

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

Final Report

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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 has been set out in 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, and in doing so, 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.

This Final Report provides an overview of the approach taken to the study, identifies those countries at greatest risk of failing to meet the 50% target in 2020, lists of Member States which were carried forward into Phase 2 of the study and synthesises the key issues found, and subsequent Priority Actions that were suggested. The results presented in this report are based on detailed reviews and discussions with Member States who had not achieved 50% recycling – under their chosen calculation method. The detailed results of this work are presented in the Early Warning Reports which have been developed for each Member State and which are appended to this report.

The report is structured as follows:

- **Section 2.0** – provides an outline of the approach taken to the study and developing the Early Warning Reports which are appended to this report.

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>

- **Section 3.0** –reports on Member States’ latest reported recycling rates as a means of demonstrating how far Member States still need to travel to achieve the target.
- **Section 4.0** – looks forward to 2020 and provides a summary of the extent to which Member States’ existing policies / measures, or those about to be implemented, are likely to enable them to close the current gap in recycling performance and allow them to achieve the 50% target. The analysis and rationale underpinning the figures reported in this section are explained in the accompanying Early Warning Reports. This section concludes by identifying the countries most of risk of not achieving the target and which were carried forward into Phase 2.
- **Section 5.0** – summarises the key messages from the study. The most common problems faced by the Member States in meeting the WFD targets are set out, as well as a summary of the main Priority Actions that were suggested.

In addition, a number of Appendices accompany this main report:

- **Appendix 1_Member State Performance Data** includes the data tables of current recycling performance under their respective calculation methods, as submitted to Eurostat, the forecast recycling rates in 2020 and the assessment matrix used to select Member States for Phase 2.
- **Appendix 2_Good Practice Priority Actions** draws together the good practice examples given in the Member State Early Warning Reports.
- The remaining appendices relate to each of the Early Warning Reports:
 - **Early Warning Report: Bulgaria**
 - **Early Warning Report: Croatia**
 - **Early Warning Report: Cyprus**
 - **Early Warning Report: Czech Republic**
 - **Early Warning Report: Estonia**
 - **Early Warning Report: Finland**
 - **Early Warning Report: Greece**
 - **Early Warning Report: Hungary**
 - **Early Warning Report: Ireland**
 - **Early Warning Report: Italy**
 - **Early Warning Report: Latvia**
 - **Early Warning Report: Lithuania**
 - **Early Warning Report: Malta**
 - **Early Warning Report: Poland**
 - **Early Warning Report: Portugal**
 - **Early Warning Report: Romania**
 - **Early Warning Report: Slovakia**
 - **Early Warning Report: Slovenia**
 - **Early Warning Report: Spain**
 - **Early Warning Report: United Kingdom**

- **Appendix 3_Data Updates for Municipal Waste Model** includes the additional research carried out related to updating the European Reference Model on Municipal Waste Management.

2.0 Approach to Study

A two-phased approach was adopted to the study:

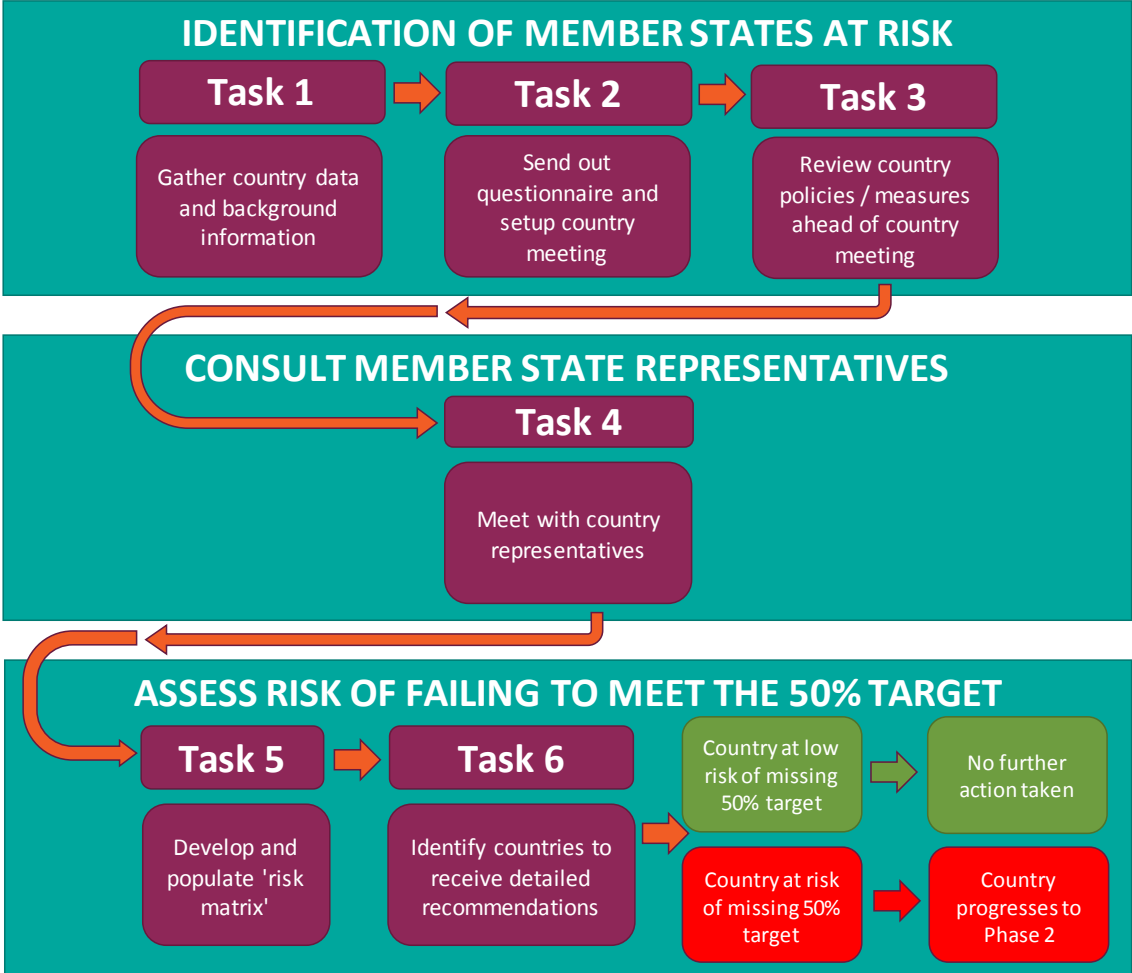
- **Phase 1** – Identifying Member States at risk of not being able to achieve a preparation for reuse and recycling rate of 50% by 2020 (as defined by their chosen calculation method); and
- **Phase 2** – Developing country specific Priority Actions for Member States found to be at greatest risk of not being able to achieve the target within the stipulated deadline.

The details of the tasks performed under each phase are outlined below.

2.1 Phase 1

Phase 1 of the study comprised of six tasks as outlined in Figure 2-1.

Figure 2-1: Approach to Phase 1 of the Study



2.1.1 Task 1 – Gather Country Data and Background Information

The first step of the project involved gathering all relevant background data on, for example, recycling rates, as well as relevant documents related to the management of municipal waste in each Member State.

2.1.2 Task 2 – Send Out Questionnaire and Setup Country Meeting

A Member State Questionnaire was developed in collaboration with the European Environment Agency (EEA) and the European Topic Centre on Waste and Materials in a Green Economy (ETC-WMGE). This questionnaire included questions aimed at gathering data and information which could be used to update the European Reference Model on Municipal Waste Management and inform the assessment of how recycling performance may develop over the next few years. The questionnaire was sent to all 28 Member States: two versions were developed, depending on whether or not the country was already achieving the 50% target under their chosen calculation method. Those countries – eight in total – whose reported recycling rates were above 50% were not included in the Early Warning System process, as it was deemed unlikely performance would fall over time such that the target would subsequently be missed. These countries did not receive questions relating to what policies / measures they were adopting to increase recycling rates.

The remaining 20 Member States were included in the Phase 1 process and the project team set up face-to-face meetings, or interviews, with relevant representatives in each of these countries (see Task 4 for further details).²

2.1.3 Task 3 – Review Country Policies / Measures Ahead of Country Meeting

Standalone Early Warning Reports were developed for the 20 Member States who were included in Phase 1 of the Early Warning System project. These reports have been prepared as separate documents which are appended to this report. For those countries included in the Early Warning System a review of key country policies / measures was undertaken ahead of the country meeting. This was based on a variety of sources of information including, but by no means limited to, the following:

- European Environment Agency / European Topic Centre on Waste and Materials in a Green Economy (2016) [*Country Fact Sheets on Municipal Waste Management*](#), October 2016.
- European Environment Agency / Topic Centre on Sustainable Consumption and Production (2013) [*Municipal Waste Management in 32 European Countries*](#), February 2013.
- BiPRO (2013) [*Factsheets and Roadmaps*](#), Report for the DG Environment of the European Commission, May 2013.

² Two countries were consulted via a teleconference.

- Eunomia Research & Consulting *et al.* (2015) [Factsheets and Roadmaps](#), Report for the DG Environment of the European Commission, June 2016.
- BiPRO and Copenhagen Resource Institute (2015) [Assessment of Separate Collection Schemes in the 28 Capitals of the EU](#), Report for DG Environment of the European Commission, November 2015.
- BiPRO and Copenhagen Resource Institute (2014) [National Factsheets on Separate Collection](#), Report for DG Environment of the European Commission.
- BiPRO (2016) [Detailed Assessment of Waste Management Plans](#), Report for DG Environment of the European Commission, January 2016.
- Eunomia Research & Consulting and Copenhagen Resource Institute (2014) [Development of a Modelling Tool on Waste Generation and Management](#), Report for DG Environment of the European Commission, February 2014.
- Waste Framework Directive Implementation Reports submitted to DG Environment.
- Member State Quality Reports submitted to Eurostat.

The above sources of information and other country specific documents helped to build up a picture of how municipal waste is managed in each Member State.

2.1.4 Task 4 – Meet with Country Representatives

In March 2017, a total of fourteen country visits were undertaken, with two countries consulted via teleconference, and two countries declining to participate in the project due to a lack of resourcing at the time (details can be found in **Appendix 1_Member State Performance Data**). The meetings with Member State representatives were aimed at:

- 1) Building up an understanding of what priority actions from the municipal waste roadmaps, developed as part of phase 1 and 2 of the Compliance Promotion Exercise, had been implemented since the completion of the roadmaps. For priority actions that had not yet been acted on the project team sought to explore why this was the case, and if there are plans to implement any of the priority actions in the near future.
- 2) Identifying changes that have been made to municipal waste collections systems, or will soon be made, in order to help improve Member States' recycling rates over the next few years.
- 3) In addition to the measures discussed as part of the above points, the project team also sought to explore how other policies / measures that have recently been implemented, or are about to be implemented, could help Member States achieve the 50% target. This was to build up a comprehensive understanding of the current state of play in each country and to ensure that any changes since the last publicly available documents were published were identified by the project team.

Information gathered through reviewing relevant documents under Task 3 and the meeting with Member State representatives allowed for a picture of historic, current, and likely future trends in municipal waste management to be developed. This

information has been summarised for each Member State in the appended Early Warning Reports.

2.1.5 Task 5 – Develop and Populate 'Risk Matrix'

Our assessment of future performance was based on the information gathered as part of the above tasks, as to what the likely recycling rate would be in each Member State by 2020 under the chosen reporting method. Depending on the estimate of the Member State's ability to achieve the 50% target by 2020, it was ranked as being at low, medium or high risk of meeting the 2020 target.

The risk matrix was populated with data from all 20 Member States included in Phase 1 of the study. This enabled a list of countries deemed to be most at risk of failing to achieve the 50% target to be readily identified.

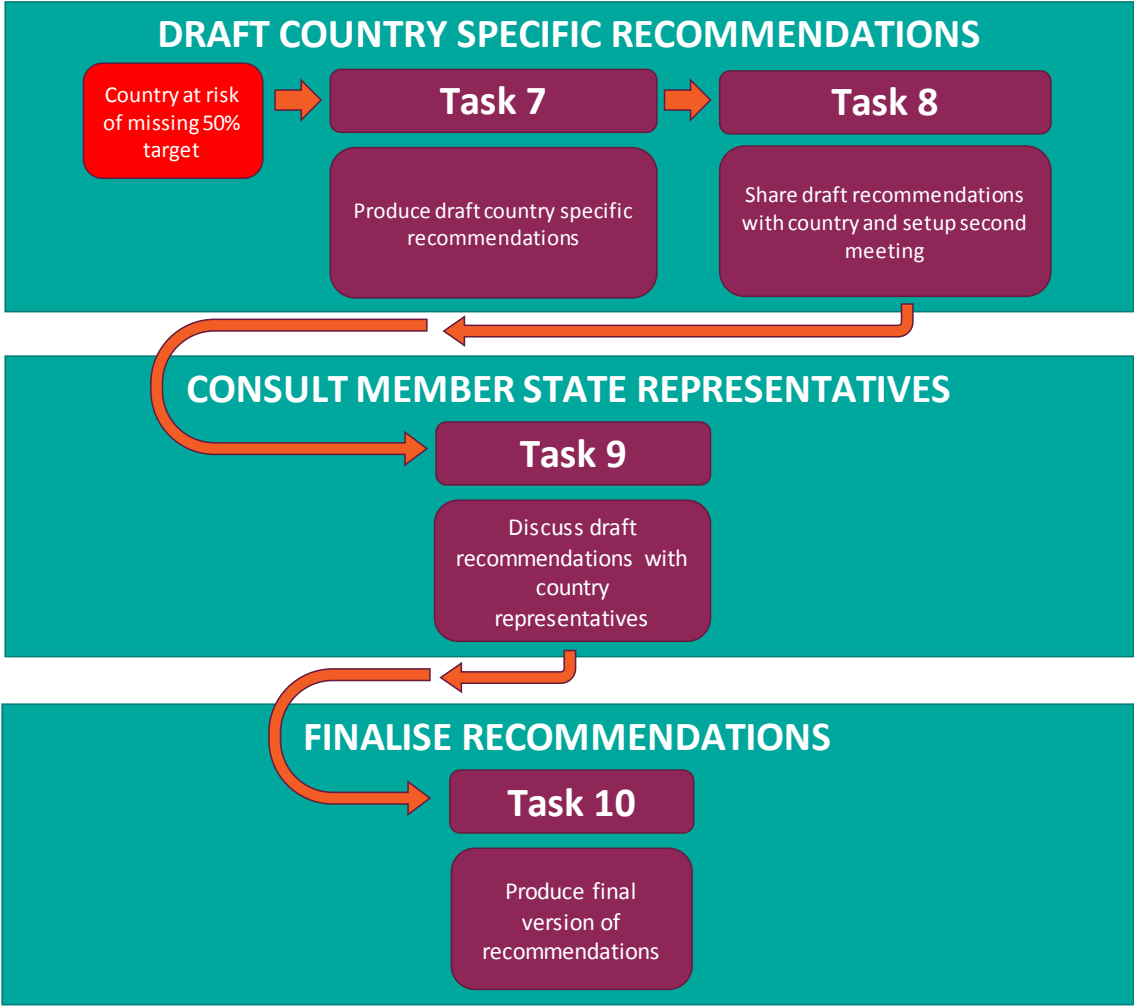
2.1.6 Task 6 – Identify Countries to Receive Detailed Priority Actions

The list of Member States which were believed to be at greatest risk of not being able to achieve the 50% target is presented in Section 4.2. These countries were carried forward to Phase 2 of the study.

2.2 Phase 2

Phase 2 of the study comprised of a further four tasks as outlined in Figure 2-2. These tasks are outlined briefly below and were carried out for the Member States agreed to be at greatest risk of failing to meet the 2020 targets.

Figure 2-2: Approach to Phase 2 of the Study



2.2.1 Task 7 – Produce Draft Country Specific Priority Actions

Based on the information gathered as part of Phase 1 the project team developed a draft set of Priority Actions for those countries which were carried forward.

2.2.2 Task 8 – Share Draft Priority Actions with Country and Setup Second Meeting

The draft Priority Actions were shared with the relevant Member State representatives ahead of a second round of country visits at which the details of the Priority Actions were discussed in detail.

2.2.3 Task 9 – Discuss Draft Priority Actions with Country Representatives

The intention of the study was to adopt a collaborative approach to the development of the Priority Actions. Member States were encouraged to engage in the process to ensure

ownership of the country specific Priority Actions presented in Early Warning Reports. The second round of country visits will offer Member States was a further opportunity to engage in the process and to receive feedback in detail, or ask questions about, the draft set of Priority Actions that have been developed for their country (further details of the programme of visits is given in **Appendix 1_Member State Performance Data**).

2.2.4 Task 10 – Produce Final Version of Priority actions

The Priority Actions were then refined based on the feedback received from the country representatives and the Commission. Where necessary, further points were clarified and confirmed with representatives prior to finalising the Priority Actions.

3.0 Current Recycling Performance

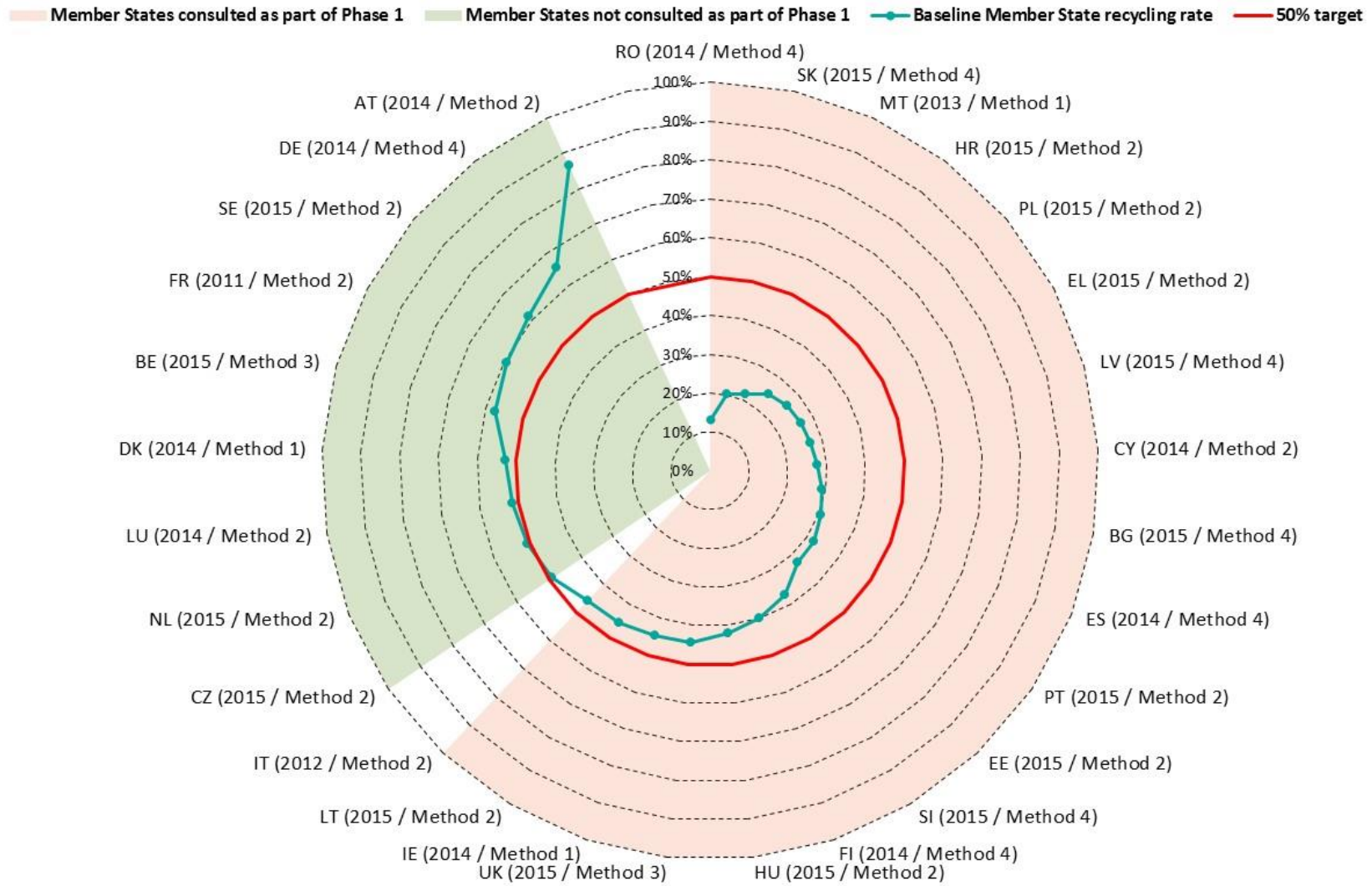
In order to better understand the likelihood of Member States achieving the 50% target by 2020 it is necessary to understand the current levels of performance. This section sets out the latest recycling rate figures across all Member States (Section 3.1).

3.1 Reported Recycling Rates

Details of historic recycling performance – as measured by Member States' chosen calculation methods – were provided by the European Commission and are presented in Appendix 1.

Figure 3-1 shows those Member States that were meeting the 50% target and those that were not in the latest year for which data was provided. The 20 Member States whose reported recycling rates were below 50% were consulted individually as part of Phase 1 of the study.

Figure 3-1: Current Recycling Performance as Reported Under Chosen Calculation Method (%)



3.2 Data Accuracy

A recent study into the accuracy of European waste statistics, carried out for the Commission, concluded that there were still significant issues with many of the datasets, despite, in some cases, long time series.³ Two of the key causes were identified as:

- Insufficient verification of the data at EU and national level; and
- Lack of incentives for accurate data reporting.

With regard to the latter point the study notes that:

“The potential for mis-reporting of performance data linked to meeting mandatory targets is rarely discussed. Organisations, private or public, may have an incentive to mis-report, especially when there is some financial or reputational benefit to be gained from doing so. For instance, where producer responsibility applies, the challenge is to design the system in such a way that producers, and / or those who discharge obligations on their behalf, have no incentive to misreport their data. Producers have an incentive to under-report the amount of products placed on the market in order to save paying fees, and this also has the effect of increasing the reported recycling rate. Producer responsibility organisations, who seek to inflate recycling performance, might tend to under-report the total waste arisings (or amount placed on the market), and overstate the amount reported as recycled. Similar concerns apply to data gathered by public authorities: waste companies have an incentive, reputational, and sometimes, financial, to inflate their performance on recycling to indicate their contribution to meeting targets. Finally, Member States may not have incentives to engage with investigations regarding the quality of reporting in detail if the data indicate compliance with targets.”

The figures reported above, regarding current recycling performance, should therefore be viewed with some caution. Particularly, if unaudited data from producer responsibility organisations (i.e. compliance schemes) are used in the calculation. The issue of data reporting was raised in many of the country chapters given as Appendices to this report. To provide an overview of the potential scale of the issue, in terms of the magnitude of mis-reporting and the number of Member States affected, a cross-checking analysis was carried out. This involved:

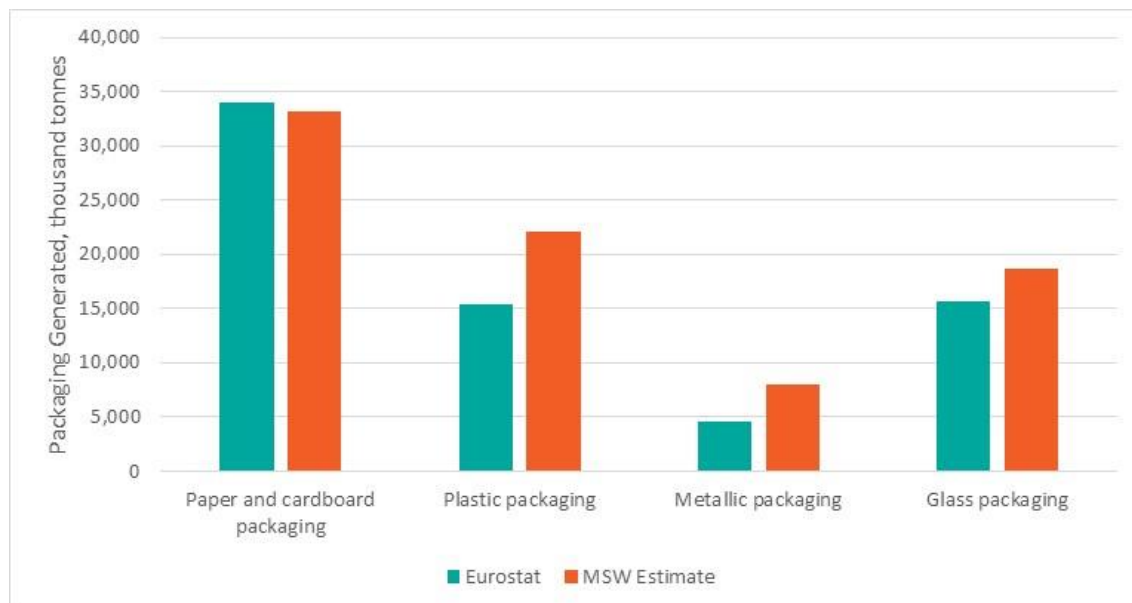
- Gathering packaging generated data from Eurostat for paper/card, plastics, metals and glass;
- Gathering MSW generated and compositional data from the questionnaires submitted by the Member States under this study, for the same categories;

³ Eunomia (2017)

- Estimating a proportion of each of the four MSW categories that is likely to be packaging, based upon a range of historical data surveys and expert judgement of the project team:
 - Paper/card = 60%
 - Plastic = 65%
 - Metals = 80%
 - Glass = 90%
- Calculating the difference between the Eurostat figures and the MSW estimate.

Figure 3-2 shows the Eurostat data compared with the estimate from the MSW data. For paper and cardboard the figures are fairly similar. The most significant differences are for metallic and plastic packaging, with glass packaging also showing a reasonable difference. For example, the amount of plastic packaging estimated to be generated is around 40% higher than the figure reported to Eurostat. If the amount of packaging generated is under estimated, the calculated recycling rates will be overestimated. This analysis is even more surprising given that the definition of MSW in most Member States will not include most commercial and industrial packaging. The Eurostat data should therefore be significantly higher than the MSW estimate.

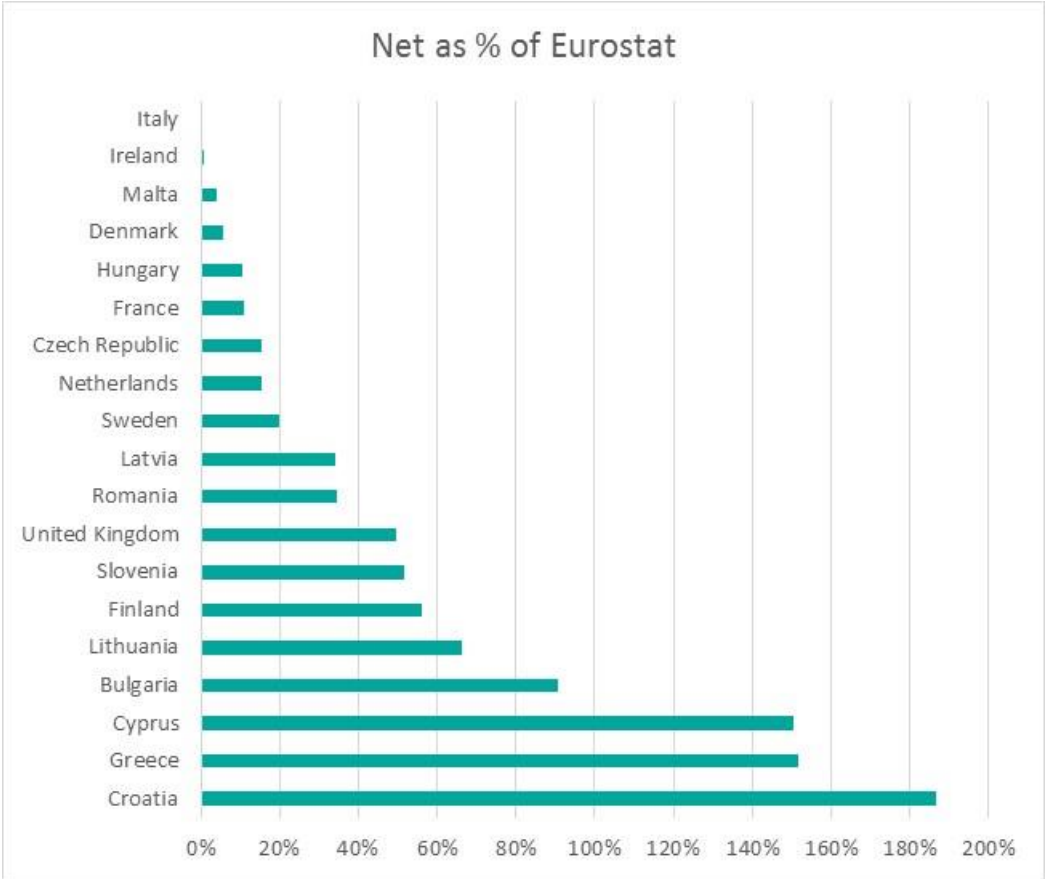
Figure 3-2: Overall Difference by Material Category



Source: Eunomia

In terms of which Member States show the most significant net difference, for all these four materials combined, Figure 3-3 shows the % difference between them. The figure shows only those Member States where the % difference is greater than zero. This shows that the difference is over 50% for 8 Member States, and over, or around, 100% for 4 Member States. These being, Bulgaria, Cyprus, Greece and Croatia. More detailed analysis of the differences between the datasets for these countries is given in the respective country chapters in the Appendix.

Figure 3-3: Net Difference by Member State (where MSW estimate is higher than Eurostat figure)



Source: Eunomia

Overall, this analysis indicates that there is potentially some cause for concern in the reported data. It is suggested that Member States carry out a statistically significant programme of surveys of residual wastes, to calculate more accurately the amount of MSW that is packaging waste. Consequently, a more accurate estimate of the potential under-reporting of packaging waste generated being reported to Eurostat could be obtained.

4.0 Future Recycling Performance

4.1 Potential Increase in Recycling by 2020

Table 4-1 provides a summary of our assessment of the likely increase in recycling performance for each Member State, based upon the visits and interviews carried out in Phase 1, and also the impact this has on their overall recycling performance.

Table 4-1: Detailed Assessment of Likely Recycling Performance in 2020 for Countries Reviewed Under Phase 1

Member State	Likely increase in recycling performance by 2020 (%)	Likely recycling performance by 2020 (%)	Proportion of performance shortfall likely to be closed by 2020 (%)	Final Distance to target
Bulgaria ^a	12%	41%	58%	9%
Croatia	8%	33%	32%	17%
Cyprus	4%	32%	18%	18%
Czech Republic ^a	2%	51%	100%	0%
Estonia	6%	39%	34%	11%
Finland	3%	43%	26%	7%
Greece	9%	35%	36%	15%
Hungary	0%	42%	0%	8%
Ireland ^a	7%	52%	100%	0%
Italy	12%	58%	100%	0%
Latvia	7%	34%	30%	16%
Lithuania	5%	50%	100%	0%
Malta ^a	12%	28%	35%	22%
Poland ^a	21%	47%	88%	3%
Portugal	5%	37%	28%	13%
Romania ⁴	6%	19%	16%	31%
Slovakia	7%	27%	23%	23%
Slovenia	0%	37%	0%	13%
Spain	6%	37%	31%	13%
United Kingdom ^a	2%	46%	35%	4%

⁴ Romania is considering changing the method, but no data on its performance according to Method 2 is currently available.

4.2 Member States 'at High Risk'

Appendix 1_Member State Performance Data provides a risk matrix that was used to identify those Member States, out of the 20 reviewed in Phase 1, that were at the highest risk, and should therefore be assessed in detail in Phase 2.

The lowest risk countries are those who exceed the target most easily. Italy is expected to meet the target under Method 2 quite easily. In Lithuania, Czech Republic and Ireland, we also expect targets to be met, albeit not by a convincing margin.

There are some countries that seem to be at lower risk of failure being closest to the targets, so that in principle, relatively minor changes could lead to targets being met. One of the Member States in the lower left 'quadrant', identified as Medium Risk, is of this nature (the UK, which achieved 44% under Method 3 in 2015). Another, Slovenia, reports performance at 37% under Method 4 in its Compliance Report, but reports a figure of 54% under Eurostat / OECD Joint Questionnaire (which should indicate the same results). There are some data issues in Slovenia which are being resolved, but we believe that any downgrade of performance due to revisions in reported data have the potential to be 'made up' by additional performance related to measures in place / being rolled out. Therefore, we believe that Slovenia represents a relatively low risk. The United Kingdom was deemed to be at least risk out of the remaining Member States, so in order to focus effort where it was most needed, the UK was not included in Phase 2, however, some key priority actions were included in the UK's country chapter.

The alarming fact remains that there are a large number of Member States which, although they are some distance from the target, do not appear to be doing enough to ensure this gap will be closed by 2020 (or thereabouts). A surprising number of these have chosen to report under Method 4, which is probably the most difficult of the Methods to report against: some could almost certainly make an improvement to their performance by simply changing their reporting Method, but we doubt that this will be sufficient to make these countries 'low risk' ones.

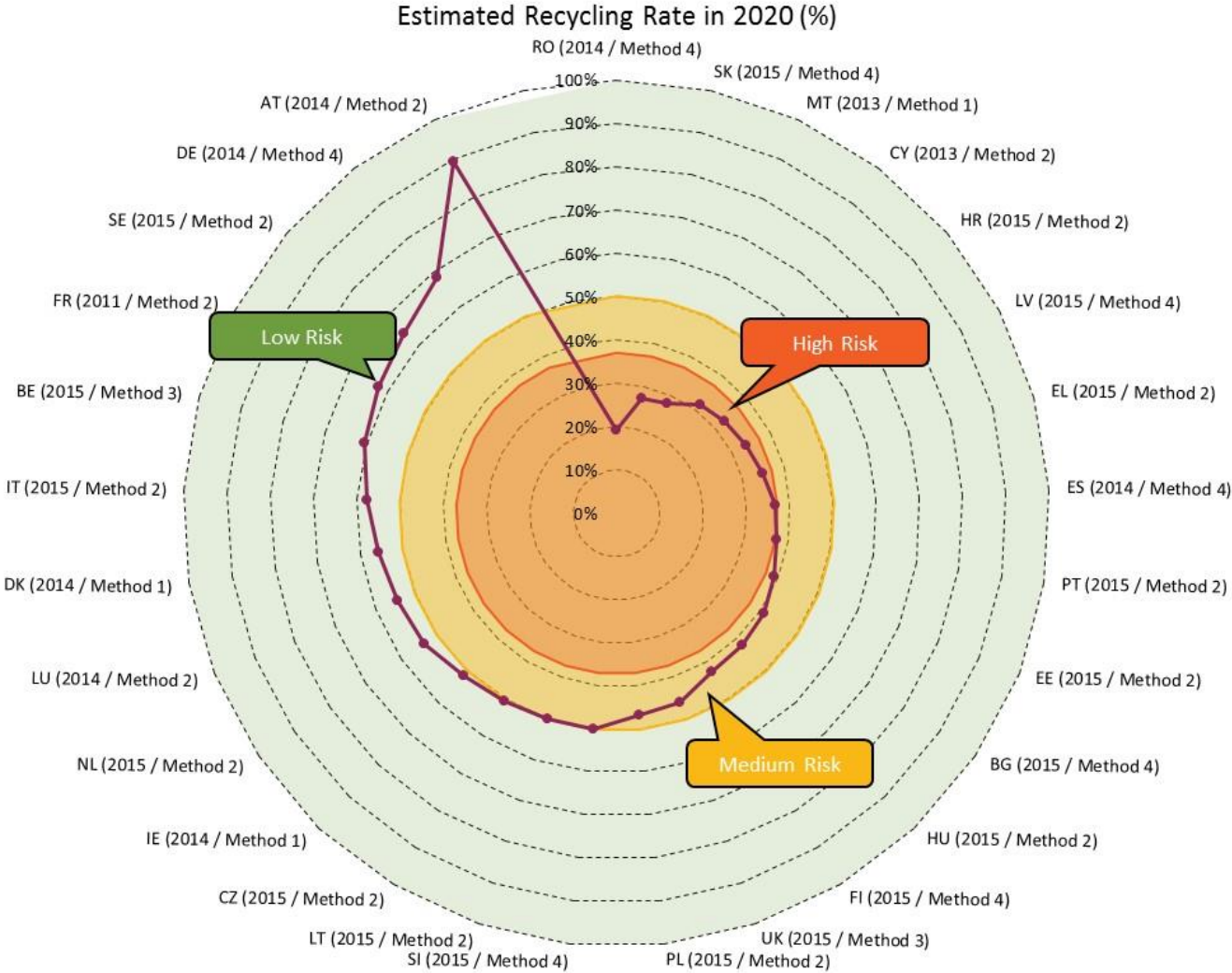
As a result of our assessment, therefore, it was concluded that the following member states are at a high risk of missing the target, and were moved into Phase 2 of the project:

- Bulgaria
- Croatia
- Cyprus
- Estonia
- Finland
- Greece
- Hungary
- Latvia
- Malta
- Poland
- Portugal
- Romania

- Slovakia
- Spain

The Final performance estimate for the Member States is also shown in Figure 4-1. Slovenia is shown to meet the 50% target (however, as noted above the data reporting is quite uncertain). Other than this, the Member States anticlockwise from Poland, except the UK, were selected to be included in Phase 2.

Figure 4-1: Summary of Recycling Rate by Member State



5.0 Study Synthesis

This section provides a summary of the Common Issues and Key Priority Actions identified through the Phase 2 assessments as the most common. These issues and actions were discussed in detail with the Member States in a Study Workshop held on 25th October 2017. In addition, **Appendix 2_Good Practice Priority Actions** synthesises the key examples of good practice priority actions suggested to the Member States in the Early Warning Reports. These are briefly summarised as follows.

5.1 Common Issues – National Level

National targets not cascaded to regional / municipal level or minimal consequence of failure. Many Member States have national recycling targets in place in order to be compliant with the transposition of the Waste Framework Directive. A range of other policies are also often in place, such as waste taxes or bans. However, the presence of national targets does not necessarily mean that action will take place on the ground. It is the regions and, mainly, municipalities that are the implementing agents of waste services, and national policy must ensure they are incentivised to act. Where targets are maintained only at the national level, there is likely to be little effect without other strong policies in place. National targets could be cascaded down to the municipal level, as is the case in Wales, Poland and Croatia, for example, but are often not. Even when they are in place, the consequence of failure to meet the target is not significant enough to ensure the desired outcomes are achieved.

Low costs of disposal. Many Member States do have landfill bans or taxes, but many still do not, or where taxes are in place the rates are still too low to provide a clear economic justification for investment in alternative reuse, recycling and composting systems. Without other strong regulatory policies it is crucial to ensure the costs of disposal are high, in order to stimulate a switch from disposal to recycling. However, high costs of landfill can simply lead to a switch to energy recovery of mixed wastes, rather than to recycling.

National policies requiring food waste separation too loosely worded and will not result in significant changes. Many of the policies reviewed that aimed to place obligations on waste producers to sort food waste were too loosely worded, and would be unlikely to see significant changes. For example, obligations to merely provide containment of a certain volume will not of itself see significant changes in consumer behaviour. Other incentives and service changes, such as reducing the capacity of residual waste containment, would also be required to ensure the policies are successful. This level of detail is often omitted from such obligations. Moreover, even where obligations are in place, exemptions were also found in some Member States which significantly eroded the effectiveness of the measure. Not least conditions around the TEEP (technically, environmentally, economically, practicable) test set out in Article

11 of Directive 2008/98/EC⁵. This was being used as justification for a lack of focus on increasing biowaste collection and recycling.

Lack of enforcement of policies. Several Member States have good policies in place, but are not being fully effective as they are not being enforced. This is in the main due to a lack of political will to prioritise changes to local government services, particularly if municipalities have significant political power within the country.

Regulatory uncertainty/continuous small changes. In a number of cases regulatory uncertainty was providing a major barrier to investment in the sector. In the absence of clear regulation, or if regulation is changing frequently due to changes political conditions, municipalities and waste companies are unwilling to make significant investments in infrastructure and services, as these investments might be redundant if policy subsequently changes. Often small, and relatively continuous, changes are made as there is only limited political capital available. It is more challenging to make wholesale system changes, but this is required in many countries who have fragmented services or use outdated approaches. Another compounding factor is that national and local administrations often lack the resourcing and knowledge to produce robust administrative and regulatory frameworks for the country.

Inadequate appraisal of best practice options in policy design. It seems clear in many Member States that national policy often seems to be implemented without a thorough understanding of the full range of best practice options that might be suitable for use in the country. Consequently, lower performing, albeit more common, systems are often introduced. This then limits the ability for the system to meet higher national targets.

No/insufficient frameworks for consistency, leading to highly variable, sometimes poorly implemented systems. Many countries need to balance central versus local government control of services, and regularly many of the decisions about implementation are left solely to the municipalities. Whilst decentralisation can help manage differences in local contexts, there are generally many common themes in how well performing services operate, and common pitfalls. Most countries have a very limited framework for consistency, which results in a wide range of service provision, including many low performing services at the municipal level.

Outdated data capture systems providing uncertainty about existing performance. Some Member States have invested in modern digital waste information systems, but the majority have not, and find it a considerable challenge to report accurate data related to the calculation of the household and similar waste recycling rate under the Waste Framework Directive. Consequently, the level of uncertainty around the existing level of performance is high and so the level of effort required to close the gap is not clear. This can inhibit investment in any future services.

⁵ The use of this flexibility will be clarified in the revised Waste Framework Directive (2018 revision).

Data on products placed on the market through EPR schemes being underreported. As discussed in Section 3.2 cross-checks of different data source indicate that the amount of material reported as ‘placed on the market’ is likely to be lower than is actually the case. Several Member States also noted the issue of underreporting during the country visits. This can have a major impact on performance against the Waste Framework Directive targets as if packaging recycling rates are exaggerated and compliance with the Packaging and Packaging waste Directive seemingly met, there is very little incentive for packaging producers to provide further funds to improve packaging collections. This is, however, absolutely essential to ensure municipal waste recycling rates increase. If accurate packaging recycling rates were being reported, this would most likely show PPWD targets were being missed and therefore producers would need to invest more in services. Consequently, the household and similar waste recycling rates under the WFD would increase.

5.2 Common Issues – Municipal Level

No integration between EPR schemes and MSW services / fragmentation of responsibilities. In most countries with separate PRO schemes for packaging wastes a completely separate recycling scheme has been setup (e.g. a Green Dot scheme), and is not linked to the other services municipalities provide. This lack of integration causes inefficient service design, as services cannot be optimised across dry recycling, food and garden and mixed waste collections. Moreover, where recycling schemes are completely separate from those responsible for collection and treatment of mixed wastes, the schemes see no financial benefit from reduced mixed waste arisings. Consequently, there is no incentive to increase recycling services, over and above compliance with packaging targets (which as noted above can be un-enforced or overstated).

Minimal / no capacity to design and deliver selective collection systems. Historically waste management at the municipal level has revolved around providing mixed waste collections to citizens. This is a relatively straightforward service to provide. Reaching high recycling targets can require much more complex and extensive service changes, taking into account a range of factors; such as consumer behaviour, the value of secondary materials market, effective communications campaigns, robust procurement and contract management. The capacity and skills of local government are often underdeveloped in these areas, posing a significant risk to effective delivery of services that would be needed to meet national targets.

High proportion of housing stock as apartments / challenges in collection of recycling. For several countries populations are concentrated in urban areas, particularly in flats and high rise buildings built mainly during the 20th Century. Providing door-to-door services is very challenging, and usually communal containers are used to collect waste. This, however, removes the ability to change behaviour at the household level, particularly as sharing the benefits of reduced mixed waste arisings is difficult. Developing systems which deliver high levels of capture of recycling from this segment of the housing stock will be a critical part of increasing recycling rates in many Member States.

Packaging recycling rates in some cases appear overestimated, reducing the financial contributions to the system and effort from producers as discussed above. However, the impact on municipalities is that the packaging element of service provision can be underfunded, putting additional pressure on local authority budgets.

Overreliance on EU Funds. For several Member States there has been an overreliance on using EU Funds for development of infrastructure, leaving no longer term funding plan in place. This is most relevant for collection and recycling infrastructure, which tends to be lower in capital cost and higher in operational costs (labour, fuel etc), as opposed to composting or incineration plants. Where sustainable funding streams have not been put in place there is often a clear lack of investment, and therefore performance remains low. Funding from EPR schemes can be limited, not least due to the point above, and whilst national, and local governments, state that raising waste management fees is politically impossible, many citizens would have the household finances available to pay for improved services. In one Member State the average annual level of waste fees was €25, whereas one stakeholder made it clear that most householders have smart phone contracts at €50 per month. Evidence from well performing countries suggests that (with proper EPR funding) per household fees in the order of €50 to €100 per year should be adequate to see significant improvements in recycling services, a cost that is quite low compared to average household incomes in the EU.

Lack of effective communication campaigns. Some countries require packaging producers to fund communication campaigns under EPR regulations, however, the delivered campaigns can be very limited, such as a few TV commercials of a person dressed as a beverage can. If citizens are being asked to pay higher fees for services, it is important to properly communicate the benefits of increased convenience and better overall waste management for the country (and planet).

Waste industry can lack required skills and competences. It was noted above that the municipalities can lack the knowledge to implement the required services, the same is true of the waste industry itself which may not have the experience to design and operate them to a high standard. This may be more of an issue in countries which don't have international waste companies in the market that can bring in expertise from operating in other countries.

5.3 Common Issues – Citizens

No financial or other incentive to separate recyclables (lack of participation). Often there are no measures that provide specific incentives to citizens to participate in the recycling services that are being offered, so for those not simply motivated by environmental goals, separation of recyclables does not occur.

Inconvenient selective collection systems (i.e. not door-to-door or near entry). Setting up communal based collection services, with recycling containers at the end of the local street is a low cost way of meeting low recycling targets. However, convenience is a key element of a well performing separate collection system. Nevertheless, many countries believe that these inconvenient systems can still deliver high levels of recycling.

Lack of public understanding of systems and need to minimise contamination. In many cases the public are unaware of the issues with contamination of recycling streams particularly, contamination of food waste from plastics or segregated plastics stream with incorrect polymers or other contaminants. Moreover, many citizens are sceptical of the final destination of segregated recycling streams, particularly when exported to China. However, the China import ban has recently made this issue much more prominent in national media.

5.4 Key Priority Actions

In order to address the various issues set out above, Priority Actions were developed for each country in Phase 2. A detailed description of the various actions are included in **Appendix 2_Good Practice Priority Actions**. The key actions are summarised here.

Incentives to meet targets:

- **Cascading down targets** – national governments can set legally binding targets at the regional and/or municipal level. These could be recycling targets, or include other targets such as reductions in residual waste per inhabitant.
- **Penalties for non-compliance** – to provide an incentive for municipalities to take action it would be important to ensure some penalties are in place for failing to meet the targets. This could be in the form of a fine, or some other penalty such as restricted access to EU funds or the like. Fines would need to be punitive enough to be effective, but could be increased over time to allow time for systems to develop.

Measures to incentivise households:

- **Convenience of recycling** – improve the convenience of recycling services by offering door-to-door services where possible, or near entry bin stores with locked access for flats and apartment blocks.
- **Reduce size and frequency of mixed waste containers** – alongside increase in provision of recycling containers, the size of frequency of mixed waste collection containers can be reduced. This provides an incentive for citizens to separate out recycling as all the waste cannot fit in the mixed waste bin.
- **Implement Pay as You Throw (PAYT)** – sometimes known as ‘recycling to save’ schemes can be very effective at providing a clear financial incentive to citizens to sort recyclables from mixed wastes, if they are implemented properly. A range of pitfalls do, however, need to be avoided. For example, well-functioning and convenient recycling services must be in place before or at least rolled out at the same time as PAYT, not afterwards.
- **Inspection and fines** – in some cases PAYT might not be possible, so a system of municipal inspections and building fines can be used instead. This is also relevant for flats with communal bin access where limited examples of PAYT exist, as is the case in Milan which has a highly successful system for capturing food waste.

Increase the cost of disposal:

- **Taxes on landfill and other residual waste treatment** – to increase the cost of disposal for all mixed wastes, residual waste taxes should be implemented. These must cover both landfill and energy recovery processes to ensure the cost of all mixed waste treatments are increased. This will ensure more material is recycled rather than just recovered.

Extended Producer Responsibility schemes:

- **Improvements to the performance and governance of the Extended Producer Responsibility schemes** – the minimum general requirements for Extended Producer Responsibility (set out in Article 8a of the recently reviewed Waste Framework Directive) makes provisions for improving the governance and performance of EPR schemes. These provisions should be implemented in full.
- **Enhancing cost recovery** – systems must be setup to ensure that producers cover at least 80% of the cost of packaging recycling services, also as per the minimum general requirements mentioned above. This will ensure financial pressure is taken off of municipal budgets so other investments in improved biowaste collections, reuse centres and other services, can be made.

Increase consistency of service provision:

- **Minimum service requirements for separate collections** – service standards are used in some Member States, and go beyond loosely worded sorting obligations, to give more precise standards for the collection services. This may be specifying door-to-door, minimum sizes of recycling containers and minimum/maximum collection frequencies of containers. This ensures a minimum level of service provision whilst giving some flexibility to municipalities to adapt to local conditions.
- **Sanctions for non-implementation** – as with many obligations, some sanction would be required to ensure the desired outcomes were achieved. This could be a financial penalty, limited access to financial support packages or requirements to prove any alternative solutions were at least as effective and efficient.

Developing separate collection and treatment of biowaste – this should not only be a consideration of Member States for which biowaste is included in scope of their calculation methodology for the 2020 target. Significant efforts will be needed to meet a 55% municipal waste recycling target according to the harmonised calculation method by 2025. Therefore, all Member States should prioritise improving separate biowaste collection systems. Not least as new provisions in the revised Waste Framework Directive require Member States to separately collect biowastes:

- Introduce mandatory requirements to sort food;
- Link biowaste collection to minimum service standard;

- Treatment type must be matched to collection system (e.g. separate food waste is suited to biogas plants, whereas mixed food and garden is not, generally);
- Provide incentives for households to home compost;
- Market support should be given to compost and digestate to facilitate its market uptake; and
- The obligations need to be well communicated with households.

Supporting implementation:

- **Implement dedicated support programme for municipalities** – a national training programme should be developed targeting all municipalities. This should be funded through national means or EU Funds (revising the allocation in the Operational Programme used to disburse EU Funds would be necessary). Good examples of local authority support schemes are those developed by WRAP in the UK and by OVAM and Vlaco in Flanders.
- **Encouraging joint working of municipalities** (e.g. infrastructure use and/or service procurement) – for some services there is a minimum efficiency of scale which needs to be achieved to get the best value for money. Sharing the burden of costs and responsibilities through effective partnership working can be one way to deliver the best overall outcomes within a country.
- **Ensuring effective use of EU Funds** – to ensure the EU Funds are spent in the most efficient way it is important that all funding calls are adjudicated by the right people with enough relevant experience. Funding packages must relate to the whole service not just individual elements, such as bins or compost plants. As noted above, these should be considered short term support only, and must not be considered substitute for implementing sustainable economic instruments.

Monitoring and reporting:

- **Implement modern and efficient digital waste information systems** – waste should be considered a resource, and therefore understanding what quantities or material are moving from location to location should be a key part of any circular economy policies. Information technology, particularly mobile based applications and online databases, is well evolved and developing rapidly. Such systems should be used to help develop modern waste information systems with the future in mind. This may include:
 - Weighing of all collections vehicles or containers on each round;
 - Inputs / outputs of sorting plants measured; or
 - Measuring inputs to final recycling processes.
- **Carry out market surveillance activities to monitor EPR data** – better processes and techniques should be installed to adequately monitor data produced by EPR schemes during the course of monitoring compliance with the waste stream Directives.