

## D6.2

# Three customized factsheet finalized

Deliverable 6.2

PNO Consultants



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### CREDITS

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# Contents

**List of abbreviations..... 4**

**Introduction..... 5**

**Clustering ..... 6**

*Selection of clustering projects..... 6*

*Clustering process ..... 7*

    COLLECTORS results ..... 7

    Identification of project needs..... 8

    Drafting of project specific factsheets ..... 9

*Conclusions..... 9*

**Annex ..... 10**

**COLLECTORS Consortium..... 11**

## List of abbreviations

CDW	Construction and demolition waste
COLLECTORS	waste COLLECTiOn systems assessed and good pRacticeS identified
PPW	Paper and Packaging Waste
PRO	Producer Responsibility Organisation
WEEE	Waste Electrical and Electronic Equipment

# Introduction

Many projects have been funded within the major funding programmes of the EU. Therefore it is important to map the projects regarding waste collection in order to leverage on their experiences, maximise the impact of COLLECTORS actions and avoid duplication. To this end, COLLECTORS has identified over 100 relevant projects for various purposes. This enabled us to build upon prior research, include relevant waste collection systems in our database (<https://www.collectors2020.eu/tools/wcs-database>), provide us with experts for our expert panel at various moments in the project, and lastly led us to several recently started EU-projects to cluster with and facilitate capitalization on our project results. These clustering exercises happened through a physical meeting at the fourth COLLECTORS conference in Thessaloniki in December 2019 as well as through Skype and Microsoft Team calls later in 2020.

This deliverable describes the process, selected projects and contains the five factsheets that were drafted for clustering purposes with these EU-projects.

# Clustering

## Selection of clustering projects

In order to maximise the impact of the tools and knowledge developed within COLLECTORS, a targeted selection procedure was used. In total, 39 potential projects were identified for clustering (see D6.1). From these 39 projects, projects were selected for clustering purposes according to two criteria; match of planned project tasks and activities with the tools produced in the COLLECTORS project; and sufficient remaining time (at least one year) to project end. This was done by selecting projects according to the above described search criteria, filtering projects with relevant and matching project descriptions/activities, assessing the project timeline, and lastly contacting the projects via email to assess their interest in the clustering exercise. Eventually, this resulted in a list of 13 potential clustering projects as set out below:

Programme	Name	Topic
INTERREG Europe	PLASTECO	Supporting EU regions to curb plastics waste and littering
INTERREG Europe	SMART WASTE	Innovation in Waste Management Policies
H2020	PROMPT	PRemature Obsolescence Multi-Stakeholder Product Testing Program
H2020	PolyCe	Post-Consumer High-tech Recycled Polymers for a Circular Economy
INTERREG Europe	EURE	Effectiveness of Urban Environmental Policies to improve Resource Efficiency
H2020	City Loops	Closing the loop for urban material flows
EIT Raw Materials	PANORAMA	Physical AccouNts Of RAW MAterial stock and flow Information Service
INTERREG Europe	LCA4REGIONS	Improved Environment and Resource Efficiency through use of Life Cycle Instruments for implementation of regional policies of the EU
INTERREG Europe	OptiWaMag	Optimization of waste management in urban spaces and in households
H2020	CEWASTE	Voluntary certification scheme for waste treatment
H2020	CICERONE	CirCular Economy platfoRm for eurOpeaN priorities strategic agEnda
LIFE	WEEE	Waste Electrical and Electronic Equipment (WEEE): treasures to recover!
LIFE	Rethink Waste	Rethinking municipal tariff systems to improve waste management

Table 1. Overview of selected clustering projects

All project representatives from the selected projects for clustering activities were contacted and introduced to the intended clustering activities. Interested projects were invited to attend a first clustering session in Thessaloniki in parallel with the Collectors project meeting in December 2019. Prior to this meeting, the selected and invited projects received summarized information about the COLLECTORS results. The goal of the Thessaloniki meeting was to present the COLLECTORS results and tools in detail, brainstorm where and how these results and/or tools could be beneficial to the projects and learn from each other's project results. Representatives from two projects were able to attend the meeting in Thessaloniki; Smart Waste and Plasteco. Subsequently and with the additional projects, a series of bilateral Skype calls were organized to complete the clustering process.

Based on the match between project scope and activities, project timeline and willingness to participate, clustering activities were organised with the following projects:

1. Smart Waste;
2. Plasteco;
3. PROMPT;
4. PolyCe;
5. LCA4Regions;
6. CityLoops and;
7. Rethink Waste.

## Clustering process

The clustering process consists of three main steps;

1. Presentation of COLLECTORS tools and results;
2. Collaborative identification of projects' needs;
3. Drafting of project-specific factsheet.

The steps are described in more detail below.

### COLLECTORS results

Clustering started with the compilation of a matrix to determine which of the COLLECTORS tools is of most interest to the clustering project. The following tools and/or reports are identified and presented to the projects:

- **Life Cycle Analysis (LCA)**; An environmental assessment on waste collection in Europe by applying LCA, analysing how improving municipal waste collection can reduce the environmental impact for the PPW, WEEE and CDW.
- **Cost Benefit Analysis (CBA)**; A financial assessments on waste collection in Europe by applying CBA, analysing how separate collection for PPW, WEEE and CDW can be implemented while balancing costs.

## D6.2 - Three customized factsheet finalized

- **Value Chain Analysis (VCA);** Assessment of the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
- **Social Acceptance Analysis (SAA);** An assessment in dialogue with citizens of the implemented solutions and key elements for societal acceptance on waste collection in Europe.
- **Multiple-Criteria Decision-Making (MCDM);** A decision making tool used for prioritising elements and aspects of waste collection systems by weighing and ranking parameters.
- **Policy recommendations;** Synthesis of all COLLECTORS results, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.
- **Good practices;** Description of the 12 good performing waste collection practices identified in the COLLECTORS project.

## Identification of project needs

To see how information about these tools could best be shared with the receiving project, a series of meetings took place. As a first result from these discussions, Table 2 below shows the identified interest per project. The final result are the shared factsheets (Deliverable 6.2).

	LCA	CBA	VCA	SAA	MCDM	Policy Rec	Good practices
SmartWaste		X				X	X
CityLoops	X	X			X		
RethinkWaste			X	X			
PolyCe						X	
LCA4Regions	X					X	X
PROMPT	X	X			X		
PLASTEKO		X		X	X	X	

Table 2. Overview of interest per project (green = final clustering projects)

Initially it was planned to only develop three factsheets, however, given the interest of the contacted projects as well as the overlap between the interest in tools, it was decided to include more projects in the clustering activities, thereby positively contributing to the impact and knowledge sharing of the COLLECTORS results.

Clustering activities took place in the form of calls; emails; and exchange of deliverables, reports and expertise with the seven listed projects. Some of these clustering activities have taken place with the SmartWaste and Cityloops project, however due to a shift in their priorities, these projects dropped out. Project specific factsheets were therefore drafted for the five following projects: RethinkWaste, PolyCe, LCA4Regions, PROMPT and PLASTEKO.



## Drafting of project specific factsheets

The factsheets consist of a two pager specifically written for the project in question. Below an example is given in Figure 1. All factsheets contain a short clustering-**project summary**, a description of the relevant **COLLECTORS tools**, a description including hyperlinks with the **relevant COLLECTORS reports**, and lastly a **tailored section on knowledge sharing** where COLLECTORS partners explain or elaborate on specific questions of the clustering-project. This results in a useful and practical factsheet where project partners of the clustering-project can find and look up relevant information for their future research.

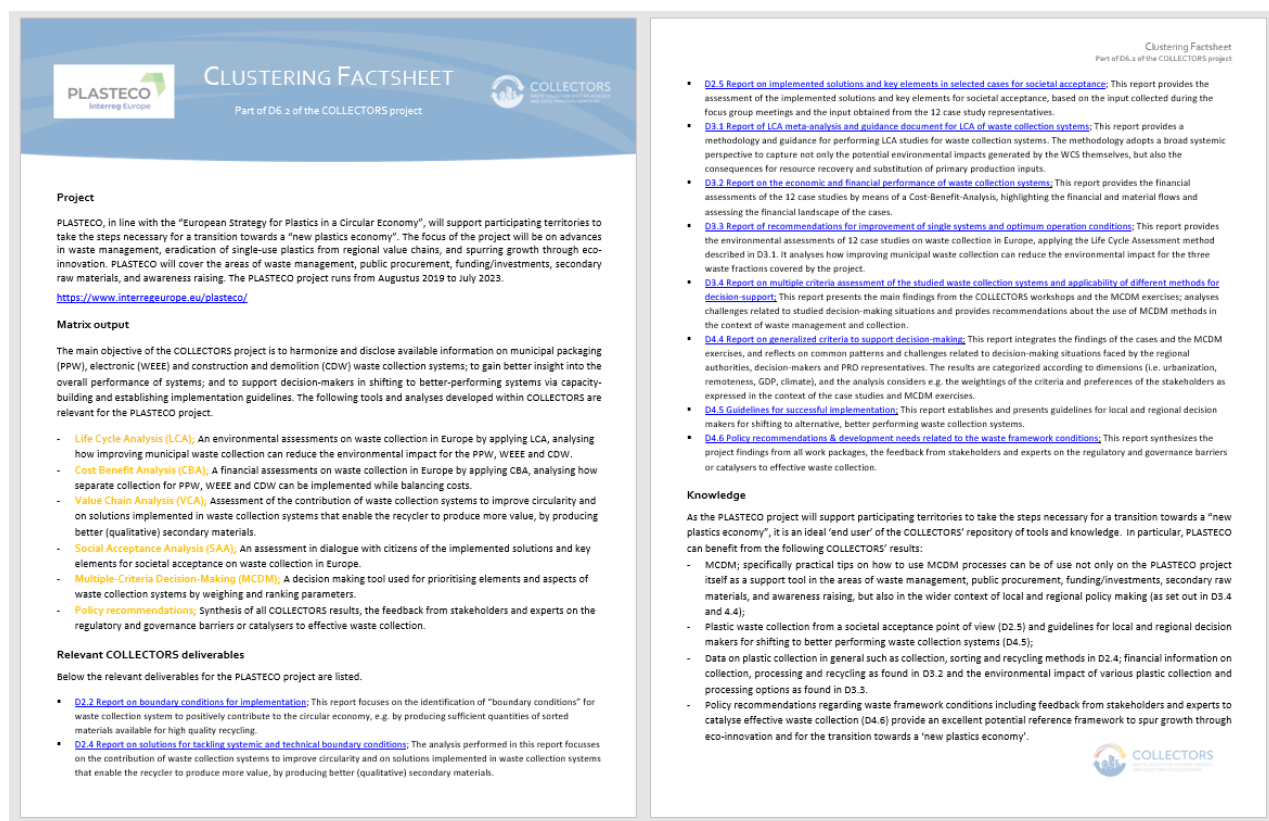


Figure 1. Example of the COLLECTORS clustering factsheet

## Conclusions

During the clustering process, some projects indicated almost all COLLECTORS deliverables to be relevant for their future work. This appeared to be the case especially for the INTERREG projects, that often include local/public authorities who – as one of the targeted COLLECTORS end users – can directly implement and/or learn from the COLLECTORS results.

As four of the five projects only started in 2019, the COLLECTORS clustering activity came at the right time to provide participating projects with relevant input and background information to build upon.

# Annex

This Annex includes the factsheets as shared with the contact points of the projects of:

- LCA4Regions INTERREG project;
- PLASTECO INTERREG project;
- PolyCE Horizon2020 project;
- PROMPT Horizon2020 project;
- RethinkWaste LIFE project.

# CLUSTERING FACTSHEET

Part of D6.2 of the COLLECTORS project

## Project

LCA4Regions will contribute to the more effective implementation of environmental policy instruments by the application of Life Cycle Methodologies. Currently, many individual policies are implemented in isolation of others. Thus, the project is focused on expanding the use of life cycle methods as a holistic approach when conceiving and implementing public policies related to environmental protection and resource efficiency. The project runs from August 2019 to July 2023.

<https://www.interregeurope.eu/lca4regions/>

## Matrix output

The main objective of the COLLECTORS project is to harmonize and disclose available information on municipal packaging (PPW), electronic (WEEE) and construction and demolition (CDW) 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 implementation guidelines. The following tools and analyses developed within COLLECTORS are relevant for the LCA4Regions project.

- **Life Cycle Analysis (LCA);** An environmental assessments on waste collection in Europe by applying LCA, analysing how improving municipal waste collection can reduce the environmental impact for the PPW, WEEE and CDW.
- **Policy recommendations;** Synthesis of all COLLECTORS results, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.
- **Good practices;** Description of the 12 good performing waste collection practices identified in the COLLECTORS project.

## Relevant COLLECTORS deliverables

Below the relevant deliverables for the LCA4Regions project are listed.

- [D2.4 Report on solutions for tackling systemic and technical boundary conditions;](#) The analysis performed in this report focusses on the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
- [D3.1 Report of LCA meta-analysis and guidance document for LCA of waste collection systems;](#) This report provides a methodology and thus guidance for performing life cycle assessment (LCA) studies for waste collection systems. The methodology adopts a broad systemic perspective to capture not only the potential environmental impacts generated by the WCS themselves, but also the consequences for resource recovery and substitution of primary production inputs.

- [D3.2 Report on the economic and financial performance of waste collection systems](#); This report provides the financial assessments of the 12 case studies by means of a Cost-Benefit-Analysis, highlighting the financial and material flows and assessing the financial landscape of the cases.
- [D3.3 Report of recommendations for improvement of single systems and optimum operation conditions](#); This report provides the environmental assessments of 12 case studies on waste collection in Europe, applying the Life Cycle Assessment method described in D3.1. It analyses how improving municipal waste collection can reduce the environmental impact for the three waste fractions covered by the project.
- [D4.6 Policy recommendations & development needs related to the waste framework conditions](#); This report synthesizes the project findings from all work packages, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.

## Knowledge sharing

LCA4Regions aims to implement the life cycle approach in the policy making at regional level. Waste management is a thematic pillar of the project. It will focus mainly during the 3th semester of the project, from August 2020 to January 2021 and the results of Collectors will be of interest to develop this part of the project.

The other project thematic pillars are resource efficiency, public procurement, training and capacity building and finally, monitoring and evaluation. Improvement in waste management is also linked to these thematic pillars, so Collectors results will be of use through the whole life of the project.

LCA4 Regions partnership consist in the following 9 organisations and all are aware of the Collectors project and showed their interest in it. Collectors could definitely help providing a consistent database, good practices and methodologies or guidelines to incorporate LCA and the life cycle thinking in the designing and implementation of waste management plans. In addition:

- The webplatform with data collected from 242 waste collection systems will be of use to the municipal waste collection, planning and implementing organisations of the LCA4Regions project;
- The deliverables on solutions for tackling systemic and technical boundary conditions contribute to the circular economy and focus on a better production of quality secondary materials and could make an important impact on resource efficiency;
- The deliverables on environment impact are key documents for LCA4regions as they gather the essence of LCA4Regions aim; improve environment and resource efficiency through use of life cycle instruments for implementing regional policies or procedures. D 3.1 provides a methodology and guidance for performing life cycle assessment (LCA) studies for waste collection systems that partners in their region could follow, taking into account the entire life cycle of the materials and assessing the environmental consequences of choices made at the collection stage:
- The Interreg Europe programme is aimed at looking for good practices to be transferred in the partner regions and D 3.3 on the environmental assessments of 12 case studies on waste collection applying the LCA method could be a source of inspiration. It shows how improving waste collecting can reduce environmental impact:
- The policy recommendations deliverable will be of interest to gather ideas to develop the 7 future action plans in the regions of the partnership.

## Project

PLASTECO, in line with the “European Strategy for Plastics in a Circular Economy”, will support participating territories to take the steps necessary for a transition towards a “new plastics economy”. The focus of the project will be on advances in waste management, eradication of single-use plastics from regional value chains, and spurring growth through eco-innovation. PLASTECO will cover the areas of waste management, public procurement, funding/investments, secondary raw materials, and awareness raising. The PLASTECO project runs from Augustus 2019 to July 2023.

<https://www.interregeurope.eu/plasteco/>

## Matrix output

The main objective of the COLLECTORS project is to harmonize and disclose available information on municipal packaging (PPW), electronic (WEEE) and construction and demolition (CDW) 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 implementation guidelines. The following tools and analyses developed within COLLECTORS are relevant for the PLASTECO project.

- **Life Cycle Analysis (LCA);** An environmental assessments on waste collection in Europe by applying LCA, analysing how improving municipal waste collection can reduce the environmental impact for the PPW, WEEE and CDW.
- **Cost Benefit Analysis (CBA);** A financial assessments on waste collection in Europe by applying CBA, analysing how separate collection for PPW, WEEE and CDW can be implemented while balancing costs.
- **Value Chain Analysis (VCA);** Assessment of the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
- **Social Acceptance Analysis (SAA);** An assessment in dialogue with citizens of the implemented solutions and key elements for societal acceptance on waste collection in Europe.
- **Multiple-Criteria Decision-Making (MCDM);** A decision making tool used for prioritising elements and aspects of waste collection systems by weighing and ranking parameters.
- **Policy recommendations;** Synthesis of all COLLECTORS results, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.

## Relevant COLLECTORS deliverables

Below the relevant deliverables for the PLASTECO project are listed.

- [D2.2 Report on boundary conditions for implementation](#); This report focuses on the identification of “boundary conditions” for waste collection system to positively contribute to the circular economy, e.g. by producing sufficient quantities of sorted materials available for high quality recycling.
- [D2.4 Report on solutions for tackling systemic and technical boundary conditions](#); The analysis performed in this report focusses on the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
- [D2.5 Report on implemented solutions and key elements in selected cases for societal acceptance](#); This report provides the assessment of the implemented solutions and key elements for societal acceptance, based on the input collected during the focus group meetings and the input obtained from the 12 case study representatives.
- [D3.1 Report of LCA meta-analysis and guidance document for LCA of waste collection systems](#); This report provides a methodology and guidance for performing LCA studies for waste collection systems. The methodology adopts a broad systemic perspective to capture not only the potential environmental impacts generated by the WCS themselves, but also the consequences for resource recovery and substitution of primary production inputs.
- [D3.2 Report on the economic and financial performance of waste collection systems](#); This report provides the financial assessments of the 12 case studies by means of a Cost-Benefit-Analysis, highlighting the financial and material flows and assessing the financial landscape of the cases.
- [D3.3 Report of recommendations for improvement of single systems and optimum operation conditions](#); This report provides the environmental assessments of 12 case studies on waste collection in Europe, applying the Life Cycle Assessment method described in D3.1. It analyses how improving municipal waste collection can reduce the environmental impact for the three waste fractions covered by the project.
- [D3.4 Report on multiple criteria assessment of the studied waste collection systems and applicability of different methods for decision-support](#); This report presents the main findings from the COLLECTORS workshops and the MCDM exercises; analyses challenges related to studied decision-making situations and provides recommendations about the use of MCDM methods in the context of waste management and collection.
- [D4.4 Report on generalized criteria to support decision-making](#); This report integrates the findings of the cases and the MCDM exercises, and reflects on common patterns and challenges related to decision-making situations faced by the regional authorities, decision-makers and PRO representatives. The results are categorized according to dimensions (i.e. urbanization, remoteness, GDP, climate), and the analysis considers e.g. the weightings of the criteria and preferences of the stakeholders as expressed in the context of the case studies and MCDM exercises.
- [D4.5 Guidelines for successful implementation](#); This report establishes and presents guidelines for local and regional decision makers for shifting to alternative, better performing waste collection systems.
- [D4.6 Policy recommendations & development needs related to the waste framework conditions](#); This report synthesizes the project findings from all work packages, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.

## Knowledge

As the PLASTEKO project will support participating territories to take the steps necessary for a transition towards a “new plastics economy”, it is an ideal ‘end user’ of the COLLECTORS’ repository of tools and knowledge. In particular, PLASTEKO can benefit from the following COLLECTORS’ results:

- MCDM; specifically practical tips on how to use MCDM processes can be of use not only on the PLASTEKO project itself as a support tool in the areas of waste management, public procurement, funding/investments, secondary raw materials, and awareness raising, but also in the wider context of local and regional policy making (as set out in D3.4 and 4.4);

- Plastic waste collection from a societal acceptance point of view (D2.5) and guidelines for local and regional decision makers for shifting to better performing waste collection systems (D4.5);
- Data on plastic collection in general such as collection, sorting and recycling methods in D2.4; financial information on collection, processing and recycling as found in D3.2 and the environmental impact of various plastic collection and processing options as found in D3.3.
- Policy recommendations regarding waste framework conditions including feedback from stakeholders and experts to catalyse effective waste collection (D4.6) provide an excellent potential reference framework to spur growth through eco-innovation and for the transition towards a 'new plastics economy'.

# CLUSTERING FACTSHEET

Part of D6.2 of the COLLECTORS project

## Project

Despite efforts to improve the collection and recycling of WEEE plastics, most of this waste stream still ends up in landfills, incineration, or in low-value applications. By bringing together 20 key players from research, business and technology with distinguished expertise in every single step of the supply and value chain of high-tech plastics, the PolyCE project aims to reduce this material and value loss. Among others, the project aims to:

- Demonstrate the feasibility of a circular model for the plastics supply and value chain.
- Develop a grading system for recycled plastics, which will ultimately serve to provide guidelines for designing new electronic products.
- Raise awareness among consumers across the EU
- Establish a feedback loop from research activities that provides policy input regarding technical feasibilities and conflicts from a technical perspective.

Duration: The PolyCE project runs from June 2017 to May 2021.

Project website: <https://www.polyce-project.eu>

## Matrix output

The main objective of the COLLECTORS project is to harmonize and disclose available information on municipal packaging (PPW), electronic (WEEE) and construction and demolition (CDW) 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 implementation guidelines. The following tools and analyses developed within COLLECTORS are relevant for the PolyCE project.

- **Policy recommendations;** Synthesis of all COLLECTORS results, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.
- **Good practices;** Description of the 12 good performing waste collection practices identified in the COLLECTORS project.



## Relevant COLLECTORS deliverables

Below the relevant deliverables for the PolyCE project are listed.

- [D4.5 Guidelines for successful implementation](#); This report establishes and presents guidelines for local and regional decision makers for shifting to alternative, better performing waste collection systems.
- [D4.6 Policy recommendations & development needs related to the waste framework conditions](#); This report synthesizes the project findings from all work packages, the feedback from stakeholders and experts on the regulatory and governance barriers or catalysers to effective waste collection.

## Knowledge sharing

**Policy recommendations:** PolyCE covers the entire value chain of WEEE plastics recycling, including collection. For this purpose, the policy recommendations resulting from the Collectors project will be a very valuable input for this part of the value chain. The European Strategy for Plastics (2018) set the goal that by 2025 ten million tonnes of recycled plastics should find their way into new products on the EU market. This target can only be reached if collection of plastics in all sectors and countries will be significantly improved.

**Good practices:** The PolyCE project is carried out by 20 partners from ten countries with different national approaches towards waste collection and recycling. However, it is clear that the circular economy is a global movement and can only be reached through coordinated and coherent approaches. In this respect, it is of utmost importance to learn from best practices and to implement them throughout the world. By highlighting five waste collection practices on WEEE, the Collectors project provides valuable input and lessons learnt to the PolyCE project at the collection level.

# CLUSTERING FACTSHEET

Part of D6.2 of the COLLECTORS project

## Project

The PROMPT project has the goal to establish an independent testing programme to assess the lifetime of consumer products when they are put on the market. The testing programme will cover major aspects related to longevity. It has the goal to enable testing bodies, consumer organisations, market surveillance authorities and other interested stakeholders to rely on tangible definitions and to assess premature obsolescence. It will contribute to ongoing and future standardisation efforts and provide designers and policymakers with recommendations on improving durability and reparability of products, empower consumers to make informed choices, and create awareness on market conditions. The project runs from May 2019 to April 2023.

<https://prompt-project.eu/>

## Relevant COLLECTORS tools

The main objective of the COLLECTORS project is to harmonize and disclose available information on municipal packaging (PPW), electronic (WEEE) and construction and demolition (CDW) 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 implementation guidelines. The following tools and analyses developed within COLLECTORS are relevant for the PROMPT project.

- **Life Cycle Analysis (LCA);** An environmental assessments on waste collection in Europe by applying LCA, analysing how improving municipal waste collection can reduce the environmental impact for the PPW, WEEE and CDW.
- **Cost Benefit Analysis (CBA);** A financial assessments on waste collection in Europe by applying CBA, analysing how separate collection for PPW, WEEE and CDW can be implemented while balancing costs.
- **Multiple-Criteria Decision-Making (MCDM);** A decision making tool used for prioritising elements and aspects of waste collection systems by weighing and ranking parameters.

## Relevant COLLECTORS deliverables

Below the relevant deliverables for the PROMPT project are listed.

- [D1.3 Selection of 12 validated case studies](#); This report describes the approach and methods used for identifying a group of potential cases of collection systems that could be studied during the project, taking into considerations contexts that prove to be challenging and performance indicators that allow the identification of well-performing cases. Multiple-Criteria Decision-Making is used to rank and finally select the cases.
- [D3.1 Report of LCA meta-analysis and guidance document for LCA of waste collection systems](#); This report provides a methodology and thus guidance for performing life cycle assessment (LCA) studies for

waste collection systems. The methodology adopts a broad systemic perspective to capture not only the potential environmental impacts generated by the WCS themselves, but also the consequences for resource recovery and substitution of primary production inputs.

- [D3.2 Report on the economic and financial performance of waste collection systems](#); This report provides the financial assessments of the 12 case studies by means of a Cost-Benefit-Analysis, highlighting the financial and material flows and assessing the financial landscape of the cases.
- [D3.3 Report of recommendations for improvement of single systems and optimum operation conditions](#); This report provides the environmental assessments of 12 case studies on waste collection in Europe, applying the Life Cycle Assessment method described in D3.1. It analyses how improving municipal waste collection can reduce the environmental impact for the three waste fractions covered by the project.
- [D3.4 Report on multiple criteria assessment of the studied waste collection systems and applicability of different methods for decision-support](#); This report presents the main findings from the COLLECTORS workshops and the MCDM exercises; analyses challenges related to studied decision-making situations and provides recommendations about the use of MCDM methods in the context of waste management and collection.
- [D4.4 Report on generalized criteria to support decision-making](#); This report integrates the findings of the cases and the MCDM exercises, and reflects on common patterns and challenges related to decision-making situations as faced by the regional authorities, decision-makers and PRO representatives. The results are categorized according to dimensions (i.e. urbanization, remoteness, GDP, climate), and the analysis considers e.g. the weightings of the criteria and preferences of the stakeholders as expressed in the context of the case studies and MCDM exercises.

## Knowledge sharing

LCA: The Collectors project has assessed the environmental impact of waste collection systems for different waste collection systems, among others for waste electrical and electronic equipment (WEEE). The PROMPT project has the main objective to help extending the useful lifetime of electrical and electronic equipment and is therefore complementary to the Collectors project from a Circular Economy perspective, since it is situated before the products' end of life. Therefore, the information generated through the Collectors project on the system's potential impact on the environment provides additional arguments for a longer lifetime of electrical and electronic equipment.

CBA: The Collectors project has also collected detailed financial information on waste collection systems, among others for waste electrical and electronic equipment (WEEE), which is relevant for the PROMPT project. Some main results were that EEE are getting smaller and more complex while less valuable materials are used resulting in less material recovery potential. This is a strong argument for value retention policies through lifetime extension, which will be argued by the PROMPT project.

MCDM: The Collectors project provides recommendations on the use of MCDM methods in the context of waste management and collection. The PROMPT project used the Analytical Hierarchy Process (AHP), also an MCDM method, in order to prioritise the products chosen for the testing programme. Both projects show that the MCDM methods can be applied when it comes to complex decision-making situations in the context of waste management and in the WEEE sector.

## Project

The main objective of LIFE-REthinkWASTE is to provide public authorities with a plug and play model based on the PAYT and know-as-you-throw (KAYT) paradigm. The goal is to increase separate waste collection, reduce residual waste per capita and boost the recovery rate, whilst simultaneously cutting the average household waste bill. This will be pursued by adapting waste management plans and addressing other drivers (e.g. regulation, financial plans, waste management contracts), based on a combined approach of PAYT and KAYT. The transition from a traditional waste management scheme to a more integrated approach often requires the encouragement of the participation of multiple stakeholders in the society: government, municipalities, public utilities, experts, and certainly the public (the area of municipal waste management, in particular, is very closely perceived by citizens since they are directly involved in waste management on a daily basis). Given this background, social acceptance and awareness is considered a must to ensure the efficient implementation of new and local personalized communication strategies and a new tariff system. The project runs from July 2019 to June 2022.

<https://www.rethinkwaste.eu/>

## Matrix output

The main objective of the COLLECTORS project is to harmonize and disclose available information on municipal packaging (PPW), electronic (WEEE) and construction and demolition (CDW) 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 implementation guidelines. The following tools and analyses developed within COLLECTORS are relevant for the RethinkWASTE project.

1. **Value Chain Analysis (VCA);** Assessment of the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
2. **Social Acceptance Analysis (SAA);** An assessment in dialogue with citizens of the implemented solutions and key elements for societal acceptance on waste collection in Europe.

## Relevant COLLECTORS deliverables

Below the relevant deliverables for the RethinkWASTE project are listed.

- [D2.2 Report on boundary conditions for implementation](#); This report focuses on the identification of “boundary conditions” for waste collection system to positively contribute to the circular economy, e.g. by producing sufficient quantities of sorted materials available for high quality recycling.
- [D2.3 Minutes of three focus group meetings](#); This report consists of the minutes from three focus group meetings with citizens meetings discussing how, why or why not they participate in waste separate collection schemes. A

total of 33 citizens from different countries (Poland, France and Italy) with different backgrounds (age, type of neighborhood, type of household...) took part in the focus group meetings so as to get a representative sample of European citizens.

- [D2.4 Report on solutions for tackling systemic and technical boundary conditions](#); The analysis performed in this report focusses on the contribution of waste collection systems to improve circularity and on solutions implemented in waste collection systems that enable the recycler to produce more value, by producing better (qualitative) secondary materials.
- [D2.5 Report on implemented solutions and key elements in selected cases for societal acceptance](#); This report provides the assessment – in dialogue with citizens – of the implemented solutions and key elements for societal acceptance in the case studies. This assessment is done based on the input collected during the focus group meetings (see D2.3) as well as the input obtained from the 12 case study representatives.

## Knowledge sharing

*Focus Group Research:* RethinkWaste puts special focus on KAYT social footprint monitoring. In this light, the results and methodology from the COLLECTORS focus groups are interesting. RethinkWaste assess a number of people changing their habit, calculate minimum incentive to have people willing to be engaged, how this incentive+frequency could decrease over time, citizens' satisfaction degree, etc. Social Footprint Analysis (SFA) has been proposed as a joint methodology to complement the overall impact and success of the case studies across the 4 testbed areas with the citizens feedback. The SFA investigation will be carried out with a testimonial pool of citizens out of the ~5000 people per each testbed area concerned by the case studies. For SFA it is proposed a mixed methods evaluation plan aimed at providing important insight around the social acceptance of PAYT-KAYT, as far as awareness and knowledge increase regarding waste management. This data will be then compared with technical results such as increase of separate collection, impurities level or number of illegal dumping. Mixed methodologies refers to both quantitative and qualitative:

- 1) *Quantitative method:* one standard-survey will be designed to capture information on the attitudes of sufficient sample of representative users. The survey will gain understanding of citizens' awareness, knowledge, attitude and claimed behaviour before KAYT-PAYT, providing a baseline. The survey will be repeated at the end of the project to estimate the change and also the recognition of messages and communication mediums used during the project. The results of the focus groups held in the framework of COLLECTORS (especially D2.3 and D2.5) provide significant insights for a better set up of the survey.
- 2) *Qualitative method:* Focus group discussions will be held in each pilot as a qualitative approach to gain in-depth understanding of social views of the PAYT/KAYT system and waste management in general. Within the focus groups, a moderator will propose a series of questions intended to gain insight about the way the groupviews the separate collection scheme, bonus obtained, messages given, concepts or symbols. Speech analysis will be done to record perceptions, opinions, beliefs and attitudes in an open and natural conversation of the group members. Focus groups could be performed at the beginning of the project for a better construction of the PAYT-KAYT messages and activities. This methodology applied to waste management has been used few times and to understand the methodology used through the COLLECTORS project has been highly relevant to better define RethinkWaste one, especially in the framework of the COVID19 emergency when the initial proposed methodology is being redefined. D2.3 and also the information provided by the person responsible of these tasks has been useful for the project.

*Social Acceptance key factors:* Social acceptance of the new KAYT is seen as one of the main success factors. Two main elements will be evaluated:

1. Believing and perceptions of citizens regarding being informed and the limits to this personalized and flexible information, trying to avoid reaching the "ecofatigue" border.
2. Believing and perceptions of citizens regarding being awarded as a driver to change their habits, which kind of "prizes" or benefits they want, what can be more effective, etc.

The RETHINKWASTE paradigm considers economic viability and public support as the key factors for the transition to new waste management tariff schemes, such as the variable tariff, along with technological advancement and ecological impact. This holistic approach primary run by the 4 testbed areas links society, economy and the environment, towards a better waste separation and recycling performances (ENV-goals), more equal fiscal justice ("pollute more, pay more" principle) and stability of local finances (ECON-goals).

Hence, the significance of economic issues to accelerate the implementation of innovative environmental technologies is broadly recognized, and economic drivers are considered critical parameters for policy-makers to develop effective strategies. But the study of social perceptions and attitudes can provide an insight into several factors that affect the shaping of public awareness on environmental actions and that – at the end of the day – affect both the environmental goals and economic goals.

Results of the COLLECTORS project (especially D2.5) improve the knowledge of the breakeven point to introduce transformation from traditional strategies to the new PAYT/KAYT schemes. Main outputs regarding believing and perceptions of the citizens linked to the different waste collection schemes are interesting for a better definition of these change drivers: better, robust and coherent communication, clear and transparent information, economic conscientiousness influence, perception of different waste collection schemes, etc.

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