





## Deliverable 1.1

TASK 1.1 SPECIFICATION – AND VALIDATION – OF KEY PARAMETERS FOR COLLECTION SYSTEMS

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## Introduction

About 500 kilogrammes of municipal waste per capita are generated every year in the EU. These wastes contain large volumes of valuable materials for Europe's industrial base. Proper collection of waste is a pre-condition for their optimal recovery. The current trend of increasing higher collection rates is promising, but progress is uneven between Members States and between regions.

Good regional practices have the potential to serve as good practice examples for other regions. So far, however, results of existing studies and good practices have not been effective enough in supporting the implementation of better-performing systems elsewhere. The main objective of the COLLECTORS project is to overcome this situation and to support decision-makers in shifting to better-performing collection system.

COLLECTORS will therefore:

1. Increase awareness of the collection potential by compiling, harmonising and presenting information on systems for Packaging and Paper Waste (PPW), Waste Electrical and Electronic Equipment (WEEE) and Construction & Demolition Waste (CDW) via an online information platform.

2. Improve decision-making on waste collection by the assessment of twelve good practices on their performance on:

- (1) quality of collected waste;
- (2) economics;
- (3) environment;
- (4) societal acceptance.

3. Stimulate successful implementation by capacity-building and policy support methods that will increase the technical and operational expertise of decision-makers on waste collection.

4. Engage citizens, decision-makers and other stakeholders throughout the project for validation of project results and to ensure the usability of COLLECTORS-output.



The COLLECTORS project covers the following waste groups/streams:

- Packaging and Paper waste from private households and similar sources:
  - Paper & cardboard packaging and non-packaging;
  - Plastic packaging;
  - Metal packaging;
  - Glass packaging;
  - Beverage composites;
- Waste Electrical and Electronic Equipment from private households and similar sources;
- Construction and demolition waste with a focus on wastes that are managed by public authorities.

In general, the waste management chain from waste generation to waste collection and the first treatment step is investigated per waste stream.



# Methodology for selection of parameters

The first task **"Specification – and validation – of key parameters for collection systems"** is related to the **identification and selection of parameters** that are suitable for describing and assessing key elements of waste collection systems. Based on the **final list of key parameters**, an inventory on waste collection systems can be prepared.

## Identification of preliminary list of parameters in literature

The first objective of task 1.1 is to **identify as many parameters as possible**, to ensure that no relevant parameters are missed. In addition, the focus is to identify parameters that either:

a) describe the context a waste collection system is embedded in (e.g. population, climate, geography etc.);

b) are not waste stream specific but potentially interesting for developing "parameter groups" (e.g. waste generation, waste collection etc); or

c) describe characteristics of waste collection systems for specific waste streams (PPW, WEEE, and CDW).

## Literature database

In a first step, a list of all material and literature to be screened for parameters has been elaborated; an initial list of literature as included in the project proposal was used as a starting point. In addition, a desk research has been conducted to identify literature related to parameters for waste collection. Project partners have also been asked to share relevant information sources.

## Overall, this resulted in a list of approximately 300 information sources for the parameter identification.

These sources were systematically screened for parameters. Therefore, an Excel database summarising all literature was created sorting all single sources according to the type of information it contained. The following information was assessed per information source:

- Short ref.
- Title
- Date (year)



- Author/publisher
- Doc. Type
- Original file name
- Link
- Country covered
- Language of the document
- Screening status (y/n)
- Covers additional stream (y/n)
- Comment
- Information on PPW, CDW or WEEE
- Original source

Short ref.	🚽 Title	🗾 Date	e 🔽 Author/pul	blisher 🔄 🔽 Da	c. 🔼 Link	Countr	Language
2014, Case study	on WEEE in FI, bio I Case study on WEEE in Fin	and 2014	4 bio Intelligen	ice Service PD	F <u>Link</u>	FI	English
2014, Case study	on WEEE in DK, bio Case study on WEEE in De	nmark 2014	4 bio Intelligen	ce Service PD	F <u>Link</u>	DK	English
2014, ACR+, The E	U Capital Cities Warhe EU Capital Cities Waste	e Managn 2014	4 ACR+	PD	F <u>Link</u>	IE, UK, D	k English
2013, The Croatian	Parliament, HR NaAct On Sustainable Waste	Managem 2013	3 The Croatiar	n Parliament PD	F <u>Link</u>	HR	English
2013, R4R, Municip	al Solid Waste Dat Municipal Solid Waste Data	- R4R Pri 2013	3 R4R	PD	F <u>Link</u>	DK, IE, A	T English
2013, Ministerium	ür Wi, DE Rhinelan Abfallwirtschaftslan Rheinla	nd-Pfalz 💈 2013	3 Ministerium	fürWirtschaft PD	F <u>Link</u>	DE	German
2013, CWIT, WP2	D2-1 Mapping of W Work Package 2: WEEE Ac	tors and 2013	B CWIT	PD	F <u>Link</u>	Europear	n English

#### Figure 1: Excerpt of the literature database

The database summarises relevant literature sources for each of the three waste streams on a separate sheet, providing a comprehensive overview. In addition, a fourth sheet collates all sources. Thus, this database can further be used as a starting point for the systematic identification of collection systems per waste stream.

## Screening of literature

Based on the literature database the project team started systematically screening each source identified per waste stream for parameters. To compile the parameters a dedicated database was designed based on several aspects that are relevant for parameters to assess waste collection system. These aspects are well known to the project team in the light of previous studies with similar focus. They are summarised hereafter.

Firstly, parameters can be grouped in three main categories:

- Quantity-based parameters reflect an amount of waste divided by a normalising factor, such as population and year, population equivalent (eqpop) and year, area and year, etc. They provide a good overview of overall waste management performance in absolute terms as well as insights on how the waste management develops over time. However, this type of parameters has limitations because it is highly dependent on external factors.
- **Performance ratios** are defined as percentages and are especially useful for specific waste fractions. These indicators are more complex because they put absolute terms in relation to each other, e.g. capture rates. This provides a good overview of the actual waste management performance for a waste management phase (collection, treatment, etc.) or a specific waste



fraction (glass, paper, etc.). The performance ratio parameters can have limitations, such as data availability issues or their dependence on external factors such as the presence of Extended Producer Responsibility (EPR) systems, weather, tourism etc.

• Qualitative parameters are a good parameter for features of a collection systems that cannot be assessed with quantitative data but can be described only. This includes two main categories of features: a) waste strategy and instruments and b) external factors whose influence is difficult to quantify. Some examples of waste strategies and instruments are: equipment used, legal framework, economic instruments, costs and incomes, communication activities; examples for external factors are: consumption patterns, geography, type of housing, weather, tourism etc.

Secondly, as aforementioned there is a difference between parameters describing the context the waste collection system is embedded in and parameters that describe the actual collection of the three waste streams. Thus, the following main assumptions should be considered:

- There are **general parameters** relevant for describing a waste collection system, that are waste independent, e.g. population size.
- There are **overarching parameters** for waste collection and can be applicable to the assessment of any waste collection system independently of the waste stream, e.g. generation per capita.
- There are waste stream **specific parameters** that are very specific to the collection of a certain waste stream and are not directly transposable to another waste stream.

Note: the distinction between general parameters, overarching parameters, and specific parameters as described above has been an **intermediate working step**, in particular to get a better overview of the hierarchy of different parameters and potential parameter groups; at a later stage, the groups "overarching parameters" and "waste stream specific parameters" have been merged (see description in section "pre-assessment of identified parameters" below).

Thirdly, to make the screening process as efficient as possible and to use synergies with the following task under this WP 1 (task 1.2 selection of parameters), it is important to assess important features per parameter identified already during the screening. This includes inter alia features related to the points outlined above. It is important to assess whether a parameter is operational, meaning that it can be calculated based on data usually available and if the parameter has already been in use to support this assessment. It is also important to categorise parameters directly based on the broader topic they assess such as waste generation, collection, economic features of the collection system, social aspects etc. Further, it must be assessed if a parameter is general, overarching, or specific (see above).

All these aspects are reflected in the design of the database for the parameter identification, which summarises information on the following:

- **Parameter group:** group the parameters depending on either the waste management phase they are applicable to, the external factor it addresses.
- **Single parameter name:** Definition of a short name for the parameter.



- **Description:** brief description of what the parameter intends to measure.
- **Sub-stream:** is the parameter also applicable to sub-streams of an overarching waste stream. The overarching waste streams are PPW, CDW, and WEEE, sub streams are e.g. paper in PPW; bricks in CDW, or batteries in WEEE.
- Unit: the unit in which the parameter can be assessed, this refers to the grouping of parameters as described above under quantity based parameters, performance ratios and qualitative parameters.
- **Country, Region, City**: was the parameter identified within a specific geographical context.
- **operational (y/n):** assessment whether data/information for the parameter assessment is available and if it has already been used as a parameter to support this evaluation.
- **Source (short ref):** Data source where the parameter was identified.
- **Applicable for other stream**: Is the parameter also applicable for another waste stream, an if yes for which one.
- Comment: Additional relevant information on the parameter

				,	1	Source	Also appli
Parameter group	J Single parameter name	Description	Sub-stream	Unit 🔽	Country, Region, City	(short ref)	le fo othe
Challenges	Past challenges with waste prevention, collection			Qualitative		Requester	
Challenges	Current challenges with prevention, collection an			Qualitative		Requester	
Challenges	Past challenges with collection	Such as impurities, vandalism, inac		Qualitative		(no date)	
Challenges	Current challenges with collection	Such as impurities, vandalism, inac		Qualitative		(no date)	
Challenges	Past challenges with treatment	Such as impurities, inconvenient di		Qualitative		Requester	
Challenges	Current challenges with treatment	Such as impurities, inconvenient di				Requester	
Challenges	Price relation of primary and secondary resource			€/t			v
Challenges	Disadvantages of the collection system		y	qualitative		WEEE cas	e v
Challenges	Level/power of jurisdiction as regards waste mar	agement	v	qualitative		local legis	
Challenges	Do other challenges exist	e.g. primary raw materials are stil		quantative	Austria	RE4 Proje	
Drivers	Advantages of the system	ergi prinary ran materialo are och	v	qualitative	, aberra	WEEE cas	
Drivers	Golden rules and best practices of the collection s	system	y	qualitative		WEEE cas	
Drivers	Budget spent on information campaigns	ystem	y Y	€		partly WE	
Drivers	Existence of a stakeholder platform to exchange	on the collection system	v	ves/no	EU-28	WEEE per	
Economic features	Set-up costs	Set-up costs to implement a specifi		€	EU-28	2015, BiP	
Economic features	Running costs	Running costs for the operation of a		€/year; €/cap		2015, BiP	
Economic features	Source of funding/funding mechanism	Regional tax; regional budget; spe		Oualitative	EU-28	2015, BiP	
Economic features	Revenue/Amount of funding per funding mechani			€	EU-28	2015, BiP	
Economic features	Cost for households	Regional tax, regional budget, spe	y V	€/collection; €		2015, BiP	
Economic features	Market value of recyclates		y Y	€/t	FU-28	2015, Dir	
Economic features	Market size for recyclates		y Y	t/v		2013, (IIO 2012, We	
Economic features	Revenue from sale of recyclates		y V	€			V
Economic features	Economic local instruments involved	Deposit scheme; fine for illegal dur	1	Oualitative	EU-28	2014, R4F	/
Economic features	cost for housholds	type of costs e.g. fees, tax, per ba		qualitative	EU-28	SR5, WMF	/
Economic features	construction cost	type of costs e.g. rees, tax, per ba	V	€	EU-28	SR5, WM	
Economic features	transportation cost		y V	€	EU-28	SR5, WM	
Economic features	equipment cost		/	€	EU-28	SR5, WM	
Economic features	land cost		y y	€	EU-28	SR5, WM	
Economic features	power		y V	€	EU-28	SR5, WM	
Economic features	labour		1	€	EU-28	SR5, WM	
Economic features	avoided costs		У	€	EU-28	SR5, WM	
Economic features	additional income		У	€	EU-28		
Economic features	Modulation of fees based on true cost of waste m		y P	ves/no	EU-28	SR5, WMF WEEE Per	
Economic features	cost efficiency	??	n #	1	LU-20	WEEE Per	. y
	Level of landfill charges	11		qualitative	EU-28	JASPERS	-# 5.4
Economic features Economic features	Taxes on virgin materials		n ves	€/t €	EU-28 Italy	EU CDW F	
		a a far promotion and support of t			Italy		
Economic features	Remaining revenues from landfill taxes Creating stimulating environments - "Separation	e.g. for promotion and support of v		qualitative		EU CDW F	y
Economic features	gets cheaper than not separating"	Cost reduction is an important driv		qualitative / €	Netherlands	NL bio	У
Economic features	Innovative business models	do innovative business models exis	yes	yes/no	Netherlands	NL bio	У
Economic features	Landfil tax		n	yes/n	EU-28	Waste dat	ty

Figure 2: Excerpt of the parameter database



## Pre-selection of parameters based on the "five basic principles"

This step is related to the selection of parameters that shall be assessed and included in the inventory analysis of waste collection systems (Task 1.2.). The eventual set of parameters upon which the waste collection systems are to be evaluated will, in addition to the pre-assessment by the project team, be validated regarding their usefulness for decision-makers via a participatory approach. Therefore, during the first regional working group in March 2018, regional and local authorities are to be consulted regarding their considerations to further specify and validate the parameter. This step is highly important also to allow for the effective multi-attribute comparison of the waste collection systems throughout the project.

## Five basic principles

The overarching methodology that shall be applied for the selection of parameters is based on the five basic principles as defined by Keeney and Raiffa<sup>1</sup>. All parameters used for the inventory need to meet certain criteria to present a neutral comparison of information on different waste collection systems. For this purpose, the five basic principles of criteria selection will be applied by the project team and when liaising with the Regional Working Group (RWG) for the selection:

- **Completeness**: The chosen set of parameters shall allow achieving the project's goal. Therefore, it must cover all relevant aspects of the research subject. For the context of COLLECTORS, the parameters must comprise all aspects relevant to compare different waste collection systems. Therefore, it is necessary that parameters of different categories are included, e.g. parameters regarding the actual waste management stage (generation, collection, transport, treatment) but also ecologic, economic, social, political, etc. aspects.
- **Operational ability:** The chosen set of parameters needs to be operational, i.e. need to be useful and meaningful to allow a comparison of different alternatives (in this case collection systems) against the project's goal. To be operational, the parameters need to help understanding the differences between the compared alternatives and should be usable for explaining such differences. Any chosen parameter for this research needs to be useful for regional decision makers who want to compare different collection systems. Also, data for existing waste collection systems per chosen parameter needs to be already available.

<sup>1</sup> Raiffa, H. and Keeney, R.L. (1975): Decision Analysis with Multiple Conflicting Objectives, Preferences and Value Tradeoffs, IIASA Working Paper, WP-75-053.



- Decomposability: The chosen set of parameters needs to be decomposable. In a complex decision-making process where many alternatives are compared against each other, the chosen set of parameters needs to show a certain level of detail. The aim should be to enable a split of the overall decision into many small decisions according to the chosen parameters. For this research this means that e.g. several parameters for the waste management stage need to be chosen. A general comparison of waste collection systems (i.e. one big decision) cannot be decisive as the decision-maker may not oversee all aspects. By contrast, a 'decomposed' decision (i.e. several small decisions) based on different parameters reflecting the waste management stage (e.g. parameters about waste generation, waste collection points, quality of the collected waste, etc.) allows the decision maker to choose an alternative (i.e. collection system) by comparing the alternatives alongside the different parameters.
- Non-redundancy: The chosen set of parameters should not include redundant parameters. Hence, parameters should not query the same information or information which will overlap to avoid double counting. Hence, there should not be a) parameters for the collected amount of waste and the population and b) a parameter for collected waste per capita.
- **Minimalism:** The chosen number of parameters should be kept to the minimum (without harming the aspect of completeness as described above) as each chosen parameter complicates the decision-making process.



## Initial internal consultation on parameters

In addition to the parameters identified via the screening of literature, partners of the project, i.e. the ones responsible for Task 1.3, WP 2 and WP 3, were asked to share relevant parameters with BiPRO to be included in the parameter database. BiPRO obtained the following input by partners:

#### Table 1: Overview of parameters requested by partners

Parameters requested by partners	Parameter(s) attributed by BiPRO matching requirement
Requested by VITO	
Quality	<ul> <li>Covered by parameter group "waste treatment": first sorting step, recycling rejects, misthrows</li> </ul>
Price	Covered by parameter group "economic features"
Commercialisation	Responsibilities for collection, policy
The final destination and application of the recycled waste to differentiate between high value and low value recycling	<ul> <li>Information going beyond the first treatment (input and output, where possible) is difficult to obtain. Additional information can be covered by parameter "sorting / treatment steps" (all streams), where available</li> </ul>
Requested by VTT	
Collection rate	<ul> <li>Covered by parameter group "waste collection": capture rate (collection rate)</li> </ul>
Share of separately collected waste	Covered by parameter group "waste collection"
Removal of harmful substances	<ul> <li>Covered by parameter group "waste treatment": to be defined per waste stream, what information is available (first treatment)</li> </ul>
Benefits, data availability	<ul> <li>Financing mechanisms are covered by parameter group "economic features"; sufficient data availability is evaluated by applying five basic principles</li> </ul>
Running costs (OPEX)	Covered by parameter group "economic features"
Set-up costs (CAPEX)	Covered by parameter group "economic features"
Acceptability, job creation	<ul> <li>Covered by parameter groups "social aspects" (acceptance) and "economic features" (job creation)</li> </ul>

Parameters requested by partners	Parameter(s) attributed by BiPRO matching requirement
Necessary framework conditions	<ul> <li>Covered by parameter group "influencing policy"</li> </ul>
Financial	Covered by parameter group "economic features"
Knowledge and time capacities for implementation of a collection system and the acceptance of a scheme	<ul> <li>Covered by parameter group "performance over time"</li> </ul>
Past and current challenges/problems	<ul> <li>Covered by parameter group "challenges and drivers"</li> </ul>
Requested by PNO	
САРЕХ	Covered by parameter group "economic features"
OPEX	<ul> <li>Covered by parameter group "economic features"</li> </ul>
Lifetime of investment/machine	Not included yet, to be discussed
% recycled material	<ul> <li>Information going beyond the first treatment (input and output, where possible) is difficult to obtain. Additional information can be covered by parameter "sorting / treatment steps" (all streams), where available</li> </ul>
Quality recycled material	<ul> <li>Information going beyond the first treatment (input and output, where possible) is difficult to obtain. Additional information can be covered by parameter "sorting / treatment steps" (all streams), where available</li> </ul>
Employment (FTE's)	Covered by parameter group "economic features"
Barriers for acceptance /challenges	Covered by parameter group "challenges & drivers"
Involved finance schemes (private/ public/ subsidies)	<ul> <li>Covered by parameter group "economic features"</li> </ul>
Consumer fees	Covered by parameter group "economic features"
Requested by Leiden University	



Parameters requested by partners	Parameter(s) attributed by BiPRO matching requirement
Total amount of waste treated (mass)	<ul> <li>Covered by parameter group "waste treatment"</li> </ul>
Total amount of waste (mass) untreated	<ul> <li>Covered by parameter group "waste treatment"</li> </ul>
Container size	<ul> <li>Covered by parameter group "waste collection"</li> </ul>
Container material	<ul> <li>Covered by parameter group "waste collection"</li> </ul>
Pre-collection separation?	<ul> <li>Not clear; source separation of single fractions covered by parameter group "waste collection"</li> </ul>
<ul> <li>Transportation:</li> <li>Mode: truck, train, ship</li> <li>Distance(s)</li> <li>Capacity/size of trucks, trains or ships</li> </ul>	<ul> <li>Covered by parameter group "waste collection"</li> </ul>
Separation process	<ul> <li>Source separation covered by parameter group "waste collection"; first treatment (sorting) covered by parameter group "waste treatment"</li> </ul>
Landfill	Covered by parameter group "waste treatment"
Incineration	Covered by parameter group "waste treatment"
Sorting including output materials (amount)	<ul> <li>Covered by parameter group "waste treatment"</li> </ul>
Area of treatment plant m2	<ul> <li>(initially covered by parameter group "environmental criteria", parameter not selected)</li> </ul>
Description of machinery	Not included.
Resource use (energy, water)	<ul> <li>(initially covered by parameter group "environmental criteria", parameter not selected)</li> </ul>
Amounts of materials recovered	<ul> <li>Information going beyond the first treatment (input and output, where possible) is difficult to obtain. Additional information can be covered by parameter</li> </ul>



Parameters requested by partners	Parameter(s) attributed by BiPRO matching requirement
	"sorting / treatment steps" (all streams), where available

The project team assessed whether there are overlaps with already identified parameters. Where not, requested parameters have been added to the database as new parameter.

## Pre-assessment of identified parameters

As the project team selected an inclusive approach for the parameter identification, meaning a screening that included all parameters identified in the literature per waste stream, many parameters were compiled within the previous step. With the objective of obtaining an operational number of parameters to be discussed at the meeting in Treviso the project team conducted a preassessment and selection in line with the five basic principles, i.e. operational ability and non-redundancy. The principles completeness, decomposability, and minimalism shall be applied for the final selection of parameters during the meeting in Treviso with the external experts.

The following steps have been applied by the project team to pre-select parameters:

- 1. As all parameters identified were listed per waste stream (PPW, CDW, WEEE) numerous parameters of the category overarching were **duplicates** to each other. The project team started by assessing each parameter to identify duplicates. Duplicates are parameters that are identical to each other, e.g. same unit. Each parameter that was a duplicate was marked as such and then excluded from the list of overarching parameters. Note that no parameter was deleted from the database to ensure traceability along the entire selection process. Instead, a filter was inserted for duplicates.
- 2. Although duplicates had been eliminated there remained parameters that were not the same but still referred to the same information of a collection system and thus did not fulfil the principle of **non-redundancy**. As an example, amount of miss throws targets the same information as the impurity rate of a waste stream collected. Analogous to the above step these parameters were filtered out.
- 3. The third step was dedicated to the assessment whether a parameter is really **operational** in the light of what is necessary for the assessment of waste collection systems. To allow a comparison of different alternatives in waste collection it is primordial that information and data on the parameter is available. Hence, the project team assessed whether a parameter is already in use (usually a good indication that data is available across systems) and if it is realistic that data can be gathered for a certain parameter in the later task 1.2. Note that this step was partly a subjective decision by the project team, that was however based on the longstanding expertise of the project team from working with parameters in waste management.



Taking into consideration the feedback of selected partners on the first draft report (version 1), a list of key parameters to be discussed with all project partners and the RWG per waste stream has been prepared and included in the second draft report (version 2):

- **general parameters** including **6 parameter groups**: external factors, population, weather, housing, economy, tourism;
- waste stream specific parameters including **10** parameter groups (note: as described in section "screening of literature above", groups "overarching parameters" and "waste stream specific parameters" have been merged at this stage):

waste generation, waste collection, waste treatment, waste prevention, economic features, environmental criteria, social aspects (acceptance, awareness, communication), influencing policy, performance over time, challenges & drivers.



## Discussion and validation of pre-selected parameters

To make sure that selected key parameters

- a) match with specific information needs of decision-makers in practice and
- b) fulfil requirements for subsequent work packages,

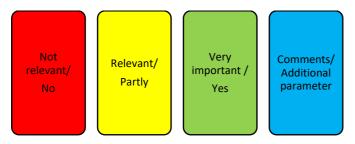
pre-selected parameters per waste stream have been discussed during the first project meeting in Treviso (20 - 22 March 2018):

- 20 March 2018 with General Assembly (interactive poster session)
- 21 March 2018 with Regional Working Group (interactive poster session)
- 22 March 2018 with Expert Group (presentation of results & discussion)

For the interactive sessions, pre-selected parameters as presented in the second draft report were processed and posters have been prepared. The main objective of the interactive sessions has been to discuss the following points:

- Which parameters are useful (relevant) / not useful (not relevant)?
- Which parameters (per parameter group) are most important in practice for decisionmaking?
- Is data on parameters available at local / regional level available (yes/no/partly)?
- Is the overall set per stream ok?
- Clarification of parameter specific questions

The following colour codes have been used:



Below, pictures from the interactive poster sessions are presented.





Figure 3: Colour code system for assessment of pre-selected parameters



Figure 4: Interactive poster session – assessment of pre-selected parameters



Figure 5: Interactive poster session - wrap-up



More detailed information on feedback obtained during the different interactive poster sessions is provided in the **Appendix to this report** (i.e. presentation of all posters by GA and RWG).

In a next step, feedback obtained from different interactive poster sessions has been compiled in an Excel file to

- **Reduce** the number of pre-selected parameters, i.e. remove parameters that were not considered useful or where data at local / regional level is expected to be not available consensus by GA, RWG and the expert group
- **Specify / improve** pre-selected parameters that were considered useful and where data at local / regional level is expected to be (yes/partly) available feedback either by GA or RWG and taking in consideration feedback from the expert group and the expertise of the project team
- Add additional parameters that were considered useful and where data at local / regional level is expected to be (yes/partly) available by GA and RWG

In addition, feedback provided by the expert group has been taken into consideration to get a reasonable set of parameters per waste stream.

The figure below illustrates how information has been processed in the Excel file. The following colour codes have been used in the Excel file:

- red colour: parameter rejected
- green colour: parameter kept
- yellow colour: parameter re-phrased
- blue colour: new parameter added

Note: the decision on parameters that finally have been selected is not based on a strict systematic approach / algorithm but rather on expertise of the project team and in line with the five basic principles (example: if there have been different opinions if a parameter is useful or not or if data is espected to be available or not, the project team made a decision based on experience and objectives of the project).



Figure 6: Excerpt of the Excel file for processing of Treviso feedback



Based on this Excel file, a final set of key parameters per waste stream has been prepared **(see next chapter**):

• general parameters with five parameter groups:

external factors, population, housing, economy, tourism (note: parameter group "weather" removed)

• waste stream specific parameters with nine parameter groups:

waste generation, waste collection, waste treatment, waste prevention, economic features, social aspects (acceptance, awareness, communication), influencing policy, performance over time, challenges & drivers (note: parameter group "environmental criteria" removed because such environmental criteria are already included in other parameter groups and might also be calculated, e.g. emissions resulting from waste transportation).

It is important to note that the **overall set of key parameters** that finally have been selected **will be used in four Work Packages.** However, since not all parameters and parameter groups are equally relevant for all Work Packages and the required level of detail for investigating certain parameters and parameter groups varies, all selected key parameters have been **allocated to different Work Packages**.

For Work Package 1, parameters have been selected

- that are needed to prepare an inventory on 252 waste collection systems under task 1.2 (i.e. interesting parameters that allow stakeholders identifying waste collection systems from the inventory / database, based on specific characteristics, e.g. remoteness, to learn more about such waste collection systems), and
- that are needed to select twelve case studies for in-depth analyses in WP2 and WP3 in dialogue with involved stakeholders under task 1.3, using a multiple-criteria decision-making approach.

All other selected key parameters will be covered by Work Package 2 "Boundary conditions and solutions for implementation of waste collection systems", Work Package 3 "Quantification of costs and benefits", and Work Package 4 "Guidelines for implementation and policy development".

The allocation of key parameters to different Work Packages has been performed internally, in close cooperation with all Work Package leaders. In the final set of key parameters per waste stream as presented in the next chapter, information on the allocation of parameters to different Work Packages is included.



## Selected key parameters General parameters

## **External factors**

Single parameter name	Description	Unit	WP allocation
Area type	Type of area in scope: municipality, group of municipalities, city, agglomeration, other	qualitative	WP 1
Area size	Size of area in scope.	km²	WP 1
Remoteness	Area in scope in regard to its remoteness / connection to the surrounding area: mountain area, island, coastal area, inland – unspecific.	qualitative	WP 1

## Population

Single parameter name	Description	Unit	WP allocation
Population	Number of inhabitants living in the area in scope.	number	WP 1
Population density	Number of inhabitants living in the area in scope in relation to the area size.	inhabitants/km <sup>2</sup>	WP 1

## Economy

Single parameter name	Description	Unit	WP allocation
GDP per inhabitant	GDP per inhabitant in the area in scope.	€	WP 1



## Housing

Single parameter name	Description	Unit	WP allocation
Type of housing	The prevalent type of housing in the area in scope: detached and semi- detached houses (houses where waste collection is expected to be rather non-anonymous, individual bins), multi-family houses: terraced houses, apartment buildings, housing blocks (houses where waste collection is expected to be rather anonymous, shared bins).	share in %	WP 1
Total number of households	The number of households in the area in scope.	number	WP 1
Average size of households	The average size of households in the area in scope.	number/ household	WP 1

## Tourism

Single parameter name	Description	Unit	WP allocation
Tourist overnight stays	Total number of tourist overnight stays in the area in scope and number of tourist overnight stays per inhabitant. Exceptional case: "general parameter" that is relevant for PPW only!	number, number / inhabitant	WP 1
One-day visitors	Total number of one-day visitors (overnight stays excluded) in the area in scope and number of one-day visitors per inhabitant. Exceptional case: "general parameter" that is relevant for PPW only!	Number / pop eq	WP 1



## Waste stream specific parameters

## Packaging and Paper Waste

## Waste generation

Single parameter name	Description	Unit	WP allocation
Scope of municipal waste generated / collected	What is included: household waste, household waste and similar commercial waste, not clear, other / additional	qualitative	WP 1
Total municipal waste generation / collection	Total municipal waste amounts generated/collected and its composition most recent reference year. Main fractions as presented in waste statistics.	t and kg/capita	WP 1
Mixed residual waste composition	Mixed residual waste composition, based on sorting analysis. Share of PPW fractions in %.	%	WP 1

#### Waste collection

Single parameter name	Description	Unit	WP allocation
Responsibility of collection	Responsibility for collection of different PPW fractions. Specification who is leading operations: public authority or private scheme. Per PPW fraction.	qualitative	WP 1
Separate collection of waste fractions	Applied options for separate collection of different PPW fractions and collected amounts in t and kg/capita	tonnes; kg/capita; qualitative	WP 1
Capture rate (collection rate)	Relative amount of separately collected quantity of a material, for	%	WP 1



	different PPW fractions (calculation based on residual waste composition / sorting analysis)		
Bins / containers	Number and size of bins / containers for door-to-door collection of PPW fractions from households	number, qualitative	WP 1
Frequency of door-to-door collection	Collection frequency for door-to- door collection of mixed residual waste and relevant PPW fractions.	number, qualitative	WP 1
Number of bring points per inhabitant	Total number + density of bring points network	total number; number of inhabitants per bring point.	WP 1
Distance to containers	Average (walking) distance for citizen to the next bring point	metres	WP 2, 3, 4
Number of civic amenity sites per inhabitant	Total number + density of civic amenity sites network	total number; number of inhabitants per CAS.	WP 1
Level of sorting in civic amenity sites	Sorting of PPW fractions in civic amenity sites	qualitative	WP 2, 3, 4
Implementation of collection system	Implementation of the current PPW collection system, per fraction: pilot phase, transition phase, fully implemented	qualitative	WP 1
Collection coverage	Percentage of households / area covered by door-to-door separate collection, per relevant fraction.	%	WP 1
Type of transportation and fuel	How are different PPW types transported from point of collection to first treatment plant? Truck, train, ship? What kind of fuel is used?	qualitative	WP 2, 3, 4
Transport distances	Transport distance for different PPW fractions from point of collection to first treatment plant	km	WP 2, 3, 4



#### Waste treatment

Single parameter name	Description	Unit	WP allocation
Impurities / misthrows	Impurity rate in % (calculation: weight of non-target material in collected waste / weight of total collected waste) * 100; or results of sorting analysis); impurities refer to the amount of non-target materials in the separately collected waste stream, i.e. misthrows by residents	%	WP 1
First sorting / treatment: destination	Destination of different PPW fractions after collection	qualitative	WP 1
Output from first sorting / treatment	Output fractions from first sorting / treatment and destination	%, qualitative	WP 1
Subsequent sorting / treatment steps and expected uses	If applicable, subsequent sorting / treatment steps and final recycling rate; expected uses of material fractions	qualitative	WP 1

## Economic features

Single parameter name	Description	Unit	WP allocation
Costs / organisation	Description of - (shared) responsibilities and benefits - funding mechanisms (e.g. fee charged to producers per tonne of household packaging put on the market; level of cost coverage by producers;	qualitative	WP 2, 3, 4



	<ul> <li>funding sources (regional tax; regional budget; special waste</li> </ul>		
	budget; waste fee, including shares;		
Setup costs	Setup costs to establish current collection system for different PPW fractions. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs	€ per y/t/cap; qualitative	WP 1
Annual running	Annual running costs to operate	€ per y/t/cap;	WP 1
costs Fee system	current collection system for different PPW fractions. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs Municipal waste fees to consumer	qualitative	WP 1
ree system	based on: fixed fee, no PAYT elements (flat rate); pay-as-you-throw elements; no clear information; other	quantative	WP 1
Annual municipal	Annual waste fee to be paid by	€ per capita/	WP 1
waste fee per	private households for municipal	household	
household	waste management, breakdown		
	(estimate) of share of PPW stream and per relevant PPW fraction, where		
	possible		
Financial incentive	Financial incentive for source	qualitative	WP 2, 3, 4
for consumer to	separation of PPW in place and		
separate waste	communicated to consumer (deposit- refund system excluded) y/n; if yes, qualitative description		



## Social aspects

Single parameter name	Description	Unit	WP allocation
Feedback gathering mechanisms	Existence of citizen feedback gathering mechanisms (surveys, questionnaires) and information on behavioural insights y/n; If yes, qualitative description of citizen feedback and / or insights (where available the relation to the level of annual waste fee the private households need to pay – cost to consumer)	qualitative	WP 1
Socio-cultural background of citizens influencing PPW collection	Information on source separation ability, cultural and educational background, age of citizens - influence on waste management practices? If yes, description	qualitative	WP 2, 3, 4
Awareness raising and communication addressing citizens	<ul> <li>Existence of awareness raising measures (γ/n)</li> <li>information campaigns for consumers, including number of campaigns</li> <li>support services (interactive help line by internet or phone) providing guidance or help to citizens regarding waste sorting and collection;</li> <li>If yes, qualitative description</li> </ul>	qualitative	WP 2, 3, 4
Stakeholder engagement	Existence of platforms (developed by local/regional authorities): - bringing together different public and private stakeholders on regular or non-regular basis - contributing to improving/ facilitating cooperation along the value chain; If yes, qualitative description	qualitative	WP 2, 3, 4



Capacity building and training addressing authorities	Existence of capacity building activities and training programmes addressing authorities; If yes, qualitative description	qualitative	WP 2, 3, 4
Employment	People employed in the municipal waste management sector (direct jobs), specified for PPW stream if data available; short description, what kind of jobs are included in statistic / estimate	number; qualitative	WP 1

## Influencing policy

Single parameter name	Description	Unit	WP allocation
Extended producer responsibility	Existence of an EPR scheme on PPW fractions	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste prevention	Waste prevention targets / legal provisions on prevention of PPW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste collection	Waste collection targets / legal provisions on collection of PPW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste treatment	Waste treatment targets / legal provisions on treatment of PPW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4



Guidelines	PPW management system implemented in line with specific planning guidelines that are available at national/regional/local level y/n (note: documents providing guidance on planning & implementation of waste collection systems in practice, not legal provisions); if yes, qualitative description	qualitative	WP 2, 3, 4
Procurement	Existence of specific procurement requirements, enhancing sustainable waste treatment and / or data collection (e.g. tracking of waste until final destination / final recycling step)	qualitative	WP 2, 3, 4
Control	Control mechanisms in place to ensure there is compliant PPW management y/n; if yes, qualitative description	qualitative	WP 2, 3, 4
Penalties, sanctions, fines	Are penalties, sanctions, fines for non-compliant management of PPW fractions in place y/n; if yes, qualitative description	qualitative	WP 2, 3, 4

## Performance over time

Single parameter name	Description	Unit	WP allocation
Development of separately collected amounts in the last five years	Development of separately collected PPW in the last five years in tonnes, per PPW fraction.	tonnes	WP 1



Development of capture rate in the last five years	Reference to parameter "Capture rate (collection rate)"; development of capture rate in the last five years before most recent reference year	%/year	WP 2, 3, 4
Development of quality of collected material in the last five years	Reference to parameter "Relative amount of waste stream rejected for recycling after first treatment"; development of quality of collected material in the last five years measured as amount of impurities in separately collected fractions (= misthrows), sorted out during first sorting step, per PPW fraction; misthrows / impurities refer to the amount of non-target materials in the separately collected waste stream;	%/year	WP 2, 3, 4
Evolution of collection system	Evolution of collection system per fraction / waste type / category over time (e.g. capture rates, amounts collected, collection coverage)	qualitative	WP 2, 3, 4
Gradual improvement or sudden changes	Conclusion on improvement, per fraction / collection type where applicable: - Cat.1: Gradual improvements - Cat 2: Sudden changes - explanation	category 1 / 2; qualitative	WP 2, 3, 4

## Challenges & drivers

Single parameter name	Description	Unit	WP allocation
PPW escaping from formal collection route/system	Is information available on: a) PPW littering b) informal PPW collection c) informal PPW treatment? If yes, short description of problem and potential measures	qualitative	WP 2, 3, 4
Main challenges in the past	Which decisions / actions taken / circumstances hampered positive	qualitative	WP 2, 3, 4



	development of waste collection system, per fraction where available / applicable; lessons learned> what should not be done / cannot be recommended		
Future challenges	Main challenges expected in future	qualitative	WP 2, 3, 4
Main success factors / drivers in the past	Which decisions / actions taken / circumstances supported positive development of waste collection system, per fraction where available / applicable; lessons learned> what should be done / can be recommended	qualitative	WP 2, 3, 4
Influencing factors - conclusion	Main drivers for having the current waste collection system as it is, in a positive and negative way (example: because of available infrastructure, because of economic limitations / options, because of good / poor citizen participation)	qualitative	WP 2, 3, 4



## Waste Electrical and Electronic Equipment

## Waste generation

Single parameter name	Description	Unit	WP allocation
Estimated WEEE generation	Estimated WEEE generation in the area in scope (municipality, city) based on estimate of WEEE generation per capita available at national level; Additional information on local / regional data to be included in remarks section if available (e.g. number and types of products in household stocks)	tonnes	WP 1
Mixed residual waste composition	Share of small WEEE included in mixed residual municipal waste.	%	WP 1

### Waste collection

Single parameter name	Description	Unit	WP allocation
Scope of WEEE collected	What is included: WEEE from households only, WEEE from households and WEEE from similar sources, no clear distinction	qualitative	WP 1
Responsibility of collection	Responsibility for collection of WEEE fractions. Specification who is leading operations: public authority or private scheme.	qualitative	WP 1
Separate collection of waste fractions	Applied options for separate collection of different WEEE and collected amounts in t and kg/capita	tonnes; kg / capita; qualitative	WP 1



Applied collection streams in civic amenity sites	Sorting of WEEE categories / types in civic amenity sites	qualitative	WP 1
Non-retail bring points (e.g. civic amenity sites)	Total number of non-retail bring points and number of inhabitants per 1 non-retail bring point/container	total number; number of inhabitants per non-retail bring point.	WP 1
Retailer bring points	Total number of retailer bring points and number of inhabitants per 1 retailer bring point/container	total number; number of inhabitants per retailer bring point.	WP 1
Mobile collection	Mobile collection points (e.g. waste collection trucks, collection events) available for the end-user; collection frequency; WEEE accepted	number; qualitative	WP 1
Implementation of collection system	Implementation of the current WEEE collection system, per fraction: pilot phase, transition phase, fully implemented	qualitative	WP 1
Collection- synergies with other waste streams	Synergies between, e.g. WEEE and batteries collection systems	qualitative	WP 1

#### Waste treatment

Single parameter name	Description	Unit	WP allocation
Quality of collected WEEE	Amount of WEEE rejected/complaint by treatment operators per container (%-estimation for categories Large Appliances, IT monitors and screens, Cooling Appliances)	%	WP 1



First sorting / treatment: destination	Destination of different WEEE categories / types after collection	qualitative	WP 1
Output from first sorting / treatment	Output fractions from first sorting / treatment of WEEE categories /types and destination	%, qualitative	WP 1
Subsequent sorting / treatment steps and expected uses	If applicable, subsequent sorting / treatment steps and final recycling rate; expected uses of material fractions	qualitative	WP 1

## Waste prevention

Single parameter name	Description	Unit	WP allocation
Waste prevention measures	Specific waste prevention measures on WEEE taken at local level? If yes, qualitative description of measures	qualitative	WP 2, 3, 4
Key measures to promote re- use/reparation	Specific measures to promote re- use/reparation of WEEE taken at local level	qualitative	WP 1

## Economic features

Single parameter	Description	Unit	WP allocation
name			
Costs /	Description of	qualitative	WP 1
organisation	- (shared) responsibilities and benefits		
	- funding mechanisms (fee charged to		
	producers per tonne of WEEE		
	category put on the market; level of		
	cost coverage by producers)		
	<ul> <li>funding sources (regional tax;</li> </ul>		
	regional budget; special waste		
	budget; waste fee, including shares)		

Deliverable 1.1



Setup costs	Setup costs to establish current WEEE collection system. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs	€ per y/t/cap; qualitative	WP 1
Annual running costs	Annual running costs to operate current WEEE collection. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs	€ per y/t/cap; qualitative	WP 1
Fee system	Municipal waste fees to consumer based on: fixed fee, no PAYT elements (flat rate); pay-as-you-throw elements; no clear information; other	qualitative	WP 1
Annual municipal waste fee per household	Annual waste fee to be paid by private households for municipal waste management, breakdown (estimate) of share of WEEE stream and per relevant category / type, where possible	€ per capita/ household	WP 1

## Social aspects

Single parameter name	Description	Unit	WP allocation
Feedback	Existence of citizen feedback	qualitative	WP 1
gathering	gathering mechanisms (surveys,		
mechanisms	questionnaires) and information on		
	behavioural insights y/n; If yes,		
	qualitative description of citizen		
	feedback and / or insights (where		
	available the relation to the level of		
	annual waste fee the private		



	households need to pay – cost to consumer)		
Socio-cultural background of citizens influencing WEEE collection	Information on source separation ability, cultural and educational background, age of citizens - influence on waste management practices? If yes, description	qualitative	WP 2, 3, 4
Awareness raising and communication addressing citizens	Existence of awareness raising measures (y/n): - information campaigns for consumers, including number of campaigns - support services (interactive help line by internet or phone) providing guidance or help to citizens regarding waste sorting and collection; If yes, qualitative description	qualitative	WP 2, 3, 4
Stakeholder engagement	Existence of platforms (developed by local/regional authorities): - bringing together different public and private stakeholders on regular or non-regular basis - contributing to improving/ facilitating cooperation along the value chain; If yes, qualitative description	qualitative	WP 2, 3, 4
Capacity building and training addressing authorities	Existence of capacity building activities and training programmes addressing authorities y/n; if yes, qualitative description	qualitative	WP 2, 3, 4
Employment	People employed in the municipal waste management sector, specified for WEEE stream if data available: direct jobs; short description, what kind of jobs are included in statistic / estimate.	number, qualitative	WP 1



## Influencing policy

Single parameter name	Description	Unit	WP allocation
Relevant additional national/regional/local legislation on waste prevention	Targets / legal provisions on prevention / preparation for re-use of WEEE influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste collection	Targets / legal provisions on collection of WEEE influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description; E.g. thresholds on max. amounts that can be delivered to bring points, etc.	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste treatment	Targets / legal provisions on treatment of WEEE influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Guidelines	WEEE management system implemented in line with specific planning guidelines that are available at national/regional/local level y/n (note: documents providing guidance on planning & implementation of waste collection systems in practice, not legal provisions); If yes, qualitative description	qualitative	WP 2, 3, 4
Standards	Does the majority of the management operators (collection,	qualitative	WP 2, 3, 4



	transport and treatment operators) apply WEEELABEX/CENELEC standards? If yes, qualitative description		
Penalties, sanctions, fines	Are penalties, sanctions, fines for non-compliant management of WEEE types / categories in place y/n; if yes, qualitative description	qualitative	WP 2, 3, 4

## Performance over time

Single parameter name	Description	Unit	WP allocation
Development of WEEE collection per capita in the last five years	Reference to parameter "total WEEE collected"; development of separately collected WEEE amounts in total and per category / type in the last five years before most recent reference year (in kg/capita)	kg/capita/year	WP 1
Development of quality of collected material in the last five years	Reference to parameter "Quality of collected WEEE"; development of amount of WEEE rejected/complaint by treatment operators per container (%-estimation for categories Large Appliances, IT monitors and screens, Cooling Appliances)	%/year	WP 2, 3, 4
Evolution of collection system	Evolution of collection system per fraction / waste type / category over time (e.g. capture rates, amounts collected, collection coverage)	qualitative	WP 2, 3, 4
Gradual improvement or sudden changes	Conclusion on improvement, per fraction / collection type where applicable: - Cat.1: Gradual improvements - Cat 2: Sudden changes; explanation	category 1 / 2: qualitative	WP 2, 3, 4

Deliverable 1.1





## Challenges & drivers

Single parameter name	Description	Unit	WP allocation
WEEE escaping from formal collection route/system	Is information available on: a) WEEE littering or vandalism b) informal PPW collection (theft, scavenging) c) informal WEEE treatment? If yes, short description of problem and potential measures	qualitative	WP 2, 3, 4
Main challenges in the past	Which decisions / actions taken / circumstances hampered positive development of waste collection system, per fraction where available / applicable; lessons learned> what should not be done / cannot be recommended	qualitative	WP 2, 3, 4
Future challenges	Main challenges expected in future?	qualitative	WP 2, 3, 4
Main success factors / drivers in the past	Which decisions / actions taken / circumstances supported positive development of waste collection system, per fraction where available / applicable; lessons learned> what should be done / can be recommended	qualitative	WP 2, 3, 4
Influencing factors - conclusion	Main drivers for having the current waste collection system as it is, in a positive and negative way (example: because of available infrastructure, because of economic limitations /	qualitative	WP 2, 3, 4



options, because of good / poor citizen participation)	



## Construction and demolition waste

### Waste generation

Single parameter name	Description	Unit	WP allocation
Scope of municipal CDW generated / collected	What is included: household waste, household waste and similar commercial waste, not clear, other / additional	qualitative	WP 1
Mixed waste composition	Based on mixed waste / waste composition analysis: % of CDW (or relevant fractions e.g. such as asbestos cement) in mixed waste	%	WP 1

## Waste collection

Single parameter name	Description	Unit	WP allocation
Responsibility of collection	Responsibility for collection of different CDW fractions. Specification who is leading operations: public authority or private scheme. Per CDW fraction.	qualitative	WP 1
Separate collection of waste fractions	Applied options for separate collection of different CDW fractions and	tonnes; kg/capita; qualitative	WP 1

	collected amounts in t and kg/capita		
Civic amenity sites	Total number + density of civic amenity sites network	total number; number of inhabitants per CAS.	WP 1
Level of sorting in civic amenity sites	Sorting of CDW fractions in civic amenity sites, description	qualitative	WP 1
Mobile collection	Mobile collection points (e.g. waste collection trucks) available for the end- user; collection frequency; CDW fractions accepted	number; qualitative	WP 1

### Waste treatment

Single parameter name	Description	Unit	WP allocation
Type of first treatment	First sorting / treatment: destination of different CDW fractions after collection	qualitative	WP 1
Hazardous substances removed before treatment	Especially asbestos	t, %	WP 1
Output from first sorting / treatment	Output fractions from first sorting / treatment and destination	%, qualitative	WP 1



Subsequent sorting /	If applicable,	qualitative	WP 1
treatment steps and	subsequent sorting /		
expected uses	treatment steps and		
	final recycling rate;		
	expected uses of		
	material fractions		

### Waste prevention

Single parameter name	Description	Unit	WP allocation
Measures taken concerning sustainability of the construction sector	Measures taken by authorities to improve/facilitate/ promote: - use of environmentally friendly construction materials, - enhancement of construction sector, - extending life cycle of buildings y/n; description	qualitative	WP 2, 3, 4

## Economic features

Single parameter name	Description	Unit	WP allocation
Costs - organisation	Description of - (shared) responsibilities and benefits - funding mechanisms (e.g. fee charged to producers per tonne of household packaging put on the market; level of cost coverage by producers)	qualitative	WP 2, 3, 4



	<ul> <li>funding sources (regional tax; regional budget; special waste budget; waste fee, including shares)</li> </ul>		
Setup costs	Setup costs to establish current collection system for different CDW fractions. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs	€ per y/t/cap; qualitative	WP 1
Annual running costs	Annual running costs to operate current collection system for different CDW fractions. If possible, breakdown of costs in: waste collection, waste transportation, waste treatment, staff, infrastructure. Elements financed by public authority vs. private schemes / producers. Explanation of all indicated costs	€ per y/t/cap; qualitative	WP 1
Fee system	Municipal waste fees to consumer based on: fixed fee, no PAYT elements (flat rate); pay-as-you-throw elements; no clear information; other	qualitative	WP 1
Annual municipal waste fee per household	Annual waste fee to be paid by private households for municipal waste management, breakdown (estimate) of share of CDW stream and per relevant CDW fraction, where possible	€ per capita/ household	WP 1



## Social aspects

Single parameter name	Description	Unit	WP allocation
Awareness raising and communication addressing citizens	Existence of awareness raising measures (y/n): - information campaigns for consumers, including number of campaigns - support services (interactive help line by internet or phone) providing guidance or help to citizens regarding waste sorting and collection; If yes, qualitative description	qualitative	WP 2, 3, 4
Stakeholder engagement	Existence of platforms (developed by local/regional authorities) y/n: - bringing together different public and private stakeholders on regular or non-regular basis, - contributing to improving/ facilitating cooperation along the value chain; If yes, qualitative description	qualitative	WP 2, 3, 4
Capacity building and training addressing authorities	Existence of capacity building activities and training programmes addressing authorities y/n; if yes, qualitative description	qualitative	WP 2, 3, 4
Employment	People employed in the municipal waste management sector (direct jobs), specified for PPW stream if data available; short description, what kind of jobs are included in statistic / estimate	number; qualitative	WP 1



## Influencing policy

Single parameter name	Description	Unit	WP allocation
Relevant additional national/regional/local legislation on waste prevention	Targets / legal provisions on prevention of CDW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Relevant additional national/regional/local legislation on waste collection	Targets / legal provisions on collection of CDW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description; Example: threshold on max. CDW amount that can be delivered to civic amenity site (fixed or mobile) y/n; if yes, threshold	qualitative	WP 1
Relevant additional national/regional/local legislation on waste treatment	Targets / legal provisions on treatment of CDW influencing local / regional waste management in place (additional to standard EU legal requirements) y/n; If yes, qualitative description	qualitative	WP 2, 3, 4
Guidelines	CDW management system implemented in line with specific planning guidelines that are available at national/regional/local level y/n (note: documents providing guidance on planning & implementation of waste collection systems in practice, not legal provisions); If yes, qualitative description	qualitative	WP 2, 3, 4
Control	Control mechanisms in place to ensure there is compliant CDW	qualitative	WP 2, 3, 4



	management y/n; if yes, qualitative description		
Penalties, sanctions, fines	Are penalties, sanctions, fines for non-compliant management of CDW fractions in place y/n; if yes, qualitative description	qualitative	WP 2, 3, 4

### Performance over time

Single parameter name	Description	Unit	WP allocation
Evolution of collection system	Evolution of collection system per fraction / waste type / category over time (e.g. capture rates, amounts collected, collection coverage)	qualitative	WP 2, 3, 4
Gradual improvement or sudden changes	Conclusion on improvement, per fraction / collection type where applicable: - Cat.1: Gradual improvements - Cat 2: Sudden changes; explanation	category 1 / 2	WP 2, 3, 4

## Challenges & drivers

Single parameter name	Description	Unit	WP allocation
CDW escaping from formal collection route/system	Is information available on: a) CDW littering b) informal CDW collection c) informal CDW treatment, in particular hazardous fractions? If yes, short description of problem and potential measures	qualitative	WP 2, 3, 4
Main challenges in the past	'Which decisions / actions taken / circumstances hampered positive development of waste collection system, per fraction where available / applicable; lessons learned -> what	qualitative	WP 2, 3, 4



	should not be done / cannot be recommended		
Future challenges	Main challenges expected in future?	qualitative	WP 2, 3, 4
Main success factors / drivers in the past	Which decisions / actions taken / circumstances supported positive development of waste collection system, per fraction where available / applicable; lessons learned> what should be done / can be recommended	qualitative	WP 2, 3, 4
Influencing factors - conclusion	Main drivers for having the current waste collection system as it is, in a positive and negative way (example: because of available infrastructure, because of economic limitations / options, because of good / poor citizen participation)	qualitative	WP 2, 3, 4



# Glossary

#### CAPEX

Capital expenditure

#### CDW

Construction and Demolition Waste

#### CO

Confidential; only for partners of the Consortium – regarding the Dissemination Level

#### EPR

Extended Producer Responsibility

#### eqpop

Population equivalent

#### FTE

Full-time equivalent

#### GA

General assembly

#### GDP

**Gross Domestic Product** 

#### **OPEX**

Operational expenditure

#### PAYT

Pay-as-you-throw

#### PP

Restricted to other programme participants - regarding the Dissemination Level

#### PPW

Packaging and Paper Waste

BiPRO – Part of Ramboll



#### PU

Public – regarding the Dissemination Level

RE

Restricted to a group specified by the Consortium – regarding the *Dissemination Level* 

#### RWG

Regional Working Group

#### WEEE

Waste Electrical and Electronic Equipment

#### WP

Work Package



# Appendix – interactive poster sessions - GA and RWG feedback

## General parameters

## General assembly

General Parameters					
ingle parameter name	General Parameters				
opulation [number]	Usefulness	Data availability	Comment		
Population growth [in %]					
20pulation density [inhabitants/km <sup>2</sup> ]					
Median population age [year]	00		Automation and and and and and and and and and an		
Area type [qualitative] begon Cay provo of mes aggeneration	••	••	and the second s		
Area size [km²]			This may		
Remoteness (qualitative) Montain mpion skind - rean moutor	••		apade a sporte reces		
Climate [qualitative] - Mafereneese - constructui - Deaxet - Neede		•			
Type of housing [qualitative] Astronet Sultays Torrest Source Control Source Cont		Dimarks and	Mangapar .		
Total number of households [number]	• •		nerena pro-		
Average size of households [number] Size in persons per household		Children and the second			
GDP per inhabitant [GDP/cap]		is whether system	There is a series they be made and		
Total nights spent in tourist accommodation [number]		The second secon	ntering and the area aread		
Tourism/population equivalents (number of nights spent by tourist per inhabitant)		Contraction of the second seco	and the second of the spectrum.		

Figure 7: Feedback poster - GA - general parameters



## Regional working group

OIPIO Gene	eral Paramet	ters	COLLECTORS WATE COLLECTION SYSTEMS ASSESSED AND COOD FRACTICES EDUPTINES
Single parameter name	General Parameters Usefulness		
Population [number]	Oserumess	Data availability	Comment
Population growth [in %]			identities affired state out performed Articles Anger strate pressions.
Population density [inhabitants/km²]			
Median population age [year]			replan were when all all and
Area type [qualitative] - Regio - Ony - Regio Cobis - Addemention	•••	•	and without to t.
Area size [km²]	•	•	
Remoteness (qualitative) Munitisingen Libbad "herransoa"	• •	•	
Climate [qualitative] Mediemona considered - Coomie Norte	•••	•	Liou SQL - CLIMENT MERCICLAN AND AND OR YORKING ON CONTRACTOR
Type of housing (qualitative) Apartment building terrade lower distance house	• @	• •	<>> 3 ficer (gundandy)
Total number of households [number]	••	•	
Average size of households [number] Dia in panana per honoehold	••	••	charter - charter of charters - in
GDP per inhabitant [GDP/cap]	•	•	
$\label{eq:control_form} \begin{array}{c} \mbox{Total nights spent in tourist accommodation [number]} \\ & \mbox{$\scale{-1:model} add = madel: $\scale{-1:model} add =$			

Figure 8: Feedback poster - RWG - general parameters (PPW group)

General Parameters				
	General Parameters			
Single parameter name	Usefulness	Data availability	Comment	
Population [number]	•			
Population growth [in %]	•	0	1 1 1 1 1 1	
Population density [inhabitants/km <sup>2</sup> ]	•			
Median population age [year]	•	•	any water for the	
Area type [qualitative]	•	•	Construction of the Constr	
Area size [km²]	•	•		
Remoteness [qualitative] - Muuniun rugion - Jaind * Notemote*	٠	•	Varies 7 Store	
Climate [qualitative] Mediterranean continued Oramine Mandel	•	•	Emaculas and Miner ingene	
Type of housing [qualitative] Automet building: terrard forces addated forces	• •	••	Game in head	
Total number of households [number]	•	•	Part Cardina	
Average size of households [number] ize in persons per household	٠		The	
SDP per inhabitant [GDP/cap]	•		and marker flood	
otal nights spent in tourist accommodation [number]	•	•	level in the	
ourism/population equivalents (number of nights spent by tourist per			200 577	

Figure 9: Feedback poster - RWG - general parameters (WEEE group)



Collectors           Dippio         General Parameters           Part of Randoni         PMG				
	General Parameters			
ingle parameter name	Usefulness	Data availability	Comment	
Population [number]	T			
Population growth [in %]				
Population density [inhabitants/km²]				
Median population age [year]				
Area type [qualitative] region Or group of this segmented	C.P.C	es.		
Area size [km²]		al		
Remoteness [qualitative] - Monitalingtion - Island - fortermote*		C.Y.		
Climate [qualitative] Medierranea continental Ocenne Norde	•			
Type of housing [qualitative] - Apartment buildings - terrace houses - detached house	T	1		
Total number of households [number]	GREENS.	2	Not evaluate	
Average size of households [number] Sala in persons per household		۲	the	
GDP per inhabitant [GDP/cap]	1	Topan		
Total nights spent in tourist accommodation [number]		Sta		

Figure 10: Feedback poster - RWG - general parameters (CDW group)



## Packaging and Paper Waste

## General assembly

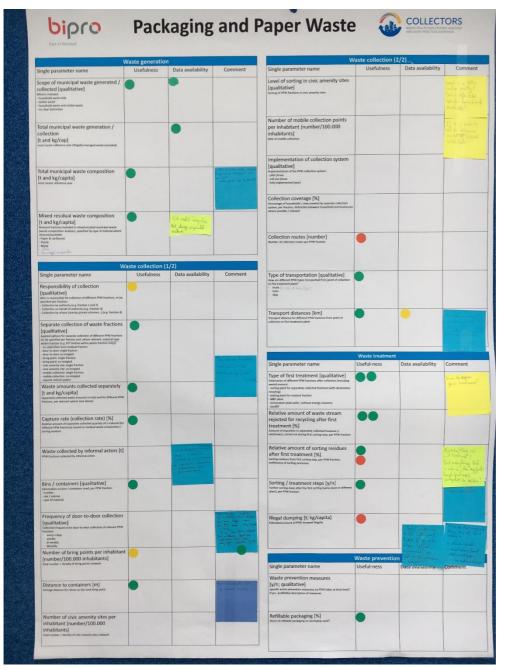


Figure 11: Feedback poster - GA - PPW (poster I)



bipro	Pac	kagin	g and	Paper Wast	e 🥻		CTORS
Part of Rambol						AND GOOD PRACTIC	CES IDENTIFIES
Single parameter name	Economic featur Useful-ness	Data availability	Comment	Social aspects (a Single parameter name	Useful-ness	reness, communic	cation)
Costs / organisation [qualitative] Description of				Acceptance of collection system by citizens [y/n; qualitative]			
<ul> <li>(blend) importidities and locating.</li> <li>Rending mechanisms (a.g. fee charged to producers per torse of hometod publicating part on the market, level of cast coverage by producent)</li> <li>-Initiag sources (regional tace, regional budget, special water longer; waves (regional tace, regional budget, special water longer;</li> </ul>			-	Exitence of citizen freeback gathering mechanisms (survey), questionnaires)			
Integret: wester fort, including shares) Setup costs [€; €/capita] Setus (sols to implement a specific collection system, per PPW Tochion where acculate	•						
traction where possible				Awareness raising and communicati addressing citizens [y/n; qualitative] Existence of awareness raising	on		
Running costs [€/year; €/capita/year]				measures (y/n) - information computings for consumers, including number of Contraction			
Examing only to operate a based on description above)				support services (interactive help lise by internet or phone)     providing goldness or help to oblivery regerding watch sorting a     collector:     fives, qualitative dissolution     Converting to 1.1			
Fee system [Cat 1/2/3] Menicipal water charges to consumer, based on:			No. of Concession	Capacity building and training addressing authorities [y/n; qualitative]			
Mentopal wask charger to consumer based on: -Cell 1: fault feel (Mru (and) -Cell 2: mul of familities & BNYT -Cell 3: PMYT				Distance of expecting activities and training programs addressing authorities			
Financial incentive for consumer to separate waste	•			Stakeholder engagement			
[v/n; qualitative] financel reserve for source separation of PPW is place and communicated to consumer (Argenti estand system emilated)				[y/n; qualitative] Existence of stations bringing together difference public and private stateholders on regular or new-regular basis			
Cost to private households [€/year; €/capita/year]							
€/capita/year] Amul waite for to be paid by private howshold: for musicipal wetter management, breakdown per PPW fraction where possible				Single parameter name	Influencing pol		
Cost for waste collection [€/t] collection out per generated t of PPW (per fraction), including collection & transferation to first treatment plant	•		and a second	Extended and use and a first of the	Useful-ness	Data availability	Comment
			State of the	qualitative] Ditterce of an EVR scheme on PPW fractions			re cano
Cost for waste treatment [€/t] Treatment ont per generated taxes of PPW (per traction)			al y tuber	Legislation on waste prevention			
			Active to a section of the section o	(y/n; qualitative) Wate prevention tagets / kgal previous on presentian of PPW place?	ú.	-	
Level of landfill charges [€/t] Level of typical levelst charges for municipal waste							
			Deserver and the	Legislation on waste collection [y/n; qualitative] where collection targets / liquel provesions on collection of PPW in			
Employment [number] Propie temployed in the municipal wate examplement sector (inversion), oth, or regional level) indirect jobs		and the state of the		hould			
				Legislation on waste treatment [y/n; qualitative]	•		
Single parar	tal crite	eria Data availability	Comment	pluor?			
Emissions oc [tCO2e]				Guidelines (y/n; qualitative) PPW minagement system applemented in the with specific modelment			shall ing
Inner policitates (SCP) -> maximum (in torms CC2 equivalents (CC2a) Area of treatment plant [m <sup>2</sup> ]							
Facilities for first frontinees, area				Planning [y/n; qualitative] www.silcal/regimalized or other planning documents leg. published or annual block docesting PMV annagement in proce?			
Resource use facilities for first tostimerz, energy or weter				the strategy over big PFW scalpoort a pice?			-
Application of eco-modulated EPR			total valles on the	Penalties, sanctions, fines [y/n; qualitative]	•		
fees [y/n] reproducts fees notabilited, where possible, for individual products or groups of similar products			An and a second se	Qualitative) Are penalties, sinctions, frees for non-ecosystem management of PDW fractions in place?			
perfection of	allenges & drive	ers					
Single parameter nan Main challenges in th	Useful-ness		Comment	Per Single parameter name	formance over ti Useful-ness		Comment
[qualitative] which decises / actions taken / circumstance/ herepered positive development of waits collection system, per fraction where available / applicable, leasons inserted -> what about not be done / convol the roomammanda				Evolution of collection system [qualitative] Induition of collection system per fination / wester type / collegery	•		and the first start of the
Available / applicable, lessons surred -> what about not be done / Cannot be moseneounded Future challenges [qualitative] Main: challenges opected in fature?	•	•		Endution of extention system per faulture / wears type / cutageny over films (5.g. overfree miles, amounts cubicitori, cubicetor cover rige)			
Main success factors / drivers in the			224.4	Gradual improvement or sudden changes [category 1 / 2 / 3] Eardistor of improvement, per fraction / edited on type views			ticlary of
Multin Success factors / drivers in the past [qualitative] which excises / attoes taken / dimensions supported pother development of exam safection entime, per fraction where voltable / applicable, losses learned - instant iteration for one / can be recommended.			a for the	Earcluston on improvement, per fraction / collection type where replicable. Call 2: Addresing significant improvements took more than 15 years, stop by stop - Call 2: Addresing significant improvements took more than 5 years, they by stop - Call 3: Section or improvements within 1 wave collection of the section - Call 3: Section or improvements within 1 wave collection of the section - Call 3: Section or improvements within 1 wave collection of the section - Call 3: Section of improvements within 1 wave collection of the section - Call 3: Section of improvements within 1 wave collection of the section - Call 3: Section of improvements within 1 wave collection - Call 3: Section of the section of the section - Call 3: Section of the section of the section - Call 3: Section - Section -			

Figure 12: Feedback poster - GA - PPW (poster II)



## Regional working group

	PdC	kagin	g and I	Paper Wast	e 🔓		CTORS
Single parameter name	Waste generat	tion	Ta	19	Waste collectio		
Scope of municipal waste generated collected [qualitative]	Usefulness	Data availability	1	Single parameter name Level of sorting in civic amenity site	Usefulness		- 300
Wink in victude. - henetoid wate enly - writer wate - henetoid wate enly - henetoid wate enly - henetoid wate enly - henetoid wate enly - henetoid wate enly			Albert J.	[qualitative] Sorting of PPW flactoons in civic anominy sites	\$ 0	• •	hi na daga sa da sa da da da
Total municipal waste generation / collection [t and kg/cap] moti recent inference star [lingely managed wate outloaded)	•••			Number of mabile collection points per inhabitant [number/100.000 inhabitants] Refer of make collecture	*	• •	dut in t
Total municipal waste composition [t and kg/capita] ment recent reference year	•	• •	charge of the astropheny	Implementation of collection system [qualitative] Implementation of the FPW collection were: 	•	• *	Trackin
Mixed residual waste composition [t and kg/capita] Network restorio isolated in Inide instead invested invested and the Investigent composition services is social and the initial and the ini	••	•	Dete energy 1 you for	Collection coverage [%] Premargi of havehold a rate cover by separate collection where, per focus, obtended between havehold and busines where positive / storaget			
relieved invitable: - Paper & setBoard - Paper A setBoard - Metal	•			Collection routes [number] Namine of raterton routes per PNW fraction	••	•	(23all) (and #19all) (and (23all) (and
Single parameter name	Waste collection Usefulness	(1/2) Data availability					
Responsibility of collection (qualitative) Media memorials for outside of different PMV features, bit second age to the close of the context of the collection memory field, forcises 1 and 21 - Collection for when private protect optimism	••		Comment	Type of transportation [qualitative] Mire and Meren PW pipe Insugement from point of addector to find to statement panel - task - task - task	••	Ø	Terrinelland Dendelskaler Fud 2 (mpage 14) Le Soverme
Separate collection of wate fraction (qualitative) The separate collection of wate fraction (a) and the separate of the separate the separate of the separate the separate of the separate separa			Transtin for bur time to beginger ofter (notions (she) (helof)	Transport distances [km] transport distance fire itherer PPM factors from poor at caleerum in floc incoment paint	••	• •	Concerned and
Loing point: single fraction     Loing point: sin-migled     Citic anteriory site, single fraction     Citic anteriory site, single fraction     citic entertity site, so mingled			Ordegeood systems?	Single parameter name	Waste treatmen Useful-ness	Data availability	Comment
- motion extension on where the depend related system Waste amounts collected separately [t and kg/capita] Separately colorade wave amounts in total and for different PPI Relations, per dependent system (see above)		•	Entro part and registration	Type of first treatment (qualitative) memory of affinet interiors after calculars including week in exact - softing later for reparately circlead heaters (with destination repeding) - softing later for reparately circlead heaters - softing later - increasing parts with / without every recovery later[]	•	0	
Capture rate (collection rate) [%] Altrinu amount of accountly collected quarkity of a maximal (bi- attioner PWF backwa); based on residual water composition / sorting analysis	. @	. 9		Relative amount of waste stream rejected for recycling after first treatment [%] Amount of impairies numericy collected hereans () Amount of impairies numericy collected hereans () anatyread, sonad out during first sorting stap, ser own function	•	•	Right have
Waste collected by informal actors [t] mm factors collected by informal actors	•	•		Relative amount of sorting residues after first treatment [%] seng residen from that aning iteg, per PPW Tealise, refliciency of sening processes	•	Ø	frankra Kula - State - State
Bins / containers [qualitative] Information on bin/ containers used, per PPW fraction: - manufact - size / volume: - type of material	•	••		Sorting / treatment steps [y/n] Further sorting steps after the first sorting borne plant an efficient plant, per PPW fraction	• 0	• ©	Ale to que de Justico de
Frequency of door-to-door collection (qualitative) Excloses Insume to door collection of relevant PPW forcions - many risks - second by Meeting	••	••		Illegal dumping [t; kg/capita] Entranse mount of PPM durgent layely	• •	•	
Number of bring points per inhabitant [number/100.000 inhabitants] Indinumber - device of bring point interest		6	What does brappeds which future streng	Single parameter name	Waste preventio Useful-ness		Comment
Distance to containers [m] decay distance for cliner to the rest bring polet	8.0	00	Walter de lans beskilte de lans de lans de lans beskilte de lans de franklikter de franklikter	Waste prevention measures [///n; qualitative] specific wate prevention menutors on PVW bases at local level? thes, qualitative description of measures	••	•	
Number of civic amenity sites per nhabitant [number/100.000	@ p	00	Bach to Sary another and Discourse granded contracts	Refillable packaging (%) stars of refilter packaging in pricing result			Der ein gest

Figure 13: Feedback poster - RWG - PPW (poster I)



<page-header></page-header>	omic features Itul-ness Dat 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	a availability	Comment	Control aspects (Jord Control aspects) (Control	eptance, awaren Useful-ness		on) Comment Comment Stars proceeder Stars proc
Single parameter name     Usef       Costs / organisation (qualitative)     Image: parameter name       Description of the name     Image: parameter name       The name information of the name     Image: parameter name       The name information of the name     Image: parameter name	Jul-ness Dat		Comment Straphin Straphin Straphin	Social aspects (acc Single parameter name Acceptance of collection system by citizens (i/r, cualitative) Awareness: raising and communication addressing citizens (i/r, cualitative) Existence of novereness raising measures (i/r) - internet of novereness raising measures (i/r) - internet - addressing automation - addressing automation - internet - internet	Useful-ness	Data availability	Comment In a star provide the first Starting and the start of the start Starting and the start of the start (r1) prophetics for the start between the start of the start
Single parameter name     Usef       Costs / organisation (qualitative)     Image: parameter name       Description of the name     Image: parameter name       The name information of the name     Image: parameter name       The name information of the name     Image: parameter name	Jul-ness Dat			Single parameter name Acceptance of collection system by citizens (i/r, qualitative) Anvareness raising and communication addressing citizens (i/n; qualitative) Existence of neuronessissing measures(i/r, qualitative) Existence of neuronessissing measures(i/r, qualitative) Capacity building and training addressing authorities [//r, qualitative] Stakeholder engagement [//r, qualitative]	Useful-ness	Data availability	Comment In a star provide the first Starting and the start of the start Starting and the start of the start (r1) prophetics for the start between the start of the start
Description of the second seco	0 0 0		Altifuel Altifuel	citizers (//r, qualitative) Entroy of the Marking Junkense Johns, warmoniesers Awareness raising and communication addressing citizens (//r, qualitative) Existence of awareness raising messares (/r) messares (/r) american (/r)	• •		<ul> <li>The second second</li></ul>
Setup Costs (E; C/Capita) Setup Costs (E; C/Capita) Running costs [C/year; C/capita/year) Running costs [C/year; C/capita/year) Fee system (Cat 1/2/3) Fee syste	0 0 0		fitte fitte i	addressing citizens [v/r, qualitative] Existence of awareness raising massures (v/n) compared to the second second second second compared second second second second second compared second second second second second compared second second second second second second second second second second second second second second second second second defersion and second second second second second second	•	• • • • • • • • • • • • • • • • • • •	
(E(Year; (Capita/year) Whether were have made the classifier water, were then have a more more and the classifier water, were then Fee system [Cat 1/2/3] Marchael man end the set water - a 2: an own Financial incentive for consumer to separate waste (U/n; qualificative) Marchael man have a days and then a days (Cost to private households [E/year; (Catily and the set of the gradient of the set of the private marchael man have a days and the set of the set Cost to private house house and the marchael Marchael man have a days and the marchael Cost for waste collection [E/A] Marchael man set of the days and the marchael Marchael man set of the days and the marchael Marchael man of the days and the marchael Marchael marchael marchael Marchael marchael marchael Marchael marchael marchael Marchael marchael Marchael Marchael Marchael marchael	0	0		interminicary -	• •	••	Verne ak Dation of
And the second s	0 0	0	depetential Hearing Hading offer Checking / mar character	addressing authorities [v/n; qualitative] Enness 4: capacity balling activities and ratifieg programs entername entername Stakeholder engagement [v/n; qualitative]	••	•••	We are attributing the light attribution attrib
separate wate ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (			dependent of a contraction of a contraction / new schemister	[y/n; qualitative]	••	•	We are adulted in a f
Configuration of the set of the proves how obtained in the market of the set of the proves how obtained and the market of the set of		0				•	Chestering - School Chestering - Short Setuen Chars (con ALCMS he open
Cost for waste collection (6/t) Galaction codie ge generated i of MW (per manual, including uniertime & transportion to find transport juliert			Lite a flat) filtere (m. (25)) De liane ministr a callecter factored				pe un s he opera
Galecian cost per generated t of PW (per traction), including collection is transportion to first treatment plant.				Single parameter name	Influencing polic Useful-ness	Data availability	Comment
Cost for waste treatment [€/t] Treatment cost per privated terms of IPW (per fraction)	•	•		Extended producer responsibility [y/n; qualitative] Distince of an UM scheme on PPW factions	••	•	6 gt weig
	•	0	Harter and the	Legislation on waste prevention [y/n; qualitative] Voto prevention topic/ liqui provisions on prevention of PPV i place?	. • 😤 •	• • •	
Level of landfill charges [€/t] tevel of typical landfill charges for municipal watto		•		Legislation on waste collection [y/n; qualitative] wate calction target / legal powelans on collection of PPW in place)	•	@ 0	Calledter and the Beryley were Beryley were
Employment [number] Protect employed in the manipul wate management setter (municipul, right or programi level) - dent plan - indirect plan	<b>*</b>	e II, ane she perfect chill be perfect	Algeria jek condra brita form under marging jek - o senterin kan jek sentering	Legislation on waste treatment [V/r; qualitative] Wate treatment tept// Registerioxics or treatment of FTW is	••	•	3 Jame
Envir	onmental criteria			Waste treatment tagets / legal provisions on treatment of PPW in place?			
Emissions occurring during collection	seful-ness D	ata availability	Comment Here's when he all allow when the called and and all a designed a lander	Guidelines (y/n; qualitative) PMW management nature implemented in the with specific guidelines?	6	0	
[tCO2e] Invasions may include greenhouse gas (SHG) and short-loved change polations (SLCP) -> measured in tennes. CD2 equivalents (SCD2e)				Rocurement			these building
Area of treatment plant [m <sup>2</sup> ] Facilities for Fink Insutment, anna		0	BUTTERED Herselfished	Planning [y/n; qualitative] War at local / regretal level or other planning documents is a published on annual back) describing PVW management in place?	•	(peta)	data collactivos
Resource use Facilities for host treatment, energy or watter	•	•		Penalties, sanctions, fines (y/n;		A	They are initianal
Application of eco-modulated EPR fees (y/n) Are public for evaluated, where peoplet, for redivibuil products or groups of sender products	•	•		qualitative) An province, succions, then for non-compliant management of PPW fractions in plane?			conside - argun Ale Carlogante - pensition fo
	llenges & drivers	ata availability	Comment	Single parameter name	Useful-ness	time Data availability	Comment
Surgie parameter mana		•	- Jugar brite coplands	Evolution of collection system [ualitative] Trubuse or beines years per factor ( wate type / preprint were line for errors size, arround collected, subcisio terrorsal	@ @ 0	® P	the for the second and the second sec
/ cannot be recommended	0			Gradual improvement or sudden changes [category 1 / 2 / 3]	0	•	Sille lang alled man (22 Sealer) plastice the states and gandon

Figure 14: Feedback poster - RWG - PPW (poster II)



## Waste Electrical and Electronic Equipment

## **General assembly**



Figure 15: Feedback poster - GA - WEEE (poster I)



		A minister for anattie for more annound - test ant not	WE	I WEEE Think	(all	COLLECT	ORS
Single parameter name	Waste treatmen Usefulness	Data availability	Comment	Single parameter name	Economic feature Usefulness	Deta evailability	
llegal WEEE landfills [number, m²]		Last picture		Costs – organisation [qualitative] Descreption of (thread expensibility and severity to the severity of the severity with category per or the moduli least of cost core age by	••	The these I uns TO BE THE RADIATION	
Amount of waste stream rejected for		Minged		<ul> <li>Narrang intercenting the charged in producing per locate at WEEL category per or the markets, leads of case coverage by producans)</li> <li>Anreling incurses (inglicit) fair inglicital fairback codes); special wave fairback of the second second second second second second fairback of the second seco</li></ul>			
recycling [t] Amount of impurities in a second (provide a second (provide a second sec			hil, sans histories da nices de factories conté han	Setup costs (C; C/capita) Setup costs to implement a specific collection system, per WEEE category / type where possible	••	He coar loss to he coarts he coarts they wants caller had	
Type of applied (pre)treatment [qualitative]			The La	Running costs [€/year; €/capita/year]		in n promine	(Piten Selveurits Se name atte
Such as sorting/dimanting/shredding/etc. manual or automatized Licensed treatment capacity [t/year]	-	"Secolar bargerbilar I	× .	Running costs to operate a specific collection system, per WEEE category / type where possible			
Amount of licensed treatment capacity for a specific sub-stream/fraction.	•	- Single Anna 1		Fee system [Cat 1/2/3] Municipal wate charges to consumer, based on - Cal 1 fixed fee (first cate) - Cal 2, risk of fixed fee & PMPT - Cal 3, FMPT	•		WOR RRCIT
Hazardous substances removed before treatment [t]	•			Cat 3: RWY Cost to private households ['C/year; C/capita/year]	•		MARKA REPORT
WEEE locally treated [t]				Annual weste fee to be paid by private households for maticipal weste management, breakdown per WIEE rategory / type where possible			
WEEE treated outside the region but				Cost for waste collection (€/t) Collection cost per generated t of WEE (per category / type), including collection & transportation to free treatment plant	••		
collected in the region [t]				Cost for waste treatment [€/t]			A Contraction
WEEE treated inside the region but not collected in the region [t]				Destinant cost per generated t of WEEE (per fraction)			
WEEE illegally managed [%]	•		The sale is here as	Level of landfill charges [€/t] Level of typical landfill charges for municipal waste	•	Terpelopy -	
WEEE prepared for re-use [1]			allines against Read advisings	Employment (number)	•		Sulle Part?
		10 - parel	and the set	People employed in the municipal wate memogeneous sector VVER transmer (municipal, site, or regional level) - detect jobs - indirect jobs	•		
WEEE material recovered [t]	•	Yn	All the backs of the	Inclusion of the eco-contribution in the EEE price visible for the consumer, per retailers' size (y/n)			
WEEE energy recovered [t]	•	Yan	a provide and	Integration of the WEEE management fees in the EEE product price Estimated level of free-riders [t; % of POM EEE]			and the second
WEEE disposed [t]	-	4	8	Estimated amount of free riding ELE not registered and reported	•		
terre opposed (d	•	to t		Single parameter name Emissions occurring during collection	vironmental Crite Usefulness Ang. with	ria Data availability	Comment
Single parameter name	Waste preventi Usefulness	on Data availability	Comment	[tCO2e] Emissions may include greentesses gas (GHG) and thort lived dimate pollutions (S(CP) -> measured in torner CO2 equivalents (SCO2e)	" L'arrepor hidden"		The second second
Waste prevention measures [y/n; gualitative]			SKIAL ACHICIT	Area of treatment plant [m <sup>9</sup> ] Facilities for first treatment, area	•		
Specific waste prevention measures on WEE taken a local level? If yes, qualitative description of measures Measures taken concerning product			11 April 10 Mil	Resource use [qualitative]			
design (qualitative) Measures taken by authorities to improve/facilitate i product design			and the map shale reserved to the provide Angeles () reserved to the rest of the rest of	Faulties for first treatment , energy of water	••		
Key measures to promote re- use/reparation [qualitative] Measures taken by authomies	•			Application of eco-modulated EPR fees ly/n] We produce fees mathatest, where passible, for metvalual produces or groups of similar produces	• •		
				and a state of the			

Figure 16: Feedback poster - GA - WEEE (poster II)



le parameter name Usefulness Data nded producer responsibility (y/n; tative) se of a IR%-legisition en WEEE y/n; geatative description	availability Comment	Surgie Parente	Useful-ness	Data availability	
itative]		Acceptance of collection system by			
see of an EPR-legislation on WEEE y/n; qualitative description	The second	citizens [y/n; qualitative] Existence of citizen feedback gathering mechanisms	-		Carl and
	Control Research	(surveys, questionnaires)		X Jew gerander	lefter felfenstjoner
slation on waste prevention [y/n; litative]		Awareness raising and communication addressing citizens [y/n; qualitative]	•		
a prevention targets / legal provisions on mison of WEEE in place v/n; , qualitative description		Existence of awareness raising measures (y/n)			
ntion of Wille in piece () in. , qualitative description		measures (y/m) - information campaigns for consumers, including number of campaigns - support services (interactive help line by internet or phone) providing patience or help to obtains negarilling waste sorting and collection; If vise, qualitative distribution			
islation on waste collection [y/n;	QAAL	wate sorting and collection; If yes, qualitative description Capacity building and training			
Ilitative]	SAN CASH	addressing authorities [y/n; qualitative]	0		
te collection targets / legal provisions on collection EEE. in place v/n; s, qualitative description	CINIMON AND	Existence of capacity building activities and training programs addressing authorities			
gislation on waste collection - focus				-	
ic amenity sites [y/n; t]		Stakeholder engagement [y/n; qualitative]	•		Sandage Alexandre Barrenter
is hold on max, amount that can be delivered to camenity site, in particular for WEEE from similar ross $y(n)$ if yes, threshold		Existence of platforms bringing together different public and private stakeholders on regular or non- regular basis			Hirrise
gislation on waste treatment [y/n;		regular basis			
ualitative)			rformance over t	ime Data availability	Comment
aste treatment targets / legal provisions on atment of WEEE in place y/n; es, qualitative description		Single parameter name Evolution of collection system	Useful-ness	Data availability	Comment
		[qualitative]	-		
uidelines (y/n; qualitative)  ZEEE management system implemented in line with	The contract of the second sec	Evolution of collection system per fraction / waste type / category over time (e.g. capture rates, amount collected, collection coverage)			
IEEE management system implemented in line with peofic puidelines y/m; yes, qualitative description	ending .				
	-	Gradual improvement or sudden changes [category 1 / 2 / 3] Canduation on improvement, per fraction / collection type	•		
Planning [y/n]		where applicable - Cat.1: Achieving significant improvements took more than 15 years, step by step			
WMP at local / regional level or other planning socuments (e.g. published on annual basis) describing WEEE management in place y/n		Charges (category 1 / 2 / 3) Charges (category 1 / 2 / 3) Canducies is improvement, per faction / calection type where applicable - (cat.). Ashereg. Signal representation for more than 0 - (cat.). Signal representation for more than 5 - (cat.). Signal representation for more than 5 - (cat.). Signal representation for more than charges.			
			nallenges & driv	ers	Comment
Standards [y/n; qualitative] Does the mulcrity of the munagement operators apply WIEELABEX/CENELEC standards? If yes, qualitative		Single parameter name Main challenges in the past	Useful-ness	Data availability	Comment
WEELABEX/CENELEC standards? # yes, qualitative		[qualitative]			
		Which decisions / actions taken / circumstances hampered positive development of waste collection system, per fraction where available / applicable; lessons learned -> what should not be done / canno be recommended			
Control [y/n; qualitative] Control mechanisms in place to ensure there is complant WEEE management y/n; if yes, qualitative		lessons learned -> what should not be done / cannot be recommended Future challenges [qualitative]			
compliant WEEE management y/n; if yes, qualitative description		Main challenges expected in future?			
a barbar		_			
Penalties, sanctions, fines [y/n; qualitative]		Main success factors / drivers in the			
Are penulties, sanctions, fixes for non-compliant management of WEEE types / dategories in place y/n; if yes, qualitative description		past (gualitative)			Vine sheety.
		Which decisions / actions taken / circumstances supported positive development of waste collection system, per fraction where available / applicable; lessons learned -> what should be done / can be recommended			ter to the
		- How to name the categoine of a	hing instrumented can	It be arriving the dr	What's ?
		- How to nove the categories, et p - challenge s success factors con	anidadent ) charkeja la los contribuent	as the soles date of	Une law ?
		Price de la present altrus. Cas			LUPE ADDIC T

Figure 17: Feedback poster - GA - WEEE (poster III)



## Regional working group

ingle parameter name	laste generation Usefulness	Data availability	Comment	Single parameter name	ste collection (2 Usefulness	Data availability	Comment
cope of WEEE generated / collected				WEEE collected by scrap metal			
qualitative] /hat is included:				collectors and shredders [t]	•	•	
WEEE from household only WEEE from households and WEEE from	•						
milar sources no clear distinction				WEEE collected by informal actors			
otal WEEE generated and kg/cap]				[y/n]	•	•	
iost recent reference year	•		13				
			823	umber of civic amenity sites per bitant accepting WEEE [number;			
VEEE estimated to be in household tocks [t]			-	bitant accepting WEEE [number; amber/100,000 inhabitants]	•		
umber and types of products in household	•			Total number, density			
tocks			Theorem States	Level of sorting in civic amenity sites [qualitative]			
EE put on the market [t]			Catalant - Martin	Sorting of WEEE categories / types in civic amenity sites	•		
iumber / Weight of EEE sold in the region / in national level		•		Number of non-retail bring			
				points/containers per inhabitant for WEEE [number/100.000 inhabitants]			
Nixed residual waste composition [t				Total number, density	-		
ind kg/capita]				Number of retailers collection points			
VEEE included in mixed residual municipal waste (waste composition analysis)	-			per inhabitant for WEEE [number/100.000 inhabitants]	•		and the
				Total number, density			the and anythe a
	iste collection (1			Frequency of mobile collection [gualitative]	Sec. 1		-
Single parameter name	Usefulness	Data availability	Comment	e.g. weekly, bi-weekly, monthly, on request	•		
Responsibility of collection [qualitative]	_			etc.			
Who is responsible for collection of WEEE: - Collection by authority - Collection on behalf of authority - Collection by others (charity, producer schemes)				Collection coverage [%]			
				Percentage of households / area covered by the specific collection type		0	
Separate collection of waste fractions [qualitative]				Implementation of collection system			
[qualitative] Applied options for separate collection of different WITE: on appration from residual fraction bring points cold, amening risks producer / results take lisck on regists		•		[qualitative]		0	
producer / nitaller take back on request				Implementation of the WEEE collection system: - priot phase - roll-out phase - fully implemented (year)			
Total WEEE collected [t or kg/capita]	1		THE ALL AND A	Collection-synergies with other waste			
Separately collected WEEE amounts in total and per category / type, per relevant option (see above)			BRULL II	streams [qualitative] synemples between, e.g. WEEE and batteries collection systems	•		Constant and
			( Cellbert)	systems			and the day
Collection rate [%]				Type of transportation [qualitative]			
Relative amount of separately collected WEEE on EEE placed on the market in the most recent reference pair	•	•	and the second	How are different WIEE categories / types transported from point of collection to first treatment plant?	0	0	
			and we have	- Truck - Train - Ship			
WEEE collected by retailers [t]				Transport distances [km]			
				Transport distance for different WEEE categories from point of collection to first treatment plant	0	0	and and and
							and a
WEEE collected by ICT refurbishment							
actors [t]			with the second				
			- marine the				
			-Layter -				

Figure 18: Feedback poster - RWG - WEEE (poster I)



bipro			WEEE	(all	COLLECT	ORS
Harr of Hampon			245			
	Naste treatment			Economic featur		
egal WEEE landfills (number, m <sup>2</sup> )	Usefulness	Data availability	omment Single parameter name	Usefulness	Data availability	Comment
nder of dumpsites	æ	e 🔴	Costs - organisation [qualitati Decreption of following resolutions and becaute factoring recolumning fee charged ps produce will concervy on on the market, level of co- ductoring and the second second second second patients george produced to the second patients george patients and patients for the second patients of the second patients and	rs per soone of	•	Contract of
mount of waste stream rejected for ecycling [t] nount of impurities in separately collected fractions misthrows), sorted out during fint sorting step	Ø	Ø	Society     S			Antonio Antonio
ype of applied (pre)treatment			per WEEE category / type where possible			14
qualitative]	0		nning costs (€/year; €/capit			-
ch as sorting/dismantling/shredding/etc. manual or tomatized			Naming costs to operate a specific collect per WEEE category / type where possible			
mount of licensed treatment capacity for a specific ub-stream/fraction;	0	0	Fee system [Cat 1/ 2/ 3]			
Hazardous substances removed before reatment (t)			Cet strate (Cet 17 2 3) Municipal water charges to consumer, has - Cet 1 flowed fee (Mar net) - Cet 2 in our of fixed fee & Wort - Cet 2 Port - Cet 2 Port	ed on:	0	14.3
	@	•	Cost to private households ['€, €/capita/year]	/year;		
WEEE locally treated [t]	0		troud waste fee to be paid by private hos burgpal waste management, breakdown wregpry / type where possible Cost for waste collection [€/t]			
WEEE treated outside the region but collected in the region [t]			Collection cost per generated to dWEE (p kype), including collection & transportation treatment plant		•	13
	Q		Cost for waste treatment [€/t]			2/1/2
WEEE treated inside the region but not collected in the region [t]	Ø	0 0	Treatment cost per generated t of WEEE (p		•	No.
WEEE illegally managed [%]			Level of landfill charges [€/t] Level of typical landfill charges for municip	usi waste 🕜	0	
Estimations or research results	Ø	•	Employment [number]			
WEEE prepared for re-use [t]	0	•	Employment (number) gale employed in the manicipal water mana the transment (numicipal, only or regional in direct plate indirect plate	gement sector even)	•	-
WEEE material recovered [t]			Inclusion of the eco-contributi EEE price visible for the consur retailers' size (y/n) entegration of the WEEE management fees product price	ner, per	0	
WEEE energy recovered [t]			Estimated level of free-riders [1 POM EEE]	t; % of		
		4	Estimated amount of free-riding EEE not re reported	gotered and		
WEEE disposed [t]			Single parameter name	Environmental Crite	And the second se	Comment
	1		Emissions occurring during col	lection	Dare availabilità	Jomment
	Waste preventi	20	[tCO2e] Entissions may include greenhouse gas (GP	40) and	8	
Single parameter name	Usefulness	Data availability	Comment Entissions may include greenhouse gas (Gi ahort-laved climate pollutants (SLCP) -> ms tonnes CD2 equivalents (SLCP)	easured in		
Waste prevention measures [y/n;			Area of treatment plant [m <sup>2</sup> ]			
qualitative] Specific waste prevention measures on WEEE taken a local level? If yes, qualitative description of measures	. 0	۵	Facilities for first treatment, area	9	۲	
Measures taken concerning product design [qualitative]			Resource use [qualitative]			
Measures taken by authorities to improve/facilitate E product design		-	Facilities for first treatment , energy or we	ter	•	C.
Key measures to promote re- use/reparation [qualitative]	(9)		Application of eco-modulated [v/n] Are producer fees modulated, where poss redicidual products or groups of amfar pr	8	0	

Figure 19: Feedback poster - RWG - WEEE (poster II)



	Influencing policy			Social aspects (acc	eptance, aware	ness, communicat	
ingle parameter name	Usefulness	Data availability	Comment	Single parameter name	Useful-ness	Data availability	Comment
tended producer responsibility [y/n; alitative]				Acceptance of collection system by citizens [y/n; qualitative]			
stence of an EPR-legislation on WEEE $\gamma/n;$ es, qualitative description	Ø	0		Existence of citizen feedback gathering mechanisms (surveys, questionnaires)	0	0 0	
gislation on waste prevention [y/n; ialitative]				Awareness raising and communication addressing citizens [y/n; qualitative] Existence of awareness raising			K S
iste prevention targets / legal provisions on evention of WEEE in place y/n; yes, qualitative description	Ø	0		measures (v/n)     indentiates training     measures (v/n)     indentiates campaign for consumers, including number     or campaign     anytox services (streactore halp inte ly internet or     phone) providing systemic on help to cheans regarding     write services on help to cheans regarding     write services on help to cheans regarding     write services (stream decorption	۲	Ø	
egislation on waste collection [y/n; ualitative]				wiste sorting and collection; If yes, qualitative description			
laste collection targets / legal provisions on collection WEEE in place y/n; res, qualitative description	Ø	Ø		Capacity building and training addressing authorities [y/n; qualitative]	٢	00	
esistation on waste collection				Existence of capacity building activities and training programs addressing authorities			
egislation on waste collection - focus ivic amenity sites [y/n; t]				Stakeholder engagement			
hreshold on max, amount that can be delivered to wic amenity site, in particular for WEEE from similar surces y/n; if yes, threshold	Ø	0		[y/n; qualitative] Existence of platforms bringing together different public and private stakeholders on regular or non- regular basis	0	0 0	
egislation on waste treatment [y/n;							
[ualitative] Vaste treatment targets / legal provisions on		Ø			rformance over		
Vaste treatment targets / legal provisions on reatment of WEEE in place y/n; i yes, qualitative description				Single parameter name	Useful-ness	Data availability	Comment
Suidelines [y/n; qualitative]				Evolution of collection system [qualitative]			
Suidelines [y/n; qualitative] WEEE management system implemented in line with specific guidelines y/n; f yes, qualitative description	0	Ø		Evolution of collection system per fraction / waste type / category over time (e.g. capture rates, amounts collected, collection coverage)	٩	0	
				Gradual improvement or sudden			
Planning [y/n] WMP at local / regional level or other planning documents (e.g. published on annual basis) describing WEEE management in place y/n	• @	ø 🔴		$ \begin{array}{c} changes \left[ category 1/2/3 \right] \\ contains on improvement, per factors / collector type where explicitally: \\ contains on improvement, per factors / collector type (1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2$	/>©	O	
Standards [y/n; qualitative]					hallenges & driv		
Does the majority of the management operators appl- WEERLABEX/CENELEC standards? If yes, qualitative				Single parameter name	Useful-ness	Data availability	Comment
lescription		-		Main challenges in the past [qualitative] Which decisions / actions taken / discumstances haveneed notified development of white collection	0		Mr. Fr.
Control [y/n; qualitative]				Which decisions / actions taken / dircumstances hampered positive development of waste collection system; per fraction where available / applicable; lessons learned -> what should not be done / cannet be recommended			
Control mechanisms in place to ensure there is compliant WEEE management y/n; if yes, qualitative description	Ø	0		be recommended Future challenges [qualitative] Main challenges expected in future?			
					0	-	
Inditation	6	8		Main success factors / drivers in the past [qualitative]			when the 3
Penalties, sanctions, fines [y/n; qualitative] We paralties, sanctions, fines for non-compliant management of WEEE types / categories in place y/n; ent, qualitative description	a (3)			Which decisions / actions taken / circumstances supported positive development of waste collection system, per fraction where available / applicable; lessons learned> what should be done / can be recommended	(1)		

Figure 20: Feedback poster - RWG - WEEE (poster III)



## Construction and demolition waste

## General assembly

W	aste generation				aste treatment (		
ingle parameter name	Usefulness	Data availability	Comment	Single parameter name	Usefulness	Data availability	Comment
cope of municipal CDW generated / ollected [qualitative]			The server of	Relative amount of waste stream rejected for recycling after first			
hat is included: iousehold waste only iousehold waste and similar waste (from small			Teresdore approve	treatment [%] Amount of impurities in separately collected fractions (= misthrows), sorted out during first sorting step			
nousehold waste and similar waste (from small ampanies) no clear distinction				(= misthrows), sorted out during first sorting step			
otal municipal CDW generated [t and				Relative amount of sorting residues			
g/capita] stal CDW generation, most recent reference year				ofter first treatment [9/]	-	-	
				Sorting residues from first sorting step, per CDW fraction, inefficiency of sorting processes			
vixed waste composition [t and		the astallite complete		Sorting / treatment steps [y/n]			r land as
rg/capita] Islevant fractions included in mixed waste / (waste omposition analysis): CDW	•	Ho askilde on the		Sorting / treatment steps [y/n] Further sorting steps after the first sorting (same plant or different plant), per COW fraction: sorting/dismantling/shredding/etc. manual or automatised			
omposition analysis): CDW				automatised			
				Licensed treatment capacity [t/year]			
	Waste collection			Amount of licensed treatment capacity for a specific sub-stream/fraction;			
Single parameter name	Usefulness	Data availability	Comment				
Responsibility of collection [qualitative] Who is responsible for collection of CDW, to be specified per fraction if relevant:							
Collection by authority Collection on behalf of authority Collection by others (charity, private schemes)				Hazardous substances removed before treatment [t]	•		
Separate collection of waste fractions							
(UCATION VE) Appled optims for separate collection of different CDW fractions (to be specified per fraction): no separation from residual fraction out antenity site mobile collection communet							
		phill .		CDW locally treated [t]			grandet mande
Waste amounts collected separately [t and kg/capita]		in the half					hadmalar 31 -
and kg/capita] Separately collected waste amounts in total and for different CDW fractions, per rolevant option (see above)							
Collection rate [%] Relative amount of separately collected quantity of a	••			CDW treated outside the region but			
Relative amount of separately collected quantity of a material - for different CDW fractions, based on residual waste composition / sorting analysis				collected in the region [t]			
Number of civic amenity sites per	0						
inhabitant (number/100,000 inhabitants) Istal number + density of clvic amenity sites network		-					
Level of sorting in civic amenity sites				CDW treated inside the region but not collected in the region [t]			
[qualitative] Sorting of CDW fractions in civic amenity sites	-						
	_						
Number of mobile collection points per inhabitant [number/100,000				Illegal dumping [t; kg/capita]			
inhabitants] Role of mobile collection							
Frequency of mobile collection [qualitative]	0	•					
e.g. weekly, bi-weekly, monthly, on request,				Illegal CDW landfills [number; m <sup>2</sup> ]	0		
Collection coverage [%]	6	0		Number of dumpsites			
Collection coverage [%] Percentage of households / area covered by separate collection system, per fraction, distinction between household and businesses where possible / relevant							
				-			
Type of transportation [qualitative] How are different COW types transported from point or collection to first treatment plant? Train Ship Train Train Ship					Waste preventio		
- Train Ship				Single parameter name	Usefulness	Data availability	Comment
Transport distances [km] Transport distance for different CDW fractions from point of collection to first treatment plant				Waste prevention measures [y/n; qualitative]	••		
point of collection to hist treatment plant				Specific waste prevention measures on CDW taken at local level? If yes, qualitative description of measures	1		
v	laste treatment	(1/2)					
Single parameter name	Usefulness	Data availability	Comment	Measures taken concerning sustainability of the construction secto			
Type of first treatment [qualitative] Destination of afferers CDW fractions after collector (including walls) amount: CDW sorting plant for separately collected fractions (with destination receiving) CDW sorting plant for residual fractionMBT pla incheration plant with / without energy recovery Landhil	••	•	LHC OF - CL	[qualitative] Measures taken by authorities to improve/facilitate/ promit- use of environmentally fiteadly construction materials enhancement of construction sector extending life cycle of buildings			
CDW setting plant for separately collected fractions (with destination recycling)	•	1	- Aller Presiding	- use of environmentally triendly construction materials - enhancement of construction sector - estending life cycle of buildings			
CDW sorting plant for residual fraction - MBT pla indineration plant with / without energy recovery	nt		negther				

Figure 21: Feedback poster - GA - CDW (poster I)



bipro			CL		Grape	AND SOME PRACTICES INTO	
Part of Rambul	conomic feature			Social aspects (accept	ance, awarene	iss, communicatio	n)
single parameter name	Usefulness	Data availability	Comment	and a particular of the second s	seful-ness	Data availability	Comment
Costs – organisation [qualitative] scriptin of bared preparatilities and benefits unarian encokanomic (e.g. In ochanged to producers per once of hospitalities and benefits) unarian geores (regional tace; regional budget; special wester digit; work (% coulding inhere).	••	•		Acceptance of collection system by citizens [y/n; qualitative] Existence of column feedback gathering mechanisms (surveys, questionnaires)			and an anned with the stand of Maryle damps
Indire courses (regional tais; regional marger, special wave digit; wave two, volutions; the second second second second etup costs [ $\varepsilon$ ; $\varepsilon$ /capita] etup costs to implement a specific collection system, er CDW fraction where possible	••	•		Awareness raising and communication addressing citizens (y/n; qualitative) Existence of awareness raising measures (y/n) -adcompage incommens, including number of compage. Incommens, including number			
tunning costs $[C; C/capita/year]$ unning costs to operate a specific collection system, er CDW fraction where possible (based on description bowe)	••	•		- Information canapage for consider, solving motion of canapage - logoot services (nameties help the by internet or phonol provide galance or help to channel regarding wate sorting and constraining and constrained and training addressing authorities [V/rc; qualitative]			
ee system [Cat 1/ 2/ 3] Aunicipal waste charges to consumer, based on: Cat 1: fored fee (flat rate) Cat 2: mix of flood fee & PART Cat 3: PART	••			Esistence of capacity building activities and training programs addressing authorities Stateholder engagement			
Cost to private households [€/year; [/capita/year] more wester for to be said by private households for	••		a la caracteria de la cara	(V) fr, Quantative) Existence of platforms bringing together different public and private stakeholders on regular or non- regular basis			
(Capita/Year) unual waste fee to be paid by private households for unnicipal waste management, breakdown per CDW raction where possible			10 m		fluencing polic		
		-		Single parameter name	Jseful-ness	Data availability	Comment
Cost for waste collection [€/t] collection cast per generated t of COW (per fraction), nduring collection & transpiration to first treatment slent				Extended producer responsibility [y/n; qualitative] Existence of an EPR scheme on CDW fractions y/n; if yes, qualitative description			
Cost for waste treatment [€/t] Treatment cost per generated t of CDW (per fraction)	••	-		Legislation on waste prevention (y/n; qualitative) Waste prevention targets / legit provisions on prevention of CDW in place y/n; if yes, qualitative description			Conneg de Trade general
Level of landfill charges [€/t] Level of typical landfill charges for municipal waste	••			Legislation on waste collection [y/n; qualitative] Waste collection targets / legal provisions on collection of COW in place y/n; f yes, qualitative description	•		
Employment [number] People employed in the manicipal waste managemen sector [manicipal, city, or regional level] - direct [obs - indirect ]obs		•		Legislation on waste collection - focus civic amenity sites [v/n; m <sup>3</sup> ] Threshold on max. CDW amount that can be delivered to civic amenty site (filed or mobile) y/n; if yes, threshold			
E	nvironmental crit	eria		Legislation on waste treatment [y/n;			
Single parameter name	Usefulness	Data availability	Comment	muntitation			
Emissions occurring during collection (tCO2e) Emissions may include greenhouse gas (GHG) and short-liked climate pollutants (SLCP) $\rightarrow$ measured in tonnes CO2 equivalents (tCO2e)	•		- Stan rawlat - traced trade - angle <b>42</b> tail flig	Qualitative regime in the second seco			
				it yes, quantative description			
Area of treatment plant [m <sup>2</sup> ] Facilities for first treatment, area				Planning (y/n) WMP at local / regional level or other planning documents (e.g. published on annual basis) describing CDW management in place y/n			
Resource use [qualitative] Facilities for first treatment , energy or water			May generated Priods Repair Lands	Control [y/n; qualitative] Control mechanisms in place to ensure there is compliant COW management y/n; if yes, qualitative description			
	Challenges & driv	Inte	dement .	Penalties, sanctions, fines [y/n; qualitative] Are penaltis, sanctions, fines for non-compliant management of CXW fractions in place y/n; if yes, qualitative description			
Single parameter name	Useful-ness	Data availability	Comment				
Main challenges in the past					rformance ov		
[qualitative] Which decisions / actions taken / circumstances hampever positive development of waste collection system, per fraction where available / applicable; lessons learned what should not be done / cannot be recommended				Single parameter name Evolution of collection system [qualitative]	Useful-ness	Data availabilit	y Comment
Future challenges [qualitative] Main challenges expected in future?	•			Exclution of collection system per fraction / waste type / category over time (e.g. capture rates, amount collected, collection coverage)	3		
Main success factors / drivers in the past (qualitative) Which decisions / actions taken / droumstances supported positive development of wate collection system, per fraction where available / applicable; lessons learned -> what should be done / can be recommended	••			Gradual improvement or sudden changes [category 1 / 2 / 3] Graduato improvement, ser faction / callector type where applicable: G: 3: Activity spefficial improvement took more that By surv. sup by step G: 2: Activity spefficial improvements took more that years, step by step G: 3: Adfinisher (provements within 5 years, usdden	n n		

Figure 22: Feedback poster - GA - CDW (poster II)



## Regional working group

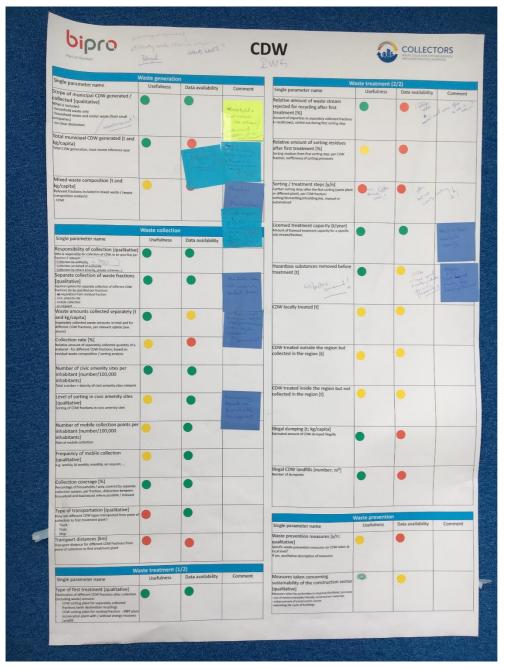


Figure 23: Feedback poster - RWG - CDW (poster I)



bipro Par of Ranbol				W WG			o parane
Eco	nomic features		Comment	Social aspects (accer Single parameter name	otance, awarene Useful-ness	Data availability	Comment
ngle parameter name	Usefulness	Data availability		Acceptance of collection system by		- and	
bsts – organisation [qualitative] scriptin of handly reportabilities and benefits unding mechanism (e.g. etc. threnget a producers per nois flowabide (accusing put on the market; line) of cent werage by producers) unding sources (ingrowal backget; seecial waste orget; water for, including threng) unding sources (ingrowal backget; seecial waste	0	•	the state	Citizens (y/n; qualitative) Existence of citizes feedback gathering mechanisms (surveys, questionnaires)		Ç,	
	9	Ope de vale la		Awareness raising and communication addressing citizens [y/n; qualitative] Existence of awareness raising measures (y/n) -internation compares for consumes, lockaling number of compares	•	•	
Summing costs to operate a reposible (based on description per CDW fraction where possible (based on description above)	Ø	e porter	ligen .	measures (v/n) - indemation companys for consumers, including number of companys - support anyones (increased hold like by internet or particular and constraints) - anyones (company) - and constraints) - Capacity building and training addressing authorities (v/n; qualitative)	•	•	
Fee system [Cat 1/ 2/ 3] Municipal waste charges to consumer, based on: Cat 1: fixed fee (flat rate) Cat 2: mix of fixeds fee & PM/T - Cat 3: PM/T		0		Existence of capacity building activation and interrup, programs addressing authorities Stakeholder engagement [y/n; qualitative] Distance of platforms bringing together different oublic and prave stakeholders on regular or non-	•	•	
Cost to private households [€/year; €/capita/year]		•		regular besis			
€/capita/year] Annual waste for to be paid by private households for municipal waste management, breakdown per CDW fraction where possible				Single parameter name	Influencing polic Useful-ness	V Data availability	Comment
Cost for waste collection (€/t) Collection cost per generated t of CDW (per fraction), including collection & transpiration to first treatment plant.	6	•	T. No sa hall	Single parameter name Extended producer responsibility (y/n; qualitative) Distance dan EPR scheme on CDW fractions y/n; Hyes, qualitative description	- Constraint -	•	
Cost for waste treatment $[\mathcal{C}/t]$ Investment cost per generated t of CDW (per fraction)	0	•	pus and	Legislation on waste prevention [v/n; qualitative] Wate prevention targets / legal provisions on provention of CDW in place y/n; if yes, qualitative facerigition	Can security	8	0
Level of landfill charges [€/t] Level of typical landfit charges for municipal waste	C	•	1	Legislation on waste collection (y/n; qualitative) Waste collection transit / legal provisions on collection of CDW in place y/n; if yes, qualitative description	-		
Employment (number) Propie employed in the municipal waste manageme sector (municaal, dhe, or regional level) - direct jobs - indirect jobs	nt 🎯	•		Legislation on waste collection - focus civic amenity sites [y/n; m <sup>3</sup> ] threshold on max. CDW amount that can be delivere to civic amenity site (fixed or mobile) y/n; if yes, threshold		۲	
	Environmental o Usefulness	Data availabilit	v Comment	Legislation on waste treatment [y/n; gualitative]	6	-	
Single parameter name Emissions occurring during collection		· Gra		qualitative) Weste treatment targets / legal provisions on treatment of CDW in place v/m tryes, qualitative description			
Emissions occurring during of the second of		G		Guidelines (y/n; qualitative) DW management system implemented in line with specific guidelines y/n: If yes, gualitathe description	. 6	Ð	
Area of treatment plant [m <sup>2</sup> ] Facilities for first treatment, area	•	•		Planning (y/n) WMF st local / reponal level or other planning documents (e.g. published on annual basis) describ COW management in place y/n		Ð	
Resource use [qualitative] ractifies for first treatment , energy or water	•	•		Control [y/n; qualitative] Control mechanisms in place to ensure there is compliant CDW management y/n; if yes, qualitative description	. 0	Ð	
	Challenges 8	drivers		Penalties, sanctions, fines [y/n; qualitative] We penalties, sanctions, fines for non-complant management of CoW fractions is place y/n; if yes, sullitative description	0	0	
Single parameter name	Useful-ness	Data availabil	ty Comment		Performance ov	er time	
Main challenges in the past (qualitative) Which deciator() / accoss stain / orienteterrien h pothe development () wate collectors system, fraction where panilalite / application, testance have whet about for the dood cannot be accommend	D mpered er	•		Single parameter name Evolution of collection system [qualitative]	Useful-ness	Data availabilit	y Comment
Factor where available / approace, therein when should not be done / cannot be accommend when should not be done / cannot be accommend Future challenges (qualitative) Main challenges expected in future?	ed (D)	•		[qualitative] Evolution of collection system per fraction / was type / category over time (e.g. capture rates, an collected, collection coverage)	eunts	5.) 61	and attended
Main success factors / drivers in past [qualitative] Werk devision / actions taken / enruntize supported positive devisiopment of varies or supported positive devisiopment of varies or process lemma - > what should be done / or recommended	the ons vitection able; an be	•		Gradual improvement or sudden changes [category 1, 2, 3] consists on myreversers, per franza / observa- ware applicable - Cat. 3 Automore spectra performance in pro- cess / automore spectra performance cat. 3 Automore spectra performance - Cat. 3 Significant approximation tool into changes.	type totan e than den	•	

Figure 24: Feedback poster - RWG - CDW (poster II)



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