Deliverable 2.5

Report on implemented solutions and key elements in selected cases for societal acceptance

TASK 2.3: Assessment of implemented solutions in the 12 selected case studies for societal acceptance – in dialogue with citizens.

ZWE, LDE, WEEE Forum

Credits

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Contents

List of Acronyms

CAS	Civic Amenity Site
DRS	Deposit Return Scheme
FGM	Focus Group Meeting
HORECA	Food service industry (Hotel/Restaurant/Café)
PAYT	Pay-as-you-throw
PMD	Plastic bottle, metal packaging and drink cartons
PPW	Paper and packaging waste
PRO	Producer responsibility organisation
WCS	Waste collection system
WEEE	Waste electrical and electronic equipment

Summary

Ensuring the involvement of citizens in the waste collection system is essential to ensure good quality recycling as efficient sorting will not only lead to quantity but also to quality of the secondary raw material. However incentivising households in properly sorting their waste is complex as it depends on many different social factors.

This report aims at providing a better understanding of the main factors related to the development and the maintaining of a sorting behaviour. To do so, on one hand, it will gather citizens' feedback on what is essential for them. On the other hand, it will analyse the societal measures implemented by local authorities whose waste collection system have proven to be successful.

Citizen's feedback have been gathered during three focus group meetings where 36 European citizens discussed the key factor related to their sorting behaviour. It appeared that having the correct information on the guidelines but also on the outcomes of the system – i.e. what happens to the waste I sort – is primordial. The system also has to be convenient and adapted to everybody's need. Citizens also mentioned that financial incentives are an efficient mean to foster the sorting habit. Furthermore, those factors complement themselves. For instance, a system will be seen as more convenient if citizens fully understand the guidelines, e.g. if they have the correct information.

The analysis of good practices from 10 local authorities have been done in collaboration with employees of the local authorities or the local PRO – producer responsibility organisation –. A set of good practices has been identified beforehand and then transmitted to the local authorities/PRO stating whether and how they implement such practice.

Measures gathered from the local authorities/PRO were the compared to the needs expressed by citizens to assess which measures are useful and how to improve their efficiency.

1. Introduction

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

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

COLLECTORS will therefore:

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

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

    (1) quality of collected waste;

    (2) economics;

    (3) environment;

    (4) societal acceptance.

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

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

The COLLECTORS project covers the following waste groups/streams:

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

Deliverable 2.5 – Report on implemented solutions and key elements in selected cases for societal acceptance – aims to analyse enhancer and obstacles to well-functioning waste collection system from a societal perspective. The report provides the assessment – in dialogue with citizens – of the implemented solutions and key elements in the 12 selected for societal acceptance. This is assessment is done based on the input collected during the focus group meetings with 36 citizens from three different countries as well as the input obtained from the case studies.

2. Goal and scope of Work Package 2 (WP2) and Deliverable 2.5 (D2.5)

2.1 Work Package 2 (WP2): Boundary conditions and solutions for implementation of waste collection systems

Work Package 2 (WP2, "Boundary conditions and solutions for implementation of waste collection systems)" analyses the role of the waste collection system within the waste recycling value chain, helping to turn waste into a resource by identifying the boundary conditions for efficient and effective recycling. These boundary conditions are the specific assets of a waste collection system that enable the recycling value chain to produce more value, by producing more (quantitative) and/or better (qualitative) secondary materials.

Waste collection systems do not operate in isolation but are part of a social and economic reality. This means that optimal collection of waste requires seamless integration into the existing social situation as well as into the broader value chain.

In other words, the willingness of citizens to cooperate with the system that has been put in place is essential and the collected waste needs to be useful for other value chain partners and, in particular, it needs to be of sufficient quality. Therefore, the focus for WP2 is on the role of the waste collection system within the waste recycling value chain (see Figure 1), rather than on the waste collection system itself.
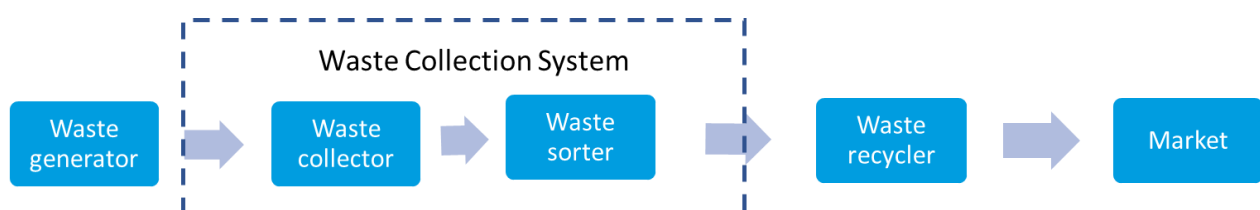
Figure 1: Waste Collection System within the waste recycling value chain

Furthermore, the introduction of the Circular Economy concept by the EU provided the framework to **shift from sustainable waste management**, i.e. diverting waste from disposal over recovery to recycling ('waste push'), **to sustainable resource management,** i.e. promoting the production of resources for which there is a market ('market pull') (see Figure 2). While the waste push mainly promotes the shifting of large quantities of waste from disposal and incineration to low level or low value recycling, the market pull seeks promotes the production of high value secondary materials from waste.
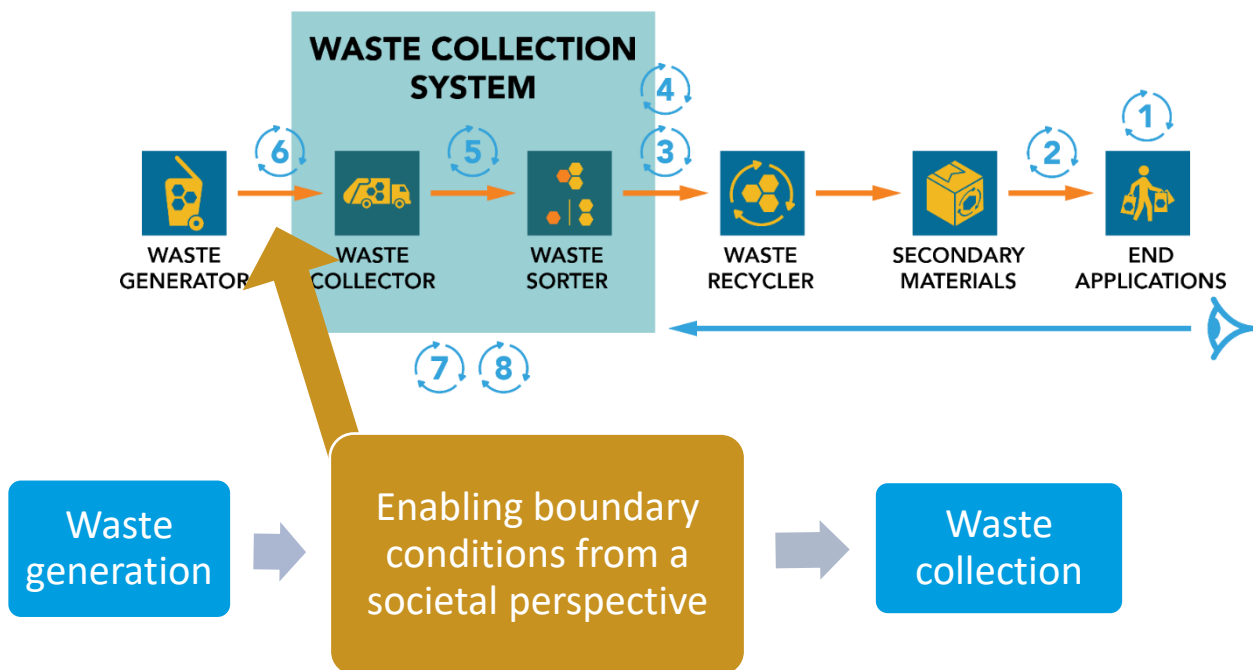
Figure 2: Circular Economy concept shifts recycling from waste push to market pull

The **objectives of WP2** are to first identify the main boundary conditions for the implementation of effective waste collection systems from the perspective of recyclers and citizens, and then to gain insight into successful solutions and key elements for implementation.

Therefore, we will identify the boundary conditions for effective recycling of secondary materials at a generic European level in Task 2.1 (T2.1). These boundary conditions are the specific assets of a waste collection system that enable the recycler to achieve better quality, resulting in more value.

In Task 2.2 (T2.2) and Task 2.3 (T2.3) we evaluate to what extent these boundary conditions have been met for specific waste collection systems (the selection of 12 case studies), including listing the specific solutions applied in the case studies and potential solutions to improve the effectiveness of the waste collection system.

This will be done both from a technical and systemic point of view (in Task 2.2), and from a societal point of view (in Task 2.3).

2.2 Deliverable 2.5 (D2.5): Report on implemented solutions and key elements in selected cases for societal acceptance

In terms of waste management and recycling improvement, the focus is mostly on technical conditions – analysed in Collectors task 2.2: "Assessment of implemented solutions in the 12 selected case studies for tackling systemic and technical boundary conditions – of the Waste Collection System", such as the purity of the different waste streams or business profitability with regards to the secondary raw material market. Yet households' participation in the collection system is essential and depends on many social factors incentivising citizens to adopt a recycling behaviour. This is all the more important, since enabling boundary conditions for citizens to sort their waste are preliminary conditions for the system's performance from a Circular Economy perspective. Boundary conditions from a circular economy perspective could be present, yet they would remain ineffective if citizens do not participate in the waste collection or do not sort their waste adequately.

In that sense, the term "societal acceptance" refers to the citizen's perception of the waste management system, whether they perceive it as a system they would be willing to use – e.g. "acceptance"., for whatever reason

This report to seeks to understand the citizen's perspective when it comes to waste collection and the measures implemented by the organisation in charge of the system. It consists of an analysis of ten specific cases of waste collection systems for WEEE and PPW, as well as the analysis of three focus group meetings during which citizens were able to discuss and reflect on their motivation to participate in the recycling system. The focus group meetings were organised with 36 citizens from three different countries (Poland, France and Italy) and different backgrounds (regarding their age, type of neighbourhood, type of household, etc.) so as to get as close as possible to a representative sample of European citizens.

Additionally, the report analyses the local waste collection systems from the case studies from a societal perspective by describing and analysing what is implemented to encourage citizens to participate in the waste collection system. The same case studies as in deliverable 2.4. Report on solutions for tackling systemic and technical boundary conditions; deliverable 3.2. Report on the economic and financial performance of waste collection systems; and deliverable 3.3. Report of recommendations for improvement of single systems and optimum operation conditions of waste collection systems will be studied. -. Five cases focus on PPW and five on WEEE.

Approach on the non-inclusion of the case studies for CDW:

In contrast to PPW and WEEE, the collection of CDW is mainly in the hands of private companies, being the building companies and contractors. The relevance of publicly organised waste collection systems is 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.

Therefore, the societal acceptance assessment and remainder of this report will only focus on PPW and WEEE.

Alternatively, CDW will still be assessed from an environmental, technical and economic perspective (as in D2.4. Report on solutions for tackling systemic and technical boundary conditions; D3.1. Report of LCA meta-analysis and guidance document for LCA of waste collection systems; D3.2. Report on the economic and financial performance of waste collection systems).

3. Approach

The generic analysis of boundary conditions ([Deliverable 2.2. Report on boundary conditions for implementation](#)) identified four main boundary conditions that are critical to citizens' involvement in a waste collection and sorting system (see Figure 3):
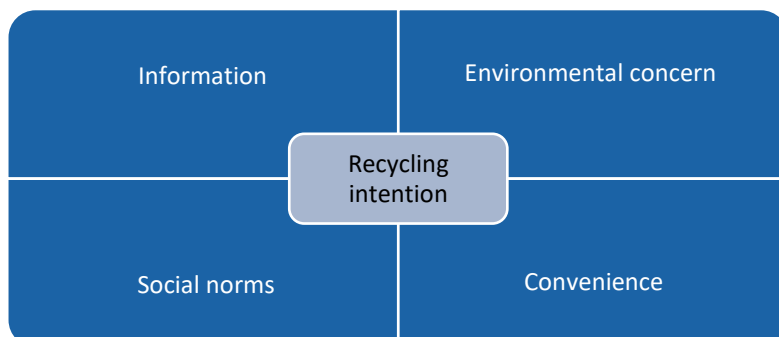
Figure 3: Most relevant social boundary conditions for recycling

Convenience relates to how easy the system is for a citizen to use. It has to be understood here as perceived convenience as even if the waste collection system is optimized for the whole population, it might not meet the expectation from one specific citizen and therefore be perceived as not easy to use. At the same time, one small change – such as changing a collection bag's colour – can significantly increase the perceived convenience of a system. Among the many variables used to influence convenience, there is distance and location of bringing points, collection frequency and visual information.

Information relates to the citizens' understanding of how the waste collection system works, from the environmental impact of waste to which waste goes in which bin. As waste collection systems are often changing due to the broadening of separate collection to new streams, a constant update of the information about these systems to the citizens is required.

Social norms refer to the local culture and context. Indeed, the influence of others from small social circles, such as family, to bigger social groups, such as neighbourhoods, have a high impact on a citizen's habits, since a positively perceived action will be rewarded with societal approval.

Environmental concern relates to general environmental beliefs. Strong environmental concerns are therefore likely to influence a recycling habit as it is seen as an environmentally friendly measure.

This report will evaluate how the generic boundary conditions are operationalised in the case studies and how they are reflected in the citizens' opinions when interviewed during the focus groups.

For each analysed case, we will describe the measures implemented to involve citizens in the waste collection system based on the main factors identified as critical in the report on boundary conditions ([D2.2. Report on boundary conditions for implementation](#)). An analysis will be done on a case-by-case basis, as well as a meta-analysis covering all the cases. Although PPW and WEEE collection systems are technically different, they will be analysed simultaneously from a citizen's perspective as, during the focus group meetings, respondents did not express different behaviour for PPW and WEEE.

To understand the behaviour of citizens, three focus group meetings were organised to assess the means that can be applied to engage citizens to source separate their waste. A common analysis of the three focus groups is provided to get the main boundary conditions from a citizen's perspective. The methodology and organisation of the focus groups is discussed in Chapter 3, followed by the discussion of the results in Chapter 4.1. A comparison of the focus groups analysis and the meta-analysis of the cases is then conducted to gain a better understanding of gaps and similarities between the citizen's perspective and the waste collection implementer's perspective. This is presented in Chapter 4.1.2.

3.1 Focus Group meetings analysis methodology

3.1.1 Focus group meetings organisation

The three following focus groups meetings took place:

1. On the 20th of March 2018 in Treviso, alongside the Regional Working Group (Italy, 13 participants), duration: 1 hour and 48 minutes;
2. On the 3rd of July 2019 in Surgères and Cyclad (France, 13 participants), duration: 1 hour and 37 minutes;
3. On the 16th of July 2019 in Warsaw (Poland, 10 participants), duration: 2 hours and 30 minutes.

The three focus group meetings specifically focused on the societal boundary conditions regarding waste collection and sorting habits. It was decided that the meetings should take place in parallel with Regional Working Group meetings to follow the progress of the project and to make it easier from a logistic perspective.

The discussions during the focus group meetings were all guided by the same guiding questionnaires. However, the angles and the discussions' progress vary as the guiding questionnaire had provisions related to the specific local context and because the focus group meeting's aim was to lead to a free-flowing discussion between participants.

Citizens' gathering and logistics set-up of the meetings were made with the help of local partners reaching out to individuals, while facilitation, transcription and translation of the minutes were done by professionals. The participants are 36 citizens from different countries (Poland, France and Italy) and with different backgrounds (regarding their age, type of neighbourhood, type of household, etc.) so as to get as close as possible to a representative sample of European citizens.

The following criteria were guiding the respondents' selection to ensure diversity during the focus group meetings:
- Sex (50% gender representation);

- Education (low, medium and high levels of education);
- Employment (unemployed, employed, retired, student);
- Age (balanced between young and elderly);
- Type of housing (urban, non-urban, flats, detached housing);
- Size of municipality (bigger towns and smaller villages).

The three focus group meetings's organisation followed those guidelines when possible. However, due to some specific constraints, some exceptions were made:

- Due to logistical constraints, it was not feasible to organise a focus group meeting in Malta. Instead, the decision was taken to organise a focus group meeting in Surgères/Cyclad;
- As Surgères/Cyclad constitutes a WEEE case study, the questions had a specific focus on WEEE. Therefore, while the first focus group in Treviso started from a general perspective, the two remaining meetings targeted specific waste streams for which they have a good capture rate: WEEE for Surgères/Cyclad and PPW for Warsaw.
- Not in all focus group meetings all criteria were completely respected and relevant. Regarding participants in Surgères/Cyclad and Treviso, the criteria could not be completely respected. In the case of Treviso, the focus was largely on waste collection facilities most of the respondents were elder people, hence the age factor was not respected. In the case of Surgères/Cyclad, due to the difficulty to find respondents, the education criterion was not taken into account.

3.1.2 Focus group meetings minutes analysis

The focus group meeting minutes consist of the transcriptions of the audio recordings of the three meetings. All data and consent were obtained according to GDPR guidelines. The minutes are available in Collectors' Deliverable 2.3. Minutes of three focus group meetings, alongside the guiding questionnaire used to steer the meetings' discussion which are available in Appendix 1.

The analysis' main objective is to answer the following questions:

- **From a citizen's perspective, what are the factors triggering, or not, and maintaining, or not, their recycling intention?**

- **In what way(s) does a specific factor act on citizens' intention?**

This analysis will be conducted with a specific focus on the 4 main factors established in the previous report on the key factors enabling a well-functioning recycling system[1]:

- Convenience;

- Information;

- Social norms;

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[1] Analysis of boundary conditions for waste collection systems.

- Environmental concerns.

The analysis followed the three next steps:

1. <u>Data grouping and labelling</u>

This first phase aims at reducing and managing a high data volume by examining, categorising and tabulating the minutes. The minutes should only take into account what is relevant, thus requiring a "clear fix on the purpose" (Krueger and Casey 2000) while getting rid of non-relevant data.

To do so, the following steps have been followed:

a.   *Examining*; a first read of the minutes while having in mind:

- The four identified main factors;
- Other identified factors;
- Interrelationships between the different factors;
- Other recurring/relevant topics regarding waste (such as waste prevention, focus on specific waste stream, etc.).

The outcomes should be a familiarisation with the document and the highlighting of key moments in the transcript to get a sense of the general ideas expressed the document.

b.   *Categorising*; Building categories and a code (colours, for example) to highlight the relevant answers. During this phase, sub-categories within categories could be identified.

c.   *Indexing and charting*; Managing the data and reducing it. Then, for each category, applying the following questions (Krueger & Casey, 2000) to build a new document:

1. Is the answer replying to the question? If no, see point 2. If yes, see point 3.
2. Does it answer a different question? If yes, move it to the appropriate question. If no, see point 3.
3. Does is say something important about the topic? If yes, move it to the appropriate question. If no, set it aside.
4. If it is something said earlier, start grouping together. If no, start separate pile.

2. <u>Knowledge (findings) and creation</u>

The second phase is the further analysis of the findings from the first step. From the obtained reduced and classified data, we will analyse what the findings say regarding the initial question. From there, theories will start to develop.

3. <u>Implications and conclusions</u>

From the theories and findings we obtained in phase 2, we will analyse what conclusions start to build up. And from those conclusions, concrete and general implications regarding citizens' participation in the recycling system will be drawn.

4. Focus group meetings meta-analysis

For each of the four most relevant boundaries from a societal perspective (information, environmental concern, social norms and convenience) as well as for the interlinkage between those factors and key factors identified during the meetings, a clustering of the key findings will be done.

The clustering will be made according to the ideas that are found to be expressed during at least two of the three focus group meeting. Based on the clustering, the following aspects will be listed:

- General considerations presenting how citizens perceive this factor;

- Key aspects regarding the factor that the organisation in charge of the waste collection system has to take into account in order to involve citizens.

3.2 Case studies methodology

The case studies analysis has the objective to report on the measures implemented at the local level to involve citizens in waste sorting and collection. As four key factors (information, convenience, environmental concerns and social norms) were identified in Deliverable 2.2 (Report on boundary conditions for implementation, see Figure 3), a specific focus is given to those factors.

The analysis comprised the following steps:

Specific questionnaires (available in Appendix 2. Case studies research questionnaire) for the two waste streams (PPW and WEEE) were drafted with the COLLECTORS project partners;

1. Those questionnaires were then transmitted to our contact points for the cases (representatives from either the local authority or the PRO analysed);
2. With the answers from the local authority/PRO, an analysis of the case was conducted. It consisted of giving account of the overall "system" implemented to involve citizens, as well as listing concrete measures implemented at the local level.

The types of action listed in the questionnaires represent a generic list of potential actions usually used to trigger citizens' participation in the recycling system. The list that was defined is the result of:

- Inputs from the COLLECTORS consortium partners (LDE, WEEE Forum, ZWE);
- Measures implemented among the local waste collection systems analysed within the Collectors project.

For two of the WEEE cases – Pembrokeshire and Helsinki, for which the cases are available in

Appendix 4. Pembrokeshire and Helsinki case studies - the relevant local authority or PRO was not able to provide information. Therefore, it was preferred to leave theses analyses out of the cases analysis as the information gathered on the website did not allow for a comprehensive overview of the system.

It is also noted that campaigns and initiatives at the national level may complement local activities, especially in the case of the WEEE collection. Those campaigns may influence the citizen's involvement in the waste collection system. However, this report only focuses on measures implemented at the local level, as it aims to capture best local practices. Also, national or regional campaigns are often limited in time and their effect cannot be directly measured when looking at the results of one specific location.

4. Results

4.1 Focus group meetings

4.1.1 Analysis of the individual focus group meetings

Focus group meeting 1 – Treviso

This focus group meeting took place on the 20th of March 2018 in Treviso, alongside the Regional Working Group. There were 13 participants and the meeting lasted for 1 hour and 48 minutes.

I.   Information (state of knowledge and information)

Participants specifically highlighted that information about the system is a key to improve sorting habits, with as well as dissemination by Contarina, a waste management company.

For the participants, the setting of the pay-as-you-throw system proved to be challenging but *"the role of Contarina was paramount to teach us and train us"*. The (quality of the) information this provided by Contarina has been essential for citizens to properly sort their waste, as stated by one of the participants: *"Contarina's guidelines were so accurate that they brought us on the right path and we finally learnt how to sort waste correctly",* when at the beginning *"It was difficult to understand the materials of the products"*.

Information, and, more importantly, the correct information, play a key role to engage citizens in the waste collection system. Although citizens specifically mentioned that it was difficult at first to clearly understand what they had to do, guidelines delivered by the waste management company proved to be key in making sure citizens would get the correct instructions to enable them to participate.

Not only was the correct information distributed, but awareness raising campaigns were launched to make sure that everyone knows about the waste collection system and is aware of it. As one participant mentioned: *"There were public hearings and they also launched an intensive work at the schools to engage the pupils"*.

Hence, information is key when properly drafted and distributed at two levels, by:

- **Providing the right information accessible to different segments of the population;**

- **Making sure that the information is widely distributed, not only through disseminating it, but also via citizens meetings or campaigns in specific institutions (classes, companies, shops, etc.)**

Specifically, regarding the financial rule of the pay-as-you-throw system implemented in 2006, information is essential as it can lead to a good or bad use of the system. As one participant explicitly mentioned, *"Before, we discussed about the two collections of bio-waste per week. When we say that it's fine with two, itis because we understand that increasing the number of collections per week would increase the costs for us. We understand that having a system in one specific way has a cost"*. Hence, a good understanding of the (financial) system allows for an optimisation by the citizens themselves because they're involved in it and know how to best benefit from it. On the other hand, a wrong understanding could lead to people not properly using the separate collection scheme: *"there are families who have not understood the concept [of PAYT] and they think that they will pay more when they get one more bin cleared [of recyclables]"*.

Furthermore, if information from Contarina is deemed enough to trigger the sorting habits, **lack of information from the producers can lead to confusion and wrong sorting manners**. One participant specifically mentioned the role of the producers that should make this information more explicit for paper: *"I think that the issue of the responsibility of the producer is especially evident for paper. The problem here doesn't come from who throws out or who collects, but it's a problem not knowing what the material is. The producer should inform."* This is also true for plastics: *"Another big problem is sorting plastic waste. I can throw bottles and other plastic stuff, but why can't I throw my toothbrush or the cd's casing in the bin for plastic?"*. Someone else specifically asks for easier-to-understand labels: *"they are putting labels that no-one understands. They could write it instead because what matters is that people understand it"*. Lack of information regarding the recyclability of packaging can then lead to citizens not sorting the waste and putting it in the mixed waste as specifically explained by a participant: *"In case of doubt, always to the residual"*.

II. Environmental concerns (attitude and environmental concern)

Although not intensively discussed, participants considered environmental concerns a key factor. One participant stated that *"the most important value is the environmental protection"* which was then predominantly approved by the participants.

Therefore, **environmental concerns are seen as an overarching factor acting as an incentive or a prerequisite for citizens to adopt a recycling habit**.

To some extent, **environmental concerns were also mentioned as a factor that helps citizens to accept the system implemented by the municipality**: *"Since we understand the importance of environmental protection, we want that waste fees are calculated separately"*.

III. Social norms (local culture and context + influence of social group)

When it comes to social norms, and especially the local context aspect, participants replied that it is a key factor in the way that it makes them feel compelled to sort their waste: *"since everyone does the separate collection, you feel uncomfortable if you don't do it. It is crystal clear"*.

Most of the participants felt compelled to sort their waste at home because of the surrounding context of everyone sorting as well. Yet for one participant, social norms were not acting in a compelling way but rather as a "shared responsibility".

Yet this sense of responsibility applies only for door-to-door collection, seen as personal, and not to bring points, for which citizens are not exclusively responsible. As a participant mentioned, it is a way to individualise the responsibility when *"people didn't consider the roadside containers as personal responsibility. In people's opinion roadside containers were common tools and did not attract the general public to engage. Conversely, door to door is more personal. It is a thing that distinguishes me in the society and therefore I must do it in the best way"*.

To a broader extent, social norms, seen as the local cultural context, are perceived as deeply incentivising the waste sorting habit as they are becoming a widespread mindset. To the participants, there has been a *"cultural change"* which led to separate collection, *"a cultural habit to which we got used"*. And as it became a widespread cultural habit, it is, as stated by one participant, *"an involuntary reflex"*. Therefore, as waste sorting behaviour became so widespread in the region, **it became cultural, which has a clear impact on citizens as they have interiorised the behaviour, thus becoming a habit.**

IV. Convenience (perceived convenience outside and inside)

Although not specifically mentioned in the answers to the questionnaire, several aspects of convenience were covered by the participants as key to their sorting habit. The following aspects were specifically mentioned: space/type of housing; information regarding the product; access to bring points; access to information; allocated time. Among those, space/type of housing, information regarding the product and access to bringing points were extensively discussed.

Lack of space due to a specific type of housing was discussed the most by the participants. Especially the fact that living in the city centre in small flats and/or high-rise buildings makes it more complex to have different bins to sort one's waste but also to frequently take it out: *"the lack of space inside the flats is a tougher issue"*. Whereas, participants living in a house in the suburbs feel that they are less vulnerable to those risks: *"We feel this problem less than those people who live in the city centre. We have more space. For instance, at my place there is a little bin in the kitchen and a bigger one in the garden"*. **Therefore, perceived convenience here is deeply linked to the type of housing and space that one has. And the lack of space might lead to citizens to see waste sorting as inconvenient.**

Information about how to sort a product was also considered as deeply confusing for citizens who do not know where to put one specific type of product as this requires technical knowledge. This was specifically mentioned for different types of paper and plastic: "plastics *that create more difficulties [to sort correctly]*". The participants also compared those kind of waste streams to organic waste to illustrate how technical plastic and paper sorting can be: "You do not need any technical information or knowledge to understand how to sort bio-waste". **Lack of clear information regarding the type of product that must be discarded therefore discourages citizens** because they do not know how to sort exactly, and this is seen as inconvenient.

Then, access to civic amenity sites was intensively discussed as it can be quite challenging for citizens to go there to get rid of their waste. As one participant mentioned *"we all go to the eco centre, but it would be good to have the collection at home once a year, as you need to get there by car and there is no public transport"*, hence **going to civic amenity sites is seen as inconvenient for citizens, especially those who do not own a car**.

V.   Other recurring/relevant topics (such as waste prevention, focus on specific waste stream, etc.) regarding waste.

- **Responsibility of manufacturers:**

Although not specifically asked, the participants mentioned by themselves the difficulty to understand how to sort their waste due to the lack of information on packaging. It is the case for paper packaging: *"I think we need to make it simpler and have only one kind of paper, or at least have the logo explaining how to sort it"* but also for plastic: "*plastics that create more difficulties [to sort correctly]"*. For the participants, this lack of information leads to uncertainty and can hinder their sorting habit. To them, this is information that should come from the manufacturers or even simpler, reduce materials to only one type, as suggested by a participant: *"I think we need to make it simpler and have only one kind of paper"*.

- **Role of the waste management entity:**

Another key factor mentioned is the **role that Contarina had in incentivising citizens to properly use the waste collection system**. The participants spontaneously mentioned that the role of Contarina has been key at different levels. As mentioned regarding the information factor, Contarina played a key role in producing the right information but also making sure that it is distributed and taught to every segment of the population. When it comes to convenience, the participants also emphasised the fact that Contarina is always available via phone: *"There are places where you have to be for hours on the phone until you reach the person you want to talk to. With Contarina, instead, they have a landline telephone you can talk to a very nice lady and then they address your demands, such as collecting the waste that hasn't been picked up"*. Participants also highlighted the role played by Contarina when shifting from bring points to door-to-door collection that was done over a year: *"the shift from roadside containers to door-to-door*

separate collection [...] wasn't easy [...]. However, Contarina started looking for the best solutions to make separate collection possible and in less than one year was successful in three things: imposition [of door-to-door], cooperation and good will resulted in the homogeneous results [we now have]".

Therefore, the participants mentioned the measures from Contarina, not only to offer a waste collection system but also to find ways to involve the citizens and reflect on the best way to involve them with a tailor-made system.

VI.   Interrelationships between the different factors

- **Interlinkages between convenience and information**

Convenience and information were the two factors often mentioned together during the meeting. For the Treviso's participants, information plays a preliminary role to make the system convenient. A lack of information will cause inconvenience to the citizens because the system is not perceived as easy to use since they do not know what to do exactly. This was mostly mentioned through the available hotline organised by Contarina which makes it easy for the citizens to quickly get information when they need it.

Focus group meeting 2 – Cyclad/Surgères

This focus group meeting took place on the 3rd of July 2019 in Surgères and Cyclad - regional waste management company - (13 participants) and lasted for 1 hour and 37 minutes.

I.   Information (state of knowledge and information)

For the participants**, information about the waste collection system, meaning how to use it but also the outcomes it has, are key factors for them to recycle or, on the contrary, not to recycle.** One of the participants mentioned the fact that information is a factor that triggers the recycling habit; *"The first for me is information. Nothing will start without information"*. The participants especially highlighted the fact that if information is so essential to recycling behaviour, wrong, confusing or not clear enough information will lead to citizens not being willing to recycle. It is a double-edge sword, as stated by one of the participants about the role of information: *"Fundamental but not exploited as it could be. The education around waste treatment isn't adapted...."*.

As information about the waste collection system was mentioned in a neutral way to the participants, it is interesting to observe that, by themselves, they mentioned two aspects of information:

1. **Basic information about how to use the system (schedule to bring the waste, when to take out the bin, etc.);**
2. **General information about the functioning of the waste recycling system and what are its outcomes.**

About general information on the system, one participant mentioned the fact that "*even if you take the waste to the right place, it will still end up in countries where children will walk in the waste material*". Following the same approach, another participant indicated: "*I heard that in fact the sorted waste collections ended up in the same bin at the end. As a result, there are many residents who were wondering why we are being asked to sort since it ends up in the same place*". This is an illustration of the fact that **correct and sufficient information is key for citizens to trust the recycling system and effectively sort their waste**. As the sorting behaviour is considered as a supplementary effort for them, they need to have the guarantee that they are not sorting in vain and that what they do has significant impact. Therefore, **if they doubt the efficiency or the usefulness of the system, they won't be ready to make that extra effort to recycle**.

Conversely, an **exhaustive and relevant explanation of the system will lead citizens to properly recycle their waste as they are aware of the reason they are doing it for and can therefore feel involved in the process**. As said by a participant, "*I think that the closer we are to the system […], immediately after this sorting and we see what happens, where it goes, who takes care of it, what the impact is of our poor sorting choices when we see reclaimers or when we see that everything we have sorted wrongly will go back into a household waste cycle, all of a sudden we understand*". Concrete results of the recycling process are simple, but to the participants they are incentives to participate, such as the fact that "*Two pallets equal a bike*", that "*with the tons of cardboard that had been recycled they could make a cardboard house*" or even that "*It was fantastic. […] They disassemble a fridge and they recover 99% of materials.*". As suggested by one participant, this can be stimulated via specific trainings or visits: "*I did two small training sessions with Cyclad and as a result, I no longer see waste as waste. I see it as raw material, potential*".

Thus, understanding of the system and its outcomes are essential to citizens' recycling behaviour but to get their involvement, it needs to be complemented by a concrete understanding of the impacts it will have on their daily life. It is necessary to "*explain to people in a very concrete way the impact it can have on their daily lives, on their immediate environment, that we explain to them what the point is today of sorting and recycling*" otherwise "*it's not concrete*".

The basic information needs to be coherent, harmonised and available at different places. Participants deemed the flyers that are distributed to be essential for them to understand how it is done but it also has to be available online as mentioned by one participant: "*if we're on the road, moving from one point to another and we say: "Let's go to the dump", on the smartphone […] we do a little research and we have some info*".

On the other hand, some participants found different information available, hence it was confusing for them "*The schedules are not identical. So that's a nuisance. The site of the town hall has conflicting information sometimes and we wasted our time quite often*".

And in the specific case where collection systems vary from one municipality to another, the information needs to be clearly explained, otherwise it makes it complicated for citizens to sort their waste as they do not know the right process: "*The information is sometimes a bit complicated. It's sometimes different from one commune to another, so many people get discouraged*". In that case, not enough information or not having harmonized information would make citizens not recycling their waste.

II.   Environmental concerns (attitude and environmental concern)

To most participants, environmental concerns are essential for them to sort their waste but also to others, meaning that they deem this factor necessary for everybody to adopt a sorting behaviour. As one participant stated: "*I sort my waste […] for several years now. I do it out of environmental conviction, yes. I think it's urgent today, to take the time to sort your waste, to try to find solutions as ordinary citizens*". For another participant, the environment is "*the most important thing*" and motivates the sorting behaviour.

Therefore, environmental concerns are of first priority, yet they need to be stimulated via good communication ("*If you had messages everywhere and TV advertising campaigns like we see for road safety […], maybe there would be more people affected by the act of sorting*") and with concrete links the citizens' daily life as "*the thing they might have to gain is quality of life, an immediate environment that won't change its way with polluted water*" when climate change or species extinction are "*a reality but it's not concrete*".

III.   Social norms (local culture and context and influence of social group)

Social norms were not deemed as essential by the interrogated citizens, possibly because the impact of local culture and social influence on citizens is not something visible and is difficult to assess for them.

Among these kind of factors, family and age were identified as playing a role in the sorting habit. For one participant, **young people grew up in a context where sorting was already important, hence they are more likely to easily interiorize the habit**.

For the rest of the participants, the family factor is key as one participant started sorting after he met his wife. For another, family influences as it is a way to influence: "*I think it's interactive in families and that's what makes it happen. And we have a little snowball effect in our circle*".

On the other hand, when asked if the social circle plays a key role, one participant clearly mentioned the fact that it does not play any role to him: "*No. We followed the instructions and the change in things that makes us sort, that's it*".

IV.   Convenience (Perceived convenience outside and inside)

Whether specifically asked or not, **convenience to sort the waste triggered a lot of discussion among the participants all along the meeting, proving that this factor is key regarding waste recycling habits.**

When asked if sorting is easy, most of the participants replied yes although this requires a thorough organisation and lots of efforts upstream. One participant specifically mentioned the fact that "*It means organising. For me there is a willingness, therefore an organisation* ".

Only one participant found sorting not easy due to a "*lack of space*" in a high-rise building.

Therefore, when it comes to convenience, the following aspects were mentioned: space/type of housing; standardisation of the sorting method (from one commune to another); personal organisation; collection frequency; odours; access to bring points; bring points' opening hours; allocated time.

Among those, **3 aspects were particularly discussed as being key to trigger (trigger)a recycling habit: lack of space/type of housing, standardisation of the sorting method and access to bring points.**

Lack of space due to specific type of housing is one of the reasons that could hinder the waste sorting habit for the participant as it requires having several bins to separately collect it. One person specifically mentioned that fact they can sort as they have a garage at home, but without this space, sorting waste would be rendered difficult. Another person mentioned that it'd be more difficult to sort for "*The poor little grandmother who lives in town in a second floor flat*".

Then, **the lack of standardisation of the sorting method was mentioned many times, especially in France where waste collection system varies from one city to another**. One participant stated that it makes it more difficult to properly sort the waste "*Since in one commune they have 3-4 rubbish bins and in others there are only 2*". Therefore, non-harmonised collection systems from one municipality to another is deemed as inconvenient because it makes it more complex to understand the sorting rules.

The question **of bringing points and civic amenity sites and access to those is seen as crucial by the participants and is not seen as a convenient way to sort the waste**. When asked why they would not sort their waste, one participant specifically answered: "*go to the dump. […] It is a barrier to sorting*". Going to bring points is therefore seen as an extra-effort that citizens have to do. First, because "*the opening hours aren't suitable*". Then because it requires having a vehicle which has enough space to carry the waste in case of big appliances. And finally, because it is

considered as a big effort, sometimes for small items when, as said by a participant, "*the easy way can also be quick ... into the black bin and then it's gone*".

V.   Other recurring/relevant topics (such as waste prevention, focus on specific waste stream, etc.) regarding waste.

- **Waste prevention and reuse:**

Although not specifically asked about the topic, the participants mentioned waste prevention and reuse as aligned with their recycling habits. To them, eliminating packaging by buying in bulk is a first step as for material, "*we know it isn't [recyclable] forever*". For one participant, information – via education – should also be focused on prevention: "*I think that as far as education is concerned, maybe we could advance a little more on these aspects, to allow people to change a little faster to bulk*".

Discussions, especially about WEEE collection, largely mentioned reuse and repair as a way to minimize waste. Participants discussed how they do not always bring their appliances to a bring point but rather try to fix them themselves or to give them to an association in charge of repairing them: "*at least before that if there is a possibility of repairing anything, we try*".

- **Economic incentives:**

Similarly, although not specifically mentioned, economic incentives were often discussed during the focus group meeting, mostly via the implementation of a pay-as-you-throw system: "*the question I have is why we are not charging by weight*". Yet, although participants were mostly in favour of the solution as "*for people who don't sort, there is only one thing that speaks, which is money*", some participants proved to be reluctant to the idea as it could lead to an increase in illegal dumping. Some also mentioned the fact that putting pressure on citizens via a financial burden does not contribute to making people more aware and that it needs to be strongly complemented with information.

VI.   Interrelationships between the different factors

- **Interlinkages between information and convenience:**

Information and convenience were the two factors often mentioned together during the meetings. For the participants, the information you get about how the system works is deeply linked to the perceived convenience they have of the system. For instance, wrong information about a bring point's opening schedule has been deemed as inconvenient for the participant. Also, to make the waste sorting convenient, a participant mentioned that they need the

information available in different places (website, flyers, on bins) so that they can have access to it whenever they need.

- **<u>Interlinkages between information and economy:</u>**

Economic incentives to incentivize citizens to sort have often been mentioned but need to be complemented by information about the outcomes of the system,. As said by the participants: "*I think that this is a good method if it's associated once again with a form of pedagogy, education and awareness to explain the ins and outs of this approach. But if it's an approach that's applied just like that, finally people will see it as an additional tax that's added to others*".

- **<u>Interlinkages between information and environmental concerns:</u>**

Although the link was not obviously made by the participants, environmental concerns and information were often mentioned together. Participants mentioned the need to have information about the way the system works and about the process' outcomes to be involved in it. Although the environmental concerns are not clearly visible, when participants mention that they need to understand that "*two pallets equal a bike*" or that "*with the tons of cardboard that had been recycled they could make a cardboard house*", this refers to environmental concerns where the recycled waste prevents further resource extraction causing environmental damage.

Focus group meeting 3 – Warsaw

This focus group meeting took place on the 16th of July 2019 in Warsaw (10 participants) and lasted for 2 hours and 30 minutes.

I. Information (state of knowledge and information)

For the Warsaw's respondents, having the right information is seen as a prerequisite to sort their waste as some mentioned that they are actually lacking clear guidelines on the sorting process, while others explained that they're sorting waste partly due to the information brochures that have been distributed.

Respondents clearly stated that they need **information materials** on sorting waste, *"What is missing is some straightforward arguments, given in a simple language or by means of some visuals showing it to us that it makes a lot of sense"*. When asked if people know how to sort, 4 immediately said no, one said they hesitate themselves and another blamed *"too complicated division. Too many groups. Because they have no place to learn about it from. There is no awareness, there are too few programmes, maybe there are not enough leaflets"*. Another participant said that "*There should be fewer groups and it should be shown clearly how it is to be sorted.*" Therefore here, participants have trouble sorting their waste because they do not have

enough or the right information. For instance, they disagreed over accessing and knowing the collection frequency or were confused about the 5 different streams.

Yet they also mentioned that information should also be more widely available as it is not only a question of producing the information but also to properly spread it. Respondents note that they received a brochure through the post informing them how to sort. One wanted a TV commercial to be aired, another underlies that they have seen large billboards on the subway. Another went onto the municipality's website to find out the right information, *"The description of those categories, what they are. But if I had not looked online, then it would have been difficult to find that information, really"*. **Most note that the information should be organised better and that they should receive feedback on how the sorting is going. To them, information should be more visible and clearly advertised,** *"I know that if I tried, I would find it online. But this information simply does not reach me. But I can see that I would find it if I wanted to. But it does not reach me on a daily basis in the news, in means of public transport, in the subway, it is not there"* and *"Maybe if there were such billboards around the city with a plastic bottle and what is made out of it. By means of pictorials. Pictures appeal to most people"*. Hence participants think information should be available everywhere, from distributed leaflets to websites, but also in public spaces via advertising campaigns in order to be really accessible and visible.

One participant also goes beyond by saying that this information should be proactively distributed by the local authorities in different types of organisations such as schools: "*Such materials should be shown in schools, so that kids know what it is all about*".

Another key aspect about information is the general understanding of the waste collection system and its outputs. Respondents want to know what happens with their waste once collected. 2 respondents note that it goes to a sorting facility, then there is confusion over what happens next - whether to incineration, glassworks, paper plant etc. When asked **what they need to start sorting, two would like to see evidence that it works**, *"I would like to see clear evidence that if I sort garbage, it will have a positive impact on the ecology"*. Therefore participants feel the desire to learn **the impact of sorting waste to feel involved in the process and that they're doing something useful,** *"I'd like to know what bad things might happen, and what good things happen at particular stages of that chain of processing it all. This is something that could convince me"*.

At the same time, **mistrust over what happens after waste is collected can lead to participants not sorting their waste.** One participant specifically explained not sorting the waste because of not being sure about what happens when the waste is collected by the truck, *"I would not sort, because as I have said, I do not see anyone come and collect it. So, I just do not do it. [...] A vehicle came and collected it all from each of them"*. One respondent also mistrusts the system because they are not sure if at some stage all the separately collected materials will just be thrown together into one. **Therefore, transparency about the system's running is key for citizens to trust it and adopt the right behaviour.**

II.   Environmental concerns (attitude and environmental concern)

Environmental concerns have been mentioned by the respondents as a key factor for them to properly sort their waste. As said by a participant *"I think that ecology matters the most, and generally everything that is related to it - it works in such a way that you generally want to do good things living in this world"*. When looking at respondents' top three factors when they consider sorting waste and recycling, the environment & ecology is the most popular, featuring in 9 out of the 10 top three responses. When asked what their top motivation for sorting waste is, 7 out of 10 said the environment. Therefore here, environmental concern is seen as a required driver, if not the most important one, for citizens to sort their waste.

This leads to the need to have an impact on the environment when you are properly sorting, *"I would like to see clear evidence that if I sort garbage, it will have a positive impact on the ecology, and that everyone will do it, and it should not be so that I go to the woods and see litter scattered there"*. Hence the **environmental concerns need to be linked to the certitude that the action one is doing – sorting the waste – has a positive impact on the environment**.

III.   Social norms (local culture and context and influence of social group)

Social norms were not deemed as essential factors by the participants when asked, although one person mentioned that sorting stems from a sense of duty implied by the fact that sorting is more rooted in society's habits.

Social norms were only listed once in the top 3 of important factors by respondents when considering sorting waste. Additionally, 4 respondents said that their neighbours do not notice if they separate the rubbish or not.

IV.   Convenience (perceived convenience outside and inside)

Although convenience was only mentioned 3 times out of 10 in respondents' top 3 factors for sorting waste, one put it as the most important. Yet, convenience was intensively discussed by the participants among which a majority stated that waste sorting was being made difficult due to the process's lack of convenience.

The following aspects - incentivising or, on the contrary, undermining waste sorting - were discussed: space/type of housing; different types of bag; additional efforts and duties, allocated time; odour; collection frequency.

For one participant especially, the system was not really convenient as it is difficult to understand the different bags and colours due to *"too many packs"* and *"too many colours"*. Hence **complex**

and/or too much information might make it difficult for citizens to understand what they need to do.

Waste sorting is also considered as a great burden by the respondents as it is **seen as an additional effort**. This is due to many reasons; having a baby, not enough time, or the collection frequency. One participant stated that it is *"it is an extra effort for me [...], sometimes I just find it very tiring"*. For them putting everything in the residual bag is more convenient as it requires less effort: *"that bin with mixed garbage makes it all easier for us, and a lot of stuff gets there"*.

Lack of space was also identified as key when it comes to waste sorting convenience. As they need 5 bins to properly sort the waste, participants replied that they do not have room to do so, *"As long as we had sorting into plastic, glass and paper in one bag it was quite fine. Yes. But now it all has to be separate – glass, paper, and plastic separately. I do not have room for that"*. For one participant, not doing separate collection, who was asked what is needed to start sorting, the reply was that **"there is simply no room"**. Therefore, lack of space, especially in densely populated areas like Warsaw makes it less convenient, or not possible at all, for citizens to adopt a sorting behaviour.

Therefore, separate collection has to be adjusted to the capabilities (physical, space, time) of citizens as convenience is different from one person to another.

     V.   Other recurring/relevant topics (such as waste prevention, focus on specific waste stream, etc.) regarding waste.

- **Economic incentives:**

The respondents also mentioned the economic factor, albeit not being specifically asked. To them, lower costs are a priority. The economy is the second highest motivation for why respondents are sorting their waste. 8 respondents put the economy within the top three of their most important factors. One participant stated: *"first of all, economy, no matter what. Money matters the most. This is what I think"*.

The participants are aware that a better sorting system will lead to lower costs for them as waste management fees can sometimes be included in the rent, *"We pay less and that matters that some money is left in our pockets, right?"*. Therefore, **economic factors are a strong incentive for them to sort the waste because they understand it has a direct impact on their wallet.**

One respondent also claims that the new system leads to more employment. One positive of the system noted is that it gives local people employment. The economic factor is here not only seen as a possible personal benefit but also as an economic benefit for the local community.

As finance is so important for them, most, if not all, respondents **support greater financial incentives** for sorting and returning waste, through rewards and DRS schemes, *"Just as we have*

all said – some profits","*So, it is important to reward, if we were rewarded, we would do it more eagerly, more often and more accurately*".

The local DRS system is mentioned by one respondent, where you can get a discount for disposing plastic bottles. Reverse vending machines where you put glass or plastic inside and get a discount for coffee or the cinema, *"those discounts that [..] talked about are interesting for me. I would like to buy cheaper tickets to the movies or theatre"* and *"with glass it is really insane that there are no collection points, the way it was in the past when you could return bottles"*. Respondents later voice support for returning crates of beer bottles to get a deposit back, *"I just wanted to say that there would not be any problems with garbage sorting if we could return everything"*. Which leads onto the same respondent mentioning deposit return cups being used at a festival as a good example of this.

One respondent underlies that they want to see economic benefits for sorting the most, through returnable glass or plastic bottles. They also want to see reusable bottles so that they know they are not producing waste, and getting money for returning bottles. Therefore, economic incentives are seen by participants as **a strong incentive for them to start but also to maintain their sorting habit**.

- **EU Legislation and regulations:**

Respondents also mentioned the European legislation as a key factor incentivising sorting behaviour. One respondent underlines that separate collection *"has been introduced because of the EU directive, we have to comply with certain norms"*. Regulation is therefore noted as an important tool to inspire and act as a catalyst for change, *"I have such a feeling that I do something good"*. For another participant, legislation and regulation are the first reason to sort, *"they have also introduced the regulation and that is the reason why we do it, otherwise I would not know I could do it"*. **Regulation as a direct pressure to citizens, but also to set a framework where sorting is necessary, is therefore a prerequisite factor for citizens to adopt a sorting behaviour.**

- **The recycling habit:**

For a participant, the recycling habit plays a great role in maintaining the behaviour, "*this is the question of habit, we have been doing it for 3 years*". What can often be annoying at first is now **second nature** after a while of continuing to sort the waste, "*This is my second nature now. Initially it was so very annoying for me. [...] But now it comes naturally. We live in such times that we just have to do it*". Therefore, sorting was considered as an extra effort in the beginning but after a certain period, it becomes fully interiorised.

- **Waste prevention:**

Respondents mention how they reuse cartons, packaging and bubble wrap that they receive when purchasing things online and in stores. When the discussion starts, it becomes clear that they do indeed go through various initiatives, "*You can go there with your own container, the salesperson puts it on the scales*" and "*In Greece you can buy wine at a store and you have to come with your own bottle, and then they will pour it and weigh it.*" There was general support for this as "*It is a very good idea.*"

Good solutions and practices were highlighted, such as food collections/banks, returnable cups during events, and ensuring waste is sorted by companies.

VI.   Interrelationships between the different factors

- **Interlinkages between information and convenience:**

For WEEE and, more broadly, collection points, respondents mentioned how local collection is made convenient and easy when they have the right information. In some cases, citizens leave old products at the store when they buy new ones. In other cases, store workers have collected them from the home. Hence here, **collection is seen as convenient because they are perfectly aware of where waste can be brought**.

On the other hand**,** some participants mentioned that not having the right information makes it less convenient to sort. When asked if people know how to sort, four immediately said no, one said they hesitate and another stated: "*Too complicated division. Too many groups. Because they have no place to learn about it from. There is no awareness, there are too few programmes, maybe there are not enough of some leaflets*". Hence here, information has a direct effect on convenience as not having the right information makes it more difficult for citizens to understand the process.

- **Interlinkages between information and environmental concerns:**

Information and environmental concerns are linked in the way that respondents – with high environmental concerns – mentioned that knowing that by sorting waste they have a positive impact on the environment, and they are more inclined to do so. Here, environmental concern is a prerequisite that is strengthened by information about the whole recycling process and its positive outcomes.

4.1.2 Meta-analysis

A.   Information

General considerations regarding the information factor and the way it is perceived by the citizens:

- To citizens, information means two things:
  - Sorting guidelines
  - General information about the recycling process and its outcome
- Information is deemed essential by all the participants;
- Hence, not enough or erroneous information will undermine citizens' sorting behaviour while the opposite will increase it;
- As a way to improve the sorting behaviour, information is at the same time a necessary prerequisite (sorting guidelines) and a strong driver (information about the process as a whole).

Key aspects related to the information factor mentioned by citizens:

- *The waste management company/local authority in charge of collection plays a key role in disseminating the information and reaching out to citizens*. It was mentioned by many participants that the entity in charge of waste management played an essential role in successful or, on the contrary, unsuccessful information dissemination.

- *Information about the sorting process needs to be:*
  - *Available in different places (flyers, hotline, website, public transport, etc.);*
  - *Widely distributed in a proactive manner;*
  - *Clear, harmonised and coherent;*
  - *Adapted to the type of public it targets.*

  The respondents mentioned the need to have information available in different places so that it can be available anytime. Additionally, it should also be proactively distributed via intervention in schools or other dedicated organisations. But dissemination is not enough, and the quality of this information was deemed key by the citizens. It should be clear to anyone (with visuals for instance), harmonised (in places where it is available) and coherent so as to be adapted to any type of population.

- *Having the right information about the recycling process and its outputs allows citizens to feel involved in the process by getting a sense of doing good*. In this way, information is a strong driver for citizens' sorting behaviour as they are interested in understanding why they are doing such action. Therefore, when citizens have a general vision on the recycling system and its outcome, they feel involved in doing something important and it bring them a sense of doing good.

- *When citizens are unsure of the system outputs or mistrust the process, they might stop sorting, hence the need for transparency.* One key issue mentioned by the citizens is that they do not see why they should sort the waste when they are unsure of what happens to it. Many respondents stated that waste is mixed in the collection truck or that in the end it is shipped outside Europe. Such confusion and mistrusts about the system make them see the system as inefficient and they do not understand why they should sort.

- *Information about recyclability put on products by manufacturers is confusing to citizens.* Many participants declared being confused by the information available on the different types of packaging. Although waste management entities play a key role, they specifically mentioned manufacturers who should make the recyclability information on their products more easily understandable.

B. Environmental concerns

General considerations regarding the environmental concerns factor and the way it is perceived by the citizens:

- To citizens, environmental is a key factor seen as essential and overarching;
- However, it is not seen as a prerequisite, meaning that citizens without environmental concerns could sort their waste for other reasons;
- Environmental concerns regarding sorting behaviour and the waste issue are closely linked to the general environmental crisis.

Key aspects related to the environmental concerns factor mentioned by citizens:
- *Environmental concerns need to be stimulated via good communication.* Since it is such an important factor, the respondents mentioned the need to further communicate on the topic and that it should be done via public campaigns, potentially created by local authorities.

- *Environmental concerns were also mentioned as a factor that helps citizens accept the system implemented by the municipality.* Good communication about the environmental issue will lead citizens to understand the issue and be more willing to accept and properly use the recycling system.

- *Environmental concerns need to be linked to the certitude that the action one is doing - sorting waste - has a positive impact on the environment.* A strong environmental concern will lead citizens to sort their waste as it is perceived as a positive action for the environment. Hence it is a strong driver for citizens to adopt a waste sorting behaviour.

C. Social norms

General considerations regarding the social norms factor and the way it is perceived by the citizens:

- Overall, participants did not feel social norms had a strong impact on their sorting behaviour;
- However, some participants mentioned that the local context, where everybody is sorting, acts as a driver for them.

Key aspects related to the economic factor mentioned by citizens:

- *Seen as a cultural context, the social norm factor is perceived as deeply incentivising the waste sorting habit.* It has been reckoned by participants that sorting is becoming more and more widespread as a general need due to the environmental crisis.

- *When sorting is part of a local context, it becomes an interiorised behaviour.* Some participants mentioned that since sorting is widespread in their local context, the habit is now interiorised. Therefore, sorting is not perceived as a conscious action but rather as a reflex.

D.   Convenience

General considerations regarding the convenience factor and the way it is perceived by the citizens:
- Convenience was often mentioned by the respondents as a key factor for them to sort their waste;
- Hence, lack of convenience or perceived convenience is a deterrent for citizens to adopt a sorting behaviour;
- Convenience deeply depends on the quality of information the citizens receive;
- The main aspects linked to convenience are space/type of housing, additional time and effort, and access to civic amenity sites or bring points;
- More generally perceived convenience is achieved by adapting the system to the different needs of citizens.

Key aspects related to the economic factor mentioned by citizens:

- *Lack of space, often related to the type of housing and population density, is a cause of inconvenience for the citizens.* The respondents clearly stated that a lack of space was a hinder to waste sorting as they do not have enough room for all the bins and have to keep them inside if they are living in a flat. This lack of space is often the case in high-rise buildings in densely populated areas, whereas participants living in houses in rural or semi-rural areas did not mention this type of issue.

- *Sorting waste is perceived as an additional effort requiring more time by most participants.* Although more and more rooted in their habits, sorting is still perceived as an additional effort which requires organisation to do it. Lack of time was most of the time the cause of this additional effort, as putting everything in the mixed waste is perceived as easier.

- *Access to civic amenity sites or bring points is perceived as inconvenient by citizens.* Most of them mentioned that having to bring waste, especially furniture but even small WEEE, is a source of inconvenience as, most of the time, it requires having a car. It was specifically mentioned for people living in cities or elderly people.

- *Information is a prerequisite to convenience for citizens.* The respondents stated that having the right information and therefore clearly understanding the sorting process is key for them to perceive it as convenient. On the other hand, confusing or complex information will make the sorting process more difficult to use and can be discouraging for citizens.

- *Lack of harmonisation from one city to another regarding the sorting process is deeply confusing for citizens.* This is especially the case in regions where sorting systems vary from one city to another. For the respondents, such variations are deeply confusing and make it more difficult to understand the sorting guidelines.

E.   Other recurring/relevant topics (such as waste prevention, focus on specific waste stream, etc.) regarding waste.

Although many topics were mentioned during the focus group meetings, there is one factor that has been recurring, which is the economic factor as a way to drive citizens' sorting behaviour. It was not specifically mentioned for the focus group meeting happening in Treviso, as there is already a pay-as-you-throw system implemented. Nevertheless, the implementation of the PAYT system was considered as a positive driver towards recycling.

General considerations regarding the economic factor and the way it is perceived by the citizens:

- Economics is key for participants and seen as a strong driver to strengthen sorting habits;
- However, it is not mentioned as a mandatory option to the sorting process in the way information is;
- Financial incentives such as pay-as-you-throw or deposit-return-schemes are positively considered by the respondents.

Key aspects related to the economic factor mentioned by citizens:

- *Economic factors are a strong incentive for citizens as they understand they have a direct economic impact on them.* The participants understood the fact that a better recycling system will lead to lower costs for them to pay regarding waste management and thus it is key for them. Some mentioned that it could have as an effect to reduce the waste management costs at the local level.

- *Financial incentives are strong drivers to start sorting but also to maintain the habit.* The implementation of financial incentives is a way to initially make citizens sort their waste. However, in the case in which there is already a well-functioning system implemented, citizens mentioned that financial incentives could act as additional drivers to maintain or improve the sorting process.

- *There is an overall support for greater financial incentives.* Although some participants mentioned that financial incentives are not a way to make people more conscious, the global perception of greater financial incentives is positive. People from Treviso mentioned the positive impact the PAYT system had and the other participants spontaneously mentioned that such a system would be a good option to further drive recycling habits. DRS systems were also mentioned as potential good drivers for citizens' sorting habits.

F. Interrelationships between the different factors

2 specific factor interlinkages were extensively discussed during the 3 focus group meetings:

• Interlinkages between information and convenience:

Within all the focus group meetings, a strong link between information and convenience has been established, although not specifically asked to the participants. Here information is to be understood as basic information about the sorting guidelines. The information factor is therefore seen here as a strong prerequisite conditioning citizens' perceived convenience as the respondents mentioned that a lack or complex information, about the sorting guidelines or recyclability of the packaging, can render the process hard to understand, hence perceived as inconvenient. Therefore, information and convenience are deeply linked in a one-way influence, as information is strongly influencing convenience but not the opposite.

• Interlinkages between information and environmental concerns:

The interlinkage between information and environmental concerns has also been specifically emphasized during the focus group meetings. Here, information needs to be understood as global level of information and knowledge about the recycling process and its outcomes. They are linked in the way that people with environmental concerns are keener to sort their waste when they are aware that they're doing an action with positive impacts on the environment. Respondents stated that a strong reason for them to recycle is because they have the information that the outcome is positive and that it matters regarding their environmental concerns. Yet, the link here is reciprocal as having a good knowledge of recycling's positive impacts might also generate or at least strengthen one's environmental concerns.

4.2 Case studies

4.2.1 Case studies related to Paper and Packaging Waste

Parma, Italy

- Area's characteristics:
    - Population: 196,475 inh.
    - Density: 753.9 inh./km^2
    - Number of languages spoken: Not known
    - GDP: 19,429 €/inh

Information regarding Parma has been directly provided by the municipality of Parma in charge of waste management.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in streets, etc.)	Yes	Tools: • Flyers • Ads in streets, newspapers, radio and TV For every transformation, a letter signed by the mayor is sent to families and businesses to explain: • The goals of zero waste • How the system works
Civic agents in the streets or civic amenity site	Yes	Each time there is a change in the neighbourhood, an information site is created to distribute information, brochures and the necessary materials (such as bins and bags).

Door-to-door explanation	Yes	Households are visited a maximum of three times to provide information about a change of the system. In case they have not been reached after three times, an informing brochure is left.
Information available on a website	Yes	A web portal has been set up (http://servizi.irenambiente.it/) with: - Collection frequency - Location of bins in the street - Street cleaning services - Sorting guidelines - Bulky waste service - Bill calculation and data on the quantity of bin collected
Organisation of visits (sorting centre, recycling centre, etc.)	Yes	Visits are organised on a regular basis for schools
Organisation of stands during public events	Yes	Major stands are organised during: - European Waste Reduction Week - Festivals - Bank holidays
Available hotline for citizens	Yes	Hotline available: - Monday to Friday from 8am to 5pm - Saturday from 8am to 1pm - Via email - Via a mobile application The email option was used a lot during the set-up phase.
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Use of Facebook by for instance uploading a video displaying the removal of the last container.

II.   Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about environmental benefits of recycling	Yes	Seminar organised in 2015 involving citizens and public administrators.
Organisation of stands during public events	Yes	Same as in section *I. Information.*
School animation	Yes	The major project was a 3-year long contest between schools to check their best performances in waste reduction.
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Same as in section *I .Information.*

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency, etc.)	Yes	An analysis was carried out before the development of the new waste management in 2012. The study was commissioned on behalf of the city.
Workshop to gather inhabitants' experience	No	
Analysis for PPW collection frequency	Yes	Collection frequency can be found on the website: https://servizi.irenambiente.it/

Analysis for the setting up of PPW bring points	Yes	Eco-stations are set-up as alternatives for door-to-door on the day/time the service is not available.

IV.   Social norms

Social norms		
Type of action	**Implementation**	**Specificity**
Action related to a targeted area	• Rural: Yes • Semi-rural sector: Yes • Densely populated: Yes	Frequency of the waste collection systems varies according to the targeted area.
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes	• Schools have different collection hours • Companies have different bin sizes • Restaurant and bars have different frequency for organic waste • Retailers have dedicated collection bins and frequency for cardboard
Action related to different ages	No	
Action related to different family size	Yes	The PAYT fees have been modulated according to the family size.

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority:

In Parma, measures to involve citizens in the recycling system are mostly based on a strong communication. It especially revolved around the change of the system happening in 2012 and implementation of a pay-as-you-throw system. A strong communication campaign in public spaces, but also specifically targeting households affected by the change, was implemented. The system also takes into consideration the different needs considering the type of area in which citizens live or different organisations, such as schools, companies or retailers.

- Highlights (Innovative/best performing initiatives):
    - There has been a wide communication campaign launched when revamping the system. It did not consist only of public communication in streets but also of reaching citizens in their home to make sure they get the required information;
    - Information about the sorting process is not only available through the hotline but also through email or a mobile application;
    - A 3 years long contest between schools to reduce their waste;
    - Mobile eco-points available for citizens in case the door-to-door system is not sufficient;
    - Collection is adapted to different types of areas, organisations and family size.

Tubbergen, the Netherlands

- Area's characteristics:
    - Population: 21,142 inh.
    - Density: 143.8 inh./km^2
    - Number of languages spoken: 2
    - Share of multi-family houses: 22.10%
    - GDP: 21,300 €/inh
    -

Information regarding Tubbergen has been directly provided by the municipality of Tubbergen in charge of waste management.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (Flyers, advertisement in streets, etc.)	Yes	Publications in the local weekly newspaper, door-to-door letters, social media and on the municipal website. The costs for this are reimbursed from the waste tax.
Civic agents in the streets or civic amenity site	Yes	There is a waste coach who provides information to our residents on the spot but can also resolve potential bottlenecks in waste collection there, often with very practical measures. The coach has experience with being in charge of the issues and communicating with the inhabitants.
Door-to-door explanation	Yes, when necessary	If there are problems in a neighbourhood or street, the waste coach is in charge of consulting inhabitants in order to find a solution. In this way, support and understanding are created for residents.
Information available on a website	Yes	Any changes in the field of waste collection and new developments are also mentioned on the municipal website and in the local weekly newspaper.
Organisation of visits (sorting centre, recycling centre, etc.)	Yes	Every year residents are invited for an excursion to our co-operation partner ROVA in Zwolle for an explanation of waste collection and a tour of the ROVA site. However, hardly any use is made of this.

Organisation of stands during public events	No	In the event of major changes in waste collection, walk-in meetings are organised where residents are invited to receive information on upcoming changes in waste collection.
Available hotline for citizens	Yes	Both the municipality of Tubbergen and our cooperation partner ROVA have a Customer Contact centre where residents can go with questions and complaints. Answer is usually provided within 48 hours.
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Facebook, LinkedIn, Twitter and Instagram.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about environmental benefits of recycling	No	
Organisation of stands during public events	No	
School animation	Yes	Primary schools have the opportunity to participate in the national program Mooi Schoon ("Nice & Clean"). For this purpose, containers are made available for

		vegetables, fruit and garden waste and plastic metal and beverage cartons and residual waste.
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	No	

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin per inhabitants, collection frequency, average number of bring point per inhabitants)	Yes	Every year we conduct a resident satisfaction survey in which we want to retrieve the experiences of our residents in order to be able to optimize waste collection even better. Tubbergen scores an 8.0 in terms of satisfaction with waste collection.
Workshop to gather inhabitants' experience	No	
Analysis for the setting up of collection frequency for PPW	Yes	The collection of PPW takes place once every four weeks. The focus is on the municipal best practices or the best collection techniques proven in the countries. National benchmarks indicate that the collection of once every four weeks should be sufficient for a family of four. Larger families can request an extra container.

		In addition, there is the possibility for the waste coach to consult residents.
Analysis for the setting up of PPW bring points	No	

IV.   Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	- Rural: Yes - Semi-rural sector: No - Densely populated: No - Other:	
Action related to different organisations	- Schools: Yes - Horeca sector: No - Companies: No - Retailers: No - Other:	Primary schools have the opportunity to participate in the national program Mooi Schoon ("Nice & Clean"). For this purpose, containers are made available for vegetables, fruit and garden waste and plastic metal and beverage cartons and residual waste.
Action related to different ages	No	
Action related to different family size	No	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority:

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In Tubbergen, a strong emphasis is put on disseminating information about the waste collection system for citizens. Among the measures, there is notably the publication of guidelines within local newspapers and a waste coach program. If citizens have questions and/or complaints, the system receiving the comments ensures a reply within the following 48 hours. Although there is a strong focus on information, communication about environmental aspects is very low. A convenience analysis is not done at the local level, but feedbacks from inhabitants is collected. Additionally, the city intensively uses examples of best functioning practices from the country.

- Highlights (Innovative/best performing initiatives):
    - A waste coach is available to inform and consult inhabitants about the waste collection system;
    - Information about the waste collection system is published in the newspapers;
    - Responses to complaints and requests are made within 48 hours;
    - A satisfaction survey is carried out every year to get inhabitants' feedback;
    - Specific school programs are present to incentivise pupils to sort their waste.

Ghent, Belgium

- Area's Characteristics:
    - Population: 261,457 inh.
    - Density: 1,640.8 inh/km^2
    - Number of languages spoken: 3
    - Country's GDP: 52,761 €/inh

Information regarding Ghent has been directly provided by the municipality of Ghent in charge of waste management.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in streets, etc.)	Yes	As the rules of collection are widely known in Flanders, this is done less often. But as new types of waste can be put in the same bag (e.g. PMD), a larger communication campaign (social media, website, flyer) is distributed. This is also partly funded by the producer responsibility scheme. A website has been setup with other communication materials such as student guides containing sorting guidelines
Civic agents in the streets or civic amenity site	Yes (on CAS)	Those agents are responding to customer demands. It happens that customers are unknowing/ unwilling and throw debris in an incorrect container.
Door-to-door explanation	Yes	Only during the setup of a new underground container site to inform citizens on the use. Budget of one temporary employee.
Information available on a website	Yes	Information about sorting guidelines is available on the website. The guidelines can be found in multiple languages.
Organisation of visits (sorting centre, recycling centre, etc.)	No	
Organisation of stands during public events	Not known	
Available hotline for citizens	Yes	A call centre has been setup with six employees dedicated to collect complaints and questions.

Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Facebook, Linkedin, Hoplr, newsletter.
Other	Not known	

II.   Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about environmental benefits of recycling	Yes	The website details the outcomes of every processed waste streams. Additionally, such information is available in the local newspapers.
Organisation of stands during public events	Not known	
School animation	Yes	Specific packages on waste are specifically made for schools. They are sponsored by the regional PRO and the region waste management company.
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Facebook, Linkedin, Hoplr, newsletter.

III. Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin per inhabitants, collection frequency, average number of bring points per inhabitants)	Yes	Until now ,analysis is done mostly on an ad hoc basis and is still rudimentary. There is an emphasis on which zone/region has the best type of collection depending on the type of housing for instance.
Workshop to gather inhabitants' experience	No	Workshops are sometimes organised but not in a very regular and structured way. However, complaints/ remarks coming to our customer service centre are received and analysed. During the preparation of the new website, an exercise was organised with inhabitants.
Analysis for the setting up of collection frequency for PPW	Yes	
Analysis for the setting up of PPW bring points	Yes	Being able to bring PPW to the civic amenity site is a nice extra when inhabitants have larger quantities, besides this, everything is covered by the door to door scheme. For high rise buildings, the underground containers function as a bring point, where they can dispose of their waste at any time. The setup of the number of bring points happens via the number of inhabitants and average distance, combined with opening hours. OVAM (Flemish regulator) also defined rules on distance, number of inhabitants, etc. that are used as a guideline.

IV. Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: No • Semi-rural sector: No • Populated: Yes	Regarding PPW, there is no other way of collection in rural or semi-rural areas. For high-rise building underground containers are setup for paper and packaging waste.
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: No • Other:	
Action related to different ages	No	Processes, systems and ways of communication are made as easy to use as possible to fit all kind of needs
Action related to different family size	Yes	There is no obliged recipient for paper and cardboard, hence inhabitants can put more outside. Frequency is adapted for smaller families.

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority:

In Ghent, the waste collection system is already well internalised by the inhabitants. Therefore, communication campaigns about information and environmental concerns are regularly carried out for specific items, mostly in the case in which there is a change in the system. However, via the website, call centre or civic agents, information is available for inhabitants when they need it. Convenience analyses or inhabitants' opinion collections are carried out, although be it on a small scale.

- Highlights (innovative/best performing initiatives):
  - Funded – by the regional PRO – information campaigns when the system is changing;
  - Information to citizens when setting up a new underground collection;
  - Rules for distance to bring points formulated by regulator are taken into account different factors such as distance or number of inhabitants.

Berlin, Germany

- Area's Characteristics:
    - Population: 3,537,100 inh
    - Density: 3,965 inh./km^2
    - Share of multi-family houses: 90.00%
    - Number of languages spoken: 7+
    - Country's GDP: 36,798 €/inh

Information regarding Berlin has been directly provided by the municipality of Berlin in charge of waste management.

I. Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in Streets, ect.)	Yes	Most of the communication tools are used. Flyers are not commonly used. However, public advertising campaigns are highly used, notably through ads put on the public bins, collection trucks or cleaning machines.
Civic agents in the streets or civic amenity site	No	
Door-to-door explanation	No	

Information available on a website	Yes	On the website, there are basic guidelines about waste sorting, type of waste and where to put it. The information is available in 7 languages to adapt to the different languages spoken in the city: • German • English • French • Arabic • Russian • Turkish • Spanish
Organisation of visits (sorting centre, recycling centre, etc.)	Yes	Visits can be organised for schools or other organisations for free. On site, people can have access to many materials. Visits are also organised in other languages.
Organisation of stands during public events	Yes	Organised during the Environment Week, the European Waste Reduction Week and any other type of public event related to the environment.
Available hotline for citizens	Yes	There is an available hotline for citizens: • Monday-Friday from 7am to 7pm • Saturday from 8am to 2pm Additionally: • Citizens can fill in a request form on the website • Mobile app for citizens to get information about the sorting process
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Email newsletters, Facebook, Twitter, Linkedin, Instagram and Youtube are used to communicate about the waste management system.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about environmental benefits of recycling	Yes	While information about the waste collection system is created by the waste management company, information about the environment is mostly carried out by the Berlin ministry. Communication is done through social media or public campaigns.
Organisation of stands during public events	Yes	Same as in section I. Information, unless sometimes the ministry has its own stand. Stands about environment can also be open during public institutions' open house day.
School animation	Yes	The ministry is hiring environmental organisations to go to 15 to 20 schools per year to raise awareness. The children learn about waste and resource efficiency.
Use of social media (Email newsletter, Facebook, LinkedIn, etc.)	Yes	Emails, Facebook, Twitter and YouTube to communicate about updates or information, but also about the work the ministry is doing and the progress of the work. Facebook is also used to create and invite people to public events.

III. Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin	Yes	On a regular basis, an analysis of waste, people's waste generation and how they sort it is conducted. On the basis of those results, public campaign can be launched. Otherwise, the system is self-regulated, and citizens can go on the website to indicate their waste

/collection point per inhabitants, collection frequency…)		collection preferences (type and size of bins, but also collection frequency).
Workshop to gather inhabitants' experience	No	No workshop, but citizens can fill out forms on the website, as well as indicating their preferences for their waste collection.
Analysis for the collection frequency for PPW	No	As indicated above, people have to indicate their preferences on the website.
Analysis for the setting up of mobile PPW bring points	No	No bring points for PPW, except for glass, which is handled privately. Part of the collection system for glass was changed from door-to-door to bring points, which led to discontent from the population.

IV.   Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: No rural area • Semi-rural sector: No semi-rural areas • Densely populated: Only populated areas	As Berlin only contains densely populated area, there is no specific action related to the type of area.
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: No (use of private companies)	Specific focusses on schools and awareness raising campaigns. Horeca sector are provided with specific bins of different sizes according to their needs.

	• Retailers: No (use of private companies)	
Action related to different ages	Yes	Only for the youth and the specific campaigns done in schools, as explained above.
Action related to different family size	No	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

As the waste collection system is privately handled by private companies, the societal acceptance is dually managed. The waste management companies in charge of the waste collection are communicating and educating on the concrete ways the system is working through dissemination of the sorting guidelines or visits of sorting centres and in different languages, as the city is multicultural. Although the division is not so clear, the Berlin ministry of environment is communicating more about the environment.

Regarding convenience and social norms, these are managed by the waste collection companies. For convenience, general analyses are regularly conducted but citizens' waste collection preferences are gathered so as to ensure the smoothest system. Except for schools and the Horeca sector, no actions are carried out regarding social norms.

- Highlights (innovative/best performing initiatives):
    o Website available in 7 languages;
    o Diversity of means to contact the waste management entity;
    o Substantial use of social media platform;
    o Strong awareness raising in schools;
    o Self-regulated system in which citizens can personally indicate their preferences about the type and size of bin, as well as the collection frequency.

Rennes, France

- Area's Characteristics:
  - Population: 438,865 inh.
  - Density: 617 inh./km²
  - Share of multi-family houses: 64.00%
  - Number of languages spoken: not known
  - GDP: 30,770.41 €/inh

Information regarding Rennes has been directly provided by Rennes Métropoles in charge of waste management.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in Streets, etc.)	Yes	Individual letters are sent to households to inform them about the waste collection system and during change regarding this system. A wide communication campaign is also created about the waste collection system.
Civic agents in the streets or civic amenity site	Yes	4 agents are employed to raise awareness in the streets. 2 more have been hired in September 2019.
Door-to-door explanation	Yes	Specifically for high-rise buildings with a focus on 4 high-priority neighbourhoods. Civics are also holding stands at the feet of buildings. For new inhabitants, mails are sent or meeting points are organised to inform them.
Information available on a website	Yes	Rennes has a dedicated website renewed in November 2019. Guidelines about waste sorting are available, along with the possibility to do research by waste category and get information about it.

Organisation of visits (sorting centre, recycling centre, etc.)	Yes	Visits available throughout the year. Mostly for schools, seniors, individuals and students. There is a visit tour, which opened in 2016.
Organisation of stands during public events	Yes	Public market with a company working in the social and solidarity economy field. Organisation of stands during public events but also in primary schools.
Available hotline for citizens:	Yes	Free hotline from Monday to Friday. 4 employees and 1 coordinator receive around 80 calls a day.
Use of social media (email newsletter, Facebook, LinkedIn…)	Yes	Only a Facebook page for the metropolitan area. No specific page dedicated to waste management.

II.   Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about environmental benefits of recycling	Yes	Same as in section *I. Information.*
Organisation of stands during public events	Yes	Same as in section *I. Information.*

School animation	Yes	Same as in section *I. Information.*
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Same as in section *I. Information.*

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin per inhabitants, collection frequency, average number of bring points per inhabitants)	Yes	Regularly done by the collection service, which is following up on the arrival of new inhabitants. The analysis assesses collection frequency or differences regarding the type of area (high-rise buildings or single house).
Workshop to gather inhabitants' experience	No	No dedicated workshop but citizens' opinions are gathered by phone or on the internet. A study to collect and analyse citizens' drawbacks to waste sorting is planned in 2020.
Analysis for the setting up of collection frequency for PPW	Yes	The system is adapted according to the system evolution and during change of public markets. It happens every 5 to 6 years but also when there are frequent requests from citizens.
Analysis for the setting up of PPW bring points	Yes	Technicians are in charge of this and carrying out studies. They make a comparison between door-to-door collection and bring points. A citizen consultation is done to assess what is the most practical solution.

IV.   Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: No • Semi-rural sector: No • Densely populated: Yes	Specific focus regarding the type of housing with a specific emphasis on densely populated areas with high-rise buildings where there is no or poor sorting.
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes	For schools, animations are made by a provider. For the Horeca sector, companies and retailers, there are agents responsible per sector (8 sectors in Rennes). Those agents needs to monitor and inform those organisations about waste sorting. If needed, extra awareness raising can be done by providers or civic agents.
Action related to different ages	Yes	Door-to-door communication is adapted to adults but animations in primary schools are adapted to children.
Action related to different family size	No	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority:

Rennes' societal acceptance system is handled by Rennes metropolitan area in charge of the waste collection system. The system relies a lot on raising awareness and giving key sorting information through public communication and consultation of citizens through door-to-door explanation, letters sent to new inhabitants and the deployment of civic agents. However, there is not a strong emphasis on the use of social media. Regarding the convenience of the system, an analysis is done on a regular basis for the system to be the most optimal. Citizens also have the opportunity to express their preferences regarding the waste collection system. Regarding social norms, the focus is very much on densely populated areas with high rise buildings and the youth through school animations. Specific employees are also in charge of involving the Horeca sector, businesses and retailers in sorting their waste.

- Highlights (innovative/best performing initiatives):
    - o Individual letters to households when there is a change in the system;
    - o Door-to-door explanation with specific focus on high-priority neighbourhoods;
    - o Regular review of the waste collection system;
    - o Citizens are consulted to give their preferences regarding the system setup or changes;
    - o Focus on different organisations via employees in charge of informing them;
    - o More emphasis put on densely populated areas and high-rise buildings.

4.2.2 Case studies related to Waste Electrical and Electronic Equipment

Vienna, Austria

- Area's Characteristics:
    - o Population: 1,867,582 inh.
    - o Density: 4,501.6 inh./km^2
    - o GDP: 47,700 €/inh
    - o Collected quantities of WEEE: 6.0 kg/inh
    - o WEEE national generated quantities: 22.0 kg/inh
    - o

Information regarding Vienna has been directly provided by Vienna's authority in charge of waste management.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in Streets, etc.)	No	
Civic agents in the streets or civic amenity site	No	
Information available on a website	Yes	There is a specific page dedicated to WEEE on the Vienna government website. For each different product, it is explained how to dispose of them. The website is also available in 6 different languages: • German • Bosnian • Serbian • Croatian • Turkish • English
Organisation of visits (sorting centre, recycling centre, etc.)	Yes	
Organisation of stands during public events	Yes	This is partly carried out by a waste consultancy. Such stands are held several times a year during street festivals and public events.

Available hotline for citizens	Yes	It is named the "Misttelefon". Available Monday to Saturday from 8am to 6pm. The number is available on the website but also on the 20.000 waste baskets and 450.000 waste containers.
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Use of Facebook, Twitter and Instagram with employees dedicated to social media work.
Other	Yes	The waste consultancy is also in charge of organising visits to kindergarten, primary and secondary schools.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about the environmental benefits of recycling	Yes	Part of the responsibility of the waste consultancy.
Organisation of stands during public events	Yes	Same as in section *I. Information.*
School animation	Yes	Same as in section *I. Information.*
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Same as in section *I. Information.*

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency...)	Yes	For instance, a pilot study has been done for a multi-family complex.
Workshop to gather inhabitants' experience	No	
Analysis for the setting up of mobile WEEE bring points	Yes	On the website, citizens have access to a map listing the different collection places for WEEE during opening hours.
Where do you put collection point	• Civic Amenity Site: Yes • Special Events: No • Schools: Yes • Retailers: Yes • Civic buildings: No • Other: Mobile collection	For schools, collection points are setup during the organisation of specific events or stands. A mobile collection system is also implemented for small appliances. It comes every 3 months in 93 locations and small items are taken free of charge.

IV. Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: No • Semi-rural sector: No • Densely populated: No	
Action related to different organisations	• Schools: Yes • Horeca sector: No • Companies: No • Retailers: No • Other:	
Action related to different ages	Yes	Children and teenagers are specifically targeted via the use of social media.
Action related to different family size	Not known	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

To involve citizens in Vienna's WEEE collection system, information is mostly disseminated via online means, such as the website, a hotline of social media. Stands are sometimes organised during events but there is no public information campaign. A strong emphasis is put on making the system more convenient with information on the website regarding the collection points as well as a mobile collection system regularly available.

- Highlights (innovative/best performing initiatives):
    - Wide use and dissemination of the hotline
    - Mobile collection system available regularly and free of charge for small quantities
    - Specific focus on the youth via the use of social media

Genova, Italy

- Area's Characteristics:
    - Population: 580,097 inh.
    - Density: 2,414.2 inh./km^2
    - Number of languages spoken: unknown
    - Country's GDP: 20,529 €/inh
    - Collected quantities of WEEE: 6.1 kg/inh
    - WEEE national generated quantities: 17.7 kg/inh

Information regarding Genova has been directly provided by Genova's authority in charge of waste management

I. Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in streets, etc.)	Yes	Communication on a daily basis through website and social media.
Civic agents in the streets or civic amenity site	Yes	
Information available on a website	Yes	They have 2 persons working on AMIU's website and social networks: • 1 person full-time • 1 person part-time They publish the information on how, when and where citizens can bring their WEEE on a weekly basis.
Organisation of visits (sorting centre, recycling centre, etc.)	No	

Organisation of stands during public events	Yes	Not specified
Available hotline for citizens	Yes	They have 3 persons working on the hotline for citizens. They answer phone calls and emails of citizens who need information and pass on complaints
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	They have 1 person following their social media every day on a full-time basis. On a daily basis they publish useful information for citizens and answer to their comments or messages
Other	Publish weekly articles on local newspapers and are frequently interviewed on local TV-channels	The communication team writes articles on a weekly basis with useful information about recycling, to be published in the local newspapers and local news websites. Moreover, their communication manager is often on local TV-channels for interviews.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about the environmental benefits of recycling	Yes	The communication team writes articles on a weekly basis with useful information about recycling and the potential environmental benefits, which is published in the local newspapers and local news websites. Moreover, their communication manager is often on local TV-channels for interviews.

Organisation of stands during public events	Yes	Not specified.
School animation	Not specified	
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	They have one person following their social media every day on a full-time basis. On a daily basis, they publish useful information for citizens and answer to their comments or messages.
Other	Not specified	

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency...)	Yes	The operations team conducts an analysis of waste collection and collection frequency based on the population density of an area and on the environmental context (urban/rural).
Workshop to gather inhabitants' experience	Yes	With the help of an external auditing, they conduct an analysis of how well the work is being done and what the public perception is. Moreover, they conduct meetings with stakeholders, including citizens, to understand how the company is perceived and to gather ideas on what and how they can improve. This is done on a yearly basis

Analysis for the setting up of mobile WEEE bring points	Yes	On a daily basis, they have vans – the free service ECOVAN/ECORAEE – that stop in different parts of the city in order to allow citizens to bring their bulky waste and WEEE at convenient bring points. They publish the monthly schedule every week, where citizens can see where and when their mobile bring points will station.
Where do you put collection point	• Civic Amenity Site: Yes • Special Events: Yes • Schools: Yes • Retailers: Yes • Civic buildings: No • Other: Not specified	
Other	Not specified	

IV. Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: No • Semi-rural sector: Yes • Densely populated: Yes • Other: Not specified	The operations team is in charge of implementing the waste collection in order to satisfy the needs of citizens both in semi-rural contexts and in a densely populated and urban environment.
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes • Other: Not specified	For schools and Horeca sector, they provide a door-to-door waste collection service. For companies and retailers, they provide bins that they can position on the public street for waste collection.

		For companies, they also provide bins made of cardboard that they can use in their offices for the separate collection of toners notably (printer ink).
Action related to different ages	No	
Action related to different family size	No	
Other		

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

In Genova, information about the recycling system is communicated via several channels both in a public way, via a communication campaign, and in a way directly targeting citizens, via door-to-door explanations. The communication is mostly done through the website and media, along with the possibility for inhabitants to use the hotline. Additionally, news on the recycling system is published every week in local newspapers. Communication on information and the environment are made jointly, via the same channels. Regarding convenience, an analysis is regularly conducted to assess the waste collection system. Inhabitants' inputs are yearly requested via an auditing process. Globally, bringing points are available everywhere for inhabitants, except in civic buildings. The type of collection is adapted to the area targeted, only for semi-rural and densely populated areas and different entities such as schools, companies or retailers. Mobile bring points are also available daily for inhabitants.

Additionally, in Genova, an additional collaboration was made with retailers within the framework of the European project *Weeenmodels*.

- Highlights (innovative/best performing initiatives):
  - 2 employees (1 full time, 1 part-time) working on digital;
  - Communication also goes through local newspapers;
  - Different types of collection system are available for different organisations, such as schools, companies or retailers.

Cyclad, France

- Area's Characteristics:
  - o Population: 148,659 inh
  - o Density: 78.4 inh./km^2
  - o Number of languages spoken: unknown
  - o Country's GDP: 26,458 €/inh
  - o Collected quantities of WEEE: 12.1 kg/inh
  - o WEEE national generated quantities: 21.2 kg/inh

Information regarding Cyclad has been directly provided by Cyclad, the waste management union.

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (flyers, advertisement in streets, etc.)	Yes	Cyclad is organising a "wake-up" call every two years. The call is made through sending informative flyers to all postal boxes. Approximate budget is 4.000 euros per action.
Civic agents in the streets or civic amenity site	No	
Information available on a website	Yes	On the website, there is a communication board which users can navigate to check how to sort their waste. Cyclad is organising a "wake-up" call every two years. The call is made through sending informative flyers to all postal boxes. Approximate budget is 4.000 euros per action.
Organisation of visits (sorting centre,	Yes	Most of those visits are organised for employees of collection points who will then become ambassador for inhabitants.

recycling centre, etc.)		
Organisation of stands during public events	No	Such stands are organised but mostly focussed on individual composting and bio-waste collection.
Available hotline for citizens	No	
Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Use of Facebook; two to six messages a year.
Other	Yes	• Set-up of "repair cafes" at the waste disposal centres for citizens to bring their broken WEEE and try to repair them; • Radio chronicle on 2 local radios broadcasted several times a week. WEEE is mentioned twice a week.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about the environmental benefits of recycling	Yes	Same as in section *I. Information.*
Organisation of stands during public events	No	Same as in section *I. Information*
School animation	No	

Use of social media (email newsletter, Facebook, LinkedIn, etc.)	Yes	Same as in section *I. Information*

III.   Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency, etc.)	Yes	Analysis done upstream about where to put WEEE containers and how many of them. It also takes into account the signage and access to the containers, along with information put on them.
Workshop to gather inhabitants' experience	No	A tool to measure the citizen's satisfaction has been installed.
Analysis for the setting up of mobile WEEE bring points:	Yes	See answer above.
Where do you put collection point	• Civic Amenity Site: Yes • Special Events: Not known • Schools: Not known • Retailers: Yes • Civic buildings: Not known • Other: Not known	Civic amenity sites are at the core of the WEEE sorting system in Cyclad. They have recently been modernised and receive more inhabitants. Not further investments are planned as the sites are modernised and there is a stronger focus on reuse and repair.

IV. Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	• Rural: Yes • Semi-rural sector: Yes • Densely populated: Yes	An analysis of the type of needs regarding the area is conducted. In densely populated area, people usually have less time, hence collection and storage capacity have been increased, while for less populated areas, capacity is reduced. For instance, some collection points are only open 50% of the usual opening time.
Action related to different organisations	• Schools: No • Horeca sector: No • Companies: No • Retailers: No	A partnership is foreseen with certain companies to organise a day dedicated to waste disposal collection points. During the day, all employees will get information about the system and will get the opportunity to leave their WEEE.
Action related to different ages	Yes	Collection sites are adapted to people with reduced mobility, usually elderly people.
Action related to different family size	No	
Other	Yes	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

Cyclad communicates about the WEEE collection system and environment through the same channels. A strong emphasis is put on communicating sorting guidelines with reminders sent every two years to the inhabitants' mailboxes. The system mostly relies on collection points, for which a deep analysis of convenience has been conducted for many factors such as location, opening hours or accessibility.

- Highlights (innovative/best performing initiatives):
  - Communication to all citizens every 2 years;

- o Radio chronicles on WEEE 2 times a year;
- o System mostly relying on CAS that have been modernised;
- o Comprehensive analysis done upstream so as to make the system convenient to use for inhabitants;
- o Analysis of population density to adapt the collection system.

4.2.3 Conclusions

General comment on the differentiation between PPW and WEEE for the societal acceptance aspect:

Although the analyses for PPW and WEEE were carried out differently, when it comes to measures addressing citizens' involvement, local authorities do not make such as clear distinction between the two waste streams. When the aim is to inform and involve citizens about the waste collection system, there is no added value in making a difference between waste streams. Technical information obviously varies from one stream to another, yet the means and channels of communication generally remain the same. Only a technical analysis regarding convenience and specificities related to the type of area offers significant differences in the societal system.

Paper and Packaging Waste:

Regarding paper and packaging waste, most of the actions implemented to involve citizens in waste separate collection are actions related to the **information** factor. The five cases analysed all implement communication campaigns to inform citizens about the sorting guidelines. Yet, as information is mostly conveyed through public communication, it was also noticed that regarding the stimulation of **environmental concerns**, this is done through the same channel. When it comes to public communication or public stands, for instance, in most cases, environmental information and technical information regarding the sorting process are communicated jointly. However, one-to-one communication campaigns such as door-to-door are not carried out by all the local authorities or are only happening at civic amenity sites.

Regarding **convenience**, all local authorities carry out a general analysis when setting-up the system and some even do so on a regular basis or during significant change of the waste collection system in case of a new waste stream for instance. Such an analysis is also done to define a convenient collection frequency and when setting-up of bring points. However, none of the local authorities were directly involving citizens in defining the waste collection system itself to make it more convenient. Some, nevertheless, provide the opportunity to citizens to send complaints or feedback and, in the specific case of Berlin, to define some of the logistic aspects themselves, such as number and type of bins and/or collection frequency.

Regarding **social norms,** only a few actions are implemented by a few of the cases. Different types of actions regarding the type of area very much depend on the area's different population densities. In most cases, specific measures regarding convenience are adapted to densely populated areas. Regarding different types of organisation, in some cases, specific information campaigns are created targeting companies or the Horeca sector. However, specific actions related to schools are setup in all cases. Actions in schools are also the only type of actions targeting a specific age group – young people. Regarding family size, no specific actions are implemented except for Parma, where PAYT's fees are adapted to family sizes.

Waste electrical and electronic equipment:

Regarding WEEE, most actions related to **information** are implemented by the cases analysed, both to publicly communicate the information - via general information campaign, a website or hotline – and to reach inhabitants one by one via door-to-door explanations. However, the use of civic agents in charge of reaching out to inhabitants in the streets or in CAS is not a measure often used, as reported by the cases. Actions related to **environmental concerns** are embedded with the dissemination of the sorting guidelines.

Regarding **convenience**, a general analysis to make the system convenient is carried out by all the cases which replied to the questionnaire. For some of them, such an analysis is made regularly, while for the other, it remains something done only before a reorganisation or change in the system. However, among the cases analysis, involvement of citizens in the system's design, via workshop of examples, is not a tool used unless in the case of Genova. Regarding setup of collection points for WEEE, in all the cases analysed, they are located at CAS and retailers. They are available in schools, and additionally the use of regular and mobile collection points is often used to complement the system.

Regarding **social norms**, no significant trends appear from the cases. Among the cases from which answers got collected, specific actions are taken regarding the type of area, specifically for semi-rural and densely populated ones. Specific actions regarding age mostly refer to actions organised in schools or social media, hence targeting the youth. Only in the case of Cyclad, elderly people were specifically targeted by making the CAS available to inhabitants with limited mobility.

Assessment of the measures implemented by the local authority or PRO:

During the cases analysis, the people responsible were asked if their implemented actions were deemed useful or not. In most of the cases, no means were dedicated to the assessment of the measures. Only actions on social media and the hotline were vaguely assessed via the number or people reached or people who called. In the best scenario, the local authority issues a feedback survey about the whole system, but this only reports on the WCS system as a whole and not on the societal system or even action by action.

5. General conclusion and recommendations

5.1 General conclusions

This general conclusion reports on the (lack of) alignment between measures implemented by local authorities or PROs, and on the citizens' expectations of the waste collection system. However, the scope between the analysis of the cases and the expectation for the citizens is different, as the focus group meetings only took place in three different areas and is not directly linked to the ten cases' context.

The general conclusion follows the division as in the generic analysis of boundary conditions for societal acceptance, being information, environmental concern, convenience and social norms.

Information:

Information has been identified as the most important aspect for citizens to be involved in the waste collection system. Citizens find that having the correct information will lead to proper sorting behaviour, whereas insufficient or unclear information can lead to incorrect or no sorting. Not only does the distributed information has to be harmonised and be fully and easily understandable, it also has to be available everywhere, e.g. at appropriate places or through appropriate channels. Also the assessment on the cases show that information is indeed the most important factor as a large share of the actions implemented focusses on dissemination of information. However, most of them only focus on the practical guidelines for sorting, while the focus group respondents broadly insisted on having information available on the outcomes and benefits of the system to feel more involved. This means not only explaining which waste goes where, but explaining what the outcome and the impact of the recycling process will be. Additionally, as all the cases strongly focus on dissemination of information, this is mostly done publicly via communication campaigns in the streets or via local newspapers. However, some respondents struggle to find the right information or are not willing, able or capable to retrieve the information, hence more personal measures on information such as door-to-door explanation or having civic agents in the streets could be considered.

Environmental concerns:

Environmental concerns is perceived as a key factor by citizens. Although local authorities or PROs have little power over this factor, they can provide information and communication on the benefits of collecting sorted waste prior to recycling and of recycling itself. For most of the cases, this is carried out jointly with a general communication on the waste collection system, using the same channels and means. From the participant's feedback, such communication should, however, preferably include more direct references to the environmental benefits of the recycling process as they usually do not include it or only briefly mention it. For most of the respondents, having the feeling that their behaviour has a positive environmental impact was identified as one of the strongest drivers to adopt the sorting behaviour.

Convenience:

Similar as information, the convenience factor is seen as a prerequisite for people to sort their waste, meaning that if they do not perceive the system as convenient, they will not adopt a sorting behaviour. For respondents, convenience is also deeply linked to the quality of the information they receive as it makes it easy for them to understand the system and perceive it as convenient. In most of the cases, a specific analysis is done to assess the convenience of the waste collection system – for some of them on a regular basis – in order to try to match the citizens' needs as much as possible. Respondents did stress that convenience is different from one person to another, thereby emphasizing the need for them to be involved in the design of the waste collection system. Some cases conducted a workshop and sometimes even give the possibility for inhabitants to share their preferences. However, this does not occur in all cases, as most cases do not or to a limited extent include citizens' feedback in their process. Additionally, three aspects have been identified as being a heavy burden for citizens to sort their waste if not properly considered. The three aspects are the following:

- Lack of space (often linked with type of housing). This is especially in densely populated areas with flats and high rise buildings;
- Additional time and efforts required for the sorting ;
- Poor or little access to civic amenity sites or bring points.

Therefore, specific attention to those points should be taken into consideration when designing or modifying the waste collection system.

Social norms:

Social norms was not deemed as an essential factor by the focus group meeting's respondents. This can be explained by the fact that social norm factors do not act in an obvious way on citizens but rather in an imperceptible way. However, for most of them, the local context plays an important role in the way that once the waste collection system has been properly established to a point where the majority of the inhabitants are sorting, it becomes part of the local culture and therefore starts to have a behavioural impact. However, among the cases analyses, not many

actions were taken regarding social norms except some specific measures regarding separate collection in densely populated areas and regarding the youth as many specific actions were targeting students in schools.

General comment:

Although it is hard to report in a completely objective way on the degree of alignment between citizens' needs and the local authority's or PRO's actions, the main trend identified is that such alignment – on the citizen's needs – is crucial and has to be taken into account when designing the measure implemented at the local level. During the focus group meetings, citizens were satisfied when they felt involved in the process, either by being able to participate in workshops or by providing feedback, but also by getting the feeling that they could contribute to a better world and environment by adopting a proper sorting behaviour. Additionally, implemented measures need to be evaluated and followed up, as most cases were not able to monitor and assess whether their measures were perceived as efficient and helpful for citizens. In most cases the best evaluations carried out for specific measures were the outreach by using social media. Broader satisfaction surveys have also been carried out but these are unable to report on specific measures regarding the societal acceptance.

5.2   Recommendations for local authorities and PROs

Based on the conclusions from both the focus group meetings and the case studies, the following recommendations have been found. These recommendations will be further detailed in Work Package 4.

- When disseminating information, ensure it is available, widely distributed in a proactive, clear, and adapted to the type of public it targets. To do so, the cases often communicate through a wide range of channels, including social media, website and emails, but also campaigns in public areas and door-to-door explanations. They also adapt the type of information to the target, meaning, for instance, that information for schools is pedagogical.

- The informational content should not be limited to the sorting guidelines but should also contain information on the waste collection system. Many citizens stated that they are sorting as a result of their environmental concerns. In that sense, when they know that their action has a beneficial impact for the environment, they are more inclined to sort.

- Setting up or modifying of the waste collection system should specifically address the following issues: space/type of housing, additional time and efforts, access to civic amenity

sites or bring points. The focus group meeting's respondents underline that those three issues are major disincentives regarding the sorting habit.

- If possible, the implementation of financial incentives positively encourages citizens to sort their waste. Focus group meetings' respondents specifically emphasised that systems like deposit return scheme or pay-as-you-throw system are highly motivating to trigger or maintain the sorting habit.

- In order to evaluate the waste collection systems and the various measures implemented for increasing societal acceptance, monitoring and further assessment of the measures implemented is crucial. Such assessments should go beyond the satisfaction dedicated from the citizens. It could target specific measures and try as much as possible to assess whether the city reached its objective to involve citizens in the waste collection system.

Appendix 1. Focus group meetings questionnaires

1. Treviso

This chapter and the information below contain the participation information sheet that will be provided to the expert or citizen participants prior to their contributing actions.

a. General objective

Focus groups: this method is applied to gain understanding of ideas, wishes and concerns of citizens as regard to good waste collection practices. An important advantage of focus groups in comparison to other research methods is that participants can respond to and build on the views expressed by the other participants. Because of this interaction, focus groups generate a large variety of opinions and ideas which provide insightful information, while maintaining a specific focus during the discussion. People from different parts of the cities will be invited randomly in order to get maximum distribution in demography, social status and geography.

b. General guideline

As the intention is to trigger the debate, generally speaking, it would be good to avoid YES/NO questions and try to put them forward as HOW questions. The following questions have been identified as key to be discussed within the focus group, but these should not be exclusive and, precisely, the debate should trigger other questions allowing to better understand the constraints of citizens to participate in separate collection.

As the aim of the focus group is to obtain a free-flowing discussion among participants, **questions laid out in part 2 are only indicative and should serve as a support to start the discussion, not to completely guide it.**

General questions

- What makes you participate or not to participate in separate collection of waste? (Convenience, environmental protection, PAYT, respect for rules, social pressure, lack of space, etc.)
- What are the strengths of separate collection? What are the drawbacks?

- How clear are the sorting guidelines?
- How easy is it to sort out the waste?
- What waste streams are easier for you to sort out and why?
- How would you define the frequency of collection of recyclables? And how about bio-waste?
- How would you define the frequency of collection for residual waste?
- How widespread is sorting around you? Is there social pressure to sort?
- How clear is the PAYT fee to you?
- How do you think the PAYT is impacting in your behaviour?
- What about other products like electronics? How convenient is it for you to sort them out?
- What do you think is the role of Contarina?

Other considerations

- Weather
- Communication of Contarina

2.   Cyclad/Surgères

This chapter and the information below contain the participation information sheet that will be provided to the expert or citizen participants prior to their contributing actions.

a. General objective

Focus groups: this method is applied to gain understanding of ideas, wishes and concerns of citizens as regard to good waste collection practices. An important advantage of focus groups in comparison to other research methods is that participants can respond to and build on the views expressed by the other participants. Because of this interaction, focus groups generate a large variety of opinions and ideas which provide insightful information, while maintaining a specific focus during the discussion. People from different parts of the cities will be invited randomly in order to get maximum distribution in demography, social status and geography.

b. General guideline

As the intention is to trigger the debate, generally speaking, it would be good to avoid YES/NO questions and try to put them forward as HOW questions. The following questions have been identified as key to be discussed within the focus group, but these should not be exclusive and, precisely, the debate should trigger other questions allowing to better understand the constraints of citizens to participate in separate collection.

As the aim of the focus group is to obtain a free-flowing discussion among participants, **questions laid out in part 2 are only indicative and should serve as a support to start the discussion, not to completely guide it.**

Introductory question

- What makes you participate or not in separate collection of waste? (Information, environmental concern, social norms, convenience, etc.)

General questions

- What are the strengths of separate collection? What are the drawbacks?
- How clear are the sorting guidelines?
- How easy is it to sort out the waste?
- What waste streams are easier for you to sort out and why?
- How would you define the frequency of collection of recyclables? And how about bio-waste?
- How would you define the frequency of collection for residual waste?
- How widespread is sorting around you? Is there social pressure to sort?
- How clear is the whole system to you?
- What about other products like electronics? How convenient is it for you to sort them out?
- What do you think the role of Warsaw is?

Social factors regarding separate collection

- If you participate, what would be a reason not to participate anymore?
- If you do not participate, what would make you participate?
- Would you say that your participation or not is mostly due to individual factors (environmental convictions, rewarding behaviour, habits, belief in the system) or to external factors (social pressure, laws and regulations, convenience)?
- In other words, do you do it because you have to? Or because you believe in it?
- Would you say that the following factors are key to your participation in separate collection? Mostly among:
    - Information (state of knowledge and information about the system)
    - Environmental concern (attitude and environmental belief)
    - Social norms (local culture and/or influence of social group)
    - Convenience (how easy do you consider using and understanding the system?)

- If yes, could you say which are the most important for you?
- If none of the above seem relevant, do you see any other relevant factors?
- In general, would you say that you participate -or not- because of one specific reason or because of a set of different reasons?

3. Warsaw

This chapter and the information below contain the participation information sheet that will be provided to the expert or citizen participants prior to their contributing actions.

a. General objective

Focus groups: this method is applied to gain understanding of ideas, wishes and concerns of citizens as regard to good waste collection practices. An important advantage of focus groups in comparison to other research methods is that participants can respond to and build on the views expressed by the other participants. Because of this interaction, focus groups generate a large variety of opinions and ideas which provide insightful information, while maintaining a specific focus during the discussion. People from different parts of the cities will be invited randomly in order to get maximum distribution in demography, social status and geography.

b. General guideline

As the intention is to trigger the debate, generally speaking, it would be good to avoid YES/NO questions and try to put them forward as HOW questions. The following questions have been identified as key to be discussed within the focus group, but these should not be exclusive and, precisely, the debate should trigger other questions allowing to better understand the constraints of citizens to participate in separate collection.

As the aim of the focus group is to obtain a free-flowing discussion among participants, **questions laid out in part 2 are only indicative and should serve as a support to start the discussion, not to completely guide it.**

Introductory question

- What makes you participate or not in separate collection of waste? (Information, environmental concern, social norms, convenience, etc.)

General questions

- What are the strengths of separate collection? What are the drawbacks?
- How clear are the sorting guidelines?
- How easy is it to sort out the waste?
- What waste streams are easier for you to sort out and why?
- How would you define the frequency of collection of recyclables? And how about bio-waste?
- How would you define the frequency of collection for residual waste?
- How widespread is sorting around you? Is there social pressure to sort?

- How clear is the whole system to you?
- What about other products like electronics? How convenient is it for you to sort them out?
- What do you think is the role of Warsaw?

Social factors regarding separate collection

- If you participate, what would be a reason not to participate anymore?
- If you do not participate, what would make you participate?
- Would you say that your participation or not is mostly due to individual factors (environmental convictions, rewarding behaviour, habits, belief in the system) or to external factors (social pressure, laws and regulations, convenience)?
- In other words, do you do it because you have to? Or because you believe in it?
- Would you say that the following factors are key to your participation in separate collection? Mostly among:
  o Information (state of knowledge and information about the system)
  o Environmental concern (attitude and environmental belief)
  o Social norms (local culture and/or influence of social group)
  o Convenience (how easy do you consider using and understanding the system?)
- If yes, could you say which are the most important for you?
- If none of the above seem relevant, do you see any other relevant factors?
- In general, would you say that you participate -or not- because of one specific reason or because of a set of different reasons?
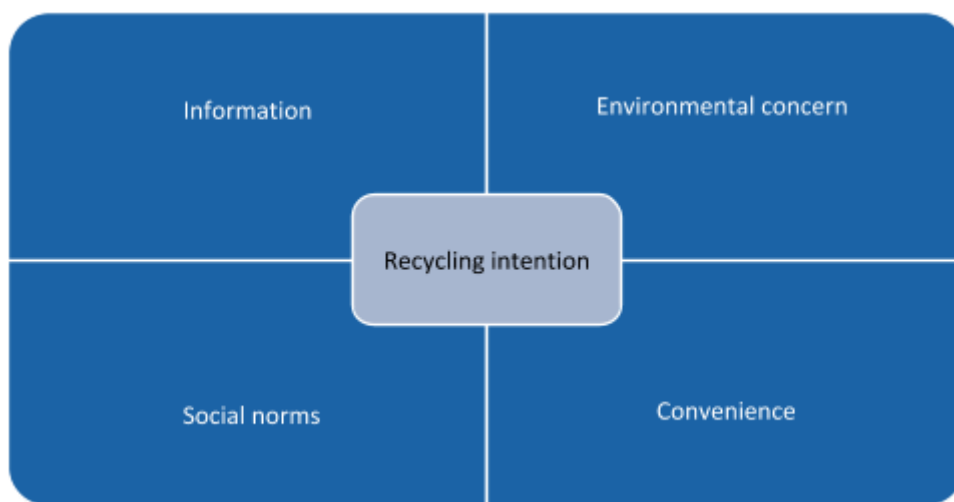
Appendix 2. Case studies research questionnaire

1.   Paper and Packaging waste

Factsheet on societal acceptance of the waste collection system for Paper and Packaging Waste (PPW) by inhabitants

As social acceptance is a key element in having good performing waste collection systems, the Collectors project also aims to analyse the selected cases from a societal perspective. In this sense, 4 key factors were identified to involve citizens in sorting their waste:

- **Information** (= state of knowledge and information)
- **Environmental** concerns (= attitude and environmental concern)
- **Social norms** (= local culture and context + influence of social group)
- **Convenience** (= perceived convenience)

To get a better understanding of the selected cases, we have listed a set of measures potentially implemented by local authorities to act on the four key factors. In that sense, we would like to ask you:

- If you implement such measures or not;
- If you consider that kind of measure efficient;
- If you implement such measures, how do you do this concretely (allocated funds, number of employed people, type of area covered, etc.);
- If you implement measures that are not listed in the list. And if so, which ones.

Beginning of the questionnaire

I.Information

Actions focussing on information about the waste collection system (I) and the environmental concern (II) can be covered by the same type of action. If you cover both with one same action, please mention it and still fill the questionnaire for both topics.

- Public communication about how the system is running (flyers, advertisement in streets, etc.):
    - Yes/No
    - According to you, is it effective?
    - If yes, how do you it? (allocated budget and how it is used, frequency…)

- Civic agents in the streets or civic amenity site:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Door-to-door explanation:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Information available on a website:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Organisation of visits (sorting centre, recycling centre...)
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget and how it is used, frequency, type of audience /focus groups …)

- Organisation of stands during public events:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency, type of public events…)

- Available hotline for citizens:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Use of social media (Email newsletter, Facebook, LinkedIn…):

- Yes/No
- If yes, which social media?
- According to you, is it efficient?
- If yes, how do you it? (allocated budget and how it is used, frequency…)

- Other:
  - What kind?:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

II. Environmental concern

Actions focusing on information about the waste collection system (I) and the environmental concern (II) can be covered by the same type of action. If you cover both with one same action, please mention it and still fill the questionnaire for both topics.

- Communication about the environmental benefits of recycling:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Organisation of stands during public events:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency, type of public events …)

- School animation:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Use of social media (Email newsletter, Facebook, LinkedIn…):
  - Yes/No
  - If yes, which social media?
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Other:
  - What kind?:
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

III. Convenience

- Do you conduct an analysis of practical convenience per inhabitants (type of bin per inhabitants, collection frequency, average number of bring points per inhabitants):
  - Yes/No

- - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Workshop to gather inhabitants' experience about this?
  - Yes/No
  - If yes, what type of workshops? For which type of audience?
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Was the collection frequency for PPW defined?
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- How was the setting up of PPW bring point defined?
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (number of inhabitants par area, perimeter, type of household…)

- Other:
  - What kind?:
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

IV.   <u>Social norms</u>

Since local authorities cannot directly influence what is happening in the private sphere, such as social groups, the questionnaire will focus on whether different strategies are adopted according to different social factors.

Do you have different actions related to:

- the targeted area:

⇒ Rural: Yes/No
⇒ Semi-rural: Yes/No
⇒ Densely populated: Yes/No

- - According to you, is it efficient?
  - If yes, how do you it?

- different organisations:

⇒ Schools: Yes/No
⇒ Horeca sector: Yes/No
⇒ Companies: Yes/No
⇒ Retailers: Yes/No
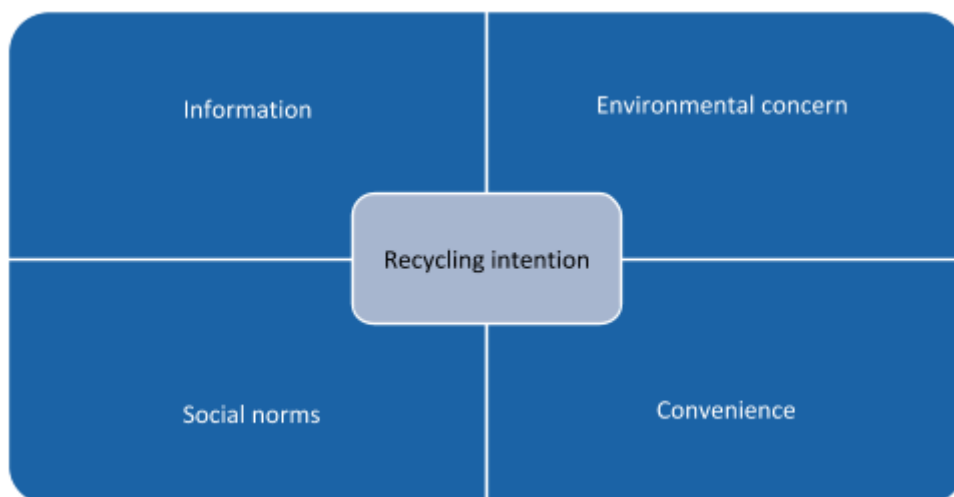⇒ Other:

- - According to you, is it efficient?

- If yes, how do you it? (allocated budget and how it is used, frequency…)

- different age:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it?

- different family size:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it?
- Other:
  - What kind?
  - According to you, is it efficient?
  - If yes, how do you it?

2.   Waste Electrical and Electronic Equipment

Factsheet on societal acceptance of the waste collection system for Waste Electrical and Electronic Equipment (WEEE) by inhabitants

As social acceptance is a key element in having good performing waste collection systems, the Collectors project also aims to analyse the selected cases from a societal perspective. In this sense, 4 key factors were identified to involve citizens in sorting their waste:

- **Information** (=state of knowledge and information)
- **Environmental** concern (= attitude and environmental concern)
- **Social norms** (= local culture and context + influence of social group)
- **Convenience** (= perceived convenience)

To get a better understanding of the selected cases, we have listed a set of measures potentially implemented by local authorities to act on the 4 key factors. In that sense, we would like to ask you:

- If you implement such measures or not;
- If you consider that kind of measure efficient;
- If you implement such measures, how do you do it concretely (allocated funds, number of employed people, type of area covered...);
- If you implement measures that are not listed in the list. And if so, which ones.

Beginning of the questionnaire

I.Information

Actions focusing on information about the waste collection system (I) and the environmental concern (II) can be covered by the same type of action. If you cover both with one same action, please mention it and still fill the questionnaire for both topics.

- Public communication about how the system is running (Flyers, advertisement in streets..):
    - Yes/No
    - According to you, is it effective?
    - If yes, how do you it? (allocated budget and how it is used, frequency…)

- Civic agents in civic amenity sites:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Information available on a website:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Organisation of visits (sorting centre, recycling centre...)
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget and how it is used, frequency, type of audience /focus groups …)

- Organisation of stands during public events:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency, type of public events…)

- Available hotline for citizens:

- Yes/No
- According to you, is it efficient?
- If yes, how do you it? (allocated budget, frequency…)

- Use of social media (Email newsletter, Facebook, LinkedIn…):
    - Yes/No
    - If yes, which social media?
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget and how it is used, frequency…)

- Other:
    - What kind?:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it?

II.   <u>Environmental concern</u>

Actions focusing on information about the waste collection system (I) and the environmental concern (II) can be covered by the same type of action. If you cover both with one same action, please mention it and still fill the questionnaire for both topics.

- Communication about the environmental benefits of recycling:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget and how it is used, frequency…)

- Organisation of stands during public events:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency, type of public events …)

- School animation:
    - Yes/No
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Use of social media (Email newsletter, Facebook, LinkedIn…):
    - Yes/No
    - If yes, which social media?
    - According to you, is it efficient?
    - If yes, how do you it? (allocated budget, frequency…)

- Other:
    - What kind?:
    - According to you, is it efficient?

- If yes, how do you it?

III.   <u>Convenience</u>

- Do you conduct an analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency..):
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Workshop to gather inhabitants' experience:
  - Yes/No.
  - If yes, what type of workshops? For which type of audience?
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Setting up of mobile WEEE bring points:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget, frequency…)

- Where do you put collection point:
⇒ Civic Amenity Site: Yes/No
⇒ Special Events: Yes/No
⇒ Schools: Yes/No
⇒ Retailers: Yes/No
⇒ Civic buildings: Yes/No
⇒ Other: Which one and : Yes/No
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget and how it is used, frequency…)

- Other:
  - What kind?:
  - According to you, is it efficient?
  - If yes, how do you it? (allocated budget and how it is used, frequency…)

IV.   <u>Social norms</u>

Since local authorities/PRO cannot directly influence what is happening in the private sphere, such as social groups, the questionnaire will focus on whether different strategies are adopted according to different social factors.

Do you have different actions related to:

- the targeted area:

⇒ Rural: Yes/No

⇒ Semi-rural: Yes/No

⇒ Densely populated: Yes/No

- According to you, is it efficient?
- If yes, how do you it?

- different age:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it?

- different family size:
  - Yes/No
  - According to you, is it efficient?
  - If yes, how do you it?

- different organisations:

⇒ Schools: Yes/No

⇒ Horeca sector: Yes/No

⇒ Companies: Yes/No

⇒ Retailers: Yes/No

⇒ Other:

- According to you, is it efficient?
- If yes, how do you it? (allocated budget and how it is used, frequency…)

- Other:
  - What kind?
  - According to you, is it efficient?
  - If yes, how do you it?

Appendix 3. Summary of the case studies

1. Paper and Packaging Waste

I. Information

Information					
Type of action	Parma	Tubbergen	Ghent	Berlin	Rennes
Public communication about how the system is running (Flyers, advertisement in streets...)	Yes	Yes	Yes	Yes	Yes
Civic agents in the streets or civic amenity site	Yes	Yes	Yes	No	Yes
Door-to-door explanation	Yes	Yes, when necessary	Yes	No	Yes
Information available on a website	Yes	Yes	Yes	Yes	Yes
Organisation of visits (sorting centre,	Yes	Yes	No	Yes	Yes

recycling centre…)					
Organisation of stands during public events	Yes	No	Not known	Yes	Yes
Available hotline for citizens	Yes	Yes	Yes	Yes	Yes
Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Yes	Yes	Yes	Yes
Other					

II. Environmental concern

Environmental concern					
Type of action	Parma	Tubbergen	Ghent	Berlin	Rennes
Public communication about the environmental benefits of recycling	Yes	No	Yes	Yes	Yes
Organisation of stands during public events	Yes	No	Not known	Yes	Yes
School animation	Yes	Yes	Yes	Yes	Yes
Use of social media (Email newsletter,	Yes	No	Yes	Yes	Yes

Facebook, LinkedIn…)					
Other					

III. Convenience

Convenience					
Type of action	Parma	Tubbergen	Ghent	Berlin	Rennes
Analysis of practical convenience per inhabitants (type of bin per inhabitants, collection frequency, average number of bring points per inhabitants)	Yes	Yes	Yes	Yes	Yes
Workshop to gather inhabitants' experience	No	No	No	No	No
Analysis for the setting up of collection frequency for PPW	Yes	Yes	Yes	No	Yes
Analysis for the setting up of PPW bring points	Yes	No	Yes	No	Yes
Other					

IV.   Social norms

Social norms					
Type of action	Parma	Tubbergen	Ghent	Berlin	Rennes
Action related to a targeted area	• Rural: Yes • Semi-rural sector: Yes • Densely populated: Yes	• Rural: Yes • Semi-rural sector: No • Densely populated: No • Other:	• Rural: No • Semi-rural sector: No • Densely populated: Yes	• Rural: No rural area) • Semi-rural sector: No semi-rural areas • Densely populated: Only populated areas	• Rural: No • Semi-rural sector: No • Densely populated: Yes
Action related to different organisations	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes	• Schools: Yes • Horeca sector: No • Companies: No • Retailers: No • Other:	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: No • Other:	• Schools: Yes • Horeca sector: Yes • Companies: No (use of private companies) • Retailers: No (use of private companies)	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes
Action related to different ages	No	No	No	Yes	Yes

Action related to different family size	Yes	No	Yes	No	No
Other					

2. Waste Electrical and Electronic Equipment

I. Information

Information			
Type of action	Vienna	Genova	Cyclad
Public communication about how the system is running (Flyers, advertisement in Streets...)	No	Yes	Yes
Civic agents in the streets or civic amenity site	No	Yes	No
Door-to-door explanation	Yes	Yes	Yes
Information available on a website	Yes	No	Yes
Organisation of visits (sorting centre,	Yes	Yes	No

recycling centre…)			
Organisation of stands during public events	Yes	Yes	No
Available hotline for citizens	Yes	Yes	Yes
Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Yes	Yes
Other		Yes	

II.   Environmental concern

Environmental concern			
Type of action	Vienna	Genova	Cyclad
Public communication about the environmental benefits of recycling	Yes	Yes	Yes
Organisation of stands during public events	Yes	Yes	No
School animation	Yes	Not specified	No

Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Yes	Yes
Other	Not specified	Not specified	Not specified

III. Convenience

Convenience			
Type of action	Vienna	Genova	Cyclad
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency…)	Yes	Yes	Yes
Workshop to gather inhabitants' experience	No	Yes	No
Analysis for the setting up of mobile WEEE bring points	Yes	Yes	Yes

Where do you put collection point	• Civic Amenity Site: Yes • Special Events: No • Schools: Yes • Retailers: Yes • Civic buildings: No • Other: Mobile collection	• Civic Amenity Site: Yes • Special Events: Yes • Schools: Yes • Retailers: Yes • Civic buildings: No • Other: Not specified	• Civic Amenity Site: Yes • Special Events: No • Schools: Not known • Retailers: Yes • Civic buildings: No • Other: not known
Other		Not specified	

IV.   Social norms

Social norms			
Type of action	Vienna	Genova	Cyclad
Action related to a targeted area	• Rural: No • Semi-rural sector: No • Densely populated: No	• Rural: No • Semi-rural sector: Yes • Densely populated: Yes • Other: Not specified	• Rural: Yes • Semi-rural sector: Yes • Densely populated: Yes
Action related to different organisations	• Schools: Yes • Horeca sector: No • Companies: No • Retailers: No • Other:	• Schools: Yes • Horeca sector: Yes • Companies: Yes • Retailers: Yes • Other: Not specified	• Schools: No • Horeca sector: No • Companies: No • Retailers: No

Action related to different ages	Yes	No	Yes
Action related to different family size	Not known	No	No
Other			

Appendix 4. Pembrokeshire and Helsinki case studies

For these two cases the relevant local authority or PRO was not able to provide information. Therefore, the limited information that was gathered via the website is included below.

1. Pembrokeshire, United Kingdom

- Area's Characteristics:
    - Population: 124,711 inh
    - Density: 78.4 inh./km^2
    - Number of languages spoken: not known
    - Country's GDP: 23,100 €/inh
    - Collected quantities of WEEE: 11.2 kg/inh
    - WEEE national generated quantities: 23.4 kg/inh

Information regarding Pembrokeshire were found on the PRO's website for WEEE – Repic – in Pembrokeshire[2].

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (Flyers, advertisement in streets..)	Yes	Communication is done on a website and through the use of social media.
Civic agents in the streets or civic amenity site	Not known	

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[2] http://www.responsible-recycling.co.uk/

Information available on a website	Yes	Information about sorting guidelines are available on the website along with the destination for the collected WEEE. Information is available about where to put WEEE but also to arrange collection.
Organisation of visits (sorting centre, recycling centre...)	Not known	
Organisation of stands during public events	Not known	
Available hotline for citizens	Yes	Hotline in connection with local charity groups where people can arrange a collection of WEEE goods for repair or reuse.
Use of social media (Email newsletter, Facebook, LinkedIn...)	Yes	Use of Facebook and Twitter.

II. Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about the environmental	Yes	Same as in section *I. Information.*

benefits of recycling		
Organisation of stands during public events	Not known	
School animation	Yes	Schools actions organised with Repic (PRO) named "REPIC Schools Adventure Challenge", organised to motivate schools in participating in the WEEE collection system. Pupils had to write adventure blogs about the time spent with Repic toy's mascot.
Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Same as in section *I. Information.*
Other	Yes	Organisation competition named "Eco Champions in Pembrokeshire", whose aim is to celebrate those citizens that are already doing great environmental things locally and to offer advice and encouragement to citizens who want to do great things but they haven't started yet.

III.   Convenience

Convenience		
Type of action	Implementation	Specificity

Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency...)	Not known	
Workshop to gather inhabitants' experience	Not known	
Analysis for the setting up of mobile WEEE bring points:	No	
Where do you put collection point	- Civic Amenity Site: Yes - Special Events: Not known - Schools: Not known - Retailers: No - Civic buildings: Yes/No - Other: Not known	

IV.   Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	- Rural: Not known - Semi-rural sector: Not known - Densely populated: Not known - Other: Not known	

Action related to different organisations	• Schools: Yes • Horeca sector: Not known • Companies: Not known • Retailers: Not known • Other:	Specific animations and projects are done with schools to involve them in the system as described above.
Action related to different ages	Not known	
Action related to different family size	Not known	

- Description of the measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

Not enough information (no reply) was received to provide a detailed overview of this case.

- Highlights (innovative/best performing initiatives):'
  - o Possibility to arrange WEEE collection on the website;
  - o School animations organised with the PRO, Repic;
  - o Organisation of the competition named "Eco champions in Pembrokeshire".

2.   Helsinki, Finland

- Area's Characteristics:
  - o Population: 1,177,535 inh.
  - o Density: 1,017.7 inh./km^2
  - o Number of languages spoken: 2 official languages (Finnish and Swedish)
  - o Country's GDP: 50,741 €/inh
  - o Collected quantities of WEEE: 11.2 kg/inh
  - o WEEE national generated quantities: 21.6 kg/inh

Information regarding Helsinki were found on the waste management authority's website for Helsinki – HSY –[3].

I.Information

Information		
Type of action	Implementation	Specificity
Public communication about how the system is running (Flyers, advertisement in streets…)	Not known	
Civic agents in the streets or civic amenity site	Not known	
Information available on a website	Yes	Information is available on the <u>website</u>. It explains which kind of items should be sorted and not sorted. There is also information on where functional WEEE can be taken, as well as broken appliances. Users can also use a searching tool giving explanation on what to do with specific waste streams.
Organisation of visits (sorting centre, recycling centre...)	Yes	Ämmässuo Eco-Industry Centre and Sortti stations. Organised on weekdays for educational groups from fifth grade upwards, residents, non-governmental groups and expert groups. Free for all, unless business trainings visits.

[3]https://www.hsy.fi/en/residents/pages/default.aspx

Organisation of stands during public events	Yes	Organisation of an escape named "wastescape room" focusing on waste in general during events.
Available hotline for citizens	Yes	Hotline available during weekdays.
Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Twitter, Facebook, Youtube. Social media are used to share videos, events and information about the waste collection system in general.
Other	Not known	

II.   Environmental concern

Environmental concern		
Type of action	Implementation	Specificity
Public communication about the environmental benefits of recycling	Yes	Part of the communication about environmental benefits of recycling and waste sorting is available on the website. It is explained why recycling allows for material reuse.
Organisation of stands during public events	Yes	Same as in section *I. Information.*
School animation	Not known	
Use of social media (Email newsletter, Facebook, LinkedIn…)	Yes	Same as in section *I.Information.*
Other	Not known	

III. Convenience

Convenience		
Type of action	Implementation	Specificity
Analysis of practical convenience per inhabitants (type of bin /collection point per inhabitants, collection frequency...)	Not known	
Workshop to gather inhabitants' experience	Not known	
Analysis for the setting up of mobile WEEE bring points	Not known	
Where do you put collection point	- Civic Amenity Site: Yes - Special Events: Not known - Schools: Not known - Retailers: Yes - Civic buildings: Yes/No - Other: Yes	In CAS, 5 "sortti stations" are open on weekdays. Collection points are also present in stores that sell small electrical appliances. Other bring points are also set up and can be found on a website. Touring collection vehicles are available all year round on specific dates during the month.
Other	Not known	

IV. Social norms

Social norms		
Type of action	Implementation	Specificity
Action related to a targeted area	- Rural: Not known - Semi-rural sector: Not known - Densely populated: Not known - Other: Not known	
Action related to different organisations	- Schools: Not known - Horeca sector: Not known - Companies: Not known - Retailers: Not known - Other: Not known	
Action related to different ages	Not known	
Action related to different family size	Not known	
Other	Not known	

- Description of measures used to foster citizens' involvement in the WCS implemented by the local authority/PRO:

Not enough information (no reply) was received from the local authority to provide a detailed overview of this case.

However, it should be outlined that in complement to the regional waste management company HSY, five PRO's are operating in Finland. They have national campaign such as educational books targeting schools or the possibility for citizens to return small WEE via post.

- Highlights (innovative/best performing initiatives):
    - Set up of an escape room about waste

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ACR+

www.acrplus.org

EUROCITIES

www.eurocities.eu

WEEE FORUM

www.weee-forum.org

ZERO WASTE EUROPE

www.zerowasteeurope.eu

www.collectors2020.eu