

D4.6 – Policy recommendations & development needs related to the waste framework conditions

Policy recommendations

Jean-Benoit Bel – ACR+ & Brooke Flanagan – EUROCITIES

Credits

Copyright © 2020 COLLECTORS PROJECT

Disclaimer

The sole responsibility of this publication lies with the author. The European Union is not responsible for any use that may be made of the information contained therein.



This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745

Technical references

Grant Agreement N°	776745	Acronym	COLLECTORS
Full Title	First list of the policy recommendations & development needs related to the waste framework conditions		
Work Package (WP)	WP4 - Guidelines for implementation and policy development		
Authors	Jean-Benoit Bel – ACR+ Brooke Flanagan – EURO CITIES		
Contributors	Twan van Leeuwen, PNO CONSULTANTS Bernhard Steubing, LDE Jakob Weißenbacher, RAMBOLL Lauri Kujanpää, VTT Lucia Herreras, WEEE-FORUM Pascal Leroy, WEEE-FORUM Pierre Condamine, Zero Waste Europe Pihkola Hanna, VTT Tjerk Wardenaar, PNO CONSULTANTS		
Document Type	Report		
Document Title	D4.6 – Policy recommendations & development needs related to the waste framework conditions		
Dissemination Level	PU	Public	

Document history

Version	Date	Partner	Author
1	24/06/2020	ACR+	Jean-Benoit Bel
2	30/06/2020	ACR+, EUR	Jean-Benoit Bel, Brooke Flanagan

Contents

Contents	4
Glossary	5
1. Introduction	6
Data collection	7
Case studies.....	7
Guidelines.....	8
2. Objectives	9
3. Approach to determine the policy recommendations	10
4. COLLECTORS Policy recommendations	12
Topic 1: Clarify and harmonise separation guidelines for paper and packaging waste for a better communication and a more consistent mining of secondary raw materials.....	12
<i>Recommendation 1.1: Harmonisation of sorting guidelines</i>	<i>12</i>
Topic 2: Improve local collection of WEEE to improve source separation and quality, and allow high quality recycling and re-use	15
<i>Recommendation 2.1: Increase source separation of WEEE</i>	<i>16</i>
<i>Recommendation 2.2: Tackle illegal practices for WEEE management at collection level</i>	<i>17</i>
Topic 3: EPR fee modulation for packaging waste and WEEE.....	20
<i>Recommendation 3.1: EPR fee modulation for packaging waste</i>	<i>20</i>
<i>Recommendation 3.2: EPR modulation for WEEE</i>	<i>22</i>
Topic 4: Improve knowledge and data availability for more alignment along the value chain, better informed local experts, and more consistent comparisons.....	24
<i>Recommendation 4.1: More consistent monitoring for local waste data, including costs, composition analysis, and end-application</i>	<i>25</i>
<i>Recommendation 4.2: More transparency and traceability over the value chain</i>	<i>27</i>
<i>Recommendation 4.3: Distinguish closed-loop from open-loop recycling for PPW monitoring.....</i>	<i>28</i>
<i>Recommendation 4.4: Involve all players that can influence collection rates.....</i>	<i>30</i>
Topic 5: Improve the recycling of construction and demolition waste	31
<i>Recommendation 5.1: Landfill bans or taxes for recyclable construction and demolition waste</i>	<i>32</i>
Topic 6: Ensure the economic relevance of higher recycling performances	33
<i>Recommendation 6.1: EPR financing for local authorities aimed at improving performance</i>	<i>34</i>
<i>Recommendation 6.2: Adjust landfill and incineration taxes.....</i>	<i>35</i>
<i>Recommendation 6.3: Promote “Pay As You Throw” obligations or subsidies</i>	<i>36</i>
References	39

Glossary

CAS: civic amenity sites

CDW: construction and demolition waste

CEPI: Confederation Of European Paper Industries

EEA: European Environmental Agency

EEB: European Environmental Bureau

EEE: electrical and electronic equipment

EuRIC: European Recycling Industry Confederation

FEVE: Federation of European manufacturers of glass containers for food and beverage and flacons for perfumery, cosmetics and pharmacy markets

IT: information technology

MCDM: multi-criteria decision making

MS: member states

NGO: Non-governmental organisation

PAYT: pay-as-you-throw

PPW: paper and packaging waste

PRO: producer responsibility organisation

WEEE: waste electrical and electronic equipment

1. Introduction

The COLLECTORS project aims to identify and highlight existing good practices of waste collection and sorting. It focuses on three waste streams: paper and packaging (PPW), waste electrical and electronic equipment (WEEE), and construction and demolition waste (CDW). In particular, the objective of the project is to harmonize and disclose available information on different waste collection systems; to gain better insight into the overall performance of systems; and to support decision-makers in shifting to better-performing systems via capacity-building and establishing policy recommendations.

To reach its objective, COLLECTORS underwent a three-step approach:

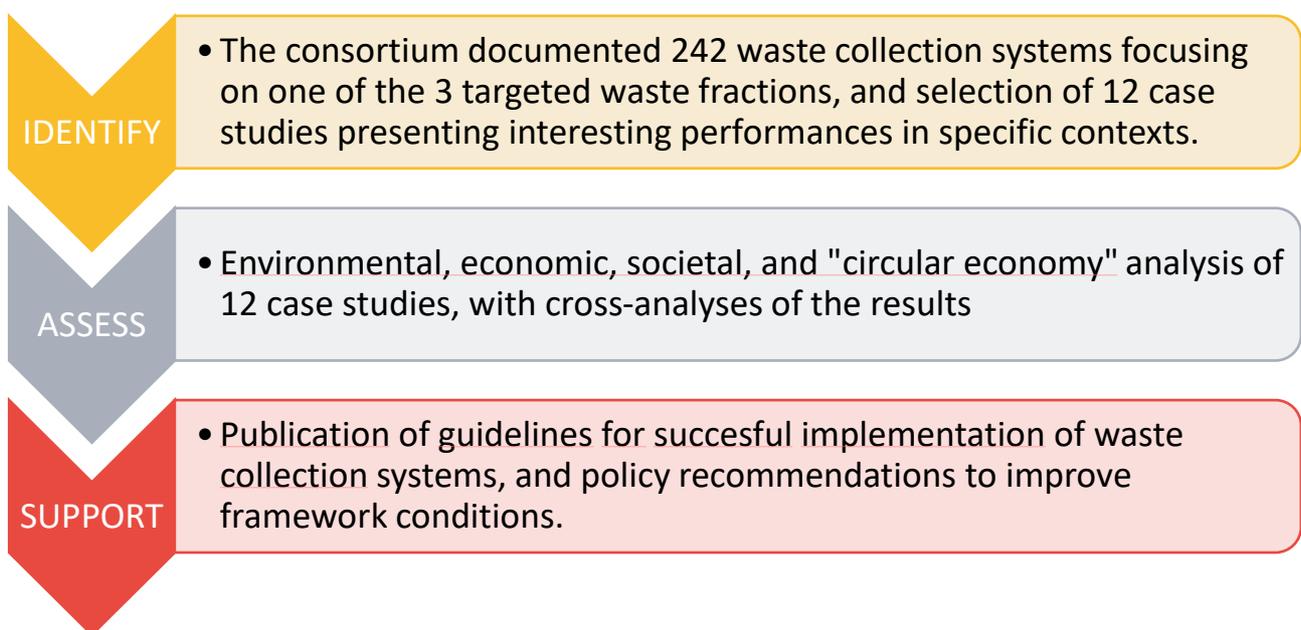


Figure 1: the 3 steps of the COLLECTORS project

The COLLECTORS project aims to contribute at two main general objectives:

- **Improve separate collection of municipal waste**, especially in territories lagging behind or facing specific challenges;
- **Improve the contribution of waste collection systems to the circular economy**, by shifting from “waste push” approach to more “market-oriented” strategies.

The COLLECTORS policy recommendations presented in this report aim to address the current context of the regulatory and governance barriers or catalysts to effective waste collection, i.e. how to ensure that municipal waste collection systems can be more effective and better aligned with the recycling value chain, so that they can effectively contribute to high quality recycling.

Data collection

The first step of the project focused on the documentation of different waste collection systems across Europe for the three targeted waste fractions, to develop a database of consistent information, enabling the identification of case studies to be further analysed. The consortium aimed to analyse situations as diverse as possible, in terms of locations and typologies, even though the process was limited by the availability of consistent local data.

In total, 242 waste collection systems were documented. The numbers of waste collection systems identified for each waste fraction are presented below:

- **Paper and packaging waste:** 135 systems from 25 countries
- **WEEE:** 73 systems from 18 countries
- **Construction and demolition waste:** 34 systems from 17 countries

The documented systems represent local situations: districts, cities, or group of cities forming an intercommunal group.

The result of this data collection is available on the [COLLECTORS Webplatform](#), where the collected data for each waste collection system is presented within individual factsheets.

Case studies

On the basis of the collected data, **12 cases studies** were identified by the consortium to be further analysed. These case studies were identified following several steps:

- For each of the waste fraction, identification of **relevant contextual parameters** for the definition of “**comparable territories**” when it comes to waste management (e.g. density, tourism, etc.), and **performance indicators** allowing the identification of good practices (capture rate, collected quantities, etc.). Regional waste management experts representing different European countries were involved within the definition of most informative parameters;
- For each waste fraction, identification of **well-performing systems in specific contexts**;
- Selection of the **case studies reflecting diverse situations**, taking into consideration the quality of available data and potential contacts allowing further information.

The identified case studies might not be considered as the best performing territories in Europe, but they reflect systems that implemented interesting solutions allowing reaching good performances in diverse contexts.

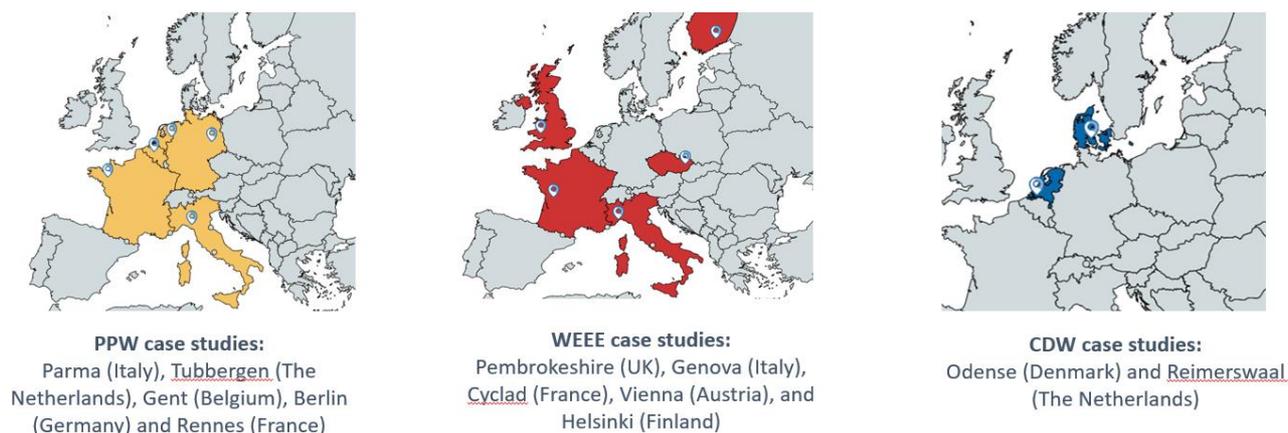


Figure 2: the selected case studies for the 3 targeted waste fractions

In-depth analyses were then conducted in collaboration with the case studies on several aspects: the **environmental performance**, **cost-benefit analysis**, **social acceptance**, and **circular economy perspective**.

Guidelines

These guidelines aim to help local players with these two general objectives, by capitalising the findings of the project and making them available and accessible to stakeholders. It provides practical guidance and examples for local authorities and PROs in charge of coordinating and conducting municipal waste management, so that they can better assess their situation, define their priorities, and improve the overall performances of the system.

[The guidelines](#) present general principles leading to improved performances for municipal waste management, as well as specific focus on the three waste fractions covered by the project. They are based on the research work led by the COLLECTORS consortium, which included the documentation of many European local waste collection systems, the in-depth analysis of 12 specific case studies, as well as the involvement of different players of the recycling value chain.

2. Objectives

The COLLECTORS policy recommendations target EU institutions and national authorities, and aim to promote the shift of municipal waste management systems toward a circular economy approach. In particular, it wishes to underline the challenges faced by local players of municipal waste management to move toward the new targets set by the new European Waste Framework Directive and close the implementation gap. These local players are responsible of the practical implementation of measures to increase collection for recycling, so their perspective is relevant when it comes to the implementation of the European regulation.

The COLLECTORS project highlighted the fact that framework conditions (e.g. national regulation, taxes on disposal, EPR schemes and subsidies, etc.) are essential to compel local decision makers to improve local waste collection systems in order to produce high-quality, secondary raw materials. The policy recommendations are based on the findings of the various studies and exchanges conducted by the COLLECTORS consortium that allowed the identification of:

- The main barriers preventing successful municipal waste strategies
- Successful instruments leading to high performances
- Successful instruments allowing a proper supply of sorted materials from waste collection systems

The economic and environmental impact associated with every recommendation may vary depending on the region in which they are implemented as a result of different context and challenges, and these factors must be evaluated in the decision-making process run by authorities in order to ensure the social acceptance, and economic and environmental sustainability of the actions selected.

That benchmarking and exchange of advice between neighbouring and similar regions that implemented similar recommendations is encouraged.

3. Approach to determine the policy recommendations

The approach for the definition and drafting of COLLECTORS policy recommendations was designed to capitalise on the consortium expertise gained during the project, as well as the input obtained during the different exchanges organised within the framework of the project:

- Expert groups, bringing together various experts from the various players of the recycling value-chain or for other EU projects;
- Regional working groups: representatives from local and regional authorities in charge of waste management across Europe;
- Citizens focus groups: meetings with inhabitants from various cities in Europe to discuss their perspective on waste management;
- Advisory board: composed of CEPI, SUEZ, EuRIC, Lenovo, and Duurzaam Gebouwd, it met several times over the course of the project to discuss its progress.

These exchanges also allowed to gain more insight on possible barriers and challenges faced by inhabitants, local authorities, and the various players of the recycling value chain, when it comes to the organisation of municipal waste management.

Each partner was asked to list and detail the main opportunities and challenges identified within the framework of the project, which were sorted in a table according to the targeted waste streams, the instruments, and references and evidence backing the observations.

To capitalise on previous projects and studies, extensive research was conducted by COLLECTORS partner Ramboll to summarise the main good practices and policy recommendations previously formulated. This was synthesized into a matrix listing the main findings and recommendations, sorted according to the audience, and the targeted waste fractions and instruments. This matrix was used to list previously identified challenges and opportunities, and compare them with the ones highlighted by the project partners.

This input was cross-analysed and organised in a list of topics, for which different challenges and opportunities were identified, along with first recommendations or open-questions to be addressed by the consortium. This list was then sent to project partners, asking them to rate the different proposition by level of priority, and propose more details and references to make them more relevant and interesting. This feedback was used to highlight priority recommendations, discard irrelevant ones, and fine-tune the first proposition of policy recommendations.

The policy recommendations were presented and discussed with external organisations (COLLECTORS advisory board, and representatives from FEVE, EEA, EEB, and Brussels Environment). This allowed the identification of further points of interest, need for clarification, and opportunities

to fine-tune the first list of recommendations. Further propositions and references were also identified, as well as potential challenges for the enforcement of new policies.

Based on this input and on the rating of COLLECTORS partners on the different propositions, policy recommendations were grouped together according to similar topics or challenges, some were discarded, while some were kept. The following criteria were used for this final selection: interest from partners or policy working group, and evidence from the project to back the policy recommendations (i.e. relevant policy recommendations focusing on topics that were not sufficiently addressed by the project were discarded).

The policy recommendations were then drafted, reviewed by the partners, and improved. The final list was then validated by the whole consortium.

4. COLLECTORS Policy recommendations

Topic 1: Clarify and harmonise separation guidelines for paper and packaging waste for a better communication and a more consistent mining of secondary raw materials

Challenge:

There is much heterogeneity when it comes to local separation guidelines for paper and packaging waste, due to many different reasons: existing infrastructure, socio-cultural backgrounds, regional or national guidelines, etc. In several Member States, sorting guidelines can be very different from one local authority to another. This situation has several shortcomings:

- Inconsistencies make **sorting guidelines unclear to inhabitants**. The different collected streams (source-separated or co-mingled), the waste fractions included in these different streams, the colours of the different bins, etc. are making sorting confusing;
- The different waste collection systems collect the very same packaging products and materials, within an EU-wide regulatory framework, in a global materials market, but with different scopes, objectives and drivers, operating in different contexts. Such an approach results inevitably in **highly fragmented value chains** derived from the collected waste and limit the possibilities of collaboration and upscaling.

Besides, the questions of extending the current sorting guidelines for paper and packaging waste to other materials is still open for many players, as it would make sorting behaviours more convenient and possibly simpler for inhabitants, but it could also hinder the quality of sorted materials and make further sorting operations much more complicated and expensive.

Recommendation 1.1: Harmonisation of sorting guidelines

PPW

Level of implementation: national / regional	Timeline: long-term	Input: D2.2 , D2.4 , D2.5
--	----------------------------	--

Description:

This recommendation is a general call to make sorting guidelines more homogeneous at regional, national, and possibly European level. The common sorting guidelines would consist of:

- **A common definition of the waste to be sorted** (“do’s and dont’s”);

- **A common separation scheme**, i.e. common instructions when it comes to what fractions are source separated, co-mingled, or not sorted. At least, a limited number of combinations that could be adapted to specific context could also be implemented, e.g. where denser areas have fewer fractions to be source-separated. It is recommended to opt for source separation of glass packaging and paper/cardboard, for which co-mingling tends to hinder the capture rate and the quality of sorted materials. For plastic packaging, metal packaging, and drinking cartons, it appears that good capture rates and proper quality materials can be obtained through co-mingled collection.
- A common colour scheme and visual communication.

It does not seem appropriate to call for homogeneous collection modes (e.g. door-to-door / bring bank schemes, etc.), as local context such as population density or the configuration of housing might prevent the use of specific systems.

Such harmonisation would, however, simplify the communication to waste producers and inhabitants, as general sorting instructions could be standardised. It would also enable more cooperation among local waste collection systems, e.g. for sorting installations, allowing potential upscaling. More standardised separation schemes could also lead to more homogeneous sorted materials, higher capture rates and fewer impurities, contributing to a less fragmented recycling value-chain.

The separation guidelines should be established to make sorting more convenient and simpler to inhabitants, but also to ensure the production of high-quality sorted materials in line with the needs of recyclers.

There might also be opportunities to extend the current sorting guidelines to a wider range of packaging waste. In many territories, some types of packaging are excluded from the separation instructions, mainly different types of plastic packaging. Including these fractions would contribute to making the new EU targets achievable.

Implementation:

Several regions or Member States have already implemented common sorting guidelines for paper and packaging waste, for instance, Belgium.

It is likely that implementing such harmonised separation guidelines would be a long-term process and sufficient time should be given to local players to introduce them. It is indeed important to consider previous local investments (e.g. in sorting centres) or subsequent changes in separation guidelines that would make the introduction of new guidelines economically challenging, or more confusing to inhabitants.

As stressed above, this harmonisation should consider some flexibility to adapt to local constraints. For instance, inhabitants have less space to sort several fractions in denser areas, while areas with low density of population can also face challenges linked with logistics.

Extension of separation guidelines to all types of plastic packaging is feasible and should be promoted if the sorting centres are adapted to sort these new fractions. Ongoing experiences show that this is technically feasible and leads to higher capture rates without hindering the quality of the sorted fractions.

Extension of sorting guidelines should be promoted at national level and enforced through the EPR systems, ensuring a consistent implementation at national level, with consistent sorting guidelines. The extension of sorting guidelines has to be implemented in parallel with the upgrade of sorting centres, so that the quality of sorted fractions is not hindered. It is important to clearly define the needs for the upgrade of sorting infrastructure, and how to finance it.

A key aspect of the extension of sorting guidelines is the communication to inhabitants, who must be presented with clear instructions, as well as with the reasons behind the extension.

The extension of separation guidelines to non-packaging waste cannot be recommended at the moment. The composition of non-packaging products (e.g. plastic objects) is more challenging to identify, and there is a risk of the components containing hazardous substances (e.g. lead/cadmium, or brominated flame retardant). The inclusion of small, non-packaging products can only be recommended when more information is made available on the content of such products, and when sorting technologies can allow a better identification of the products to ensure proper sorting without contamination of the sorted fractions.

Further references:

WRAP launched a call for “A framework for greater consistency in household recycling in England”, which proposes the following elements:

- a common scope for sorted fractions (plastic bottles, plastic packaging such as pots, tubs and trays, metal packaging – cans, aerosols and foil, glass bottles and jars, paper, card food and drink cartons, and food waste)
- 3 different separation schemes based on kerbside collection, with different degrees of co-mingling for paper and packaging waste fractions, and different collection equipment. These different systems could be adapted to different context (e.g. single-family houses, flats, etc.). Collection frequencies could be adapted according to the local context, with general recommendations;
- A common container colour system.

The proposed systems are based on analyses and research to identify a balance between clarity, cost-efficiency, and quality, in collaboration with the recycling industry. The collaborative approach and the flexibility offered to accommodate local contexts can be considered a good illustration of what harmonised sorting guidelines could comprise. ([source](#))

In France, the extension of separation guidelines has been under development for several years and is expected to be extended to all inhabitants. This resulted in an average increase of 4 kg/capita of

collected packaging, among which 2 kg are new plastic packaging, and the other 2 kg come from the increase of collection of packaging that were already in the sorting guidelines. The newly collected packaging is mostly recycled, and 20% to 25% is sent to energy recovery due to the absence of proper recycling technologies. This extension also led to the implementation of different projects to identify new sorting and recycling technologies ([source](#)).

The European Commission's "Circular Economy Action Plan: For a cleaner and more competitive Europe" (2020) also proposes improved harmonisation of collection systems, including:

"To help citizens, businesses and public authorities better separate waste, the Commission will propose to harmonise separate waste collection systems. In particular, this proposal will address the most effective combinations of separate collection models, the density and accessibility of separate collection points, including in public spaces, taking account of regional and local conditions ranging from urban to outermost regions. Other aspects that facilitate consumer involvement will also be considered, such as common bin colours, harmonised symbols for key waste types, product labels, information campaigns and economic instruments." ([source](#))

Topic 2: Improve local collection of WEEE to improve source separation and quality, and allow high quality recycling and re-use

The European project CWIT ("Countering WEEE Illegal Trade") determined that only 35% of the 9.5 million tonnes of WEEE generated in Europe in 2012 ended up in the officially reported collection and treatment routes, while the rest was not reported and treated in licensed or unlicensed units (33%), illegally exported (15%), illegally collected to extract valuable materials (8%), or thrown away in the mixed residual waste (8%)¹.

Quality recycling and preparing for re-use of WEEE is only possible if source separation is properly organised and sufficient, so that the different streams are not contaminated or damaged, and WEEE reach the recycling and preparing for re-use facilities in proper conditions.

Local illegal behaviours can seriously hinder the quality of the sorted WEEE, thus interfering with their proper recycling and preparing for re-use, and reducing the incomes and resources to sustain quality waste collection systems. Illegal practices also generate negative environmental impacts, such as the uncontrolled release of CFC gases when fridge compressors are stolen before collection.

¹ CWIT, 2015, *Deliverable 6.4 - Recommendations for the electronics industry*



Recommendation 2.1: Increase source separation of WEEE

WEEE

Level of implementation: national, regional, local	Timeline: short-medium -term	Input: D2.4 , D3.4
<p>Description:</p> <p>Improving source separation of WEEE can be achieved by implementing several actions at local level: a better network of more visible, more accessible collection points, more consistent sorting systems enabling sufficient source-separation and low contamination, and better handling of sorted WEEE. This can also be pushed through training of staff at collection points. These local actions can be fostered by improved policies and EPR-related instruments, promoting:</p> <ul style="list-style-type: none"> ▪ Adequate compensations to civic amenities based on the level of WEEE segregation: currently, in many Member States, civic amenities receive an economic compensation for the WEEE collected. A rated compensation based on the level of WEEE segregation may encourage collection points to separate WEEE into different types of groups, e.g. collecting small WEEE and large WEEE separately will prevent additional damage of the waste. ▪ Ban or penalise mixed collection of WEEE with bulky waste: WEEE might still be collected through kerbside collection together with bulky waste, which entails scavenging of valuable parts and potentially damages the collected WEEE, hindering their recycling. Such collection schemes should be either banned or collected quantities through them should be subsidised at a lower rate. Alternative solutions should be made available, e.g. on-demand collection ensuring limited storing time on the kerbside, or encouraging take-back on delivery systems for retailers. ▪ Boost more accessible and visible collection points: the lack of close and accessible collection points, or the lack of information on their availability, seriously hinder collection performances and might lead to improper collection routes for WEEE. Several specific actions can be listed: <ul style="list-style-type: none"> ▪ Encouraging the implementation of retailer collection points for small WEEE, IT equipment and lamps. These collection points usually provide good quality fractions; ▪ Promoting the implementation of collection points (e.g. secured containers) in other places often visited by a high number of citizens: specific types of stores, schools, workplaces, public institutions, etc. ▪ Make sure that these collection points are visible through the implementation of ad-hoc information tools and the centralisation of information, e.g. apps and websites informing of the closest collection point, clear signage on site, training and informing nearby actors etc. ▪ Improve training of staff in municipal collection points and retail: municipal collection points tend to present lower performances in terms of quality of the collected WEEE. Defining training courses on the identification of WEEE products for their separation, on illegal practices and their consequences, and on the requirements for WEEE collection to 		

enable quality re-use or recycling. Such training programmes need to be implemented at the local level in collaboration with local authorities and supported by EPR systems operating in the region on a regular basis. Training may be part of the broader training programme for workers at collection points, and should be organised regularly. Appropriate display of information on-site addressed to workers and users is also recommended. As regards retail collection, it is advisable to ensure that staff at retailers subject to the 1x1 and 1x0 obligation are aware of it and know how to implement and enhance it properly.

Implementation:

Most of these actions can be promoted by EPR systems, considering their role in organising and financing collection points. This can include:

- Define specific collection systems that can be proposed to local authorities to address the lack of collection points, such as punctual collection campaigns, that can be implemented in specific contexts;
- Promote transversal information at local level, so that inhabitants get a proper overview of the different collection options available regardless of who operates them (e.g. retailers, municipality, charity organisation);
- Clarify and enforce collection schemes through retailers: encouraging the use of reverse logistics and implementing measures to check appropriate implementation of 1x1 and 1x0 take-back as described in the WEEE Directive. Information campaigns, provision of adequate visual material and training, and measures to assess compliance can be part of the enforcement measures;
- Identify the potential to implement secured collection points in places often visited by a high number of citizens, such as schools, workplaces, public institutions, etc., through the definition of individual agreements;
- Develop and implement training courses for municipal collection points as part of the professional staff training programme, and promote them through the contractor and public procurement conditions. Training materials may be developed as part of the communications campaigns often supported by EPR systems.

Further references:

Proximity collection in the French EPR: producer responsibility organisations can organise “proximity collection” for local authorities meeting several criteria (urban, population above 60,000 inh. and low collection performances) ([source](#))

Recommendation 2.2: Tackle illegal practices for WEEE management at collection level



WEEE

Level of implementation:
national, regional, local

Timeline: short-medium term

Input: [D2.4](#), [D3.4](#)

Description:

Tackling illegal practices of WEEE management is a key priority for most national schemes, as there are significant gaps between the generated quantities and the quantities associated with the different collection routes. At collection level, illegal practices mainly occur when collection schemes make the WEEE easily available to scavengers, e.g. kerbside collection schemes taking place on a regular schedule, or at municipal collection points where security is insufficient. Tackling illegal practices such as scavenging consists of limiting the access to valuable WEEE and increasing the security of the collection points.

To tackle illegal practices occurring at collection levels, several actions should be promoted:

- **Ban cash transactions for metal scrap:** this policy can limit the incomes from illegal sales from scavenged or stolen WEEE. While this has been introduced in several Member States, this measure can probably be more effective if a ban is introduced across EU. Enforcement is crucial for good results.
- **Adapt compensations to civic amenities based on the detected level of scavenging:** this can be implemented through a system of maluses and bonuses, e.g. by cancelling or increasing the compensation depending on the level of scavenging;
- **Limit kerbside collection for WEEE:** kerbside collection for WEEE should be either banned, or the associated collected quantities should receive lower subsidies;
- **Promote the securing of municipal collection points:** several local actions can be implemented to limit theft and scavenging on civic amenity sites. These actions can be promoted through providing technical guidance, and financial support:
 - Implement closed containers with locks to store WEEE;
 - Mark the WEEE collected at CAS with bright, indelible paint and inform nearby WEEE treatment plants and facilities recovering scrap metal about the marking to prevent them from accepting stolen, marked goods. The information can be delivered by the PRO, the municipalities, or the authority in charge of the inspection of such facilities;
 - Implement video surveillance;
 - Adapt collection frequency of WEEE from the CAS to limit their storage time, e.g. including pickups from the collection point on Saturdays and Sundays if the civic amenity sites have significant scavenging rates;
 - Foster collaboration with local police for reporting illegal practices and ensure regular checks around collection sites.
- **Enhance monitoring of individual collection points:** by doing so, significant drops or underperforming collection points can be better identified, leading to the possible identification of illegal activities occurring there. Besides, promoting the monitoring of specific WEEE fractions with missing parts (e.g. fridge compressors) can help better monitor illegal activities occurring at local collection points and identify hot spots. This information can be used to develop specific strategies targeting the areas with worst performances.

Implementation:

- **Ban on cash transactions on scrap metal** can be introduced through specific financing laws, along with mandatory reporting of transactions where scrap dealers have to keep a record on-site for inspection.
- **Supporting measures against theft and scavenging:** measures can be promoted by PRO, by including specific provisions on the security at municipal collection points. This can include additional subsidies per sorted tonnes, under the conditions that specific activities (such as WEEE marking, locked containers, monitoring of individual collection points, etc.) are implemented, and that improved performances are monitored (e.g. the collection rates, or the rate of scavenged WEEE for key categories).
- **Implement regular benchmarking studies:** where the performances of collection points are compared according to their context, types, etc., to identify low-performing territories/collection points, and better plan inspections or field studies.

Further references:

- **French ban on cash transaction:** it was introduced in 2011 in the law n° 2011-900 of 29/07/2011 on Finances, that made any cash transaction for ferrous and non-ferrous metal forbidden. Only cheques, bank transfers and payment by card are now authorised, in particular, to prevent theft on construction sites. This was linked with another law modifying the Tax Regulation, making it mandatory for metal recycling companies to issue an annual declaration listing sellers' identities and addresses.
- **The French EPR system developed several types of supporting measures against theft and scavenging:** several dispositions are listed in the contract between the PRO and the local authorities, e.g.:
 - The possibility to get one or several locked container(s) for a 6-month period and to assess its efficiency before acquiring it/them;
 - The possibility to access a “compensating” subsidy for the protection of WEEE, which depends on the implementation of a diagnostic, reaching a minimum collection rate for cooling and freezing appliances, and marking these appliances.
- In a study called “The Dutch WEEE flows”² commissioned by Wecycle in 2011, the United Nations University conducted a benchmarking on the municipal waste collection points across the Netherlands, followed by a field study of 100 specific locations, which highlighted some reasons behind the difference of performances ([source](#))
- The Italian “ Premi di Efficienza ”: allows civic amenities meeting certain requirements to get an economic compensation. When the levels of scavenged WEEE are significant, the economic compensation is cancelled. This initiative is based on a 2012 agreement between ANCI (national association of Italian municipalities) and the Italian coordination centre of WEEE. ([source](#))

² Huisman, J., van der Maesen, M., Eijsbouts, R.J.J., Wang, F., Baldé, C.P., Wielenga, C.A., (2012), The Dutch WEEE Flows. United Nations University,

Topic 3: EPR fee modulation for packaging waste and WEEE

EPR systems greatly contribute to improving the recycling of the targeted waste fractions, as well as to the overall eco-design of products, however there is room for improvement, as their effectiveness greatly varies across Member States. The EPR fee (paid by producers or by companies putting products on the markets) contributes to the funding of waste collection and recycling, yet they can also be regarded as an economic incentive to put on the market products that can be recovered in a positive environmental and economic way. Besides, the Waste Framework Directive has set minimum requirements for EPR schemes that include the implementation of incentives to better design the products put on the market to improve their recyclability and reusability.

The analysis of waste collection systems conducted by COLLECTORS shows that their performances are also limited by the type of waste that they have to handle: some packaging waste fractions do not have proper recycling routes and end up in energy recovery. In addition, the environmental benefits of WEEE recycling seem limited for specific fractions, such as IT equipment, which can partly be attributed to the technical difficulty of effectively dismantling them.

Therefore, improving recycling and re-use performances also needs a better design of products, which can be promoted through eco-modulation of EPR fees.

Recommendation 3.1: EPR fee modulation for packaging waste

PPW

Level of implementation: national, regional, local	Timeline: short-medium term	Input: D2.4 , D3.2 , D3.3
--	------------------------------------	--

Description:

EPR fee should be modulated to reflect the recyclability of the product, and the economic and environmental costs associated with its disposal, particularly if it is not properly separated. This means that EPR fees should be applied differently for the different materials, according to their recyclability, e.g. the existence of effective recycling schemes and end-users for the sorted materials, as well as the absence of recycling disrupters: additives, combination of material fractions that hinder sorting and recycling.

Another consideration is that current fees do not reflect the cost for handling packaging waste, including the cost and impact of unsorted fractions sent to disposal.

Implementation:

It seems challenging to come up with a simple criterion to modulate the EPR fee. Several options can be listed:

- **Recyclability:** several criteria could be included, such as the existence of a recycling industry and end-users of sorted materials, the combination of different materials within the same packaging, etc. Specific criteria should be defined for each type of material fraction, and frequently revised to acknowledge innovation;
- **Actual recycling rates:** taking into consideration the actual recycling rate for the different materials gives a proper assessment of how recyclable the different packaging waste fractions are. However, the lack of accurate data and traceability makes this calculation method currently impractical to get figures for every type of packaging.
- **Cost for the end-of-life:** as highlighted in recommendations 4.1, this proposition is also limited due to currently insufficient data on cost in most Member States.

The main difficulty is to find a system that can be controlled and is not too complicated to be complied with by producers, and that can be based on robust data. Harmonisation of fee modulation across Europe might contribute to making the fee system easier to implement, and have a more significant impact on efforts made by producers toward eco-design. It seems that the first step could be to establish recyclability criteria, that could be then completed or replaced with criteria or recycling rates and costs when sufficient data is available. Besides, this action should be complemented with others targeting the consumers, such as awareness raising campaigns.

Further references:

- **Plastic Recyclers Europe** defined protocols for the recyclability for HDPE and PE films, [available here](#).
- In its “Study to Support Preparation of the Commission’s Guidance for Extended Producer Responsibility Schemes”, **Eunomia** listed several EPR systems that have already implemented modulated fees:
 - Italy: the plastic packaging fractions are classified into 4 categories, depending on the existence and the level of maturity of the recycling chain;
 - The Netherlands: a reduced fee has been introduced for certain rigid plastic packaging made of certain polymers and meeting several criteria on the non-presence of disruptors.
 - Sweden: two levels of fee are defined. To get the lower fee, the plastic packaging should be in specific polymer and comply with other requirements (e.g. no multi-layered materials)
 - Portugal: a penalty fee applies to specific packaging, e.g. glass bottles with non-removable ceramic stopper, or PET bottles with PVC labels;
 - France: a bonus is applied for specific types of plastic bottles, and further eco-modulation should be applied depending on the level of maturity of recycling schemes for the different plastic polymers. ([Source](#))

- In France, a new law (*Arrêté du 29 octobre 2019 relatif aux éco-modulations*) introduced further bonuses for packaging including a certain rate of recycled materials for PE, PP, and PS. ([Source](#))
- In Germany, the new Packaging Act (*Verpackungsgesetz*), that entered into force on 1st January 2019, introduces a 'Minimum standard for calculating the recyclability of packaging' and schemes are obliged to create incentives when calculating the participation fees. However, the process of implementing the ecological design of participation fees in practice, including the creation of real incentives, is still ongoing ([Source](#)).

Recommendation 3.2: EPR modulation for WEEE



WEEE

Level of implementation:
national, regional, local

Timeline: short-medium term

Input: [D2.4](#), [D3.2](#), [D3.3](#)

Description:

The analysis of the recycling value-chain of IT equipment and small WEEE shows that the current recovered materials and the associated environmental benefits from these fractions can be improved, calling for more eco-design enabling greater re-use and recycling.

Some parameters are known to hinder the possibilities of re-use and recycling of EEE equipment³:

- lack of information from manufacturers on repairability or on the content of hazardous substances;
- unavailability of spare parts over time;
- design making dismantling not possible or challenging (e.g. the need of specific tools, the use of adhesives, the accessibility of the different parts);
- the diversity of types of materials (e.g. of plastics) and the combination of materials that cannot be processed together;
- the presence of toxic substances, etc.

Eco-modulated fees could address these shortcomings through the inclusion of bonuses and maluses addressing these different elements.

Implementation:

Such eco-modulation can take the form of bonuses or maluses when the product or the producer is not complying with specific requirements that would either make re-use and recycling simpler or more challenging.

³ UNEP, 2009, GUIDELINE ON THE AWARENESS RAISING-DESIGN CONSIDERATIONS

Considering the waste hierarchy and the associated environmental and social benefits, it seems important to primarily focus on any measure promoting longer life-time of products, possibly through repair. Eco-modulation could be focusing on the following elements:

- The availability of repair instructions for repairers;
- The guaranteed availability of spare parts for a sufficient period of time;
- The possibility to dismantle with commercially available tools;
- The possibility to upgrade the products from a material and software point-of-view (e.g. for mobile phones, laptops, and computers);
- The proposition of extended warranty.

When it comes to design for recycling, criteria for eco-modulation should primarily focus on the main materials that can be recovered for each type of EEE (e.g. plastics and metal for IT equipment). Specific criteria could be applied to:

- The presence of specific hazardous substances that are known to hinder recycling (e.g. flame retardant);
- The presence of paint/coating that limit the possibilities of recycling of plastics.

Defining clear criteria for assessing the reparability or recyclability of EEE products is complex, and requires collaborative efforts from the different players of the value-chain for each category of product. Such collaborations between producers of EEE, recyclers, and re-use organisations should be promoted for the definition of more appropriate criteria taking into consideration forthcoming innovation on product design and recycling.

For both packaging waste and WEEE, harmonisation of eco-modulated fees should contribute to making their implementation less complex for producers.

Further references:

The French EPR system has included several criteria to promote the eco-design of EEE. Specific products are already subjected to eco-design criteria, for instance:

- The availability of spare parts for this equipment for a certain period of time;
- The availability of technical documents for authorised repairers;
- The incorporation of recycled plastics;
- The presence of brominated flame retardants.

[\(Source\)](#)

The new anti-waste law for a circular economy (law n° 2020-105 against waste and for the circular economy) included new provisions to promote the extension of life-time of EEE products, including provisions on the update of software for mobile phones and tablets so that users can keep a ‘normal’ usage, or “repair funds” financed by PRO, the availability of information on spare parts available for

the EEE, and the fact that spare parts should be proposed within 15 days upon request, or the creation of a “reparability/sustainability index” that could be displayed on products.

([Source](#))

Topic 4: Improve knowledge and data availability for more alignment along the value chain, better informed local experts, and more consistent comparisons

Challenge:

The lack of harmonised data hinders the efficiency of the different recycling value-chains for various reasons:

- Along the course of the recycling value-chain, material streams get aggregated, which makes it very challenging to track local streams from collection to actual recycling. The lack of transparency and traceability makes it challenging to assess the actual performances of local waste collection systems when it comes to the quantities recycled and whether these systems allow quality recycling.
- The inclusion of many different processes under the label “recycling” also limit the comparisons and analysis of collection systems when it comes to their actual performances. Closed-loop recycling and downcycling might have significant differences when it comes to their environmental benefits, so differentiating them would provide more information on the actual performances of collection.
- Consistent decision-making is heavily dependent on the availability of data and the quality of local information. It can also strongly benefit from consistent comparisons with other territories which allows learning and benchmarking with other regions. However, the inconsistency of data on local waste collection systems limit the possibilities.
- When it comes to WEEE, shortcomings on reporting also make comparisons and analyses challenging. More harmonised reporting systems, and ensuring proper reporting by all the different actors handling WEEE is necessary to fill the gaps and ensure the proper fulfilling of EU targets

Improving knowledge requires more harmonised monitoring and reporting systems set at regional, national, and possibly European level. Providing guidance and tools for local players to better report and monitor their local data will also help them to better understand their performances and identify relevant areas for improvement, allowing learning from good practices developed in other regions.

These recommendations seem particularly relevant regarding the implementation of the new Waste Framework Directive. The new targets focusing on recycling rather than collection are currently very challenging to assess. Therefore, improving the quality and consistency of local

data, as well as ensuring the traceability of sorted fractions, shall greatly contribute to the quality of data reported by Member States. Besides, reaching the new, ambitious targets will only be possible through a better understanding of current discrepancies regarding local performances, and should benefit from the proper identification of best practices on the basis of consistent, local recycling rates.

Recommendation 4.1: More consistent monitoring for local waste data, including costs, composition analysis, and end-application ALL

Level of implementation: national/regional	Timeline: medium term	Input: D2.4 , D3.2 , D3.4 , D4.4
--	------------------------------	---

Description:

The comparison and analysis of local waste collection system is challenging, due to inconsistent calculation and reporting methods. This is especially true for two types of data:

- **Composition analyses:** the results of composition analyses and their consistency strongly depend on the robustness of the method used. How the sampling is done, the different categories of waste fractions and their actual scope and definition, how much the external parameters (such as type of housing, seasonal variations, etc.) are taken into consideration for the representativeness of results, all significantly impact the quality of the results. Composition analysis provides key information on the actual performances of the collection system, by highlighting the potential for improvement and allowing to identify improper practices for WEEE collection.
- **Costs:** the data on costs of local waste collection systems are highly inconsistent, and the figures heavily depend on the local reporting system. For instance, costs might deduct the revenues from e.g. sales of products and subsidies. Costs per material fractions are generally assessed based on hypothesis and specific allocation keys can be used to distribute the costs among the different fractions. Besides, the costs borne by the municipality might not reflect the actual technical costs of waste collection, but rather the tariff paid to the waste company.

Consistent information on the costs associated with local waste collection systems contributes to better understand their efficiency, and identify whether the framework conditions make the improvement of local performances economically sustainable for local decision makers. It also contributes to a better implementation of the minimum requirements for EPR schemes set by the new Waste Framework Directive on the coverage of costs for collection and treatment, and information.

Besides composition analysis and costs, it seems important to further develop local data on the quality of sorted fractions, taking advantage of the data held by EPR systems and/or recyclers.

Implementation:

Several recommendations can be formulated to address this challenge:

- The establishment of **regional/national reporting systems** for local waste data, based on consistent methods and terminologies, e.g. through the creation of an online platform that allows data reporting and consultation;
- The inclusion of **figures on quality of the sorted fractions**, e.g. the content of impurities or the share of sorted materials that is discarded by recyclers, in a consistent manner;
- The establishment of **common methods for reporting costs and performing composition analyses**;
- The **promotion of cost reporting and composition analyses at local level**, through technical assistance, training, and/or adequate subsidies by regional/national authorities or packaging PRO;
- Alternatively, **regional or national campaigns on composition analyses** could be proposed, covering various contexts in terms of population density, tourism, types of housing, etc.
- Efforts toward **harmonisation at EU level**: identifying solutions to make local data more consistent (including figures on costs) would greatly contribute to establishing more consistent data reported by Member States and comparisons leading to the identification of good practices. Studies identifying and comparing existing methods could be a first step toward this harmonisation.

Further references:

Common reporting systems and online database:

- The French online database SINOE, implemented by the French Environment and Energy Management Agency, includes data on local waste collection systems (among others), based on bi-annual surveys. Users can access data on collected quantities, destination of sorted waste, costs, etc. presented in a consistent manner ([source](#))
- The project “TRADES” enabled the creation of a shared database on local waste collection system allowing comparisons on quantities and costs ([source](#))

Standards and methods for composition analysis:

- Scottish Environmental Protection Agency (UK): [link](#)
- Nordtest methods (Nordic countries): [link](#)
- University of Lisbon (Portugal): [link](#)
- French Environment and Energy Management Agency (France): [link](#)
- Guidelines produced by the Finnish Solid Waste Association: [link](#)

Methods for cost reporting:

- Nedvang’s benchmark on household waste provide annual benchmarking elements on costs of household waste management in the Netherlands ([source](#)).
- ADEME (French Environment and Energy Management Agency) developed a common matrix for local authorities to report their costs in an harmonised way ([source](#))

<p>Recommendation 4.2: More transparency and traceability over the value chain</p>  <p style="text-align: right;">PPW</p>		
<p>Level of implementation: national / regional / local</p>	<p>Timeline: medium term</p>	<p>Input: D1.3, D2.4, D4.4</p>
<p>Description:</p> <p>The analyses conducted by COLLECTORS highlighted a general lack of data and fragmented information across the recycling value-chain of paper and packaging waste. For many local waste collection systems, limited data is available beyond packaging waste sorting centres, e.g. regarding the quality of the sorted fraction, or the destination, outcomes, and end-application of the different material streams.</p> <p>This lack of information has several drawbacks:</p> <ul style="list-style-type: none"> It limits the analysis of local waste collection systems and their own understanding of their local performances. Current practices tend to mostly focus on sorted quantities and capture rates, while it gives only a partial view on the contribution to the recycling value-chain. It prevents local authorities from measuring their progress toward the new EU recycling targets. These targets are regarded as a key driver for improving local performances, therefore enabling the calculation of recycling rates at local level is important for local decision-making. <p>The lack of transparency of the outcome of sorted waste might hinder the trust of inhabitants in waste separation. Recent scandals and bans on exports of low-quality waste fractions have raised concerns about the relevance of the paper and packaging waste management system as a whole.</p>		
<p>Implementation:</p> <p>To allow the collection of consistent data allowing the traceability of sorted materials, Member States should set up and implement electronic registries that would allow the reporting from the various players of the recycling value-chain. It can be recommended to capitalise on existing databases, such as the ones developed by EPR organisations to monitor the collected and sorted streams and their actual recycling, with the involvement of recyclers and end-users. However, the consistency of the reporting system with the new recycling targets, and the question of traceability have to be reviewed so that they match with the new EU requirements on calculation methods and measurement points.</p> <p>To ensure traceability of data, the main difficulty comes from the fact that waste streams are aggregated when moving across the recycling value-chain: waste from different municipalities are</p>		

mixed together, and municipal waste is mixed with commercial/industrial waste. It is therefore recommended to:

- Whenever possible, require sorting and recycling units to keep track of the output materials by identifying their source;
- For processes that mix together waste from different sources, assess the individual composition and contamination rates of the different input materials through consistent sampling of the input by individual suppliers (e.g. the different local authorities sending their waste to a sorting centre).

Further references:

The European Commission published a **study to support the implementation of the new reporting obligation**⁴. This study provides propositions on the new measurement points, the accounting of losses, and the identification of the source of materials. ([Source](#))

For sampling methods, European standards can be listed: EN 14899 (“Framework for the preparation and application of a Sampling Plan”) and CEN/TR 15310 (“Characterization of waste. Sampling of waste materials”, with 5 parts on the different steps).

Recommendation 4.3: Distinguish closed-loop from open-loop recycling for PPW monitoring



PPW

Level of implementation: national

Timeline: medium term

Input: [D3.3](#)

Description:

For paper and packaging waste, it appears that the different recycling routes do not offer the same environmental benefits, nor the same impact in terms of resource recovery. In general, closed-loop recycling greatly contributes to reducing the impact of the production of new products, which is the most significant step in terms of environmental impact when it comes to all types of packaging. On the other hand, open-loop recycling includes a greater diversity of recycling processes, and thus allows the recycling of greater quantities. While it does not seem possible to establish that closed-loop recycling automatically yields higher benefits than open-loop recycling, since it mainly depends on the substituted materials⁵, differentiating closed and

⁴ Eunomia, 2019, Study to Support the Implementation of Reporting Obligations Resulting from the New Waste Legislation Adopted in 2018

⁵ Geyer, R., B. Kuczynski, T. Zink, and A. Henderson. 2015. Common misconceptions about recycling. Journal of Industrial Ecology

open-loop recycling gives some interesting insight on the quality of sorted materials and the contribution of waste collection to resource management⁶.

While promoting individual and comparable assessments of the environmental performances of local waste collection systems, or documenting the quality of each sorted fraction, seems currently challenging, introducing a distinction between closed-loop and open-loop recycling for packaging waste could provide more insight on the performances of the waste collection systems, the quality of sorted fractions and its contribution to circular economy.

Implementation:

The key question is the definition of closed-loop recycling for the different material fractions. A too restrictive definition (e.g. product to product) might not be practical in terms of monitoring and could make little sense regarding the assessment of the impact on resource efficiency. Closed-loop recycling implies that the new product in which the material is reprocessed will enable the same application in the next life-cycle, i.e. that it is recycled into the same or similar-quality application.

Propositions for the classification as “closed-loop recycling” are given in the following table for each material stream:

PPW fraction	Closed-loop recycling
Glass	Production of glass packaging (bottles or jars)
Paper	Production of fibres for paper production
Cardboard	Production of fibres for cardboard production
Ferrous metal	Production of ferrous packaging
Non-ferrous metal	Production of non-ferrous packaging
PET	Production of PET bottles

Another challenge to overcome is the question of traceability of sorted fractions, which is addressed in recommendation 4.2.

Further references:

Haupt, Melanie & Vadenbo, Carl & Hellweg, Stefanie. (2016). “Do We Have the Right Performance Indicators for the Circular Economy?” Insight into the Swiss Waste Management System: this

⁶ Haupt, Melanie & Vadenbo, Carl & Hellweg, Stefanie. (2016). Do We Have the Right Performance Indicators for the Circular Economy?: Insight into the Swiss Waste Management System

report calls for separate figures for closed and open loop recycling, and present figures for Switzerland ([source](#))

Recommendation 4.4: Involve all players that can influence collection rates



WEEE

Level of implementation: national	Timeline: medium term	Input: D2.4 , D4.4
--	------------------------------	---

Description:

In most Member States, EPR systems have been assigned one of the main roles for reaching collection targets, however there are WEEE flows that are not accessible by PROs. The involvement of other actors that can influence collection rates (e.g. citizens, municipalities, enforcement bodies, waste operators etc.) may improve the situation. WEEE may be hoarded by households or wrongly disposed of in the mixed residual waste bin. Citizens and other types of waste holders may play a crucial role in WEEE collection. In addition to this, a lack of consistent and extensive monitoring leads to inconsistency and gaps in national data. Besides, unreported WEEE flows are likely to be connected with illegal practices in terms of trade or treatment. Making reporting of WEEE flows mandatory and more consistent, and implementing more frequent inspections could reduce this gap and better identify illegal practices. It will also contribute to reaching the EU targets.

Implementation:

- Educate consumers, by developing and running targeted communication campaigns. It is recommended that campaigns are designed based upon studies assessing the different behaviours and motivations of citizens when disposing of WEEE. Regular surveys to assess citizens’ level of awareness and disposal behaviours may also provide input on the efficiency of the communication campaigns carried out.
- Collect information on the unreported flows by developing sampling protocols to estimate the shares of WEEE in mixed residual waste and WEEE hoarded.
- Develop a national WEEE monitoring strategy, including the creation of a single database to centralise the reported quantities, and the identification of actors that have access to WEEE. Such a monitoring strategy can be co-elaborated between PROs and government agencies in charge of environmental protection and inspection of industrial sites. Implementing an information campaign targeting the actors that have to report, and developing adequate reporting and monitoring tools are also recommended.
- Member States to run studies and develop harmonised methodologies to know where the missing WEEE flows are and design targeted measures for improving collection
- Involve all actors that may influence collection rates in a national strategy, by agreeing on the roles they should play and the obligations assigned to them (e.g. report WEEE received separately, treat WEEE appropriately, trace WEEE, etc.);

- Clarify reporting guidelines: the types of WEEE should be clearly described to avoid any confusion, e.g. with other scrap metal. A common codification should be adopted to allow the traceability of the different types of WEEE.
- Control the collected data through frequent audits and inspection organised by PRO and/or government agencies;
- Run national campaigns for enforcing appropriate reporting and involvement of stakeholders able to influence collection rates. Train and raise awareness of enforcement and decision makers.

Further references:

The CWIT project provided detailed recommendations regarding WEEE monitoring and involvement of EEE users. Several examples of good practices can be listed:

- A national register was set up in the Netherlands and Spain, where all WEEE producers and treatment operators have to report their collected quantities;
- An observatory was implemented in France, aiming at identifying all the players involved in WEEE collection and treatment;
- The obligation for contracts between sorting and treatment operators and PRO was introduced in France;
- Protocols for determining proportions of WEEE categories in mixed loads were developed in the UK to assist stakeholders for whom reporting is too challenging.

[\(Source\)](#)

An example of a national platform for all actors' reporting can be found in Portugal, where there is a national database for WEEE collected that centralises the reported quantities and identifies all actors that have access to WEEE. This database is run by the Portuguese Environmental Agency.

[\(Source\)](#)

Topic 5: Improve the recycling of construction and demolition waste

Challenge:

Construction and Demolition Waste (CDW) accounts for nearly 30% of all EU waste. CDW arises from construction and total or partial demolition activities. CDW is a large source of secondary raw materials, consisting roughly out of wood, masonry (inert materials such as brick, concrete and rock), drywall, roofing, plastics (such as PVC, insulation) and metals. It has a strong potential for recycling and re-use because of the high value of the materials (mostly metals), the large market for re-use

(such as the use of waste aggregates in roads) but also because the technology for recycling is well established.

As a result, CDW is one of the priority waste streams in the EU, with a target⁷ of preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of 70% by 2020 set in the Waste Framework Directive. Recovery rates vary across Member States, with rates of up to 90% in some. However, it must be stressed that if backfilling operations were excluded from the calculation of the overall recovery rate achieved, then no Member State is on track to achieve its 2020 target. This means that recycling of C&D wastes needs more attention.

The collection of CDW is mainly in the hands of private companies, being construction companies and contractors. The relevance of publicly organised waste collection systems is very different for CDW compared to PPW and WEEE, and mostly limited to providing a service to citizens for the collection of specific fractions of CDW that citizens want to get rid of.

The challenge for waste authorities is to develop or identify a local market for secondary CDW fractions, which then provides the demand for diverted materials. In addition, the cost of diverting the materials ideally needs to be lower than using the materials for backfilling, so fiscal measures, taxes or bans should be explored.

Recommendation 5.1: Landfill bans or taxes for recyclable construction and demolition waste



CDW

Level of implementation: EU/national / regional

Timeline: medium term

Input: [D2.4](#), [D3.2](#), [D3.3](#)

Description:

To prevent CDW being sent to landfill and to ensure the cost-benefit of diversion is positive for waste authorities, landfill bans, gate fees (taxes) or incentives for recycling of fractions should be implemented. Ideally this should be done at national or regional level to ensure that CDW leakage to adjoining landfill sites does not occur. It will also support the development of local or regional markets for CDW fractions, especially those with higher value.

Implementation:

⁷ by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight.

The EU Circular Economy Action Plan (2020) includes the commitment to develop a Strategy for a Sustainable Built Environment to promote circularity principles throughout the lifecycle of buildings. One element of this will be “considering a revision of material recovery targets set in EU legislation for construction and demolition waste and its material-specific fractions”.

This approach is a step in the right direction which would likely ensure a higher recycling rate for specific CDW fractions, particularly those with a higher re-use value. However, it does not address the issue of backfilling, or the use of CDW for low value purposes, or prevent some higher-value fractions still being landfilled.

The EU could go further in exploring or encouraging landfill bans for CDW (or particular fractions) to ensure that there is an incentive for the development of local markets, separate collection by waste authorities and, in the long-term, improved design of buildings to avoid CDW from demolition.

Landfill bans are generally implemented at Member State or regional level, depending on where the competence lies. It is, however, important to ensure that the scale at which the ban/tax is implemented is sufficient to ensure that there is no incentive to transport the waste further to a landfill which does not have a ban or tax in place, or to illegally dispose of it.

Further references:

- European Commission (2020) Circular Economy Action Plan: For a cleaner and more competitive Europe ([source](#)).
- Deloitte, 2017, Resource Efficient Use of Mixed Wastes- Improving management of construction and demolition waste ([source](#))

Topic 6: Ensure the economic relevance of higher recycling performances

Challenge:

Improving waste collection systems usually leads to increasing collection and processing costs, that can be balanced by different economic instruments, among which the cost of waste disposal and incineration play a significant role. In many EU territories, landfilling and incineration costs are too low, making recycling a more expensive solution. In order to increase the recycling of materials, it is important to change that equation to increase the costs of landfilling and incineration when compared with recycling. Recycling needs to make sense not just environmentally but also financially for waste authorities and households to increase the recycling rates of PPW.

Alongside landfill and incineration taxes, other measures could be implemented to support the improvement of the performance of the waste authority and to provide an incentive for households to successfully sort their waste and recycling.

<p>Recommendation 6.1: EPR financing for local authorities aimed at improving performance</p>  <p style="text-align: right;">PPW</p>		
<p>Level of implementation: national / regional</p>	<p>Timeline: short-medium term</p>	<p>Input: D2.4, D3.2, D3.3</p>
<p>Description:</p> <p>EPR schemes generally reward local authorities according to the achieved performances for recycling. This provides an incentive for the local authority to maintain a high rate and quality of recycling.</p> <p>However, for poorer performing local recycling systems, particularly those with more challenging circumstances, they often need financial support to make improvements and implement system innovation.</p> <p>National EPR agreements could be modified to provide support to struggling local waste authorities. This could provide the impetus needed to implement system improvements, citizen engagement and participation, or other actions needed.</p> <p>EPR systems have become a strong feature of the recycling landscape so incentives provided through the systems would also send a strong message about the direction of travel for recycling. It could be targeted at an authority’s overall recycling system or at specific problems, such as multi-family apartment blocks or remote areas.</p>		
<p>Implementation:</p> <p>There are two ways in which this could be implemented. The first would be through the EPR enabling framework or regulations of the Member State, which would formalise the requirement within national schemes. This could also prioritise certain circumstances or local challenges that need additional support. The second, and perhaps more expedient, would be for the PROs to develop and fund a workstream at national level to support local authorities to improve performance.</p> <p>This would also complement the commitment in the recently published EU Circular Economy Action Plan (2020):</p> <p><i>“The Commission will also enhance the implementation of the recently adopted requirements for extended producer responsibility schemes, provide incentives and encourage sharing of information and good practices in waste recycling.”</i></p>		

The sharing of information and good practices could be an important element to complement the financial support provided to improve performance, resulting in a comprehensive package for poor performing local authorities in overcoming systemic or specific recycling challenges.

Further references:

European Commission (2020) Circular Economy Action Plan: For a cleaner and more competitive Europe ([source](#))

The experience of Parma ([source](#))

Recommendation 6.2: Adjust landfill and incineration taxes



PPW

Level of implementation:
national

Timeline: medium term

Input: [D2.4](#), [D3.2](#), [D3.3](#)

Description:

To provide an additional financial incentive to increase the rate and quality of recycling of PPW, landfill and incineration taxes can be implemented. They are usually levied at the national or regional level (depending upon where the competency sits) and applied by weight, and sometimes type of material being landfilled or incinerated. If set at the right level, they can tip the balance in favour of improved or advanced recycling collection and treatment systems.

Landfill taxes are a well-established mechanism for incentivising alternative treatment of waste materials and resources. As targets to cut landfilling have increased, so have landfill taxes. All EU Members States have some form of landfill tax. In general, the tax is set at a higher level for more environmentally harmful materials and for those where alternative treatment is available, such as for packaging materials.

With stretching landfill avoidance targets, incineration has also become a more financially attractive alternative. Once again, it is important to set the tax at a level which incentivises alternative collection and treatment systems. In the COLLECTORS case studies, the majority of high performing systems operated within an environment that included landfill and incineration taxes. These were part of a suite of financial and fiscal incentives which were important in the realisation of high performance.

The Netherlands has had an incineration tax since 2015, currently set at €32 per tonne. Other countries including Denmark, Finland, Italy and Belgium have incineration taxes.

Implementation:

Generally, landfill and incineration taxes are set at national level, or in some cases regionally when the competency is at that level. They are usually established by legislation/regulation. Ideally, they should be increased over time as new and improved alternative treatment systems (eg. improved and/or expanded recycling collection systems) are implemented, continuing to provide an incentive for ongoing improvement.

It is important to consider the rates of tax for both landfill and incineration in tandem to ensure that perverse incentives are not created. These taxes are being set to promote the most environmentally desirable outcome (within the waste framework) so it is important that this is considered when setting these taxes. The ideal outcome is that taxes will make the financial case for waste authorities to implement improved recycling systems. However, they also establish a preference for landfill or incineration as the ultimate disposal option

As part of the European Commission Circular Economy Action Plan, the Commission commits to:

“(…) continue to encourage the broader application of well-designed economic instruments, such as environmental taxation, including landfill and incineration taxes, and enable Member States to use value added tax (VAT) rates to promote circular economy activities that target final consumers, notably repair services (subject to legislative progress).”

Further references:

BioIntelligence Services et al for the European Commission (2012) Use of Economic Instruments and Waste Management Performances ([source](#))

Recommendation 6.3: Promote “Pay As You Throw” obligations or subsidies 

PPW

Level of implementation: national / regional / local	Timeline: medium term	Input: D2.4 , D2.5 , D3.2 , D3.3
--	------------------------------	---

Description:

In communities with Pay-As-You-Throw (PAYT) programmes (also known as unit pricing or variable-rate pricing), residents are charged for the collection of residual waste based on the amount they throw away. This creates a direct economic incentive to recycle more and to generate less waste.

In cases where a PAYT has been implemented, they have seen an increase in recycling and decrease in residual waste compared with their neighbours. It has been noted though that not all PAYT

schemes achieve the same improvements. Those schemes which are based on weight or frequency of collection tend to record greater improvements than those based solely on bin capacity.

Implementation:

PAYT schemes are used by local authorities in Belgium, the Netherlands and Luxembourg (among others) in an effort to increase recycling and reduce residual waste collected from households. There are numerous different methods of applying PAYT schemes, with the part of the fee related to the choice / behaviour of residents linked either to:

1. The size of container chosen by the household;
2. The frequency of collection of a given container;
3. The application of a fee per sack used;
4. The weight of waste set out for collection; or
5. A combination of the above

The EEA in a briefing on PAYT Schemes also outlines the different pricing options available to waste authorities:

Full unit pricing

Residents pay for all the waste collected in advance by purchasing a custom bag, bin or selected size container.

Partial unit pricing

The local authority decides on a maximum number of bags or the collection of waste containers which are covered by taxes. Should the user exceed the permitted amount of waste, additional bags or containers are available for purchase. A flat fee ('first-tier') is applied to create revenue stability, and then the 'second-tier' fee is based on the additional amount of waste thrown away.

Variable rate pricing

Residents can choose to rent bins or containers of varying sizes with the price corresponding to the amount of waste generated. The advantage of this is that householders ration their waste generation to fit the size of container they rent and they are motivated to rent smaller containers.

PAYT schemes have been deployed across many cities and regions in the EU. Once again, it is recommended that these incentives to improve household recycling are part of a suite of financial incentives which address different levels of the system. National and regional authorities should encourage local authorities to implement such systems through obligations or financial/technical assistance.

Further references:

Eunomia and IEEP (2016) Pay As You Throw Schemes in the Benelux Countries ([source](#))

Interreg (2017) Policy Learning Platform: Pay As You Throw Schemes Increase Recycling ([source](#))

ACR+ (2016), Cross-analysis of "Pay-As-You-Throw" schemes in selected EU municipalities ([source](#))

References

- ACR+ (2016), Cross-analysis of "Pay-As-You-Throw" schemes in selected EU municipalities (source)
- ADEME, L'intérêt de la matrice des coûts et de ComptaCoût® pour les collectivités, available here: <https://www.ademe.fr/collectivites-secteur-public/integrer-lenvironnement-domaines-dintervention/dechets/maitriser-couts-ajuster-financement/dossier/connaitre-couts/linteret-matrice-couts-comptacoutr-collectivites>
- BioIntelligence Services et al for the European Commission (2012) Use of Economic Instruments and Waste Management Performances (source)
- CDCRAEEE, Accordo Comune, available here: https://www.cdcaee.it/GetPage.pub_do?id=2ca98095564a8fc201564acccdeb0026#:~:text=Pr emi%20di%20Efficienza&text=I%20premi%20potranno%20quindi%20arrivare,300%20euro%2Fton%20per%20R5.
- CITEO, 2019, Simplification du tri en France : on fait le point !
- CWIT, 2014, Recommendation paper to actors1Recommendation paper to actorson e-waste classifications
- da Graça Madeira Martinho, M., Silveira, A. I., & Fernandes Duarte Branco, E. M. (2008). Report: New guidelines for characterization of municipal solid waste: the Portuguese case. *Waste Management & Research*, 26(5), 484–490.
- Deloitte, 2017, Resource Efficient Use of Mixed Wastes- Improving management of construction and demolition waste (source)
- Ecologic, 2017, HOUSEHOLD WEEE FINANCIAL CONTRIBUTION
- Eunomia and IEEP (2016) Pay As You Throw Schemes in the Benelux Countries (source)
- Eunomia, 2019, Study to Support the Implementation of Reporting Obligations Resulting from the New Waste Legislation Adopted in 2018
- Eunomia, 2020, Study to Support Preparation of the Commission's Guidance for Extended Producer Responsibility Schemes
- European Commission (2020) Circular Economy Action Plan: For a cleaner and more competitive Europe (source)
- European Commission (2020) Circular Economy Action Plan: For a cleaner and more competitive Europe (source).
- French Environment and Energy Management Agency (ADEME): Guide méthodologique pour la caractérisation des flux de déchets encombrants collectés dans les déchèteries et l'expérimentation du démantèlement d'objets
- French Ministry of Environment, 2020, THE ANTI-WASTE LAW IN THE DAILY LIVES OF THE FRENCH PEOPLE, WHAT DOES THAT MEAN IN PRACTICE?
- Geyer, R., B. Kuczenski, T. Zink, and A. Henderson. 2015. Common misconceptions about recycling. *Journal of Industrial Ecology*
- Haupt, Melanie & Vadenbo, Carl & Hellweg, Stefanie. (2016). "Do We Have the Right Performance Indicators for the Circular Economy?" Insight into the Swiss Waste Management System: this report calls for separate figures for closed and open loop recycling, and present figures for Switzerland
- Huisman, Jaco & Maesen, M & Eijsbouts, RJJ & Wang, F & Baldé, Cornelis & Wielenga, CA. (2012). The Dutch WEEE Flows. 10.13140/RG.2.1.3193.7446.

- Interreg (2017) Policy Learning Platform: Pay As You Throw Schemes Increase Recycling (source)
- JLY, 2017, Opas sekajätteen koostumustutkimuksiin
- NORDTEST, 1995, Solid waste municipal: sampling and characterisation
- NVRD, 2018, Benchmark Huishoudelijk Afval
- SILiAmb website: <https://apoiosiliamb.apambiente.pt/>
- The experience of Parma (source)
- TRADES project, platform presented here: <https://www.federatiaadi.ro/index.php?page=trades>
- WRAP, 2020, A framework for greater consistency in household recycling in England
- Zentrale Stelle Verpackungsregister, Recycling-friendly design, available here: <https://www.verpackungsregister.org/en/information-orientation/recycling-friendly-design>
- ZeroWaste Scotland, 2015, Guidance on the Methodology for Waste Composition Analysis For local authorities commissioning waste composition analysis of municipal waste

COLLECTORS Consortium



PNO CONSULTANTS
www.pnoconsultants.com



BIPRO
www.bipro.de



VTT
www.vttresearch.com



VITO NV
www.vito.be



UNIVERSITEIT LEIDEN
www.centre-for-sustainability.nl



ACR+
www.acrplus.org



EUROCITIES
www.eurocities.eu



WEEE FORUM
www.weee-forum.org



ZERO WASTE EUROPE
www.zerowasteurope.eu



www.collectors2020.eu



This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745