Spain (Programa Estatal de Prevención de Residuos, hereafter referred to as PEPR)<sup>16</sup> was adopted by the Council of Ministers on 13<sup>th</sup> December 2013. The main objective of the programme is to reduce by 10% the amount of waste (in tonnes) produced in 2010 by 2020, and to contribute to reducing marine litter from terrestrial sources. The programme covers the 2014-2020 period and applies to the whole of Spain. It has four strategic points and eight priority areas through which specific measures are organised. These are:

#### 1) Strategic Points:

- a. Reduce the quantity of waste, with a special focus on food waste, construction and demolition waste, packaging waste and disposable products;
- b. Reuse products and extend products' life cycle, with a special focus on furniture, textiles, toys and books, electronic devices, packaging and tyres;
- c. Reduce the hazardous properties of waste, in particular for the following categories: chemicals industry, batteries and accumulators, vehicles and electronic devices; and

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<sup>16</sup> <http://www.boe.es/boe/dias/2014/01/23/pdfs/BOE-A-2014-679.pdf>  
<http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/planes-y-estrategias/Planes-y-Programas.aspx>

- d. Reduce the environmental impacts of waste, as well as its impacts on human health, in particular for: electric and electronic devices, vehicles and packaging.

## 2) Priority Waste Areas:

- a. Food waste;
- b. Construction and demolition waste;
- c. Packaging;
- d. Disposable products;
- e. Chemicals industry;
- f. Vehicles, tyres and batteries;
- g. Electronic and electrical devices; and
- h. Furniture, toys, books and textiles.

The programme also outlines several measures for the reduction of bio-waste, involving national, regional and local administrations as well as economic agents and consumers. The proposed measures include regional and local initiatives to reduce food waste, support the prevention of waste generation, modify the productive processes and promote food banks and responsible consumption.

## 1.5 Progress towards the Fulfilment of Targets

### 1.5.1 Landfill Directive Targets

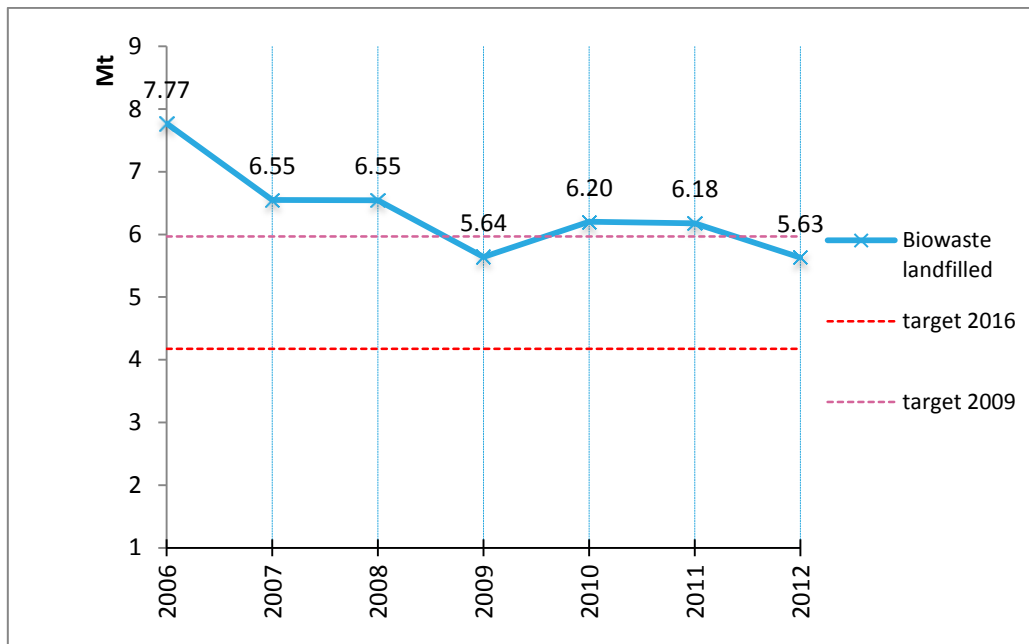
The Landfill Directive sets out specific targets regarding biodegradable municipal waste and how it should be disposed of in landfills. Specifically, by 2006, biodegradable municipal waste going to landfill must have been reduced to 65% of the total amount of biodegradable municipal waste (BMW) generated in 1995. This share is required to be further reduced to 50% and 35% by 2009 and 2016, respectively.

The PEMAR explicitly acknowledges these targets (page 38), and by 2020 it limits the landfill of waste to 35% of total waste generated, restricted to rejects from treatment and incineration plants.

The baseline to be used for calculation purposes is 11,934,142 tonnes of biodegradable municipal waste going to landfill in 1995; therefore the target for 2016 implies that no more than 4,176,950 tonnes of BMW should be landfilled. Both the 2006 and 2009 targets were met, although in 2010 the amount of BMW disposed of in landfills grew to 6,200,000 tonnes, exceeding the 2009 target by 0.2 million tonnes. By 2012 this amount had fallen to 5,600,000 tonnes.

On average, since 1995, the disposal of BMW to landfills has decreased by ~315,000 tonnes per year. In order to meet the 2016 target, an annual reduction of ~400,000 tonnes is needed on between 2012 and 2016 (Figure 1.3).

**Figure 1.3: Biodegradable Municipal Waste Landfilled in Spain, 2006-2012**

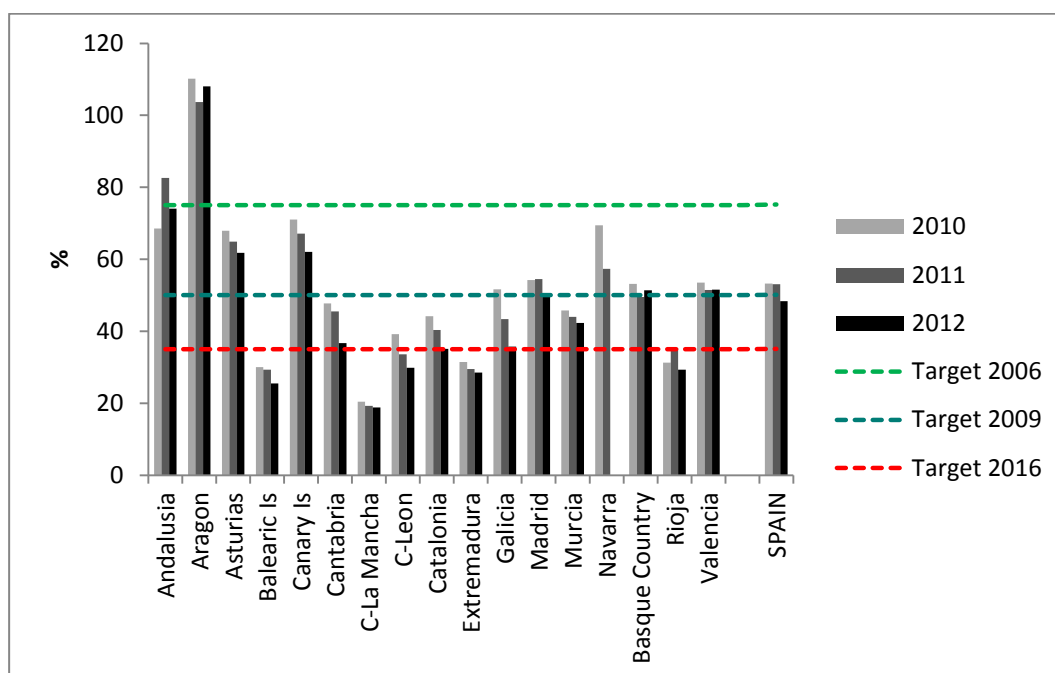


Source: MAGRAMA

Figure 1.3 shows the amount of BMW sent to landfill by ACs in the period 2010-2012, and how this relates to the targets set out in the Landfill Directive. Seven out of 17 ACs had not met the 2009 target in the year 2010, whilst four ACs had already met the 2016 target and three of them were very close to doing so. The most populated regions (Andalusia, Madrid, Valencia and Catalonia) account for approximately 60% of Spain's population and they contributed to 60% of the total landfilled BMW in 2012. Whereas some regions (Balearic Islands, Castile-La Mancha and Castile-Leon, La Rioja) already meet the 2016 target, Andalusia, Madrid and Valencia missed the 2009 target. In Aragon, the amount of BMW landfilled in 2012 was higher than in 1995.

According to the MAGRAMA, each AC is responsible for the calculation of BMW sent to landfill. The methodological details could not be found either in the regional plans or the PEMAR.

**Figure 1.4: Amount of BMW Landfilled by ACs, compared to the Landfill Directive Targets (%)**



Source: MAGRAMA

### 1.5.2 Waste Framework Directive Targets

Spain is set to use calculation method number 4 (Commission Decision 2011/753/EU, Annex I)<sup>17</sup> for reporting performance against the WFD targets. Statistics for reporting are compiled by the MAGRAMA and the INE. The MAGRAMA receives the data from the ACs which in turn, are provided with data from the waste treatment plants. The INE compiles data from the annual survey on urban waste collection and treatment, which is completed by waste managers. The calculation of total urban waste generation is based on a range of inputs and these are displayed in Table 1.1. The inputs used for the calculation of the recycling rate are:

- Separated collection of paper/cardboard and glass;
- Input of bio-waste to bio-waste treatment plants minus rejects;
- Input to packaging sorting plants minus rejects;
- Materials recovered from mixed collection; and
- Bio-waste treated from mixed collection (input to mixed collection treatment plants minus rejects minus recovered materials).

In 2008, the recycling rate followed a downward trend from 39.7% to 26.7% in 2011, before increasing again and reaching 29.8% in 2012, according to data reported to Eurostat (Figure 1.5). This is explained in part by a change in the way data was collected until 2008<sup>18</sup>. At the AC's level, Andalusia, Catalonia, Madrid and Valencia are responsible for 60% of waste

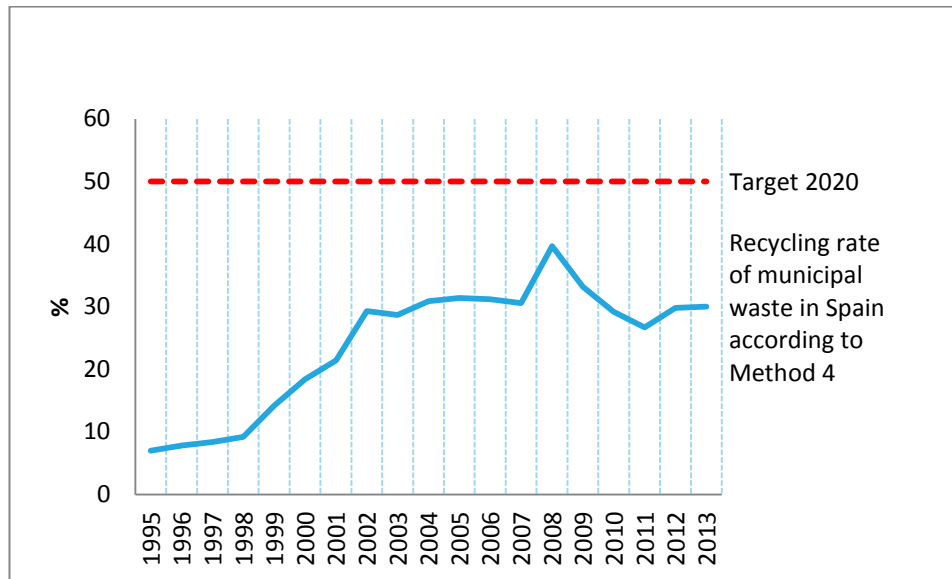
<sup>17</sup> Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council (2011/753/EU) (OJ L310/11)

<sup>18</sup> Confirmed by MAGRAMA.

generation. Figure 1.6 shows the recycling rates as displayed by the PEMAR, at the regional level. Rioja, Extremadura and Valencia lead, although their recycling rates are very sensitive to the calculation of composting and anaerobic digestion at MBT (mechanical-biological) plants. Madrid stands out as a large waste generator with low recycling rates.

General data and statistics on waste management can be accessed via the INE<sup>19</sup> and the MAGRAMA<sup>20</sup>. Some waste streams privately managed are not accounted for within the official statistics, although for example Catalonia records them with the same criteria as the rest of waste streams.

**Figure 1.5: Spain's Municipal Waste Recycling Rates, 1995-2013**



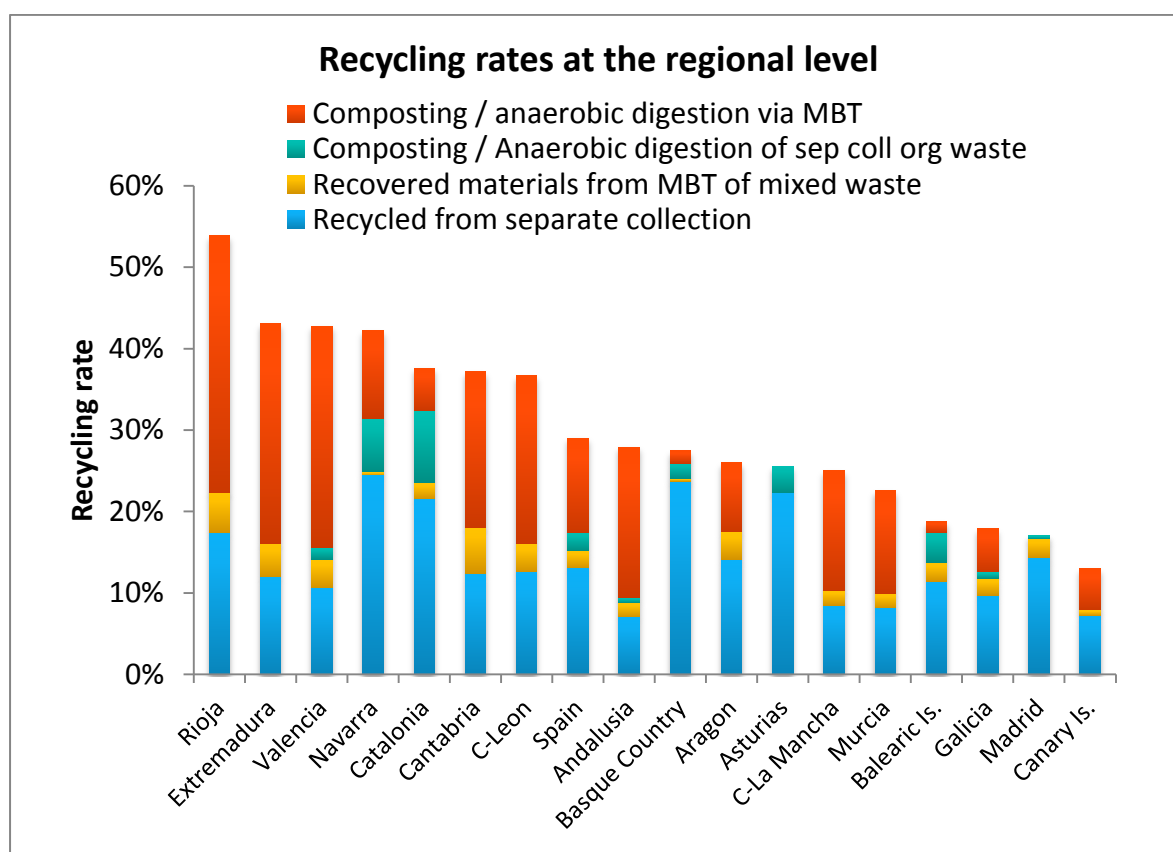
Source: Eurostat

<sup>19</sup> Statistics on waste collection and treatment, National Statistics Institute:

<http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft26%2F068%2Fp01&file=inebase&L=1>

<sup>20</sup> Statistical Yearbook, MAGRAMA: <http://www.magrama.gob.es/es/estadistica/temas/publicaciones/anuario-de-estadistica/default.aspx>

**Figure 1.6: Spain's Municipal Waste Recycling Rates at the regional level**



Source: PEMAR

Table 1.1 lists the bodies in charge of each of the waste categories captured by the urban waste generation calculation:

**Table 1.1: Bodies Responsible for Gathering Data on Waste by European Waste Catalogue Code**

EWC Code	Description	Compiled by
15 01 01	Paper and cardboard packaging	INE
15 01 02	Plastic packaging	INE
15 01 03	Wooden packaging	INE
15 01 04	Metallic packaging	INE
15 01 06	Mixed packaging	MAGRAMA
15 01 07	Glass packaging	MAGRAMA
15 01 09	Textile packaging	INE

<b>EWC Code</b>	<b>Description</b>	<b>Compiled by</b>
<b>20 01 01</b>	Paper and cardboard	MAGRAMA
<b>20 01 02</b>	Glass	MAGRAMA
<b>20 01 08</b>	Biodegradable kitchen and canteen waste	MAGRAMA
<b>20 01 10</b>	Clothes	INE
<b>20 01 11</b>	Textiles	INE
<b>20 01 21</b>	Fluorescent tubes and other mercury-containing waste	INE
<b>20 01 23</b>	Discarded equipment containing chlorofluorocarbons	INE
<b>20 01 33</b>	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	INE
<b>20 01 34</b>	Batteries and accumulators other than those mentioned in 20 01 33	INE
<b>20 01 35</b>	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	INE
<b>20 01 36</b>	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	INE
<b>20 01 38</b>	Wood other than that mentioned in 20 01 37	INE
<b>20 01 39</b>	Plastics	INE
<b>20 01 40</b>	Metals	INE
<b>20 02 01</b>	Biodegradable waste	MAGRAMA
<b>20 02 02</b>	Soil and stones	INE
<b>20 02 03</b>	Other non-biodegradable wastes	INE
<b>20 03 01</b>	Mixed municipal waste	MAGRAMA
<b>20 03 02</b>	Waste from markets	INE
<b>20 03 07</b>	Bulky Waste	INE

## **1.6 Implementation of Specific Waste Framework Directive Articles**

### **1.6.1 Article 4: Application of the Waste Hierarchy**

The principles of the waste hierarchy at present can be found:

- 1) In Act22/2011 through which the WFD is transposed;
  - a. Specifically within Article 8, Paragraph 1 which states:
 

*In developing the policies and legislation concerning waste prevention and waste management, the competent authorities shall implement the waste hierarchy in the following order of priority, in order to achieve the best overall environmental outcome: prevention; preparation for re-use; recycling; other recovery, e.g. energy recovery; and disposal.*
- 2) The PEMAR
  - a. Outlines how the principle of waste hierarchy is applied to the waste prevention and management policies in Spain, defining qualitative and quantitative objectives and measures for the achievement thereof for the various waste streams;
- 3) Within the regional waste management plans
  - a. The ACs which have regional waste management plans in place or which have plans that are currently being revised<sup>21</sup> or finalised<sup>22</sup> have incorporated the principle of waste hierarchy; and
- 4) In most of the new regional legislation on waste:
  - a. Waste Regulation of Andalusia (Decree 73/2012 of March 22<sup>nd</sup>): Article 50 on waste management hierarchy.
  - b. Decree 2/2006 of January 16<sup>th</sup> of Aragon approving the Regulation on the production, possession and management of non-hazardous industrial waste and on the legal regime of the public service for disposal of non-hazardous industrial waste not suitable for recovery (Article 9); Decree 236/2005, approving the Regulation on the production, possession and management of hazardous waste and on the legal regime of the public service for disposal of hazardous waste (Articles 2 and 5); Decree 262/2006 approving the Regulation on the production, possession and management of non-hazardous waste from construction and demolition, and on the legal regime of the public service for disposal and recovery of debris that does not come from minor construction work or domestic repairs (Article 9); and Decree 40/2006 of February 7<sup>th</sup> of Aragon which regulates used tyres.
  - c. Decree 1/2009 of July 21<sup>st</sup> (General Law on wastes); Decree 89/2010 of June 29<sup>th</sup> (on construction wastes); Decree 16/2010 (on waste management infrastructure); and Decree 87/2010 of June 29<sup>th</sup> of Catalonia (on municipal waste management).
  - d. Law 1/1999 of January 29<sup>th</sup> on waste in the Canary Islands (Article 2).
  - e. Decree 104/2006 of October 19<sup>th</sup> on waste slag of Cantabria, to encourage the recovery of slag and prevent the dumping thereof; and Decree 72/2010 of October 28<sup>th</sup> regulating construction and demolition

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<sup>21</sup> Navarra.

<sup>22</sup> Murcia.



- waste production and management, to encourage the recovery of construction and demolition waste and prevent the dumping thereof.
- f. Law 5/2010 of June 23<sup>rd</sup> on prevention and environmental quality of Extremadura.
  - g. Law 10/2008 of November 3<sup>rd</sup> of Galicia, and
  - h. Law 5/2003 of March 20<sup>th</sup> on waste of Madrid.

On a national level, waste generation decreased by 10% since the onset of the economic crisis in 2008. The recycling rate decreased (Figure 1.5) whereas the landfill rate (60% in 2012) decreased only very gradually at the national scale since then, which can be explained in part by an improvement in the way data was collected and a change of calculation method. In 2012, 8% of waste generated was incinerated.

These trends have been acknowledged in the PEMAR, which sets specific recommendations and quantitative targets devoted to increasing the rates of separate collection. It also recommends developing economic instruments such as developing municipal charges on waste according to the quantity and type of waste collected. Furthermore the PEMAR is recommending the implementation of landfill and incineration taxes to incentive reuse and recycling. At the moment, Castile Leon, Catalonia and Extremadura have approved landfill taxes for municipal waste and only Catalonia has implemented an incineration tax. The MAGRAMA reports a landfill cost of €30-40 per tonne in Spain, which might be considered low as compared to other Member States.<sup>23</sup> Evidence from other Member states suggests that an introduction of (harmonised) landfill taxes in all AC's and a significant increase would be needed to provide sufficient incentives to divert waste from landfills.

PEMAR includes the following targets for 2020 in regards to the waste hierarchy:

- A decrease of 10% in municipal waste generation by means of waste prevention, taking 2010 as the baseline; this means decreasing municipal waste generation from 22.7 Mt in 2010 to 21.4 Mt in 2020, of which 10.7 Mt will be recycled;
- Energy recovery estimated to be 15% of municipal waste generation (3.4 Mt) and restricted to rejects streams from treatment plants;
- In addition to the targets set by the Landfill Directive on BMW, the aim is to landfill a maximum of 35% of municipal waste and only after it has been treated; and
- Increase separate collection from 2.7 Mt in 2012 to 8.7 Mt in 2020.

In 2012, on average, 26.7% of total waste generation was landfilled without any treatment although several ACs are well above this figure: the Canary Islands (77%), Asturias (74%) and the Basque Country, Navarra, Aragon, and Madrid (all over 40%).

## 1.6.2 Article 10: Recovery

The Waste Framework Directive defines recovery as *“any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function,*

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<sup>23</sup> ETC/SCP. 2012: [http://scp.eionet.europa.eu/publications/WP2012\\_1/wp/WP2012\\_1](http://scp.eionet.europa.eu/publications/WP2012_1/wp/WP2012_1)

*in the plant or in the wider economy”(Article 3.15). In practice it includes recycling, reuse and incineration.*

The recovery targets for 2020 as stated in the PEMAR are to increase preparation for reuse and recycling to 50% of total waste generation, with energy recovery accounting for 15% of overall waste (3.4 Mt) and confined to the refuse fraction from treatment plants. Thus, recovery as a whole should reach 65% of total municipal waste generated by 2020. In 2012 the amount of waste recycled, reused and incinerated out of the total generated was 39%.

### 1.6.3 Article 11: Reuse and Recycling

The PEMAR targets an increase in the net recycling from separate collection of biowaste, paper, glass, plastic and metals. The aim is to recycle 2.3 of biowaste, 2.3 Mt of paper/cardboard, 1.3 Mt of glass, 1 Mt of plastic and 0.3 Mt of metals from separately collected materials by 2020. The measures proposed to achieve these targets are:

- 1) Increase separate collection:
  - a. Implementing separate collection of bio-waste;
  - b. Fostering home composting in rural areas;
  - c. Increasing treatment capacity for bio-waste, mostly for composting facilities;
  - d. Regulating the end-of-waste criteria for high quality compost and digestate;
  - e. Focusing on the main generators of paper/cardboard such as offices, universities, etc.;
  - f. Intensifying efforts to foster the separation of glass in households;
  - g. Setting specific efforts for better separation of plastic in households and other sources which generate large amounts of waste;
  - h. Setting specific efforts for better separation of metals in households and other sources which generate large amounts of waste;
  - i. Setting specific efforts for better separation of beverage cartons in households and other sources which generate large amounts of waste;
  - j. Implementing separate collection of wood, focused on sources which generate large amounts of waste and recycling centres;
  - k. Developing agreements with organisations for better collection of textiles; and
  - l. Increasing the network of recycling centres for the collection of batteries, furniture, domestic oils, sanitary and waste from electric and electronic equipment (WEEE).
- 2) Ensure an appropriate treatment of non-separated waste by prioritising:
  - a. The recovery of glass, metals and plastic from non-separated collection;
  - b. The development a clear regulatory framework for the recovery of biostabilised materials; and
  - c. The energetic recovery of the refuse fraction.
- 3) Development and implementation of economic instruments such as:
  - a. Municipal charges; and
  - b. Landfill and incineration taxes.
- 4) Information:
  - a. Making data from collection and treatment plants available;

- b. Making data on collection and treatment of municipal waste and derived costs available;
  - c. Using this data to evaluate the efficiency of waste management systems in order to introduce changes, if necessary;
  - d. Adequately recording the budget allocated for waste collection and treatment at the local level;
  - e. Periodically characterising waste, particularly waste to landfill;
  - f. Compiling data on non-hazardous commercial and industrial waste collected and managed privately; and
  - g. Developing an information system, which improves the collection of data directly from collection and treatment plants, in order to be able to publish more accurate statistics on these
- 5) Education and training:
- a. Training for municipalities regarding collection and treatment models, targets, costs and operative settings;
  - b. Dissemination of new models for collection in order to communicate to citizens their role regarding domestic separation;
  - c. Dissemination of good practices for waste collection and management at the local level; and
  - d. Making information on waste management costs available to the public.
- 6) Investments must be devoted to:
- a. Complementing the existent collection systems and new implementations;
  - b. New infrastructure for reuse and recycling;
  - c. Adaptation, modernisation and improvement of current infrastructure;
  - d. Improving tools for capturing data on waste and traceability;
  - e. Environmental education to promote separation in public bodies and enterprises; and  
Campaigns regarding the implementation of new collection and management models.
- 7) Strengthening of markets for recovered and recycled materials.

Table 1.2 illustrates the separate collection models currently used in Spain for urban waste, as reported in Spain's reply to the Implementation Questionnaire on the WFD for 2010-2012. Separate collection accounted for 15% of overall waste collection in 2012. According to Ecoembes (the integrated waste management system for packaging), currently 99.8% of the population have access to separate collection for paper/cardboard and packaging waste, through more than 100 agreements with local authorities.<sup>24</sup> Similarly, Ecovidrio (the integrated waste management system for glass) reports that they supply separate collection for glass waste to 7,976 municipalities, which comprise 98.3% of the population.<sup>25</sup>

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<sup>24</sup> Ecoembes. 2015: <https://www.ecoembes.com/es/administraciones/recogida-selectiva>

<sup>25</sup> Ecovidrio. 2013: <http://www.ecovidrio.es/files/Publications/00000022.pdf>

**Table 1.2: Existing Separate Waste Collection Models in Spain**

Type 1 5 fractions	Type 2 Wet/dry	Type 3 Multi-product	Type 4 4 fractions + pruning	Type 5 4 fractions	Type 6 3 fractions
Glass	Glass	Glass	Glass	Glass	Glass
P/C	P/C	P/C + LP	P/C	P/C	P/C
LP			LP	LP	
Residual waste	Residual waste + LP	Residual waste	Residual waste (including BW)	Residual waste (including BW)	Residual waste (including BW + LP)
Biowaste	Biowaste	Biowaste	Garden waste	-	-

Source: MAGRAMA

Notes: P/C: paper/cardboard; LP: Light packaging; BW: bio-waste

Model 1 is found in Catalonia, Pamplona (Navarra) and Guipuzcoa (Basque Country). Model 2 can be found in some municipalities of Navarra, Galicia and the cities of Valladolid (Castile Leon) and Cordoba (Andalusia). Model 3 is basically limited to some counties in Catalonia. Model 4 is most commonly used in the rest of Spain. Model 5 is used in Madrid.

There are some indications that Model 1 could be more effective since the rate for separate collection is higher in those regions that have adopted this model. Separate collection rates are even higher when that takes place via door-to-door collection. Likewise, regions applying Model 5 have low separate collection rates.

To help establish which waste collection models are the most effective, studies have been carried out in different regions. These, along with initiatives currently in place regionally to encourage reuse and recycling, are outlined below:

- 1) The Balearic and the Canary islands:<sup>26</sup> In the Canary Islands rates for separate collection are particularly low, while in Mallorca and Menorca bio-waste collection systems are only implemented in some municipalities. A sharp seasonality in waste generation was observed due to the influx of tourism.
- 2) Isolated rural areas:<sup>27</sup> Separate collection, particularly for bio-waste, is less prominent in the ACs where there are more rural areas that are difficult to access. The increased travel distance to treatment plants makes the inclusion of

<sup>26</sup> ENT. 2011:

[http://www.magrama.gob.es/imagenes/es/Estudio%20sobre%20modelos%20de%20gesti%C3%B3n%20de%20residuos%20en%20entornos%20insulares\\_tcm7-183310.pdf](http://www.magrama.gob.es/imagenes/es/Estudio%20sobre%20modelos%20de%20gesti%C3%B3n%20de%20residuos%20en%20entornos%20insulares_tcm7-183310.pdf)

<sup>27</sup> ENT. 2011:

[http://www.magrama.gob.es/imagenes/es/Gestion%20de%20residuos%20en%20entornos%20rurales%20vfinal%20revisada%20150411\\_tcm7-183008.pdf](http://www.magrama.gob.es/imagenes/es/Gestion%20de%20residuos%20en%20entornos%20rurales%20vfinal%20revisada%20150411_tcm7-183008.pdf)

these rural areas within the integrated management systems problematic, impacting on recycling and recovery rates.

- 3) Separate collection of bio-waste:<sup>28</sup> General guidelines have been published regarding the implementation of separate collection of bio-waste.
- 4) The Catalan Association of Municipalities for Door-to-Door Selective Waste Collection has carried out a study on the costs of this system as compared to regular collection.<sup>29</sup>
- 5) The MAGRAMA has made available the simulation software SIMUR<sup>30</sup> to facilitate decision-making related to waste collection models.
- 6) Producer responsibility schemes for urban waste are currently in place for:
  - a. Domestic Packaging (other materials than glass): managed by Ecoembes;
  - b. Glass domestic packaging: managed by Ecovidrio;
  - c. Domestic medicines packaging: managed by SIGRE
  - d. WEEE: managed by Ambilamp, Ecoasimelec, Ecofimática, Ecolec, Ecolum, Eco-Raee's, Ecotic, Erp, Reinicia, Fundación Canaria para el Reciclaje y el Desarrollo, Sunreuse;
  - e. Batteries: managed by Ecopilas, ERP, EcoRaee's and Ecolec.

#### 1.6.4 Article 14: Costs of Waste Management

**According to Puig Ventosa and Sastre (2016), more than a half of the Spanish municipalities report to have incomes from municipal waste charges, although these are generally not directly linked to waste generation (e.g. per flat charges, per square meter charges, as a ratio of water consumption, etc.). This share is higher for large municipalities and capital cities (more than 75%). An average household (i.e. a two people household) in Spain is estimated to pay around €85 per year, although great differences are found. Data on costs and cost coverage is not reliable as to report an estimate..**

Pay as You Throw (PAYT) is scarcely implemented by the Spanish municipalities. Only seven out of more than 8,000 municipalities had implemented PAYT schemes by the beginning of 2015 (Table 1.). The PEMAR describes PAYT as one of the key economic instruments to improve separate collection. Catalonia's regional waste management plan

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<sup>28</sup> MAGRAMA. 2013: <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/Guia-para-implantacion-recogida-separada-gestion-biorresiduos-competencia-municipal.aspx>

<sup>29</sup> Catalan Association of Municipalities for Door-to-Door Selective Waste Collection. 2014: [http://portaaporta.cat/documents/arxiu\\_portaaporta\\_173.pdf](http://portaaporta.cat/documents/arxiu_portaaporta_173.pdf)

<sup>30</sup> MAGRAMA. 2015: <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/prevencion-y-gestion-residuos/actuaciones/Aplicacion-programa-SIMUR.aspx>

(PRECAT<sup>31</sup>) explicitly mentions the promotion of PAYT among its main action points, and Catalonia is now preparing a strategy to roll this out, taking into account the guidelines it has already provided to its municipalities for the adoption of such schemes.<sup>32</sup>

**Table 1.4: Implementation of PAYT in Spain**

Municipality	AC	Year	Type of Scheme
Torrelles de Llobregat	Catalonia	2003	Pay per bag
Esporles	Balearic Islands	2009	Pay per bag
Argentona	Catalonia	2010	Pay per bag
Miravet	Catalonia	2011	Pay per bag
Rasquera	Catalonia	2011	Pay per bag
Santa Maria de la Salut	Balearic Islands	2014	Pay per bag
Binissalem	Balearic Islands	2014	Pay per bag
Usurbil	Basque Country	2014	Pay per bin

Source: ENT. Notes: AC: Autonomous Community.

Notes: PAYT was cancelled in Torrelles de Llobregat several months later in the same year after a change of the municipal government (Puig, 2008). Some other municipalities not included in the table conduct PAYT schemes but only for commercial waste.

In regards to packaging, Integrated Management systems (IMS) do not fully assume the costs since the Spanish law on packaging under Article 10 (11/1997) states that:

*“IMS will assume the difference between the cost of the ordinary systems for the collection and transport of waste and the cost of the IMS.”*

### 1.6.5 Article 22: Encouraging the Separate Collection of Biowaste

The Act on waste (Act 22/2011, Article 24) did not establish this obligation, but only referenced promoting the separate collection of bio-waste. The PEMAR contains recommendations to encourage the separate collection of bio-waste, and emphasises the importance of this stream for the accomplishment with targets included in several Directives.

The net recycling from biowaste separately collected is expected to increase until 2.3 Mt by 2020. Among the recommendations included in order to achieve this goal is the implementation of separate collection for bio-waste, with a particularly focus on the sources

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<sup>31</sup> Agència de Residus de Catalunya: [http://residus.gencat.cat/web/.content/home/ambits\\_dactuacio/planificacio/precat20/precat20\\_web\\_cast.pdf](http://residus.gencat.cat/web/.content/home/ambits_dactuacio/planificacio/precat20/precat20_web_cast.pdf)

<sup>32</sup> Agència de Residus de Catalunya. 2010: [http://residus.gencat.cat/web/.content/home/lagencia/publicacions/centre\\_catala\\_del\\_reciclatge\\_\\_ccr/guia\\_pxx\\_en.pdf](http://residus.gencat.cat/web/.content/home/lagencia/publicacions/centre_catala_del_reciclatge__ccr/guia_pxx_en.pdf)

which generate most waste, such as parks and gardens and domestic waste in urban and rural areas<sup>33</sup>.

## 1.7 Summary of Policy Mechanisms and Instruments to Meet Targets

The main instruments used in Spain over the last few years in order to help meet the targets outlined in the Landfill Directive and the Waste Framework Directive are:

### 1) Legal Instruments:

- a. Adoption of Act 22/2011, of July 28<sup>th</sup> on Waste and Contaminated Soils, which transposes the Waste Framework Directive;
- b. Adoption of the Royal Decree 1304/2009 of July 31<sup>st</sup> and Order AAA/661/2013 of April 18<sup>th</sup>, which amend the Royal Decree 1481/2001 that transposes the Landfill Directive;
- c. Adoption and implementation of the National Waste Management Plan, PEMAR 2016-2022; and
- d. Implementation of the National Waste Prevention Plan 2014-2020
- e. In relation to bio-waste, the most advanced regulation is Law 9/2008 of July 10<sup>th</sup>, which modifies Law 6/1993 of July 15<sup>th</sup> regulating waste in Catalonia. It establishes the obligation to undertake separate collection of bio-waste for the entire region. Other regional plans (e.g. Asturias, Castile La Mancha, Basque Country) also provide instruments to encourage bio-waste collection, but without establishing separate collection as mandatory.

### 2) Economic/Fiscal Instruments:

- a. Application of extended producer responsibility to packaging, WEEE, tyres, end-of-life vehicles, mineral oils and batteries;
- b. Implementation of landfill taxes in several Autonomous Communities, and an incineration tax in Catalonia;
- c. Grants awarded to the regional governments for the closure or conditioning of landfills; and
- d. Introduction of taxes or fixed prices in some regions for disposable plastic bags.

### 3) Administrative Instruments:

- a. Completion of the network of waste treatment facilities, although there are still gaps in the network for facilities on recovery and recycling;
- b. Adaptation of landfills and incinerators to new requirements arising from EU regulations;
- c. Closure of illegal landfills across Spain;

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<sup>33</sup> Studies have shown that the quality of separately collected bio-waste depends greatly on the type of collection schemes, being by door-to-door collection models the most effective in this regard (Puig Ventosa et al, 2013)

- d. Improving systems for monitoring, inspecting and surveilling environmental crime, particularly those infringements related to illegal dumping;
- e. Creation of the Coordination Commission on Waste, consisting of members of the Government, the regional governments and local authorities; and
- f. Promotion of voluntary agreements with associations and companies to move towards a more efficient use of resources and better waste management.

#### **4) Informative Instruments**

- a. Improving information available on waste, establishing common requirements and exchange of information between the competent authorities and the sectors concerned;
- b. Development of information systems and collaboration with the National Statistics Institute for implementing EU regulations on waste statistics; and
- c. Public awareness campaigns on recycling, conducted in collaboration with regional and local authorities and private entities. In particular there have been several campaigns to reduce the use of disposable plastic bags.

However, as set out in Section 1.5, these measures are not sufficient to achieve the targets set by the Waste Framework and Landfill Directives in all regions. In accordance, the Ministry has included additional instruments in the PEMAR, primarily aimed at increasing recycling and composting rates. The main instruments and guidelines that the regions should apply are:

##### **1) General Guidelines:**

- a. Implementation and reinforcement of separate collection of biowaste from households in rural and urban areas, gardening and big producers;
- b. Strengthen the promotion of home composting;
- c. Make the necessary changes in the existing collection systems to reduce the presence of impurities;
- d. Improve the separate collection of paper, especially among sources which generate large amounts of waste (e.g. administrations, offices, universities, etc.);
- e. Improve the separate collection of glass in households and among sources which generate large amounts of waste;
- f. Improve the separate collection of plastic packaging in households and sources which generate large amounts of waste, and even allow the joint collection of packaging and non-packaging plastic;
- g. Implement the selective collection of wood among sources which generate large amounts of waste and increase the uptake of wood in waste recycling centres;
- h. Improve the separate collection of textiles and improve the collection network of textiles; and
- i. Increase the collection network of special waste streams (e.g. WEEE, batteries, etc.).

##### **2) Guidelines about Infrastructure:**



- a. Construction of new bio-waste facilities near the points of generation, and prioritising composting vs. anaerobic digestion; and
  - b. Mechanical biological treatment and recovery of waste non-separately collected.
- 3) Legal Guidelines:**
- a. Regulate compost/digestate and promote its use as a product;
  - b. Develop a legal framework for the bio-stabilized material use in the soil and reduce its application in agriculture by 2020;
  - c. Analyse the application of the extended producer responsibility principle to other commercial and industrial packaging; and
  - d. Develop technical specifications for materials according to the needs of the recycling industry, taking into account developments in technology and in the materials market.
- 4) Economic/Fiscal Guidelines:**
- a. Establish differentiated rates for municipal waste management services, moving towards PAYT schemes;
  - b. Establish a framework for environmental taxation, for landfilling as a first step and for incineration as a second step; and
  - c. Work towards detailed accountability of the costs associated with the collection and treatment of waste for each type of management.
- 5) Information Guidelines:**
- a. Improve data collection on collection and treatment waste facilities, as well as on the managers of these facilities;
  - b. Perform periodic characterisations of different waste streams at the entrance to the treatment facilities, especially for landfilling;
  - c. Improve the information available on non-hazardous commercial and industrial waste managed privately;
  - d. Develop an information database that includes annual reports from facilities and allows for the development of statistics using the information these include; and
  - e. Conduct training and awareness campaigns targeted at both local authorities and citizens in relation to the new collection models and their costs.

The sanctions included in Act 22/2011 of July 28<sup>th</sup> are related to the non-compliance of management operators (e.g. waste management without the administrative permit or littering). These are divided into three categories and include fines up to €1,750,000. Since targets are not regionalised, there are no mechanisms currently to enforce regional authorities to accomplish national targets. However, the PEMAR sets for first time regionalized objectives for the ACs, which according to Act 22/2011 would permit to reallocate penalties to those regions where non-compliance with targets occur.

## 1.8 Investment in Waste Management Infrastructure

Investments in waste management infrastructure largely correspond to the ACs through their regional waste management plans, although Local Authorities might make investments as well. Table 1.5 gives an overview of investments which have either been approved or are

in the planning stages of ongoing waste management plans. Many WMPs are outdated and/or do not seem to foresee enough investments to reach the targets.

**Table 1.5: Investments in Infrastructure as Included Within Regional Waste Management Plans**

Autonomous Community	Period	Plan(s)	Investment (Millions of €)	Action(s)
Andalusia	2010-2019	Plan Director Territorial de Gestión de Residuos No peligrosos de Andalucía	2.5	Prevention
			2,139	Infrastructure
			5.9	Others
			7.1	Monitoring
			29.2	Dissemination
Aragon	2009-2015	Plan Integral para la gestión de residuos de Aragón	36.6	Infrastructures and others
Asturias	2014-2024	Plan Estratégico de residuos del Principado de Asturias	287.2	Infrastructure
Balearic Is. Mallorca	2000-2006	Plan Director Sectorial para la gestión de los residuos urbanos de Mallorca	6.2	Reduction and Recycling
			1.3	Containers
			69.5	Infrastructures
			21.5	Others
Balearic Is. Ibiza and Formentera	2000-2006	Plan Director Sectorial para la gestión de los residuos urbanos de Eivissa y Formentera	57.2	Infrastructure
			6.9	Others
Balearic Is. Menorca	-	No information available.	-	-
Canary Is. Santa Cruz de Tenerife	2007-2016	Plan Territorial Especial de Ordenación de los Residuos	9.1	Containers refuse
			206.9	Infrastructure
			10	Containers selective
			38.4	Others
Canary Is. Las Palmas	2014-2020	Plan Territorial Especial de Residuos de Gran Canaria	1	Prevention
			0.01	Reuse

Autonomous Community	Period	Plan(s)	Investment (Millions of €)	Action(s)
			118.5	Selective collection
			110.8	Biowaste valorization
			214.7	Valorization. infrastructure
			58.6	Improvement of sanitary waste elimination
			1,3	Complementary measures
			0,9	Management bodies
<b>Cantabria</b>	2010-2014	Plan Sectorial de Residuos Municipales	2.6	Prevention
			0.7	Reuse
			9.2	Collection
			0.4	Recycling
			0.1	Energy uses
			11.6	Incineration
<b>Castile La Mancha</b>	2009-2019	Plan de Gestión de Residuos Urbanos de Castilla-La Mancha	10.4	Prevention
			151.6	Reuse and Incineration
			103	Improved treatment of refuse
			3.5	Composting plants
			5.5	Landfills
			39.6	Supplies (containers, etc.)
			5.5	Dissemination
			37	Recycling centers
			7	Transfer Station
			13.3	Landfill closure
<b>Castile Leon</b>	2004-2010	Plan Regional de ámbito Sectorial de Residuos Urbanos y	8.5	Prevention
			123.3	Implementation and equipment

Autonomous Community	Period	Plan(s)	Investment (Millions of €)	Action(s)
		Residuos de Envases de Castilla y León	97	Landfill closure
			12	Dissemination
Catalonia	2013-2020	Programa general de prevenció i gestió de residus i recursos de Catalunya and Pla territorial sectorial d'infraestructures de gestió de residus municipals de Catalunya	18	Monitoring
			98.85	Infrastructure (approved)
			303	Infrastructure (planned)
Extremadura	2010-2015	Plan Integral de Residuos de Extremadura	31.2	Recycling
			0.7	Dissemination
			0.2	Recovery
			2.3	Incineration
Galicia	2010-2020	Plan de Gestión de Residuos Urbanos de Galicia	19.9	Dissemination
			11.3	Prevention
			20.3	Organic
			2.8	Packaging
			4.6	Refused
			21.2	Recycling centres
			2.7	Public bodies
			417.7	Treatment plants
			7	Markets for recycled products
Madrid	2006-2016	Plan Regional de Residuos Urbanos de la Comunidad de Madrid	19	Landfill Closure
			9.5	Recycling centres
			14.4	Dissemination
Murcia	2007-2012	Plan Estratégico de los Residuos de la Región de Murcia	-	-
Basque Country	2014-2020	Plan de Prevención y Gestión de Residuos	0.2	Collection and selective separation

Autonomous Community	Period	Plan(s)	Investment (Millions of €)	Action(s)
		de la Comunidad Autónoma del País Vasco	1.5	Prevention
			0.9	Reuse Recycling and recovery
			0.1	Optimization
			0.8	Dissemination
<b>Guipúzcoa</b>	2002-2016	Plan Integral de Residuos Urbanos de Guipúzcoa	143-164	Compost, energy recovery Landfills
<b>Vizcaya</b>	2005-2016	II Plan de Gestión de Residuos Urbanos de Vizcaya	190	Infrastructure
			2	Legislation
			8	Dissemination
<b>Alava</b>	2006-2010	Plan de Gestión de Residuos Urbanos del Territorio Histórico de Álava (2006-2016)	14.4	Infrastructure
			15.2	Dissemination and others
			4.9	Data management
<b>La Rioja</b>	2007-2015	Plan Director de Residuos de La Rioja	3,9	Prevention
			80	Recycling and recovery
			10	Incineration
			9,1	Landfill closure
			2,8	Others

## 2.0 Summary

Overall Spain has been making slow but steady progress over the last twenty years towards meeting the European targets; however, the full accomplishment of these targets will largely rely upon the success of the implementation of PEMAR.

At the national scale, Spain has reported a 32.5% recycling rate in 2013, leaving a significant challenge to reach 50% recycling by 2020. Regarding BMW to landfill, a 50% rate was recorded in 2012 and further efforts are needed in order to achieve 65% diversion by 2016. Some questions remain regarding how BMW is defined and accounted for in the ACs.

Significant interregional differences have been identified in work elsewhere, such as that by the European Topic Centre in 2014.<sup>34</sup> To date, the contribution of each region to the overall targets remains quite varied. Therefore, achieving the appropriate focus within regional legislation and waste management plans will be crucial in order to achieve these goals, particularly since investments are mostly made up of regional budgets. Strengthening coordination and cooperation amongst the three administrative levels is also necessary in order to address waste management challenges in the short- and medium-term.

#### **Main Strengths:**

- There is an adequate level of legislation in place or under development in order to support appropriate waste management policies;
- The necessary involvement of administrative bodies at different levels (i.e. national, regional and local) allows for a reasonable degree of flexibility in terms of the adaptation of different tools to specific contexts (e.g. rural areas, islands or big cities);
- Regional waste management plans have sufficient detail on the different waste streams addressed, budget allocations and priority issues;
- The PEMAR is accurate in its diagnosis of the different streams. It clearly relates means to goals;
- PEMAR includes a proposal for minimum contents to be included within regional waste management plans in order to ensure their coherence;
- Some regions have gained significant experience in developing prevention and recycling policies, implementing separate collection and recycling schemes. Those regions lagging behind could benefit from their experiences and guidance documents and tools, as well as from tools developed by MAGRAMA and European organisations (such as R4R and ACR+). In addition, these regions could benefit from recent experiences on PAYT schemes and landfill and incineration taxes applied in other regions. These precedents may encourage other regions to set up similar systems in the near future.

#### **Potential Weaknesses:**

- Existing legislation is currently weak with regards to the establishment of monitoring systems necessary to enforce the compliance with targets at the regional scale. This gap is also seen as one of the main weaknesses for waste management at the national scale;
- The implications in terms of cost efficiency of devolving the responsibility for the accomplishment with the Waste Framework Directive to the Autonomous Communities are not addressed. This implies that those regions that have already met the target or are close to meet it will have no incentives to go beyond the required levels, whereas other regions might have to allocate their financial resources to solutions devoted to get short term results (i.e. mechanical biological treatment plants) instead of implementing strategic long term approaches (i.e. increase the separate collection of bio-waste).

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<sup>34</sup> ETC/SCP.2014: [http://scp.eionet.europa.eu/wp/wp2014\\_1](http://scp.eionet.europa.eu/wp/wp2014_1)

- Regional plans are too diverse in terms of time span, waste streams covered, instruments used and budget, and some of them are currently out of date and in need of revisions;
- The relation between the current endowment and planned investments in waste management infrastructure and the actual demand is not clearly stated in the PEMAR and in the regional waste management plans.
- The low efficiency of MBT plants regarding material recovery and composting seriously constitutes a bottleneck for the compliance with the recycling target. The contribution of MBTs to the overall recycling rate by 2020 is expected to decrease by 40%. Consequently the role of MBTs in the fulfilment of the targets will be limited.
- Overcapacity in energy recovery facilities constitutes a barrier to prevention and recycling policies in the Balearic Islands;
- There is no cross-regional identification of priorities and opportunities and how these could potentially contribute to the accomplishment of targets. Some highlights/examples of good practices would be useful;
- There is no official information published on the various recycling rates associated with the different waste collection models, which makes it difficult to take stock and highlight lessons learnt;
- Given the allocation of responsibilities (i.e. executive competences correspond to the ACs) most of instruments and proposals within PEMAR, particularly those referring to the use of taxes and economic incentives, are not mandatory since they are not underpinned by legislation at the national scale;
- The slow progress made in adopting more effective separate collection schemes, especially in areas responsible for large amounts of waste generation -namely Madrid and Andalusia- may be an obstacle in accomplishing the recycling and landfilling targets. Further efforts, particularly regarding separate collection of bio-waste, will have to be promoted in order to boost the contribution of these key ACs to overall national targets;
- There is very limited use of landfill/incineration taxes which disincentive waste diversion from landfill;
- There is very limited use of PAYT schemes in Spain currently, although the existing collection arrangements would make such application somewhat problematic, except where door-to-door separate collection is already implemented.
- A business as usual scenario (i.e. in the absence of further measures on waste prevention, profound changes in waste collection systems and the use of appropriate economic instruments) would lead to the non-compliance with targets plus an increase in total waste generated in 2020.
- If the WFD targets are to be met by each region, specific attention should be paid to the worst performers in the short term: namely Canary Is., Madrid, Galicia, Balearic Is., Murcia, C-La Mancha, Asturias, Aragon, Basque Country and Andalusia. Moreover, some of the best performers, namely La Rioja, Extremadura and Valencia strongly rely on the calculation of recycling figures at MBT plants where mass losses are accounted for as recycling.
- In order for the Landfill Directive's target to be met by 2016, further measures should be implemented in Andalusia, Madrid, Valencia, the Canary Islands, the Basque Country and Aragon. Furthermore, the details on how biodegradable waste sent to landfill is calculated in each region should be assessed in order to ensure

methodological transparency and enhance comparability, reliability and soundness of the figures reported.

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# 1.0 Summary of Recommendations for Spain

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Spain's compliance with the Landfill Directive (due by 2016) and the Waste Framework Directive (due by 2020) relies upon addressing several technical, administrative, legal and management issues in the short and mid-term for which these measures are proposed:

- Measures addressing several potential issues:
  1. Introduction of a **national tax on landfill** of municipal waste;
  2. Co-ordinated **updates to the Regional Waste Management Plans (RWMPs)**;
- Measures regarding the **alignment of the RWMPs with national obligations**:
  3. Identifying and characterising regions at risk of non-compliance;
  4. Identifying and characterising top performing regions, key factors of success and dissemination of good practices;
  5. Approval of waste prevention programs complementing the RWMPs in prevention issues if they are not included in RWMPs.
- Measures for **increasing separate collection (SC)**:
  6. Introducing **specific plans for biowaste management** within RWMPs;
  7. Identifying and raising awareness about successful waste collection/charging models (i.e. door-to-door SC + PAYT schemes);
- Measures for ensuring the best possible **performance at Mechanical-Biological Treatment (MBT) facilities**:
  8. Compiling capacities and efficiencies (based on mass-flow analysis) as regards to residual waste treatment at MBT facilities;
  9. Compiling the capacity of MBTs for the treatment of separately collected biowaste as well as the quality of outputs;
  10. Identifying and characterising the best performing MBT plants and ensure technology transfer;
- **Economic instruments and tax reforms** for a better waste management:
  11. Reform on municipal waste charges to cover full costs;
  12. Improved and new extended producer responsibility (EPR) systems;
- Measures addressing **the reliability of data** on waste management:
  13. Compiling, comparing and harmonizing current methods for the calculation of BMW to landfill at the regional level;
  14. Addressing the sources of inconsistency, in particular regarding MBT plants.
- Measures addressing **the coordination and cooperation on interregional waste shipments**:
  15. Monitoring interregional waste flows;
  16. Fostering efficiency and economies of scale through a plan for sharing treatment facilities.

## 2.0 Potential Issues with approach to Waste Management

Number	Potential issue	Description	Reasons for the issue
1	Regional waste planning not aligned with national obligations.	<p>The State is responsible for the accomplishment of targets.</p> <p>Most Executive competences rely on the ACs and they have to put in place their corresponding RWMPs.</p> <p>The PEMAR (National Waste Management Plan,) establishes that targets must be met at the regional level (i.e. 50% recycling rate by 2020, biodegradable municipal waste (BMW) to landfill 35% by 2016). It follows that ACs should amend/revise their RWMPs according to these targets and time frames.</p>	<p>The PEMAR establishes that each AC should meet the targets set out by the Waste Framework Directive and the Landfill Directive. This new context suggests that co-ordination must be strengthened. PEMAR does not include an identification of priorities, transitional measures and mechanisms for technological and knowledge transfer towards the worst performing regions. In the absence of further coordination of efforts, the accomplishment of targets at the national level will depend upon ACs' commitment.</p> <p>Until now, RWMPs have been implemented largely independently from each other. RWMPs differ in terms of targets, focus, waste streams addressed and time spans. This situation has led to different outcomes in terms of recycling and material recovery rates, related to different waste collection schemes, waste management approaches and investments. Consequently, the current degree of compliance quantitatively and qualitatively diverges at the regional level:</p> <ul style="list-style-type: none"> <li>- 7 ACs have already met the target for BMW to landfill (due by 2016) and 3 others are close to reach it. 7 regions are very likely not to make it.</li> <li>- Regarding recycling rates, one region has already met the target and 6 ACs will accomplish the target (due by 2020) if the current trends are maintained. The remaining 10 ACs will find difficulties meeting the target unless major changes occur.</li> </ul> <p>This situation places in jeopardy the successful accomplishment of targets at the national level.</p>

Number	Potential issue	Description	Reasons for the issue
2	Slow progress in the adoption of more effective separate collection (SC) schemes, particularly regarding biowaste.	The low levels of separated collection suggest that SC schemes needs to improve.	<p>Only 18% of total waste generated was separately collected in 2012. The recycling and recovery rate at MBTs will not allow the targets to be met even in case of diverting the whole tonnage of unsorted waste going currently to landfill towards these facilities.</p> <p>Consequently, only through the adoption of more effective schemes of SC will the targets be accomplished. This is particularly relevant for biowaste (44% of total municipal waste generated). SC of biowaste was 4% of total municipal waste generated and 24% of separately collected waste.</p> <p>There is a lack of knowledge about the efficiency of the different waste collection schemes as related to recycling and recovery rates and costs. Door-to-door collection, although increasing, still has a very limited presence currently.</p>
3	Poor performance of mechanical-biological treatment (MBT) plants.	Residual waste amounted 82% of total waste collected in 2012 (17,911,465 t). Of this, approximately 63% (or 53% of total waste generated) was treated in MBT plants where 65% of the input was rejected. There are neither incentives linked to performance nor any contractual commitment on recycling and material recovery.	<p>Improving performance at MBT plants is important in the short term. Until more effective collection schemes are fully operating, MBT plants will be treating the largest share of municipal solid waste (MSW) (54% in 2012, 47% planned in 2020).</p> <p>There is also a data gap on both, nominal capacities for unsorted waste treatment at MBT's and for nominal capacities of segregated biowaste treatment at independent composting / digestion facilities. This gap hampers the crosscheck of current and expected treatment capacities against current and expected waste generation<sup>1</sup> and its spatial distribution. Consequently, the appropriateness of future investment on infrastructures cannot be properly evaluated. This point is related to issue number 6.</p>

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<sup>1</sup> The PEMAR expects the overall quantity of unsorted waste treated at MBTs to remain constant by 2020; therefore investment in new MBT facilities should be checked against this forecast at the regional and municipal level.

Number	Potential issue	Description	Reasons for the issue
4	Scarce, and non-harmonised implementation of economic instruments in waste management	Economic instruments to incentivise management of waste in the higher tiers of the waste hierarchy are scarcely implemented. Moreover, the extent of implementation of these instruments is very unevenly distributed across regions.	<p>Although a number of regions have introduced a landfill tax on municipal waste, the level of the tax is not high enough to act as a disincentive for residual waste disposal and foster prevention and efficiency (waste to landfill was more than 60% of total MSW in 2012, albeit that some of this was stabilised biowaste). In the absence of a landfill tax implemented at the national level, distortions are caused by differentials in landfill costs. In the meantime, transitional measures are required in order to cope with the current landfill levels.</p> <p>Municipal charges do not generally cover the costs of waste management and they are rarely linked to waste generation. A very limited number of PAYT schemes are implemented.</p> <p>Deposit and refund systems are currently restricted to some products used in the food service industry sector.</p>
5	Quality of data for reporting.	<p>ACs are responsible for gathering data on waste collection and treatment from waste treatment plants and municipalities. This data is then sent to the MAGRAMA.</p> <p>The method for the calculation of BMW sent to landfill in each AC is unknown.</p> <p>Mass balances as reported by waste treatment facilities, do not completely match with data on waste collection.</p>	<p>Each AC is responsible for the gathering of data on waste treatment and waste collection from treatment plants and municipalities. It has not been possible to find out the method by which each AC estimates BMW sent to landfill. In the absence of a common and transparent framework for accounting, results are unverifiable.</p> <p>Since 2009 the two bodies responsible for reporting data on waste management, namely the National Statistics Institute and MAGRAMA, have coordinated their methods and standards. Inconsistencies remain, though. First, regarding the correspondence between data on inputs to waste treatment plants and data on waste collection. Second, mass losses at MBT plants (accounted for as recycling) are unusually high for some facilities.</p>
6	Coordination and cooperation on interregional (IRR) waste shipments.	IRR waste shipments have been recently regulated at the national scale. IRR coordination should contribute to avoid the “border” effect entailing inefficiencies, and a “race to the bottom” for those ACs where landfill costs are higher.	<p>There is a lack of knowledge on the current IRR waste flows, in terms of tonnage, quality, origin/destination, economic efficiency, etc.</p> <p>IRR waste shipments can contribute to optimize treatment capacity, lower treatment costs and the emergence of economies of scale. However, it can also lead to a “race to the bottom”, particularly for waste coming from regions where landfill costs are higher.</p>



## 3.0 Recommended Measures

### 3.1 Measures Addressing Several Potential Issues

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<p>1. <b>Introduction of a national tax on landfill and treatment of municipal waste:</b><sup>2</sup>            This tax would build upon the main characteristics of the existing regional taxes, and its revenue would be transferred to the Autonomous Communities, which would also define the tax rates within a minimum level set by the national legislation. It should be applied both to residual waste disposal and rejects from MBT plants, albeit at different rates if the MBT outputs meet a standard for stabilisation. It should also include incineration. If the introduction of a national tax proves impossible, at the very least, a minimum tax rate should be mandatory.</p>	Legal, economic	MINHAP, MAGRAMA.	-	N/A	<p>It should help diverting unsorted waste from landfills and fostering efficiency at treatment facilities.</p> <p>The current gate fees and landfill taxes do not disincentive disposal. Landfill taxes will help implement the waste hierarchy by making the higher tiers more cost competitive.</p>

<sup>2</sup> This proposal is taken from report from the Commission of Experts for the Spanish Tributary System Reform (2014), though adapted to include other forms of residual waste management. The report also recommends the definition of a national minimum tax rate.

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<p><b>2. Co-ordinated updates to the RWMPs:</b></p> <p>The Comisión de coordinación <b>could be</b> developed to promote coordination at regional level, thereby ensuring consistency across the RWMPs. Co-ordination of the plans should include:</p> <ul style="list-style-type: none"> <li>- Updating targets, deadlines and frequency of revision (where necessary).</li> <li>- Alignment of periods covered by RWMPs</li> <li>- Defining minimum common contents for the RWMPs.</li> </ul> <p>Updates to the RWMP should cover the following:</p> <ul style="list-style-type: none"> <li>- Updating investments in infrastructure in the short term (where necessary).</li> <li>- Waste prevention programmes, including targets, which should include objectives to expand the existing networks of re-use and repair centres. This should follow from a mapping exercise whereby existing re-use / repair infrastructure is identified.</li> </ul>	<p>Legal, Administrative</p>	<p>MAGRAMA, Comisión de coordinación en material de residuos, Autonomous Communities.</p>	<p>-</p>	<p>N/A</p>	<p>RWMPs become homogeneous in terms of targets and deadlines, yet flexible for the local implementation of strategies and investments.</p> <p>ACs officially committed to the accomplishment of national targets and deadlines.</p> <p>Ensure waste prevention is recognised as a priority and measures are taken at regional level.</p>

## 3.2 Measures aimed at Addressing Specific Issues

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<b>Issue 1: Regional waste planning not aligned with national obligations.</b>					
<b>3. Identifying and characterising regions at risk of non-compliance.</b>	Informational	MAGRAMA, Comisión de coordinación en materia de residuos.	-	N/A	Identification and characterisation of regions for priority action. Identification and recommendation of priority measures.
<b>4. Identifying and characterising top performing regions, key factors of success and dissemination of good practices.</b> Here, the Comisión de coordinación could play a role in monitoring the implementation of waste management plans in the AC's, the dissemination of best practice, and improving the dialogue between AC's and central government.	Informational	MAGRAMA, Comisión de coordinación en materia de residuos.	-	N/A	- Characterisation of the top performing regions; -Technology/knowledge transfer is fostered.
<b>5. Inclusion of waste prevention plans within the RWMPs.</b>	Administrative / legal	Autonomous Communities.	Unknown	Unknown	- Waste is moved up the hierarchy, improving diversion from landfill

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<b>Issue 2: Slow progress in the adoption of more effective separate collection (SC) schemes, particularly regarding biowaste.</b>					
<p><b>6. Introducing specific plans for biowaste management within RWMPs:</b> identify opportunities and candidates for the implementation of separate collection of biowaste. Consider the implementation of binding regulations which require municipalities to implement biowaste collection in (for instance) towns greater than a set number of households. Also regulations obliging commercial organisations generating more than a fixed quantity of food waste per annum to separate and contract for separately collected organic waste.</p>	Administrative / legal	Autonomous Communities.	Unknown	Unknown	<p>Candidates for implementing the SC of biowaste identified and prioritised.</p> <p>Potential requirement on municipalities to collect household biowaste. Potential requirement on businesses to have commercial biowaste separately collected.</p> <p>Targets for SC of biowaste could be defined.</p>
<p><b>7. Identifying and raising awareness about successful waste collection/charging models</b> (i.e. door-to-door + PAYT schemes). To be achieved through the introduction of a separate body aimed at knowledge transfer and training (similar to WRAP in the UK), covering issues such as the system design, operation and optimisation.</p>	Informational	MAGRAMA, Autonomous Communities, Municipalities.	-	N/A	<p>Linking specific collection schemes to recycling rates will permit recommendations to be based upon an empirical basis.</p> <p>Increased separation at source entailing increased recycling rates.</p>

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<b>Issue 3: Poor performance of mechanical-biological treatment (MBT) plants.</b>					
8. <b>Compiling capacities and efficiencies (based on mass flow analysis) as regards to residual waste treatment at MBT facilities.</b>	Informational	MAGRAMA, Autonomous Communities,	Additional required treatment capacity unknown	ERDF to be considered	Linking MBT capacities (i.e. current and planned) with the estimated production of unsorted waste will permit the re-assessment of the planned investments (i.e. MBT plants) as well as the optimization of existing facilities ( the PEMAR estimates that by 2020, the overall quantity of unsorted waste treated at MBT's will remain constant).
9. <b>Compiling capacities for biowaste treatment of the separately collected fraction, both at MBTs and dedicated composting plants. .</b>	Informational	MAGRAMA, Autonomous Communities	Additional required treatment capacity unknown	ERDF to be considered	The need for new biowaste treatment facilities for SC organics will be identified and planned.

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<p><b>10. Identifying and characterising the best performing MBT plants and ensure technology transfer.</b></p>	<p>Informational</p>	<p>MAGRAMA, Autonomous Communities, Waste Managers</p>	<p>-</p>	<p>N/A</p>	<p>Technological transfers and/or including performance standards in public contracts will entail an overall increase of the quantity and quality of the recovered materials and in turn, a reduction of refuse. The margin for improvement is narrow though (see Factsheet 1.4.1 and PEMAR page 29).</p>

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
<b>Issue 4: Scarce, non-harmonised implementation of economic instruments in waste management</b>					
<p><b>11. Reform on municipal waste charges on:</b></p> <ul style="list-style-type: none"> <li>- Households by progressively linking payment to waste generation (i.e. PAYT) as the implementation of more efficient collection system makes it suitable;</li> <li>- Commercial activities to ensure full cost coverage. PAYT schemes should be introduced as the implementation when collection schemes allow.</li> </ul>	Legal, economic	Municipalities.	-	N/A	<p>A progressive shift towards municipal waste charging systems based on waste generation will increase waste prevention and separation at source.</p> <p>As more efficient waste collection systems are implemented (i.e. door to door collection), PAYT schemes are more likely to succeed resulting into waste prevention and greater recycling rates.</p>
<p><b>12. Improved and new extended producer responsibility (EPR) systems:</b></p> <ul style="list-style-type: none"> <li>- Expanding EPRs towards additional waste streams (e.g., furniture, textiles, sanitary and hygiene products, etc.)</li> <li>- Ensuring full cost coverage and introducing eco-design (i.e. durability, recyclability) criteria for payments.</li> <li>- Consider the introduction of deposit refund systems</li> </ul>	Legal, economic	MAGRAMA, Integrated Management Systems.	-	N/A	<p>Increased waste prevention, reuse and recycling.</p> <p>Decrease in disposal of unsorted/bulky waste.</p> <p>Assumption of waste management costs by producers.</p>
<b>Issue 5: Quality of data for reporting.</b>					

Measure	Type of instrument	Responsibility	Estimated costs (infrastructure requirement)	Available EU funding	Anticipated impact
13. <b>Compiling, comparing and harmonizing current methods for the calculation of BMW to landfill at the regional level.</b>	Informational	MAGRAMA, Autonomous Communities.	-	N/A	Transparency of reporting enhanced. Comparability assessed. Better characterisation of unsorted waste across regions.
14. <b>Addressing the sources of inconsistency between mass balances presented by treatment facilities and waste collection at municipalities.</b>	Informational	MAGRAMA, Autonomous Communities, Municipalities.	-	N/A	Transparency of reporting enhanced. Identification of priorities on a sound quantitative basis enabled.
<b>Issue 6: Coordination and cooperation on interregional waste shipments</b>					
15. <b>Monitoring interregional waste flows:</b> Data on waste flows will be crucial in the short term in order to check the extent to which interregional cooperation can contribute to the overall compliance with targets.	Informational	Autonomous Communities, MAGRAMA	-	N/A	Identification of priority regions for landfill diversion policies. Identification of priority treatment facilities for capacity optimization
16. <b>Fostering efficiency and economies of scale</b> through a plan for sharing treatment facilities (where viability is ensured by life cycle analysis).	Administrative	Autonomous Communities, MAGRAMA.	-	N/A	Optimization of treatment capacities (particularly if implemented hand in hand with measures 8 and 10).



### 3.3 Timeline for introducing the Proposed Measures

MEASURES	2016	2017	2018	2019	2020	Beyond 2020
1. Introduction of a national tax on landfill of municipal waste and rejects from MBT.	Preparation	In place				
2. Updating RWMPs	Preparation	In place				
3. Identifying and characterising regions at risk of non-compliance	In place					
4. Identifying and characterising top performing regions, key factors of success and dissemination of good practices	In place					
5. Introducing specific plans for biowaste management within RWMPs	Preparation	In place				
6. Identifying and raising awareness about successful waste collection/charging models (i.e. door-to-door + PAYT schemes)	Continuous work	Continuous work	Continuous work	Continuous work	Continuous work	Continuous work
7. Compiling capacities and efficiencies as regards to residual waste treatment at MBT facilities	Delivered					
8. Compiling capacities for biowaste from SC characterising as regards to the quality of outputs	Delivered					

MEASURES	2016	2017	2018	2019	2020	Beyond 2020
9. Identifying and characterising the best performing MBT plants and ensure technology transfer	Delivered					
10. Reform on municipal waste charges (where collection systems allow)	Progressive adoption	Progressive adoption	Progressive adoption	Progressive adoption	Progressive adoption	Progressive adoption
11. Improved and new extended producer responsibility (EPR) systems	Viability Assessment	Viability Assessment	In place			
12. Compiling, comparing and harmonizing current methods for the calculation of BMW to landfill at the regional level	Delivered					
13. Addressing the sources of inconsistency	Delivered					
14. Monitoring interregional waste shipments	Preparation	Preparation	Results			
15. Fostering efficiency and economies of scale	Preparation	Preparation	Preparation	Delivered		

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