Study to Identify Member States at Risk of Non-Compliance with the 2020 Target of the Waste Framework Directive and to Follow-up Phase 1 and 2 of the Compliance Promotion Exercise

Early Warning Report: Greece

Report for the European Commission, DG Environment, Waste Management and Secondary Materials Unit

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1.0 Introduction

Eunomia Research & Consulting (Eunomia) was commissioned by DG Environment of the European Commission to lead a consortium to undertake a *Study to Identify Member States at Risk of Non-Compliance with the 2020 Target of the Waste Framework Directive and to Follow-up Phase 1 and 2 of the Compliance Promotion Exercise*. The basis for this study is the "Early Warning System" that was included as one of the Commission's proposed amendments to the Waste Framework Directive (see Recital 19 and Article 11b).[1] The Early Warning System introduces the concept of Early Warning Reports which the Commission shall develop to assess *'progress towards the achievement of the targets'*. For each Member State these reports must:

1) Provide an estimation of whether the targets are likely to be achieved by the stipulated deadline; and
2) For countries deemed to be at risk of missing the target appropriate priority actions need to be drawn up to help the country achieve the target.

The Early Warning System does not apply to the existing 50% preparation for reuse and recycling target set out in Article 11 of the Waste Framework Directive (Directive 2008/98/EC). However, under this study, the Commission has decided to test the envisaged procedure set out in Article 11b of the proposed legislative changes to Directive 2008/98/EC. In doing so, the European Commission aims to help Member States to achieve the existing 50% target by 2020, and to highlight where issues may be arising in respect of the prospects for meeting targets that are likely to be higher in future years.

Data provided by Greece indicated that the country's preparation for reuse and recycling rate – as reported under Method 2[2] – was 26.5% in 2015 (the latest year for which data was available at the time of writing). Given the relatively short time available for achieving the target, there is a possibility that the country might not reach the 50% target by 2020. This Early Warning Report assesses whether the policies and measures that have been put in place, or are about to be implemented, are likely to be sufficient to close this gap in recycling performance.

[1] European Commission (2015) *Proposal for a Directive of the European Parliament and of the Council Amending Directive 2008/98/EC on Waste*, COM(2015) 595 Final, December 2015, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0595

[2] Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council (notified under document C(2011) 8165) (2011/753/EU), http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011D0753

This Early Warning Report is structured as follows:

- **Section 2.0** – provides an overview of the approach taken to developing this country report.
- **Section 3.0** – presents the data on Greece's historic recycling rates and explores the reasons behind the current level of performance.
- **Section 4.0** – looks forward to 2020 and provides an assessment of the extent to which existing policies / measures, or those about to be implemented, will enable Greece to close the current gap in recycling performance and allow the country to achieve the 50% target.
- **Section 5.0** – Greece was found to be at risk of not being able to achieve the 50% target and the project team, in collaboration with relevant Member State representatives, therefore developed a number of priority actions to help increase recycling rates over the short- to medium-term. These priority actions are presented in the final section of this report.

2.0 Approach to the Country Report

A detailed overview of the approach taken to the study is presented in the project's main report to which this document is appended. In essence, the study was divided into two phases:

- **Phase 1** – Identified Member States at risk of not being able to achieve the 50% target by 2020 (as defined by their chosen calculation method); and
- **Phase 2** – Developed country specific priority actions for those Member States found to be at greatest risk of not being able to achieve the target within the stipulated deadline.

Each phase was broken down into a number of tasks and further details on these can be found in the main report. The key sources of information and tasks carried out for this country report are presented below.

2.1 Phase 1

This country report has been based on the following activities:

1) A review of publicly available data and data supplied to the European Commission / Eurostat on recycling rates as calculated using Greece's chosen calculation method.
2) A review of existing documents regarding municipal waste management in Greece: the key documents and sources of information are listed below.
    a. European Environment Agency / European Topic Centre on Waste and Materials in a Green Economy (2016) *Country Fact Sheet on Municipal Waste Management in Greece*, October 2016, http://wmge.eionet.europa.eu/Muncipal.
    b. European Environment Agency / Topic Centre on Sustainable Consumption and Production (2013) *Municipal Waste Management in Greece*, February 2013, www.eea.europa.eu/publications/managing-municipal-solid-waste.
    c. BiPRO (2013) *Factsheet and Roadmap for Greece*, Report for the DG Environment of the European Commission, May 2013, http://ec.europa.eu/environment/waste/framework/support_implementation_1st_phase.htm.
    d. BiPRO and Enviroplan (2015) *Summary Evaluation Report for Assessing The Waste Management Plan of Greece-National (Final Version).*
    e. Greece's Waste Framework Directive Implementation Reports submitted to DG Environment.
    f. Greece's Quality Reports submitted to Eurostat.

    The aim of reviewing the above documents was to understand the background policy environment and any identified shortcomings at the time the reports were written.

3) Further data gathering by means of a Member State Questionnaire was also undertaken.
4) A country visit to the Ministry of Environment and Energy (MoEE), also attended by officials from Hellenic Recycling Agency to explore data gaps, and to understand the evolution of policy since the reports that had been reviewed were written. The aim was to inform our understanding of the likely performance against the target by 2020.

Information on our assessment of the likely increase in recycling performance by 2020 for all countries was used to populate a 'risk matrix'. This matrix included data for all countries covered under Phase 1 of the study (i.e. the 20 Member States whose reported recycling rates were below 50% at the time of writing). Those countries deemed to be at greatest risk of missing the 50% target were identified and carried forward to Phase 2. Further details on this are provided in the main report.

2.2 Phase 2

Analysis under Phase 1, the results of which are presented for all Member States in the main report, was used to highlight the countries at greatest risk of not being able to achieve the 50% target by 2020, and these countries – Greece included – were carried forward to Phase 2 of the study.

The following activities were carried out as part of Phase 2:

1) The project team developed a draft set of priority actions based on information gathered as part of Phase 1;
2) The draft priority actions were first shared with the European Commission, and amended following this first set of comments;
3) The draft priority actions were then shared with the relevant Member States prior to a second meeting to discuss the nature of the priority actions in detail; and
4) The priority actions were refined based on the feedback received from the Member State representatives. Where necessary, certain points were removed, further points added, and points clarified, prior to finalisation of the actions.

These priority actions are intended to support delivery of the targets by 2020, taking care to ensure that by implementing these measures, the Member States concerned are not compromising their ability to meet higher targets in future years, given that proposals for higher targets are expected to be finalised shortly. As biowaste is not in scope of the calculation methodology used for the 2020 target, it is important to note that action regarding the improvement of biowaste collections will need to be taken after 2020; details of good practice implementation of biowaste collection and treatment services are given in Appendix 2.0.

3.0 Historic Recycling Performance

In order to understand better the likelihood of a country achieving the 50% target by 2020 it is necessary to understand historic trends and current levels of performance. This section first examines Greece's historic recycling rates (Section 3.1), it then outlines some of the reasons for the reported levels of recycling performance (Section 3.2), before exploring some of the key data and reporting issues identified as part of this study (Section 3.3).

3.1 Reported Recycling Rates

Of the four calculation methods available for reporting against the 50% target in the Waste Framework Directive, Greece has selected to use Method 2.[3] According to the MoEE, the waste streams taken into account, to report recycling performance in Greece under Method 2, are: packaging waste (paper and cardboard, glass, metal and plastic) and printed paper.

Data on historic recycling rates (as submitted to Eurostat) using this Method are presented in Table 3-1.

Table 3-1: Historic Recycling Quantities and Rates

Year	Amount Generated	Amount Prepared for Reuse / Recycled / Composted	Recycling Rate
	thousand tonnes	thousand tonnes	%
2010[1]	2,610	n/a	n/a
2011[1]	2,470	n/a	n/a
2012[2]	2,420	n/a	n/a
2013[2]	2,341	613	26.2%
2014[2]	2,355	605	25.7%
2015[2]	2,325	616	26.5%

Note: *n/a = data not available*

[3] Commission Decision of 18 November 2011 establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council (notified under document C(2011) 8165) (2011/753/EU), http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011D0753

Source:
1. Estimations from the Department for Waste Management of Municipal, Industrial and Similar Waste, Ministry of the Environment & Energy, Greece, sited in the 2nd Deliverable of the study for the Revision of the National Solid Waste Management Plan, (2013), pg. B1.9.
2. Information made available by the European Commission and includes data supplied to Eurostat and/or submitted as part of Member State Waste Framework Directive Implementation Reports.

Note:
The data provided for the reference years 2010 - 2011, are based on reported waste generation, and on the waste composition provided in the National Waste Management Plan.

For the years 2010-2012 no figures were provided to Eurostat on recycling performance as defined in Method 2.

According to the MoEE, the waste streams taken into account, to report recycling performance in Greece under Method 2, are: packaging waste (paper and cardboard, glass, metal and plastic), from household, commercial and industrial sources.

3.2 Explaining Recent Performance

Greece has achieved significant progress regarding the legal and institutional steps taken to increase waste recycling and the expansion of Extended Producer's Responsibility (EPR) schemes. Even so, the sector still faces major problem in terms of implementation. The lack of necessary infrastructure for source separation of recyclables, the citizens' low level of awareness towards recycling, the lack of financial incentives and the absence of economic instruments could explain the low, and stable, performance of national recycling between the years 2010 and 2015. The economic recession and the subsequent financial crisis in Greece has influenced the waste sector leading to a decrease of the waste generation but also to an intensive presence of informal recycling the recent years.

Policy changes influencing recycling in Greece since 2010 have been introduced through the main legislative framework on waste management and the framework of alternative management for a range of waste streams.

The Greek law on Waste Management No. 4042/2012 that was implemented in 2012 is the single law transposing the requirements of the Waste Framework Directive (WFD) 2008/98/EC.[4] The Law has triggered changes at various levels (e.g. enforced the revision and update of the National Waste Management Plan and the thirteen (13) Regional Waste Management Plans), which although they have not yet influenced the performance of recycling, are expected to exert a significant influence in the upcoming years.

The Extended Producer Responsibility (EPR) policy approach, although not named as such in Greece, was incorporated into the national legislative framework via Law 2939/2001 (amended by Law 3854/2010 and 4042/2012). The Law 2939/2001 had a

[4] However, the Article 22 of the WFD is transposed with additional information in Law no. 4042/2012 Article 41, enforcing targets for the separate collection of bio-waste to be achieved in specific target years.

future-oriented perspective, which facilitated further adoption of the different EPR EU Directives through Presidential Decrees (PD) after the Law 3854/2010, through Ministerial Decisions (MD). In fact, other waste streams (e.g. used tyres, used oils and Construction and Demolition waste - C&D) which are not specifically under the EPR policy in the EU legislation were put under the EPR umbrella. Currently there are 24 EPR scheme operators covering the management of Packaging Waste, End of Life Vehicles (ELV), Waste Electrical and Electronic Equipment (WEEE), Waste Lubricating Oils, Waste batteries and accumulators, used tyres, and Construction, Demolition and Excavation (CDE) wastes.[5]

The National Organisation for Alternative Management of Packaging and other Products (NOAMPP) is the competent authority of the Ministry of Environment & Energy for the design and implementation of recycling policy in Greece. It is responsible for approving national 'alternative waste management systems' for the various products/packaging covered, and for controlling the progress of recycling within the Greek territory under Law 2939/2001. For organisational and legal reasons, the NOAMPP systematically failed to fulfil its role and only in 2010, under the Law 3854/2010 (amendment of 2839/2001), did the organisation effectively become operational. In the meantime, Law 3854/2010 established the polluter-pays principle as state law. The NOAMMP was then modified by Law 4042/2012 so that it became the Hellenic Recycling Agency (HRA).

The management of packaging waste falls under the Hellenic Recovery Recycling Cooperation (HERRCo) which has introduced the blue recycling bin (1,100 litre) system for co-mingled packaging waste collection (paper & cardboard, metal, glass and plastic); businesses tend to use the blue recycling bins for glass recycling.;

The percentage of population covered by the blue bin system is reported to have increased from 75% in 2011 to 92% in 2015 (HERRCo, 2017). In addition, the number of sorting facilities for packaging waste has increased from 28 (in place) in 2011 to 32 in 2015.

Although, since 2010 there has been a notable expansion of the EPR schemes for collection of recyclables, performance is still low (see discussion below). According to HERRCo approximately 478,000 t of recyclables (mainly collected through the blue bin system, with small amounts of printed paper) were collected, and 274,000t were recycled in 2012, while in 2015 around 356,000 t of recyclables were collected and 202,000t recycled. In both years, the differences between the collected and recycled quantities are indicative of the extent of impurities in the blue bin system, suggesting an approximate loss rate of 43%.

In addition, HERRCO reported, in 2014, a reduction of 4% in certified packaging quantities recycled from the blue bin system (2014/2013); and a reduction of 6% in the per capita performance from the blue bins for the industrial and commercial packaging waste (2014/2013). It is believed this is due to material being removed by the informal

[5] Hellenic Recycling Association: https://www.eoan.gr/en/content/7/epr-schemes

sector from the blue bins before collection by municipalities. The informal sector is growing in prominence since a large number of economic immigrants, living under conditions of extreme poverty, remove the most valuable materials from the recycling bins and leave the lower value recyclables. The wastes most often targeted are paper and cardboard and metals. It is estimated that approximately 25,000 t of cardboard and paper were removed from the blue bin system in 2014 (HERRCO, 2014).

In addition, HERRCO[6] reports that the drop in the collected amounts of packaging materials from the blue bin system can be explained by:

- Reduced collection services performed by cooperating municipalities, mainly due to financial difficulties (e.g. shortage of workers). The issue is significant in Attica region whereby, from 2010 – 2014, recycling collection routes decreased by 30%.
- Issues with collections of the blue bin in some municipalities causing interruption to the recycling system. Moreover, a small number of municipalities recorded (through public complaints) the collection of both residual and recycling waste in the same vehicle, raising questions to the citizens whether recycling is taking place.
- The cancellation of HERRCO's Business Plan for 2009-2014 and cost cutting measures taken during the economic crisis (e.g. reduction of costs for promoting recycling).

The average cost of the blue bin system is €63 per tonne of the recycled packaging material. The cost includes the depreciation of the sorting and transportation costs, e.g. from the islands. The costs for communication/raising awareness, administrative costs and the operating costs of collection are not, however, included.

The introduction of the EPR schemes has triggered the expansion of other separate collection schemes for materials such as printed paper, batteries, small WEEE and fats and oils. Very recently a separate collection system for textiles has been introduced in some municipalities.

A range of EU funded projects have been introduced in Greece aiming at supporting the local authorities in the actions to be undertaken for waste prevention, actions for raising awareness at schools (such as the ''Eco schools'' initiative which supports the establishment of environmental committees and environmental action plans in schools and of the surrounding environment), PPPs for the optimisation of the reduction and recycling of waste in touristic destinations (three such programs were developed in Chalkidiki), organisation of events for the demonstration of waste reduction methods, actions promoting the use of reusable bags, the reuse of clothing, amongst others. The pay-as-you-throw (PAYT) scheme (foreseen in the Law 4042/2012) for the reduction of waste in landfills and the enhanced participation of the public in the separate collection

[6] http://www.herrco.gr/UserFiles/sinopsi-ypeka-2014.pdf

of waste has not been implemented: only in the municipality of Elefsina has a scheme with some such characteristics been introduced.

Under the Law 3982/2011 "Aid for Private Investment to Economic Growth, Entrepreneurship and Regional Cohesion", replacing law 3299/2004, private enterprises have been entitled to become engaged in improving waste management.

A landfill tax was introduced through Law 4042/2012, and was meant to enter into force on 1 January 2014, but its implementation has been postponed until December 2017. Thus, the low landfill gate fee does not create any incentive to increase recycling of materials.

3.3 Data and Reporting Issues

Table 3-2 shows the development of recycling of all MSW in Greece as reported by the Greek administration.

Table 3-2: Total Amount of Municipal Waste Generated and Treated

Year	Amount Generated	Proportion Recycled	Proportion Composted	Total Recycling Rate	Proportion Incinerated	Proportion Landfilled
	thousand tonnes	%	%	%	%	%
2010[1]	5,917	14.7%	2.4%	17.1%	0%	82.9%
2011[1]	5,586	14.9%	3.2%	18.1%	0%	81.9%
2012[1]	5,585	15.6%	3.8%	19.4%	0%	80.7%
2013[1,2]	5,285	15.6%	3.7%	19.3%	0%	80.7%
2014[2]	5,315	n/a	n/a	n/a	0%	n/a
2015[2,3]	5,249	15.7%	2.6%	18.3%	0%	81.7%[4]
2016[5]	5,354	14%	3%	17%	1%	82%

Source: [1.Eurostat (2017) Municipal Waste by Waste Operations [env_wasmun], Date Accessed: 2nd January 2017; 2. Eurostat, (2016) Waste Framework Directive-Recycling Targets, Waste Data Quality Reports 2013-2014-2015, submitted by Ministry of the Environment and Energy, GREECE; 3. EEA, ETC/WMGE & Eunomia (2017) Questionnaire to Member States: Greece.]; 4. In 2015 the amount of waste disposed direct to landfill was 78.7%. 5. Eurostat (2018) Municipal Waste by Waste Operations [env_wasmun], Date Accessed: 27 January 2018.

Landfilling of MSW remains the main disposal method in Greece with the majority of MSW send to compliant landfills (and some non-compliant landfills (109) that are still in operation (WWF- Greece, 2011)). In fact, landfill rates reported a stable performance between 2010 - 2015 (81-82%). In recent years, there has been significant progress in

reducing waste disposal to non-compliant landfills which in 2015 dropped to less than 4% of the total waste disposed to landfill.

Since the majority of MSW (almost 82%) was landfilled in 2015, only 15.7% was recycled and 2.6% was composted, indicating no significant increase in performance of recycling and composting figures over the period 2010-2015.

Some uncertainties identified in the reporting of MSW may raise questions, when aiming to estimate the national recycling rate (under Method 2). This applies, for example, to the following issues which are outlined in this section:

- The definition of municipal solid waste used, and the methodology utilised to report MSW generation and composition;
- The methodology utilised to report the amount of recyclables and recycling rates;
- The methodology used to report other relevant data (biowaste recovered rates, rates of landfilling).

3.3.1 The definition of municipal solid waste used, and the methodology used to report MSW generation and composition

The Greek National Waste Management Plan (2015), provides the definition[7] for Municipal Solid Waste. All waste categories included under this definition are reported by Greece as part of municipal solid waste.

The Greek National Waste Management Plan (2015), also provides the official national MSW composition, which refers to 2011, with no updating having taken place since then. The waste composition of 2011 is based on the "Guide for biowaste source separated programs & management systems implementation (2011)" and the composition analysis of waste seems to have been taken from landfill sites in operation in 2011, held by the Ministry of Environment and Energy: this seems likely, therefore, to represent residual waste only.

Updated MSW composition data are included in some of the thirteen (13) recently revised and updated Regional Solid Waste Management Plans. However, these data have not undergone any further processing as yet.

The reported total waste generation in Greece refers to the amount of municipal solid waste *collected* and is based on annual estimations, taking into account data from

[7] According to the Greek National Waste Management Plan (2015), municipal solid waste is consisted of: (a) household waste, (b) waste from the chapter 20 of the EC list of Waste, that are produced from commercial enterprises, from establishments such as ports, airports, railway stations, industries, healthcare units, or the army, (c) packaging waste, (d) WEEE and batteries from municipal waste, (e) small quantities of hazardous waste in municipal waste.

different sources[8]. According to Greece's reporting to Eurostat (2015), the total population coverage of municipal waste collection systems reaches 100%.

Regarding the reported total waste generation in Greece there is some level of inconsistency between the data provided by Eurostat (2017) and that included in the summary evaluation report for assessing the waste management plan of Greece – National (Bipro, 2015) for the years 2010 and 2011. It is assumed that the data presented in the latter report is based on estimations from the Ministry of the Environment & Energy, cited in the 2nd Deliverable of the study for the Revision of the National Solid Waste Management Plan, (2013), pg. B1.5, whereas the data presented by Eurostat is the official data submitted by Ministry of the Environment & Energy, Greece. In this sense, it is considered that official data reported to Eurostat are more accurate and shall be used in the evaluation process, under the scope of the present report.

The Ministry of Environment and Energy reported that there have been significant methodological changes to the municipal waste data collection calculation from the year 2011. More specifically, up to now, the amounts of waste coming from edible oil and fats treated were reported, by mistake, in the "composting" treatment operation. According to the National Waste Management Plan, these quantities were delivered to companies for the production of biodiesel (fuel for energy production).

3.3.2 The methodology utilised to report recyclable waste and recycling rates

The materials taken into account, to report recycling performance in Greece under Method 2 include packaging waste and printed paper from household, commercial and industrial sources. Data on the reported amounts recycled are provided from the inputs to final recycling process.

The amount of collected recyclables is calculated based on the inputs to Material Recycling Facilities (MRFs) and data from the EPR schemes. However, it should be noted that the Material Recovery Facilities (sorting points, sorting facilities) are reporting

[8] Sources used to calculate total waste generation in Greece: (i) waste treatment facilities; (ii) questionnaires regarding the implementation of Directive 1999/31/EC; (iii) the amounts of managed waste from the Producer Responsibility Organisations –PROs Schemes (systems of alternative management); (iv) the recycling of paper and cardboard within the country and abroad, (v) household composting using specific bins; (vi) the recovery of rural areas biodegradable waste in farming and agricultural operations; (vii) the network of waste coming from edible oil and fats.

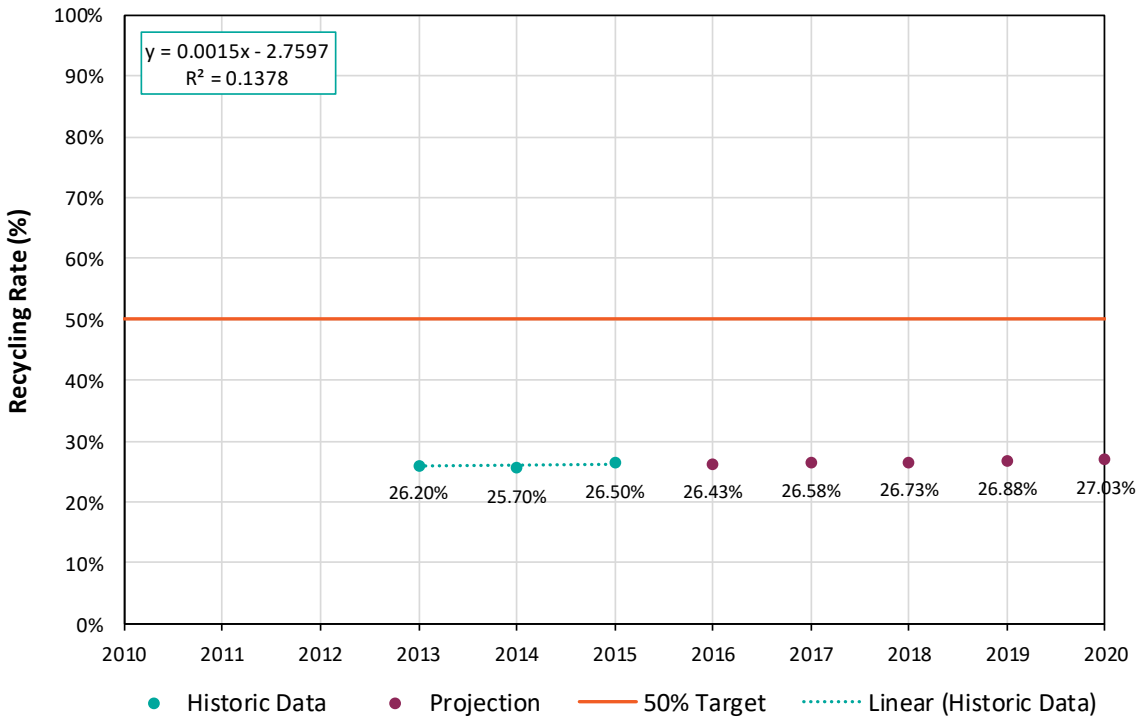
Treatment facilities are obliged to keep data and records regarding the input and output waste (i.e. weighing, relevant documentation). Data validation is accomplished by inspections carried out by the PROs Schemes or the competent authorities (Environmental inspectors, permit authorities, or local environmental authorities) in the treatment facilities, and also by comparing the data with the annual reports submitted by the treatment facilities.

impurities between 30-40% wet weight, which should be considered as ‘significant’ (and hence, the data being reported should be adjusted accordingly).

4.0 Future Recycling Performance

Figure 4-1 provides a linear projection of municipal recycling rates under Method 2. This is shown for indicative purposes only: there is no guarantee that the past changes will be replicated in future, and the effect of policy changes, or the lack of them, may be to considerably invigorate recycling performance, or cause the recycling rates to falter, especially if existing policies have already worked their way through the system. The projection is of greatest relevance to cases where the main effects of policy are coming from those which are already in place, and which have yet to work their way through the system.

Figure 4-1: Projection of Recycling Rates Based on Method 2



Source: Historic data based on data submissions to Eurostat and / or Waste Framework Directive Implementation Reports

In order to understand how recycling rates may change in the period to 2020, the project team took into account the policies and measures which are already in place, have recently been implemented, and are already at an advanced stage of planning, and considered their likely impact in future. As noted in Section 2.0, understanding of the policies and measures was gained by means of reviewing existing documents, responses to the Questionnaire, and a meeting with Member State representatives.

Note that recognising the substantial gap that has been observed in the past between intentions of Member States and the reality of implementation, the effects of measures which are only now being discussed, or mooted, has been discounted: where Member States are some way from implementing a given policy, there can be no guarantee that

this will be introduced, let alone that it would be in place early enough to ensure that it delivers against a target which falls in 2020.

The details of this review are set out below (Section 4.1), before assessing what impact these policies are likely to have on recycling rates (Section 4.2).

4.1 Policies / Measures Likely to Influence Future Recycling Rates

4.1.1 Response to Measures Proposed Under the Roadmap for Municipal Waste

As part of the Member State visit, where a Roadmap had previously been developed for the country, questions were asked about the extent to which action had been taken in response to the recommendations in the roadmap. The recommendations included in the roadmap for municipal waste – developed as part of the compliance promotion exercise – are shown in Table 4-1 alongside the actions taken by Greece.

Table 4-1: Summary of Action Taken and Likely Impact on Recycling Rates for Recommendations Included in the Roadmaps for Municipal Waste

Roadmap Recommendation	Description of Action Taken
1. Introduce a landfill tax and progressively increase the landfill tax to divert waste from landfill. Use revenues to support separate collection and alternative infrastructure	No landfill tax is yet in place. The NWMP expresses the intention to postpone the application of the Common Ministerial Decision on the collection of landfill tax (which has been suspended until 2018) until completion of infrastructure for source separation and recovery operations. The landfill tax was introduced by Law 4042/2012 and will apply to any organisation or enterprise which disposes specific types of waste untreated into landfills in order to promote the diversion of waste away from landfills. Organizations/enterprises disposing untreated municipal waste into landfills will have to pay a landfill tax which is planned to start at a level of 35 €/t. It is envisaged to raise the tax annually by 5 €/t until it reaches 60 €/t. However, such postponement will have to be regulated by law in order to be effective. For this reason, this measure will be active after issuing the required Joint Ministerial Decision which will define the process for collecting this special tax. (Q1 of 2018). In summary, given that the law introducing the tax was passed before the Roadmap was published, it is somewhat disappointing that the tax is not yet in place.
2. Update the national and regional WMPs including specific policy measures how to achieve the targets set by the Waste Framework Directive (WFD) and analysis of the current waste	The NWMP has been updated in order to include specific policy measures to achieve the targets set by the WFD. The RWMPs (13) have been recently revised and updated in order to comply with the WFD and the National WMP. The majority of these analyse the current waste management situation on the basis of robust data and all of them analyse the impacts of implementation of the policy measures, required infrastructures and projections of future waste generation and

Roadmap Recommendation	Description of Action Taken
management situation on the basis of robust data, analysis of impacts of implementation of the policy measures, required infrastructures and projections of future waste generation and treatment	treatment. There is a need to evaluate and to compare waste data of RWMPs to homogenize them and in order to understand the effects at the national level and to provide measurements for infrastructure of the transitional period.
3. Implement the bio-waste strategy including specific measures to divert biodegradable waste from landfill	The NWMP and the RWMPs foresee the establishment of the separate collection of bio-waste in order to achieve by 2020 the target of separate collection of 40% by weight, and the proper treatment of bio-waste in order to produce compost which meets quality criteria so as to be able to be used further in accordance with international and/or national standards. The use of separate collection of biowaste, has been piloted in some areas and started to expand in order to cover the whole country. Among the 110 units for residual waste and biowaste treatment (either food waste or garden waste) provided in the RWMPs to be constructed by 2020 with total capacity almost 1 Mt/y, there are many small municipal plants for separately collected biowaste. Also, home composting is being promoted, mainly in rural areas. Also, some specific guidelines are available on the official page of MoEE:[9] (a) Preparation & distribution to all stakeholders of the “Guide for biowaste management practices” (b) Preparation & distribution to beneficiaries of the “Technical guidelines for the design of composting plants–tender documents” (c) Preparation & distribution of the “Guide for Composting Plant operation”. (d) Development of specifications of various types of compost for market promotion (to be awarded)
4. Extend and improve the cost-effectiveness, monitoring and transparency of existing EPR schemes and eliminate free-riding	In the years 2011-2015 the existing EPR schemes were extended with the aim to cover more areas. From 2011 until 2014 nine EPR schemes for Construction and Demolition waste have been approved and started their operation. Also, in February 2014 the establishment and operation of new EPR scheme for waste batteries named "COMBATT SA”, was approved No dedicated waste collection scheme is available for industrial waste. Depending on category/type of the industrial waste, the relevant waste streams are collected and subsequently treated by the specialized schemes.

[9] http://www.ypeka.gr/LinkClick.aspx?fileticket=oeVjSbKq%2b%2fE%3d&tabid=898&language=el-GR

Roadmap Recommendation	Description of Action Taken
	The Ministry informs us that the EPR scheme for packaging and packaging waste is closely supervised and inspected on a yearly basis by the Hellenic Recycling Agency (HRA). The inspection activities include (among others) financial controls, verification of the declared recovered packaging waste quantities and the evaluation of the implementation of the approved operating conditions. These inspections and audits are performed either by the HRA's specialized "technical" staff or by external collaborators specialized in certification activities or financial auditing. HRA also inspects "obligated producers" on a sampling basis, imposing sanctions when there is violation of the relevant legislation. The discussion below, however, indicates problems in this regard. The amendment of the legislative framework for recycling (Law 2939/01) which above others will rationalise the operation of EPR schemes (extended producer responsibility) was adopted by the National Parliament in November 2017.
5. Establish and control separate collection infrastructure and schemes. Implement door-to-door separate collection as soon as possible	The introduction of separate containers for glass bottles began in 2013 and is still expanding. The door-to-door collection of glass from commercial activities (such as bars, restaurants, hotels) began in 2008 as pilot project, with the aim of identifying the main glass packaging waste producers and the amounts of waste produced per different activity. In 2013, this project was partially terminated and since then the separate glass collection is performed through containers placed either at private premises e.g. large hotels (door-to-door) or at public ones (bring points) with emphasis in areas with increased commercial activity. The goal is to increase the network of bins for separate glass collection in order this to become the primary method of glass collection. From 2013 to 2015, the coverage for the co-mingled packaging collection system has been expanded from 83% to 91% of the Greek municipalities. The co-mingled packaging waste collection is not a door-to-door scheme (there is not one bin per block of flats, let alone one per house). The network of the bins has been planned with a ratio of one bin per 75 residents. Legislative acts necessary for the installation and operation of "Green Points" (collection areas) of separately collected waste streams have been approved by the article 21 of Law 4447/2016. Standards and specifications of the Green Points were established by the JMD 18485/2017. Therefore, "Green Points" are expected to be operational during 2017. In the approved National and all the Regional Waste Management Plans the obligation to provide at least one Green Point per municipality is established. Furthermore, the development of a large network of "bring points" (Recycling corners or vehicles) is provided in many municipalities.

Roadmap Recommendation	Description of Action Taken
	The provision of separate collection (door to door collection system) for the 4-6 waste streams in the National and all the Regional Waste Management Plans has started being implemented in some cities. There are 2-3 cities that implement door to door collection on pilot scale. For instance in Sparta Municipality (33,000 inhabitants) door to door collection is taking place in the centre of Sparta, covering 1000 citizens. 120-240 litres bins for plastic and paper (not including glass and metals) are provided door-to-door and containers for glass (1100 litres) for separate collection of glass and metal at central points. In practice, the pace of development of the recycling services has been quite slow, with efforts to enhance performance being somewhat tentative.
6. Extend and enforce PAYT scheme. Provide incentives and support for households to participate in separate collection	The National Waste Prevention Strategic Plan ("NWPSP"), which was finalized in December 2014, foresees pay-as-you-throw (PAYT) schemes, as a means to reduce waste in landfills to enhance participation of the public in the separate collection of waste. Nevertheless, no incentive system to favour prevention and participation to separate collection PAYT is in place. Under the HEC – PAYT LIFE+ Environment Policy and Governance Project "Development of Pay As You Throw Systems in Hellas, Estonia and Cyprus" a pilot PAYT scheme was developed in the municipality of Elefsina (29,900 population). The project covered 1,500 households (5,500 population) selected and actors from the commercial and service sector (69 companies). The scheme was based on a partial reimbursement of municipality taxes for the participants of the scheme, so acting more as a reward scheme than a pay-as-you-throw scheme. This is understandable given the relatively low level of development of the collection services. The pilot project achieved: • 25.8% of waste was diverted from landfill • recycling of 56% of packaging waste • recycling of 4.6kg of WEEE per participating person • composting of 17.1% of organic waste. A guide for the use of the various "Pay as you Throw" models targeted to the Municipalities, the Regions and the Waste Management Bodies must be developed. Also, there is no infrastructure in place for this measure.
7. Include all packaging waste from households and similar sources into the data on generation and treatment of municipal waste.	They were always included.

4.1.2 Measures Expected to Influence Recycling Performance in Future

The measures that are expected to have an impact on recycling rates between now and 2020 are summarised in Table 4-2. These are split according to:

1) Those already in place and expected to have ongoing impact;
2) Those recently adopted; and
3) Those already announced / firmly planned but not yet implemented.

We also list those that are being considered / discussed, but these are not considered as contributing to performance.

In the forthcoming years, reforms in the waste management and recycling sector in Greece, are expected to take place. The main measures/policies which are foreseen to still contribute to the increase of the national recycling performance until 2020 are summarised below:

- The implemented "Extended Producer Responsibility" (EPR) system is expected to have further influence on the recycling rates until 2020 since it has triggered the expansion of EPR schemes. An operational Plan for EPR concerning packaging is about to be put into force which will introduce funding for different EPR packaging schemes.
- The Greek Law on Waste Management No. 4042/2012 that was implemented in 2012 is the single law transposing the requirements of the Waste Framework Directive (WFD) 2008/98/EC into national law. Most of the requirements of the WFD have been transposed into national legal requirements[10]. The Law has triggered changes at policy level (e.g. enforced the revision and update of the National Waste Management Plan and the thirteen (13) Regional Waste Management Plans), although it has not yet influenced the performance of recycling.
- Through the EU Funds for the programming period 2014-2020, Greece has foreseen the allocation of significant proportion of funds for waste management programmes and infrastructure with emphasis on integrated waste treatment facilities and source separation schemes. It is estimated that the available fund allocated on waste management is < 1 billion EUR. Specifically the Ministry informs us that concerning the planned waste treatment facilities:
    - The implementation of a wide-range action plan for the creation of a network of waste treatment facilities will result in the waste management infrastructure with more than 49 MBT Plants out of 116 units totally in all Greece and also a large network of at least 330 Green Points and 57 new material sorting facilities for separate

[10] However, the Article 22 of the WFD is transposed with additional information in Law no. 4042/2012 Article 41, enforcing targets for the separate collection of bio-waste to be achieved in specific target years.

collection of recyclable and biowaste. There are provided 67 small municipal plants for separately collected biowaste.

  - Some of the facilities provided in the Regional Waste Management Plans to be constructed by 2020 have already been approved for financing by the Operational Programme "Transport, Infrastructure, Environment and Sustainable Development", such as the MBT Plant of Epirus (105,000 tn/y) and Serres (63,000 tn/y) and their construction starts in 2017 using the PPP scheme, whereas the construction of Thiva MBT Plant (32,000 tn/y plus 7,000 biowaste) starts within the next month. Finally, the MBT Plant of West Macedonia (120,000 tn/y) starts its full operation in June 2017.

- Through the National Waste Prevention Program, in the National Waste Management Plan, and the 13 Regional Waste Management Plans there is an effort to maximise the collaboration with local and regional authorities, aiming to ensure co-responsibility and common understanding, in order to ensure that citizens will benefit from a sustainable waste management system nationwide.
- In May 2017 an Action Plan promoting Circular Economy was approved by the Government, following a proposal by the MoEE. A detailed proposal specifying specific quantitative targets are set to be met, recording the appropriate policy tools to meet these objectives (green public procurement, tax incentives, etc.) and describe the role that all the competent bodies (State, local authorities, enterprises, civil society) have to play. In order to accelerate the actions it was decided to set up a bi-ministerial coordination group with the participation of the Ministries of Environment and Energy, Interior, Economy and Development, Education, Finance, Infrastructure and Transport, Shipping and Island Policy, Rural Development and Food. Food waste, Construction & Demolition waste, Recovered Fuels Plastics and Organic based Fertilizers, are identified as key-sectors.

Table 4-2: Summary of Measures and Likely Impact on Recycling Rates

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
Already in Place			
EPR schemes Extend and improve the cost-effectiveness, monitoring and transparency of existing EPR schemes and eliminate free-riding. An operational Plan for EPR concerning packaging is about to be put in force which will introduce funding for different EPR schemes.	This was expected to contribute towards the expansion of the EPR schemes already in place and the development of new ones. An effect of this measure will be the capture of additional materials by the EPR schemes. Also monitoring programmes will be introduced to improve effectiveness.	Since 2010. The operational plan of HERRCO for the years 2015-2020 is prepared is about to be put into force to meet the needs of the NWMP.	The schemes collecting the wastes included under the recycling targets as per Method 2 are already being collected by EPR schemes. It is questionable, therefore, the level of significant improvements under these schemes as a result. We estimate an additional 2% on the basis of this approach.
Law on Waste Management 4042/2012 The Greek Law No. 4042/2012 that was implemented in 2012 is the single law transposing the requirements of the Waste Framework Directive (WFD) 2008/98/EC into national law. Most of the requirements of WFD have been transposed into national legal requirements.	The Law was expected to trigger further changes in policy level towards higher recycling. The New National Waste Management Plan (NNWMP): • Promotes maximisation of the separation at source and recovery of materials. Specifically the new Law defines the implementation of separation at source, as the most appropriate means of collection, with the aim to achieve high quality recycling through – among others – the establishment of separate collection of waste materials (at least paper, metal, plastic and glass) nationwide in order to achieve the recycling targets by 2020. • Introduces the policy for development of Regional Waste Management Plans (RWMPs).	Since 2012.	There is little evidence of improvement since the Law was passed: • Although, since 2010 there has been a notable expansion of the EPR schemes for collection of recyclables, performance is still low. • 13 Regions have recently updated their RWMPs. The transposition of law is known to be no guarantee that change will be forthcoming.

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
EU funds for the programming period 2014-2020 allocated towards waste management	The allocation of significant funding for waste management programmes and infrastructure with emphasis on integrated waste treatment facilities and source separation schemes. It is expected to be the major driver to establish the missing infrastructure in the waste sector and the implementation of several waste recycling, reuse and prevention programs.	Since 2014 – Activated in 2016	This could lead to improvement in the performance of the waste management sector in Greece, including improving recycling performance. However, much depends on the specific measures chosen, and given the aim to achieve a target by 2020, and the materials targeted by the Method 2 target, the aim should be to intensify efforts at separate collection.
Recently Implemented			
Establishment of a network for the separate collection of waste streams	The National and Regional Waste Management Plans foresee separate collection for paper, glass, metal and plastic. In particular, the necessary infrastructure for the separate collection of these waste streams is described in the Regional Waste Management Plans aimed at achieving a target for separate collection of 65%.	Separate collection of 4-6 waste streams have already been introduced as a pilot in some municipalities. It is expected that in 2017 more municipalities will follow.	The infrastructure proposed in the regional waste management plans (e.g. capacity of units, number of bins) is aimed at achieving a target in separate collection of 65%. However, it is questionable whether the 13 Regions that have updated their RWMPs will reach 65% separate collection for paper, glass, metal and plastic in the short-term. The target is challenging to be met by 2020. We could estimate an increase of 3-5% by that date.

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
Development of a network of Green Points and of Centres for Recycling, Training and Source Separation.	The development of a network of Reuse Centres is currently promoted by implementing pilot actions. Regional and local waste Management Plans foresee the development of a network of Green Points and of Centres for Recycling, Training and Source Separation. This measure is part of the previous measure. However, it is separately described because special emphasis is given to it in the national waste management plan, as it is the first time in Greece that the framework for developing a network of Green Points is set and the need for social economy in recycling is acknowledged. The implementation of this measure contributes to capturing higher quality and quantities of packaging waste, bulky waste, textiles, small WEEE and other recycling materials and enhance recycling rates. The MoEE is currently preparing a regulation, defining the nature of materials to be accepted to the Green Points.	There are some municipalities that have already constructed Green Points and others that are in the phase of designing them. It is expected that in 2017 more municipalities will follow. Furthermore, many municipalities are under evaluation process to receive EU funding to design and build the Green Points. The evaluation is expected to be completed within 2017.	With the introduction of new Green Points, monitoring will be essential to ensure high capture rates and avoid high levels of impurities. Even though some municipalities have already constructed Green Points and more will follow, the effect with regards to recycling rates is uncertain but likely to be positive.
Separate collection (mostly in bring points) of biowaste from municipal waste (first priority according to the national waste management plan)- **Development of programs for home and on site composting.** The National Waste Management Plan foresees the separate collection of	The separate collection of biowaste will: • increase the recycling rate of municipal waste, contribute to the improvement of the quality of the remaining recyclables; • increase the quantity of the waste stream separately collected (Measure 1); and	There have been already separated collection schemes of biowaste in few municipalities in pilot scale. It is expected that in 2017 more municipalities will follow. Furthermore, many municipalities are under	The Regional Waste Management Plans propose infrastructural measures for achieving a recycling rate for biowaste of 40%. This rate implies a considerable increase, and it seems unlikely to expect the rate to be higher than 8-10% by 2020.

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
biowaste at municipal level, in combination with the construction of decentralised compost units. The local (municipal) waste management plans, which have been incorporated in the Regional Plans, indicate separate collection of biowaste as a basic goal. Development of programs for home composting, particularly in rural and semi-urban areas, as well as for on-site composting in open (green) spaces, schools, professional areas with large green areas (e.g. hotels, military camps), residential campus.	• Contribute to the use of agricultural land etc., when it meets the quality standards, in the form of compost. This measure, will contribute to the achievement of the target for the separate collection of bio-waste.	evaluation process of receiving EU funding for equipment (bins, garbage tacks and composting units) for biowaste management The evaluation is expected to be completed within 2017.	This will, however, not help to meet the targets under Method 2 as defined.
Operation of Digital Waste Registry (DWR), in which municipalities, as well as waste management bodies, waste producers and waste collectors and carriers, are obliged to report the quantities of waste collected for recycling (JMD no 43942/4026/2016, OJG 2992 B)	The data reported in the Digital Waste Registry will be used for the traceability of waste as well as for monitoring the recycling rates at the municipal level. This information, along with the data in the registry, provide the necessary background for the implementation of the policies as reported in the National and Regional waste management plans. The operation of the Digital Waste Registry is an important tool for monitoring the sound management of waste and will indirectly contribute to increasing recycling rates.	Registry Initiated in January 2017 and is expected to be completed by March 2017. Producers reports of the years 2015, 2016 are expected to uploaded on the DWR by the end of May 2017.	The DWR will provide better quality data and benchmarks and will indirectly contribute to increasing the recycling rate. However, the effect with regards to recycling rates still remains uncertain but likely to be positive.
Firmly Planned			

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
Formulation of the required legislative framework for the development of a network of Green Points and of Centres for recycling, training and source separation. **Setting the types and the standard specifications for Green Points and Centres for recycling, training and source separation. Simplification of the licensing process.**	The aim is to give the option to social economy organisations to develop programs for source separation/recycling and training in agreement with the municipal authorities.	By April 2017	The legislative framework regulating the construction and operation of Green Points and Centres for recycling, training and source separation, in combination with setting the proper location criteria, as well as the simplification of the licensing process, is expected to facilitate the development of the network and improve recycling performances. With the introduction of new Green Points, monitoring will be essential to ensure high capture rates and avoid high levels of impurities. Even though some municipalities have already constructed Green Points and more will follow, the effect with regards to recycling rates is uncertain but likely to be positive.
Amendment of the legislative framework for recycling (Law 2939/01) in order to (i) rationalise the operation of "Producer Responsibility Organisations-PROs Schemes" (extended producer responsibility), (ii) set concrete terms and conditions for the separate collection of waste streams at the municipal level, (iii)	It is expected to: • Strengthen the recycling sector in Greece. • Improve the PROs performance and recovery of materials	By November 2017	The amendments of the legislative framework for recycling aim to support achieving a target in separate collection of 65%. However, it is unlikely that the EPR schemes will perform that effectively, to increase recycling from 15.7% (% recycled under Method 4, 2015) to 65%. An increase

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
upgrade the role of the Hellenic Recycling Agency.			of 2-3% by 2020 seems reasonable to expect.
Joint Ministerial Decision for the treatment of biowaste. The Joint Ministerial Decision will include the standards of the produced compost, separately for each indented use.	It is expected to contribute to the production of good quality compost for use in agriculture and to the development of new markets for compost. In this sense it is expected to further promote the separate collection and composting of biowaste.	By June 2017	Support to achieve a recycling rate for biowaste of 40%. No impact will be felt on the Method 2 target, as set at present.
Use of economic instruments in waste management. Development of a guide for the implementation of the "Pay as you Throw" principle. Use of economic instruments (e.g. "Pay as you Throw", environmental taxes, extended producers responsibility etc.), based on the results of a study at national level. Development of a guide for the use of the various "Pay as you Throw" models targeted to the Municipalities, the Regions and the Waste Management Bodies**.**	Expected to enhance waste hierarchy, reduce waste and disposal costs and ensure financial resources for waste management.	A call for Tender was issued in 2015 to develop a Guide for the implementation of the "Pay as you Throw" principle. Support has been requested by the MoEE to the European Commission to issue a Call on assessing and introducing economic instruments including PAYT, by 2018.	The anticipated impact will aim, by 2020, to: Improve waste charging, which will be directly connected with waste generation. This way recycling would be promoted while at the same time waste producers would cover full cost for the management of the waste they generate. Moreover, more reliable data on waste generation would be collected, thus addressing issue. The pilot project in Elefsina showed that PAYT increased packaging recycling to 56% and 17% of organic waste was composted, providing a positive indication that this measure would support higher recycling rate, if the necessary infrastructure in in place. It is unclear how widespread such schemes will be by 2020, but the state of separate collection might

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
			suggest that such approaches may not be widespread in 2020.
Disincentives for disposal of recyclable waste in landfills – establishment of a special tax on landfill (article 43 of Law 4042/2012)	Landfill tax is expected to oblige municipalities to optimise and increase recycling rates in their territory.	This measure will be active after issuing the required Joint Ministerial Decision which will define the process for collecting this special tax.	Assist towards the reduction of waste going to landfill, therefore aiming to meet the landfill diversion target. Indirectly, this may have a positive effect on the recycling rate. The key issue here is the extent to which the municipalities, responsible for managing residual waste, are able to introduce measures that influence Method 2 targets in response to the tax.
In Discussion			
Increase of separate collection of printed paper Increase of recovery rates of printed paper initially through its separate collection in selected points and until 2020 in the whole country. In addition, separate paper collection in Green Points and in the Centres for recycling, training and source separation is foreseen. The option of developing a network for the separate collection of printed paper, in combination with the network for the separate collection of packaging paper is also examined.	Expected to increase recovery rates of printed paper	n/a	Aim to support achieving a target on separate collection of 65%. In order for this measure to contribute to the overall recycling rate, high level of participation needs to be achieved, while impurities need to be kept at low level. Awareness raising campaigns as well as easy access to the paper recycling scheme, should be considered, to support any increase in the recycling rate. No increase is taken into account as the measure is not firmly planned yet.

Policy / Measure	Nature of Effect	Period for Effect	Expected Impact on Recycling Rate
Establishment of a standard of mandatory rules for municipal waste management used by the municipalities (including avoiding or reducing littering) Establishment of a standard of mandatory rules for municipal waste management, used by the Municipalities in order to follow a common approach in the management of municipal waste. The rules will include guidelines for the management of all waste streams.	The aim is to formulate clear, simple and legally binding rules.	n/a	Aim to support achieving a target on separate collection of 65%. The standard of mandatory rules for municipal waste management, if followed correctly by the municipalities could generate positive results, however strict enforcement and monitoring measures need to be in place to ensure all municipalities comply with the standards. No increase is taken into account as the measure is not firmly planned yet.

4.2 Assessment of Likely Recycling Performance in 2020

In summary, it was concluded that Greece could increase recycling rates by a further 7-10% by 2020 under Method 2. This would bring the country's recycling rates to 33-36% at most. Further details of the country's risk ranking, relative to other Member States, is provided in the main report to which this Early Warning Report is appended.

5.0 Priority Actions

5.1 Introduction

Greece has achieved significant progress regarding the legal and institutional steps taken to increase waste recycling and the expansion of Extended Producer's Responsibility (EPR) schemes.

Even so, the sector still faces major problem in terms of implementation. The lack of necessary infrastructure for source separation of recyclables, the citizens' low level of awareness towards recycling, the lack of financial incentives and the absence of economic instruments could explain the low, and stable, performance of national recycling between the years 2010 and 2015. The economic recession and the subsequent financial crisis in Greece has influenced the waste sector leading to a decrease of the waste generation but also to an intensive presence of informal recycling the recent years.

As measures that would help in the fulfilment of the WFD target, we propose the following core priority actions for MoEE:

- Introduce **financial incentives for increasing recycling** (Section 5.2);
- Ensure **performance reporting** is accurate and internally consistent (Section 5.3);
- Implement a more **effective packaging waste recycling system** (Section 5.4);
- Ensure **EU Funds** are put to the best use to support the country's recycling activities (Section 5.5);
- Ensure national **training and awareness** raising programme are developed targeting all regions and municipalities including islands and remote areas, with clear and consistent signage (Section 5.6 and Section 5.7).

5.2 Introduce Financial Incentives for Increasing Recycling

A landfill tax (35 euros/tonne) was introduced through Law 4042/2012 and was meant to enter into force on 1 January 2014, but its implementation has been postponed until December 2017. Thus, the low landfill gate fee does not create any incentive to increase recycling of materials.

At present, the lack of integration of collection services under one provider makes the application of such a tax somewhat problematic. The producer responsibility scheme, HERRco, is the main provider of infrastructure for collection of dry recyclables: given this, it seems less than clear how the collection service can respond to rising costs of disposal without engaging HERRco – HERRco, on the other hand, is not strongly affected by disposal costs, and so its behaviour is unlikely to influenced by a landfill tax. A rational actor would do more to encourage recycling and reduce disposal, but if those who face the costs of disposal are not also the ones who control the quality of the recycling infrastructure, the potential for such an adaptive response is limited.

The introduction of a tax, therefore, needs to be considered alongside the question of how the collection service is coordinated between HERRco and the municipalities. It would be preferable, in our view if HERRco was only a conduit of funds, and if municipalities had their own obligations in terms of separate collection. HERRco would be responsible for funding the full costs of the packaging element of separate collection by municipalities.

According to the latest amendments of the legislative framework on packaging and packaging waste (Law 2939/2001) currently being adopted by the National Parliament, the Association of Municipalities (*ΦοΣΔΑ)*[11] will have the responsibility for final waste treatment of residues and landfilling, as well as for introducing fees to municipalities. These fees will be specified according to the efficiency of sorting at source, the diversion of organic waste from landfill, the collection of packaging waste per inhabitant and the recycling in connection with the targets per municipality. It still remains unclear how these fees will look. This further highlights the fact that HERRco seems likely to remain insulated from disposal taxes.

Some of the approaches below have been designed in part to reflect the fact that there have been immense difficulties in implementing a landfill tax in Greece, and in the absence of such a tax, these measures are expected to deliver similar improvements. That having been said, the introduction of a landfill tax would help generate a financial impetus to recycle more.

Priority Actions

> **To introduce the landfill tax (set to apply from 2018). In doing so, to consider how to ensure that the system is made responsive to higher disposal costs. It would be preferable (see below) if HERRco was only a conduit of funds, and if municipalities had their own obligations in terms of separate collection. HERRco would be responsible for funding the full costs of the packaging element of separate collection by municipalities. The system would be made more responsive to a tax as a result.**

5.3 Ensure Performance Reporting is Accurate and Internally Consistent

Further to some data analysis, it was observed that the packaging data reported by HERRCo varies greatly from the data reported under Method 2 of the WFD.

In 2015, HERRCo declared a 58 % packaging recycling rate, whereas under Method 2, the reported recycling rate reached 26.5%. In principle, if packaging waste recycling targets

[11] ΦοΣΔΑ: are the competent waste management bodies that are specialised and implement the objectives and actions of the Regional Solid Waste Management Plans. There are 13 ΦοΣΔΑ established in Greece. (http://www.eedsa.gr/default.aspx?lang=en)

are met, then Greece should be at, or close, to its target under Method 2. The reported figures, however, suggest otherwise (see Table 5-1).

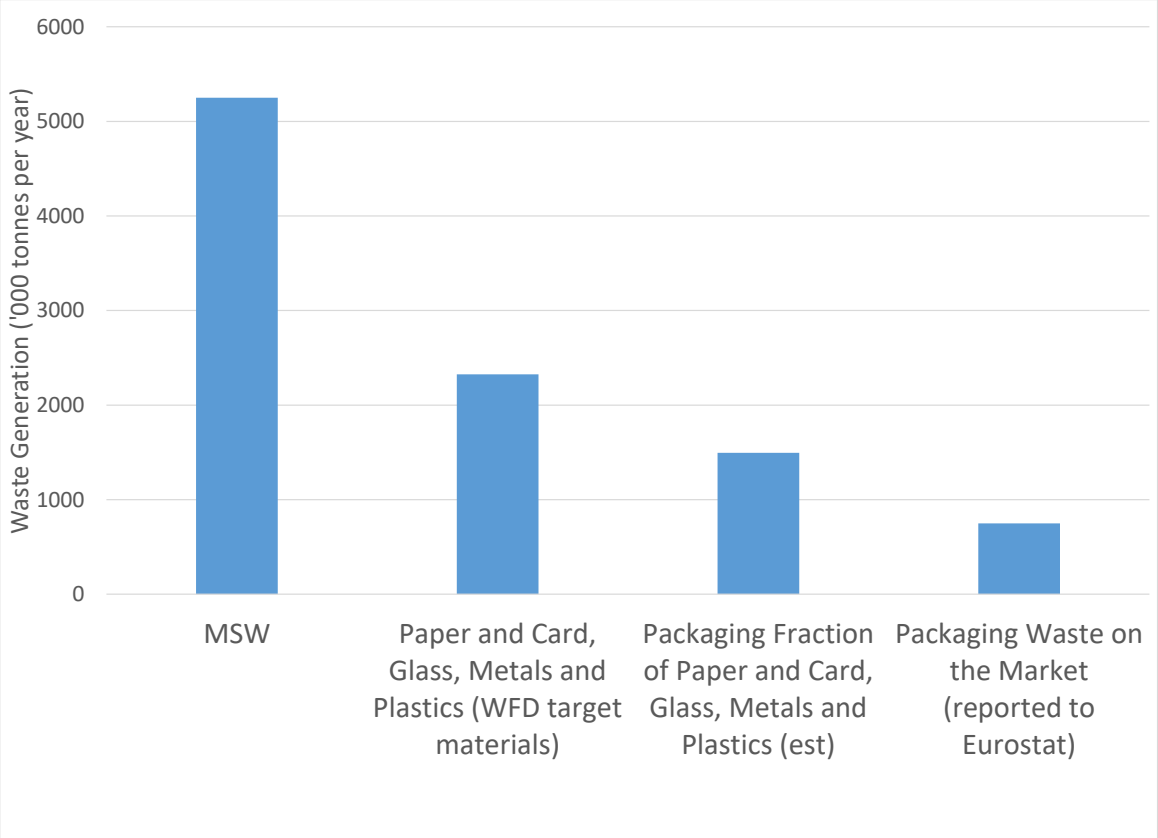
Table 5-1: Data on MSW, Related Fractions and Packaging

	2010	2011	2012	2013	2014	2015
WFD (Method 2)				26%	26%	27%
All Packaging	59%	62%	59%	52%	53.8%	57.6%
Paper and Card	94%	92%	84%	80%	79.1%	84.5%
Glass	21%	37%	55%	28%	21.5%	26.7%
Metals	42%	44%	38%	48%	58.8%	56.3%
Plastics	30%	33%	32%	32%	32.8%	35.3%
Wood	50%	66%	42%	2%	17.4%	24.2%

Source: Eurostat data: 2010 - 2013 while data for 2014 - 2015 have been provided by EOAN.

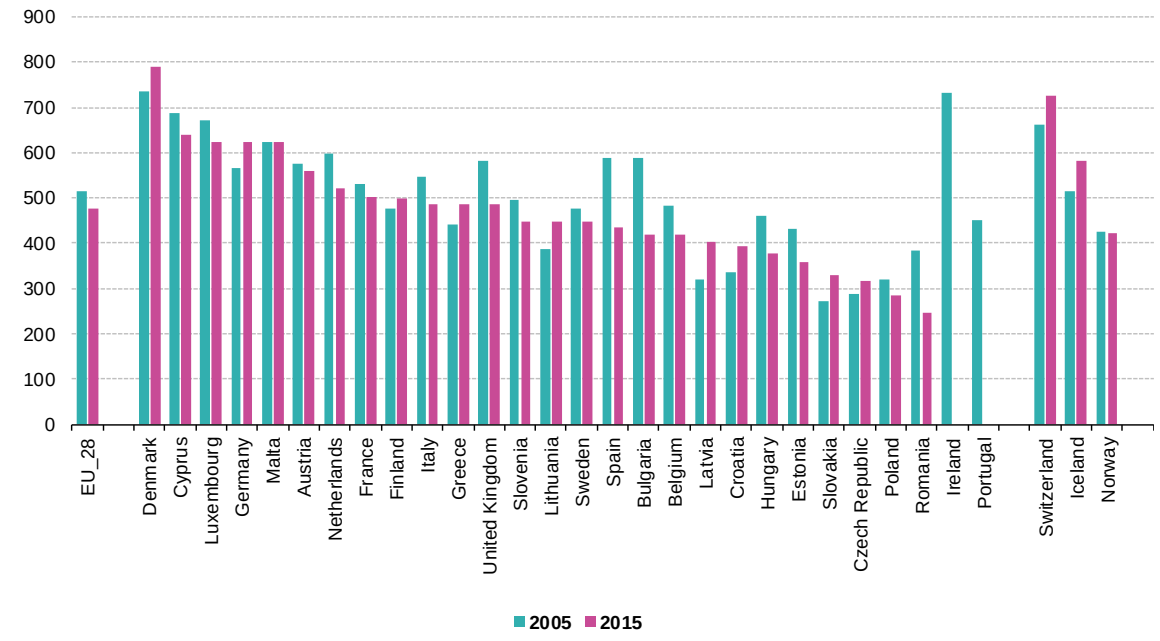
Data provided by Greek authorities, regarding the quantity and composition of municipal waste, suggest that the quantity of packaging waste (as represented by packaging placed on the market) is well below the quantity suggested by the municipal waste data. Indeed, the figure for packaging in MSW, based on the available data, is more or less double the figure for all packaging reported by Greece to Eurostat (see Figure 5-1 – the relevant figures are in the third and fourth columns). The suggestion is that the amount of packaging placed on the market is significantly under-reported.

Figure 5-1: Data on MSW, Related Fractions and Packaging



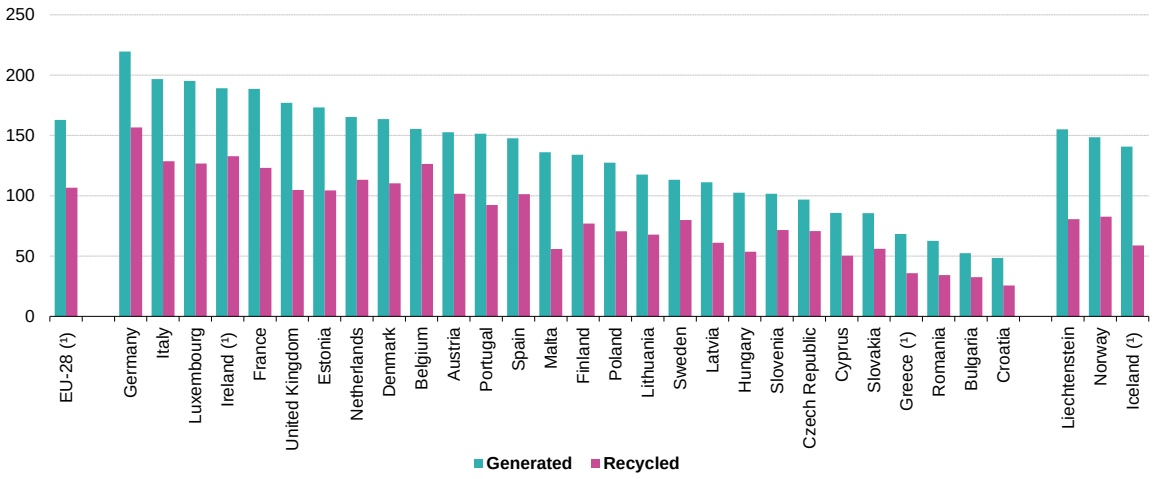
Some qualified support for this argument – that the reported quantity of packaging waste in the waste stream is too low – comes from the following two figures, indicating that within a relatively average (for the EU) quantity of MSW per inhabitant (see Figure 5-2), the reported packaging fraction is very small (Figure 5-3). Indeed, in order for the reported packaging figures to be accurate, then even if all packaging was in municipal waste, then no more than 14% of MSW could be packaging. Such a low figure would be extremely rare anywhere in Europe, and Greece's own waste composition analysis suggests it is far higher. In reality, the figure – based on composition data – is likely to be in the range 22%-30%.

Figure 5-2: Municipal waste generated by country in 2005 and 2015, sorted by 2015 level (kg per capita



Source: Eurostat

Figure 5-3: Packaging Generated and Recycled, kg/inhabitant, 2014



Source: Eurostat

Consequently, there is an urgent need to 'reset' the reported figures such that they are consistent and accurate. This should be considered with it clearly in mind that there is no point in the packaging system being designed such that, in meeting the relevant packaging target, Greece also falls short of its Method 2 target (given the nature and scope of the materials included in the target - see below): in other words, performance

across packaging and the Method 2 target should demonstrate far greater convergence than is currently the case.

Fundamentally, the MoEE needs to understand and reconcile:

- the data reported regarding the WFD target; and
- the packaging waste data reported under the PPWD.

This is of interest not only for the sake of improving the accuracy of data: to the extent that the Method 2 target is largely coincident with the obligations of packaging waste producers, it follows that if the packaging data allows the producers to declare compliance with their target even though their performance level is (probably) somewhat below what should be expected, then there will be a 'gap' between the performance that needs to be achieved, in respect of packaging, under Method 2, and what the packaging scheme really achieves.

The new National Registry for Producers (NRP) (also for importers and traders), managed by the Hellenic Recycling Agency, and set up in 2017, is currently in operation aiming to increase the fees collected by the producers. This tool also aims to assist in providing more accurate data on the packaging placed on the Greek market.

It should be noted that the Greek National Waste Management Plan (2015) is the source of the official national MSW composition. It would be useful to update this. We were advised that a targeted study on the proportion of packaging in municipal waste would be undertaken. This should take into account all fractions of MSW (separately collected, residual waste, collected at Green Points, collected as litter) and all sources (including businesses falling under the scope of MSW). It should also reflect seasonality.

It should also be noted that HERRco provided us with data from its own analyses which purport to show a lower proportion of packaging in municipal waste than the existing data suggest. Although the existing data may be wrong, however, it appears that the quantity of packaging per inhabitant, as reported to Eurostat, is at the lower end of the range reported by European Member States. It should also be noted that the countries with lower quantities of packaging than Greece are all believed to be suffering from the same issue (under-reporting of packaging waste placed on the market).

Taking action to improve data quality is fully consistent with the new general minimum requirements for EPR schemes set out in the revised WFD (the 2018 amendment of Directive 2008/98/EC on waste), which would require Member States to ensure all actors report reliable data, and such data has adequate self-control mechanisms supported by regular independent audits.

Priority Actions

- **To reconcile differences between the packaging data, and the municipal waste data.**
- **As part of this, to initiate a study which will provide an updated compositional analysis for municipal waste which reflects the situation across Greece**

- **On the basis of the outcomes, 'reset' the reported figures in relation to packaging placed on the market such that they are more accurate, and consistent with what is being reported in relation to the WFD target;**
- **To maintain accuracy, introduce audits on those companies providing data regarding the amount of packaging placed on the market (and introduce more systematic audits for those where there are fundamental questions regarding accuracy of the reported figures).**

These changes are intended to ensure that the packaging producers 'pull their weight' in respect of the contribution they make to municipal waste recycling in future (see next Section).

5.4 Implement a More Effective Packaging Waste Recycling System

In Greece, it follows from the above discussion that unless the packaging system is being forced to improve its performance against accurate data on the quantity of waste in the waste stream, then meeting the Method 2 target could not occur without the municipalities carrying out additional collections of the same material targeted by the producer responsibility scheme. This would imply considerable duplication of effort and potential inefficiency.

The nature of the existing packaging waste collections also gives little confidence that the quality of material collected separately will be especially high (reject rate at 43%, as mentioned under Section 3.2). It is accepted that some packaging materials are extracted from mixed waste sorting in Greece (such as in Chania, Crete), but reliance on this approach is likely to prove problematic, especially in the case of paper and card, as well as, in the future, biowaste.

Given the likely worse than reported performance of the packaging scheme, and the level of losses that are believed to take place from the existing recycling services, there is likely to be a need to reconfigure the service so as to enhance performance, and reduce the extent of contamination / losses from the dry recycling service.

As importantly, there is a need to reconceive the interaction between HERRco and municipalities as a means to drive the required improvement in the performance of the recycling service.

Setting clear responsibilities for the management of packaging wastes, and ensuring costs are optimised by integrating services, is fully consistent with the new general minimum requirements for EPR schemes in the revised WFD. In addition, the requirements support the setting up platforms for regular dialogue between stakeholders.

There are options available for this, and these are set out below:

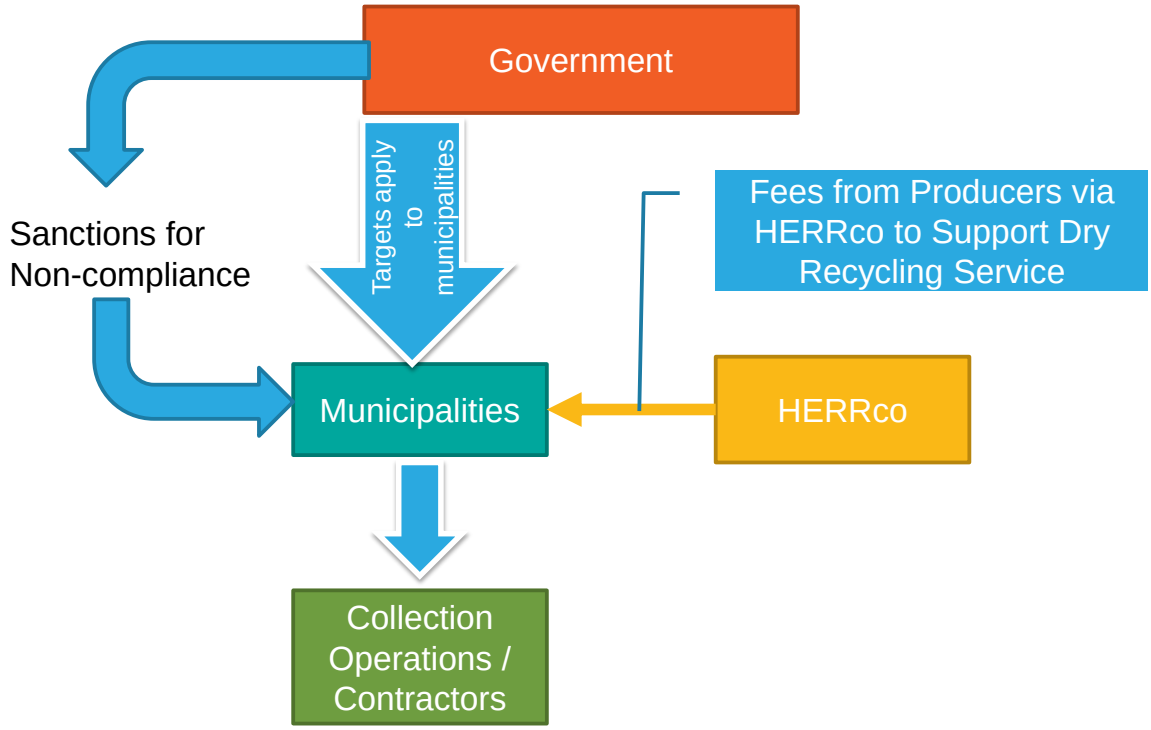
1) **National level (MoEE) cascading targets down to municipalities**

The first option involves making two changes to the current scheme:

- The first is that the 50% recycling target under the WFD are cascaded down to the municipalities: they have to demonstrate a level of performance that enables Greece to meet the WFD Method 2 target. If they fail to do so, then for each tonne by which they fail to meet the target, a sanction would be payable at a punitive level (encouraging municipalities to meet the target).
- The second is that municipalities are fully funded by HERRco for providing their dry recycling service. Currently HERRco provides funds for: equipment (containers, vehicles), sorting technologies (ΚΔΑΥ) and, partly, for awareness raising programmes. The cost of the collection of dry recycling falls under the responsibility of the municipalities. Apart from allowing producers to avoid some of the costs of their obligation, the current system forces municipalities to negotiate with HERRco for the provision of infrastructure required to deliver quality recycling services for packaging.

Taken together, these measures would mean, implicitly, that HERRco has to fund a level of performance such that Greece meets the WFD targets (in other words, HERRCo – and hence, the producers - funds the costs of meeting the WFD Method 2 target). The approach is shown graphically in Figure 5-4.

Figure 5-4: Mechanism for Cascading Targets



As well as enabling a proper **implementation of the polluter pays principle**, to the extent that HERRco is no longer involved in determining the collection infrastructure (only paying for what is deemed necessary by local authorities, or what HERRco agrees to fund), this approach would enable local authorities to determine, in a more holistic manner, the nature of their collection services. As the country seeks to roll out separate

collection of biowaste, which it will need to do in future, it will prove difficult to do this as long as dry recycling services are determined by HERRco: a coordination problem is likely to be the outcome.

This mechanism effectively relies on there being a credible, and actively enforced, form of sanction in place for non-compliance with targets. By way of an example of such a system, in Poland a range of penalties on the municipalities have been implemented to incentivise action. Fines are imposed by the Regional Inspector of Environmental Protection and are the revenues of the Regional Fund of Environmental Protection. A municipality not reaching the annual targets is subject to a fine; targets have been set for recycling, preparing for reuse and recovery and reducing the weight of biodegradable municipal waste to be landfilled. The fines are calculated individually per each tonne of waste and are increased per annum to achieve the 2020 target; they are set as follows:

- 35 € (140 PLN) in 2018;
- 43 € (170 PLN) in 2019; and
- 68 € (270 PLN) in 2020

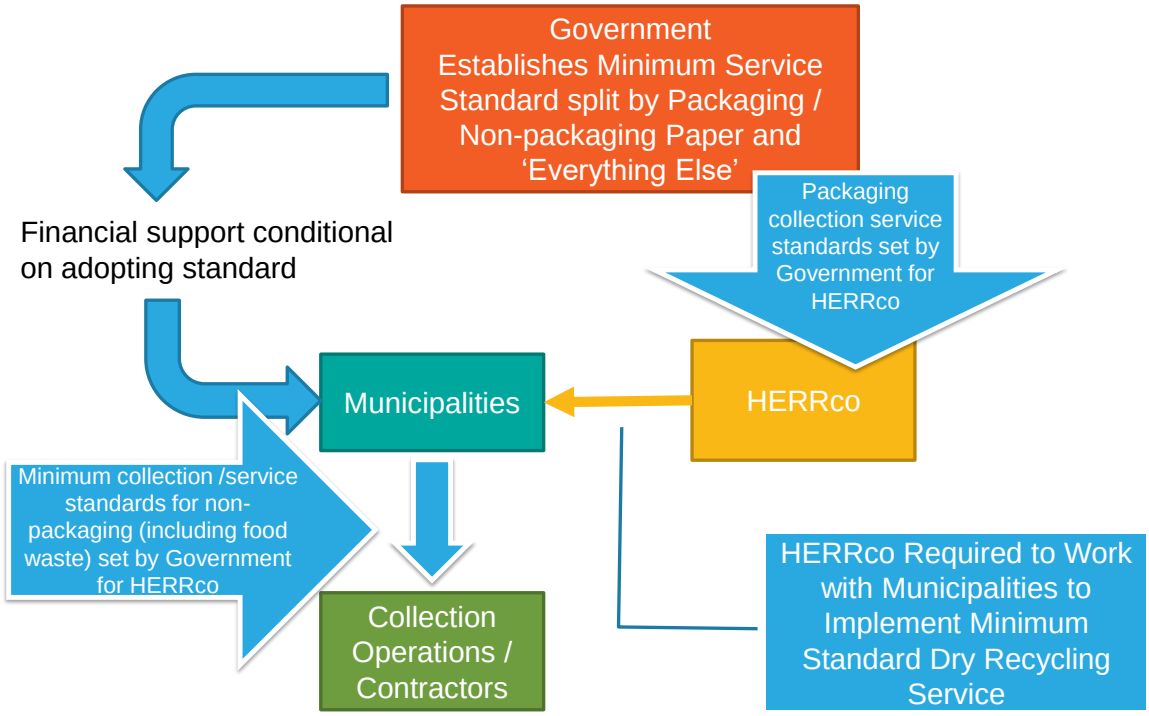
Municipalities in Poland may apply for a temporary suspension of the fine, if they adopt and enforce the action plan to achieve full compliance with targets. If compliance is then achieved the fine is cancelled. However, if compliance is not achieved the fine shall be paid within 30 days.

2) **Setting a minimum level of service**

A second option would be to maintain the responsibilities much as they are, and instead of cascading down targets and asking municipalities to determine the level of service required to meet a given target, a minimum level of service for the recycling service could be established in law. HERRco's role would then be to arrange for the delivery of that minimum level of service along with municipalities: municipalities, would, in turn, be entitled to expect that service level, and to have the cost of its delivery funded in full (in line with the requirements of Article 8a of the revised Waste Framework Directive).

The principle difference between this and the previous suggestion is that the service specification, and not the target, would drive the performance forward. Using an appropriately specified minimum service standard probably gives greater confidence that performance will improve since it should ensure that no sub-standard services are implemented. It would make sense, in our view, for the operational aspects of HERRco's role to be removed. This allows municipalities to concentrate on the design of integrated services for recycling, including biowaste. HERRco would fund the dry recycling aspect, in line with an agreed formula / approach, and would do so only where municipalities implemented systems that met the minimum standard. HERRco could play an advisory role on procurement boards of municipalities. See Figure 5-5 below.

Figure 5-5: Mechanism for Implementing Minimum Service Standards for Collection



The specification of a minimum collection service standard needs to take into account the interaction between the collection service for dry recyclables, that for food waste, that for other biowaste, such as garden waste, and that for residual waste. The service standard could be differentiated by type of property, but should include specification of:

- The collection method (individual households or communal services)
- The density of collection points (where communal services) or the (containers and) frequency of collection (for collection from individual households);
- The volumes of containment required (in relative and absolute terms, taking into account the collection frequency).

It is recommended to collect glass separately, and not – as in the current blue recycling bin (1100 L) – alongside all other packaging: paper, card, plastic and metal.
The review should encourage a move to door to door collection services, wherever this is straightforward, with a view to achieving higher participation, higher capture rates, and reduced contamination. Such an approach might include the provision, for each household, of an appropriate volume (related to collection frequency) of:

- 1 container for paper and cardboard
- 1 container for metal and plastic (and potentially, glass)
- Communal services for glass (if not collected with light packaging)
- 1 container for food waste, to be collected more frequently than residual waste (in Greece, a frequency of two to three times weekly may be necessary given the hot climate);

- 1 container for residual waste (and, if biowaste collection is introduced, a container for separately collected food waste).

It is also essential to provide an effective waste management system for islands and remote areas and set minimum standards of service to improve the current performance. Under the NWMS it has been proposed to establish a Special Waste Management Area (SWPA) on the islands including Crete and Evia as well as in the developed tourist areas as reflected in the Framework for Spatial Planning and Sustainable Development for Tourism. Mandatory infrastructure development and recycling practices are set up in the Special Waste Management Areas by source separation at source for all municipalities and tourist enterprises. These guidelines should be adopted in the revised Regional Waste Management Plans. SWMAs are linked to encourage measures for financial support and to better utilise the large number of visitors that go beyond the local population. The MoEE will allocate 7 million euros to improve waste management on the Greek islands, therefore specific attention should be drawn to the distribution of funds to improve the service and not only on additional purchase of equipment.

Overall, it is recommended that HERRCo is required to fully fund the collection service for dry recyclables, including the packaging remaining in residual waste. HERRCo is currently insulated from disposal costs. In the short-term, this could happen with existing responsibilities otherwise unchanged, but with the service HERRCo funds being required to meet minimum standards.

This would require the specification of minimum service standards. Service specifications do not have to be completely prescriptive: they do, however, need to be sufficiently clear so as to ensure that a high level of recycling performance is likely to be delivered. It should be considered that such a specification can be an effective means of providing guidance to municipalities so that they do not implement schemes that are likely to fail. A simple specification that says 'municipalities must separately collect materials X, Y, Z etc.' is of practically no value. Municipalities could capture anything from 0% to 100% of the material, and still claim to be doing 'some' separate collection.

An example of where service standards have had notable success is in Wales. Since the implementation of collection service standards, all local authorities in the country are now achieving municipal recycling and composting rates over 50%[12]. Furthermore, 19 of the 22 local authorities are achieving over 60%, and one is now at 70%. Published in 2010, Wales's *'Collections Blueprint'* encompasses a weekly collection of dry recyclables and food waste collected on the same vehicle, as well as reduced volume and/or frequency of collection for residual waste. Furthermore, the Blueprint requires that the

[12] Welsh Assembly Government (2011) *Municipal Sector Plan Part 1 - Collections Blueprint*, http://www.wrapcymru.org.uk/sites/files/wrap/Municipal%20Sector%20Plan%20Wales%20-%20Collections%20Buleprint.pdf

dry recyclable materials are sorted and segregated on the vehicles during collection, which leads to minimal central sorting requirements and high quality recyclate.

The Blueprint includes:[13]

- Specification of how to collect dry recyclables;
- Specification of the minimum range of recyclable materials to be collected: paper; cardboard; plastic bottles, pots, tubs and trays; metal cans and small scrap (e.g. kitchen utensils), foil; glass jars and bottles.
- Requirement for weekly separate food waste collections;
- Requirement to restrict capacity of residual waste through reducing volumes available, or restrictions on the number of bags; and
- Reduced frequencies of residual waste collection where bins are in use.

This approach is not made mandatory upon local authorities in Wales: however, some pressure is exerted on local authorities through the availability of some funding streams. Furthermore, if local authorities in Wales choose alternative systems, they are required to demonstrate that the scheme will deliver the same, or better, level of performance as the Blueprint. The standard was implemented in 2010 and municipal recycling rates increased by 15% by 2015 and are now over 60%.

Another example can be found in Flanders, where the minimum service standards that are required from municipalities are shown in **Error! Reference source not found.**. The minimum frequencies and collection methods for different household waste fractions are absolute minimum requirements. Municipalities and the inter-municipal partnerships (collaborating municipalities) are responsible for implementation of these requirements. Some deviation is allowed, for example, in the case of packaging, in the context of an innovative pilot project initiated by FOST Plus (the producer responsibility organization which deals with packaging in Belgium), or in the case of other materials, where OVAM (the Public Waste Agency of Flanders) grants its approval.

As well as minimum service standards, OVAM seeks to improve the quality of collected materials. It has established the following targets to ensure waste fractions qualifying for recycling should contain as few pollutants as possible. These are:

- a maximum 3% for VFG waste (i.e. garden waste), green waste and paper and cardboard waste,
- a maximum 5% for wood and glass waste,
- a maximum 15% for construction and demolition waste, and
- a maximum 5 to 15% for textile waste.

This type of approach has much to recommend it. Such a service requirement could be based around minimum standards for services which are intended to make high captures of material for recycling highly likely, whilst not necessarily being prescriptive of the exact method of delivery (e.g. in terms of vehicles used, etc.). Targets for impurities also

[13] Municipal Sector Plan Part 1, Collection Blueprint (2011)

seem to be sensible so that a requirement to separately collect materials is not undermined by large quantities of sorting residues resulting from waste collected with high contamination rates, or (on the other hand) low captures of recyclable material owing to poorly specified services. The service specification should, therefore, seek to:

- Ensure high captures of material; and
- Ensure quality of the captured materials; whilst
- Allowing for innovation through not being too prescriptive in terms of collection method used.

This standard has been part of a highly successful package of waste management policies in Flanders, and has seen recycling rates increase by 50% (from 10% to 62%) over a period of around 10 years in the 1990s.

Table 5-2: Example of Service Standards in Flanders

Fraction	Minimum collection method	Collection modality	Recommended minimum frequency
Household waste	Door-to-door collection	Household waste container **or** household garbage bag	Bi-weekly except for city centres and tourist areas of coastal municipalities
Paper and cardboard waste	Door-to-door collection (mixed fraction) **and** collection at the HWRC	Container	Monthly
Glass waste (glass cullet)	Bottle bank - two-colour separations **or** door-to-door collection (in combination with the collection at the HWRC)	At least 1 bottle bank per 1000 residents (district by district and at **or** near the HWRC)	Monthly
PMD-waste (plastic bottles and flasks, metal packaging and drink cartons)	Door-to-door collection (possibly in combination with the collection at the HWRC) **or** HWRC [2]	Collection receptacle	2 x month (2)
Kitchen waste	Door-to-door collection	Food waste containers **or** approved compostable bags[1]	Bi-weekly
Garden waste	Door-to-door collection **and** HWRC		4 x a year via door–to-door collection in green regions, on demand
Fine garden waste and grass	HWRC	Container	
Textile waste	HWRC and door-to-door collection **or** HWRC and separately placed containers	Containers 1/1000 residents	4 x a year via door –to-door collection
Bulky waste	HWRC **and** door- to-door collection **Or** door-to-door collection	Container(s)	2x a year via door-to-door collection on demand, 4x a year on demand [3] as of 2010 6x a year via door-to-door collection or on demand
Construction and demolition waste containing asbestos	HWRC	Container	
Stone debris – inert	HWRC	Container	
Metals mixed (= discarded iron)	HWRC	Container	
Wood waste	HWRC	Container	
Tree trunks	Composting facility **or** HWRC		
Small hazardous waste (all fractions) + injection needles	HWRC **or** door- to-door collection or district collection	Small hazardous waste –safe **or** comparable space Collection receptacle	4 x a year
Old and expired medications/ drugs	Pharmacist		

Fraction	Minimum collection method	Collection modality	Recommended minimum frequency
Waste electrical and electronic equipment(WEEE)	HWRC **and** re-use centres	Conform to acceptance requirement	Conform to acceptance requirement
Re-usable goods	Door-to-door collection **and** carrying to re-use centre (possibly to HWRC)		On-going, on demand

Source: OVAM (2008) Implementation Plan for Environmentally Responsible Household Waste Management

Notes:

(1) Compostable bags only in existing collection projects and in city centres with a population density exceeding 1,000 residents per km^2.

(2) A lesser frequency is allowed when the objectives of the Interregional partnership agreement on the prevention and management of packaging waste 30.05.1996 are achieved following the positive evaluation of an innovative trial project (conforming to the accreditation by Fost Plus).

(3) following the positive evaluation of this collection method of bulky waste.

Definitions: HWRC = household waste recycling centre, PMD = plastic / metals / drinks.

A number of Member States also use service standards for the provision of bring banks (or road containers) for recycling where door-to-door recycling is not considered. Other examples of service standards relate to the density of provision of civic amenity sites, or container parks, or eco-points, designed to accept a wide range of sometimes bulky materials.

In both Wales and Flanders, adoption of these approaches has helped municipalities achieve very high recycling rates. Furthermore, where recycling rates are currently low, municipalities are not always well-placed to understand which systems may work best for them, so these schemes can play an advisory role.

5.4.1 Considerations

The above suggestions reflect our view as to approaches which would be useful to implement. There are, however, changes in the offing which might affect the decisions ultimately taken.

According to the latest amendments of the legislative framework for recycling (Law 2939/01), soon to be adopted by the national Parliament, it becomes evident that the PRO for packaging, HERRCo, will continue to play a substantial role in the organisation, planning and operation of source separate collection of packaging waste in Greece. Key proposed changes are presented below.

HERRCo will have as its sole purpose the organisation and operation of the EPR scheme for packaging, as approved by the Hellenic Recycling Agency (EOAN). It is proposed that under Article *4^B.5*:

1) *Financial contributions (fees) paid to the PROs by the packaging producers are exclusively used to cover the cost of waste management for packaging waste in order to meet the recycling target.*

   The financial contributions are determined in such way to cover the total cost of waste management for the products they place on the market, including the following costs: (a) The cost of separate collection, transport, sorting and

treatment required to achieve the recycling targets, after deduction of revenue from the reuse or sales of secondary raw materials; b) The cost of providing sufficient information to waste holders about the availability of systems; c) The awareness and information costs to the public about waste prevention, separate collection etc.; d) The cost of data collection and reporting; e) The costs of self-auditing of the PROs and the costs of regular independent audits supporting self-audits; (f) Administrative costs.

It still remains unclear how the financial contributions will be determined to cover the total cost of waste management and how the calculation of the costs of seperae collection will be made, but in principle, it would seem that the scope of the costs to be funded by HERRco is being broadened to include collection costs: this is a positive development.

With the upcoming revised Regulation, municipalities are responsible for the collection of packaging waste as stipulated in the Regional and Local Waste Management Plans and imposing fines where necessary (see below the fine rate). Specifically, the following provisions will apply under Article 8.5:

- *Six-year cooperation contracts are developed (a) between the PROs and the Municipalities and b) between the PROs and third party operators, as long as the latter are stipulated in the LWMP or there is a relevant decision of the Municipal Council. The contract shall specify in particular:*

1) *Operational plans, which include, inter alia, the packaging waste management operations undertaken by the parties, the quantified targets, the timetable for their achievement and the specifications of the recovered materials.*
2) *The framework, terms and provisions about cost recovery from the PROs to the Municipalities and to third party operators. The cost recovery may be provided in the form of equipment and / or payments. The payments must correspond to the actual cost of the overall management of municipal packaging waste, which takes into account the cost reduction from the source separate collection of packaging waste.*
3) *The measures taken and the consequences in the event of non-compliance with the contractual obligations of the parties.*

The framework, terms and provisions regarding costs to be paid by HERRco to the municipalities seems very loose, and depending on the negotiations, some authorities will, likely, secure a better agreement than others. It would have been useful to establish a national framework, setting out in more detail the basis for establishing the payments to be made by HERRco to municipalities.

In addition, under Article 8.8:

- *Municipalities are obliged to take the necessary measures for the smooth and efficient operation of the system. These measures relate mainly to the implementation of systems for the return and collection of packaging waste with mandatory participation by the consumer or end-user. Following Council decision, a fine of 20 to 500 EUR may be imposed, depending on the*

significance and frequency of the infringement, to the consumer or end-user who does not comply with these measures.

This Article raises a series of questions that the Ministry will need to clarify further. For example, how would anyone know who is, or is not participating in the scheme where the collection is based on the use of communal road containers? Who would determine what is required for the 'smooth and efficient operation of the system'? The MoEE explained that it is HERRco's responsibility to predominantly ensure convenience of the dry recycling system, yet the Regulation seems to give responsibilities to municipalities that reflect the implementation of a scheme for which is not entirely in the gift of municipalities to determine.

In summary, the new legislation does little to resolve the problems we have identified. Indeed, they seem likely to be entrenched. The principle issue being addressed is the packaging recycling target, but as we have highlighted above, this is reported as being – more or less – already met. The changes will not obviously help in the pressing matter of improving the municipal waste services for the collection and recycling of the materials targeted for recycling under Method 2 of the WFD.

Priority Actions

To improve the performance of the recycling service and for Greece to meet the 50% of the WFD, under Method 2, we suggest either:

1) **Target-led Approach**
    - **Recycling targets are cascaded down to municipalities;**
    - **Government imposes sanctions for municipalities that miss the recycling target: these sanctions would be lower in the short-term, and revenues could be used to support investment in infrastructure. The sanctions would become more punitive after 5 years or so (once municipalities have had time to respond to the targets), thereby giving a financial incentive to comply with the targets;**
    - **HERRco would fund the packaging and non-packaging paper element of the service which municipalities chose to implement; OR**
2) **Service Quality-led Approach:**
    - **Government sets out a specification of a minimum service standard for waste collection which municipalities must meet;**
    - **Municipalities implement the service standard (and any financial support from central government is made contingent on the municipalities signing up to meet the standard) ;**
    - **HERRco funds, in full, the delivery of the part of the collection service which relates to the collection of packaging and non-packaging paper in line with an agreed funding formula.**

The options above are similar, and both aim to drive performance forward in a relatively certain manner. The latter relies upon the careful elaboration of an

appropriate minimum service standard for waste collection services. The former would also, potentially, benefit from such a specification.

5.5 Funding

The implementation of the individual objectives and measures relating to waste management under the Operational Program 2014 - 2020 (priority axis 14) cover a total spending value of € 890,588,235.

There is clearly a need to understand better how these funds will be disbursed, and how they will be distributed in such a way that gives confidence that the spend will deliver value for money. The relative emphasis, in terms of financial allocations, between Objectives 26 (waste prevention, preparation for reuse, separate collection and recycling including compost) and 27 (a)improve the effectiveness of integrated waste management, based on the updated Regional Waste Management Plans and b)ensure self-sufficiency in recovery infrastructure networks) are deserving of closer inspection.

More fundamentally, however, a key issue remains to ensure that funds are not awarded for activities / equipment in a manner which is unlikely to deliver the results which are urgently needed. There is a clear need to support municipalities whose aims are:

1) To develop – alongside enhanced dry recycling services for packaging, which should be funded by HERRco (see above) - convenient door-to-door collection systems for food waste;
2) Through working collaboratively, as necessary, with other municipalities, the development and operation of quality biowaste treatment systems;
3) The provision of green points designed to a) support re-use through the development of 'up front' re-use shops; and b) support recycling of bulky materials, including garden waste.

During our meeting with the MoEE, the following breakdown of funding streams was shared with the project team:

- 10 million EUR technical assistance to municipalities implementing their Local Waste Management Plans;
- 7 million EUR technical assistance to improve waste management on islands and remote areas;
- 60 million EUR for mature waste treatment plants;
- 23 million EUR to implement Green Points across the country;
- 30 million EUR to close illegal landfill sites, dumps.

It is not clear from this that the funding priorities will enable significant improvements in the recycling performance. There is a clear need for technical support to municipalities, in order to put in place effective waste management systems to meet both the WFD target and national targets as set in the NWMP. The 40% separate collection target of biowaste suggests a need for municipalities to consider and plan thoroughly the design of their collections services. However, it remains to be seen how much impact the funding for 'implementing Local Waste Management Plans' will be: the urgent need is for municipalities to re-configure their collection services on the ground, and for

coordinated implementation of collection schemes designed to capture food waste, and infrastructure designed to treat separately collected food waste.

Priority Actions

- **To maximise the beneficial use of EU Funds through ensuring that funds support:**
  - **Activities in the upper tiers of the waste hierarchy, notably, at recycling and the tiers above;**
  - **Capacity building at the municipal level to support the development of high quality recycling services;**
  - **The delivery of high quality recycling services by local authorities, including enhanced dry recycling services for packaging, which should be funded by HERRco (see above), and convenient door-to-door collection systems for food waste, consistent with the types of performance that will need to be achieved in future;**
  - **Delivery of biowaste treatment to manage separately collected biowastes (to be integrated with the development of collection systems, and working collaboratively, as necessary, with other municipalities)**
  - **The provision of green points designed to a) support re-use through the development of 'up front' re-use shops; and b) support recycling of bulky materials, including garden waste.**
- **There should be a corresponding reduction in the emphasis on provision of capacity for the treatment of residual waste.**

5.6 Technical Assistance and Training

The challenge facing Greece is essentially a societal one. The change in approach required will touch the majority of residents in the coming years. In seeking to bring about these changes, municipalities will need to do things that few of them have done before. New skills will have to be acquired, and a change in outlook and perspective will be needed.

Against this backdrop, it would seem wise to establish a programme of technical support aimed at upskilling the staff within municipalities. A national programme of training and technical support could be developed, targeting all regions and municipalities including islands and remote areas.

The Ministry together with other relevant stakeholders should draw on best practice approaches from OVAM[14] and WRAP in the UK[15]. The *Collaborative Change Programme*

[14] http://www.regions4recycling.eu/upload/public/Good-Practices/GP_OVAM_incineration-and-landfill-policy.pdf
[15] http://www.wrap.org.uk/content/changes-pipeline-recycling-managers-training

in Wales is also a good example. The programme is open to individual authorities and is considered as a key tool for enabling partnership working and collaboration on the delivery of services.[16] The programme is not only about how authorities will achieve targets, it also aims to support the active sharing of good ideas and practices that can improve efficiency in terms of cost reduction and improvement in performance. This includes services that are more environmentally sustainable, with lower ecological and carbon footprint impacts. It also includes services that are more financially sustainable, with lower net costs of service delivery.

Funding for such programmes could be obtained from EU Funds, if included in the Operation Programmes of the Member States.

Priority Actions

- **To establish a national programme of ongoing technical support aimed at upskilling the staff within municipalities (see above regarding Funding). This would target all regions and municipalities including islands and remote areas.**

5.7 Communications

Communication campaigns are essential to enable householders to make proper use of their waste and recycling service, raise awareness of recycling and also promote and new services as they are introduced. It is generally recognised that household communications are vital to increasing and maintaining participation in recycling services, and ensuring that separately collected fractions are of high quality. Zero Waste Scotland has developed guidance to provide further support.[17]

Household communications are also designed to overcome some of the barriers faced by residents in participating in recycling services. Some key barriers to recycling are presented in Table 5-3.

16 http://gov.wales/topics/environmentcountryside/epq/waste_recycling/infrastructure/collaborative/?lang=en

17 Zero Waste Scotland (2012), *Communications Guidance: Improving Recycling Through Effective Communications,* http://www.zerowastescotland.org.uk/sites/default/files/Improving%20Recycling%20Through%20Effective%20Communications_ZWS_0.pdf

Table 5-3: Barriers to Recycling

Nature of barrier	Problem needing to be confronted
Situational barriers	Not having adequate containers, a lack of space for storage, unreliable collections, unable to get to bring sites.
Behaviour	Not having the space or systems in place in the home to recycle, being too busy with other preoccupations, difficulties in establishing routines for sorting waste and remembering to put it out
Lack of knowledge	Knowing what materials to put in which container, and understanding the basics of how the scheme works.
Attitudes and perceptions	Not accepting there is an environmental or other benefit, being resistant to householder sorting or not getting a personal motivational reward from recycling

Source: WRAP Barriers to Recycling Report, www.wrap.org.uk/content/barriers-recycling-home

There is much to be said – not least, in areas where populations are especially mobile – for developing common branding and iconography in the development of a range of tools for adaptation and use by municipalities in all parts of the country.

In essence, if templates are well designed, these can be adapted by each municipality with their own names appearing on the marketing tools used. As well as ensuring a common message and branding that becomes more widely recognised, the approach also means that the cost of each municipality developing its own marketing tools is kept at low levels. WRAP, in the UK, has successfully used this approach to develop national marketing collateral and iconography for adaptation locally, so that residents have clear and consistent messages, and so that signposting to recycling containers becomes widely understood across the whole territory.

An example of iconography for communication campaigns is presented below (Figure 5-6), which falls under the 'Recycle Now' campaign programme which was successfully implemented in the UK.

Figure 5-6: Iconography used in WRAP Communications Campaigns

Furthermore, as an example of a successfully implemented communications campaign, Milan carefully designed and advertised the new concept of food waste collection, to households within the community. This included kits delivered to households, enabling face-to-face interaction with householders and further awareness raising; customer centre with free hotline; website and leaflets with information available in 10 languages; a free mobile app; media and passive advertising; school projects; guided tours of facilities.

Targeted campaigns were aimed at resolving specific problems, such as:[18]

- Information about the importance of quality, specifically use of compostable bags for organic waste to avoid pollution by plastic bags (90% of pollution)
- Information documents in 10 languages, with one to one distribution by people with similar ethnic background to local communities

AMSA's communication team took six months preparing an information strategy and package, which was presented to each sector of the city, four weeks prior to the introduction of the new scheme. Public outreach meetings were organised in each sector of the city to inform citizens and help address any issues prior to implementation.[19]

It is recommended that marketing materials and relevant iconography are developed at the national level for use in national and local campaigns. This will support the

[18] https://www.municipalwasteeurope.eu/sites/default/files/6.Danilo%20Vismara.pdf
[19] https://issuu.com/giorgioghiringhelli/docs/food_waste_recycling_the_case_study

development of a recycling consciousness across Greece. Producer responsibility schemes, such as HERRco, might usefully be included within the design process to ensure their effectiveness and use by these schemes.

Priority Actions

- **To ensure that through HERRco and other producer responsibility schemes, and with national level coordination, there is:**
  - **A national programme of communications designed to foster awareness about proper management of waste, and a recycling consciousness;**
  - **To develop consistent iconography, and other marketing collateral, so that this may be used by municipalities in local communications work. This will ensure that residents encounter clear and consistent signage at Green Points, recycling containers and on communications leaflets for recycling services.**

5.8 Summary of Priority Actions

To help ensure that the Waste Framework Directive recycling target of 50% in 2020 is met, a range of measures should be taken to mitigate barriers and improve performance. Consequently, the following priority actions have been given:

Priority Actions
Economic incentives to increase recycling
1) To introduce the landfill tax (set to apply from 2018). In doing so, to consider how to ensure that the system is made responsive to higher disposal costs. It would be preferable (see below) if HERRco was only a conduit of funds, and if municipalities had their own obligations in terms of separate collection. HERRco would be responsible for funding the full costs of the packaging element of separate collection by municipalities. The system would be made more responsive to a tax as a result (see point 6).
2) To consider introducing pay-as-you-throw (PAYT) schemes, as a means to reduce waste to landfills and to enhance participation of the public in the separate collection of waste.
Accurate and internally consistent reporting
3) 'Reset' the reported packaging figures such that they are consistent and accurate. Data provided by Greece, regarding the quantity and composition of municipal waste, suggest that the quantity of packaging waste (as represented by packaging placed on the market) is well below the quantity suggested by the municipal waste data.
4) Introduce audits on companies providing data regarding the amount of packaging placed on the market (producers or Producer Responsibility Organisation). In cases where there are fundamental questions regarding accuracy of the reported figures introduce more systematic audits.
5) Conduct statistically representative compositional analysis of municipal waste and to seek to reconcile / minimise differences between the datasets on municipal waste and packaging waste.
Implement a more effective packaging waste collection system

6) **Reconceive the interaction between HERRco and municipalities as a means to drive the required improvement in the performance of the recycling service - given the underperformance of the packaging scheme, and the level of losses that are believed to take place from the existing collection services, there is urgent need to reconfigure the service, and reduce the extent of contamination / losses from the dry recycling service.**
This can be done:
   a. **either by cascading down recycling targets to municipalities along with sanctions for non-compliance**
   b. **or by setting out the minimum service standard for waste collection that municipalities must meet and any financial support from central government is made contingent on the municipalities signing up to meet the standard.**

7) **In any of the options listed above, HERRco should fund, in full, the delivery of the part of the collection service which relates to the collection of packaging and non-packaging paper in line with an agreed funding formula.**

More effective use of EU Funds

8) **Maximise the beneficial use of EU Funds through ensuring that funds support:**
   a) **Activities in the upper tiers of the waste hierarchy, notably, at recycling and the tiers above;**
   b) **Capacity building at the municipal level to support the development of high quality recycling services (see point 10);**
   c) **The delivery of high quality recycling services by local authorities, including enhanced dry recycling services for packaging, which should be funded by HERRco (see above), and convenient door-to-door collection systems for food waste, consistent with the types of performance that will need to be achieved in future;**
   d) **Delivery of biowaste treatment to manage separately collected biowastes (to be integrated with the development of collection systems, and working collaboratively, as necessary, with other municipalities)**
   e) **The provision of green points designed to a) support re-use through the development of 'up front' re-use shops; and b) support recycling of bulky materials, including garden waste.**

9) **There should be a corresponding reduction in the emphasis on provision of capacity for the treatment of residual waste..**

Capacity building

10) Establish a national programme of ongoing technical support aimed at upskilling the staff within municipalities (see above regarding Funding). This would target all regions and municipalities including islands and remote areas.
Communications and awareness raising
11) To ensure that, drawing on funding from HERRco and other producer responsibility schemes, and with national level coordination, there is: **a. A national programme of communications designed to foster awareness about proper management of waste, and a recycling consciousness;** **b. Consistent iconography, and other marketing collateral, developed so that this may be used by municipalities in local communications work. This will ensure that residents encounter clear and consistent signage at Green Points, recycling containers and on communications leaflets for recycling services.**