

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
Population				
Total (inhabitants)	9,947,599	247,495	262,202	10,457,295
Waste generation				
Total (thousand tonnes)	4,363	128	108	4,598
Total (kg/capita/year)	438.6	514.3	410.6	439.7
Waste composition (%)				
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
Type of MSW collection (% by weight)				
Separate collection	13	12	14	13
Undifferentiated collection	87	88	86	87
Separate collection (% by weight)				
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
Waste management (% of MSW)				
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,¹ 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.²

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/year³.

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

¹ http://www.apambiente.pt/_zdata/Politicar/Residuos/DL_73_2011_DQR.pdf.

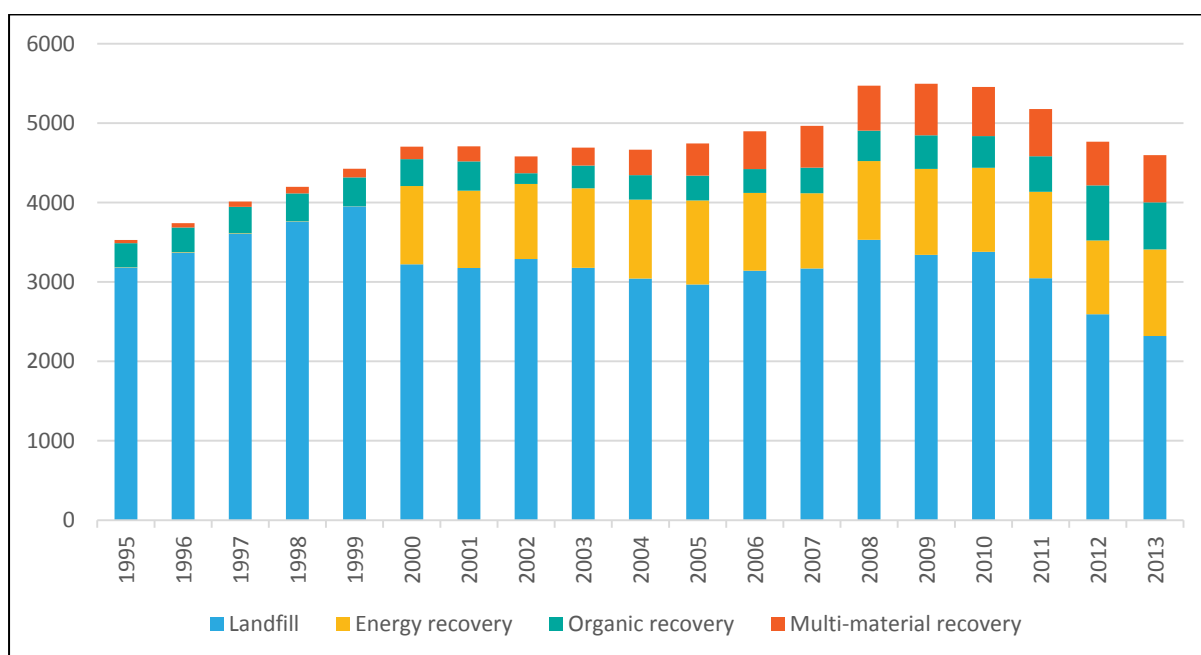
² According to APA, MSW corresponds to the 3 categories. However, MSW data only refers to waste collected under the responsibility of the municipalities, i.e. waste generated by households and small producers, with exception of the Azores which also includes big producers.

³ 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.⁴

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.

⁴ 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 ¹	<ul style="list-style-type: none"> • 32 landfills • 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. • 2 energy recovery facilities (incineration) • 4 Mechanical Treatment (MT) stations • 81 transfer stations • 27 waste sorting facilities • 1 unit for the preparation of refuse derived fuel (“Combustíveis derivados de resíduos” – CDR)
Azores ²	<ul style="list-style-type: none"> • 4 landfills • 3 processing centres integrating a recycling centre, an organic recovery facility, and a transfer station • 1 processing centres integrating a recycling centre and an organic recovery facility • 2 processing centres integrating a recycling centre, an organic recovery facility, a sorting unit, and a transfer station • 1 bailing unit for waste streams of paper and cardboard, plastic, and glass • 2 sorting, bailing, and storage units for waste streams of paper and cardboard, plastic, and glass • 3 sorting and bailing units for waste streams of paper and cardboard, plastic, glass, metals, composites, and woods. • 2 organic recovery facilities • 1 recycling centre
Madeira ³	<ul style="list-style-type: none"> • 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 • 1 transfer and sorting station and recycling centre • 1 transfer station and recycling centre • 1 MSW processing centre integrating an recycling centre, sorting and transfer units, and landfill

Source: ¹ APA (2014), ² Governo Regional dos Açores (2014), ³ ARM (2014).

Notes: ^{1&2} Data refers to 2013, ³ 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 ¹	80%
Organic recovery	377,714 ²	829,000 ³	46%
Incineration	927,886	1,042,000	89%

Source: ERSAR (2014)

Notes: ¹ Associated with the annual licensed capacity to receive waste; ² Refers to waste subject to organic recovery; ³ 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:

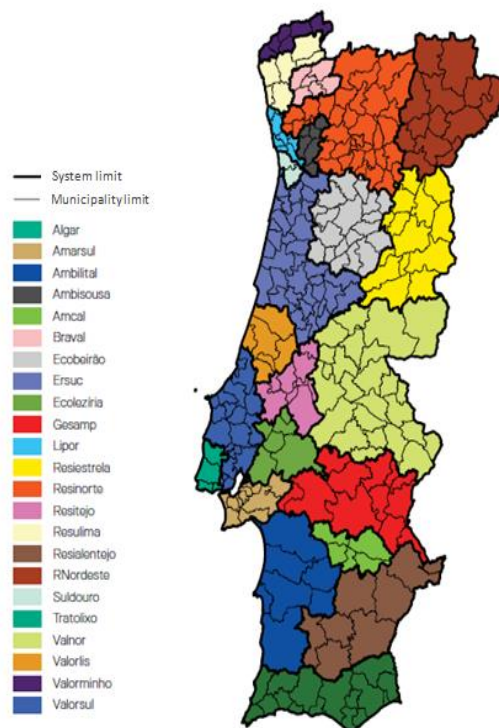
- “Norte”;
- “Centro”;
- “Lisboa e Vale do Tejo”;
- “Alentejo”; and
- “Algarve”.

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”).⁵ These are divided into 11 inter-municipal systems and 12 multi-municipal systems (see Figure 1-2).⁶ 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 2013.⁷ 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

⁵ For the purpose of simplification these will be referred as “high services” throughout the text.

⁶ 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.

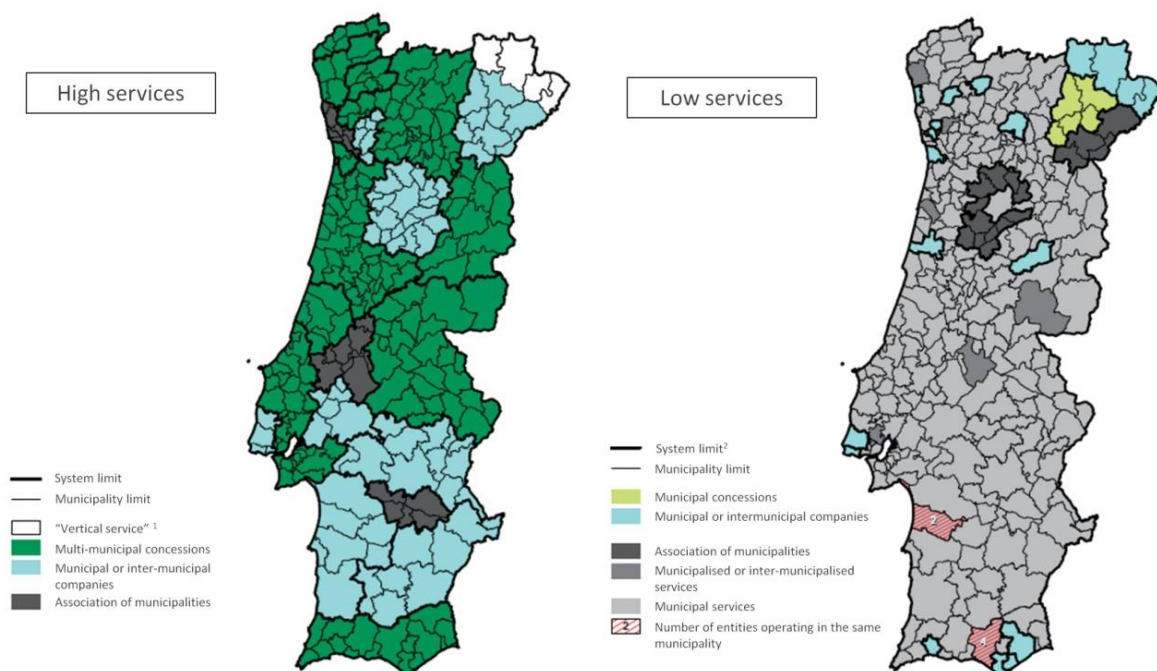
⁷ http://apambiente.pt/_cms/view/page_doc.php?id=1166

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”)⁸, 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.⁹ 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: ¹ “Vertical service” refers to the municipalities where high and low services are operated by the same entity. ² “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

⁸ For the purpose of simplification these will be referred as “low services” throughout the text.

⁹ <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.¹⁰

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.¹¹

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

¹⁰ Bases on information provided by SPV.

¹¹<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,¹² and No 165/2014 of 5 November,¹³ which amended the Decree Law No 73/2011 of 17 June.¹⁴ 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,¹⁵ 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,¹⁶ which revoked the Regional Decree Law No 20/2007/A of 23 August.¹⁷ The autonomous region of Madeira indirectly adopts the WFD through the national law, without a specific transposition.¹⁸

Furthermore, the Decree Law No 183/2009 of 20 August implemented the Landfill Directive (LFD) No 1999/31/CE.¹⁹ 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

¹² <https://dre.pt/application/dir/pdf1sdip/2014/05/08700/0267002692.pdf>

¹³ <https://dre.pt/application/conteudo/58752835>

¹⁴ http://www.apambiente.pt/_zdata/Políticas/Resíduos/DL_73_2011_DQR.pdf

¹⁵ http://www.azores.gov.pt/NR/rdonlyres/FE0FC2F9-725B-428F-968F-082B94CB8C7A/615502/DL_178_2006.pdf

¹⁶ http://www.dgap.gov.pt/upload/legis/2011_dl_29_a_01_03.pdf

¹⁷ http://www.igfse.pt/upload/docs/2011/DLR_20_2007.pdf

¹⁸ Information provided by the Environmental and Spatial Planning Regional Directorate, in Portuguese “Direção Regional do Ordenamento do Território e Ambiente” – DROTA. 9 June 2015.

¹⁹ 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,²⁰ 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,²¹ 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 2014-2020.²² 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.²³ 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.²⁴

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.

²⁰ <https://dre.pt/application/file/66763015>

²¹ http://www.apambiente.pt/_zdata/DESTAQUES/2014/Portaria_PlanoEstrategico_PERSU2020_final.pdf

²² 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. 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.

²³ <http://www.netresiduos.com/Handlers/FileHandler.ashx?id=341&menuid=110>

²⁴ 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 2010.²⁵ 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.

²⁵ 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. ²⁶	- 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, ²⁷ 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.		

²⁶ <http://www.legislacao.org/primeira-serie/portaria-n-o-851-2009-residuos-amostragem-urbanos-caracterizacao-182752>

²⁷ <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.

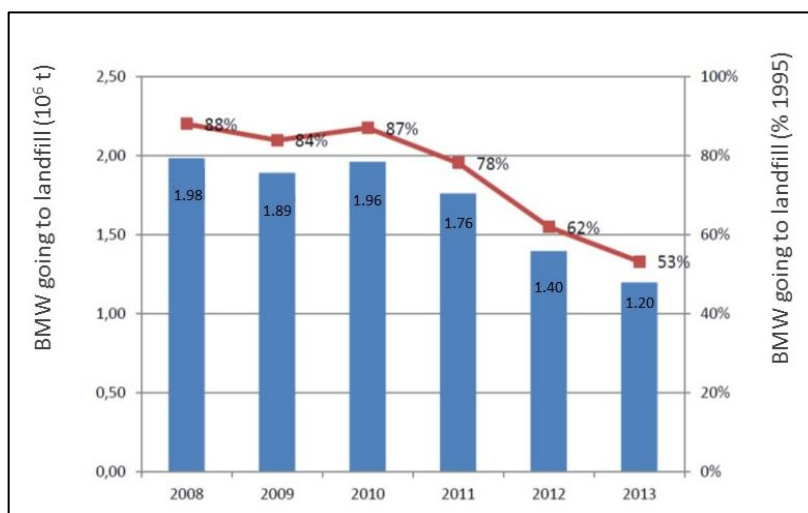
The Madeira region includes few references to waste prevention in its WMP. This objective is integrated through activities such as the promotion of awareness campaigns in schools and for the general public, as well as the development of feasibility studies for the reduction of waste generation.

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.²⁸

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

²⁸ 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.

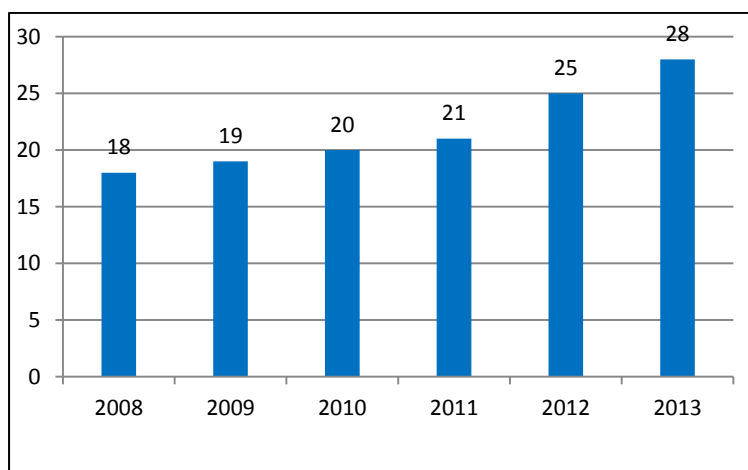
These actions would allow the urban waste management systems to reduce BMW sent to landfill to a greater extent. The results obtained with the “Scenario for the definition of targets” show a performance of 26% of BMW being sent to landfill, or nine percentage points below the required EU-target.

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 (%), 2008-2013²⁹



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

²⁹ “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).³⁰

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

³⁰ 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

Number of participants	104
Type of participants	15% from diverse manufacturers 56% from waste collection and treatment sector 21% from wholesale commerce sector 8% from other activities
Type of waste traded	Mainly packaging coming from separate collection
Number of waste transactions	1,891
Waste traded (tonnes)	372,229
Total value traded (million Euros)	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 October³¹) 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.

³¹ 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/97³² 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 267/2009³³ 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 UCO, 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. ^{34,35}

³² http://www.apambiente.pt/_zdata/Politic/Residuos/FluxosEspecificosResiduos/ERE/DL366.pdf

³³ http://www.ecopark.pt/portal/legislacao/ambiente/residuos/decreto-lei-n-o-267-2009-de-29-setembro-oau/at_download/file

³⁴ http://apambiente.pt/_zdata/Politic/Residuos/FluxosEspecificosResiduos/OAU/PerguntasFrequentes.pdf

³⁵ This information refers only to the mainland as the Azores and Madeira have their own legislation and targets regarding UEO.

- Decree Law No 206/2008³⁶ 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 systems 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.³⁷

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

³⁷ 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%.³⁸

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.³⁹ The funding of separate collection infrastructure is supported by the municipalities and the SPV.⁴⁰

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.⁴¹

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.⁴² Moreover, it also states that one of the main

³⁸ http://apambiente.pt/_cms/view/page_doc.php?id=971

³⁹ http://www.pontoverde.pt/assets/docs_publicacoes/pub201506021433265257.pdf

⁴⁰ http://www.pontoverde.pt/en/quem_somos.php

http://www.spvnet.pt/cpanel/assets/documentos/Despacho%2025590-2008,%2014%20de%20Outubro_Verdoreca.pdf

⁴¹ Information based on the Questionnaire on Implementation of Directive 2008/98/EC, C (2012) 2384 filled by the Portuguese authorities.

⁴² According to information provided at the Portuguese workshop held in Lisbon in the 10th 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
Total	48,701	66,535	56,493	60,831	63,164

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;⁴³ lack of recycling culture⁴⁴; and high levels of waste sent to landfills, which are supported by the low incentives for changing this situation.⁴⁵ 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”.

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.

⁴³ MAOTE (2014b) PERSU 2020 – Plano Estratégico para os Resíduos Urbanos

⁴⁴ 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”.

⁴⁵ 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 Management⁴⁶

The polluter pays principle is present in the Legal Regime for Environmental Responsibility (“Regime Jurídico da Responsabilidade Ambiental”), specifically in the Decree Law No 147/2008⁴⁷ 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,⁴⁸ 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”).⁴⁹

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

⁴⁶ 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.

⁴⁷ <http://www.seguramos.pt/Portals/2/Files/Legislacao/DL147-2008de29-07.pdf>

⁴⁸ http://www.dgap.gov.pt/upload/legis/2008_l_64_a_31_12.pdf

⁴⁹ <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.⁵⁰ 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 2012.⁵¹ 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.^{52, 53}

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.⁵⁴

⁵⁰ 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.

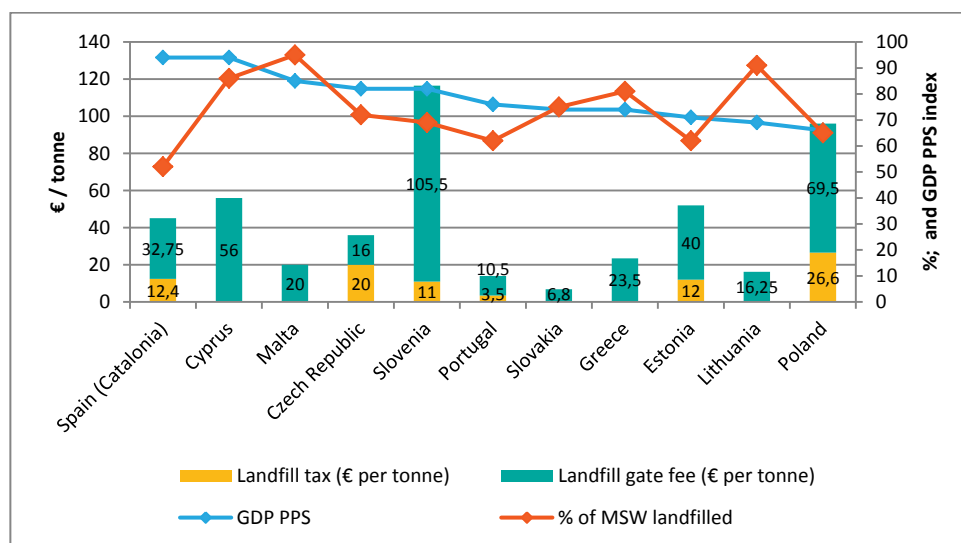
⁵¹ <http://www.eea.europa.eu/publications/managing-municipal-solid-waste/portugal-municipal-waste-management>

⁵² Niza et al. (2014). Extended producer responsibility policy in Portugal: a strategy towards improving waste management performance. *Journal of Cleaner Production* 64:177-287.

⁵³ According to information provided at the Portuguese workshop held in Lisbon in the 10th of July 2015, a higher increase of the Waste Management Fee was proposed, although it was not approved.

⁵⁴ Idem.

Figure 1-6: Comparison between landfill charges and MSW landfilled in similar EU countries in terms of GDP PPS, 2012



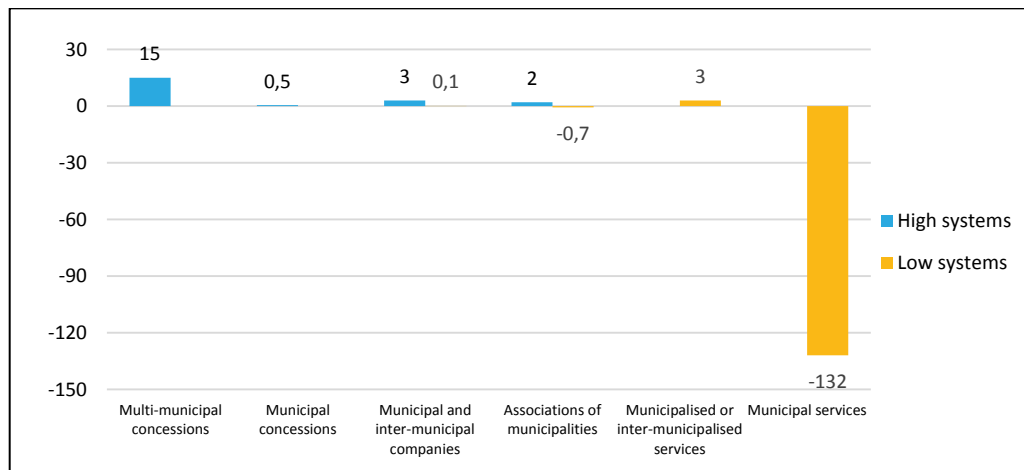
Source: EEA (2013) and EUROSTAT (2015).

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.

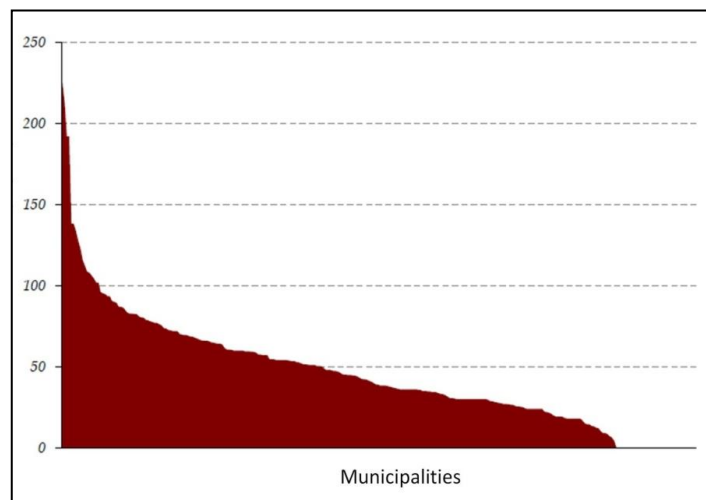
Figure 1-7: Net income of high and low systems (million Euros), mainland, 2012



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 1324/2010⁵⁵ 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:

⁵⁵ 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)⁵⁶; Decree Law No 92/2013 of 11 June,⁵⁷ and Decree Law No 294/94 of 16 November,⁵⁸ 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.⁵⁹
- 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.⁶⁰
- 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

⁵⁶ <http://dre.pt/pdf1sdip/2014/03/04600/0173301746.pdf>

⁵⁷ <http://dre.pt/pdf1sdip/2013/07/13200/0403904043.pdf>

⁵⁸ <http://www.egf.pt/files/164.pdf>

⁵⁹ <http://www.legislacao.org/primeira-serie/decreto-lei-n-o-90-2009-parceria-entidade-estado-gestao-181645>

⁶⁰ <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:

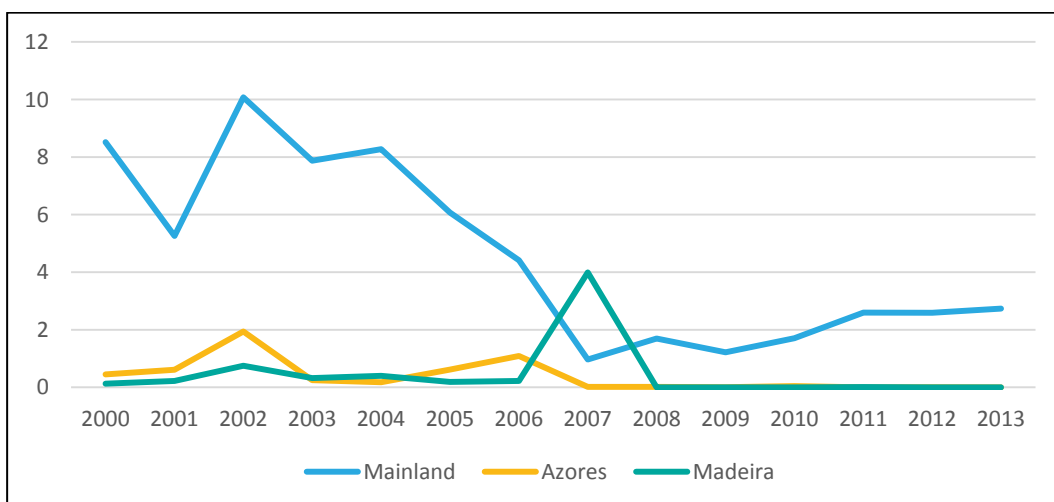
- Awareness campaigns aimed at promoting increased separate collection of WEEE, UCO, and batteries and accumulators.
- Awareness campaigns regarding the phasing-out of the use of plastic bags, and the reduction of food waste.
- Promotion of home composting.
- Promotion of a better articulation regarding 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. 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.⁶¹ 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.⁶²

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.⁶³

Finally, the region of Madeira expects to finish the third stage of construction of a landfill in 2015.⁶⁴ 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).⁶⁵

Table 1-9: Expected future investments in waste management infrastructure

Regional area	Type of investment	Estimated value (Million €)
Mainland territory ¹	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

⁶¹ Information provided by EGF.

⁶² Information provided by the Regional Government of the Azores.

⁶³ http://www.azores.gov.pt/NR/rdonlyres/B17C3D46-7303-4899-902A-6BDE5C7B2D09/833995/Plano_Regional_Anuual_2015.pdf

⁶⁴ <http://www.gov-madeira.pt/joram/1serie/Ano%20de%202015/ISerie-022-2015-02-05sup.pdf>

⁶⁵ <http://www.alram.pt/images/stories/IV-LEGISLATIVA/ordens-trabalho/OT-18/OT-18-PIDDAR-2015-Proposta.pdf>

Azores ²	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 ³		- Third stage of the Landfill construction in the area of the MSW treatment station.	Na

Sources: ¹ PERSU 2020; ² PEPGRA; ³ 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.⁶⁶ 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

⁶⁶ 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.⁶⁷

- 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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<http://www.alram.pt/images/stories/IV-LEGISLATIVA/ordens-trabalho/OT-18/OT-18-PIDDAR-2015-Proposta.pdf>

⁶⁷ The latter idea was referred in the workshop held in Lisbon (Portugal) on the 10th 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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