Ambitious waste targets and local and regional waste management

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It does not represent the official views of the Committee of the Regions.

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List of abbreviations

ACR+	Association of Cities and Regions for Recycling and sustainable Resource management
BMW	biodegradable municipal waste
C&D	construction and demolition
CoR	Committee of the Regions
EEA	European Environment Agency
ELV	End-of-life vehicles
EPR	Extended Producer Responsibility
EWC	European Waste Code
FEAD	European Federation of Waste Management and Environmental Services
FoEE	Friends of the Earth Europe
LAPN	Limerick/Clare/Kerry: Local Authority Prevention Network
MSW	municipal solid waste
NUTS	Nomenclature of Units for Territorial Statistics
PAYT	pay-as-you-throw
RREUSE	Re-Use and Recycling European Union Social Enterprises
VLACO	Flemish Compost Organisation
WCA	Waste Collection Authorities
WEEE	Waste electrical and electronic equipment
WFD	Waste Framework Directive

Summary

The "Roadmap to a Resource Efficient Europe" (COM(2011) 571) contains a commitment of the European Commission to "review existing prevention, re-use, recycling, recovery and landfill diversion targets to move towards an economy based on re-use and recycling, with residual waste close to zero (in 2014)".

In the process of stakeholder contribution, the European Commission requested the Committee of the Regions on the 14th December 2012 to produce an Outlook Opinion on the review of the targets contained in the Waste Framework Directive, the Landfill Directive and the Packaging and Packaging Waste Directive. The present study will contribute to the cooperation between the CoR, the European Commission and other stakeholders, in particular in view of the above mentioned CoR Outlook Opinion.

Relevant waste targets

The requirement for the review of the key waste policy targets stems from the Waste Framework Directive 2008/98/EC, the Landfill Directive 99/31/EC and the Packaging and Packaging Waste Directive 94/62/EC.

The targets in Article 11(2) WFD to be achieved by 2020 are:

- Preparation for re-use, recycling of waste materials such as at least paper, metal, plastic, glass from households and possibly similar wastes to be increased to a minimum of overall 50%.
- Preparation for re-use, recycling and backfilling of 70% construction & demolition waste.

The Landfill Directive contains in Article 5.1 the obligation to reduce the disposal to landfill of biodegradable waste, compared to the amount of biodegradable waste produced in 1995:

- 2006: reduction to 75%;
- 2009: reduction to 50%;
- 2016: reduction to 35%.

Derogation: Member States which in 1995 landfilled more than 80% of municipal waste may postpone the attainment of these targets up to 4 years.
The Packaging and Packaging Waste Directive sets a recycling target for packaging waste between a minimum of 55% and a maximum of 80%. With regard to the materials contained in packaging waste the recycling targets are:

60% for glass, 60% for paper and board, 50% for metals 22.5% for plastics and 15% for wood.

Waste policy targets from other waste directives, such as WEEE-Directive or ELV-Directive are not in the focus of this review.

Relationship between targets and instruments

Setting targets in EU waste legislation is a policy instrument, which requires the Member States to take action on specific topics of waste management, but it leaves it open to the Member States, with which measures the targets will be reached. The advantage of targets is that they allow Member States to take country-specific framework conditions into consideration when selecting appropriate policy instruments with the possibility to make attainment of the waste targets more effective and efficient.

The target setting in EU legislation itself, however, is not consistent, as it covers certain waste streams twice (e.g. packaging waste from households), while other waste streams are not covered. In the process of assessing the management of bio-waste, which is envisaged by the European Commission in Article 22 of the WFD, the introduction of a recycling/composting target for bio-waste should be discussed.

Although waste prevention is the first priority in the waste hierarchy, no targets for the prevention of waste production are set. Quantitative prevention targets, especially for packaging waste, but also for municipal waste, would be a driver for additional waste prevention efforts, but the problems with target setting and assessment have to be taken into consideration.

Regarding the management of waste, the WFD requires Member States to encourage waste prevention, set up collection systems for four recycling materials (by 2015), promote re-use and high quality recycling and ensure high levels of recovery. For mixed municipal waste collected from private households, a network of recovery installations has to be set up. Although the waste legislation does not prescribe concrete instruments, it gives the authorisation for establishing extended producer responsibility (EPR) and for eco-design and mentions examples of potential instruments for re-use and recycling, e.g. support of re-use and repair networks, the use of economic instruments, procurement criteria.

With the obligation to establish strategies (Art. 5 Landfill Directive), waste management plans (Art. 28 WFD) and prevention programmes (Art. 29 WFD, Art. 4 Packaging Directive) the Member States are required to think about the

appropriate way to reach the targets. As the measures in the diverse strategies, plans and programmes target partly the same waste management activities, a harmonisation exercise is necessary in order to avoid overlap of work and conflict of measures.

While the WFD sets recycling targets for the specific waste streams household waste and construction and demolition (C&D) waste it only introduces provisions for recycling in general. Specific provisions for the recycling of household and C&D-waste are missing. Only the packaging waste part of the household waste is covered by the directive on packaging waste. A dedicated directive, especially for C&D-waste and for bio-waste, as well as specific measures for achieving the household waste recycling target should be considered.
The WFD partly recommends to Member States and partly requires from Member States to introduce certain instruments. This approach is efficient when the final target group are private consumers, local markets and local activities. For this target group the Member States can design tailor-made instruments. However, as far as products are concerned which are traded on international markets, Member States activities need to be complemented by EU-level measures. It is for example recommended to introduce eco-design requirements for product longevity, reparability and recyclability at the international level.

Calls for more ambitious and new quantified targets

Recycling of household/municipal waste
Several stakeholders call for new targets regarding the management of household waste:

- Quantitative prevention target.
- Re-use target, at least for certain waste streams, like textiles.

Concrete target values are suggested by ACR+, an association of cities and regions for recycling and sustainable resource management, on the basis of a value of 600 kg/cap of municipal solid waste (MSW):

- Prevention: 10%;
- Re-use/preparing for re-use: 5%;
- Bio-waste recycling: 25%;
- Dry recycling: 45%.

The combined target for bio-waste and dry recycling is 70% and thus much higher than the target in the WFD for 2020 (50%).
The European Environment Agency (EEA) has produced forecasts of the achievements of Member States in recycling rates for municipal waste. The

forecast estimates that about half of the EU Member States might experience problems in reaching the recycling target of 50% for household waste, set in the WFD for the year 2020.

Landfill diversion of biodegradable municipal waste
The stakeholder ACR+ suggests a target for maximum landfilling of municipal waste of 5%.

The EEA has furthermore assessed the performance of the Member States regarding the reduction targets for biodegradable municipal waste (BMW). With the exception of one country, all Member States without derogation period have reached the target for 2009. Almost half of the Member States with derogation period were not able to reach the first target for 2010 (i.e., the reduction of disposal to landfill of biodegradable waste to 75% of 1995 figures by 2010).

Recycling of construction and demolition waste
A study commissioned by DG Environment (Bio Intelligence Service 2011b) documents that recycling rates for C&D-waste of up to 90% are feasible. On the other hand eight countries currently report recycling rates below 40% and six additional countries do not even have data available for the estimation of the recycling rate . Nevertheless, the findings of the study suggest that the recycling target of 70% by 2020 set in the WFD should be achievable for the majority of Member States.

Recycling of packaging waste
The European Environmental Bureau asks for a revision of the recycling targets for packaging waste and has tabled target values of 70% for plastic and 80% for glass, metal and paper for discussion.

A study for DG Environment (Bio Intelligence Service 2011c) identified the best recycling rates for packaging waste to be in the range of 70-80%. These rates were judged to represent the current plateau in performance. The study concludes that the implementation of more stringent recycling targets is not feasible at EU level in the near term (e.g., the next 5 years). On the other hand, the current country average rate for the recycling of packaging waste of about 59% is higher than the 55% target.

Recycling target for bio-waste
Based on Article 22 of the WFD the European Commission has started preparatory work on a potential legislative proposal on bio-waste. The European Commission issued a “Green Paper on the management of bio-waste in the EU” which describes a recycling target of 36.5%. In a consultation exercise about

two third of the responding stakeholders were of the opinion, that the proposed target delivers added value in comparison to the existing legal situation.

Methodology

The main task of the present project is the identification of best practices that set quantified waste targets which are more ambitious than the comparable EU targets.

All 27 Member States were scanned for potential best practice case studies. The search resulted in about 200 initiatives for prevention/reduction, re-use, recycling, recovery and landfill diversion, including "zero waste"/zero landfill initiatives in almost all EU Member States. However, in the majority of identified initiatives no concrete waste targets were fixed or the adopted targets were not comparable with the targets, which are relevant for the present study. Thus only 23 best practice case studies, distributed among 13 Member States, were further assessed in the study.

Seven of the cases have been implemented at municipal level, seven at regional level and nine at national level. Most of the case studies concern EU15 Member States. Only two cases, one in Cyprus and one in Slovakia, were implemented in the newer EU Member States.

Findings on targets

Recycling of household waste

A number of regions and municipalities have set more ambitious targets for the recycling of household or municipal waste than the values set in the WFD. The targets are more ambitious, because they are higher or have to be reached in less time. The recycling targets that exceed the value of the Directive in 2020 vary between 55% and 60% for household waste and between 58% and 70% for municipal waste.

Landfill diversion

The targets for landfill diversion identified in Member States were set for household or municipal waste and not for BMW and are, therefore, not directly comparable to the targets of the Landfill Directive. However, six of the older Member States divert more than 95% of their respective municipal waste away from landfill.

Recycling of construction and demolition waste
Concerning the recycling of C&D-waste, only one target and one achieved recycling value on regional/local level could be identified. These two values are very high (88% and 90%) in comparison to the recycling target of 70% by 2020 set in the WFD. It has to be added that both values were identified in Member States which have already reached the recycling target for 2020 on the national level.

Recycling of packaging waste
More ambitious targets for recycling of packaging waste identified on regional and national levels in two Member States range from 65% to 75% by 2019.

Recommendations on targets

Recycling of household waste
The assessment that half of the Member States will have to strengthen their efforts significantly to meet the existing 50% target for household waste recycling by 2020 indicates that this target still needs to be considered as ambitious. A recycling target of above 60% is likely to be reached only by the leading performers while the remaining countries will likely need a derogation period. Therefore, it is suggested, not to increase the 50% target for household waste recycling in general.

Landfill diversion
The assessment of the existing situation shows that there are six Member States, which are able to divert almost all municipal waste away from landfilling. On the other hand there are about the same number of Member States which do not meet the target for 2010, although they have a derogation period. Still, a reduced maximum landfill target of 25% could be introduced for the year 2020 (for countries without derogation period).

Recycling of construction and demolition waste
The data show that very high recycling rates are achievable, however, primarily in countries which have a high demand for construction material, limited primary resources and, thus, a well-developed market for secondary construction material. The assessment that about half of the Member States will have to strengthen their efforts to reach the existing target of 70% recycling of C&D-waste by 2020 indicates that an increased target will not be met by the majority of Member States. Therefore, a general increase of the 70% target is not recommended. A derogation period for less performing countries may be a solution.

Recycling of packaging waste
As with the other waste targets, there is variation in country performance regarding the recycling of packaging waste. This variance, however, is not as substantial as compared with other recycling targets. The existing country average for recycling of packaging waste lies already above the target value. Therefore, a more ambitious goal could be considered for the recycling of packaging waste: a recycling rate of 60% should be attainable.

Conclusions regarding policy instruments

Landfill diversion
In a number of countries and regions, the policy instrument of a *landfill ban* has been successfully implemented to divert waste away from landfills. The landfill ban is applied on BMW as a whole, but also on certain waste fractions, such as municipal waste, that can be prevented, recycled or incinerated.

Recycling of household waste
Diverting municipal waste from landfills can lead to an increase in incineration of waste. In order to push waste treatment up the waste hierarchy, some Member States and some regions, have introduced an *incineration tax*. There is a broad overall trend that higher incineration charges are generally associated with higher percentages of municipal waste being recycled and composted.

Studies have shown that the introduction of a *mandatory separate collection* of certain municipal waste fractions, e.g. waste paper, in addition to packaging waste, or mandatory separate collection of bio-waste, results in high municipal waste recycling levels. The legal introduction of an obligation for separate collection is done at the regional or national level, while municipalities focus on improving separate collection by developing collection infrastructure and by motivating citizens to use it properly.

Finally, the of economic incentives for households to recycle their waste, such as the *Pay-As-You-Throw (PAYT) scheme*, leads to increased recycling rates. PAYT schemes can be successfully applied by regions and municipalities to encourage citizens to generate less waste, apply home composting or use collection systems for recycling materials.

Policy instruments for recycling of waste should be accompanied by the definition of common minimum standards for recycling and of *quality standards for recycled materials*.

On the municipal level, the applied instruments focus on the improvement of separate collection and the installation of sorting and recycling capacity. The

improvement of separate collection is mainly carried out by introducing a door-to-door collection system for separately collected waste streams. A large number of municipalities are *building up capacities* for material recycling or biological treatment either by direct investment or by support to other operators. Supportive instruments are *awareness raising campaigns* and *administrative capacity building*.

Recycling of construction and demolition waste

In a best practice case, a municipality achieved high recycling rates for C&D-waste by improving separate collection and by constructing a treatment plant for the recycling of C&D. This measure was supported by the national C&D-waste policy with a high landfill tax also for C&D-waste.

High recycling rates for C&D-waste can be supported on the national level by introducing *landfill taxes*, a *landfill ban* on combustible waste and *recycling or reuse targets*. In addition, *mandatory source separation* of C&D-waste fractions can be a strong driver for increasing recycling. A supporting element for improving the market situation of recycled building material is the definition of *quality standards* for the use of recycled C&D-waste.

Recycling of packaging waste

As the policy for packaging waste management is regulated at the national level there is not much room for manoeuvre for municipalities. Only few regions with legal power can introduce their own legal rules, for example a *packaging tax*. Furthermore, recycling rates of packaging waste can be increased at the local level by improved separate collection and by setting up sorting capacity.

At the national level, *producer fee schemes* for packaging have been identified in almost all Member States. Only very few countries apply taxation systems and deposit-refund systems. In a study, it was discovered that the inclusion of the full cost of packaging waste collection and treatment in the producer fee scheme plays a role in meeting high recycling targets.

The most successful producer responsibility schemes appear to share certain features: a common, fully private body that is created, run, owned and supported by the obligated producers; requiring producers to fully fund the collection and recycling scheme; and high targets.

General conclusions

Waste management is a complex system with a number of influencing parameters. In order to reach ambitious targets it is necessary to apply not only one policy instrument, but a set of methods that are tailored to the specific regional and local contexts and which address several levels of the waste

hierarchy simultaneously. Studies have shown that countries and regions using many integrated instruments have a higher municipal waste recycling rate than those using very few or no instruments.

In addition, it is also advisable to combine different instrument types, such as regulatory instruments (e.g. bans), economic instruments (e.g. taxes) and communication instruments (e.g. public awareness raising).

1 Background / Purpose

In 2011, the European Commission adopted a Flagship initiative "A resource-efficient Europe" (COM(2011) 21) under the Europe 2020 Strategy (COM(2010) 2020), in which a strategy to make the EU a 'circular economy', based on a recycling society with the aim of reducing waste generation and using waste as a resource, is envisaged. The reference scenario for waste consists of the full implementation of existing EU waste legislation, notably in terms of achievement of recycling targets and waste reduction.

In its Opinion CdR 140/2011 the Committee of the Regions (CoR) asked the European Commission to intensify its efforts towards a zero waste society by introducing binding EU waste prevention targets and by tightening the current recycling targets. The CoR points out, that pioneering cities and regions go already far beyond the minimum European recycling and landfill diversion targets and that the instruments used by these high performing cities and regions to promote waste prevention and recycling should be used as examples for other authorities (Opinion of the CoR on a Resource-efficient Europe – Flagship Initiative under the Europe 2020 Strategy).

The "Roadmap to a Resource Efficient Europe" (COM(2011) 571), which is one of the key components of the Flagship Initiative, contains a commitment of the European Commission to "review existing prevention, re-use, recycling, recovery and landfill diversion targets to move towards an economy based on re-use and recycling, with residual waste close to zero (in 2014)". Aspirational objectives of the roadmap for the year 2020 are the following:

- Full implementation of the EU waste acquis.
- Waste generation per capita in decline.
- Recycling and reuse are economically attractive.
- Energy recovery limited to non-recyclable materials.
- Landfilling virtually eliminated.

In the process of stakeholder contribution, the European Commission requested the Committee of the Regions on 14th December 2012 to produce an Outlook Opinion on the review of the targets contained in the Waste Framework Directive, the Landfill Directive and the Packaging and Packaging Waste Directive. The present study will contribute to the cooperation between the CoR, the European Commission and other stakeholders, in particular in view of the above mentioned CoR Outlook Opinion.

2 Relevant waste targets

The requirement for the review of the key waste policy targets stems from the Waste Framework Directive 2008/98/EC, the Landfill Directive 99/31/EC and the Packaging and Packaging Waste Directive 94/62/EC. Waste policy targets from other waste directives, such as WEEE-Directive or ELV-Directive are not within the scope of this review.

2.1 Waste Framework Directive 2008/98/EC

In order to move towards a European recycling society with a high level of resource efficiency, the Waste Framework Directive 2008/98/EC (WFD) sets targets for re-use and recycling of waste. In particular, Article 11.2 lists the following two targets:

- By 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight.
- By 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04[2] in the list of waste shall be increased to a minimum of 70 % by weight.

By 31 December 2014 at the latest, the European Commission shall examine the measures and the previously mentioned targets with a view to, if necessary, reinforcing the targets and considering the setting of targets for other waste streams (Article 11.4).

In addition, Article 9 of the WFD gives the European Commission the mandate to propose measures required in support of the prevention activities and the implementation of the waste prevention programmes. This mandate covers also the setting of waste prevention and decoupling objectives for 2020 by the end of 2014, based on best available practices including, if necessary, a revision of the indicators referred to in Article 29(4).

[2] 17 05 04 soil and stones other than those mentioned in 17 05 03; 17 05 03 soil and stones containing dangerous substances.

2.2 Landfill Directive 99/31/EC

Article 5.1 requires Member States to "set up a national strategy for the implementation of the reduction of biodegradable waste going to landfills...This strategy should include measures to achieve the targets set out in paragraph 2 by means of in particular, recycling, composting, biogas production or materials/energy recovery." According to Article 5.2 the strategy shall ensure that:

> "(a) not later than five years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 75 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;
> (b) not later than eight years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 50% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;
> (c) not later than 15 years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 35% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available.

Two years before the date referred to in paragraph (c) the Council shall re-examine the above target, on the basis of a report from the European Commission on the practical experience gained by Member States in the pursuance of the targets laid down in paragraphs (a) and (b) accompanied, if appropriate, by a proposal with a view to confirming or amending this target in order to ensure a high level of environmental protection."

The concrete year for (a) is 2006, for (b) is 2009 and for (c) is 2016 (12 countries have been given a derogation period of four years for all targets, meaning that they must reach their targets by 2010, 2013 and 2020; four countries have been given a derogation period for selected targets). Consequently, the re-examination of the targets is due in 2014.

2.3 Packaging and Packaging Waste Directive 94/62/EC

Article 6.1 contains the following recovery and recycling targets (only targets, which are currently valid):

"In order to comply with the objectives of this Directive, Member States shall take the necessary measures to attain the following targets covering the whole of their territory:
[…]
(b) no later than 31 December 2008 60% as a minimum by weight of packaging waste will be recovered or incinerated at waste incineration plants with energy recovery;
[…]
(d) no later than 31 December 2008 between 55% as a minimum and 80% as a maximum by weight of packaging waste will be recycled;
(e) no later than 31 December 2008 the following minimum recycling targets for materials contained in packaging waste will be attained:

(i) 60% by weight for glass;
(ii) 60% by weight for paper and board;
(iii) 50% by weight for metals;
(iv) 22.5% by weight for plastics, counting exclusively material that is recycled back into plastics;
(v) 15% by weight for wood."

According to Article 6.5 the present targets have been fixed for the "five-year phase 2009 until 2014, based on the practical experience gained in the Member States in pursuit of the targets laid down in paragraph 1 and the findings of scientific research and evaluation techniques such as life-cycle assessments and cost-benefit analysis. This process shall be repeated every five years."

2.4 Additional waste targets

The Waste Framework Directive provides in Article 11.4 the authorisation for the European Commission to set additional targets for other waste streams. In addition to the targets for waste streams, explicitly mentioned in the three directives above, the contractor will investigate the 27 Member States for waste targets for other waste streams, which are high on the political agenda and which fall under the responsibility of regional and local authorities (e.g. food waste).

The following waste targets are not covered by the study:

- limitation of hazardous substances, e.g. heavy metals in packaging,
- recycling efficiency of batteries' treatment,

- waste electrical and electronic equipment (WEEE) or
- end-of-life vehicles (ELV).

3 Relationship between targets and instruments

The aim of this chapter is to reveal and highlight inconsistencies that exist between the targets and the policy instruments specified in EU legislation which are connected with the respective waste stream or category. Inconsistencies can exist on different levels. An inconsistency between targets and instruments can be observed when the available policy instruments are ineffective with regard to achieving the targets.

In addition, targets set out in different legislative acts may contradict each other. Such inconsistencies could occur when the specified targets are in conflict with the overall aim and scope of the overarching waste policy. These forms of inconsistency have not yet been identified within the scope of this study.

3.1 Recycling of household waste

3.1.1 Preconditions for high household waste recycling rate

In order to evaluate the existing instruments we summarise which preconditions must be provided by such instruments to achieve a high recycling rate of household waste.

A high recycling rate can be achieved when

- products are designed in a way that they can easily be recycled,
- waste, which is difficult to be recycled, is prevented,
- waste products, which would be difficult to recycle are re-used,
- different waste/material types are collected separately,
- efficient systems for the separate collection of household waste fractions exist,
- these systems are actually used to their full potential,
- an efficient, environmentally sound system for the treatment of the separately collected fraction exists, is used and leads to competitive, high quality secondary materials, or
- a market for these secondary materials exist.

3.1.2 Existing instruments for increasing household recycling rate

In Commission Decision 2011/753/EC with the title “Establishing rules and calculation methods for verifying compliance with the targets set in Article

11(2) of Directive 2008/98/EC", it is specified which waste fractions can be used for calculating the recycling rate. The options for the calculation method in Annex 1 include household waste as well as municipal waste. For both waste streams no specific EU directives have been adopted, but they are covered by the generic provisions of the Waste Framework Directive.

The Waste Framework Directive establishes the legislative framework for the handling of waste in the Community, which is also applicable to household, construction & demolition, packaging and biodegradable waste. The WFD contains the following provisions for encouraging waste recycling and for diverting waste away from landfills.

Waste hierarchy (Article 4)
The WFD sets the following 5-step priority order: prevention, preparing for re-use, recycling, other recovery (e.g. energy recovery), and disposal.

Waste prevention
In order to encourage waste prevention the WFD gives Member States the authority to introduce the instrument of *extended producer responsibility* and to encourage *eco-design* (Article 8).

> *"Article 8: Extended producer responsibility*
> *1. In order to strengthen the re-use and the prevention, recycling and other recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility.*
> *2. Member States may take appropriate measures to encourage the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products, and in order to ensure that the recovery and disposal of products that have become waste take place in accordance with Articles 4 and 13. Such measures may encourage, inter alia, the development, production and marketing of products that are suitable*
> - *for multiple use,*
> - *that are technically durable and*
> - *that are, after having become waste, suitable for proper and safe recovery and environmentally compatible disposal."*

The obligation to establish *waste prevention programmes* (Article 29) requires the Member States to think about their waste prevention activities. However, the WFD contains no quantitative waste prevention target. The task to set benchmarks for waste prevention measures, which might be used as prevention

targets, is delegated to the Member States. The Member State waste prevention programme shall describe the existing prevention measures and evaluate the usefulness of the examples of measures indicated in Annex IV of the WFD or other appropriate measures.

Re-use and recycling

Article 11 of the WFD requires the Member States

> *"take measures, as appropriate, to promote the re-use of products and preparing for re-use activities, notably by*
>
> - *encouraging the establishment and support of re-use and repair networks,*
> - *the use of economic instruments,*
> - *procurement criteria,*
> - *quantitative objectives or other measures.*
>
> *Member States shall take measures to promote high quality recycling and, to this end, shall set up separate collections of waste where technically, environmentally and economically practicable and appropriate to meet the necessary quality standards for the relevant recycling sectors.*
>
> *Subject to Article 10(2), by 2015 separate collection shall be set up for at least the following: paper, metal, plastic and glass."*

Recovery

Article 10 of the WFD requires the Member States to "take measures to ensure that waste undergoes recovery operations" in accordance with the waste hierarchy in order to minimise health and environmental impacts. Where necessary to facilitate or improve recovery, waste shall be *collected separately* if technically, environmentally and economically practicable.

Disposal

Article 12 WFD completes the 5-step waste hierarchy by obliging Member States to ensure that waste not recovered according to Article 10 of the WFD is disposed of safely and without endangering human health and harming the environment (Article 13 WFD).

In addition, Article 16 of the WFD contains the provision, that the Member States shall take appropriate measures "to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households".

Biowaste

In Article 22 the WFD requires the Member States to take measures to encourage the *separate collection* of bio-waste with a view to the composting

and digestion of bio-waste, the environmentally sound *treatment of* bio-waste and the *use of environmentally safe materials* produced from bio-waste.

In addition, the European Commission will examine the opportunity of setting minimum requirements for bio-waste management and quality criteria for compost and digestate from bio-waste.

It has been discussed already, whether a separate recycling target for bio-waste would be helpful to increase the recycling performance of the Member States.

Waste management plans
With the obligation to establish waste management plans, in Article 28 the WFD requires the Member States – among others – to think about "the measures to be taken to improve environmentally sound preparing for re-use, recycling, recovery and disposal of waste".

Furthermore, fractions of household and municipal waste (as specified in Annex 2 of CD 2011/753/EC) are covered by specific EU legislation. These are:

- Recycling of Packaging waste: paper and cardboard (EWC code 15 01 01), metals (EWC 15 01 04), plastic (EWC 15 01 02), glass (EWC 15 01 07) and wood (EWC 15 01 03). These fractions are covered by the Packaging and Packaging Waste Directive (see chapter 3.4 of this report).
- Landfilling of Biodegradable municipal waste (BMW): Biodegradable kitchen and canteen waste (EWC 20 01 08), biodegradable garden and park waste (EWC 20 02 01), paper and cardboard (EWC 20 01 01) and wood (EWC 20 01 38). The landfilling of these fractions is covered by the Landfill Directive (see chapter 3.3 of this report).
- Recycling of Discarded Equipment (WEEE) which is not in the scope of this study.

3.1.3 Evaluation of instruments regarding household waste recycling

Although household/municipal waste is in the focus of waste policy, this waste stream is not addressed by a specific EU Directive. This leads to the situation, that on the one hand a general recycling rate for household/municipal waste has been introduced in the Waste Framework Directive, while for selected fractions of this waste stream (packaging waste, BMW, WEEE) specific waste targets exist in other directives.

Article 8 of the WFD gives Member States the power to introduce extended producer responsibility systems in addition to the existing on packaging, end-of-

life-vehicles, batteries, WEEE etc. However, the introduction of extended producer responsibility systems is a strong market intervention, which only can be justified with high impact waste streams. From today's perspective it seems unlikely that single Member States will take the initiative to introduce extended producer responsibility systems for additional waste streams. If such a new extended producer responsibility systems is to be introduced, it would require the agreement of the majority of the Member States.

Article 8 of the WFD also gives Member States the power to introduce eco-design requirements on multi-usability, longevity and recyclability. While the introduction of such requirements is seen as an important step, corresponding regulations on the Member State level seem quite unrealistic. Most products we use are traded on the European market if not world market. So any eco-design requirements necessarily need to be introduced on the EU-level.

With respect to waste prevention programmes, Article 29 gives much room to the Member States for a decision on how intensive and costly such a programme may be. According to paragraph 3 of Article 29 Member States shall determine appropriate qualitative or quantitative benchmarks for waste prevention measures and may determine specific qualitative or quantitative targets in their waste prevention programmes. The fact that the WFD contains no dedicated waste prevention target for municipal waste is also an issue in the Report of the Court of Auditors No 20, 2012 (Court of Auditors 2012). Also with respect to the measures, the waste prevention programme the WFD is relatively vague. While Annex IV of the WFD lists measures for the whole life cycle, there is no obligation to implement any of them. Also the measures of Annex IV seem to be much focused on getting the population consuming the right products, while not questioning very much the consumption as such. A stronger focus on answering the question which needs actually should be covered by which type of consumption would help to effectively reduce waste generation.

With regard to re-use, Article 11 of the WFD requires Member States to take measures to promote the re-use of products and preparing for re-use activities. To list the promotion of re-use and repair networks, the use of economic instruments, introduction of procurement criteria and setting of quantitative objectives as measures to be implemented for promoting re-use is seen as an important contribution for progress in this field. It is, however, unclear if these are really obligatory measures. It seems that the intensity of the re-use-supporting measures is very much left to the Member States. It should be stated more clearly that the promotion of re-use and repair networks, the use of economic instruments (such as tax exemptions for repair services or the introduction of an eco-bonus system for reusable goods), the introduction of

procurement criteria for reusable goods and the setting of a re-use target are obligatory.

With regard to recycling Article 11 of the WFD requires from Member States to take measures to promote high quality recycling and to set up separate waste collection systems. The focus on high quality recycling is very much appreciated. High recycling targets alone would drive the market towards low quality recycling (down-cycling). In order to minimise the environmental impacts the additional requirement to go for high quality recycling is a necessity.

It is left to the Member States to decide which separate waste collection systems are technically, environmentally and economically practicable and appropriate. In principle it is a good solution to let the Member States optimise their waste collection systems according to their respective frame conditions. However, the separate collection should be obligatory not only for paper, metal, plastic and glass (as required by Article 11) but also for bio-waste. This would provide a substantial contribution for achieving both, a higher household waste recycling rate and more diversion of biodegradable waste from landfills.

In connection with separate collection systems it has to be mentioned that in some parts of the newer Member States the general household waste collection system has not been fully established yet. So there are still efforts required to establish the general household waste collection system.

With respect to separate collection systems it also needs to be mentioned, that the existence of such a system alone is not sufficient. The system also needs to be used to its full potential. Given the additional efforts required by waste producers for their keeping the waste separate and for bringing the waste to the separate waste collection containers, it cannot be taken for granted that all waste producers use the separate waste collection systems. Additional measures for promoting the use of separate waste collection systems should be applied. Such measures also should be proposed by the EU regulations.

With respect to recovery it might be helpful that in Article 10 of the WFD a requirement is added, that the recovery should lead to high quality recycling materials, while removing pollutants and transferring them to a safe sink.

The WFD in connection with the Landfill Directive provides an elaborate regulatory framework for the European waste disposal systems. These waste disposal systems are well established in the majority of the Member States. However, in some Member States mainly (but not only) in Southern and Eastern Europe they are not yet fully established and cause far reaching problems. Such

the EU needs to follow a two-pronged approach, while establishing the waste hierarchy from the top (with priority on prevention, re-use and recycling) to solve the most urgent problems at the bottom (to collect all waste, and to establish compliant landfills for all waste which cannot be treated with the infrastructure in the region at hand).

With respect to the waste management plans and the WFD as a whole, the WFD empowers Member States to take a wide array of measures for promoting prevention, re-use and recycling. Even instruments which influence the market may be applied. While instruments on the Member State level are certainly appropriate when consumers, the use of products, waste collection systems and domestic production is addressed, it is necessary to take more initiative and to establish EU wide rules, when it comes products (including recycling materials) are addressed which are traded at international markets.

3.2 Recycling of construction and demolition waste

Most of the preconditions for recycling and most of the EU regulations discussed in the chapter above for household waste are also applicable for construction and demolition (C&D) waste. Here we only discuss the specifics of C&D-waste.

3.2.1 Preconditions for a high C&D-waste recycling rate

What makes construction material different from other products is the length of its use, which is mostly determined by the duration of the usefulness of the building in which it is applied. Also specific for C&D-waste is the ease of downcycling (using the C&D-waste as backfilling material) and the difficulty of high quality recycling.

Preconditions for high C&D recycling rates are

- Design of buildings in a way that they can be easily adapted to changing needs and the building materials easily disassembled after use.
- Documentation of the building materials used.
- Recycling oriented demolition (preceded by a screening of pollutants).
- Separate collection at the construction and demolition site.
- Quality assured preparation of recycling materials from C&D-waste.
- A market for these secondary construction materials.

3.2.2 Existing C&D Recycling Instruments

No specific EU Directive for construction and demolition waste (C&D-waste) has been adopted so far. This waste stream is covered only by the generic provisions of the Waste Framework Directive (see chapter 2.1). A definition of C&D-waste for the purpose of calculating the recycling rate is given in Commission Decision 2011/753/EC.

In its introduction, the Waste Framework Directive contains the intention to lay down end-of-waste criteria for C&D-waste in order to clarify, when this waste stream ceases to be waste.

Annex IV of the WFD does not contain any specific measures for preventing C&D-waste.

3.2.3 Evaluation of C&D Recycling Instruments

Due to its large volume C&D-waste is identified as a priority waste stream by the European Union. However, it is not addressed by a dedicated directive, therefore only the general instruments in the WFD can be applied.

In some Member States primary construction materials are so scarce, that there is a strong demand for secondary construction materials, so that almost all C&D-waste is recycled. In these countries there is some danger that also polluted materials are recycled. This requires a stringent quality assurance system for the recycling materials.

In other countries, primary construction materials are abundant and/or potential users of secondary material reluctant to use a material which is made from waste.

Also in these cases a stringent quality assurance system, based on third party certification is seen as being necessary. In addition measures for making the secondary material more economic by better separate collection and by creating a demand through public procurement standards are of help. An own C&D-waste directive which addresses these points and helps to realise the pre-conditions listed in chapter 3.2.1 seems to be advisable.

3.3 Landfill diversion of biodegradable municipal waste

In order to divert biodegradable municipal waste (BMW) away from landfills, it is not sufficient to think about an appropriate landfill policy, but a comprehensive waste management system has to be set up, complemented by measures for waste prevention. Therefore, the Landfill Directive sets targets for limiting the quantity of BMW going to landfill and asks Member States to set up a national strategy for such reduction of BMW going to landfill (Article 5) as well as to ensure, that only waste that has been subject to treatment is sent to a landfill (Article 6). National efforts to achieve diversion of BMW from landfilling shall encompass measures for recycling, composting, biogas production or materials/energy recovery. Provisions for these measures are given in the Waste Framework Directive (see chapter 3.1.2 above).

Evaluation
The Landfill Directive requires Member States to establish a strategy for diverting BMW away from landfills. For this purpose the strategy should not be limited to the landfilling of waste, but must include the upper parts of the waste hierarchy (prevention, preparing for re-use, recycling, recovery) as well. A harmonisation exercise is necessary in order to avoid overlap of work and conflict of measures in all waste plans and programmes requested by EU legislation.

The approach of the Landfill Directive to introduce a target in several steps and to foresee a derogation period for Member States, which starts at a lower level of landfill diversion, is beneficial. In some Member States (e.g. Austria or Germany) the introduction of landfill acceptance criteria which effectively limit the organic matter (TOC) in deposited waste, has proven as efficient measure for diverting biodegradable waste from landfills.

Bio-waste is regulated in a paragraph of the WFD at the moment. The process of assessing bio-waste management in the Member States can be used to add adequate regulatory provisions, including a recycling target for bio-waste. This process may lead to a separate legal document for regulating bio-waste.

3.4 Recycling of packaging waste

3.4.1 Existing instruments for recycling of packaging waste

Recovery and recycling of packaging waste, but also its prevention, is regulated in the Packaging and Packaging Waste Directive 94/62/EC.

Priorities
The main priority of the Packaging Waste Directive is the prevention of production of packaging waste, followed by reusing packaging, recycling and other forms of recovery packaging waste and, hence, reducing the final disposal of such waste (Article 1).

Packaging waste prevention
Qualitative waste prevention is covered by:

- Article 9 / Annex 2: Composition and recoverability of packaging waste placed on the market;
- Article 11: Limitation of concentration of heavy metals present in packaging.

In Article 4, Member States are required to ensure, that additional preventive measures, such as national programmes, are implemented. A concrete *target for quantitative prevention* of packaging waste produced, however, is not set in the directive.

Re-use
Article 5 offers Member States the opportunity to encourage re-use systems of packaging.

Recovery and recycling
According to Article 6, the Member States shall take the necessary measures to attain the packaging waste recycling targets set out in the directive. The measures shall be published by the Member States and shall be the subject of an information campaign for the general public and economic operators. In addition Member States shall, where appropriate, encourage the use of materials obtained from recycled packaging waste for the manufacturing of packaging and other products by:

(a) improving market conditions for such materials;
(b) reviewing existing regulations preventing the use of those materials.

Return, collection and recovery systems
Main instrument for the return, collection and recovery of packaging waste is the establishment of return and/or *collection systems* for used packaging and/or packaging waste from the consumer as well as *systems for the re-use or recovery, including recycling,* of the packaging waste collected in Article 7.

3.4.2 Evaluation of packaging waste instruments

Although the Packaging and Packaging Waste Directive puts high priority on waste prevention, it contains no quantitative target for waste prevention.

Regarding re-use discussion within the EU is ongoing whether re-usable drink packaging shall be promoted, e.g., by an eco-bonus system. One argument against the promotion of re-usable packaging is that such a promotion would favour local markets and introduce market barriers to internationally used one-way packaging. As drink packaging markets are partly local, partly international also the regulations leading towards more re-use and recycling should be partly Member State regulations and partly regulations on the EU level.

Although the Packaging Waste Directive does not require the introduction of extended producer responsibility systems for packaging and packaging waste, the majority of Member States use this approach to implement the Directive. The concrete manner of incorporating producer responsibility varies between countries. Additionally, Member States use different policy instruments in enhancing the recycling of packaging waste. These include, among others, material specific mandates in addition to packaging materials, deposit refund systems and fiscal measures (tax/fee, tax exemptions/reductions) directed at certain types of packaging (ETC 2011).

4 Calls for more ambitious and new quantified targets

The principle use of targets as policy instrument is welcomed by a number of stakeholders. It is highlighted that targets make policy objectives clear and measurable.

4.1 Recycling of household/municipal waste

A number of stakeholders suggest that besides recycling targets prevention targets and re-use targets should also be introduced, at least for certain waste streams like textiles (RREUSE). While EEB, EREP and RREUSE do not suggest concrete prevention and re-use targets, ACR+ has compiled a list of targets for the management of municipal waste.

ACR+ suggests revised targets for the management of municipal solid waste by the year 2020 (except derogations). The values are based on their own studies about the potentials for waste reduction and on the achievements of best performing Member States regarding dry material recycling and composting. Basis for the calculation is a value of 600 kg per capita MSW.

Table 1: ACR+ suggested targets

Waste management activity	kg/capita	percentage
Waste reduction	60	10%
Reuse / Preparing for re-use	30	5%
Bio-waste recycling	125	25%
Dry recycling	225	45%
(Energy) recovery	124	25%
Final disposal	25	5%

Aside from the proposed prevention and re-use targets, the combined target for recycling is 70% and much higher than the corresponding WFD target of 50%. Other stakeholders such as the FoEE call for higher recycling targets, but do not mention exact values. Also the European Parliament considers that more ambitious prevention, re-use and recycling targets should be set.

Only FEAD is of the opinion that the high recycling rates, which have already been reached by Northern European Member States, may have reached a plateau and that further significant increases in recycling will most likely only be achieved at the expense of disproportionate costs. FEAD recommends that

recycling targets should only be increased, where their recycling potential is not yet fully exploited.

The stakeholders suggest a number of instruments which they see useful for the prevention, (preparing for) re-use and increased recycling of municipal waste. One measure, which is suggested very often, is the *definition of quality standards for recycled material*. FEAD explains that the supply of high quality secondary raw material (SRM) is a pre-condition to making recycled products a more attractive prospect in the market place. Another common suggestion is the *appropriate information and education of citizens* in order to motivate them to reduce their waste generation and to make use of the separate collection schemes.

Regarding re-use the RREUSE association suggests the introduction of the following instruments:

- Labelling for life expectancy and reparability,
- Approved re-use and repair centres,
- Strengthening of GPP in order to increase demand,
- Extending eco-design to durability and reusability.

RREUSE and ZeroWasteEurope as well as the European Parliament call for a reduction of municipal waste incineration. While RREUSE suggests an EU wide incineration tax, ZeroWasteEurope and the European Parliament call for a ban to incinerate waste, which is suitable for recycling or composting.

Instruments to divert municipal waste away from landfills are listed in chapter 4.2.

Additional sources of information for the suitability of the recycling targets are the actual achievements of the Member States. Based on these achievements, forecasts can be made to estimate the recycling rates in the target years. Such a forecast has already been made by the European Environment Agency (EEA) for the recycling of municipal waste (EEA 2013).

The forecast concerning the recycling of municipal waste is based on already achieved recycling rates and their trends through 2010, reported to Eurostat in connection with the Sustainable Development Indicator on Municipal Waste. The model works with simple linear trends and does not take into account planned policy measures. Therefore it has to be interpreted carefully, but it can give a rough estimation of how many Member States will meet the existing recycling target of the WFD in 2020. The results of the forecast are:

- Ten Member States have already reached the target or will reach it, if they can proceed with their recycling efforts as in the previous years (AT, BE, DE, IE, IT, LU, NL, SE, SI and the UK).
- Four Member States have a good chance to reach the target, if they increase their recycling efforts slightly (DK, ES, FI and FR).
- The remaining 13 Member States have to increase their annual increase rate remarkably, if they want to meet the target.

All in all, the forecast estimates that about half of the EU Member States might get problems to reach the recycling target for household waste, set in the WFD for the year 2020.

The same study investigates in chapter 2.2.3 also regional differences in recycling rates. The investigation comes to the result, that there are significant variations in the recycling rates between different regions of the same country. The study comes to the conclusion that the large regional differences indirectly indicate the influence of regional and local policies on the recycling levels of municipal waste and that regional and local implementation of EU and national targets is crucial for achieving positive results. This message, however, is qualified by the observation that some of the differences may be influenced by differences in reporting.

In the country papers the differences in the recycling rates are presented in detail. It is striking that in many investigated countries the capital region has the highest amounts of MSW generated, but the lowest percentages for material and organic recycling. For this observation the following reasons are mentioned:

- Due to space constraints in the high urban density there is a lack of infrastructure for separate collection.
- The temporary storage of organic waste in flats may also be an important barrier for organic recycling.
- Incineration capacity is often built up in the vicinity of big cities. The increased share of incineration causes a lower recycling rate (EEA 2013).

The country papers contain no information about regional and local policies, so that a comparison of policy initiatives with recycling rates on regional level is not possible. Drawing from experiences with Austrian data it can be said, that due to differences in reporting and data management a comparison of recycling rates among different regions is problematic and may lead to wrong conclusions.

4.2 Landfill diversion of biodegradable municipal waste

It is common agreement among the stakeholders that waste, which can be prevented, re-used, recycled or recovered, should not be landfilled. ACR+ estimates that – after all other measures have been used – a maximum landfill rate for MSW of only 5% is possible. This rate has already been reached by a number of Member States.

Regarding diversion of municipal waste from landfills stakeholders suggest the use of the instruments "landfill ban" and "landfill tax". While the landfill ban is partly restricted to biodegradable and recyclable waste (ZeroWasteEurope), RREUSE even calls for an EU wide landfill tax to avoid export. Municipal waste Europe asks to introduce a progressive landfill ban and also FEAD is of the opinion that landfilling of biodegradable waste should be progressively reduced.

The study of the European Environment Agency, mentioned in chapter 4.1, also contains an assessment of the Member States regarding their performance against the Landfill Directive targets on biodegradable municipal waste (BMW). The study analyses the situation of landfilling BMW and is divided into the 15 Member States with and the 12 Member States (AT, BE, DK, FI, FR, DE, HU, IT, LU, NL, ES and SE) without derogation period.

- Member States without derogation period:
  All countries have reached the target for 2006 and landfilled less than 75% of BMW compared to the amount generated in 1995. With the exception of one country (IT), all Member States reached the target for 2009 (50%), seven of which met the 35% target for 2016 (AT, BE, DK, DE, LU, NL and SE).
- Member States with derogation period:
  Seven Member States reached the 2010 target of landfilling less than 75% of BMW compared to the generated amount in 1995 and one almost achieved the target. That means that almost half of the Member States with derogation period were not able to reach the given target.

4.3 Recycling of construction and demolition waste

The European Commission published a study in which the existing situation of C&D-waste recycling is analysed (Bio Intelligence Service 2011b). Currently, no reliable data exist on the recovery and recycling rates of C&D-waste in the EU. Based on two sources, the study estimates recycling rates of the Member States and calculates the difference from the recycling target of the WFD. While

9 countries fulfil already the Directive's target or are close to it (AT, BE, DK, EE, DE, IE, LI, NL and the UK), 8 countries report comparably low recycling rates. Nevertheless, the findings of this study suggest that the recycling target in the WFC of 70% should be achievable for most Member States.

Regarding the development of the recycling targets, the study comes to the following conclusions. First, from a quantitative point of view, the best practices in Europe show that recycling rates over 80% or 90% are feasible. For those countries which are already achieving higher re-use, recycling and recovery rates, the WFD does not provide an incentive to achieve higher targets. In principle, differentiated targets for these MS could be set in the WFD, or alternatively, in their national legislation.

4.4 Recycling of Packaging Waste

EEB notes that the average achievements 2010 for packaging waste are already better than the targets. Therefore, EEB floats targets of 70% for plastic packaging and of 80% for packaging made of glass, metal and paper.

FEAD advocates a deposit refund systems for specific products (e.g. batteries, plastic and glass drinks bottles).

The recycling rates for packaging waste for the year 2010, presented in following diagram, are based on Eurostat Reporting on packaging waste (env_waspac). From these data, an existing country average of about 59% recycling was calculated.

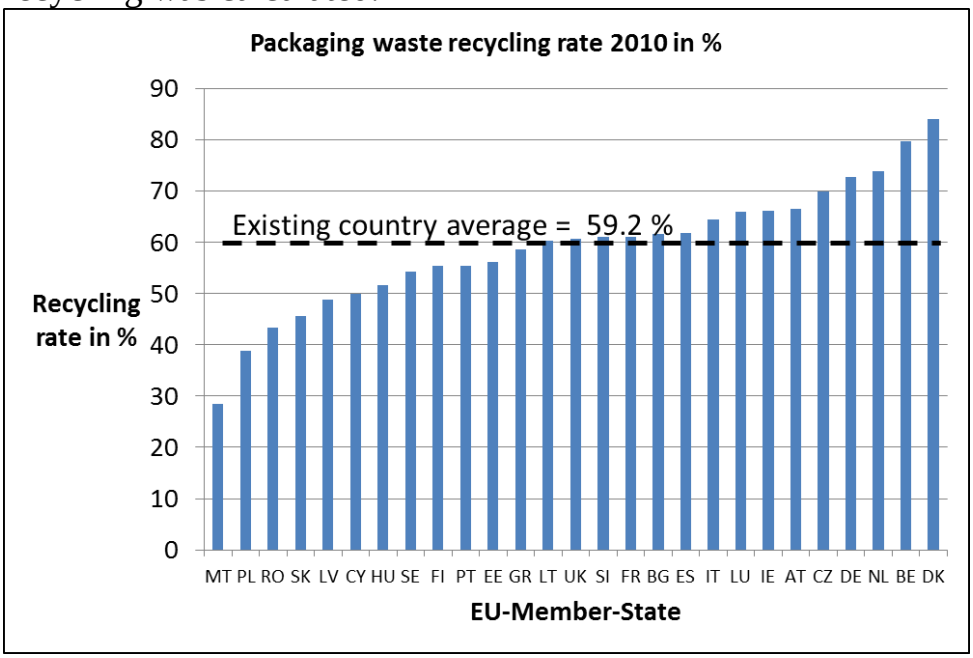

Figure 1: Packaging waste recycling rate in EU-Member States in 2010 (Eurostat 2013b).

A study on coherence of waste legislation by Bio Intelligence Service for DG ENV (2011d) interprets the recycling rates in the following way. The highest achieving MS recover 80-90% and recycle 70-80%, which appears to represent a plateau in performance. The implementation of more stringent recycling targets does not seem very feasible at EU level in the short term (e.g. next 5 years): MS are currently struggling to maintain or further increase the recycling rates. Market dynamics across the EU-27 are also important in packaging waste, meaning that allowing newer MS to comply with the current targets is very important before increasing the targets further (Bio Intelligence Service 2011c).

4.5 Recycling target for bio-waste

Based on Article 22 of the Waste Framework Directive the European Commission has started preparatory work on potential legislative proposal on bio-waste. In a first step the European Commission issued a "Green Paper on the Management of Bio-waste in the EU", which was accompanied by a working document. In the Annex to the Green Paper a recycling target of 36.5% is described.

In connection with this preparatory work a comprehensive stakeholder consultation on the appropriateness of setting targets for bio-waste recycling was carried out. For around two thirds of the responding stakeholders the advantages of binding recycling/ separate collection targets dominated, while around one third of stakeholder were of the opinion that the proposed targets deliver no real added value. In addition it can be noted, that most stakeholders are not in favour of differentiated target-level setting.

5 Methodology used by the contractor

The main task of the present project is the identification of best practices that set additional quantified waste targets – exceeding EU targets – for the following administrational levels:

a) by regional authorities (in countries with federal structure, like Belgium or Germany) or, in case this is not done at the regional level in a Member State (for example because of the small size of the country, like Denmark or Cyprus), by the national administration, including the (innovative) instruments and support given to local/waste management authorities to achieve these targets, and
b) by local/regional waste management authorities, including the (innovative) instruments applied by them to achieve the targets.

For this purpose, the following tasks have been carried out:

1. Scanning of all 27 Member States for potential case studies ;
2. Selection of best practice case studies;
3. Documentation of 23 best practice case studies in a standard form (fiche).

The study was carried out by desktop research.

5.1 Scanning of Member States

5.1.1 National level

Although the research for best practice cases had focussed primarily on the local and regional level, nonetheless some case studies have been selected on the national level. This has been done for case studies in small Member States where the distinction between regional and national level is blurred and for case studies that are implemented on the national level with good prospects for downscaling to lower-level geographical entities. For the scanning at the national level, European and national sources were used. The European sources were mainly the European Commission, the European Environment Agency and the European Topic Centre on Sustainable Production and Consumption, but also stakeholders at the European level, such as associations of local/regional authorities or environmental NGOs. On the national level mainly the web pages of the ministries and agencies responsible for waste management were consulted; specific focus was placed on national waste management plans.

The literature, as well as the main web pages used, is documented in Annex C.

5.1.2 Regional and local level

The literature and web pages, documented in Annex C, were also used to identify best practice cases on regional and local level. Focus was set on associations of local/regional authorities as well as dedicated projects, which deal with waste management in Europe, especially on a regional level. The most valuable source for best practice cases was the list of initiatives, documented by R4R – Regions for Recycling.

At the regional level, the websites of the competent authorities responsible for waste management were consulted. In addition, a country-specific internet search for certain key words was conducted. For the majority of countries, the search for examples on local websites could be carried out in the local language. In a number of cases, where additional clarification was required, local and regional authorities were contacted by e-mail.

5.2 Selection of best practice cases

A key element of the project is to identify and gather information on quantitative waste targets. Thus, the scope of the present project covers only cases where concrete waste targets have been set regarding prevention/reduction, re-use of waste, recycling, recovery and landfill diversion. Cases that include "zero waste"/zero landfill targets were identified as well. With regard to waste types, focus was put on household waste, construction and demolition waste, packaging waste and biodegradable municipal waste.

5.2.1 Selection criteria of the Methodology Note

The Methodology Note, submitted on January 13 2013, described the following criteria for narrowing down the list of identified cases to a selection of 25 – 30 best practice cases:

- The selected cases show that the Member States succeeded at the respective level in achieving the respective targets.
- The selected cases are transferable to other levels of administration/to other countries, depending on required frame conditions.
- The selected cases document cost-effectiveness (required costs and EU-funding, where available) of the measures/efforts implemented to achieve the targets.
- The selected cases can be considered representative for the whole EU, according the following parameters:
  - Rural and urban areas (population density);
  - Geographical coverage;

- Date of accession to the EU (older/newer Member States);
- Approximately the same number of cases representing the different cases a) (by regional or national authorities and b) (by local and regional waste management authorities) should be selected ;
- If possible, a number of different waste streams should be covered.

5.2.2 Actual selection process

The scan of the 27 Member States resulted in about 200 initiatives for prevention/reduction, re-use, recycling, recovery and landfill diversion, including "zero waste"/zero landfill initiatives in almost all EU Member States.
Unfortunately, a high number of initiatives could not be used for the purpose of the project. The main reasons were:

- No concrete targets had been set.
- The targets were defined in a way, which are not comparable to the targets set in the Waste Framework Directive, the Packaging and Packaging Waste Directive and the Landfill Directive (e.g. targets in absolute figures or in waste per capita without sufficient background data to convert these values into comparable targets).
- The targets were not more ambitious than those set in the relevant EU-Directives.
- The initiatives had a very specific scope (e.g. food waste in schools, drink containers at events), which makes a transfer of the project results to a general level very difficult.

Only 14 initiatives could be identified which featured all the required criteria in terms of a concrete target, the right waste management activity (prevention, recycling, recovery, landfill diversion) and the waste types in the focus of this review (household/ municipal waste, construction & demolition waste, packaging waste, biodegradable municipal waste). Thus the selection did not present problems in narrowing down a high number of examples to the best cases, but rather did for finding additional cases with targets which were comparable to the targets in the directives. Therefore, the following types of targets were selected additionally:

- Targets for additional waste streams (total waste, food waste, commercial waste, bulky waste).
- Targets for additional waste activities (separate waste collection).
- Achieved results instead of targets.

A list of the selected initiatives can be found in Annex 1.

5.3 Sources for recommendations for target development

The recommendations for development are based on the analysis of the following three sources:

- Input from stakeholders and European waste studies.
- Results of the identification of targets at the regional/national level and local/regional authorities.
- Forecast of achievements for reaching the targets.

6 Findings of the identification of targets and instruments

6.1 Overview

The 23 identified best-practice cases are distributed among 13 Member States. Seven of the cases have been implemented on municipal level (NUTS 2 or lower), seven on regional level (NUTS 1) and nine on national level. Most of the cases have been identified in old EU Member States. Only two cases, one in Cyprus and one in Slovakia, were implemented in new EU Member States. The reason for the low number of cases in new Member States is not the way of case selection, but the problem to identify appropriate cases in these countries.

Table 2: Distribution of best practice cases amongst member states

Country	Municipal level	Regional level	National level
Austria	1		
Belgium	1	2	1
Cyprus		1	
Denmark	1		1
France	1	1	1
Ireland		1	1*
Italy	1		
Netherlands			2
Portugal			1
Slovakia	1		
Spain			1
Sweden			1
UK	1	2	
Total	**7**	**7**	**9**

**self-commitment target of an industrial sector*

6.2 Findings on targets

Focus on household/ municipal waste

At the regional and municipal level, many more cases were identified which dealt with targets for household or municipal waste than with targets for packaging waste or construction & demolition waste (C&D-waste). The main reason for this focus is the distribution of responsibility. While household and municipal waste fall directly under the responsibility of municipalities and partly also under regional administrations, packaging waste is usually regulated at the national level. The room to manoeuvre for municipalities to increase the

recycling rate of packaging waste is rather limited. Concrete targets for biodegradable municipal waste (BMW) were not detected, however a landfill diversion of household or municipal waste covers large parts of municipal BMW.

Focus on regions
The distribution of responsibilities is also the main reason that most of the identified targets were set for the regional level rather than the municipal level.

Active authorities cover more waste streams
In many cases, competent authorities set ambitious waste targets not only for one but for a number of waste streams. Thus, some active authorities are mentioned as examples for several targets.

6.2.1 Targets for Household and Municipal Waste

Household vs. municipal waste
Some authorities have set their recycling targets for household waste, others for municipal waste. Municipal waste has a wider scope and comprises household waste and waste from municipal services, such as street sweepings, park and garden waste, cemetery waste or market waste. A remarkable share of waste from municipal services is biodegradable and can be composted or fermented (anaerobic treatment). That means that higher composting rates can be achieved for municipal waste than for household waste when biological treatment is applied.

Recycling-targets for household waste
Recycling-targets for household waste were identified for the regions of Scotland (UK) and Grand Besancon (F) as well as for the Greater Manchester District (UK). All of the targets are more ambitious than the target of the Directive, either because they are higher or because they must be reached earlier. For the target year 2020, the comparable target value for recycling of household waste of Scotland is 60%.

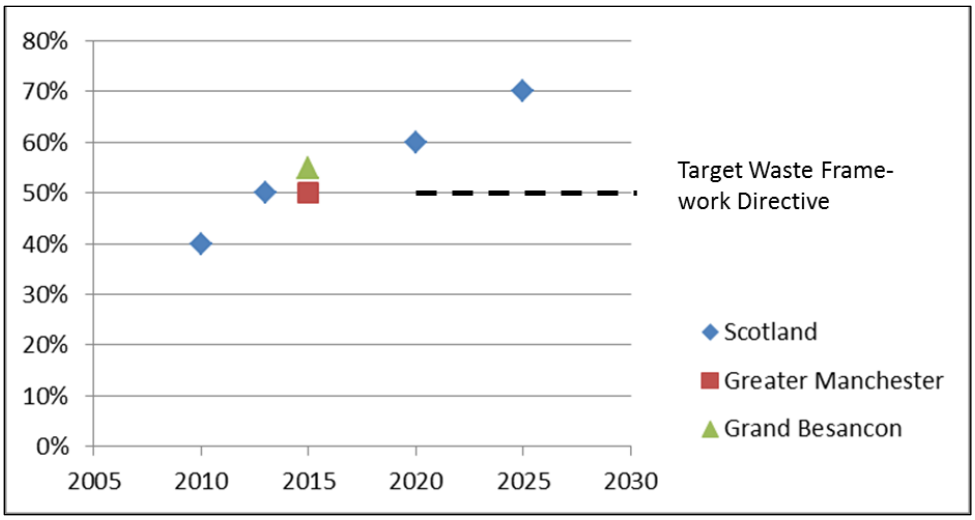

Figure 2: Recycling targets for household waste in comparison to the targets specified in the WFD.

Recycling targets for municipal waste

The regional recycling targets of Flanders and Wales and a national target for Spain have been set for municipal waste. All targets are more ambitious than the target of the Directive, either because they are higher or because they must be reached earlier. For the target year 2020, the comparable target value for recycling of household waste of Wales is 64%. Flanders sets its even more ambitious recycling target of 70% even sooner for the year 2015.

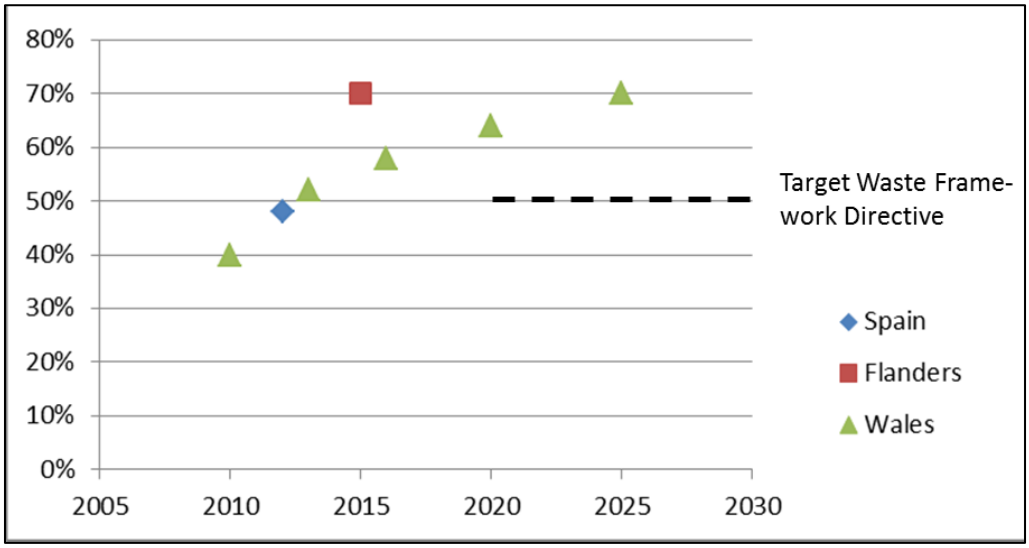

Figure 3: Recycling targets for municipal waste in comparison the target value set by the WFD.

Landfill targets for municipal waste

The Landfill Directive sets targets for diverting waste from landfills for biodegradable municipal waste. For this waste stream no targets could be found. However, the region of Wales and the Greater Manchester District have set

targets for the maximum percentage of municipal waste which may be landfilled:

- Wales: 10% landfilling of municipal waste in 2020, 5% in 2025.
- Greater Manchester: 25% landfilling of municipal waste in 2015.

Here, it should be mentioned that the UK has a derogation period of four years for the implementation of the landfill diversion targets.

The municipality of Palárikovo in Slovakia has already reached a landfill rate for municipal waste of 26% in the year 2005.

Due to different definitions of targets in both the referenced regions and in the Directive, a direct comparison is not possible.

Prevention Targets for household and municipal waste

For prevention of household or municipal waste, national targets of Portugal and France and a regional target of Wales were identified:

- Wales: Reduction of 1.2% of generation of household waste per year.
- France: Reduction of 7% of generation of household waste from 2007 until 2012, i.e. 1.4% per year.
- Portugal: Reduction of 10% of generation of municipal waste from 2006 until 2016, i.e. 1% per year.

At the moment, no target for the prevention of household or municipal waste is defined in EU legislation.

6.2.2 Recycling targets for Construction & Demolition Waste

Only two recycling values for C&D-waste could be identified:

- Region of Wales: Recycling target for 2020 of 90%.
- City of Copenhagen: Achieved recycling rate of 88% in 2009.

These two values are very high in comparison to the recycling target of the Waste Framework Directive, with 70% for 2020.

6.2.3 Recycling targets for Packaging Waste

For packaging waste, material specific recycling targets have been identified for the region Ile-de-France. Ambitious targets at the national level have been set by the Netherlands. Table 3 shows the target values in detail and in comparison to the targets of the Packaging and Packaging Waste Directive.

The targets of both authorities are remarkable higher than the provisions of the Directive. However, the targets for Il-de-France have to be reached much later in the year 2019.

Table 3: Comparison of target values from the Ile-de-France Waste Management Plan (PREDMA) and the Netherland national targets with the values from the Packaging and Packaging Waste Directive

Fraction	Packaging and Packaging Waste Directive	Target 2019 Ile-de-France	Target 2010 NL national
Glass	60%	90%	90%
Paper / board	60%	65%	75%
Metals	50%	Steel: 90% Aluminium: 93%	85%
Plastics	22,5%	45%	30%
Wood	15%	-	25%
Total	55% - 80%	75%	65%

6.2.4 Recycling targets for additional waste streams

A number of regions and municipalities have set recycling targets for additional waste streams which are also relevant for the scope of this study:

- The region of Wales in the UK has recycling targets not only for municipal waste and C&D-waste, but also for *commercial waste*. The target values are at approximately the same level for the respective years as the ones for municipal waste (in brackets): 57% for 2016 (58%), 67% for 2020 (64%) and 70% for 2025 (70%).
- The region of Limerick/Clare/Kerry in Ireland has already reached a recycling rate for *commercial waste* of 75% in 2010.
- The region of Scotland has set a target for recycling and composting of *total waste* of 70% in 2025. This is exactly the same target as for household waste. Scotland has also introduced a maximum landfill rate of 5% for total waste.
- 7 municipalities in Belgium have already reached a recycling rate for *bulky waste* of 70% in 2003.

Interesting recycling targets for additional waste streams could also be identified at the national level:

- Denmark has introduced a national recycling target for *total waste* of 65% for the year 2012. In the same year, the maximum landfilling rate of total waste was to be reduced to 6%.
- Sweden has set a national recycling target for *food waste* of 50% until 2018.

- In a sectoral initiative in Ireland, the farm plastic producer have set a target for the recovery of *farm plastic* put on the market of 60%.

6.3 Findings on instruments

A distinction has to be made between instruments on national level and the level of regions with the power to introduce legal rules on the one hand and on the other hand the instruments of municipalities, which have mainly the task to implement the waste management system. The legal instruments on national and regional level cover the following instrument types: regulatory instruments, economic instruments and voluntary agreements. On municipal level the instruments focus on the improvement of separate collection and the installation of sorting and recycling capacity. Supportive instruments are awareness raising campaigns and administrative capacity building.

In most cases not only one instrument has been applied, but a set of combined measures which are expected to lead to the defined results. Therefore a great number and a great variety of instruments could be identified.

6.3.1 Regulatory instruments

Main regulatory instruments are landfill and incineration bans as well as mandatory separate collection.

Landfill ban
A landfill ban is applied to push waste treatment up the waste hierarchy. In Denmark the landfill ban is applied on combustible waste in order to increase the incineration of waste. Flanders has a broader scope and applies a landfill ban on waste, which can be prevented, recycled or incinerated. The waste management strategies of Scotland and Wales contain also plans for landfill bans, but they have not yet been implemented.

Incineration ban
Flanders has adopted not only a landfill ban, but additionally an incineration ban for selectively collected wastes that can be recycled (except for some high calorific wastes for renewable energy purposes) and for unseparated industrial and household wastes.

The Scottish waste management strategy contains a provision that energy from waste treatment shall only be used to recover value from resources that cannot offer greater environmental and economic benefits through re-use or recycling.

Mandatory separate collection
Denmark supplements the landfill ban with a mandatory separation of waste. In other countries the separate collection is supported, but not mandatory.

6.3.2 Economic instruments

The economic instruments comprise mainly taxes and deposit/refund schemes. The taxes are either applied on the generation of waste or on certain treatment options, mainly landfilling, but also incineration of waste.

Waste tax
A waste tax has been adopted in France on national level on household waste and on highly waste-generating products. This tax has the objective to prevent the generation of waste.

Landfill tax
In a number of countries (e.g. Denmark, France) a landfill tax is applied in order to divert waste away from landfilling. Also on regional level (e.g. Limerick, Clare, Kerry) a landfill tax has been adopted. The tax is applied as a single instrument, but can also be combined with a landfill ban (e.g. Denmark).

Incineration tax
Denmark and France have also introduced an incineration tax in order to foster waste prevention, re-use and recycling.

Packaging tax
In 2008 the Netherlands introduced a packaging tax for companies placing more than 15,000 kg of packaging onto the Dutch market. In Flanders taxes for specific packaging waste came into force in a stepwise approach: single use drinks packaging (April 2004), reusable drinks packaging (March 2007), plastic bags, disposable cutlery, plastic wrap and aluminium foil (April 2007).

Deposit/refund schemes
In addition to the packaging tax, the Netherlands have introduced a deposit/refund scheme for bottles of water, beer or soft drinks.

Pay-as-you-throw schemes
The Wallonian municipalities have implemented PAYT schemes, with some of them using volume-based systems (pay-per-bag charge) and some using a weight-based system.

6.3.3 Voluntary agreements

Under the policy instrument "voluntary agreement" only one country can be mentioned. In Ireland the sector association for farm plastics has committed itself to separately collect and recover farm plastic.

6.3.4 Support to municipalities:

In addition to legal instruments and voluntary agreements, support is offered to municipalities by regional and national governments:

In France financial and technical support is offered to municipalities putting in place a prevention strategy.

In the late 1980s Flanders had good experience with subsidy policy for investments in recycling centres, composting plants and incinerators, and the subsidies helped stimulate these major investments in particular for (small) municipalities.

6.3.5 Implementation of separate collection

The improvement of separate collection is mainly carried out by introducing a door-to-door collection system for separately collected waste streams. Examples are a number of regions in Cyprus for packaging waste or Capannori (Italy) for separate collection of municipal waste fractions.

A specific case is Copenhagen where the improved separation of C&D-waste, containing hazardous substances, has the objective to improve the quality of the recycling products.

6.3.6 Investment in up-to-date waste management facilities

Either by direct investment of by support to other operators a big number of municipalities are building up capacities for material recycling or biological treatment.

- Manchester: Materials recovery facility, mechanical biological treatment and anaerobic digestion.
- Copenhagen: Treatment plant for the recycling of C&D-waste.
- Seven municipalities in BE: Sorting centres for bulky wastes.
- Ile-de-France: Waste management and recycling centres.
- Grand Besançon: Optimisation of household waste recycling centres and development of a dismantling centre for bulky objects.

- Sweden: Anaerobic digestion for food waste.
- Cyprus: Up-to-date technological recycling facility for packaging waste.
- Austria: Agreements/ contracts with farmers, who receive subsidies for the building of composting plants.

6.3.7 Awareness raising and educational programmes

Almost all best-practice cases are accompanied by awareness raising and educational programmes. Topics of these programmes are waste prevention (e.g. change of behaviour and lifestyles), including promotion of home composting, improvement of separate collection and information about the importance of recycling and biological waste treatment.

The means of awareness raising are very broad. Beneath the conventional distribution ways in media (newspapers, radio, TV) and with information material (flyers), the internet gains more and more importance. Website contain recommendations for better waste management of the citizens and can even include databases for collection points or best-practice cases. Specific education programmes are often targeted to schools and organisations. Some municipalities offer SMEs support to achieve better waste management.

The most elaborate means for distributing information about proper waste management is the employment of waste experts. Such experts may be located at the municipalities themselves or in separate "education centres". In Flanders a network of so-called compost masters has been established, who are responsible for giving direct support to citizens, who are interested in home composting.

6.3.8 Set up of administrational capacity

For a better organisation and implementation of waste management specific organisation may be founded. Examples are:

- Flemish Compost Organisation (VLACO): monitoring of the compost quality and promotion of compost sales.
- Grand Besançon: Household Waste Recycling Centres.
- Limerick/Clare/Kerry: Local Authority Prevention Network (LAPN).

7 Conclusions and Recommendations

7.1 Conclusion and recommendations regarding targets

7.1.1 General remarks on target setting

Setting targets, which shall be valid for the EU as a whole, is a difficult task, in part because the starting points vary widely between Member States, regions and cities. There is a wide range of current performance levels ranging from some Member States, regional and local authorities already exceeding existing targets before the specified deadline to others that have just begun their efforts. Targets should on the one hand provide an incentive even for frontrunners to continue or even strengthen their efforts and must on the other hand give those lagging behind a realistic chance to meet the targets within a sensible timeframe and at reasonable costs. A solution for this dilemma can be a combination of a step-by-step introduction of the targets and derogation periods for those who need it.

Ambitious targets should have the effect of steering resources towards a pathway that entails significant improvements in terms of increasing resource efficiency and reducing environmental impacts. However, targets also need to be achievable without causing excessive costs. Excessive costs would hamper economic growth and consume funds needed in other areas.

High recycling rates do not automatically translate into low environmental impacts, for example in the case of contaminated waste. Thus high recycling rates require:

a) an efficient and effective waste cleaning system, removing hazardous substances and bringing them to a safe sink,
b) an unbiased, efficient and effective quality assurance system for recycling material and
c) a market for recycled materials, in which potential users of the recycled material can trust its quality and low environmental impact.

Frequently, there are different options for recycling. Usually, re-use and high quality recycling – where much of the “energy” invested in the material is maintained and which leads to high quality products – is preferable over low quality recycling into a lower quality product (also called down-cycling). For example the re-use of concrete plates in building construction is preferable to a use of the concrete as backfilling material. Too ambitious quantitative recycling targets may provide an incentive for prioritising recycling volumes while neglecting recycling quality.

7.1.2 Recycling of household waste

Opinion of stakeholders

ACR+, an association of cities and regions for recycling and sustainable resource management, suggests a prevention target of 15% and a recycling target of 70% for municipal waste for the year 2020. The recycling target is based on achievements of best performing Member States.

The European Parliament as well as a number of environmental stakeholders calls for a more ambitious recycling target without mentioning specific values. FEAD, on the other hand, is of the opinion, that the recycling rates of the best performing countries have by-and-large reached a plateau, so that a further increase could only be achieved at disproportionately high and hence unjustifiable costs.

Forecast of recycling rate

A forecast of the European Environment Agency estimates that about half of the Member States will be able to reach the recycling target for household waste set in the WFD for the year 2020 (EEA 2013). The remaining half would need to significantly strengthen their efforts and it is not clear whether they are actually in the position to achieve the 50% recycling target by 2020.

Ambitious targets, identified on local, regional and partly national level of Member States

A number of regions and municipalities have set more ambitious targets – in terms of level or the time point by which to achieve them – for the recycling of household or municipal waste than the values set in the WFD. The recycling targets which exceed the value of the Directive in 2020, vary between 55% and 60% for household waste and between 58% and 70% for municipal waste.

Conclusion

The assessment that half of the Member States will have to strengthen their efforts significantly to meet the existing 50% target for household waste recycling by 2020 indicates that this target still needs to be considered as ambitious. A recycling target of above 60% is likely to be reached only by frontrunners, while countries at the low end of the spectrum would most likely need a derogation period. Therefore, it is suggested, not to increase the 50% target for household waste recycling in general.

7.1.3 Recycling of construction & demolition waste

Opinion of stakeholders
No stakeholder opinion could be identified concerning the recycling of C&D-waste.

Recycling rate – achievements of Member States
A study commissioned by DG Environment documents that recycling rates for C&D-waste of up to 90% are feasible (Bio Intelligence Service 2011b). On the other hand eight countries currently report recycling rates below 40% and six additional countries do not even have the necessary data for estimating their recycling rates. Nevertheless, the findings of the study suggest that the recycling target of 70% by 2020 set in the WFD should be achievable for the majority of Member States.

Ambitious targets identified on local, regional and partly national level of the Member States
Concerning the recycling of C&D-waste only one target and one achieved recycling value on regional/local level could be identified. These two values are very high (88% and 90%) compared with the 70% recycling target by 2020 set in the WFD. It has to be added that both values were identified in Member States which have already reached the recycling target for 2020 on the national level.

Conclusion
The data and available studies show that high recycling rates appear to be achievable, especially in countries characterised by a high demand for construction material, limited primary resources and, thus, a well-developed market for secondary construction material. The assessment that about half of the Member States will have to strengthen their efforts to reach the existing target of 70% recycling of C&D-waste by 2020 indicates that an increased target will not be met by the majority of Member States. Therefore, a general increase of the 70% target is not recommended. A derogation period for countries with current recycling rates significantly below the 70% mark may be a solution.

7.1.4 Landfill diversion

Opinion of stakeholders
ACR+, an association of cities and regions for recycling and sustainable resource management, suggests a maximum landfill target for municipal waste of 5%.

Landfill diversion – achievements of Member States
A study of the European Environment Agency (EEA 2013) analyses the performance of Member States regarding the targets of the Landfill Directive on biodegradable municipal waste (BMW). The report shows that almost all Member States without derogation period have reached the targets for 2006 and 2009. Half of the Member States with a derogation period have not met their respective target for 2010.

Ambitious targets, identified on local, regional and partly national level of Member States
The targets for landfill diversion identified in Member States were set for household or municipal waste and not for BMW and are, therefore, not directly comparable to the targets of the Landfill Directive. However, six of the older Member States divert more than 95% of their respective municipal waste.

Conclusion
The assessment of the existing situation shows that there are six Member States, which are able to divert almost all municipal waste from landfilling. On the other hand there are seven Member States which do not meet the target for 2010, although they have a derogation period. Still, a reduced maximum landfill target of 25% could be introduced for the year 2020 (for countries without derogation period).

7.1.5 Recycling of packaging waste

Opinion of stakeholders
The European Environmental Bureau asks for a revision of the recycling targets for packaging waste and puts target values of 70% for plastic and 80% for glass, metal and paper up for discussion.

Recycling rate – achievements of Member States
A study for DG Environment (Bio Intelligence Service 2011c) identified the currently best recycling rates for packaging waste to be in the range of 70-80%. These rates were judged to represent a plateau in performance. The study concludes that the implementation of more stringent recycling targets is not feasible at EU level in the near term (e.g. the next 5 years). On the other hand, the current country average rate for the recycling of packaging waste of about 59% is higher than the 55% target of the Packaging Waste Directive.

Ambitious targets, identified on local, regional and partly national level of Member States
More ambitious targets for recycling of packaging waste identified on regional and national levels in two Member States range from 65% to 75% by 2019.

Conclusion
As with the other waste targets, there are front runners and underperforming countries regarding the recycling of packaging waste. The variance in performance, however, is not so significant compared to other recycling targets. The existing country average for recycling of packaging waste lies above the target value.

Therefore, a more ambitious goal could be considered for the recycling of packaging waste: a recycling rate of 60% is justifiable and achievable at reasonable economic costs.

7.1.6 Recommendations for target setting

The setting of waste targets is not a separate process, but has to be integrated into the whole waste management planning. Target setting takes influence on all steps of the waste planning process, i.e. the identification of the framework conditions, the documentation of the current status, the planning process and also its implementation. Experience on national, regional and local level show that ambitious targets can only be reached, if the targets are in line with the strategic waste planning and implemented by adapting the respective parts of the waste management system.

Policy commitment
As the implementation of ambitious waste targets requires substantial financial and organisational resources as well as policy coordination, the main pre-condition for this process to be successful is the commitment of the political leaders and willingness on the part of the waste producers and others affected by changes in production and use processes. This commitment must include realistic financial resources as well as logistical and organisational support. It is advisable to include not only political actors into the process, but to consider also stakeholders in the field of waste management, i.e. who should be involved in the planning process and how.

Identification of frame conditions
Before waste targets can be set, it has to be clarified, which legal and political framework conditions have to be taken into consideration. For the scope of the present study it is obvious, that at a minimum the targets of the Waste Framework Directive, the Landfill Directive and the Packaging Directive have to be reached. The implementation of the targets, i.e. the choice of the policy instruments, must also comply with EU and national waste legislation. The lower the political level, the more influences from superior legislation have to be taken into consideration. Thus, the room for manoeuvre for local administrations might be rather limited.

Documentation of present status
Before a decision about future target values can be made, present recycling and landfill diversion rates need to be documented. Using the given definitions the data on the generation and management of household or municipal waste, packaging waste and construction and demolition waste have to be collected and the currently existing recycling rates as well as the landfill rate for BMW have to be calculated.

Furthermore, it has to be documented, how the waste streams are currently managed. This refers on the one hand on the existing collection systems as well as the presently available waste treatment plants. The following questions have to be answered in sufficient detail:

- Who is responsible for the waste collection? What infrastructure (transfer station) and equipment (bins, vehicles) is used? What are the transport logistics?
- Which waste streams are going into which treatment plants? Where are they located and what is their capacity?

Target setting and waste management planning
The status documentation gives an indication about present achievements and their distance to existing target values.

By analysing the waste collection and treatment system it can be detected, which parts of the waste management system work well and which do not. By assessing the reasons for problems and shortcomings it becomes possible to identify opportunities for influencing the relevant parts of the waste management system in order to increase the recycling rates and reduce the waste quantities going to landfill.

Good practices for improving the waste management system in relation to recycling rates are documented in the fact sheets for the case studies in Annex B, which are summarized in the following chapter 7.2. With the help of feasibility studies and cost-benefit analyses it has to be decided, which policy instruments are most effective under the given circumstances, not only in terms of environmental benefits, but also considering financial and social aspects.
New recycling and landfill diversion targets can be formulated based on the starting point in terms of achieved recycling rates and existing waste management system and the decision about policy instruments to be applied in the future. Depending on the available financial resources and the distance to the target a stepwise approach might be necessary.

Implementation
In order to reach the newly defined targets a proper implementation of the selected policy instruments is necessary. For this purpose an action plan has to be set up, which clearly defines responsibilities for the actions, time frames, human resource requirements and performance monitoring criteria.

The action plan has to be accompanied by a financial plan, which deals with the economic consequences of reaching the targets, both regarding initial investments and operating costs, and the future level of user fees and charges.

7.2 Conclusion and recommendations regarding policy instruments

7.2.1 General remarks regarding policy instruments

Waste management is a complex system with a number of influencing parameters. In order to reach ambitious targets it is necessary to apply not only one policy instrument, but a set of adjusted methods which are affecting several levels of the waste hierarchy. For diverting municipal waste away from landfills it is not sufficient to stop landfilling, but alternative options have to be offered, such as incineration, but also recycling and composting.

In addition, it is also advisable to combine different types of instrument, such as regulatory instruments (e.g. bans), economic instruments (e.g. taxes) and communication instruments (e.g. public awareness raising).

Studies have shown that countries using many instruments have a higher municipal waste recycling rate than countries using very few or no instruments (EEA 2013). It was also demonstrated that Member States with low percentages of landfilled municipal waste have not only high landfill taxes, but also some form of landfill restriction in place for unsorted or untreated municipal waste (Bio Intelligence Service 2012b).

For the purpose of this study it has to be taken into consideration that a distinction has to be made between the policy instruments of the regions which have the power to introduce legal rules and of municipalities which have mainly the task to set up the waste collection and treatment system.

7.2.2 Landfill diversion

Potential policy instrument for landfill diversion
A study of the European Topic Centre on Sustainable Production and Consumption identified which policy instruments are successful in diverting waste away from landfills (ETC 2011). These are:

- A ban on landfilling of BMW or portions of BMW.
- Introduction of landfill taxes.

Most of the successful countries have introduced a *ban on landfilling* of BMW or part of BMW. Landfill diversion targets are commonly seen in lower performing countries which are transposing the text of Directive without introducing policy instruments ensuring reaching the targets.

In addition, a high number of Member States currently have *landfill taxes* in place for the disposal of non-hazardous municipal waste sent to legal landfills. The level of taxation varies widely and there seems to be a correlation between higher landfill taxes (and higher total landfill charges) and lower percentages of municipal waste being sent to landfill.

The application of landfill bans and landfill taxes has also been suggested by a number of environmental stakeholders.

Policy instruments applied in best practice cases
The policy instrument of a landfill ban is also introduced in some regions. For example in Flanders there exists a ban on landfilling of waste which can be prevented, recycled or incinerated. Scotland and Wales are also planning to ban the landfilling of certain waste streams in the future.

Landfill taxes were only identified in national best practice cases, e.g. in Denmark.

7.2.3 Recycling of household waste

Potential policy instrument for recycling of household waste
Instruments for diverting away household/municipal waste from landfills (such as landfill bans or landfill taxes) are also suitable to increase the recycling of household waste, as has already been mentioned in the previous chapter.

Diverting municipal waste from landfills can lead to an increase in incineration of waste. In order to push waste treatment up the waste hierarchy, some Member States have introduced an *incineration tax*. There is a broad overall trend that higher incineration charges are generally associated with higher percentages of

municipal waste being recycled and composted. It has to be mentioned, that all six Member States which have incineration taxes also have landfill taxes, and in every case the landfill tax is higher than the incineration tax (Bio Intelligence Service 2012a).

Studies have shown that countries which have introduced *mandatory separate collection* of certain municipal waste fractions, e.g. waste paper, in addition to packaging waste, or mandatory separate collection of bio-waste, have high municipal waste recycling levels. This indicates that once countries have set up separate collection schemes for at least paper, metal, plastic and glass by 2015, as required by Article 11 of the 2008 WFD, the recycling rates can be expected to grow significantly in many countries (EEA 2013).

Finally, the application of economic incentives for households to recycle their waste, such as the Pay-As-You-Throw (PAYT) scheme, has been shown to lead to increased recycling rates. A total of 17 Member States employ PAYT systems for municipal waste, but only three of them have PAYT schemes in place in all municipalities. In principle, volume-based, frequency-based, weight-based and sack-based schemes can be applied, but several Member States use a mixture of different types of schemes.

Good results in terms of increasing the recycling rate can be reached with the following scheme: the highest variable fee for residual waste; a lower (but non-zero) fee for biowaste if garden waste is targeted by biowaste collection (to encourage home composting); a zero fee where only kitchen waste is targeted by biowaste collection; and a low or zero fee for collected dry recyclables. With regard to waste prevention, weight-based systems are most successful, followed by volume and frequency-based/sack-based systems, and then volume-based systems (Bio Intelligence Service 2012b).

The supply of high quality secondary raw material is a pre-condition for creating a functioning market for recycled products. Therefore, policy instruments for recycling of waste should be accompanied by the definition of common minimum standards for recycling and of *quality standards for recycled materials*. This requirement is also mentioned by almost all stakeholders. An additional measure to increase demand for recycled products is the strengthening of the requirements for green public procurement (GPP).

Policy instruments applied in best practice cases

An incineration ban is applied in Flanders where selectively collected wastes that can be recycled and un-separated household waste must not be incinerated. The Scottish waste management plan contains the provision that energy from

waste treatment is only used to recover value from resources that cannot offer greater environmental and economic benefits through reuse or recycling.

The improvement of separate collection which is a pre-requisite for recycling, the establishment of sufficient sorting capacity and the construction of recycling facilities are the main instruments of municipalities for increasing their recycling rate.

The main element for the *improvement of separate collection* is the application of door-to-door collection systems for a number of recyclable waste fractions. In Sweden, waste bins are separated into four compartments which allow for the separation of different waste fractions at the source. This solution allows for the collection of correctly sorted waste fractions.

A high number of municipalities are investing in up-to-date waste recycling facilities. Flanders has made good experiences with a subsidy policy for investments in recycling centres, composting plants and incinerators and the subsidies helped stimulate these major investments in particular in small municipalities.

The improvement of the collection and treatment of household waste must be connected with the set-up of administrational capacity. Specialised organisations, such as Waste Collection Authorities (WCA) in the region of Greater Manchester or Household Waste Recycling Centres in Grand Besancon, support the proper implementation of waste management systems.

Another measure which is required for the success of collection systems is the deployment of comprehensive *awareness raising and educational programmes.* Media such as TV, internet and newspapers can be used for informing and motivating the population. Educational programmes can be targeted to schools.

7.2.4 Recycling of construction & demolition waste

Potential policy instrument for recycling of C&D-waste

The countries with the highest recycling rates have all introduced landfill taxes. Furthermore, the top two countries have combined this instrument with additional initiatives such as a landfill ban on combustible waste and recycling or reuse targets (ETC 2011).

Mandatory source separation of C&D-waste fractions can be a strong driver in countries without landfill taxes.

A supporting element for improving the market situation of recycled building material is the definition of standards for the use of recycled C&D-waste, as applied in Denmark.

Policy instruments applied in best practice cases
In the city of Copenhagen, a treatment plant for the recycling of C&D-waste was constructed. This measure was supported by the national C&D-waste policy in Denmark with a high landfill tax also for C&D-waste.

7.2.5 Recycling of packaging waste

Potential policy instrument for recycling of packaging waste
Producer fee schemes for packaging have been identified in almost all Member States. Only very few countries apply taxation systems and deposit-refund systems. In a study, it was discovered that producer fee schemes cover the full costs to local authorities/waste collection authorities of these activities in only three Member States. It is assumed that the inclusion of the full cost of packaging waste collection and treatment in the producer fee scheme plays a role in meeting high recycling targets (Bio Intelligence Service 2012b).

The most successful producer responsibility schemes appear to share some features: a common, fully private body that is created, run, owned and supported by the obligated producers; requiring producers to fully fund the collection and recycling scheme; and high targets (Bio Intelligence Service 2012b).

Policy instruments applied in best practice cases
As the policy for packaging waste management is regulated on national level there is not much room for manoeuvre for municipalities. Only some regions with legal power can introduce own legal rules. Flanders, for example, introduced a packaging tax on single-use beverage packaging, reusable beverage packaging and plastic bags.

Annex A. Overview of selected cases

No	Country	Level	Region	Waste management activity	Waste stream	Main Instruments applied
1	BE	reg	Flanders	Recycling	Municipal waste	Waste disposal levy Compost Master programme Ban on incineration and landfilling of certain waste the duty of acceptance for paper total ban on landfill of household waste
2	FR	reg	Ile-de-France	Recycling	Packaging waste	Waste management and recycling centre Public awareness for waste separation
3	DK	nat	n/a	Recycling	Total waste	Landfill and incineration tax; Total ban on the landfilling of combustible waste; Mandatory separation of waste
				Maximum Landfill	Total waste	
4	UK	mun	Greater Manchester District	Recycling, composting	Household waste	Improvement of waste collection by waste collection authorities (WCA); Educational/awareness raising; Investment for waste management facilities
				Landfill diversion	Municipal waste	
5	FR	mun	Grand Besancon	Recycling, composting	Household waste	Full implementation of the Pay-as-you-throw scheme Awareness raising waste prevention Local composting plants Household waste recycling centres and dismantling centre for bulky waste
6	BE	nat	n/a	Recycling	Plastic packaging	EPR (green dot scheme) Tax paid by inhabitants to the regions to improve packaging waste management; Deposit refund system
7	IE	sec	n/a	Recovery	Farm plastic	Voluntary agreement with sector organisations Levy on sale of farm plastics to fund collection and recovery of this waste
8	NL	nat	n/a	Recycling	Packaging waste	Producer Responsibility Scheme; Packaging Tax; Deposit Scheme for bottles of water, beer or soft drinks
9	UK	reg	Scotland	Recycling, composting, re-use	Household waste	Source segregation and separate collection of specific materials; Only suitable waste types to be treated in energy from waste plants;
				Recycling, composting, re-use	Total waste	

No	Country	Level	Region	Waste management activity	Waste stream	Main Instruments applied
				Maximum landfill	Total waste	Ban specific materials from landfill; Place a limit on the biodegradable content of waste which can be landfilled.
				Recycling	C&D-waste	
10	UK	reg	Wales	Prevention	Household waste	Waste prevention (ecodesign, greener production, GPP, change of behaviour); Separate collection; Recycling facilities (up-cycling), anaerobic digestion Improve markets for recyclates and digestate; Introduction of a landfill ban
				Recycling, re-use	Commercial waste	
				Recycling, re-use recovery	C&D-waste	
				Recycling, re-use composting	Municipal waste	
				Maximum Landfill	Municipal waste	
11	NL	nat	n/a	Recycling	Municipal waste	Promotion of Recycling
12	ES	nat	n/a	Material recovery	Municipal waste	Promotion of waste prevention; Increase in and the territorial expansion of selective collection; Treatment of all waste.
13	PT	nat	n/a	Waste collection	Municipal waste	Adopting door-to-door collection schemes; Database related to waste collection
14	FR	nat	n/a	Prevention	Household waste	Incentive taxes on household waste, defined at a local level; Taxes imposed on highly waste-generating products in situations where alternatives exist; Incineration tax and increase of the current landfill tax in order to give incentives for prevention; Financial and technical support for communities putting in place a prevention strategy in order to support application of local prevention plans
15	SE	nat	n/a	Biological treatment	Food waste	Specialized waste collection system (compartment bins); The food waste is pre-treated and then digested in a reactor to ogas and bio fertilizer.

No	Country	Level	Region	Waste management activity	Waste stream	Main Instruments applied
16	DK	mun	Copenhagen	Recycling	C&D-waste	Construction of a treatment plant for the recycling of C&D-waste; Improved separation of C&D-waste containing hazardous substances in order to improve the quality of the recycling products
17	CY	reg.	Nicosia, Limassol, Famagusta and Paphos districts	Recycling	Packaging waste	Professional door to door waste collection system and an up-to-date technological recycling facility
18	SK	mun	Palárikovo	Landfill	Mixed waste	Education of the public concerning promotion of domestic composting; Separate waste collection with PAYT
19	IT	mun	Tuscany, Capannori	Separate collection	Household	Introduction of “door to door” home waste collection; Awareness campaigns for changing behaviours and lifestyles
20	IE	reg	Limerick/Clare /Kerry	Recycling	Commercial waste	Landfill levy; Network activities; Awareness campaigns
21	BE	mun	7 municipalities	Recycling	Bulky waste	Sorting centres: bulky wastes collection service, recycling and re-use scheme
22	AT	mun	Freistadt district	Recycling, composting	Bio-waste	Agreements/contracts with farmers; subsidies for construction of composting plants; Awareness campaigns
23	BE	reg	Walloonian region	PAYT		Introduction of an PAYT

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1. Waste Management in Flanders	
Country	Belgium
Level	Regional
Name of region/city	Flanders
Population density	Urban
Operator/Partners	OVAM Openbare Afvalstoffenmaatschappij voor het Vlaams Gewest (Public Waste Agency of Flanders)
Targets	The regional recycling target has been fixed at 75 per cent of total municipal solid waste.
Instrument Type	Legal instruments: Landfill and incineration bans; waste management plans; Legislation: Take-back obligations based on the principle of producer responsibility and polluter pays principle; Articles 36 and 37 of the Waste Decree; Economic instruments: Environmental levies on landfilling and incineration of waste; Social instruments: Every year the OVAM has some information campaigns about prevention of waste; a support and information centre called STIP; Green assessment guides; MAMBO, software for companies to calculate waste costs.
Sources/References: OVAM Website http://www.ovam.be/jahia/Jahia/pid/973 Global Alliance for Incinerator Alternatives (GAIA) http://www.no-burn.org/-1-18	

Rationale for inclusion

Abstract/Status/Success In accordance with the European Waste Framework Directive, Flemish waste policy gives top priority to waste prevention, followed by re-use, recycling, waste incineration (with energy recovery) and, as last and worst option, landfilling. The regional recycling target has been fixed at 75 per cent of total municipal solid waste. Flanders' planned and integrated waste management and waste management policy is one of the most successful in Europe. Door-to-door schemes together with a high density of civic amenity sites facilitate separate collection at source so that 73 per cent of municipal solid waste is collected in order to be re-used, recycled or composted, just 2 percentage points below the regional target.

Targets and current legislation: Flemish waste policy has set a regional recycling target at 75 percent of total municipal solid waste. This target **exceeds** the Waste Framework Directive 2008/98/EC, which set a recycling rate of 50% by 2020.

Transferability: Research analysis of this project shows that the OVAM initiative is possible to recreate at different levels. Flemish authorities were able to divide "responsibility appropriately between municipal, regional and national governments"

Cost efficiency: Yearly total cost of household waste management: 220 € per household (2-4 persons) - 2008. Through pilot projects with local authorities, where OVAM pays a percentage of the total project costs, innovating technology or initiatives or approaches have been tested.

Other findings: Flanders has the highest diversion rate of waste generation in Europe.

2. PREDMA – Ile de France Waste Management Plan	
Country	France
Level	Project is realized on the local level with Ile-de France itself being a very heterogeneous territory encompassing a very dense urban centre and sparsely populated rural areas.
Name of region/city	Ile de France (Paris Metropolitan Region).
Population density	suburban/urban; 967 /km² on average with 20 843 /km² in the centre and 450/km² in the periphery.
Operator/Partners	The project concerns a waste management plan that has been laid down by the regional government of Ile de France. Progress is monitored by ORDIF, a non-profit organisation acting as Waste Management Observatory.
Targets	The waste management plan sets a target of 75% for recycled packaging waste by 2019. Seperate targets exist for sub-fractions of packaging waste, e.g. 90% for glass packaging, 59% for non-glass packaging.
Instrument Type	Waste Management Plan
Costs	Different cost-categories are documented in an Annex given to the Waste Management plan. Amongst other costs 56-112 Mio € foreseen. A global figure has not been referenced.
Sources/References PREDMA Waste Management plan (p. 96 for targets; p. 187 ff for Costs) www.ordif.com/repository/328/3282515264/16083495.pdf Waste Management plan on the website of the IdF Region tinyurl.com/ak9hn6z ORDIF Waste Management Observatory http://www.ordif.com/public/ordif/ Vers un Plan regional d'élimination des déchets ménagers et assimilés (Predma) Overview Brochure of the plan www.iledefrance.fr/uploads/tx_base/predma-int.pdf	

Rationale for inclusion

Abstract/Status/Success In 2009, only 23% of the 505 kg of municipal solid waste generated per inhabitant in the Ile-de-France region was recycled. This rate is still far below the national target of 45% recycled municipal solid waste by 2015. The regional waste management plan sets separate targets for each fraction, aiming, for example, for 75% recycled packaging waste by 2019. Ile-de-France is a very heterogeneous territory, encompassing a very dense urban centre and rural areas. Reaching high sorting rates in dense areas is an important challenge and few comparable examples are available.

Targets and current legislation: The targets set out in the Regional Waste Management plan can be related to the Targets given in the Packaging Waste Directive. Comparing the aspiration level between the PREDMA targets and the ones mentioned in the Packaging Waste directive is difficult, because the years for the targets to be met are different. While the packaging waste directive sets less ambitious targets, they are to be met earlier (31. Dec 2008 for minimum recycling targets).

Transferability: While the targets in itself will be readily applicable to other regional entities, the waste management plan is highly specific to the given circumstances. However the approach of detailed planning as a general strategy should be transferable to other municipalities or metropolitan regions.

Other findings: The targets set for the recycling of packaging wastes are only a specific part of the PREDMA waste management plan. In fact the plan contains 15 objective categories ranging from quantitative figures ones such as prevention targets (e.g. prevention of 50kg per cap in 2019 in comparison to 2005), material recovery (25% in 2019) to more qualitative objective categories such as a prioritization of refurbishing existing waste incineration plants instead of building new ones and the requirement to shift the financing or waste management to incentivised strategies. One the one hand this large number of evaluation dimensions takes the multi-dimensionality of waste management into account, on the other hand it is difficult to compare the objectives with regard to their significance and to ensure the consistency of the numerous target dimensions.

3. Odense Waste Management	
Country	Denmark
Level	Municipality
Name of region/city	Odense
Population density	Urban
Operator/Partners	Odense Waste Management Company
Targets	The Danish Waste Strategy 2009-2012 sets the objective for recycling to 65 % as a minimum.
Instrument Type	Legal instruments: Legislation: The Danish Waste Strategy 2009-2012. Economic instruments: General state tax on waste: landfill waste is the most expensive, incineration is less expensive, and recycling is tax exempt; "green" taxes on packaging, plastic bags, disposable tableware and nickel-cadmium batteries. Social instruments: "Interpersonal Communication" guided tours to recycling stations; "Waste is fun" online materials for children; Advises public and private enterprises, institutions and other organisations.
Sources/References: Odense Waste Management Company http://www.odensewaste.com/ Regions 4 Recycling http://www.regions4recycling.eu/partners/Odense	

Rationale for inclusion

Abstract/Status/Success Danish waste policy is based on seven basic elements: waste prevention; reduction of resource losses; reduction of greenhouse gas emissions; reduction of the overall environmental impact; ensuring the highest environmental benefit per cost; improved waste management quality; ensuring an effective waste sector. The national waste strategy 2009-2012 implemented the Waste Framework Directive and set a national recycling target of 50 per cent of total municipal solid waste. A second part of the strategy issued in 2010 includes initiatives to increase waste prevention and encourage development of new waste treatment technology.

Targets and current legislation: The current (2011) rate of selective collection for recycling (material reuse or recovery) in Odense is 60 per cent. Incineration with energy recovery comprises 38 per cent, while 2 per cent is landfilled. Through participating in R4R, Odense Waste Management Company expects to facilitate the implementation of its Waste Handling Plan 2010-2020 which focuses on developing easier recycling solutions for citizens and communicating more effectively by shifting from mass to interpersonal communication. Further, the authority hopes to optimise its waste data collection and to raise further awareness among citizens in order to achieve even higher selective collection and recycling rates, with the aim of minimizing incineration and eliminating the need for landfilling in its territory. However, 75% of the bulky waste is recycled. The rest is incinerated and only a small percentage is landfilled.

Transferability: The project is a more stringent, disseminated version of the Danish national waste policy. Its projected goals could be applied to other EU regions, and it could probably be expanded. However, the authorities, which implement this policy are all on a municipal level, so the structure of waste management in a particular region would have to be considered.

Other findings: Odense Management Company is EMAS 3-registered. EMAS 3 is a European approval where you have to enter some key environmental indicators for the entire company each year.

4. Recycling for Great Manchester	
Country	United Kingdom
Level	Sub regional
Name of region/city	Greater Manchester
Population density	Rural /urban area
Operator/Partners	Greater Manchester Waste Disposal Authority (GMWDA)
Targets	Residual waste reduced to: 400kg/household by 2025; 50% recycling and composting by 2015; 50 megawatts (MW) of energy produced Target year: 2015.
Instrument Type	Organization of waste collection covering nine Greater Manchester Waste Collection Authorities collecting from 973000 households. Education /awareness raising. Communication is made mainly through the project website, that provides information and education to inhabitants. These concern: waste reduction (receipts to cook leftovers, tips to avoid food waste, tips to reduce packaging waste, services for avoiding junk mail and for clothes nappies), reuse (information on second hand markets and repair shops), recycle (tips for home-recycling, information on collection points), recover and composting (tips for home composting, education). An Education Centre is available to provide further information and organize educational meetings in schools and organizations. SME can ask support to achieve responsible waste disposal.
Costs	Greater Manchester Waste Disposal Authority (GMWDA) has signed a 25 year PFI Contract with Viridor Laing Limited, triggering a £631 million programme.
Sources: Project Website http://www.recycleforgreatermanchester.com/ Project Report http://www.iswa.org/uploads/tx_iswaknowledgebase/Dunn_Jenkinson.pdf	

Rationale for inclusion

Abstract/Status/Success The program aims at building a state of the art waste management facilities. Through the website, the resident is informed about waste management practices and facilities to reduce recycle and recover waste. The website provides tips to gain in energy and material efficiency in households, second hand markets, house composting, sustainable shopping, waste disposal centres available in the area, initiatives, etc. Since its application in 2009, it already reduced the amount of waste collected from over 1.4 million tonnes in 2004/05 to around 1.1 million tonnes in 2010/11.

Targets and current legislation: GMWDA and the nine WCAs are set to build on their recycling success (from 7% of Greater Manchester's municipal waste being recycled in 2002/03 to over 30% today). Within the Contract Greater Manchester will be able to recycle and compost an impressive amount; at least 50% of all waste by 2015 which corresponds to the recycling targets set in the European Waste Directive.

GMWDA will divert more than 75% of Greater Manchester's waste away from landfill. Being responsible for 5% of the UK's municipal waste, GMWDA will be making a powerful contribution to ensuring that the UK complies with its requirements under the European Union Landfill Directive, in turn producing important carbon benefits.

Transferability: Extent to which the project is confined to specific national circumstances or alternatively poses a good possibility for application in other countries. Is it possible to launch a similar/the same project elsewhere? Is it possible to make the project larger? Is it possible to repeat the project at a later stage/on a regular basis

The Transferability of this project solely depends on the availability of the budget and technology in respective countries, since the costs are rather high when speaking of £ 631 million.

Cost efficiency: The funding for the project comes from a number of sources. It is a government backed PFI Contract and will receive £124.5 million PFI credits.

VLGM, as sponsor, is enabling funding through a number of major financial institutions: the European Investment Bank; Bank of Ireland; Sumitomo Mitsui Banking Corporation; Banco Bilbao Vizcaya Argentaria; and the Lloyds Banking Group. The Pennon Group, Viridor's parent company, is also providing direct investment. GMWDA provides capital contribution of £68 million. Over 25 years the Contract is worth £3.8bn, which is a total of approximately £4.7bn, when landfill and GMWDA's own costs are added. The Contract provides £631m of investment.

5. Waste on a Diet	
Country	France
Level	Local
Name of region/city	Communauté d'agglomération du Grand Besançon
Population density	Urban/suburban
Operator/Partners	SYBERT (Syndicat mixte de Besançon et sa Région pour le Traitement des déchets), the Waste Division of the Greater Besançon Metropolitan Authority (CAGB) (114 people) and those of the corporate services of the CAGB and the City of Besançon.
Targets	To optimize the household waste recycling centres so as to increase the global rate of material waste recovery (recycling and composting) to a recycling level of 55%, an increase of 17 percentage points in 5 years (38 % in 2009). To reduce residual household waste, aiming towards a reduction of 150 kg/inhabitant/year which would represent 35,000 metric tons in 2015, a drop of 25% in 5 years (217kg/inhabitant/year in 2009).
Instrument Type	Economic instrument: The project aims to deploy solutions to facilitate full implementation of the Pay-as-you-throw scheme. This includes the installation of a waste prevention awareness campaign in collective housing, development of local composting facilities in group housing, optimisation of household waste recycling centres and development of a dismantling centre for bulky objects.
Sources/References: SYBERT Website http://www.grandbesancon.fr/index.php?p=1624	

Rationale for inclusion

Abstract/Status/Success: The project entitled "Waste on a diet" (July 2012 to June 2015) aims to reduce waste, increase re-use and recycling, and to limit the incineration and storage of waste in both rural and urban areas. This project is based on an important local issue: one of the two local incineration plants is getting old. As a consequence, the local elected representatives have decided to look for alternatives which avoid having to replace it. Moreover, the project will address two specific targets: collective housing and rural waste recycling facilities.

Success: Statistics / Studies highlighting the effect the project had on the targets / on waste management practices / on the environment. If a number of instruments have been applied, the most successful instruments.

Targets and current legislation: In order to reach the above mentioned objectives, the project will concentrate on a number of activities around two major axes:

- Limiting waste (reduction of 25% in five years) and treating organic waste locally
- Increasing material and organic waste recycling at Household Waste Recycling Centres (increase of 17% in five years)

Transferability: The "Waste on a Diet" project is somewhat specific to the Besançon region because the project was started because one of the two incineration furnaces in the region is becoming too old and would need to be replaced. The purpose of the project is originally to look for alternatives to replacing this furnace. However, although the incinerator was a catalyst for the project, the project's basics can be replicated in other regions.

Cost efficiency: The current annual budget of the SYBERT is around 20 million Euros. The total cost of the project is 1,777,810 €. To control costs, i.e. limit the rise in the waste collection charge for users and remain below the 90 euro barrier per inhabitant between now and 2015 (75 € in 2009).

6. Green Dot Scheme	
Country	Belgium
Level	National
Name of region/city	Belgium
Population density	Urban/rural
Operator/Partners	Fost Plus (for household waste), VAL-I-PAC (for non municipal packaging waste).
Targets	at least 80% recycling, and at least 90% recovery for household packaging waste (from 2009).
Instrument Type	Economic Instrument: Producer Responsibility Scheme (Green Dot Scheme), Tax payed by inhabitants to the Regions to improve packaging waste management. A deposit refund system for drinks containers is in place in Belgium at Federal level since 1993. In 2007 a revised ecotax was introduced for both disposable and reusable drinks containers, which are not reused, and not included in the refund system.
Costs	Green Dot Scheme

Sources/References

The Interregional Packaging Commission (IPC) Website
www.ivcie.be/nl/
Fost Plus Website
http://www.fostplus.be/
Watkins, E.; Hogg, D.; Mitsios, A.; Mudgal, S.; Neubauer, A.; Reisinger, H.; Troeltzsch, J.; Van Acoleyen, M. 2012: Use of Economic instruments and waste management performances. Funded by EU Commission, DG Environment.
http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf

Rationale for inclusion

Abstract/Status/Success: In Belgium, EC Directive 94/62/EC on Packaging and Packaging waste was transposed into national law as a Cooperation Agreement between the three Belgian regions. The law came into force on 5 March 1997. The revised Packaging Directive 2004/12/EC has been transposed in the renewed Cooperation Agreement of 4 November 2008 with effect from 1 January 2009. Two private "Green dot" organisations are in charge of coordinating and financing the selective collection and end-of-life treatment of packaging waste across the country: Fost Plus and VAL-I-PAC. In 2010, out of the 755 000 tonnes of household packaging put on the Belgian market by Fost Plus members, 91,5% have been recycled and 94,5% have been recovered. The Cooperation Agreement also fixes minimum recycling levels by material to be reached for the entire Belgian territory by 2010. Results for households in 2008: Glas: 117.73 %, Paper/cardboard: 122.6 %, Drinks cartons: 77.5 %, Metal: 98 %, Plastic: 36.4 %.

Targets and current legislation: The Cooperation Agreement between the 3 political regions in Belgium sets the following targets: at least 80% recycling, and at least 90% recovery (for household packaging waste, by 2009). The minimum recycling targets for the different packaging materials by 2010 are the following: Glas: 60 %, Paper/cardboard: 60 %, Drinks cartons: 60 %, Metal: 50 %, Plastic: 30 %. The targets exceed the objectives of the Waste Framework Directive 2008/98/EC and the Packaging and Packaging Waste Directive 94/62/EC.

Transferability: Green Dot Schemes are already in action in different European countries.

Cost efficiency: The green dot contribution covers 100 % of collection, recycling and recovery costs for paper/cardboard (packaging) (17,60 Euro/t), glass (18.40 Euro/t), plastic bottles and flasks (PET: 199,40 Euro/t), beverage cartons (272,80 Euro/t) and metal packaging (steel: 37,60 Euro/t, Aluminium: 137,90 Euro/t).

To cover additional costs linked to waste prevention and management, the new 2008 Cooperation agreement imposed an annual tax of 0,50 EUR per inhabitant per year (equating 5 million EUR/year) which has to be paid to the Regions to improve packaging waste management.

[3] Calculated based on declaration of Members to Fost Plus. Results can exceed 100%, due to the fact that not all parties responsible for packaging are members of Fost Plus. For glass, the excess is mainly due to private import.

7. Farm Plastics Producer Responsibility Initiative (PRI)	
Country	Ireland
Level	National
Name of region/city	Ireland
Population density	National
Operator/Partners	Irish farm film producer group (IFFPG)
Targets	The Farm Plastics Producer Responsibility Initiative (PRI) requires that 60% of all plastic placed on the market is recovered. IFFPG are exceeding this target, with currently collecting 19,000 tons of farm plastics waste from over 30,000 farmers annually. This initiative is being conducted since 1997.
Instrument Type	Organization of waste collection (collection of silage plastic bags); Farmers voluntary agreement. Regulations: a producer / supplier of farm plastics has the choice of either complying with the regulations directly or alternatively participating in the approved scheme. Further, the fee farmers have to pay depends on the cleanness and dryness of the plastic bags, thus imposing indirectly environmental responsibility on the farmers.
Costs	Under the IFFPG scheme, producers apply a levy (€127/tonne) on the sale of farm plastics which in turn is transferred to the IFFPG for use in funding the collection and recovery of farm plastics waste.
Sources: http://www.environ.ie/en/Environment/Waste/ProducerResponsibilityObligations/FarmPlastics/ http://www.farmplastics.ie/	

Rationale for inclusion

Abstract/Status/Success

The IFFPG was established with the support of the Irish Farmers Association and comprises representatives of film manufacturers and importers and is the sole approved body for the recovery of farm plastics.

IFFPG is a not-for-profit organisation and is at present the sole approved body in Ireland for the purposes of operating a compliance scheme for the recovery of farm plastics and currently collects approximately 19,000 tonnes of farm plastics waste for recycling from over 30,000 farmers annually.

Under the IFFPG scheme, producers apply a levy (€127/tonne) on the sale of farm plastics which in turn is transferred to the IFFPG for use in funding the collection and recovery of farm plastics waste.

The cost of collection, recycling and recovery are covered by the levy and a weight based farmer collection fee.

Voluntary agreement between Farm Film Producers and the Government of Ireland, in response to the Farm Plastics Regulations. The scheme is a membership based, 'not-for-profit' limited company

Targets and current legislation:

With 60% of plastics recovery set as a goal for this initiative, the IFFPG exceeds by far the EU target on this matter (set by 22.5% for plastic according to the Packaging and Packaging Waste Directive 94/652/EC.

Transferability:

To assure the transferability of this project a strict legislation on recovery, complemented by an implemented plastic collection system are required.

8. Denmark – Waste Strategy 2009 – 2012	
Country	Denmark
Level	National
Name of region/city	n/a
Population density	129 inhabitants per km²
Operator/Partners	• Ministry of the Environment and Energy • Danish Environmental Protection Agency
Targets	The target for recycling of total waste is 65% in 2012. The target for maximum landfill of total waste is 6% in 2012.
Instrument Type	**Waste management strategy** Landfill tax and incineration tax Total ban on the landfilling of combustible waste Mandatory separation of waste
Costs	No information about costs available.
Sources/References Regeringens Affaldsstrategi 2009-12 http://www.mst.dk/NR/rdonlyres/747FBCE2-A3D4-444F-BF60-D1747C36516D/0/Endelig1delafAffaldsstrategi200912.pdf Waste in Denmark http://www.seas.columbia.edu/earth/wtert/sofos/Denmark_Waste.pdf Waste Strategy and Waste Prevention http://www.mst.dk/English/Waste/waste_strategy_and_waste_prevention/waste_strategy_and_waste_prevention.htm	

Rationale for inclusion

Abstract/Status/Success

The major initiatives to improve MSW management in Denmark were taken before 2000. The landfill tax and incineration tax introduced in 1987 and the total ban on the landfilling of combustible waste (coming into effect on 1 January 1997) have been the main drivers for treatment of municipal waste in Denmark. In addition, the establishment of separate collection schemes for paper, glass packaging, and garden waste has contributed significantly to the increased level of recycling.

After having reduced the waste of re-sources going to landfills significantly, the challenge in the waste strategy 2009 – 2012 is to prevent waste and at the same time to develop new technologies which can utilize the materials in the waste. Therefore, the Waste Strategy has two new important activity areas:

- Waste prevention
- Innovation of waste treatment technology.

Targets and current legislation: In the European waste directives there are no targets for total waste. However, a high recycling target for total waste can only be met, when the recycling of all waste streams is improved.

Nevertheless, the recent years' development in recycling (2006-2010) demonstrates that Denmark will face problems in reaching the recycling target in 2020.

Transferability: Denmark has a long history in waste management, starting with the landfill and incineration tax already in 1987. The mentioned instruments can principally be transferred to other countries. The results, however, can only be reached by setting up and optimising a complex waste management system, which can only be carried out over a longer period of time.

Other findings: Denmark is drafting a new waste management plan covering 2013-2018. The draft is planned for consultation after the summer 2012. It is expected that the plan will include initiatives to fulfil the 50 % target of recycling and prepare for reuse for household waste 2020 (Article 11 (2) in the WFD).

9. Scotland's Zero Waste Plan	
Country	UK
Level	Scotland is one of 4 regions of the UK
Name of region/city	Scotland
Population density	67 inhabitants per km²
Operator/Partners	Scottish Government, with local authorities, the Scottish Environment Protection Agency (SEPA) and Zero Waste Scotland
Targets	Recycling, composting and preparing for reuse targets for waste collected from households: 2010: 40%, 2013: 50%, 2020: 60% and 2025:70% Maximum landfill for total waste arisings by 2025: 5% Recycling and recovery of non-hazardous construction and demolition waste, excl. naturally occurring material by 2020: 70%
Instruments	The targets are fixed in a waste management plan. For meeting the targets the following instruments are foreseen in the plan: 1. Source segregation and separate collection of specific materials. 2. Placing restrictions and only allowing suitable waste types to be treated in energy from waste plants. 3. Ban specific materials from landfill. 4. Place a limit on the biodegradable content of waste which can be landfilled.
Costs	The waste management plan contains no information about costs.
Sources/References Scotland's Zero Waste Plan http://www.scotland.gov.uk/Publications/2010/06/08092645/0	

Rationale for inclusion

Abstract/Status/Success

The Zero Waste Plan sets a long term vision and will require a significant change in the way Scotland approaches the management of its waste. To achieve this vision, action needs to be taken across the following four areas: resource streams, economic opportunity, resource management sector, and education and awareness. With existing waste management instruments the following values for the recycling efficiency of municipal waste fractions could be reached in 2008/2009:

Municipal waste fraction	**Recycling efficiency**
Paper and Card	37.2
Metals	35.7
Plastics	5.5
Glass	41.2
Food and Garden Waste	38.1
Wood	74.9
Aggregate (rubble)	70.6
Municipal waste (total)	**33.4**

Targets and current legislation: The recycling, composting and preparing for reuse targets for waste collected from households as well as the Maximum landfill target are more ambitious than the targets of the Directive

Transferability: Waste management plans have to be set up according to the WFD. The selected instruments are already used in a number of European Member States.

Other findings: -

10. Wales – Towards Zero Waste	
Country	UK
Level	Wales is one of the 4 regions in the United Kingdom
Name of region/city	Wales
Population density	144 inhabitants per km²
Operator/Partners	• Welsh Assembly Government, incl. Local Authorities • Commercial and industrial sector • Public sector
Targets	Waste prevention of household waste: 1.2% per year from 2007 until 2050; Re-use and recycling/composting of municipal waste: 40% until 2010, 52% until 2013, 58% until 2016, 64% until 2020, 70% until 2025; Re-use and recycling of commercial waste: 57% until 2016, 67% until 2020, 70% until 2025; Re-use, recycling and other recovery of C&D-Waste: 90% until 2020; Maximum landfill of municipal waste: 10% until 2020, 5% until 2025.
Instrument Type	Waste Management Strategy Implementation by sectoral plans: (1) Waste prevention (ecodesign, greener production, GPP, change of behaviour); (2) Separate collection; (3)Recycling facilities (up-cycling), anaerobic digestion; (4) Improve markets for recyclates and digestate; (5) Introduction of a landfill ban.
Costs	Government has announced a total of £181 million in Sustainable Waste Management Grant (SWMG) over the three years 2009 to 2011. In addition £26 million of Strategic Capital Investment Fund (SCIF) money has been awarded to anaerobic digestion facilities.
Sources/References Towards Zero Waste, One Wales: one planet. The Overarching Waste Strategy Document for Wales June 2010. http://wales.gov.uk/docs/desh/publications/100621wastetowardszeroen.pdf	

Rationale for inclusion

Abstract/Status/Success

The waste management strategy document identifies high level outcomes, policies and targets, and forms part of a suite of documents that comprise the national waste management plan for Wales. Detailed delivery actions will be provided in 'sector plans' and other papers as necessary.

The transposition of the strategy in legislation was done by the Waste Measure which was adopted by the National Assembly for Wales in 2010.

The first targets of the strategy have been met:

- Steady decrease in waste arisings since 2004/05
- Municipal waste recycling/composting targets for 2003/04 (15%) and 2006/07 (25%).
- Meeting two years early our target to landfill less than 0.710 million tonnes of biodegradable municipal waste by 2010.
- Meeting of reuse/recycling target for construction and demolition waste of at least 85% by 2010 (the reuse/recycling rate for 2005/06 was 85%).

Targets and current legislation: All targets of the Waste Management Strategy are more ambitious than the targets of the directives. Additional targets for waste prevention and for recycling of commercial waste have been set.

Transferability: Waste management plans have to be set up according to the WFD. The selected instruments are already used in a number of European Member States. The Welsh approach is very comprehensive, including a high number of instruments, and very ambitious.

Other findings: The waste management strategy is accompanied by a number of studies.

11.Packaging Decree	
Country	Netherlands
Level	National
Name of region/city	Netherlands
Population density	Urban/rural
Operator/Partners	Nedvang
Targets	From 2010: 75 per cent of the total quantity of packagings by weight are put to good use4, 70 per cent by weight is re-used as a material. Furthermore, individual recycling percentages per material have been defined.
Instrument Type	Legislation: Packaging Decree Economic instruments: Producer Responsibility Scheme, Packaging Tax, Deposit Scheme for bottles of water, beer or soft drinks with a deposit scheme
Sources/References Pro Europe http://pro-e.org/_Netherlands.html Nedvang http://www.nedvang.nl/ Watkins, E.; Hogg, D.; Mitsios, A.; Mudgal, S.; Neubauer, A.; Reisinger, H.; Troeltzsch, J.; Van Acoleyen, M. 2012: Use of Economic instruments and waste management performances. Funded by EU Commission, DG Environment. http://ec.europa.eu/environment/waste/pdf/final_report_10042012.pdf	

[4] As "good use" in relation to packagings is understood the re-use as a material, primary use as a fuel or primary use for another means of generating power.

Rationale for inclusion

Abstract/Status/Success: The national law, based on the European Directive 94/62/EC and the revised Packaging Directive 2004/12/EC was implemented in 2005 and is named as the Packaging Decree. The Packaging Decree defines that Dutch producers and importers of packaged products are responsible for the separate collection and recycling of packaging waste and also for waste prevention. The packaging regulation includes packaging from plastics, paper and cardboard, metals, type of woods, types of textile, glass.

Targets and current legislation: The producer or importer shall ensure that, from 2010: 75 per cent of the total quantity of packagings by weight are put to good use5, 70 per cent by weight is re-used as a material. Furthermore, individual recycling percentages per material have been defined: (1) plastic drinks packagings (larger than 500 ml) - at least 95% is collected separately and re-used as a material; (2) plastic drinks packagings (smaller than 500 ml) - at least 55% is collected separately and re-used as a material; (3) the remaining plastic packagings, at least 45% will be put to good use and at least 27 percent by weight will be re-used as a material; (4) other material types, at least the following percentages by weight will be put to good use through their re-use as materials: 90 percent by weight of glass packagings, 75 percent by weight of paper and card packagings, 85 percent by weight of metal packagings, 25 percent by weight of wooden packagings. These targets exceed the objectives of the the Packaging and Packaging Waste Directive 94/62/EC.

Transferability: Producer Responsibility Schemes via Packaging Taxes are implemented in different European countries.

Cost efficiency: The tax was expected to generate 365 million Euros in 2009. By funding a waste fund, the total amount of € 115 million is spent to remunerate waste collectors, sorters and recyclers for their efforts, to prevent the creation of packaging waste and the organisation of the infrastructure. In 2013, the tax has the following amount: glas: 0,0595 €/kg, paper and card packagings 0,0233 €/kg, metal packagings: 0,0212 €/kg, plastics: 0,3876 €/kg, other materials: 0,0212 €/kg.

[5] As "good use" in relation to packagings is understood the re-use as a material, primary use as a fuel or primary use for another means of generating power.

12.Catalan Municipal Waste Management Programme (PROGREMIC)	
Country	Spain
Level	Regional
Name of region/city	Catalonia
Population density	233.9 inhabitants / km²
Operator/Partners	The Agència de Residus de Catalunya (ARC)
Targets	The National Integrated Waste Plan (PNIR) was set in 2008 to run until 2015, with the target to achieve higher selective collection and recycling rates, and to reach the regional target of 48 per cent materially recovered municipal solid waste by 2012.
Instrument Type	Organization of waste collection system, assessment of potential recycling rates, definition of the most suitable collection models of its municipalities: by type of waste segregation model (5 fractions, minimum waste and mixed waste) and by type of location of the collection systems (surface containers, buried containers, door-to-door and pneumatic). Database on municipal waste management. Publication of annual waste statistics for Catalonia.
Costs	-
Sources: http://www.regions4recycling.eu/partners/ARC http://www20.gencat.cat/portal/site/arc?newLang=en_GB	

Rationale for inclusion

Abstract/Status/Success

The fundamental pillars of the Catalan Municipal Waste Management Programme (PROGREMIC) are the promotion of waste prevention, an increase in and the territorial expansion of selective collection, and the treatment of all waste.

Through an exchange of good waste management practices and enhanced awareness-raising in the context of the Regions 4Recycling project, ARC hopes to achieve higher selective collection and recycling rates, and to reach the regional target of 48 per cent materially recovered municipal solid waste by 2012.

Targets and current legislation:

Preventive measures implemented under 2008–2015 National Integrated Waste Plan (PNIR) together with the application of legislation deriving from the national incorporation of the EU's Waste Framework Directive are expected to notably reduce waste generation, increase recycling rates and lower landfill. The PNIR sets targets through to 2015, encouraging the involved authorities and economic agents to integrate the guiding principles of European waste policy and to significantly change waste management in Spain.

However, the regional target of 48% of material recovery is not addressing EU targets.

13.Lisbon waste management picture	
Country	Portugal
Level	National
Name of region/city	Lisbon
Population density	Urban
Operator/Partners	Lisbon City Council
Targets	The target set is, by introducing fully working energy recovery, only 10% to go to landfill within 10 years; respectively from 2006 to 2016 reducing municipal waste to landfill.
Instrument Type	Organization of waste management collection, adoption of door-to-door collection schemes Development of database related to waste collection where citizens can leave complaints or make suggestions.
Costs	-
Sources: http://www.regions4recycling.eu/partners/Lisbon_City_Council (web site)	

Rationale for inclusion

Abstract/Status/Success

By adopting door-to-door collection schemes, Lisbon – which received the European Green Capital Award - has become a national example and benchmark in selective and mixed waste collection. To improve its waste management, the City Council developed a database related to waste collection where citizens can leave complaints or make suggestions. The municipality's selective collection rate of 33 per cent is, however, still far from the overall national target of 55 per cent by 2020. Incineration with energy recovery is the main treatment method; 10 per cent is landfilled, and only about 18 per cent of the total municipal solid waste is recycled or materially recovered.

Targets and current legislation:

The municipality's selective collection rate of 33 per cent is, however, still far from the overall national target of 55 per cent by 2020. Incineration with energy recovery is the main treatment method; 10 per cent is landfilled, and only about 18 per cent of the total municipal solid waste is recycled or materially recovered. Through R4R, the municipality wishes to learn about other European good practices in order to improve its resource management, selective collection rate and quality of selected waste at the source.

Transferability:

In order to be able to transfer such a project to other countries two highly important assets would be needed. Firstly, an adequate infrastructure that allows a door to door waste collection. Further a developed waste recovery technology would be needed as in this case in order to be able to avoid waste to landfill.

14.France – Waste prevention programme	
Country	France
Level	National
Name of region/city	n/a
Population density	97 inhabitants per km²
Operator/Partners	• Ministry of Ecology, Sustainable Development and Energy • ADEME • Local administrations
Targets	Prevention target: 7% reduction of household waste within 5 years, i.e. in the 2007-2012 period
Instrument Type	Waste prevention programme Taxation: Incentive taxes on household waste, defined at a local level and linked to quantities generated per household, taxes imposed on highly waste-generating products in situations where alternatives exist, creation of an incineration tax and increase of the current landfill tax in order to give incentives for prevention Financial and technical support for communities putting in place a prevention strategy in order to support application of local prevention plans
Costs	No information about costs available.
Sources/References Evolution of (bio-) waste generation/prevention and (bio-) waste prevention indicators http://biowaste-prevention.eu-smr.eu/documents	

Rationale for inclusion

Abstract/Status/Success

The Waste prevention objectives laid out by Grenelle I, Grenelle II and the 'Plan d'actions déchets 2009-2012' are the following:

- Municipal waste reduction (Target: 7% reduction of householdwaste within 5 years, i.e. in the 2007-2012 period)
- Increased producer responsibility
- Integration of waste reduction into local waste management programmes
- Better management of construction waste.

A report prepared in 2009 by ADEME on the progress made on Grenelle II did not present quantitative figures but did present the types of research and the technical support activities being carried out to support waste prevention activities at the local and national level, following the guidelines and objectives set out in Grenelle II. 'La Collecte des déchets par le service public en France' (Public service waste collection in France) is completed every two years, with the next cycle finishing in 2011, at which point it will be possible to benchmark volumes of household waste produced, and thereby assess progress against targets set.

Targets and current legislation: In the European waste directives there are no targets for quantitative waste prevention.

Transferability: The applied instruments, i.e. the tax on certain waste streams and the support for communities, setting up waste prevention programmes, are principally transferable. Partly, they are already implemented in a number of countries.

15.Swedish Waste Management System	
Country	Sweden
Level	National target with local implementation
Name of region/city	Lund, Linköping and others
Population density	23 inhabitants / km²
Operator/Partners	In Sweden, the responsibility for household waste lies with the municipalities. Afvall Sverige, the Swedish trade organization within the waste and recycling sector promotes the overall vision of zero waste in Sweden.
Targets	Sweden pursues amongst other a target of greater resource economisation in the food chain. In May 2012, the Swedish government implemented specific targets aimed at food waste: by 2018, at least 50 percent of food waste must be separated and treated biologically to recover plant nutrients, and at least 40 percent have to be treated to recover energy.
Instrument Type	National target setting in combination with local organization of waste management.
Costs	no specific information available

Sources/References

2012 Report on the Swedish Waste Management System
http://www.avfallsverige.se/fileadmin/uploads/Rapporter/SWM2012.pdf
Afvall Sverige, the Swedish Waste Management and Recycling association
http://www.avfallsverige.se/in-english/
Corvellec, H. (2012): Normalising Excess: An Ambivalent Take on the Recycling of Food Waste into Biogas
http://www.ism.lu.se/fileadmin/files/rs/wp/WP_15_NOV_2012.pdf

Rationale for inclusion

Abstract/Status/Success: On a national level, Sweden has defined a target for the greater economisation of the food chain by 2018. In 2010 Sweden managed to recycle as much as 20% of its food wastes. In 2011, 14,9% of the food waste in Sweden was treated biologically in various compost and biogas plants. That corresponds to 650,300 tonnes or 68,6 kg/person, and indicates an increase of 4,3% compared to 2010. The high importance of recycling of food wastes makes

Targets and current legislation: Municipally owned solid waste management companies play a key role in the waste strategy, not least because municipalities have legal responsibility for the treatment of waste. These companies advertise intensively that food waste, if it cannot be avoided, can be turned into biogas. Southern and Western Swedish cities offer several examples.

Transferability: The targets of improved economisation of the waste sector are readily applicable to other regional entities. The experiences in Sweden made with biofuel and biogas production can be utilized as examples useful for municipalities in other countries.

Other findings: The delegation of responsibility for waste management to municipalities has induced good practices for waste management. The waste management practices in Lund and Linköping may serve as good examples in this context. Both provinces have assigned high importance to waste recovery with a special focus on the development of source separation systems, and by developing integrated systems with different treatment methods for different types of waste.While both systems have achieved overall good results in the source sorting of household waste, they are different in the implementation of the sorting system and in the organization and task allocation between municipality and operating agencies.

In the city of Lund a specialized waste collection system has been set up. Waste bins that are separated into four compartments allow for the separation of different waste fractions at the source. This solution allows for the collection of high purity waste fractions (91% pure packaging and 98% pure foodwaste) suited for recovery. The food waste is pre-treated and then digested in a reactor to produce biogas and bio fertilizer. Local Recycling (Renhallingsverk) and regional recovery (SYSAV) are organized as business companies

In Linköping the collection system is implemented by using different bags for the collection of different waste fractions (90-98% purity for food wastes). The system is run by Tekniska Verken, which is entirely owned by the Linköping Municipality.

16.Copenhagen Waste Recycling Centre (Kalvebod Miljocenter)	
Country	Denmark
Level	Local
Name of region/city	Copenhagen
Population density	7.350 inhabitants per km²
Operator/Partners	• City of Copenhagen • RGS 90 A/S (private company)
Targets	The target for recycling of C&D-waste was 90% in 2004.
Instrument Type	Construction of a treatment plant for the recycling of C&D-waste with a capacity of 500,000 tons per year. In addition, the City of Copenhagen improves the separation of C&D-waste containing hazardous substances in order to improve the quality of the recycling products.
Costs	No information about costs.
Sources/References Copenhagen recycling centre http://raf.ew.eea.europa.eu/documents/danishpresentationpdf Copenhagen Waste Management Plan 2012 https://subsite.kk.dk/Nyheder/2009/April/~/media/30EC1D727EBE4A909908CCA9EBBF3D97.ashx	

Rationale for inclusion

Abstract/Status/Success

The treatment plant contains a range of treatment processes to which the waste is subjected, ranging from direct delivery to the crusher for concrete waste and pre-crushing by a mobile jaw crusher for the ferrous reinforced concrete. The mixed waste is separated initially by mobile cranes with the resultant fractions going through the processing facilities, which includes handsorting of waste.

Targets and current legislation: The target of 90% recycling of C&D-waste in Copenhagen for 2004 is much higher than the target value in the WFD with 70% in 2020. Although the target could not be reached completely, recycling rates of 86% in 2006 and 87% in 2009 are a big success.

Supportive measures for C&D-recycling are the national Danish tax on landfilling of waste and the tax on sand, gravel and quarried stone used in construction in order to foster recycling material.

Transferability: Denmark is a country with low resources of primary aggregates. Therefore, big efforts are made to yield recycled materials from C&D-waste. Other countries with sufficient and thus cheap resources of construction material are not so interested in secondary aggregates. In these countries, the landfill tax often is much lower for C&D-waste than for municipal waste.

Other findings:

When the recycling centre activities end and all depots have reached their capacities, estimated at 2020, the area will then be transformed into an attractive recreation area close to the centre of Copenhagen.

17.Cyprus Green dot recycling	
Country	Cyprus
Level	Regional
Name of region/city	Nicosia, Limassol,Famagusta and Paphos districts
Population density	Urban
Operator/Partners	Green Dot(Cyprus) Public Co. Ltd.
Targets	The Greendot Projects aimed at achieving 60 % recycling of packaging waste in 2013. With the recycling of 46,500 tons of packaging in the year, the target of 60 % to be reached by 201 was already achieved in 2011.
Instrument Type	Integrated waste management system implementation, distribution of container for waste sorting to inhabitants. Rising public awareness
Costs	-
Sources: http://www.greendot.com.cy/cmslikethis/uploadedContent/downloadsFiles/GDCANNUALREPORT1357226325.pdf (pag 31) (Report about the project with information on achievements- 2011- report in Greek) http://www.greendot.com.cy/ http://www.greendot.com.cy/en/view-subpage-greeniversity/46/green-dot-success-2010 (facts and figures from 2010)	

Rationale for inclusion

Abstract/Status/Success

Green Dot Cyprus Ltd' is the first collective waste management scheme licensed and operated in Cyprus in line with the Packaging and Packaging waste Law. The Program began its operation for the industrial/ commercial facilities in September 2006 and for households in February 2007. The program currently involves four municipalities serving almost 85% of the GCC population. The success is imminent in terms of population coverage and recycling achievements. In 2010 Green Dot Cyprus celebrated one of its biggest achievements, the recycling of 41.500 tonnes of packaging. For the first time the System managed not only to achieve the 2010 packaging recycling target but to exceed it

Targets and current legislation:

With the EU Directive on packaging waste foreseeing at least 55% of packaging to be recycled, the Green Dot project in Cyprus demonstrates with its in 2011 achieved 62% an overachieving in this matter.

Transferability:

Transferability to other countries requires the implementation of a professional door to door waste collection system and an up-to-date technological recycling facility.

Other findings: During the course of the year coverage of the population grew to 85%, giving access to about 700.000 people in 28 Municipalities and 50 communities.

18.Zero Waste strategy in Palárikovo	
Country	Slovakia
Level	Municipality
Name of region/city	Palárikovo
Population density	Regional
Operator/Partners	Municipality
Targets	Even though there were no specific targets set in at the beginning of this project in 1999, the municipality achieved to reduce the waste to landfill from 1300 tons in 1999 to only 330 tons in 2005, resulting in a 74% decrease of municipal and bio waste to landfill in only 6 years by implementing a Pay as your through (PAYT) regime.
Instrument Type	Introduction of Pay as You Throw Scheme. Implementation of an integrated system of separated waste collection in the municipality. Intensive education of the public concerning waste separation and promotion of domestic composting by means of local media press, radio, leaflets.
Costs	-
Sources: http://www.ipen.org/ipepweb1/library/ipep_pdf_reports/19ceh%20zero%20waste%20as%20bep%20in%20cee%20countries.pdf (p.17) (document on project- last update: 2006)	

Rationale for inclusion

Abstract/Status/Success

The municipality had to start solving the issue of wastes in 1999, when its municipal landfill was closed down thanks to stricter legislation. The first step the municipality did was an analysis of the existing situation to determined composition of municipal waste in the municipality.

The implementation of the project started in 2000 through intensive education of the public concerning reduction of biologically decomposable municipal waste - promotion of domestic composting. Finally, since 2002, an integrated system of separated waste collection has been implemented in the municipality.

By introducing a Pay as your through regime, where 7.4 € had to be paid by people who do not separate waste, and 4.7 € for those who do, resulting in positive consumer stimulation and leading to a reduction of landfilled waste from 1300t to 330 in 15 years and mixed waste from 1250t to 330t in 5 years (by 2006)

Targets and current legislation:

Regarding the compatibility with EU targets on landfill the Municipality of Palárikovo achieved a 75 % reduction of waste going to landfill in 15 years, and of 74% of mixed waste in 5 years, addressing therefore the requirements stated in the Landfill Directive 99/31/EC, Art 18(1).

Transferability:

The transferability of this is rather high in the sense of transferring the idea of putting a PAYT system on a regions/city's population.

Cost efficiency: Economic stimulation of the inhabitants is important. In 2000 to 2003, people paid a lump sum fee 7.4 € for people who do not separate waste, and 4.7 € for people who do separate. Now, when 99 % of inhabitants have participated in the system, the PAYT (pays as you throw) principle has been applied. The municipality uses a sack system for collection of the separated materials. At present, the wastes are collected once in two months. The municipality gets the sacks at a low price (in the beginning, it got the sacks free, now it pays 0.025 € per one sack), and it started the whole system with minimum investments. The separated raw materials from the sacks are clean and may be more easily processed. The system is beneficial also for the inhabitants who do not have to carry the wastes anywhere.

Other findings: Till 2004, the municipality introduced gradually separation of paper and cardboard, tetra pack, glass, various types of plastics, metal packaging, textiles, electronic scrap, tires, batteries, cables, high-volume waste, hazardous waste, and small building waste.

19. Capannori towards zero waste by 2020	
Country	Italy
Level	Regional
Name of region/city	Capannori
Population density	Rural
Operator/Partners	Municipality
Targets	Though no target were set in this project, due to the fact of door to door house hold waste collection the separate collection increased from 37% in 2005 to 88% in 2010.
Instrument Type	Organization of separate waste collection system: elimination of all communal bins, introduction of door to door collection system, distribution of kit for differentiated waste disposal to inhabitants. Raising public awareness/ complementary initiatives: abatement of the plastic bottles water in school refectories, washing- up liquid and soaps on tap installed in supermarkets ,milk distributors in schools' playgrounds, the "Water way" of public fountains.
Costs	-
Sources: http://www.wasman.eu/media/uploads/deliverables/WASMAN_Best_Practice_Report.pdf http://www.zerowastelazio.it/1/upload/testo_legge_rifiuti_revisionato_finale_1_.pdf	

Rationale for inclusion

Abstract/Status/Success The municipality of Capannori, the first Italian town council to adopt a "Zero waste strategy", has undertaken a complete re-organisation of the waste management service, building an environmental policy with two main drivers: sustainability and participation. Capannori eliminated all of the communal bins and begun doing "door to door" home waste collection, providing each family with the necessary equipment for differentiated waste disposal. The programme aimed moreover at changing behaviours and lifestyles, at building a new and stronger sense of citizenship with the aim of realizing conditions to meet human needs and social resources by using less, consuming less energy, reducing emissions into the atmosphere and producing less waste. Reported data show that rate of separate collection increased from 37% in 2005 to 82% in 2010 thanks to the introduction of door-to-door separate collection

Targets and current legislation: The "Zero Waste" action, an umbrella of initiatives under which "Capannori towards Zero Waste strategy" was implemented, aims at discussing a law proposal addressing the following target: by 2020: 91% sorted waste collection, 5% reuse, 85% recycling and composting, 95% material recovery, 20% reduction (baseline year: 2000), and therefore exceeding the targets set within the Waste Framework Directive 2008/98/EC.

Transferability: The popular consensus was the key to the success of the Capannori's experience, having invested so much in terms of human resources and time to explain "door to door" the organizational details of the new system. Citizens' participation is essential in "door to door" collection since the system enters into every house, asking people to change something in their attitude towards domestic waste, calling for changes to individual and family behaviours consolidated for years.

Cost efficiency: Since the implementation of the "door to door" refuse collection service the quantity of non separated waste has dropped by more than 10,000 tons. In 2007 a total of 15,737 tons of separated refuse was collected, which would have amounted to 2,515,860 Euro in disposal costs. With the savings achieved by not having to dispose of non-separated waste, in addition to covering the cost of the new jobs, the Municipality has been able to reduce the waste disposal tax debited to each resident by 20% on the variable portion

Other findings: Since the implementation of the project were saved 100,000 trees, 2.85mil liters of water and 9.1 tons of CO2. In 2007, 2.5 Mio Euro were saved on waste disposal costs by preventing 15.7 Tons of waste. Moreover, more than 30 new jobs were created and the waste disposal tax debited to each resident was reduced by 20% on the variable portion.

20.Regional Waste Management Plan (IE)	
Country	Ireland
Level	local
Name of region/city	Four local authorities in the region: Limerick County, Limerick City, Clare County and Kerry County
Population density	Urban/rural
Operator/Partners	**Limerick Clare Kerry Regional Waste Management Office**
Targets	The 2006 Replacement Waste Management Plan specified the following overall targets: Recycling 45%, Thermal Treatment 41%, Disposal 14%.
Instrument Type	Regulatory: Waste management plan, different Waste Regulations: Waste Management (Food Waste) Regulations 2009. Economic: Landfill levy. Information: Networking activities via regions4recycling, Local Authority Prevention Network (LAPN) programme, awareness campaigns on different topics: recycling, organic waste.
Sources/References Website of Limerick Clare Kerry Regional Waste Management Office http://www.managewaste.ie/ Evaluation of the Replacement Waste Management Plan for the Limerick/Clare/Kerry Region 2006-2011 http://www.managewaste.ie/docs/2012/LCK%20Evaluation%20of%20Waste%20Management%20Plan%202006-2011-%20Dec%202012.pdf Website of Interreg Project: Regions4recycling http://www.regions4recycling.eu/partners/Limerick	

Rationale for inclusion

Abstract/Status/Success

In 2001, first Waste Management Plan for the Limerick/Clare/Kerry Region was published. The second plan was published after a review process in 2005. The objectives are the prevention, minimisation, re-use and recycling of waste.
Since the publication of the first plan the Region has gone from 6 % household waste recycling in 2001 to 42 % in 2010. The commercial recycling rate is now 75% (2010), having started at less than 20 % in 2001.

In 2012, the Evaluation of the Replacement Waste Management Plan for the Limerick/Clare/Kerry Region 2006-2011 was published. The report says that in 2011 42% of households in this Region were not signed up to a waste collection service and therefore the management of this waste cannot be accurately accounted for and requires assessment and action. The collection of organic waste for household and commercial waste began in 2008 and now over 8,000 tonnes of organic waste has been collected per annum.

Targets and current legislation: Different waste regulations were implemented, e.g. landfill levy to decrease the amount of waste going to landfills. The 2006 Replacement Waste Management Plan specified the following overall targets: Recycling 45%, Thermal Treatment 41%, Disposal 14%. The regulations exceed the objectives of the Landfill Directive 99/31/EC and the Waste Framework Directive 2008/98/EC.

Transferability: The establishing of the waste management plan was supported by different funding programmes: national Irish programmes but also via an Interreg project.

Cost efficiency: The landfill levy is currently €65/t (since 1st July 2012). A direct policy on user charges was not included in the plan however with the exception of Killarney Town Council, all authorised household waste collectors within this Region have been issued a Waste Collection Permit (WCP). Over €800,000 in grant aid was given by Environmental Protection Agency to the Limerick/Clare/Kerry Region since 2006 and successful diversified projects were carried out in many areas.

21.LIFE project: "RCYCL”	
Country	Belgium
Level	Regional
Name of region/city	7 municipalities of the German-speaking Community in Belgium (Eupen, Aubel, Baelen, Plombières, Kelmis, Limbourg, Lontzen and Raeren. The small town/village target region has a total of 65,000 inhabitants covering an area of around 400 km.
Population density	The small town/village target region has a total of 65,000 inhabitants covering an area of around 400 km.
Operator/Partners	The Ministry of the German-speaking Community of Belgium, NPMA RCYCL
Targets	Reduction in the quantities of bulky waste assigned to landfills by 60 to 80%
Instrument Type	Organization of waste collection: bulky wastes collection service, recycling and re-use scheme (in most cases, free) Social instruments: Through the cooperation with 2 schools a total of 35 trainee positions were created; about 3.000 hours of training were given per month.
Sources/References: LIFE programme Website http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=811 Project Publication http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=LIFE99_ENV_B_000640_LAYMAN.pdf	

Rationale for inclusion

Abstract/Status/Success: The pilot project, "RCYCL", addresses the re-use and recycling of bulky wastes through a holistic approach based on environmental, social and economic considerations. The project aimed to demonstrate the viability of a pre-industrial re-use and recycling structure set up for bulky wastes. It would lead to a reduction in the quantities of bulky waste assigned to landfills, while offering socially unprivileged people real insertion opportunities. The intention was also that the project would become self-supporting and that the activities would be extended on a permanent basis beyond the LIFE financial contribution. It would multiply the services rendered to society while keeping the costs for treatment of bulky wastes at the same level.

The bulky wastes collected by the sorting centre increased steadily from 88 tonnes in 2000, 367 tonnes in 2001 to 850 tonnes in 2002 and 298 tonnes in the first 4 months of 2003. Besides this, 160 tonnes of electrical appliances were also collected in 2002 by the beneficiary. The project partners collected another 250 tonnes in 2002. More than 80% of the collected wastes could be either recycled (70%) or reused (10%). This is much higher than in a normal bulky wastes collection system where maximally 15% is recycled or re-used; this means that about 500 tonnes per year are prevented from being sent to landfill or incineration.

Targets and current legislation: The project would lead to a reduction in the quantities of bulky waste assigned to landfills (by 60 to 80%).

Transferability: In principle, the realization of the project would be transferable to other regions. During the project it was noticed that different conditions are beneficial to the setting up of such a project, e.g. (1) High environmental awareness of residents in the catchment area; (2) The geographical proximity of high and low-income populations: delivery and receiving of second-hand articles; (3) In larger agglomerations: large numbers of households on a small square km area, few storage possibilities for the households, often empty warehouses, (4) high unemployment rate = strong potential of workers; (5) The will of the local public authorities to support social projects; (6) The presence of operators with experience in the areas of recycling and re-use of bulky refuse.

Cost efficiency: The financial viability was not fully proven: the project was not self-supporting and this was not expected to happen in 2003 or 2004. However, the continuity of the project was ensured in that the key partners had sufficient faith to continue the activities after the LIFE contribution. The LIFE project had a funding of 250,000 Euro/year (2000-2002). Around 50% of personnel costs subsidised by the EU. The local authorities fund the service to the tune of 150-180 Euro/t, Revenue from electrical recycling: approximately 160 Euro/t.

22.Proximity (farm) composting	
Country	Austria
Level	Regional
Name of region/city	District of Freistadt
Population density	Rural
Operator/Partners	Municipality
Targets	The following targets were set: Reduction of residual waste by 40 % (by weight 28%). It was assumed that the bio - waste would be collected separately, that a sufficient number of farm composting plants would be created, covering the whole surface of the district. This project has already been implemented in 1992.
Instrument Type	Agreements/ contracts, subsidies for the set up of the composting plants, Communication/ sensitization, support instruments
Costs	-
Sources: http://www.miniwaste.eu/mediastore/fckEditor/file/Miniwaste_good_practices_inventory.pdf; http://www.wasman.eu/media/uploads/deliverables/WASMAN_Best_Practice_Report.pdf (p.53) (report on case study as best practice)	

Rationale for inclusion

Abstract/Status/Success

This project aimed at removing bio-waste from residual waste, use of compost as a valuable fertilizer and soil conditioners, development of a new source of income for farmers through community activities in the services sector, promotion of awareness in the public process and strengthening of regional employment situation. In order to accomplish the set goals 20 farmers as full scale partners in bio-waste collection and farm composting were incorporated in to this scheme.
Reported data shows a collection rate of 149 kg/in/y, by which 80% of the compost produced is used in agriculture and 20% is sold to private customers.

Targets and current legislation:

The objectives set within the project refer to the Austrian Compost Ordinance (2001).

Transferability:

It is important that as many meetings as needed are organised with all stakeholders prior to the onset of the project where various issues have to be clarified: machinery equipment, presentation of the compost training program, determining which farmers will compost and similar. A training course was mandatory and essential condition for signing a contract with the local municipalities to take part to the project.
For a successful implementation, it was noticed the importance for inhabitants that separate collection is convenient, odourless and optimal collection schemes adopted. Also special offers like for delivery and collection of bulky garden waste are a welcomed instrument for customer stimulation and attraction for separate collection

Cost efficiency: -

Other findings:

As a result, today 280 to 300 professionally trained farmers treat about 300,000 t of the collected organic waste. The mean throughput is 1,000 t per year. It is estimated that >35% of the entire compost produced in Austria is used in agriculture. For Agricultural Composting Plants the use of compost on their own agricultural land is estimated with 70 to 90%.

23.Wallonian Waste Plan	
Country	Belgium
Level	Regional level
Name of region/city	Wallonia
Population density	208 person per km² The Walloon region has a total of 3.5 Million inhabitants in 262 municipalities.
Operator/Partners	In Belgium, waste management policy is organised at the regional level. The wallonian municipalities are grouped together in eight intermunicipal associations that are the main operators of household waste management. The Municipalities are the competent authorities for local taxation on household waste management.
Targets	
Instrument Type	The municipalities have implemented PAYT schemes Some cities have adopted volume-based systems based on the issue of 'free' bags per year with a pay-per-bag charge applying to additional bags to be uplifted. Others have adopted a weight-based system for which no additional charge is made to householders who restrict their waste below a specified mean weight.
Costs	The average price of a 60l bag in the Walloon Region has risen from 0.86€ in 2005 to 1.04€ in 2011.
Sources/References Wallonian Waste plan 2010 http://environnement.wallonie.be/rapports/owd/pwd/index.htm Charging for household waste – factsheet from Wallonian Government http://tinyurl.com/bswanb4 Municipal waste management in Belgium (EEA 2013) http://tinyurl.com/cngr97p	

Rationale for inclusion

Abstract/Status/Success Since 2010 Wallonia has experienced a drastic change in recycling rates. The most significant increase is commonly attributed to a very large increase in landfill taxation from 25€/t in 2008 to 65€/t in 2010. This increase in taxation led to a change in total MSW recycling rates from about 16% in 2006 to just below 40% in 2008. This means that on the regional level, Wallonia still needs additional effort to reach the overall recycling target of 50% in 2020

Targets and current legislation: Wallonian Waste policy has been organized around waste management plans. A first plan from 1991 to 1995 set out the general objectives of preventing waste generation as well as material and energy recovery. If fostered the optimisation of both waste management technologies and infrastructure. An additional objective has been the development of a suitable institutional framework.

The second plan implemented from 1998 to 2010 built on the initial plan but indicated in addition specific quantitative targets such as halving the amount of MSW generated by 2010.

Transferability: Due to the distribution of tasks on the intermunicipal level has resulted in the implementation of different PAYT schemes. These can be consulted as exemplary cases for the implementation of similar schemes.

Other findings: According to statistics from SPW (Wallonian public service) pay by weight schemes give the best results followed by pay by volume schemes. Both approaches are superior to setting aside a fixed budget share for waste management which is an option that has disappeared from Wallonia by now.

The costs of municipal waste management that have been borne by the municipal authorities in Wallonia have been set by decree. They were set at a minimum rate of 75% in 2008 and have to achieve at least 95% in 2012, not exceeding 110%.

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