

ECAP

Used Textile Collection in European Cities



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Executive summary

The European Clothing Action Plan (ECAP) has the overall aim of reducing clothing waste across Europe and embedding a circular economy approach into Europeans' provision, access to and consumption of clothing.

One of the work packages under ECAP aims to reduce clothing waste to landfill and incineration by increasing collection, reuse and recycling of post-consumer clothing. Engagement with municipalities is a key element in this.

As a first stage in this work package we have studied practices in six cities across Europe and drawn out findings that can inspire municipalities elsewhere. The cities are: Antwerp, Copenhagen, Gothenburg, Paris, Rome (suburb of Albano Laziale) and Rotterdam. A seventh case study looks at a kerbside collection initiative BEST Bag that has been rolled out in two regions of the Netherlands. The case studies focus on cities, since these can present complex challenges for collection, because collection rates per capita in cities are often lower than national averages and because 40% of Europeans lives in cities with populations over 150,000.

We uncovered a wealth of approaches from the seven cases, both in terms of physical collection methods but also how collection and subsequent processing was organized, key messages that have been communicated to citizens and the role that municipalities have taken. Often the approach taken has been highly influenced by the background context; national and regional policy and earlier collection activities/challenges.

Increased municipality engagement

In all cases, city authorities have directly, or indirectly, increased their level of engagement in recent years. Waste prevention policy and the growing circular economy agenda implemented in some cases by national/regional goals for used textiles has been one driver. Further municipalities have seen opportunities to combine environmental and social goals through supporting the employment of disadvantaged groups in textile collection and processing. Some have responded to a demand for greater transparency in what happens to used textiles and, finally, potential economic benefits for municipalities and their waste collectors have played a role. This engagement will increase further towards 2025 by which time EU Member States will be obliged to ensure separate collection of used textiles.

To increase transparency city authorities in Copenhagen, Gothenburg, Antwerp and Albano Laziale, Rome have developed accreditation processes for collectors including qualification criteria, codes of conduct and reporting responsibilities. Similar accreditation is carried out in France under the Extended Producer Responsibility system. Copenhagen, Rotterdam, Antwerp and Albano Laziale have gone a step further by limiting permission to one or two collectors to gain greater control over collection activities, reduce street clutter by containers from competing organisations, reduce confusion among citizens and potentially increase collection efficiency.

Some municipalities have engaged in collection themselves, and in partnership with others have used areas of cities as test-beds for piloting new collection activities. This has included kerbside collection or swap corners and collection of worn-out textiles in local recycling centres.

Spreading eggs between baskets

Using a spectrum of collection methods can reach to out different segments of a population. In Paris, collection includes containers on streets and in recycling centres, mobile containers following planned routes around the city, supermarkets and reuse shops for use in the dense city

centre, containers inside multi-storey social housing to reach a segment where collection rates have traditionally been low, and finally containers in schools where there is a high turnover of clothing and where they can play an educational role.

Other cities showcase kerbside collection, collection in workplaces, libraries, post offices and shops and in the waste areas of multi-apartment housing. These various methods balance between convenience and costs. Street containers have a relatively low cost per tonne of collection, but less-motivated segments of the population may only deliver to collection points that are close by; outside their door, in the waste areas of multi-apartment housing or in supermarkets and workplaces that are part of daily routines.

Collection close to the citizen can be more expensive than street containers or collection in recycling centres, but the extra cost can be partially offset by lower contamination by waste. Moreover, collection costs decrease where collection is combined with other waste streams. Organised theft can be a major hindrance to kerbside collection and steps should be taken to minimise this risk.

Collaboration and branding

Collaboration rather than competition between actors can increase efficiency of collection. In Antwerp, collectors who each fill a different collection niche came together in a cooperative where each of their activities complements one another. The focus on networks in the city of Antwerp's tender documents laid the foundations for this cooperation. Further actors that can be brought into such collaborations are clothing brands, who both can collect used clothing in their own shops and provide communication that can benefit all.

The Antwerp collaboration has branded itself as *de Collectie* and uses this common brand on all communication. This simplifies and amplifies communication with citizens. A similar approach has taken place in Paris. Here organisations certified as official textile collectors by the national producer responsibility organisation EcoTLC, carry the EcoTLC certification logo as a reassurance to citizens.

The importance of communication

A clear brand and signage reduces confusion of citizens in relation to where they should put their used textiles. In Rotterdam it was found that by giving all containers the same single colour and placing them above ground away from containers for waste, contamination by non-textile waste was reduced.

A collector increased collection quantities by 65% in Albano Laziale simply via being transparent to citizens on what it does with collected textiles and with the money raised from them. This is because a significant proportion of citizens care *who* benefits from their used clothing. This demonstrates the importance of investigating citizen preferences. Where a significant number prefer for their donated textiles to provide humanitarian benefits, it would be ill advised for a municipality to organise collection without the involvement of such organisations.

The double-edged sword of worn-out textiles

Householders typically don't wish to deliver what they themselves do not see as reusable even though this may be reusable on global markets or, failing that, recyclable. A message that everything is accepted can solve this issue, can increase collection rates and divert more textiles from landfill and incineration. This has been a key focus in a number of the city cases.

On the other hand, collecting worn-out textiles negatively affects the economy of used textile collection; collection costs per tonne remain relatively unchanged, sorting costs increase, and the

price per kg that textiles can fetch on global markets falls rapidly as the reusable share reduces. Global prices for recyclable textiles are currently at rock-bottom.

The acceptability of worn-out textiles presents a challenge to communication. If not designed carefully, signage that worn-out textiles are accepted can have the undesired effect that some people *only* deliver their waste textiles to these containers, and deliver their high quality reusable textiles elsewhere. Such actions further impact on the economy of the collector.

Finally, there can be legal issues concerned with this collection. Where collectors state that they don't wish for worn out textiles, or do not openly advertise for them, operations have traditionally not been seen as waste collection, even if they do receive some waste. Where collectors advertise for worn-out textiles in many countries this is interpreted as waste collection, in which case special rules may apply. In Germany, Netherlands and Norway, collectors of used textiles must be registered waste collectors.

Benefits and challenges of local solutions

In reaction to citizens' or city authorities' own wishes that used textiles should create local jobs and provide local social support, tender processes in some cities favour local processing, reuse and recycling of collected textiles. The approach follows true closed loop thinking where society becomes responsible for its own waste and reuses and recycles resources as far as possible.

In the short term, this is not the most environmentally beneficial approach. Reuse provides much greater environmental benefits than recycling independent of where in the world the reuse takes place. Domestic reuse markets in Europe are limited to the top 10-20% in quality of used textiles. A good share of the remainder can be reused in other countries. If they must remain in Europe will typically end up downcycled in low quality products or incinerated. Textile-to-textile recycling opportunities are currently limited. Moreover, due to the high costs of labour in western European countries, local sorting and processing is economically marginal.

In the longer term, more closed loop thinking may be needed should global markets for especially lower quality used textiles become saturated as global supply increases but demand stagnates. It will, however, take time and investment for such solutions to be found. Municipalities and national governments with goals for local processing, reuse and recycling should be pragmatic with respect to when these can be reached and what the short-term economic consequences might be on collectors.

Economic support and social benefits

Some municipalities are exacerbating the economic pressures on collectors and sorters, by taking a fee for collection, or conversely by carrying out collection themselves for sale in own shops, and passing on the lower quality, textiles to the traditional collectors. This risks undermining collection in the long term.

Other municipalities are taking a wider perspective and have taken actions to counter the negative effects that their demand for worn-out textile collection and for local solutions has on collectors' economies, and are also investing in domestic recycling solutions.

In Antwerp and Rotterdam, for example, sorting and selling of collected clothing is partially subsidised by the municipality/region via wage support for long-term unemployed and/or disadvantaged groups. This combines social and environmental benefits. The same support is provided by textile producers in France through the producer responsibility organisation EcoTLC. Supporting the economy of sorting indirectly supports the economics of collection.

EcoTLC also provide financial support for R&D in new methods for material recycling of rags. The goal is to create viable recycling industries that can make use of non-reusable textiles for valuable products, and pay a reasonable price for them. Similar research is being funded elsewhere in Europe.

Considerations for municipalities and collectors

Set measurable targets related to textile collection and then set up systems for monitoring of these. Reporting systems will need to include all collection actors.

Carry out a citizen survey before designing measures for meeting targets – the reasons for non-delivery of used clothing and textiles may be complex and include many factors that you were unaware of. Many citizens care what happens to their textiles and what the money is used for. Some may want to see them support local jobs and social activities. Others may wish them to support development projects abroad.

Consider increasing/ensuring transparency in the fate of collected textiles and how the money raised from them is used for example via an accreditation system such as the Nordic Reuse and Recycling Commitment.

Consider providing a range of collection/delivery possibilities or ensure that such a range is provided by collectors. Citizens differ in their daily habits and motivation for delivery. The city landscape may differ from high to low density and suitability of different collection types.

Collaboration between different actors can strengthen collection, subsequent processing and sale. Stakeholder's strengths can supplement one another in their collection activities, communication strengths and ability to reach out to certain citizen segments.

Make use of existing actors experience and knowledge of textile collection, used textile processing and global markets. This is a huge asset and should be made use of. Engage and build on these instead of reinventing the wheel.

Consider a common brand for all types of collection activities, containers and actors to reduce confusion/inaction among citizens and strengthen messages on collection.

Ensure the economic viability of collection and processing for all actors in the value chain otherwise collection initiatives will not last. Demanding fees from collectors or demanding them to accept non-reusable textiles will squeeze their margins in an already difficult market. By collecting non-reusable textiles, they will reduce municipal mixed waste collection costs. Consider channelling some of these savings to the collectors.

Ensure that collection and processing solutions adhere to national legal frameworks. Existing collectors of used textiles may not be permitted to advertise for non-reusable textiles without becoming registered waste collectors for example.

Be pragmatic about local solutions. Having a goal that all textiles will be reused and recycled locally cannot always be realised. In the long term local solutions can be developed, but reuse should generally be prioritised over recycling even if this takes place in other countries.

Social, circular economy and environmental gains can be made by combining wage support for long-term unemployed or disadvantaged groups in employment/training in

collection, sorting, processing and sale of used textiles.

Ensure clarity on communication on non-reusable textiles. If these are to be collected, then choose the communication carefully so that citizens realise that 1) both reusable and non-reusable waste textiles are accepted 2) that delivered textiles will be used in the most optimal way possible – good quality textiles will be reused and worn-out textiles will be recycling as far as possible.

Consider increasing collection convenience if collection levels are low, by increasing collection point densities or collection in the home or work place. Costs of increased convenience can potentially be reduced by mixing collection of textiles with other reusables and recyclables from households, but be aware of the risks of theft and risk of contamination by other waste streams.

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1.0 Background and objectives

The European Clothing Action Plan (ECAP) is a three-year program funded under the European Commission's LIFE fund. The program has the overall aim of reducing clothing waste across Europe and embedding a circular economy approach into Europeans' provision, access to and consumption of clothing. Five organisations are implementing the programme; UK WRAP, MADE-BY, Rijkswaterstaat (part of the Dutch Ministry of Infrastructure and Waterstaat, which is the responsible ministry for environmental, waste and circular economy policies), Danish Fashion Institute and the London Waste and Recycling Board.

The ECAP programme aims to:

1. Divert over 90,000 tonnes of clothing waste from landfill and incineration.
2. Reduce the carbon (save 1.6 million tonnes CO₂), water (save 588 million m³) and waste footprints of clothing consumed in Europe.
3. Ensure that fewer low-grade textiles go to incineration and landfill.
4. Prevent waste in the clothing supply chain.
5. Encourage innovation in resource-efficient design, recycling of textile fibres and service models to encourage business growth in the sector.
6. Influence consumers to buy smarter and use clothing for longer by using the existing Love Your Clothes consumer campaign.

Rijkswaterstaat (RWS) is leading a work package on collection of clothing that addresses goals 1 and 3 above (and thereby indirectly address goal 2). More specifically the objective of the work package are to reduce clothing waste to landfill and incineration by increasing the recovery rates of all clothing through reuse/re-wear and recycling to high value materials, such as new textiles. Action steps under the work package are:

- Gathering of key information and lessons learnt from cities across Europe
- Organising regional meetings for municipalities
- Developing a guidance for municipalities, collectors and graders
- Communication and dissemination to relevant stakeholders

RWS commissioned PlanMiljø to carry out the first stage of this work. The objectives of the work are:

'to collect information on various successful approaches to the collection of used textiles in European cities and present findings that can be used by RWS to inspire and guide city municipalities and other actors in Europe to adopt and further develop these approaches according to local needs'

This report provides an overview of the methods and findings of the work. The ECAP project team will use the report as input for regional meetings in Europe with municipalities to disseminate knowledge and experiences to them that can be used to implement and take action to increase and improve collection of textiles. Ultimately improved collection in combination with market pull will affect reuse and recycling operations to become more commercially viable for textile collectors and sorters.

2.0 Broad approach

2.1 Scope

RWS have made it clear during discussions with PlanMiljø that the focus of the project should be on the compilation of experiences, examples and proven good practices in big cities with waste and textiles collection and the subsequent analysis of these experiences, and the conclusions and recommendations that emerge. The report also includes a brief overview of textiles collection within Europe. This does not represent a comprehensive status of collection rates and methods from country to country but rather provides an illustrative background context within which the city studies are embedded. It has been drawn from easy-available existing publications and data.

It was agreed that the project should focus on collection of material from a selection of 6-8 cities that would be presented as cases in this report and would provide the basis for further analysis. Moreover, it was agreed to focus on collection from private households and not on collection from private businesses, and public organisations such as hospitals, nursing homes etc.

Finally, although ECAP focuses on clothing, we are aware that most collectors do not distinguish (at the collection stage) between clothing and home textiles. Therefore, we refer to textiles throughout this report. Moreover, shoes and other accessories such as bags, and cuddly toys are often included in reported collection quantities. Apart from under the overview of textile collection in Europe section, we have not attempted to isolate quantities of used clothing from these other products.

2.2 Actors

Many different kinds of actors can be involved in collection of used textiles in cities: charities, municipalities, public or privately owned waste companies, clothing brands/retailers, post deliverers or a collaborating combination of these. Where it is the city municipality driving an action the action will likely be restricted to that city. Where it is a waste company, the action may be more widely spread and include other cities or municipalities. Where it is a charity or clothing brands/retailers the action may be national or even multinational. This means that in the latter cases the action may not be adapted to the specific needs of the city in question and will be of a more generic nature. Account should be taken of this in the analysis of actions in the cities. It may also mean that data has not been collected specifically for the city.

2.3 Treatment of Data

We did not feel that it would be useful to attempt to compare data between cities in the study. Cities can have very different characteristics that affect collection rates of used textiles including 1) the quantity and type of textiles consumed per capita due to differences in prosperity, climate etc. 2) cultural differences 3) presence of charities 4) (national) legal and regulatory differences.

Instead we have used data provided to via city studies to follow trends within a given city i.e. before and after a particular campaign, action or establishment of a new system for collection. We must recognise that not all cities may have this data available.

3.0 Methodology

3.1 Collection of contextual data in EU

Under this sub-task we collected information and data that can provide a background picture of relevant policy (at EU level) and collection of used textiles across Europe. As already noted earlier the aim was not to provide a comprehensive picture but rather a context within which the city cases could sit. We made use of a wide range of national and international reports and surveys that present data on collection of used textiles across Europe, and present relevant policy at EU and national level. Many of these reports and studies we were made aware of during interviews with key stakeholders under city studies. Others we knew about already or found via searches.

3.2 Selection of Cities for studies

Selection of cities for inclusion as case studies was a key step in the project on which the rest of the analysis would depend. The objective was to identify 6-8 cases that can be applicable to a range of different cities with a range of characteristics. Importantly, since the objective is to inspire other cities, the cases should represent cutting edge rather than average practice.

The selected cities/cases should as far as possible include cities:

- Where municipalities, charities or other actors have made a commitment to increasing collection rates of used textiles, and have adopted initiatives to live up to this commitment.
- That showcase a range of different approaches to collection of used textiles including: door-to-door collection, street-side containers, collection bins as part of municipal waste collection, in-shop collections.
- That showcase different constellations of actors working together i.e. municipalities, charities, brands etc.
- Where communication/nudging/behaviour change methods have been used to influence households.
- Where particular population segments or city areas have been targeted i.e. the young, ethnic minorities, tower blocks, poorer segments of the city etc. and finally and perhaps most importantly.
- With leading actors who were willing to cooperate with us and provide us with the information and data we needed and that have available data on collection rates.

The budget for the project did not allow a systematic screening of all cities in the EU in the search for cities that meet these criteria. Instead we relied on our own knowledge and the knowledge of our own and RWS' networks supplemented by media searches.

To obtain a first pool of potential cases we:

- wrote to our and RWS network of actors involved in used textile collection in Europe to ask whether they have ideas for good cases from European cities. We provided them with the selection criteria listed above
- carried out a web search for good cases

The first contacts to our networks led us to further contacts in a so-called avalanche effect; both people in extended networks who may also be able to help us and contacts to people within proposed cities. See Appendix A for a full list of people contacted during the city search. The web-search led us to one or two additional cities but the network contact was by far the most effective means for finding cases although it may have led to an overweight of cases from north-western Europe.

We followed up with first contacts to city actors to gain more info on types of actions, actors involved, availability of data and willingness to engage. Table 1 gives a list of the cities that were considered for inclusion and the reasons for selection/non-selection.

Table 1: Pool of cities considered for cases

City or area	Interest	Included? If not why?
London, UK	London Waste and Recycling Board (LWARB) have launched a circular economy route map that includes textiles	No No single authority had overview of collection activities. Would need to contact all boroughs separately
County of Surrey, UK	Has put a strong focus on increasing collection rates for separately collected fractions with initial focus on textiles. Found that one of key reasons for low rates was that people didn't know what type of textiles were acceptable and could be reused/recycled. They have put a large focus on communication to citizens of value of ALL textiles (and shoes) even worn out.	No They did not have any data for collection rates before or after, and did not have time to participate
Copenhagen, DK	City has set focus on textile collection. Has professionalised collection agreements with collection organisations, communicated with households encouraging delivery of rags and has run a pilot for direct C2C exchanges in recycling centres.	Yes
Antwerp, BE	Alternative and novel collection method through a collaboration of actors, where textiles are used locally as far as possible and containers are banned in the street. Antwerp has a high collection rate.	Yes
Rotterdam and The Hague, NL	Collection rates have increased following changes in numbers and placement and type of containers in both cities. Rotterdam is more recent but has had higher focus on advertising campaigns and other city authority inputs	Yes
Rd4 and Circulus Berkel served regions of Netherlands	19 municipalities served by waste companies that makes use of so-called BEST bag collection system for kerbside collection of textiles along with some other reusable streams from households.	Yes

Gothenberg, SE	Piloted collection of textiles direct from multi-apartment buildings and in secure areas to test increases in collection and quality – which has led to further development of concept. The city used a code of conduct for collectors that includes reporting collected volumes annually.	Yes
Eskilstuna, SE	The waste company owned by Eskilstuna and neighbouring municipality Strängnäs runs the Optibag coloured bag system for collecting separate waste streams from households that is also run by other municipalities. This company is the first to extend the system to include textiles.	Partial: have included as extra material in Gothenburg case
Albano Laziale, Rome, IT	In municipality of Albano Laziale official collector is collecting 5.8kg per inhabitant, almost three times the national average. This result has been achieved via good communication and engagement of the municipal administration. In addition good to have a city case in southern Europe	Yes
Paris, FR	National framework in France is of great interest due to the Extended Producer Responsibility System and associated concrete targets for increase. Paris provides showcase of this. Paris is also of interest due to high density of central area that makes traditional collection via containers impossible and needs other solutions.	Yes
Strasbourg and St. Etienne, FR	As above all French cities are of potential interest because of EPR-system. In Strasbourg the city aimed to coordinate the various local collection stakeholders to optimize the container placement mesh and emptying of these for maximum efficiency. St Etienne was also proposed by EcoTLC contact as a good example.	No No response to initial approaches. Also Paris showed strong willingness to participate as French case
Hoppegarten and Märkisch-Oderland Region, DE	Collection is supposedly very high in Germany. However, the landscape has also changed recently via waste companies being expected/given potential for collection. In Hoppegarten, just east of Berlin, container density and collection has been increased. At region of Märkisch Oderland collecting textiles via paper bins using same contractor. Has not been successful but failures are also of interest.	Partial: The key actors did not have sufficient time to fully participate in the study but we do have some information for use in this report

3.2 Collection of information from case stakeholders

Data and information for the seven selected cases given in the table above were collected primarily via phone interviews with representatives from the driving stakeholders in the cities/cases. For many of the cases, we took contact with three or more organisations that were engaged in textile collection in the city in order to gain a full picture of initiatives and effects. This varied from case to case but typically included a representative of the city authority (e.g. municipality or other) and/or the municipality's

waste company, and one or more charitable or private collectors and/or sorters of textiles in the city.

Interviews were framed by an interview guide and were sent out to contacts prior to interviews. The focus was in the following areas:

- *Policy background* (national and local) and motivation for increasing textile collection
- *Description of initiatives* and the actors involved
- *Measures for motivating/activating* citizens to engage
- *Trends in collection* in the city as influenced by the initiatives
- *Successes and challenges* experienced during the initiatives
- *Future plans*

The questions in the guide can be found in Box 1. Additional complementing published material or material found online was also used where available to complete the full picture of the cases studies. This was particularly necessary for the first part of each case that described relevant national and local policy and the framework for collection in the country/region within which the city lies. These were seen as a key element in each case, providing context within which the need for and goal of the various initiatives could better be understood.

Box 1: Questions in interview guide for key actors

1. Context/motivation

- Is there national data on collection rates in the country as far as you know? Or has there been a study which has gathered this for a single year? If yes please provide link
- Is there a national or municipal policy/strategy/target for used textile collection? If yes please send us a link and describe key elements like targets (for instance on reuse or recycling). Is this strategy part of a wider waste collection or circular economy policy?
- Has there been an increased focus or change in the way that textiles are collected (in your country or your city) in the past 5 years? How? What was the motivation for this change? Who has been the main driver? What have been the results of this new focus?

2. Description of collection/initiative

- Who is involved directly and indirectly in collection and communication connected to it (in the case city)? Please describe each of their roles and their status (i.e. government, business, charity, mix; other collectors?)
- How is collection carried out physically? E.g. Containers in recycling centres, containers in the streets or on other public ground, over the desk in shops, kerbside collection, containers in apartment buildings, other possible new ways
- What happens to the collected textiles afterwards?
- Which other partners should we speak to? Please provide names and email address

3. Motivating/activating citizens

- Who has been responsible for communicating to citizens/households/businesses?
- What media has been used and how and when has it been carried out?
- Have you targeted particular kinds of households in your communication or in your collection systems?
- Have you used other ways to activate or motivate than communication campaigns, e.g. nudging, rewards, social motivation, other interventions improving personal motivation or ability,

4. Successes and challenges

- Have you done anything special to ensure:
 - Increased collection rates
 - Collection from households/areas where collection rates normally low
 - Collection of non-reusable clothing and textiles for recycling
- Have the efforts been successful? Have collection rates been improved? What do you think has been key in the success or lack of success?
- What challenges have you experienced and how have you attempted to solve these? Lack of awareness, high costs, legal/regulation obstacles, lack of collaboration with other actors
- Are you planning new initiatives? Will they solve some of these issues?

5. Data and other information

- Have you carried out household surveys to find out attitudes of citizens to textile use? What were the key findings? Have attitudes from citizens changed?
- Do you have data on the quantities of used textiles collected in the city (country, chain of retailers etc.)? Can you send us this data?
- What are the trends in collected used textiles in terms of quantity and quality before and during the initiative?
- Do you have figures on the costs of collection per ton collected?
- Do the sales of collected textiles exceed costs of collection? If not how do you cope with the shortfall? Has this changed after you started collecting in a different way?
- Do you have additional written information on the activities that you can send us?

It quickly became apparent that we should not limit ourselves to single initiatives within each city but rather paint a pallet of a range of complimentary or connected initiative. Especially in the larger cities it became clear that there is no one size fits all and that a range of initiatives is needed if all parts of the city and all components of the population are to be reached.

Data availability varied significantly between cases. Sometimes data was available for the city as a whole, in other cases only for collection via a specific initiative in which case it was harder to gain a picture of whether the initiative had increased total collection per person in the city or simply transferred collection from one site to another. Information on costs of collection was particularly hard to gather, either because the organisations could not separate these from other costs in their accounts or because they did not wish to share them.

One other area where information was lacking was in the area of consumer attitudes. These had only been measured in a few cases and even then only at a single sample and not repeated to see whether initiatives had led to changes in attitude and behaviour.

3.3 Presentation of cases

Cases are presented separately for each city/area largely following the key areas covered by the interview guide. Boxes on key issues of interest are also included. This can be a specific government or local policy, a description of a particular initiative at national level, details of information required by municipal tender documents for collectors etc.

3.4 Cross-cutting analysis

The cases were analysed to draw out messages and characteristics of different approaches that can be of use to other municipalities when wishing to increase collection rates of used textiles. Different approaches include not only different practical means for collection - i.e. kerbside collection with bags, increasing density of containers on street, collection in backyards of multi-apartment housing – but also communication approaches to increase engagement and reduce scepticism among citizens. We are also interested in how initiatives and approaches have been influenced by background policy frameworks at European, national and regional level.

Guiding questions for the cross-cutting analysis were as follows:

- What spectrum of approaches/initiatives are represented and what opportunities and challenges do they represent for a given situation/city?
- How have approaches/initiatives been influenced by i) international, national and local policy, ii) specific challenges experienced by a city, iii) markets for used textiles iv) other factors?
- What issues and risks should municipalities and other actors be aware of when designing approaches for textile collection?

The final question is summarised by a set of considerations at the end of this report.

4.0 Textiles collection in Europe – a brief overview

4.1 Consumption of textiles and the circular economy

Household spending on clothing in the EU-28 stood at EUR 314 billion in 2012, equivalent to 4.2% of total household expenditure. When household expenditure data are adjusted to reflect changes in the price of clothing, they indicate that the total weight of clothing purchased in the EU-28 increased by up to 40% between 1996–2012 and per capita consumption by 34% over the same period (EEA, 2014).

According to Beton et al (2014) the total EU-27 consumption of textiles in 2007 was estimated at 9.55 million tonnes of textile products (giving 19.1kg/capita), of which 6.75 million tonnes were clothes and 2.79 million tonnes were household textiles. WRAP UK (2017) gives a more recent figure of 6.4 million tonnes of clothing (12.7kg/capita) consumed in the EU-28 in 2015 but does not calculate a figure for household textiles.

Production and consumption of textiles is dominated today by a linear economic model that relies on large quantities of cheap, easily accessible materials and energy. A more circular system where unwanted clothing and household textiles are re-circulated to new users and worn out textiles are exploited for their material content for use in new products, provides opportunities for reducing demands on material resources and environmental pressures (Ellen Macarthur Foundation, 2013).

A circular economy for clothing has existed for decades in many parts of Europe through the activities of charities and private textile collectors and traders. Nevertheless, even in countries with thriving collection practices, much of the reusable clothing and most non-reusable clothing still ends up in mixed waste (EEA, 2014) and represents a loss of valuable resources. It is only recently that policy makers at European, national and municipal level and the fashion industry have begun attempts to tackle these issues as part of a wider circular economy agenda.

4.2 EU and national relevant policy

In 2015, the European Commission adopted a **Circular Economy Package**, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy. The proposals included targets that 65% of municipal waste should be recycled by 2030, maximum 10% of municipal waste may be sent to landfill by 2030 and a ban on landfilling of *separately collected* waste¹.

Although, there were no specific targets for textiles in the original proposal, the European Parliament voted in March 2017 to include a requirement that countries must ensure that systems are in place for the separate collection of (discarded) textiles by 2025. It also voted to increase the household waste recycling target to 70% including 5% preparation for reuse. These changes will be made in an updated **Waste Framework Directive (WFD)**. The current 2009 version of the WFD includes a household waste recycling target 50% recycling² by 2020.

¹ http://ec.europa.eu/environment/circular-economy/index_en.htm

² This is a partial simplification. There are in fact four different calculation methods that Member States can choose from. See <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0753>

The WFD also requires that Member States adopt both waste management plans and waste prevention strategies. Whether or not these prioritise textiles as a waste stream is up to the Member State and differs very much from country to country. Should the requirement for separate collection of textiles be adopted by the EU and implemented in a revision to EU waste regulations as expected, future waste prevention strategies are more likely to include textiles.

Finally the WFD has relevance to collection of used textiles, in terms of what it defines as waste. This has strong implications for textile collectors and collection. If the textiles they collect is defined as waste then this can mean that 1) the textiles are the property of the municipality or their assigned waste collector and the collector will need permission to collect 2) the collector may need to be registered as a waste collector 3) the collector may need to register the quantities of textiles they collect in a national waste register 4) the collector will need to have a filled out 'green list' waste shipment document (Annex VII of the **Waste Shipment Regulation**) if they ship unsorted textiles across borders internally within the EU or EEA countries.

The WFD defines waste as "*...any substance or object which the holder discards or intends or is required to discard...*" The waste definition is dependent on what should be understood by "*discards*". Discarding can be interpreted according to the intention of the user but also on what subsequently happens to the discarded item. Courts have been asked to interpret the definition on a number of occasions and a body of case law now exists at both EU level and national level. The key issue is whether the aims of the WFD are being undermined (Defra, 2012).

In the case of textiles, countries have different interpretations of when these should be defined as waste. In some countries such as Italy and the Netherlands, all textiles collected via containers are considered as waste and should be registered. In others it can depend on whether the (majority) of the textiles that have been collected are reusable and are indeed reused. It can also depend on the intention of the citizen who delivered the textiles: are they donating for reuse or are they simply getting rid of their unwanted articles? Importantly it may also depend on whether the collector is openly encouraging citizens to deliver non-reusable textiles (i.e. 'we also want your holed socks') or not.

The WFD also defines when waste is no longer waste, for example if it has been prepared for reuse. In general, textiles that have been sorted into fractions to be sold for reuse are no longer considered as waste.

National relevant policy includes waste plans and waste prevention strategies as required by the WFD. In some countries such as Sweden and France these plans and strategies include specific targets for the reduction of textiles in residual household waste or for the separate collection of textiles. France is, so far, the only country in Europe to place responsibility for collection of used textiles on the shoulders of producers and importers of new textiles via its Extended Producer Responsibility (EPR) regulations³. In Germany and the Netherlands the responsibility is placed on

³ <https://www.ecologique-solidaire.gouv.fr/textiles-usages>

municipalities to ensure that separate collection of textiles is in place. Municipalities are free to decide whether this is implemented by charities/private collectors or whether they carry collection out themselves. The Swedish parliament is currently debating on whether to choose the EPR or municipality route (Naturvårdsverket, 2016) and the recently published Dutch Transition Agenda for Consumer Goods suggests an extension of EPR to textiles in the Netherlands (Rijksoverheid, 2018).

It is not possible here to give a comprehensive overview of national policies across the EU, but the cases in the following section give an overview of relevant policies in Flanders (Belgium), Denmark, France, Italy, the Netherlands and Sweden.

Even in countries where no responsibility for textile collection has been specifically allocated, waste prevention strategies are raising awareness amongst municipalities on textiles as a waste stream. These are beginning to engage more actively in collection of used textiles.

4.3 Brief overview of collection levels and stakeholders in Europe

No overall data could be found for separate collection rates for textiles across the EU as a whole, either as a share of textiles put on the market each year, or in kg/capita. GFA & BCG (2017) claim a figure of 20%, but this is based on figures given in Beton et al (2014) which itself uses data from Textile Recycling Association (2005) based on the OVERTES study for seven countries - France, the UK, the Netherlands, Germany, Poland, Spain and Belgium – using 2004 data or earlier, so these figures can no longer be trusted.

More recent studies have been carried out in several countries that estimate collection rates either in kg/capita or in shares of new textiles places on the market. We are aware of such studies in Denmark⁴, Germany⁵, France⁶, Flanders⁷, Italy⁸, the Netherlands⁹, Sweden¹⁰ and the UK¹¹. Unfortunately no consumption data is available for Flanders.

Table 2: Estimated separate collection rates for clothing and household textiles in eight EU countries

Country and (data year)	Flanders (2016)	DE (2013)	DK (2010)	FR (2016)	IT (2015)	NL (2012)	SE (2013)	UK (2010)
Consumption (ktonnes)	-	1347 ⁱ	89	600 ⁱ	881 ⁱⁱⁱ	240	121	1693
Consumption (kg/capita)	-	16.7 ⁱ	16.0	9.0	14.5	14.0	12.6	26.7
Separate collection (ktonnes)	53 ⁱ	1011 ⁱ	39 ⁱ	214 ⁱ	133 ^{iv}	89	23	619 ⁱ
Separate collection (kg/capita)	8.1 ⁱ	12.5 ⁱ	7.4 ⁱ	3.2 ⁱ	2.2 ^{iv}	5.4	2.4	11 ⁱ

⁴ Watson et al (2014)

⁵ BVSE (2015)

⁶ EcoTLC (2017)

⁷ OVAM (2017a)

⁸ ISPRA (2017)

⁹ collection figures from FFACT (2014) consumption figures are from the branch organisation Modint (private communication)

¹⁰ Elander et al (2014)

¹¹ Bartlett et al (2012)

Share of quantity placed on market (%)	-	75%	44%	36%	11% ^v	37%	19%	31% ⁱⁱ
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ⁱ Includes footwear

ⁱⁱ Shoes included in both denominator and numerator

ⁱⁱⁱ Clothing only. Taken from WRAP (2017)

^{iv} This is the figure reported as part of waste statistics. In Italy any collection of textiles via containers is considered as waste and must be registered. However direct delivery across the counter in charities will probably not be registered so this is likely an underestimate

^v Assumes that clothing represents ¾ of textiles put on the markets based on UK and Danish split between clothing and home textiles

The best indicator of the collection performance of a country is perhaps the quantity of collected used textiles expressed as a share of new textiles put on the market, rather than kg/capita. For example, the UK reported collection amount at 11kg/capita, is second only to Germany, but this is in part a result of the very high consumption rate of 26.7kg/capita of clothing and home textiles, far higher than any other country with data. The share gives a better indication of potential room for improvement and the share of textiles that still end in mixed waste streams destined for landfill or incineration.

As can be seen from Table 2, collection shares range from 11% in Italy to over 70% in Germany. It should be noted that there is some uncertainty in some of the figures. For example, in some cases shoes and bags etc. have been included in collection quantities but not in the quantities put on the market, which raises apparent collection shares. Finally, ways of estimating collection rates also give uncertainties. Large numbers of estimates are made. For example, it is very difficult to estimate collection across the counter in shops or via schools or sports clubs, somewhat easier for collection via containers and kerbside collection. Italy's collection data only accounts for collection via containers for example. Nevertheless, these uncertainties alone cannot explain the significant differences in collection rates between countries.

The causes of differences between countries are dependent on a myriad of other factors including cultural differences, the intensity of activities of charities and other collectors but also on policy and implementing measures.

France is a good example of how a country with a previously very low collection rate can increase collection significantly via ambitious policy. Prior to Extended Producer Responsibility Regulations being adopted in France, collection rates were low. They have doubled from 18% to 36% between 2010 and 2016 (EcoTLC, 2010; EcoTLC, 2017) as a direct result of the activities of EcoTLC, the organisation who carries out the responsibilities of producers under the regulations, and its associated partners; charities, private collectors and municipalities. Activities have included increasing density of collection points, economic support of textile sorters to increase prices for original, R&D in recycling initiatives and communication campaigns with citizens.

France is also a good example of how many different actors are directly or indirectly engaged in used textile collection. This increase in the diversity of actors is something that is common for a range of European countries. A decade ago, charities along with some private actors dominated collection of used textiles. More recently, other actors have entered the arena including high-street clothing brands and municipalities. In the

former case this has resulted from a raising interest on the environmental impacts of the textile industry both from NGOs and government and from within the clothing industry itself. In the latter case, waste prevention strategies that Member States have been obliged to develop under the EU Waste Framework Directive have in some cases included textiles as a focus area. This and implementation of the Landfill Directive may have raised municipalities' awareness of used textiles and textile waste.

4.4 Collection in cities

Cities present a particularly interesting case where the condition for textile collection differs from conditions elsewhere in a number of ways. These include the following:

- *Higher living density* – this can present both an opportunity and a challenge. An opportunity because individual containers placed in dense areas can potentially collect much higher quantities of textiles reducing collection costs. A challenge because there can be pressure on street space and limited room for placement of containers
- *More high-rise and multi-apartment buildings* – this is related to the above but adds additional opportunities/challenges. Challenges are that there is limited space in apartments for storing separate waste streams. Opportunities are that multi-apartment housing often has collective solutions in terms of waste rooms in the buildings or backyards. Textile collection can take advantage of these collective solutions.
- *Multi-cultural demographics* – this can make citizen communication more complex both in terms of language but also because people are coming from very different backgrounds with a different relationship to and experience of, donation, waste separation and so on.
- *Many competing actors* – since there are more gains to be had there are more actors competing for the same used textiles. This can lead to coordination issues, street clutter and confusion amongst citizens, but also means that citizens in general will have greater opportunities to deliver their used textiles.

In the Netherlands data is available on used textile collection at municipality level allowing comparison between different types of municipalities. In general the larger cities have significantly lower collection rates than other municipalities; Amsterdam, Rotterdam, Utrecht and the Hague report separate collection rates of between 12% and 18% compared to 37% for the country as a whole (City of Amsterdam, 2015). Paris also reports a low collection rate at 1.6kg/capita compared to an average of 3.2kg/capita in France (see case study).

As such, special efforts and approaches may be needed in cities, which due to their size can have a significant influence on collection rates as a whole in a country. Spreading good practices between cities can have relatively high returns from a fewer number of actors; the 500 cities in Europe with a population of over 150,000 have a total population of 212 million – 40% of the population of the EU. Hence the focus on cities in this report.

5.0 City Cases

The following seven cases provide an overview of textile collection in six selected cities plus one initiative (BEST bag) that is implemented over two regions of the Netherlands. Each case begins with an overview of the national and local policy context and national textile collection activities, before presenting the initiatives in the city.

The cases don't attempt to cover all textile collection within the selected city, but rather highlight the more interesting or innovative initiatives within the city.

References have been given for all information provided under the national policy context, and textile collection sections. Most of the information in the sections describing the initiatives in the city have been provided via interviews. A full list of interviewees can be found in Appendix A.

5.1 ANTWERP, FLANDERS

A partnership of five previously competing textile collectors now cooperate in Antwerp with a focus on local reuse and recycling and social support. Containers are being removed from the streets and being replaced by points in libraries and shops, in combination with door-to-door collection.

Inhabitants of Antwerp Municipality	498,473 (2011)
GPD/capita (EUR) (Antwerp)	43,200 (2015)
Consumption of new textiles/capita	No data

Policy context

Waste policy in Belgium as in many other areas is carried out largely at regional level, and this case restricts itself to the Flemish region. The Flemish government's vision "Visie2050", includes the circular economy as one of seven priorities (Government of Flanders, 2016). The Flemish Materials Decree¹² determines that waste is not an end point but is rather as a raw material for new products.

Box 2: *Kringloop* reuse sector

The Flemish reuse sector known as *kringloop* emerged in the early 1990s and has 30 centres and around 141 shops run by a federation of social enterprises, KOMOSIE. The sector has the dual goals of reducing environmental impacts and providing employment/training for long-term unemployed through collecting, sorting, repairing and reselling clothing, electronics, furniture, books, toys and bicycles. The Flemish government provides subsidies to the centres and in return has set the target for the sector of achieving 7 kilograms sales of reusable goods per inhabitant per year by 2022. Critically, only items reused within the region count towards the target.

By 2016 the sector employed 4200 people and had processed 73,784 tonnes (11.4kg/capita) of potentially reusable goods from citizens and businesses of which 13,193 tonnes (2.0kg/capita) were textiles. 5.3kg per capita of used goods were sold for reuse in the shops of which 0.5kg/capita were textiles. 28% of collected textiles were resold in the *Kringloop* shops. The remainder was mostly exported.

To meet the 7kg/capita target for local reuse for all goods by 2022, more skilled staff, affordable processing spaces and most importantly, a higher quality of collected goods will be needed. The sector is currently investing in new forms of sales such as pop-up stores and smaller stores for specific product groups such as textiles.

Sources: <http://www.ovam.be/kringloopsector-groeide-opnieuw-in-2016> and Komosie (2017)

Flanders has a 65% recycling of household waste, the highest in Europe¹³ and textiles is one of six priority waste streams in the Implementation Plan for Household Waste and Comparable industrial Waste.

Emphasis is placed on increasing the collection of non-reusable textiles via changing labelling on textiles containers and on dialogue across the value chain aimed at closing the loop for used textiles (OVAM, 2017b). According to the plan it is not only the *Kringloop* (see Box 2) and the other traditional second-hand

actors that are part of the solution, but also brands and the fashion industry (OVAM, 2017b).

In addition, the Flemish waste agency OVAM aims to ensure the following minimum collection conditions in municipalities: textile collection in recycling centres (container

¹² <https://www.vlaanderen.be/nl/vlaamse-regering/transitie-circulaire-economie>

¹³ <https://www.businessinantwerp.eu/clusters/circular-economy>

parks) and *either* door-to-door collection of textiles minimum four times a year *or* a minimum container/collection point density of one container per 1000 people (OVAM, 2017b)¹⁴.

Collection of textiles is already part of the activities of the government-subsidised reuse (*kringloop*) sector which aims to achieve 7kg of reuse per inhabitant for a range of products including textiles, by 2022 (see Box 2).

Textile collection in Flanders

Belgium has a relatively high rate of separate textile waste collection due to a dense network of containers and other collection options across the country. In 2015, 120,000 tonnes of used textiles were in Belgium sorted for reuse and recycling¹⁵. However this includes textiles imported for processing in Belgium's large sorting facilities.

There are no collection figures for Belgium as a whole but according to OVAM (2017b) the total amount of textiles collected in the region of Flanders rose from 48,500 tons (7.5kg/capita) in 2014 to 52,600 tons (8.1kg/capita) in 2016. Collection is carried out by KOMOSIE social enterprises (see Box 2 earlier), other charitable organisations and also private collectors and sorters gathered under the branch organisation COBEREC (OVAM, 2017b).

Box 3: City of Antwerp's 2016 tender

In 2016 the City of Antwerp issued a tender for agreement of a concession to collect textiles in the city. The focus of the tender was not on price but on sustainability and local engagement. The tender required that the collector:

- must have strong experience in the collection of waste and specifically in collection of used textiles
- must be certified by OVAM as a collector of waste
- must have a local anchoring to reduce ecological footprint
- can demonstrate competences in integration of and interaction with the local community and network-forming

Points were also given for offering door-to-door collection, collection at recycling centres and alternative delivery points; local reuse of the collected textiles; and involvement of local partners

At the same time as collection rates are growing, quantities of textiles (and shoes/handbags) found in residual household waste is also on the increase; from 4.0 kilograms per inhabitant in 2001 to 7.8 kilograms by 2014 (OVAM, 2016; OVAM, 2017b), demonstrating that there is potential for further substantial increases in collection rates.

Until 2008, collection in Antwerp was carried out by charities and private collectors with relatively little control or interference by the city authorities. From 2008 onwards the city took more of an active control in the control of permits for collection on public land. The charities Mensenzorg and De Kindervriend were given permits for door-to-door collection and Oxfam for putting up of containers in the city's recycling centres between 2008 and 2011 and from 2011 to 2014 collection in recycling centres was taken over by city authorities and door-to-door collection by the charity Recyclant. Collection was continued, however, by other charities and private collectors via containers placed in streets, sometimes without authorisation¹⁶. As a result, in 2014 the City of Antwerp

¹⁴ Also provided in the background information provided in City of Antwerp's guideline for awarding concessions for textiles

¹⁵ <https://coberec.be/nieuwsbericht/textielrecyclage-belgie-500-miljoen-stuks-oude-kleren-kregen-een-tweede-leven-2015> This also includes used textiles imported to Belgium.

¹⁶ All information on earlier collection is taken from City of Antwerp's guideline for awarding concessions for textiles

decided it wished for greater coordination in the collection of textiles in the city.

Description of Initiatives

Initiative 1: Starting in 2014, the city's urban management business unit developed some guiding principles for textiles collection in the city. These included that:

- The numbers of containers in streets should be reduced as far as possible to limit street clutter, reduce the activities of grey actors and reduce garbage accumulation next to containers

Box 4: The organisations in De Collectie and their roles

De Kringwinkel Antwerpen: is the largest partner who runs several second-hand shops in Antwerp and are part of KOMOSIE (see Box 2). They collect textiles across the counter at their eight shops and also have a pick-up door-to-door collection service that citizens and businesses can order free of charge.

Oxfam: is the only organization that has permission to place containers in Antwerp's eight recycling centres. They have positioned 2-3 containers at each recycling centre.

Wereld Missie Hulp: is a charity organization that previously collected via containers in front of churches. As part of the drive to remove containers from the street De Kringwinkel and Wereld have together established collection points in libraries, shops, post offices etc. There are currently approximately sixty of these points placed around the city.

Kindervriend and Mensenzorg: are two small charitable collectors that collect textiles door-to-door. They put flyers in mailboxes with times and dates for collection. Prior to De Collectie they also had an agreement with the municipality to do this and carry out similar activities in other Belgian cities.

- The collection of textiles should rather take place via door-to-door collection, textile containers in recycling centres and/or via alternative delivery points.
- Collected textiles should be reused/resold via local market as far as possible via various channels and different partners. This was in an effort to reduce exports of used textiles and resulting lost influence and traceability of their end fate
- Collection and processing of textiles should contribute to social employment and training
- The city itself should retain powers of supervision and control over textile collection and ability to make revisions to this as necessary

These principles were then translated into a tender for a concession agreement on collection of used textiles which was issued in 2016 (see Box 3). At this time, there were a number of collectors active in the city, working separately and often competing to collect textiles from the same areas of the city. Unusually, both for Flanders but also for the wider Europe, a number of these actors decided to joined forces in answer to the tender/ accreditation process. They formed a cooperation called De Collectie (The

Box 5: HNST 50% recycled denim

Antwerp citizen Tom Dohoux has together with his partners developed a yarn that consists of 50% cotton recovered from old jeans collected by HNST but also provided by De Collectie. The remaining 50% comprises Tencel[®], a residual wood processing product. The yarn is manufactured in Flanders and the rest of the production takes place in Europe.

The newest collection of HNST is designed by Ellen Robinson. In the collection there will be three jeans and overalls for women. For men there will be three pants and a vest. Furthermore, the brand will offer a maintenance and repair service for their customers.

<https://tussendromenenleven.be/2017/09/duurzaam-me-jeans-van-hrvst.html/> and www.letsbehonest.eu/en/

Collection) that subsequently won the concession agreement.

De Collectie is a joint venture between five non-profit textile collectors (see Box 4) in Antwerp all with a long history in the collection and processing of textiles. De Collectie has four main principles:

- Full transparency on the fate of textiles collected by the joint venture
- Benefits and profits gained from collection to be invested in local and social solutions. Social solutions include training and employment for people with difficulties in finding employment
- Removal of textile containers from the street, because these gather garbage which contaminates the textiles, and focus on other sorting activities
- Collection of both reusable and non-reusable waste textiles

This latter point was not part of the tender requirements but was developed later by the city in cooperation with OVAM and De Collectie, and was to be included in all communication by these actors to citizens. This was in part a result of Antwerp Citylab2050's project Fashion Flows in 2014-15 that mapped out waste flows from fashion. As a result of the finding that a large part of clothing ends in mixed waste although it could have value for use in new products, OVAM began to communicate to all municipalities in Flanders that they should begin communicating to citizens to also

Box 6: Tips for building and maintaining a partnership

The following measures are suggested for building and continuing partnerships between otherwise competing organisations:

- Municipality tenders should emphasise cooperation and different collection methods within tenders
- Partners should be identified that have potentially complimentary approaches to collection and processing
- Organise meetings where agreement can be made early on concerning a common vision and common branding
- Do not try to change partners activities from the beginning, but develop a long term plan with gradually increasing cooperation in sorting, processing and sale of the collected textiles
- Develop a common brand and communication from the beginning
- Hold regular meetings where partners discuss their concerns and agree on solutions

deliver their worn out textiles to collection points. De Collectie has been actively trying to find local recycling/redesign solutions for the non-reusable fractions they subsequently received. One example of a local recycling/redesign solution that is making use of non-reusable textiles gathered by de Collectie and similar in Flanders is given in Box 5.

The de Collectie partnership was not a requirement in the tender; the 5 partners made the decision themselves to cooperate instead of compete. One can say, however that the innovative requirements of the tender with focus on local anchorage and engagement, a range of collection and resale activities and local networking inspired the development of such a cooperation.

This cooperation is the first of its kind in Flanders. It was partially inspired by an information meeting held between the City and the existing collectors prior to the tender. De Kringwinkel then took leadership in gathering the actors together. One issue that assisted in the cooperation was that the actors' collection techniques already varied from one another to a certain extent and did not directly compete. This included door-to-door collection, collection in recycling centres, collection via containers and collection in shops. Under the partnership these different techniques became complimentary.

Moreover, actors have been able to continue with their own sorting, resell in own shops and sell on to their existing clients.

What makes them more effective together than in their separate parts is firstly, a common brand for communication with citizens and secondly, a vision for the future with more cooperation on handling of textiles and more local reuse and recycling. The cooperation has neither been easy to achieve or maintain, and issues/conflicts that have arisen include a resistance by some partners to reduce their own brand and take on that of de Collectie as the primary brand when working in Antwerp. This conflict was resolved by the city that determined that leaflets put through doors by door-to-door collectors should have de Collectie logo on one side and the organisations own name on the other. The same has been followed on containers and other collection points where the individual organisations can retain their logos but have the de Collectie logo and brand as dominant.

Box 6 presents some tips from de Collectie partners on how to build and maintain cooperation. As required by the tender, de Collectie has gradually removed street-side containers (though it retains containers in recycling centres) and replaced these with increasing numbers of collection points in shops, libraries, post kiosks etc. These provide collection via small in-store containers and/or collection over the counter as occurs in the 16 post kiosks around Antwerp that also provide logistics by transporting these textiles via reverse logistics to a single post sorting centre for pick-up by de Collectie. De Collectie now has a total of 150 delivery points in the city with the aim of achieving 300 by the end of 2018.

Initiative 2: Antwerp has taken other initiatives to minimize textile waste. Many of them aim to change the mind-set of the citizen. One of the initiatives is with students from a high school who have to make a final project where they re-design and upcycle old clothing to make new. Antwerp wants to target teenagers and young people, in particular, since they are one of the highest consuming segments of new clothing and they can also influence the rest of the family.

Communication

Both the partners of de Collectie and the municipality communication team *Stadsbeheer* are responsible for communicating to citizens. In order to inform citizens on the collection of textiles, the municipality has put banners on garbage trucks and bus stops with information about de Collective. In addition households have received flyers with information on how, where and when textiles can be collected.

Social media and regular city channels are also used as a communication tool to reach citizens. When de Collectie started in October 2016, it was launched with a widely attended press event following this up a year later with a further press conference where the successes of the cooperation and of textile collection in the city were presented. The event was covered by articles in papers and reported on the local TV.

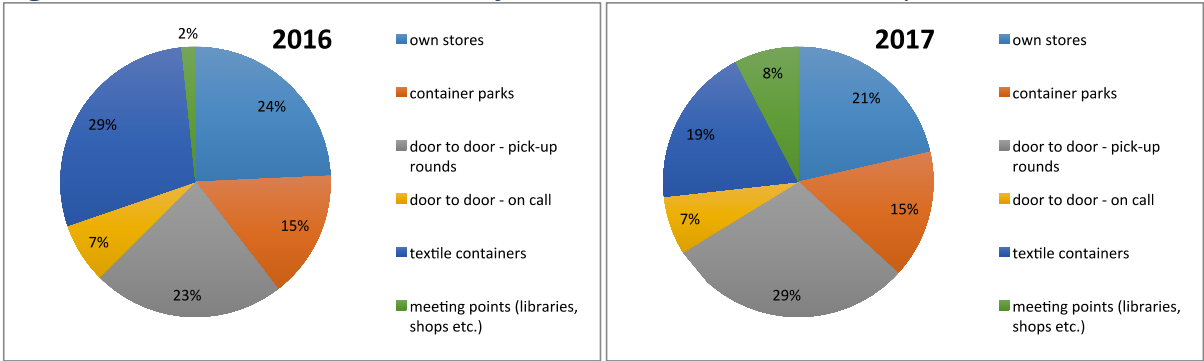
As noted earlier, one key element of the communication has been that all types of textiles can be delivered to de Collectie. Attention has also been raised on this by demonstrating the potential value of non-reusable textiles. The de Collectie's press

conference, for example, included a fashion show for new clothing made from used textiles.

Trends and successes

The initiative has resulted in increased collection. The partners in de Collectie collected 925 tons in the first 9 months of 2017 compared to 823 tons in the first 9 months of 2016; a 12% increase. De Collectie has an ambition to double the collected textile within five years. The initiative has also resulted in the creation of 80 new jobs for people outside the labour market. Figure 1 shows the distribution of collection between different collection points in 2016 and 2017. Collection via containers has reduced as containers are gradually removed from street. Collection at meeting points (libraries, shopping centres, post-kiosks etc.) has filled the gap.

Figure 1: Distribution of collection by collection method in Antwerp



Source: de Collectie

The quality of textile depends on the collection method. The best quality is received through the partners’ own shops, the second best is received from the door-to-door collection and the lowest quality is collected through containers.

According to de Collectie, the average quality that it receives has increased as containers are phased out. The organisation claims that this is a result of reduced contamination of textiles by other waste that is thrown into containers. Such contamination is more seldom where collection takes place at manned points. Another explanation may be that citizens do not wish to deliver worn out textiles to manned points, but this is not borne out by the simultaneous increase in collection that has occurred as containers have been phased out.

Currently, 16% of all textiles collected by de Collectie is reused locally. The organisation does not have figures for the reuse and recycling of the remainder, since this is sold to various large buyers in the global marketplace. The longer-term plan is to increase traceability by requiring that all buyers report on the fate of the textiles that they collect. This will be eased if the partners agree to a common sales policy and buyer for all their textiles.

Challenges experienced

As already discussed, the partners have also experienced challenges in their cooperation, not least from the need to underemphasise their identities for the sake of the common brand. This has also meant that so far they have not expanded their

cooperation to other parts of Flanders as had originally been the plan. All but one (Kringwinkel Antwerp) of the partners operate elsewhere in the region.

There are many reasons for this not yet being achieved. Firstly, the partnership has not yet been developed far enough with consolidating a common vision or policy concerning handling of textiles that is necessary for such an expansion. Secondly, there are a number of private collectors in Flanders who oppose the tender and accreditation process that led to de Collectie and as a result lobby against this type of partnership in other parts of the region. Thirdly, according to de Collectie, regulation regarding textile collection and sorting in Flanders is ambiguous, which makes expansion more difficult. Finally, expansion of logistics has proved difficult for some of the partners of de Collectie.

A further challenge is that De Collectie still has challenges in living up to its 'reuse and recycle locally' message. Good quality reusable textiles can typically be sold in the shops, but the lower quality grades and recyclable textiles are currently sold to big buyers, who sell them internationally. It has been particularly difficult finding local recycling solutions. The HNST project is one of these and de Collectie hopes that more will follow.

Finally, the wage support from the region for disadvantaged groups and long-term unemployed is due to be phased out which will challenge the economics of local sorting and processing.

Next steps

De Collectie aims to further increase cooperation between the partners in actual processing and selling of collected textiles so that 1) traceability in the fate of the collected textiles can be increased 2) more local reuse and recycling solutions can be found. Moreover, de Collectie aims to double the number of collection points from 150 to 300 by the end of 2018. This will act towards doubling total textile collection within five years.

5.2 BEST BAG INITIATIVES, NETHERLANDS

Two municipally owned waste service companies carry out kerbside collection of household textiles together with small electronics, books and games in BEST bags. The goods are sorted by socially disadvantaged groups for reuse and recycling at municipal-supported Kringloop Reuse Centres.

Inhabitants	Circulus Berkel district: 438 010 Rd4 district: 140 835 (2015)
GPD/capita (EUR) (Netherlands)	41 500 (2016)
Consumption of new textiles/ capita (Netherlands)	14kg/capita

Policy context

The Dutch 2013 From Waste to Resources (*Van Afval Naar Grondstof*) Program¹⁷ includes goals for reducing household residual waste to 100kg/person/year by 2020 and 30kg/person/year by 2025. These are partly to be achieved by increasing the separate collection of small and bulky household waste streams to 75% by 2020. Meanwhile, the National Waste Management Plan (LAP3 2017-2023)¹⁸ aims at achieving reuse and recycling rates for all waste of 85% by 2023.

The Public Framework for Domestic Waste from 2014¹⁹ (*Publiek kader Huishoudelijk Afval*) aims to implement these goals via a voluntary agreements between the national government and individual municipalities. So far, at least 220 municipalities have signed the agreement or otherwise indicated commitment to the goals²⁰.

In addition a so-called Green Deal voluntary initiative signed in 2012 by the government and industry representatives in 2012, aimed at halving the amount of textiles in household residual waste by 2015 (see Box 24 in the Rotterdam city case). This did not meet its goals, but sent a clear message to municipalities that all textiles should be collected separately including those not fit for reuse.

Textile collection in the Netherlands

At the beginning of the millennium charities were responsible for almost all collection of used textiles in the Netherlands. By 2013, their market share had dropped to only 55%. Recycling centres – both commercial and social enterprises – had about a quarter of the market and private waste companies the remaining 20% (Dutch Waste Management Association, 2013).

According to Rijkswaterstaat, total separate collection of used textiles in the Netherlands increased from 50 ktonnes (3.1kg/capita) in 2000 to 69 ktonnes (4.2kg/capita) in 2008, but had reduced slightly again to 67 ktonnes by 2014 (see Figure 3 in Rotterdam Case). Data from FFact (2014) indicates higher collection quantities of around 90 ktonnes in 2012. Nevertheless even at that higher collection rate, up to 60% of all end-of-life textiles (235 tonnes per year) end in residual household waste destined for incineration.

¹⁷ <http://www.vang-hha.nl/>

¹⁸ <https://lap3.nl/>

¹⁹ <https://www.rijksoverheid.nl/documenten/rapporten/2014/12/01/publiek-kader-huishoudelijk-afval-2025> *The Public Framework for Domestic Waste Is an implementing measure of the Waste to Resources Program*

²⁰ <http://www.vang-hha.nl/nieuws-achtergronden/2016/bestuursakkoord-0/>

Reported²¹ collection rates differ strongly between municipalities ranging from under 1kg/capita to 10.4kg/capita. In one of the best performing municipalities, Oldenzaal, textiles are collected directly from households (at least 4 times a year) and there is a reasonably high textile container density²² (1 container per 1170 households).

Description of initiatives and involved actors

Two municipal-owned waste and service companies Rd4 and Circulus Berkel working in two different regions of the Netherlands (see Box 7), work with a collection system for books, small electronics, toys and textiles called BEST (*Boeken, kleine Elektrische apparaten, Speelgoed, Textiel*) bag.

The system was originally developed by the Dutch EPR organisation WeCycle for collection of WEEE and was then expanded to other 'dry' waste streams. The concept is built up on the fact that convenience of delivery has been shown to be a key factor in determining whether or not citizens donate/separate their used clothing and other goods for reuse/recycling. On the other hand pick-up from households can be expensive compared to collection by containers. The BEST bag addresses this to a certain extent by collecting several fractions in a single bag to reduce collection costs per fraction.

Circulus Berkel area: Householders receive the BEST bags from the waste company and are asked to place their unwanted books, small electronics, toys and textiles in the bag, seal it and place it out on the kerbside on the day of collection. The bags are single use plastic bags with a QR code specific to the household.

The BEST bag system operates in 7 out of 8 of the municipalities that own Circulus Berkel. In these municipalities bags are collected from the kerbside by the waste companies according to a schedule provided by the relevant municipality. Collection frequency varies from municipality to municipality. The bags are collected once in every 2 weeks in the towns of Deventer and Zutphen but only once every eight weeks in the other municipalities. From 2018 onwards collection frequencies will be reduced in most municipalities to three times a year to reduce collection costs.

Box 7: Rd4 and Circulus Berkel

Rd4 is a regional company part owned by 11 municipalitiesⁱ in the region of Limburg in the southern tip of the Netherlands, responsible for collecting and treating waste, running recycling shops (*kringloopwinkels*) and other public services.

Circulus Berkel is a similar non-profit service company jointly owned by 7 municipalitiesⁱⁱ in the province of Gelderland along with the municipality of Deventer lying in the bordering province of Overijssel just to the northeast. Circulus Berkel is also the mother of two local companies for management of public space and one kringloop shop. Circulus Berkel cooperates with social work places.

ⁱ Heerlen, Brunssum, Kerkrade, Landgraaf, Voerendaal, Simpelveld, Vaals, Nuth, Onderbanken, Eijsden-Margraten and Gulpen-Wittem
ⁱⁱ Apeldoorn, Bronckhorst, Brummen, Doesburg, Epe, Lochem and Zutphen

²¹ not all municipalities have good data. For instance many of the collected clothes by small charities (in schools, clubs, churches) are not recorded. (Emile Bruls, pers. comm.)

²² Benchmarks for household waste. Online resource: <http://analyse.bmha.nl/DisplayDashboard.aspx?key=G7JD5L7HVF&code=L7AZT&vl=nl-NL&p=27>

The collected bags are scanned by their QR tag in local collection centres to identify which households have delivered them. These later receive a replacement bag for the next collection. Following scanning the bags are transported for sorting to 3 sorting centres run by the *Kringloop* organisations (see Box 8), where they are unpacked and sorted. Some of the items are sent for resale in Kringloop shops (if necessary following repair). Three different Kringloop organisations are active in the municipalities that own Circulus Berkel (Box 8).

Textiles make up roughly half of the collected items (by weight). About 10% of the collected textiles are suitable for resale in the shops and the remainder are sold to Reshare a daughter organisation of the Dutch Salvation Army that is responsible for textiles. Reshare resells these on global markets for reuse and recycling.

Rd4 area: The BEST bag system is very similar in the Rd4 area and was initiated already in 2012. The kringloop shops in their area are, however, run directly by Rd4. Moreover, textiles that cannot be sold in the kringloop shops are sold to a private textile trader for onward sale for reuse and recycling in the Netherlands or elsewhere.

Communication

Communication has followed various routes. Circulus Berkel's own website is the key source of information for interested citizens and companies. This provides an overview of the BEST bag concept, who is involved, what should be delivered and why citizens should use the bag.

Box 8: Kringloop Reuse Centres

Kringloop effectively means second hand. There are many hundreds of privately owned kringloop shops in the Netherlands. However, a special type of organisation is the Kringloop Reuse Centre. These are owned or financially supported by municipalities and play a special role in both the circular economy and in support of socially disadvantaged groups. This concept also spread to Flemish region of Belgium in the early 1990s and this linking of the circular economy with social employment has been identified as one key success factor of for reuse in the regionⁱ.

Kringloop Reuse Centres employ socially disadvantaged groups and/or long-term unemployed to sort, repair, resell and recycle used goods handed in, gathered directly from households or via waste companies. This can be the goods collected by BEST bag systems but can also include larger goods like furniture and white goods. The shops employ 15,000 people in Netherlandsⁱⁱ.

There are three different *kringloop* organisations operating in the municipalities served by Circulus Berkel: Het Goed (Deventer), Foenix (Apeldoorn) and 2Switch (the other 6 municipalities).

The Foenix organisation can be used as an example of these organisations. Foenix has existed in the municipality of Apeldoorn for 35 years. It is financially supported by the municipality but is managed independently as a social enterprise. It is the municipality's designated collection and processing organisation of used goods and raw materials. It employs 750 employees and in 2016 it gave a new lease of life to 4000 tonnes of goods. Recycling markets are found as far as possible for all goods that can't be resold in the organisation's shops. It has strong incentives to do this recycle since it must pay the same waste fees as private companies for materials it sends for incinerationⁱⁱⁱ. The organisation also runs a C2C sharing platform and workshops for citizens to learn how to repair broken goods.

IN the Rd4 area, the organisation runs its own *kringloop* shops. There are three of these in Kerkrade, Herleen and Margraten with the first (Kerkrade) established in 1998 and the third (Margraten) in 2016^{iv}.

ⁱ https://www.ovam.be/sites/default/files/atoms/files/2015_Folder-Kringloop-engels_LR.pdf

ⁱⁱ <https://www.kringloopwinkels.nl/over-bkn/kengetallen/>

ⁱⁱⁱ <https://www.foenix.nl/over-foenix/>

^{iv} <https://www.rd4.nl/kringloop/historie-rd4-kringloop>

The site also provides links to dedicated pages for each of the 7 municipalities where the BEST bag is operating. These provide collection times and other information specific to the system operating in that municipality including which key partners (Kringloop reuse organisations etc.) are involved in that municipality.

One of the key elements of the communication is on what can be delivered. The communication makes it clear that non-reusable textiles, electronics and toys as well as the reusable ones are acceptable, but that wet or soiled textiles are not. Furthermore the sites provide data on how much has been delivered and what savings these led to. Citizens are led to the website via other media such as local newspapers, leaflet, annual waste calendar and a regional waste app.

As well as providing a convenient means of donating/delivering used textiles (and other goods) BEST bags there is also an economic incentive for householders to use the bags since they pay for mixed waste collection though not by weight. If using the BEST bags means they can reduce the size of the containers then they will save money. This is not true for low-income families, however, who are exempt from these payments in the Rd4 area.

Rd4 has experienced that in multi-apartment buildings separate collection of waste streams including those in BEST bags only works whenever there is some guidance and instruction from a caretaker, who for instance provides the bags and a room where waste can be put aside.

Trends and successes

In the municipalities served by *Circulus Berkel*, 336 tonnes of books, electronics, textiles and toys were collected with the BEST bags in 2016, of which 144 tonnes were textiles and 49 tonnes were residual waste. In total nearly 46,000 BEST bags were collected between February and October 2016. 16% of all households in the municipality made use of the BEST-bag. Of these 64% handed in only 1 bag during the period, 24% two bags and 13% three or more bags. On average, 6kg of books, electronics, textiles and games are delivered per bag.

In the municipalities served by *Rd4*, 1500 tonnes of used textiles are collected of which 400 tons are from BEST bags and 1100 tons are delivered to containers. Rd4's BEST bag collection began in 2012/13. However, municipality level textile collection data for Rd4 municipalities do not show any increases since then. The BEST bag collection volumes are perhaps not included in collection figures (Emile Bruls pers. comm.).

In the Rd4 area costs of collection (200 Euro/tonne) are higher than for collection in containers (165 Euro/tonne) but the quality of textiles collected and therefore their value is higher, in part due to lack of contamination by other waste. Sorting costs need to be added to these and currently sales of the contents of BEST bags don't cover collection and sorting costs. Therefore, the operation is part subsidised by the municipalities. On the other hand, they do result in employment of 80-90 people, many of whom are long-term unemployed or from disadvantaged groups.

Challenges experienced

Theft of the filled bags has been an issue in both areas. The waste service companies have responded to this by communicating to citizens that they should deliver the bags in the morning of collection and not the evening before. Nevertheless, it could be imagined that even with placement on the street the same day, the BEST bag system is perhaps open to organised theft since the contents of the bags have some value. Such organised theft along collection routes has only been reported in some municipalities. Losses of the BEST bags by households has also been an issue since it inhibits households from delivering. Long periods between collection dates exacerbates the risk of loss.

Finding suitable markets for the non-reusable textiles can also present a challenge. This can negatively affect the Kringloop shops economies since they are liable for the same waste costs for incineration as private companies.

There has been some negative reaction to the BEST bags from charities who would otherwise have received the re-sellable goods. In some cases such as the city of Apeldoorn this has led to opposition against the initiative.

Finally, unlike in some other cases we have looked at in other countries (e.g. Copenhagen) there is no legal challenge to waste companies collecting used goods that have reuse value and therefore shouldn't necessarily be defined as waste. In the Netherlands it is up to municipalities to decide who has, and who has not the right to collect items that people wish to discard. If a municipality decides to delegate it exclusively to the waste collector this is not a legal issue.

Next steps

Circulus Berkel is currently tendering for an organisation that would be responsible for sorting and treatment of the non-reusable textiles. Innovation will be a key element of the successful contractor who should have a clear vision on how to find or create markets, preferably local ones, for recyclable fractions.

5.3 COPENHAGEN, DENMARK

Textile collection is relatively high in Denmark and has been carried out for many years by charities and some well-established private collectors. There is recognition that a significant quantity, in particular non-reusable post-consumer, still ends in mixed waste. This has led to efforts by the City of Copenhagen and various other actors to get hold of these lost textiles.

Inhabitants (Copenhagen municipality)	600,000
GDP/capita (EUR) (Denmark)	53,418 (2016)
Consumption of new textiles/capita (Denmark)	15kg (2010)

Policy context

The Danish Government's Strategy for Prevention of Waste²³ has the overall goal of avoiding that valuable resources end in waste treatment. Although no goals are included for collection or reuse of used textiles, the strategy does include plans to establish a partnership of stakeholders across the value chain to increase the lifetime of clothing. This has so far led to dialogue meetings between brands, charity and professional collectors and waste companies and identification of potential models for increased cooperation.

The City of Copenhagen has its own waste and resource strategy (RAP18)²⁴ for the same period with the goal of diverting 90 000 tons of waste from incineration to reuse, recycling and composting. Clothing/textiles is one of the target fractions. Here, the focus has been on increasing the collection of non-reusable textiles, since the collection of reusable textiles is relatively well functioning.

Textile collection in Denmark

Collection rates are reasonably high in Denmark with the most recent estimate lying at 44% of textiles put on the market²⁵. Used textile collection has for many years been dominated by charities and private collectors collecting over the desk in second-shops and via containers in recycling centres and other public locations.

More recently, other actors have begun to collect used clothing including brands and municipal-owned waste companies. This is in part a result of the national resource strategy which has also led to new or re-negotiated agreements between municipal-owned waste companies and the traditional collectors. Brand collections have been relatively short-lived due to lack of interest from customers or difficulties in finding partners. H&M's collection was the only example still operating in beginning 2018.

Due to ownership of waste rules and the fact that the vast majority of the economic value of used textiles lies in reusable clothing, collectors have until recently made it clear that they only wish to receive these textiles and not rags unsuitable for reuse. Various initiatives in Copenhagen and in the wider country have begun to focus on this non-

²³ Danish Government (2015)

²⁴ City of Copenhagen (2012)

²⁵ Watson et al (2014). The numbers are from 2010. A study has recently been initiated to map the textile flow in Denmark including the total amount of textile collected and will be published in 2018

reusable element via collecting it and routing it towards recycling. According to an analysis made by the Red Cross 70% of citizens claim to donate (at least some of) their used clothing, 22% sell some of their used clothes and 8% dispose of all used clothes in mixed waste.

Description of initiatives and involved actors

Initiative 1: Amager Resource Centre (ARC) is a municipality-owned waste company that collects waste in 5 municipalities including Copenhagen. In 2015, the company launched a tender process with the aim of choosing a single collector that would have permissions in nine of ARC's recycling centres. Evaluation was based on the transparency of the collecting organisation in terms of what happens to collected textiles and what the money raised by the textiles is used for, the level of reuse and recycling which the collector could assure, and the price they were willing to pay ARC per kg collected.

The aim was to have better control over collection of textiles, increase reuse and recycling levels as far as possible, and at the same time to reduce costs of waste collection for the citizens in the municipalities (ARC, 2017).

The Danish division of UFF Humana, won the contract. The organisation has a system in place for following the fate of collected textiles. All textiles collected in Denmark are exported to a facility in Lithuania for sorting, sale and distribution in Europe and Africa. UFF could document that 80% is reused, 15% recycled and the remaining 5% disposed of as waste²⁶.

Copenhagen municipality – the largest owner of ARC - and UFF subsequently agreed to pilot the Nordic Textile Reuse and Recycling Commitment initiated by the Nordic Council

Box 9: The Nordic textile commitment

The Nordic textile re-use and recycling commitment is a voluntary certification system being developed by the Nordic Council of Ministers with the overall objectives of:

- doubling the share of post-consumer textiles that are separately across the Nordic region by 2025 compared to 2012
- ensuring 90% of collected textiles are re-used or where re-use is not possible, recycled
- prioritising closed-loop recycling over down-cycling
- increasing transparency of the fate of collected textiles, the purpose of the collection, and increase public confidence
- eliminating the illegal collection, export and trading of post-consumer textiles

A draft certification system was developed during 2013-14 and piloted during 2015-2016. The pilot aimed to test the system and the draft criteria for transparency and environmental performance. This concerned reporting on and providing satisfactory documentation for where textiles were collected, their weight, the fractions resulting from sorting operations and the share that is re-used and recycled and otherwise managed.

The actors involved in the trial also had to develop an action plan for increasing reuse and recycling rates. The pilot included sample checks of compliance with certification, and 3rd party auditing of 3-6 actors along the value chain from collection through sorting to distribution. Finally, the pilot also aimed to promote the Commitment across the Nordic region to ensure its continuation and growth.

The trial included actors in Denmark, Sweden and Norway. In Denmark, the trial region was the Municipality of Copenhagen and the collector testing the system was UFF Denmark.

Source: The Nordic textile reuse and recycling commitment: <http://www.textilecommitment.org/?lang=en>

²⁶ <https://www.a-r-c.dk/privat/toej-sko-og-tekstiler>

of Ministers (see Box 9). Under the commitment, participating collectors must make it clear that they accept all used textiles, including textiles unsuitable for reuse. In a break from typical operation in Denmark, this was achieved by making the containers indistinguishable from other waste stream containers in the recycling centres. The containers carry ARCs symbol for waste textiles and shoes, rather than UFF's logo. The idea was that this would encourage citizens to deliver all their used textiles including textile waste.

Box 10: "Drop your clothes" - campaign

Together with the Danish channel TV2 and the retail chain Coop, the Danish Red Cross launched a campaign in 2015 to encourage citizens to donate their used clothing to the Red Cross as well as other collectors. The campaign has been repeated yearly since. The focus of the campaign is to encourage donation by households, in schools and in workplaces as well as to inform about where to donate the used textiles. Collection bin density was increased at the same time, and set up in new places such as retail stores. The Red Cross is given special permission by the municipality of Copenhagen to set up 50 containers in streets and public places during the campaign period in May.

As well as being communicated via TV2 and the media channels of Red Cross and Coop local Red Cross shops have initiated events during the campaign period and teaching materials for schools about reuse had been developed in connection with the campaign.

Red Cross collected 1,200 tons of textiles nationally during the first campaign period in 2015. The Red Cross increased national annual collection rates from 5,400 tons in 2014 to 7,000 tons in 2015 and the collection rate has stayed at the same level since. The campaign was initiated as a once a year event but has led to a more general change of behaviour. Other collectors have also seen increased rates as a result of the campaign. The retail chain Coop has experienced greater quantities of donations than expected.

Cooperation between TV2, Coop and Red Cross have presented a challenge in that it requires all parties to compromise due to different agendas, foci and capacities.

Source: Red Cross Denmark 2015: Smid Tøjet med Røde Kors og TV2, <https://www.rodekors.dk/nyheder/smid-toejet-danmark>

Initiative 2: In March 2016 the Copenhagen Municipality initiated an experiment also in cooperation with UFF Humana to collect all types of textiles at *local* recycling centres. All six of Copenhagen's local centres are now participating in the experiment although the final one only joined in autumn 2017. The local recycling centres are smaller sites with fewer fractions than the general recycling centres and are run by the municipality rather than by ARC as a supplement to the household waste collection. The local centres allow the municipality to experiment with new fractions and initiatives²⁷.

The local centres have a "swap shop", where citizens can deliver used items that others may wish to take home, as a waste prevention exercise. These swap shops are well used but the municipality found that many of the textiles

were not being claimed and subsequently thrown for incineration by the centre staff. The municipality saw a potential for further textile collection.

Metal containers were established by UFF at the five local recycling centres under agreement with the municipality. These can be used directly by citizens, or by staff when processing textiles delivered to the swap shop.

Sorting analysis show that the new containers contain a more diverse composition of

²⁷ <https://www.kk.dk/nyheder/nu-skal-toejet-ud-af-forbraendingsanlaeggene>

textile qualities. The project has resulted in a better understanding of the amounts and flows of textiles in Copenhagen (Winberg, 2017).

Initiative 3: UFF (and other collection organisations) also collect textiles in some multi-apartment housing via written or oral agreement with housing representatives. The containers are placed together with waste containers in multi-apartment housings backyards. A range of sizes of containers is offered to meet the needs of the housing group. UFF has 34 such containers in Copenhagen. Close communication with the housing representative with respect to emptying frequency etc. is key in ensuring satisfaction on both sides.

Initiative 4: In 2015, the Danish Red Cross and a TV company TV2, launched a campaign to encourage citizens to deliver their used textiles to collectors for reuse and recycling (see Box 10).

Box 11 describes a further Danish initiative of interest, though this was carried out in Jutland not Copenhagen; a pilot kerbside collection of textiles with other waste streams.

Figure 2: Picture based signage on containers in local recycling centres emphasising worn-out textiles



Source: Tina Winberg, City of Copenhagen

Communication

One of the central elements of Copenhagen Municipality's pilot study in local recycling centres was to communicate on the need to also donate textiles not suitable (in citizens perception) for reuse. Often those textiles that Danish citizens think not to be suitable for reuse can be reused elsewhere in the world. Otherwise they can be recycled giving further resource benefits. This has been communicated through text and pictures on the containers placed in local recycling centres.

The pictures are more effective than text and can also be understood by non-Danish speakers. The municipality found that the original pictures showed clothing of too clean and too high quality clothing which misled citizens. The picture was changed to include rags and delivery of non-reusable increased (see Figure 2).

The project has been communicated by the municipality through common channels such as a quarterly distributed information booklet separate waste collection. The Drop Your Clothes campaign described in Box 10 has also worked on communicating the same message across Denmark as a whole and appears to have had a significant impact on collection rates, at least in the months following the campaign.

Trends and successes

There is no data system for collection of textiles across municipalities as a whole in Denmark as there is in some European countries. The table to the right provides data on UFF's collection under the various initiatives plus the percentage change in collection between equivalent periods in 2016 and 2017.

	Collection per year ²⁸	Change over one year ²⁹
Local recycling centres	19 tonnes	70%
Multi-apartment housing ³⁰	75 tonnes	-5%
Recycling centres (ARC)	580 tonnes	8%

Collection has grown most rapidly in the local recycling centres, suggesting an increasing awareness amongst citizens of

Box 11: Kerbside collection pilot, Vejen

Between June 2015 and June 2016, Vejen Municipality in Jutland in cooperation with Dansk Affald carried out a pilot project where textiles were collected along with other waste streams by the municipality waste company in kerbside collection. 550 households were included in the pilot.

The municipality uses the DuoFlex[®] system developed by Dansk Affald; small household waste container system for dry recyclables such as plastic, glass, metal and paper. Under the pilot scheme a sealable bag was distributed to households, for packing with clothing and other textiles including textile waste, sealing and putting into the DuoFlex container. The bag was printed with a large barcode to enable automatic separation of the textile bag from the other waste streams in the municipal waste sorting facility.

The DuoFlex containers were emptied weekly. The system collected on average 4.7kg of textiles per household over the year. Quantities collected weekly did not increase during the pilot period.

The bag included a message encouraging households to deliver their reusable textiles to charities of their choice and to focus on using the bag for waste (non-reusable) textiles. However, 60-65% of the collected quantities were reusable clothing or shoes. A potential extension of the pilot being considered by Dansk Affald is to allow households to specify whom they wish the money raised by sales of their textiles to be donated to, either on the bag itself or online.

One challenge with the system is that around a third of bags were holed or damaged during the collection process. This could potentially lead to contamination of the contents by the other waste streams collected in the DuoFlex container.

Source: Jesper Vange Heinzl, Dansk Affald, pers. comm. (2018)

the possibility of delivering textiles to these. The quantities collected, however, remain insignificant compared to the quantities collected via regular recycling centres. These have also seen a growth in collection since the initiative with new container types began. Unfortunately we don't have access to data on collection in the recycling stations prior to this as this was carried out by other organisations and was not reported to ARC. The growth in collection in regular recycling centres is smaller in percentage terms but much larger in volume terms, with an increase of over 30 tonnes.

As can be seen in Figure 3, communication on the acceptability of worn out textiles appears to have been successful. Certainly the average quality of textiles delivered to containers in ARC's recycling centres, local

²⁸ Collection in 2017

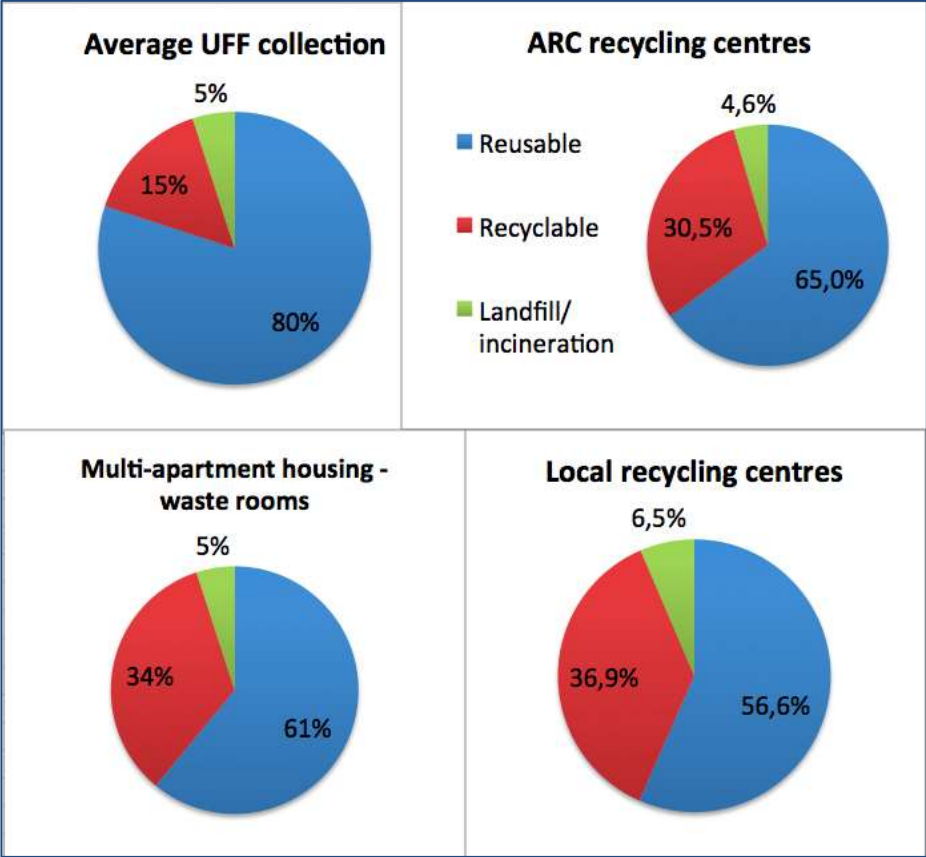
²⁹ This is a comparison between the same periods of time in 2016 and 2017. For the local recycling centres it compares mid-Feb to end-Dec 2016 with mid-Feb to end-Dec 2017; for the recycling centres it compares start-Apr to end-Dec 2016 to start-Apr to end-Dec 2017; and for the multi-apartment housing it compares full 2016 with full 2017

³⁰ Mainly containers in multi-apartment housing (see initiative 3) and a few containers at supermarkets etc.

recycling centres and containers in backyards in Copenhagen is significantly lower than the average for UFF collections. Containers in local recycling centres with the pictures communicating the acceptability of waste have the lowest reusable share of all the initiatives at just 57%.

If the message that worn out and damaged textiles also should be delivered is working, this is good for sustainability goals. However, it's not necessarily good for the economics of collection that are highly affected by the share of re-usable textiles (see under challenges).

Figure 3: Quality of textiles collected in various locations



Source: Kaj Pihl, UFF

As described in Box 10, the Red Cross increased national collection volumes by 30% following their Smid Tøjet (Drop your Clothes) campaign, which can be deemed as a significant success. Other collectors also reported an increase in the collection rates of used textiles in the months after the SmidTøj campaign. Unfortunately, there is not central yearly collection of data from collectors of collection rates to be able to show the overall effects.

Challenges experienced

In Denmark there has been a grey zone regarding municipalities' legal basis for the collection of re-usable textiles. Whereas municipalities are committed to take care of waste management, it is less clear if they have a mandate to receive and process re-usable textiles, as it is not necessarily characterised as waste. EU regulations and the Danish environmental protection law encourage waste prevention, but it was unclear

whether Danish municipalities have a mandate to prepare for reuse under Danish waste regulation. Clarity was provided by the Danish appeals board in 2017 in its judgment that municipalities may sell and prepare waste (apart from electronics) for reuse in the name of waste prevention (Danish Waste Association, 2017).

Simultaneously, the traditional collectors of used textiles face legal and economic challenges when opening up for the collection of *non-reusable* textiles. These are defined as waste and thereby are the property of municipalities and their waste companies. This issue is avoided if municipalities give permission to this collection but can still raise legal problems if the collectors transport 'original' (unsorted) used textiles over national borders. Danish collectors are becoming aware of the need to follow their German and Dutch counterparts and register themselves as waste collectors, and register their shipments as green waste with the resulting bureaucracy that this entails.

Of perhaps more importance are the economic implications of broadening collection to non-reusable textiles. Almost all the economic value of used textiles is currently found in the reusable share and particularly the top 10% premium quality that typically represents more than 50% of the total value of original. A higher share of non-recyclable rags in their containers will have a negative effect on the collectors' economies: collection costs will remain the same per tonne but revenues will reduce.

Next steps

Copenhagen Municipality is in the process of developing a new Resource and Waste Strategy, RAP24, and will provide input for the next national strategy. Experiences from the pilot study will be taken into consideration and the municipality will through this work make the decisions on further handling of textiles in Copenhagen including the collection of the non-reusable textiles.

Textile containers in multi apartment housings bring textile collection closer to the residents in Gothenburg. The pilot project has triggered the implementation of a new qualification procedure of collectors that gives mandate to handle the textile collection on behalf of the municipality.

Inhabitants in Gothenburg Municipality	550,000 (2016)
GPD/capita (EUR) (Sweden)	51,600 (2016)
Consumption of new textiles/capita (Sweden)	12.5kg (2013)

Policy context

Goals for handling of used textiles and prevention of textiles waste are included as milestones under the Swedish system of environmental objectives that are central to environmental policy in Sweden. The Swedish EPA has proposed a goal for textiles to decrease the amount of textiles in residual waste by 60% in 2025, compared to the year 2015, and that 90% of separately collected textile waste shall be prepared for reuse or recycling by 2025 (Naturvårdsverket, 2016).

The Swedish waste prevention strategy from 2013 (Naturvårdsverket, 2013) includes textiles as one of four priority streams. The strategy included five strategies for reducing the environmental impacts of Swedish textile consumption. One of these is to improve

Box 12: Attitudes towards used textiles in Gothenburg in 2012

In 2012 the municipality of Gothenburg made a survey on the perception on textile collection among citizens in Gothenburg.

- **71% said that they donate *all*** of their used reusable clothes, shoes and textiles for reuse. Only 10% said they don't donate any of their used clothing.
- The share of those donating all their textiles is **lower for citizens living in multi-apartment housing** than in detached houses and **lower for men (64%)** than for women (77%)
- **18% had low or very low trust** of charity organisations that are collecting textiles. Trust was lowest amongst those groups that donate least.
- **80%** were aware of a collection point within 500 metres of where they live
- **Convenience** is one of the key factors in increasing donations of textiles. 18% felt that donating textiles requires considerable effort and time.
- **39% buy second hand** clothing themselves. 47% of the under thirties.

collection systems for used textiles, including a higher density of collection sites, more coordination between actors, better information for citizens on where and why to deliver used textiles and a strengthening of second-hand markets. The strategy also obliges municipalities to adopt waste prevention plans. The municipality of Gothenburg's waste plan includes the goal that waste generation per capita in 2020 will be lower than in 2008 and that waste covered by extended producer responsibility (EPR) orders found in mixed household waste would be halved. This will have relevance for textiles if a relevant EPR is adopted (see below).

In 2016 at the request of the Swedish government the Swedish EPA proposed a new national strategy for more sustainable management of textile and textile waste. This includes two broad options for collection: adopting extended producer responsibility (EPR) obligations for textiles or giving responsibility to municipalities to ensure that systems are in place for separate collection of textile waste. The proposed EPR regulations would give responsibility to producers and importers of new textiles that would then most likely pay a volume-related fee to a central organisation to implement

these responsibilities in a similar way to the French system (see Paris case). Under the latter proposal municipalities could either carry out collection themselves or contract an existing collector (including charitable organisations) to carry out the collection and processing. The Swedish EPA assessed that the municipality proposal has less potential impacts on the current collectors, but would not follow the polluter-pays-principle as would an EPR

At the time of writing, the proposals were still before the Swedish parliament. The decision will have significant consequences for how used textiles are collected in Sweden. In 2017 the Christian Democratic party also proposed a tax of 10 000 Swedish crowns per tonne for non-recovered textiles in waste as an economic incentive to ensure the separate collection of textiles (Nordel et al, 2017).

Textile collection in Sweden

121,000 tons textiles (12.5kg per person) were consumed in Sweden in 2013, down from 132,000 tonnes in 2011 (Elander et al, 2014). The same study estimated that 23,400 tonnes (2.4kg per person) were collected for reuse and recycling in 2013. Palm et al (2014) estimated 29,000 tonnes in 2011 and Watson et al (2016) found that the largest five collectors alone collected 26,000 tonnes in 2014 but these figures also include shoes.

Picking analysis from 2016 estimated that 7.5kg of textiles per person are discarded in mixed household waste, of which an estimated 59% was suitable for reuse prior to discarding (Hultén et al, 2016). If this latter estimate is correct then there is large potential for increased collection rates under economically viable conditions for collectors.

Collection in Sweden is mostly carried out by charities that were responsible for 87% of total collection in 2013 up by 5% since 2011 (Elander et al, 2014). The rest is collected by private companies. Collection is dominated by 5 large collectors: Myrorna, Emmaus Björka, Human Bridge, Swedish Red Cross and Humana (Watson et al, 2016).

Municipalities have only been engaged on a minor level until very recently. Most municipalities hesitate to act in textile collection due to unclear accountability and lack of market demand for non-reusable textiles (Palm et al, 2015). About half of the municipalities inform about

Box 13: Qualification of collectors

In 2015, the City of Gothenburg implemented a formal qualification process for collectors of used textiles. This was in recognition of the municipality's more active role in textile collection pilot projects, and the resulting need for transparency in the subsequent fate of collected textiles and in what the income they raised would be used for.

As a minimum collectors should both comply with the Swedish 90-account and be certified under the Nordic Textile Reuse and Recycling Commitment as soon as certification system is in place. Furthermore, collectors are required to report collection rate to the municipality on a quarterly basis.

The 90-account, run by the NGO, Swedish Fundraising Control, is a quality stamp for charities to confirm that they are fundraising in an ethical way and that at least 75% of total income is used for charitable purposes.

The Nordic Textile Reuse and Recycling Commitment is a certification system for actors in the used textile sector piloted by the Nordic Council of Ministers. Certified organizations adhere to strict criteria on traceability and environmental performance when collecting and handling textiles. It is described in more detail in the Copenhagen case.

the collection of textiles, but even here some are hesitant. There is nevertheless strong support from municipalities to increase collection but in collaboration with charities, not supplanting them. Regardless of which of the two Swedish EPA proposals the Swedish government selects to meet increased collection targets engagement by municipalities will increase in the future.

The municipality of Gothenburg is already actively working within the area via establishing links with actors involved in textile collection and handling. As a part of this the municipality arranges dialogue meetings for actors involved in collection of textiles and other garments for reuse in order to have information and collaborate on common issues and projects.

Description of initiatives

Initiative 1: In 2014 a one-year pilot project on textile collection in multi apartment housing was initiated. Textile collection bins were set up in the waste separation area in multi apartment areas to test the quantities and quality of textiles collected as well as the perception and motivations of residents. The overall aim was to redirect textiles from residual mixed waste to separate waste collection for reuse and recycling.

Collection bins were placed in 31 waste sorting rooms serving multi-apartment housing in socially and economically varying areas of the city. The waste sorting rooms served a total of around 5,000 residents.

The project was initiated by the municipal-owned waste company Renova who had had registered a decreasing demand for paper containers in waste collection areas serving multi-apartment housing, which freed up space for a textile container. The hypothesis behind the initiative was that accessibility is one of the main drivers for increased waste separation (see Box 12) and that fewer residents in apartment buildings have access to a car compared to other types of housing, which makes donation at recycling stations less convenient.

The pilot project was carried out in cooperation with the municipality of Gothenburg, the housing company Bostads AB Poseidon and the Swedish charity organisation Human

Box 14: Attitudes of residents in the four pilot housing areas, 2017

As described in the main text collection of textiles within four different multi-apartment housing associations was established between May and August 2017. In November 2017 386 of the housing association residents were interviewed to find out their awareness and response to the pilot. This resulted in the following findings:

- **62%** of the residents **have noticed the new textile collection** in the house. Of these, a third say that they read information about the collection container before it was installed
- 66% of those who have noticed the collection containers feel that they have a good knowledge of what can be left in the container, but in fact only **half knew** that they could deliver **worn out textiles**
- **A quarter** of those that have noticed the containers **still delivery elsewhere**. They believe that all textiles delivered in the building are recycled instead of reused. They don't want to waste their good quality clothing
- **15%** of those who noticed the collection containers say they now throw less textiles in mixed waste as a result **Half** the people who previously had **disposed of all their textiles in mixed waste now use the containers**. This is due to increased convenience.
- Of those that deliver their used textiles to separate collection, **60%** state **social / humanitarian reasons** as the motivation while only 15% name saving resources/environment. 36% feel it is important for them who is collecting their textiles.

Bridge. After the project period the containers were kept in place as the project was considered a success (see later).

Initiative 2: The city of Gothenburg was inspired by the project above to move forward with initiating further similar projects. In Sweden municipalities have tended to limit their involvement in textile collection to granting permission to organisations that wish to set up containers on public land. Acting as the initiator of collection projects was something quite new. With the aim of increasing transparency and to increase the trust of its citizens in textile collection, it decided as a first in Sweden to implement a qualification process for collectors wishing to engage with them (see Box 13). This was also important because one of the requirements was that the collector(s) should also accept non-reusable textiles. This would effectively make them a collector of waste which has legal implications.

Three charity organisations applied and qualified by the new scheme. The municipality subsequently contacted housing companies in Gothenburg with an invitation to participate in cooperation with one of the qualified collectors. Two municipally owned and two private housing associations in Torslanda, Angered/Rannebergen, Stampen and Masthugget/Majorna, with approximately 3,000 residents in total joined the project. By August 2017 all these associations had textile collection containers in the general waste collection locations within the housing associations. All housing companies chose to the same collector; Emmaus Björkå.

One final initiative is worth mentioning although this is from another part of Sweden. This is the Optibag separate collection system for dry recyclables that has been used in the Eksilstuna and Strängnäs municipalities for a number of years and which has recently been extended to the collection of textiles. It is described in Box 15. This is in many ways similar to the collection system in Vejen in Denmark that was piloted in 2015/2016 and was described in Box 11 in the Copenhagen case

Communication

The municipality of Gothenburg has developed information material about the textile collection service that was then communicated by the housing companies to their residents. The information included arguments for separated waste collection and the environmental benefits. During the pilot project housing company Poseidon informed its residents about the new container on noticeboards in waste areas. This made it clear that clothing and household textiles including those not suitable for reuse could be delivered to the containers.

The municipality has a theme about textiles in the monthly municipal magazine distributed to all households, where the project was mentioned. Finally it has shared information on textile donation through its Instagram channel on sustainable consumption [#greenhackbg](#).

Trends and successes

There is no overall data for collection of used textiles via all collection points and organisations in the city. Therefore, it isn't directly possible to see the degree to which the initiatives have increased overall rates. However, collection data from the initiatives

themselves and consumer surveys can give us some useful information.

During the first pilot-project run by Renova in association with Human Bridge, 24 tons of materials through the 31 sorting rooms between February 2014 and February 2015 of which 18 tons were textiles. Monthly collection rates doubled during the pilot. The 31 sorting rooms served approximately 5,000 residents giving approximately 3.6kg of textile collection per capita per year.

Of course some of the textiles delivered to the new containers would otherwise have been delivered elsewhere. Nevertheless, the collection rate is 50% higher than the average quantity collected in Sweden of 2.4kg/capita/year, suggesting that this collection type increases total collection.

Emmaus Björkå has data for collection from the four multi-apartment housing schemes, under the continuation project (named Initiative 2 above). The largest of these Rannebergen on the outskirts of Gothenburg, with 1,600 apartments and approximately 3,200 residents, has been running since June and has so far collected 2.4 tonnes. This corresponds to approximately 1.8kg/capita/year. This is lower than average collection rates for Sweden but less than two thirds of residents are so far aware of the containers and a quarter of those that are aware of them still deliver their textiles elsewhere (see Box 14).

The resident survey also gives some indications that the schemes have led to higher overall collection; 15% state that they now deliver more textiles for reuse and recycling instead of

Box 15: The Optibag initiative in Eksiltuna and Strängnäs

Human Bridge, one of the collectors engaged in Gothenburg is engaged in another innovative used textile collection scheme being piloted elsewhere in Sweden using the Optibag system. Optibag was launched by the Swedish company *Envac Optibag AB* in 1994. It is a system allowing kerbside collection of dry fractions of household waste in the same container.

Householders sort their dry re-usables and recyclables into different fractions at home into variously coloured bags – each fraction with its own colour. These are then tied securely and placed, irrespective of colour into the same kerbside or backyard waste container. Following pick-up by the municipal waste company these bags are then sorted automatically by colour into the various fractions.

Eskilstuna and Strängnäs are the first Swedish municipalities to include textiles as one of the fractions in the system. The municipalities adopted the Optibag system for a number of waste fractions in 2011, but first introduced a bag for textiles in September 2017. The textile fraction is taken to a sorting facility in Avesta. Reusable clothing goes to Human Bridge. Unusable textiles are being used as feed to a sorting machine being tested by IVL, which uses near infra-red technology to sort textile waste by fibre type and colour (Miljö & Utveckling, 2017). Those fractions with a market are being sent for recycling.

It is too early to say whether the Optibag collection of textiles this has been a success but the municipalities experiences with the Optibag system in general have been positive with the share of household waste being sent to incineration reducing from 60% to 46% within four years (Sperl, 2016).

The Optibag system as well as saving collection costs for individual waste fractions and allows new fractions to be added as these arise. However, it is highly dependent on residents' ability and willingness to accurately sort their waste into fractions and to properly seal the bags to prevent contamination (Sperl, 2016).

Sources:

Envac Optibag website: <http://www.envacgroup.com/about-us/envac-optibag-ab>

Ekman, (2017)

Eksiltuna Energi & Miljö <https://www.eem.se/privat/om-eem/aktuellt/2017/snart-lanserar-vi-den-rosa-pasen-for-textilier/>

Sperl, L.K. (2016)

discarding them in mixed waste, and half of those that say that they previously discarded *all* their used textiles in the garbage now make use of the containers (Box 14). The increased convenience of having textile containers close at hand seems to have had a positive effect.

Quality of the collected textiles is also high. Under the initial Human Bridge pilot 23% of collected textiles were sold for reuse in Sweden, 65% were exported for reuse in other countries (total 88% reuse) and 12% were recycled.

Challenges experienced

A key issue is that collection in multi-apartment housing is more time consuming and thereby more expensive than collection through containers in the streets. Therefore, collectors have to combine the multi-apartment containers with other kinds of collection (e.g. from containers in streets) to break even.

Gothenburg city has determined that it should be made clear on containers that not only reusable but also non-reusable clothing and home textiles are accepted. As such the collection is legally classified as waste collection. As household waste is the responsibility of the municipality other actors may only handle the waste if the municipality commissions it. It also requires a more open and transparent process than simply giving permission for collectors to put up a container on public land as Swedish municipalities have tended to limit themselves to in the past. The solution was the qualification process described earlier, the first of its kind in Sweden.

Openly asking for donations of all textiles and not only reusable textiles has a further implication: it can negatively impact on the economic viability of collection, since recyclables are collected at an economic loss to the organisations. This does not seem to have occurred in the trials so far as the quality levels in 2014-2015 have been high with more than 20% resellable in Sweden. This may be a result of a communication issue though since the resident survey in 2017 found that only half of residents that are aware of the containers know that they can deliver worn out clothing to them. Paradoxically, another quarter don't deliver their good quality textiles to the containers because they believe that all the textiles delivered to them are recycled and not reused, so they deliver their good quality textiles elsewhere. This highlights how important communication is in this type of project. Moreover, partnership with a charity is a key element for motivating residents since 60% deliver textiles because of humanitarian and social benefits and only 15% because of environmental benefits.

Other challenges include good management of containers. Human Bridge experienced a degree of scepticism from housing companies due to earlier experiences with containers that were not emptied or mishandled. If the person responsible for waste handling in the multi apartment housing is changed out Human Bridge has experienced that they have been asked to remove the containers. The municipality is arranging a dialogue meeting with collectors and housing companies to find a process to ensure a continuous collection or an action plan in such situations. Moreover, in the pilot project from 2014-2015 people tried to steal textiles from the containers at around 10% of the sites. This has been solved through use of more secure containers.

Next steps

While waiting for the decision about the textile strategy the municipality of Gothenburg might prolong the project after the first year in order to collect more experiences and knowledge about the new collection system. Furthermore they will look for other types of textile collection methods to complement the collection in multi apartment housing, as the need of a container depends on how many and what type of tenants live in the building.

France is the only country in Europe with mandatory extended producer responsibility for textiles. This has led to rapid increases in textile collection starting from a low base level. Paris has been challenged in meeting targets due to its high density and limited street space for containers. This has been tackled through innovative collection approaches and widespread communication campaigns.

Inhabitants (Municipality of Paris)	2.2 million
GDP/capita (EUR) (Paris)	53,617 (2016)
Consumption (kg) of new textiles/ capita (France)	9.2 (2015) (includes footwear)

Policy context

National: The circular economy in France is encouraged at strategic level by the 2015 Law on Energy Transition for Green Growth³¹. The Act includes a chapter on circular economy which amongst other things includes goals to reduce household waste per capita by 7% by 2020 from 2010 levels, to recycle 55% of waste by 2020 and 60% by 2025 and to only recover energy from waste that can't be reused and recycled. One of the key measures by which these goals are to be implemented is via the extended producer responsibility laws for various products.

Box 16: EcoTLC – the extended producer responsibility organisation

EcoTLC is the only organisation accredited to organise the collection of clothing, linen and footwear (TLC) on behalf of producers/importers under the EPR law. 97% of all producers and importers of TLC in France are members of EcoTLC,

EcoTLC's members pay a fee to the organisation according to the quantities of textiles and footwear they place on the market each year. There are rebates in these fees for textiles that include at least 10% recycled materials in order to stimulate the recycling market.

EcoTLC uses the fees it collects:

- To support sorting companies in order to stimulate markets. On return sorting companies must source a minimum share of employees amongst long-term unemployed and disadvantaged groups
- On communication campaigns and communication kits to all stakeholders including municipalities
- To fund R&D of recycling processes for non-reusable textiles in France
- On measuring tools to analyse and develop reliable statistics about the industry
- For real time mapping of all French collecting sites to inform local citizens

France is the first country in Europe to adopt a mandatory extended producer responsibility law for textiles. The law that was adopted in 2007 applies to clothing, linen and footwear (abbreviated as TLC in French). The law gives responsibility to producers and importers of TLC to arrange for post-consumer collection and processing. It also lays down requirements for organisations that carry out these responsibilities on behalf of producers and importers³².

These requirements include targets for collection, reuse and recycling. The current targets are that by 2019, 50% of TLC put on the market are to be collected separately post-consumer, 95% of these must be reused or recycled and maximum 2% landfilled³³. Since 9.2kg/capita of TLC are consumed annually, a 50% collection rate relates to 4.6kg/capita.

The EPR regulations for TLC determined

³¹ <http://www.planete-energies.com/en/medias/close/france-s-energy-transition-green-growth-act>

³² <https://www.ecologique-solidaire.gouv.fr/textiles-usages>

³³ *ibid*

that to achieve this collection rate, collection points should be created at a density of 1,500 inhabitants per collection point, nationally. A single organisation has been given a license under the regulations to carry out the responsibilities of producers: EcoTLC (see Box 16).

City level: Ten years ago textiles were not considered as a priority and were not addressed by the city's waste strategies. This changed from the beginning of the current decade and momentum increased after the 2014 local elections. Under French waste regulations it is compulsory for municipalities to develop a municipal strategy for waste prevention (PLPDMA). The PLPDMA for Paris for 2016-2020 prioritises textiles along with four other waste streams and includes the following goals (City of Paris, 2016a):

- Reduce the amount of TLC disposed of in municipal mixed waste by a further 20% between 2016 and 2020
- Increase the number of collecting points of used textiles to achieve 3kg of collected TLC per inhabitant in 2020. This is much lower than the national target of 4.6kg in recognition of the fact that current collection rates are low in Paris compared to national averages (see later)

In July 2017, the first Circular Economy Plan for Paris was adopted (City of Paris, 2017a). It provides for the development of "Recyclerie" reuse shops (see Box 19) and plans the first steps in the development of a system for the collection and recovery of uniforms from municipality employees (see Box 20).

The motivation for the Circular Economy Plan is both environmental but also to save costs for the municipality. Removing textiles from mixed waste saves 100 € / ton on municipal waste collection costs and 100 € / ton on the cost of incineration³⁴. As a result of the EPR the municipality can effectively transfer collection and processing costs to producers.

Textile collection in France

Used textile collection has been largely carried out under the umbrella of the

Box 17: Tisseco – collection in multi-apartment housing

Tisseco is a social enterprise operating in L'île de France whose aim is to provide jobs for citizens with difficult social problems in the collection, sorting and sale of reusable textiles. It works in association with the French Red Cross and a further charity Samu Social and the French State. Employees are hired on contracts subsidized by the State for a period of 6 to 24 months for 26 hours per week.

Tisseco collects textiles via small containers placed in or close by multi-apartment housing and in schools and institutions under agreement with the management of the respective buildings. The association guarantees at least weekly collection but collects 2 or even 3 times per week from containers where filling rates are high. Filling rates are monitored and recorded. Collection is carried out using small trucks that follow a route mapped out according to necessary emptying frequency in order to ensure time and energy efficiency.

The association also promises to keep the site immediately around the container clean from other waste, including food waste that has been placed around it. The containers are carefully designed to prevent theft. Tisseco has also developed a smaller box for indoor use within offices and apartment blocks. All containers/boxes are constructed by Tissecos workers.

To date the association has 413 containers in L'île de France. 55% of collected textiles are reused, 35% recycled and 10% incinerated in cement plants.

Source: <http://www.tisseco.com/et-les-collectivites/>

³⁴ <http://www.tisseco.com/et-les-collectivites/>

extended producer responsibility (EPR) system for TLC. EcoTLC is the central organisation that organises and partially subsidises the collection and processing of used textiles at the national level on behalf of producers and importers and has to meet the targets set in the EPR law for clothing, linen and footwear. See Box 16 for a description of its activities.

Existing charities and other collectors of used textiles can register as official collectors under the scheme. This allows them to bear the EcoTLC label and to sell the textiles that they can't sell in their own shops to EcoTLC. In return they must meet certain requirements; they must accept all textiles including those not fit for reuse, and that they weigh and report on all the used textiles that they collect. By 2016, there were more than 39,000 collection points across the country and collection rates were at 3.2kg per capita. Textiles are sorted in 64 sorting centres; 50 in France and 14 in other countries of the European Union³⁵.

In Paris there were 671 collection points in 2016 and collection rates were just 1.6kg of textiles per capita (ORDIF, 2017), this is only half of the national average and only a third of the goal of 4.6kg to be achieved by 2019 (EcoTLC, 2017). The density of collection points at one per 3343 inhabitants (2016) was considered insufficient to meet collection targets for 2019.

Box 18: Trimobile – mobile collection containers

The Trimobile is a mobile container for the collection of small recyclable and reusable waste fractions that aren't currently part of door-to-door collections by the City of Paris. This includes unwanted textiles and footwear and electronics and electrical equipment.

There are currently four of these mobile containers that are each moved to a new site each day where they are open between 9 am and 1 pm. The containers move between 49 different sites within all 20 of Paris's arrondissements during a month. Some sites are visited twice during the month. The timetable for visits are provided on the municipality's website.

The Trimobile containers also play an important secondary role as communication hubs. They are used as information points for circular economy and environmental initiatives and organisations in the city.

Between July 2015 and June 2016, 156 tonnes of recyclable or reusable waste were collected in the mobile containers during 733 placements in the city.

Source: https://www.paris.fr/parisdutri#le-trimobile_55

Description of initiatives and involved actors

The municipality of Paris plays a central role in textile collection by providing permission, technical and financial support to collectors and processors. Since 2011 it has allowed charities and other collectors to place textile collection containers on public land in the city.

Currently one company (Ecotextile) and two charities (Le Relais 75 and Le Relais Val de Seine) have permission to set up these containers. However, these are not the only collectors. Around 15 other non-profit organisations and charities also provide collection points in shops and elsewhere in the city. The national EPR responsible organisation, EcoTLC, has a key role to play also in Paris, by providing accreditation to these collectors and communicating on why and where to deliver used textiles via the web site *La fibre du tri*³⁶.

³⁵ <https://www.ecologique-solidaire.gouv.fr/textiles-usages>

³⁶ <https://www.lafibredutri.fr/>

Tisseco is of key importance (see Box 17). Tisseco place containers in the grounds of, or within multi-apartment housing, schools, supermarkets and have a particular focus on placing containers within social housing for groups that otherwise are less active in sorting waste for reuse and recycling. This reflects the activities and goals of Tisseco, a social enterprise that provides employment for marginalised groups in Paris and the wider region. Placing containers in schools and nurseries is also strategically effective; firstly, there is rapid turnover and high reuse value in children's clothing, and secondly, the presence of the containers acts to inspire young people to understand the value of clothing.

The density of Paris can be a challenge for the placement of containers for textiles and other reusable/recyclable waste streams, especially in the central part of the city. The municipality and partners have addressed this through deployment of innovative solutions in dense areas of the city. Trimobile (see Box 18) is the name of mobile containers that move around the city according to fixed timetables, allowing further density of collection points in the city, and increasing the visibility of textile (and waste electronics) collection. The municipality has also developed so-called TriLib; small multi-compartment containers developed for deployment in the dense central area of Paris.

The development of so-called *recyclerie* reuse shops is also a solution to this by removing collection from streets. The municipality aims to develop more of these in the future. The municipality provides these with both start-up and operational economic support in return for their waste prevention and social support activities (see Box 19).

Together the organisations/initiatives had increased collection points from 657 in 2015 to 798 by 2017. These include:

- 289 containers on public ground, mostly in streets (Ecotextile, le Relais 75 and Le Relais Val de Seine)

Box 19: Les Recycleries reuse shops

As part of Paris' approach to achieving its goal for 55% reuse and recycling of household waste by 2020, the city has established so-called *Ressourceries*® and *Recycleries*. These operate in a similar way to the Kringwinkel and Kringloop shops in Belgium and the Netherlands (see Antwerp and Rotterdam cases).

The shops act as collection, repair and resell points for used articles which citizens no longer have a need for but still have some value. The employees in the shops include long-term unemployed and disadvantaged groups. The shops part finance themselves but are also supported by the municipality. They serve a social function both by employing those with difficulties finding work and by providing affordable working goods to people and environmental function in the city.

By 2016, the City of Paris had 7 general *recycleries*, which accept all types of flows and 2 further specialized *recycleries* for particular streams (toys, music, paintings and books). In 2016 they collected 2,665 tons of articles (9% down from 2015), most of which have been diverted from landfill, incineration or recycling. Some of the *recycleries* combine the core repair and resell activities with cultural events, meetings, organic cafes and other means to create sustainability hubs.

More *recycleries* are needed in Paris to divert more of the 20,000 tonnes of textiles that end in mixed household waste and, the 65,000 tons of bulky waste collected each year in the city. The city has the goal of having 20 *recycleries* operating by 2020. They will assist in finding suitable locations for them in the city, and provide start-up financial support and financial support for operations for a three-year trial period before continued support is assessed as necessary. Support is provided in accordance with the weight of items resold via the shops, and the number of disadvantaged people that are employed.

Sources: City of Paris (2017a) and (2017b)

- 333 small containers inside or close to supermarkets (Franprix, Monoprix, Bio-Coop and others), on private ground and in multi-apartment housing (Tisseco) (see box 17)
- 40 small (TriLib) containers in the streets for collecting various separate streams including textiles
- 83 collection points in high street clothing shops (H&M, Guerrisol etc.)
- 53 charity shops/reuse shops (Emmaus, Red Cross etc.) and Recycleries (See Box 19)

The 49 different collection points served each month by the Trimobile travelling containers (see Box 18) are not included in this total.

Communication

Communication is a central element of textile collection in France and in Paris. EcoTLC carries out communication at national level through various media and assists municipalities via developing communication toolkits and guides. Municipalities must have a collection point density giving maximum 2,000 inhabitants per collection point if they are to gain support for communication from EcoTLC (ORDIF, 2017).

EcoTLC launched a guide on collection, sorting and recovery of textiles³⁷ at the City Hall of Paris in May 2015.

The City of Paris has also been active. It launched a campaign “Le Paris du Tri” in 2016 to improve Parisians awareness and behaviour with respect to sorting of waste into fractions via a website³⁸ and other media. The website is mostly aimed at assisting citizens in how to sort correctly. For clothing, linen and footwear the site directs citizens to Le Relais 75, Le Relais Val-de-Seine and Ecotextile containers and to the timetable of the Trimobile mobile containers (see Box 18). The Trimobile containers themselves also act as communication points on circular economy and waste prevention initiatives.

The municipality distributes an App for smartphones that allows citizens to locate the nearest collecting point to them and has distributed flyers and paper guides in letterboxes have posters on waste collection trucks and on signposts. Finally, the city uses the Paris Waste Week in November to communicate on how and why to donate/deliver textiles to collection points.

Trends and successes

Collections rates have been improved in Paris as a result of collection initiatives and communication campaigns. Collection quantities in street containers increased by 8% between 2014 and 2016 from 2,900 tonnes to 3,130 tonnes (City of Paris, 2015 and 2016b). Improved separate collection has led to a 31% reduction in textiles in mixed household waste, from 15.2kg/capita in 2011 to 10.5kg in 2015 (City of Paris, 2016a).

The number of collection points have increased by 21% from 657 in 2015 to 798 in 2017. The collection point density now lies at 1 per 2,760 inhabitants. This is still some way from the national goal of 1 per 1,500 inhabitants.

³⁷ http://www.ecotlc.fr/guide_pratique/.

³⁸ https://www.paris.fr/parisdutri#trois-bacs-pour-trier-vos-dechets_28

Reuse rates for collected textiles in Paris are a little lower than we see in some other regions (see e.g. Gothenburg and Rotterdam cases), but still reasonably high at 61%, with 33% recycled (City of Paris, 2016b), thus meeting EcoTLC goals.

Challenges experienced

Despite increases in density of collection points and novel collection activities there is still much more to be collected in Paris; it still has a textile rate collection rate half that of the country average.

There is also a perceived need to improve the value chain within the region and country. Surveys have found that in Paris and elsewhere in France, citizens prefer that the textiles they donate are sorted, reused and recycled in locally or nationally rather than being exported. Knowing that their donations may be exported and provide jobs in other countries can dissuade people from donating.

EcoTLC is attempting to tackle this through financial support to local sorting centres and to R&D in recycling innovations within France. As yet, however, there are no recycling plants in Ile-de-France region and very few in France.

Next steps

There is a new Parisian remanufacture program called “Re-fabriquer à Paris” that is attempting to bring back manufacturing including textile up-cycling and recycling back to the region. The municipality is also lead partner in an initiative to develop a storage and reuse hub in the city for all types of reusable/recyclable products and materials (City of Paris, 2017a). The city also plans to include dedicated spaces in recycling centres for depositing items fit for reuse that other citizens can take (City of Paris, 2016b). A first trial has been made in Porte de Pantin (19ème) from 2017³⁹.

Finally, the city in collaboration with OREE is investigating setting up a system for collection and recycling of uniforms and workwear that are distributed to 30,000 city workers each year (see Box 20).

Box 20: Study on collection of uniforms and work clothes

In 2015, just under 30,000 City of Paris employees received uniforms and work clothes from the city. This represented over 400,000 articles. The City is working on procuring these from more sustainable sources using for example Fairtrade labels and requiring recycled content but currently do not have systems in place for the collection and recovery of uniforms and work clothing. Moreover very few companies specialize in the recycling of professional clothing.

Some French organisations (the Post Office, SNCF rail services), organise collections but not routinely. A study on the technical and financial feasibility of setting up a collection and recycling system for uniforms and work wear was launched in June 2016 by the association OREE of which the City is a member. The City participates in this study and co-financing, in partnership with public enterprises and industrialists in the textile sector. If this study is conclusive, a second step will be to lay the foundations of structuring a professional clothing recycling sector.

In parallel with the introduction of recycling, repair workshops for uniforms could be created for easy repairs of buttons, zippers etc.

Source: City of Paris (2017b)

³⁹ <https://www.mairie19.paris.fr/actualites/dans-le-19e-rien-ne-se-perd-tout-se-recupere-273>

Cooperation between municipality and collector has increased the yearly collection rate by 65% in 4 years in Albano Laziale in the metropolitan area of Rome. This has been achieved by focusing on communication and transparency to establish renewed trust regarding the collection and handling of donated textiles.

Inhabitants (Albano Laziale)	41,000 (2016)
GDP/capita (EUR) (Italy)	30,527 (2016)
Consumption of new textiles/ capita (Italy)	14kg (2013) ⁴⁰

Policy context

In 2006, Italy adopted national targets on household waste separation with a final target of 65% in 2012 (ISPRA, 2017). Even though this target was not met, Italy managed to increase its waste separation from 28.5% in 2006 to 52.5% in 2016. Textiles however only contribute 0.8% (by weight) to this share (ISPRA, 2017).

Box 21: Public sensitivity to waste in Italy

The awareness and sensitivity to waste-related problems is quite high in Italy, mainly due to the waste crises that have struck Italy in recent yearsⁱ. Some of these crises involved a lack of waste collection and questionable disposal of waste, which led to local soil and air pollution. These issues have put waste management high on the agenda in both political and public debates and have made the public more prone to participating in separate collection schemesⁱⁱ.

ⁱ The Telegraph, June 24th 2016, "Mafia, toxic waste and a deadly cover up in an Italian paradise", <http://www.telegraph.co.uk/news/0/mafia-toxic-waste-and-a-deadly-cover-up-in-an-italian-paradise-t/>

ⁱⁱ European Commission, 2012, "Country Factsheet for South Italy"

Although public awareness on waste is relatively high in Italy (see Box 20), few municipalities have implemented specific strategies or targets for textiles. Municipalities are more focused on higher volume fractions such as organic waste, paper, plastic and glass although some attention has been given to textiles in municipalities with a high rate of separate waste collection. For many municipalities used textiles are not a waste or resource issue but are solely collected to serve charitable and social purposes, and therefore considered

outside their jurisdiction.

In Albano Laziale, a municipality close to Rome, however, a clear strategy has been defined for recycling and reuse within each sector, including textiles. A key focus has been the need for transparency in the value chain.

Textile collection In Italy

It is mandatory by law to register separate collection of textiles whether they are for reuse or recycling⁴¹. The Italian National Institute for Environmental Protection and Research (ISPRA) publish a yearly report on urban waste. The data is based on samples from a few municipalities in every region. Samples from 2016 show an average collection rate for the country of 2.2kg of textiles per capita in 2016 (ISPRA, 2016). There is a slightly higher collection rate in the northern and central part of Italy than in the southern part, which might be due to the fact that fewer cities in the south have a

⁴⁰ CONAU, 2013, <http://www.conau.it/2013/statistiche/>

⁴¹ Art. 188bis "Controllo delle tracciabilità dei rifiuti", http://www.bossettiegatti.eu/info/norme/statali/2006_0152.htm

separate waste collection system. However, some of the companies that are engaged in collection do not operate complete above board in terms of their collection operations and do not necessarily report their quantities. True collection rates may be higher.

Box 22: Rome textile scandal

In 2013-2014 a scandal concerning textile collection in Rome came to light which seriously undermined citizen confidence in donating their textiles to containers. It was discovered that the company running the city's textile collection was used by the mafia to fund criminal activities.

They also falsified papers documenting that they had complied with rules to sort and disinfect the collected textiles, when in fact they had chosen to save the expenses for these processes and instead sold the collected textiles as 'original' on global markets.

Source: Tizian (2015)

The majority of municipalities are liberal in giving permission to organisations to put up textile containers and typically place few demands on them.

Over the last five years many new actors have entered the textile collection sector in Italy due to higher prices for textiles on global markets. Moreover in 2013-2014 a scandal concerning textile collection in Rome led to general public scepticism

towards the sector (see Box 22).

This has led to an increase in the number of municipalities choosing to put textile collection out to public tender to be awarded to a single company to reduce competition in the streets.

It has also led to an increased focus on transparency in textile collection. ANCI – the national municipalities association developed guidelines for municipalities on how to evaluate organisations when awarding permits or contracts for textile collection (see Box 23).

Description of initiatives and involved actors

In 2013 the charity organization Humana Italy won a tender to run the service of textile collection in the municipality of Albano Laziale in the province of Rome. One of the main reasons they won the tender was their willingness to document all their economic transactions and document their use of revenue raised from textile collection and processing. Furthermore, they proposed donating some of the revenue to support local school children.

In addition to the collection service, the tender included specific communication activities with schools on textile collection and the social purpose behind it. Humana also sponsors scholarships to children with difficulties in local schools. Communication materials were developed in cooperation between Humana and the municipality with the purpose to rebuild trust in the

Box 23: Guidelines for textile collection tenders

In 2013 ANCI – the national municipalities association – provided guidelines to municipalities on the provision of the service of separate collection of the textile fraction. The guidelines contain required features of the service (including safety requirements, monitoring and periodic reports), admission requirements (compliance with law, holding transport license etc.) and award criteria. The suggested award criteria are that the municipality should choose the most economically advantageous offerⁱ.

ⁱ ANCI, 2013, "Elaborate 'Linee guida' per l'affidamento raccolta differenziata della frazione tessile"

textile collection among citizens.

In many municipalities in Italy the collector has to pay a fee to the municipality for every bin or container they put up, but Albano Laziale chose to make it free of charge.

Humana collects textiles via 42 containers placed strategically near schools, supermarkets and other public places in the city. As Humana’s collection is a public service they also collect non-reusable textiles, but they are not strongly promoting this part of their collection, as it is not profitable. From the textiles they collect only 4% cannot be reused or recycled.

Communication

Humana is present at different markets and events arranged by the municipality communicating about the organisation. The mayor of the municipality was involved in general communication about textile collection and the communication in the schools and via social media.

Humana have organized their own events, e.g. an event with the Mozambique embassy, which focused on the direct connection between the collected textile and the social work that is done in Africa.

The municipality has communicated about the textile collection through social media etc. In the communication the transparency of the collection is stressed and the whole value chain of the collected textile is explained to the public. Humana works on positioning themselves as one of the only actors in the textile collection industry that follows the fate of textiles along the value chain and has codes of conduct that apply along this chain.

Trends and successes

According to figures reported by Humana (see table), collection rates of used textiles in the municipality have increased from 3.5kg/capita to more than 5.8kg/capita in the four years they have been collecting textiles in the municipality. This is far above the national average of 2.2kg/capita.

Textile collection in Albano Laziale	2014	2015	2016	2017
Total (tons)	145	161	220	240
Kg per capita	3.5	3.9	5.3	5.8

This has mostly been achieved through raised awareness and transparency about the textile handling and resulting social projects. Little was done physically to increase collection rates; numbers of containers was increased only slightly from 38 to 42 and Humana has not begun initiating other means for collection i.e. via door-to-door collection etc. This demonstrates the power of a good message, especially in the wake of a chain of bad messages.

Of the collected textiles 70% can be reused, 26% can be recycled and 4% are disposed of as waste. The average value of textiles collected in containers close to supermarkets in Albano Laziale is up to 50% higher than those collected in Humana’s containers in recycling centres.

Challenges experienced

The main challenge has been to convince the public that Humana's textile collection is not connected to illegal activities. Creating total transparency in relation to all of Humana's activities as well as informing the public on the value chain has been the main driver in order to overcome this challenge. Another challenge has been an increased competition from private companies who entered the sector in recent years as the prices of textiles increased. In 2013, six companies wanted to handle the textile collection, which forced the municipality into making its first public tender.

Next steps

There aren't any specific targets for the future collection of textile in Albano Laziale, but Humana strive to improve little by little and organise events and initiatives more or less every quarter. They want to keep improving the collection rate while also improve the quality of the collected textile. Furthermore, they are currently working on education their staff better, so fibres don't get mixed in the sorting process etc.

5.7 ROTTERDAM, THE NETHERLANDS

A doubling of collection rates, local job creation for socially disadvantaged, increased and a local sorting centre were some of the requirements in a municipal tender on textile collection in Rotterdam. The winning contractor, ReShare in cooperation with the city has increased collection rates by 70% over 3 years through increased container density and clearer coordinated communication.

Inhabitants (Rotterdam municipality)	634,000
GDP/capita (EUR) (The Netherlands)	41,259 euros (2016)
Consumption of new textiles/capita (The Netherlands)	14kg

Policy context

The Dutch 2013 From Waste to Resources (*Van Afval Naar Grondstof*) Program⁴² includes goals for reducing household residual waste to 100kg/person/year by 2020 and 30kg/person/year by 2025. These are partly to be achieved by increasing the separate collection of small and bulky household waste streams to 75% by 2020. Meanwhile, the National Waste Management Plan (LAP3 2017-2023)⁴³ aims at achieving reuse and recycling rates for all waste of 85% by 2023.

The Public Framework for Domestic Waste from 2014⁴⁴ (*Publiek kader Huishoudelijk Afval*) aims to implement these goals via a voluntary agreements between the national government and individual municipalities. So far at least 220 municipalities have signed

Box 24: Dutch Green Deal

In 2012 the Dutch Government set up a programme of voluntary agreements and initiatives called the Green Deal aimed at catalyzing green growth in selected sectors. Under the programme, organisations can apply with a green business concept. Applications can lead to voluntary agreements (Green Deals) between industry partners, NGOs and the government that typical last 2-3 yearsⁱ.

In 2012 a Green Deal on textiles was signed with the overall goal of halving the quantities of textiles found in residual waste between 2012 and 2015, (giving 4.2kg per person by 2015). The increased collection, reuse and recycling was estimated to give societal benefits of €323 million. The Green Deal aimed to achieve this through better mapping of flows of textiles, common communication by actors on what can and can't be delivered to containers, actions aimed at behavior change in consumers and assisting municipalities with setting achievable targetsⁱⁱ.

The Green Deal, although successful in some actions, ultimately failed to achieve its primary goal. The main cause was the low market price for the non-reusable fractions of used textiles and a fear amongst collectors that the Green Deal could lead to the share of reusable textiles in containers falling from 65% to 50% if half of textiles in residual waste were diverted to containers. This would have a strong negative effect on their economies and they were reluctant to actively advertise for non-reusable textilesⁱⁱⁱ. It was not possible to agree a model for sharing the lost revenue between the various interested actors.

ⁱ <https://www.ellenmacarthurfoundation.org/case-studies/green-deal>

ⁱⁱ B-142 Green Deal inzameling textiel

ⁱⁱⁱ http://www.greendeals.nl/wp-content/uploads/2015/04/Greendeal-Resultaten-Rapport_08-def.pdf

* <https://www.ellenmacarthurfoundation.org/case-studies/green-deal>

⁴² <http://www.vang-hha.nl/>

⁴³ <https://lap3.nl/>

⁴⁴ <https://www.rijksoverheid.nl/documenten/rapporten/2014/12/01/publiek-kader-huishoudelijk-afval-2025> *The Public Framework for Domestic Waste Is an implementing measure of the Waste to Resources Program*

the agreement or otherwise indicated commitment to the goals⁴⁵.

A Green Deal initiative signed in 2012, aimed at halving the amount of textiles in household residual waste by 2015 (see Box 24). This led to a clear message that all textiles can be handed in separately, even if they are worn-out or damaged. Finally, one of the actions announced in the 2018 Transition agenda Consumer Goods, as part of the Dutch circular economy program, is to investigate the possibilities for an Extended Producer Responsibility scheme for textiles (Dutch Government, 2018).

At the local level, the Rotterdam Waste Plan 2013-2018 aims to double used textile collection by 2018 from 2011 levels (City of Rotterdam, 2013).

Textile collection in the Netherlands

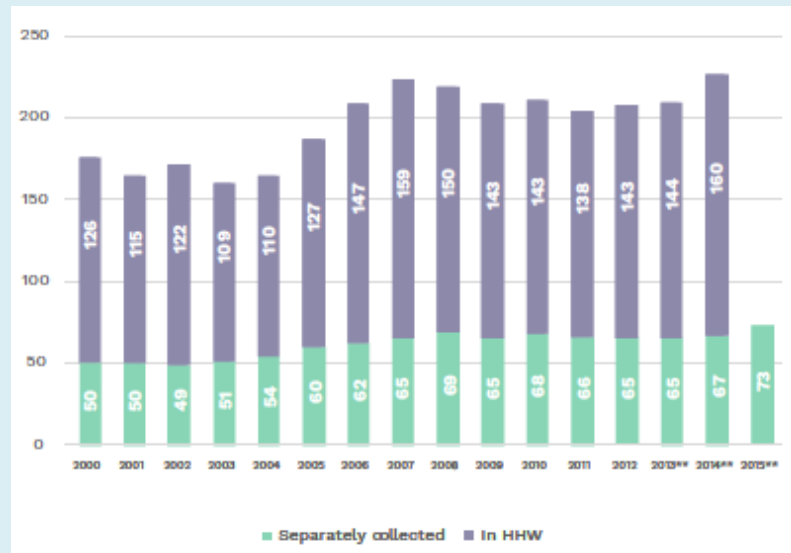
At the beginning of the millennium charities were responsible for almost all collection of used textiles in the Netherlands. By 2013, their market share had dropped to only 55%. Recycling centres – both commercial and social enterprises – had about a quarter of the market and private waste companies like Van Gansewinkel and SITA had the remaining 20% (Dutch Waste Management Association, 2013).

Charities and private collectors are often being asked to pay municipalities for textiles they collect via containers in public space. Rates are around € 0.10-0.50 per kilo collected (Maldini et al, 2017).

Municipalities are also increasingly engaging in textile collection directly via their waste companies. An increasing number of municipalities require collectors to receive all kinds of textiles including non-reusables, in accordance with one of the key messages of the Green Deal.

According to Rijkswaterstaat total separate collection of used textiles in the Netherlands increased from 50 ktonnes (3.1kg/capita) in 2000 to 69 ktonnes (4.2kg/capita) in 2008, but had reduced slightly again to 67 ktonnes by 2014 (see Figure 4). Data from FFact (2014) indicates higher collection quantities of around 90 ktonnes in 2012. Nevertheless even at that higher collection rate, up to 60% of all end-of-life textiles (235 tonnes per year) end in residual household waste destined for incineration.

Figure 4: Textile collection versus textiles found in mixed waste in Netherlands



Source: Rijkswaterstaat in Maldini et al (2017)

⁴⁵ <http://www.vang-hha.nl/nieuws-achtergronden/2016/bestuursakkoord-0/>

Reported⁴⁶ collection rates differ strongly between municipalities ranging from under 1 kg/capita to 10.4kg/capita. In one of the best performing municipalities, Oldenzaal, textiles are collected directly from households (at least 4 times a year) and there is a reasonably high textile container density⁴⁷ (1 container per 1,170 households⁴⁸).

Large Dutch cities have collection rates under the average (City of Amsterdam, 2015), reportedly in part due to a higher share of multi-apartment housing, which are known to donate less textiles compared to other types of housing (City of Rotterdam, 2013): collection rates on average are 60% higher in areas with low high rise housing (lower than 19% of housing stock) compared to areas with a high share of high-rise (more than 50% of housing stock). At the same time collection and processing costs per ton are less than half in the high-rise areas compared to areas without high-rise⁴⁹.

Rotterdam's collection rate in 2014 was 2.7kg/capita, (compared to the national average of 4.0kg/capita) (Emile Bruls, pers comm.) and had only managed to separately collect 16% of textiles in 2010 (City of Rotterdam, 2013). Prior to 2014, Humana was responsible for 50% of collection in Rotterdam, KICI for 35% and ReShare (a daughter organisation of the Salvation Army) was responsible for 15% (City of Rotterdam, 2013). Textile collection had occurred largely outside the influence of the city authorities.

Description of initiatives and involved actors

In 2014, the municipality of Rotterdam decided to take a more active role in textile collection, and issued a tender for used textile collection and processing. The tender required that the winning contractor should open a local sorting centre and should deliver best quality reusable textiles for resell to four local *Kringloop* second-hand shops (see Box 8 in BEST Bag case) owned by the municipality. In a break from earlier approaches, the municipality also took responsibility for the placement of containers, and for emptying them and delivering the textiles to the contractor for sorting. Finally, 5% of the contract price should be used for social support via employment of long-term unemployed and disadvantaged groups in the sorting centre and in emptying containers and transporting textiles.

Via this new approach the municipality aimed to:

- **Encourage a more efficient used textile collection** via reducing competition and increasing cooperation between actors, and using each for their own skills. The

Figure 5: Signage on ReShares containers making it clear that worn out textiles are also acceptable



⁴⁶ not all municipalities have good data. For instance many of the collected clothes by small charities (in schools, clubs, churches) are not recorded. (Emile Bruls, pers. comm.)

⁴⁷ Benchmark Huishoudelijk Afval 2015 <http://analyse.bmha.nl/DisplayDashboard.aspx?key=G7JD5L7HVF&code=L7AZT&vl=nl-NL&p=27>

⁴⁸ comparable with French density targets

⁴⁹ Dutch Household Waste Benchmarks <http://analyse.bmha.nl/DisplayDashboard.aspx?key=G7JD5L7HVF&code=L7AZT&vl=nl-NL&p=24>

city waste authority was best placed to maintain containers and collect and deliver used textiles. The contractor on the other hand should have a good knowledge of markets for used textiles. Communication to citizens would also be coordinated between the city and contractor.

- **Increase transparency** in volumes of used textiles collected and what happened to them. Previously, reporting on quantities and fate of textiles collected by the various collection organisations was informal and haphazard.
- **Create local jobs including social support** by requiring a local sorting centre and supply of textiles to the municipality's own second-hand shops
- **Support charitable activities** via placing more weight on a charity as the sorting and processing contractor in the tender
- **Double used textile collection rates by 2018** by means suggested by the contractor
- **Ensure that both reusable and non-reusable textiles** were collected again via communication

The contractor was primarily chosen according to transparency, job creation and experience in textile collection rather than price. ReShare, won the public tender, in part because the organisation had managed to increase collection rates significantly in The Hague over the preceding previous years in part via increasing the numbers of containers and wished to develop these concepts further in Rotterdam.

ReShare gradually increased the total numbers of textile containers on public land in Rotterdam from 126 to 225. The locations for the new containers were decided upon based on experiences of ReShare and the city waste authority of good collection positions and on filling rates of existing containers.

Previously, containers had had many different shapes, signage and colours. It was agreed between the city and ReShare to have a single type of container painted purple to increase visibility and awareness of citizens. These symbols have also made it clearer to citizens that the containers are for textiles and thereby prevent contamination with residual waste.

As a result, shares of residual waste in containers in Rotterdam are lower than in other cities; 5% in Rotterdam compared to 13% in Utrecht (Jolande pers. comm.). A further contributing factor may be that the containers aren't placed next to other waste containers as they are in Utrecht (Bruls, pers. comm.)

Box 25: REBOX initiative

In March 2017 ReShare launched a novel new means of collecting used textiles via workplaces. Employees/managers can ask the local ReShare shop floor manager for a cardboard box called a REBOX to be delivered to their workplace. This is placed in a busy area of the workplace e.g. in the canteen or busy corridor and the existence of the box communicated via the responsible employee. The message is that *'your old clothes can make up someone else's wardrobe'*.

When the REBOX is full ReShare collect it. For every 10kg collected a gift voucher for ReShare shops worth 10 Euros is generated. The gift voucher is distributed by the floor manager of the local ReShare shop to people in need of clothing. The gift vouchers are anonymous so that the receiver is not stigmatised as being 'in need'.

So far ReShare has distributed 80 REBOXs in the Netherlands of which 7 are in Rotterdam, and collected 10 tons of textiles (400kg in Rotterdam) from workplaces and distributed 10,000 Euros worth of used clothing gift vouchers to people in need.

Sources: <https://www.resharestore.nl/actie> and Jolande Uringa pers. comm.

In order to meet increased transparency wishes, ReShare also organises tours to the sorting centre where citizens can see textile processing in operation and find out what happens to the textiles afterwards. This should potentially improve citizens' opinion and awareness of the value of used textiles although this has not, so far, been tested via surveys.

In an attempt to further increase collection rates, in late 2014/early 2015 the city delivered bags to households for delivery of used textiles. The initial idea was to use these in kerbside collections, but experiences from other waste fractions had demonstrated that this would rapidly be picked up by organized theft due to the value of the textiles. Instead households were asked to deliver the bags to nearest textile stations and thus acted more as a communication instrument than an alternative means of collection. Finally, ReShare's Rotterdam stores have also implemented the REBOX for collecting textiles in work places (see Box 25)

The municipal cost for the service (emptying and transporting) is €22,40 per tonne, a cost which is covered by the collector in a yearly fee with no profit for the municipality. This is somewhat different to the situation in other municipalities in northern Europe that charge a price per kg for collection on public land. The price is often set via a bidding process with the highest bid winning the right to collect textiles. The approach in Rotterdam assures a fair price for the collector. This also means that Reshare also can raise money for their charitable activities via the agreement.

Communication

Communication on textile waste collection is carried out via cooperation between the municipality and ReShare, plus some actors which strengthens the message and increases awareness amongst citizens. The themes of communication also complement one another: the municipality's key message is that increased collection of textiles leads to environmental savings and reduced waste management costs; ReShare's message on the other hand concerns the social and charitable benefits of donating clothing.

The city of Rotterdam informs citizens about textile collection via advertisements on waste collection trucks, social media, a website, campaigns, and a weekly article in the free Metro newspaper about waste and resources. As an example they have made an animation video about different waste fractions to share on social media. Furthermore the municipality advertise for textile collection on waste collection trucks and on buses. To make donations easier a link to an Interactive map can be found on the website of the municipality showing the closest textile container to any household⁵⁰.

ReShare uses social media and press releases to inform about the textile collection and are present at different events such as the Fair Fashion Festival. Local environmental NGOs also encourage separate waste collection partially funded by the municipality.

Trends and successes

Textile collection increased by over 70% between 2013 and 2016 (see table). When

⁵⁰ <http://afvalkalender.container-beheer.nl/>

ReShare initiated the project in 2014 2.3kg/person were reported by the various collectors as being collected in Rotterdam. By 2016 this number had increased to 3.2kg/person.

	2013	2014	2015	2016
Textile collection in Rotterdam (tonnes)	1,251	1,722	2,161	2,147

In a similar initiative by the Salvation Army in The Hague the number of collection bins were increased by 25% and the amount of collected textiles were tripled in five years. Rotterdam has yet to achieve its goal of doubling collection and may not achieve this by end of 2018 but will come relatively close.

ReShare report that 85% of collected textiles are reused either in the Netherlands or abroad, 10% are recycled and 5% incinerated. This is a very high level of reuse compared to reported reuse from other cities in this report, especially considering the fact that ReShare actively communicate that they accept worn out textiles (Figure 5).

ReShare’s explanation is that positioning containers above ground and away from other waste containers has reduced the share of non-textile waste in the containers. It may, however, also indicate that the message on worn out textiles is not being delivered effectively.

Challenges experienced

ReShare is challenged regarding the handling of non-reusable textiles, because the market is not big enough to receive the available amounts of this quality of textiles. The Salvation Army has tried to lobby the national government to fund solutions for the non-reusable fraction.

Rotterdam is a relatively dense city and there is a fight over street space. Moreover, aesthetic consideration spoke against too many containers in city streets. In part to tackle this, the municipality flirted with kerbside collection of textiles via bags. However, it was quickly realised that unlike the municipalities that are running similar initiatives in other parts of the Netherlands (see BEST bag case), organised theft of the bags along the collection routes was too high a risk and the initiative had to be dropped again. This demonstrates that a collection method that works in one municipality cannot necessarily be transferred to another. Moreover the use of the bags more as a nudging tool for reminding households to deliver used textiles to their nearest container proved too expensive in relation to the additional textile collection that resulted from this approach.

Rotterdam has a large share of high-rise housing, whose inhabitants are notoriously bad separators of waste in the Netherlands due to a combination of physical features such as limited space for storing separated waste streams and longer distance to waste areas, and social feature such as lower education and incomes. Rotterdam has tried various measures for increasing collection of separate waste streams from high-rise housing such as personal contact rather than delivering written information, more frequent collection rates, improving the aesthetics of collection areas serving the buildings but so far no silver bullet has been found that dramatically increases collection rates. Moreover, environment and waste are not high priority areas in the city of

Rotterdam compared to other issues and little new money is made available for initiatives including communication to further increase collection rates.

Next steps

Based on the analysis on textile collection rates around the cities containers ReShare is planning to address specific neighbourhoods with low collection rates by handing out leaflets in the mailboxes about how to donate textiles and where the nearest container is placed and other means. They also plan to take up the concept of delivering bags again to households to nudge them into delivering textiles to containers. This time to maximise collection and reduce costs per kg collected, the focus is on timing this delivery to specific periods when households go through their wardrobes, such as the switch from winter to spring/summer.

The municipality of Rotterdam would like to arrange pop-up textile collections during at events such as large flea markets. The municipality would also like to carry out household surveys on attitudes and behaviour with respect to textile collection to find out how they further can increase textile collection. Finally the city will continue with developing new approaches to increasing collection in high-rise buildings.

6.0 Cross-cutting analysis and key findings

6.1 Overview of initiatives

Table 3 provides a summary of the city cases that we have studied in the course of this project. It illustrates the wealth of approaches that have been taken across Europe, both in terms of physical collection methods but also how collection and subsequent processing was organized, key messages that have been communicated to citizens and the role that municipalities have taken.

Often the approach taken has been highly influenced by the background context in terms of national policy goals, earlier collection activities and challenges. For each case we have identified novel approaches, successes and challenges. What works and what doesn't work often relates to the context and the starting point for the initiative. For example, in the Albano Laziale municipality on the outskirts of Rome, a 65% increase in collection rates were achieved solely by establishing trust in citizens following a string of scandals, without need to introduce new collection methods or increase collection densities.

In Paris on the other hand, where collection rates are low compared to the rest of the country, the focus has been on increasing collection point densities via a range of different collection types that suit the varying contexts in the city; from the dense central areas with little space for containers, to social housing where motivation to deliver textiles has been low.

In the following text we provide some key findings from the studies that governments, municipalities and collectors from across Europe can reflect on when they seek to increase collection rates, especially where they find similar contexts to their own.

6.2 Why municipalities are getting more involved

In all the cases we looked at city authorities have directly or indirectly increased their engagement in the collection of used textiles. This may be a simple case of positive selection i.e. that the cities we have selected and where changes are occurring are also the cities where municipalities are more engaged. Interviews with stakeholders and reviewed literature suggest that these are not isolated incidents but are illustrative a growing tendency at least in the countries where our studies were focused.

There are a number of reasons for this increased engagement. In some of the cases (Rotterdam, Antwerp, Paris, Gothenburg) national/regional/local goals have been set for used textile collection rates or reductions in textiles in household mixed waste, that municipalities are expected to ensure or at least contribute to. In both France and Flanders, goals have also been set for minimum density of collection points. More generally, under the Waste Framework Directive (WFD), all Member States have a goal of recycling 50% of municipal waste by 2020.

The call by the EU's Circular Economy Package to adjust the WFD to oblige Member States to ensure separate collection of used textiles by 2025 are perhaps too recent to have had a concrete influence as yet on municipalities. This will have a strong impact over coming years.

Of perhaps more influence to date has been the growing circular economy and waste prevention agendas that have emerged both at European and national level. Where countries have included textiles as a focus area in national Waste Prevention Strategies (Denmark, Flanders & Sweden) this has led to increased engagement by (some) municipalities even where the strategy hasn't transferred any textile responsibilities to them.

Economic drivers are also visible. The City of Paris identified that diverting textiles from saves 100 € / ton on municipal waste collection costs and 100 € / ton on the cost of incineration. Separate collection of textiles also has a cost, but these are partially or wholly (depending on the collection type) offset by the economic value that can be gained from sales of textiles. In the case of Paris, the municipality does not gain from the sales of textiles. In other cities, however, municipalities also have an eye on the potential economic value of used clothing, and are gaining from this either through taking over collection of textiles themselves or through charging collectors a fee for collection of textiles on public land. The argument is that municipalities and their waste collectors have a duty to reduce the costs of waste management for their citizens.

Municipalities have been engaging in some cases due to increased numbers of private and charitable collectors and increasing competition for placing of containers on public land, which leads to clutter and confusion among citizens. Moreover, they have been responding from calls from citizens for greater transparency in what happens to their used textiles.

Finally, in Flanders and the Netherlands and potentially elsewhere, municipalities have seen opportunities for combining environmental and social goals through supporting the employment/training of long-term unemployed and disadvantaged groups in textile collection, reuse and recycling.

6.3 How municipalities are getting involved

Municipalities and their waste companies are getting involved in many different ways and at different levels within the used textile collection system. These can include the following:

- **Accreditation system for collectors** – In most countries, collectors must (in principle) have permission from a municipality in order to collect textiles on public land e.g. on streets or in a recycling station. Until recently, most municipalities, also those included in our cases, have given these out on a relatively ad hoc basis. As part of a wish to both have a better overview of collection levels and activities, and in response to the finding that citizens care who receives and benefits from their textiles (see later), there has been a rise in more formal accreditation processes with qualification criteria and responsibilities. This can be seen in Copenhagen, Gothenburg, Antwerp, Rome, Paris, although in the latter case it is the producer responsibility organisation, EcoTLC carrying out the accreditation and not the municipality. See 6.4 for more information.
- **Coordinating collection** – Accreditation as described above can be carried out

simply to ensure that the organisations collecting used textiles live up to minimum codes of conducts expected by a municipality and the citizens living there. However, it can also be used to coordinate collection in a city by limiting permissions to one or two collectors (Copenhagen, Rotterdam, Antwerp) or dividing a city area between various collectors as reported for example in Strasbourg⁵¹ and Aarhus⁵². This can reduce cases of containers from different organisations being lined up beside each other, which can confuse citizens and be inefficient for the individual collector as has been reported in Berlin⁵³. By asking accredited collectors to report on their activities and their collected and processed volumes, municipalities can also follow progress against targets and adjust requirements and or add initiatives as necessary. We have seen this in Antwerp.

- **Charging a fee for collection** – In some countries in northern Europe, municipalities or their waste companies are charging collectors a fee per kg for collecting textiles via containers on public land, particularly in recycling centres. The fee is often selected via a tender process with the highest bidder winning rights to collect, provided that the collector also lives up to other requirements under an accreditation process. Such processes have been seen in Copenhagen and several Dutch municipalities. However, other municipalities such as Antwerp, Gothenberg and Albano Laziale close to Rome, have decided not to charge a fee so as not to squeeze the economic margins of collection such that it is no longer economically viable. More on this later.
- **Carrying out collection** – Some municipal waste companies also engage directly in used textile collection. There can be a number of reasons for this: to raise money from used textiles and thereby reduce the overall costs of waste treatment for citizens; and/or to combine collection with collection of other waste streams in order to reduce the costs of collection. Kerbside collection for example can often prove too expensive for charities or private collectors, but when combined with collection of other waste streams can be more efficient. Moreover, whereas for a charity or a private collector, collection of used textiles must raise a profit, for a municipal waste company this is not a requirement. This also allows them to trial difficult methods such as kerbside collection that are not economically viable but may raise collection rates by increasing convenience for citizens. In the city studies, collection is carried out by the RD4 and Circulus Berkel waste companies in the Netherlands, by the Eskilstuna and Strängnäs waste company in Sweden and in Rotterdam where the city waste company empties street side containers. In all these cases, the textiles are subsequently sold to charities and other organisations for processing. Elsewhere, there are many reported cases of waste companies first skim off the best quality textiles for sale in their own shops in recycling centres and sell/donate the remaining

⁵¹ As part of a plan to increase collection of textiles from 1300 tons to 3000 tons, the city of Strasbourg has divided the city up into four collection areas each of which is allocated to a single collector; Emmaus Mundolsheim, Vétis, Horizon Amitié or Le Relais. The aim is to reduce competition and increase efficiency while not discriminating against individual collectors. See e.g. <http://rtes.fr/Les-operateurs-textile-du-SIEG> and http://rtes.fr/IMG/pdf/DCLib_Conseil_EmS_21.pdf

⁵² Kaj Pihl, UFF Denmark, personal communication via telephone December 2017

⁵³ Kåre Dahne, Human, Germany personal communication via telephone October 2017

lower quality fractions to a charity/private organisation. The Rotterdam case is unusual in that the waste company only charges the receiving charity the actual costs of collection, thus not earning from the collection themselves.

6.4 Designing of a tender/accreditation system

The demands on collectors under an accreditation system differ from case to case depending on what the goals of the municipality are. The goals can include any of the following:

- to increase the confidence of citizens in collection organisations' validity and transparency
- to ensure that textiles are processed and used in an environmental and socially responsible way
- to increase local reuse and recycling and job creation
- to gain an overview of progress in collection rates against goals
- to raise as much money as possible for the municipality

These can lead to a variety of different kinds of requirements:

- *reporting on the weight of textiles collected*, the share that is reused and recycled, and what is done with the income that is raised from the collection (Albano Laziale, Antwerp, Copenhagen, Gothenburg, Paris, Rotterdam)
- *collectors must be non-profit* (Antwerp, Gothenburg) and are also members of a registry of charities (Gothenburg - the Swedish 90 account), although Gothenburg is now changing these rules to allow for-profit collectors
- *standards for information and marking* that is provided on containers (Antwerp, Copenhagen, Gothenburg, Paris, Rotterdam)
- *advertising that worn-out and damaged textiles may be delivered* along with the reusable ones (Antwerp, Copenhagen, Gothenburg, Paris, Rotterdam). focus on local reuse and recycling and job creation (Antwerp)

Table 3: Overview of characteristics, successes and challenges of cases#

	Physical collection types discussed	Involvement of municipality/government	Asking for worn out textiles?	Innovative/novel elements	Successes	Challenges
Antwerp, Flanders	<ul style="list-style-type: none"> • 2nd hand shops, • Post-offices, libraries other • Door-to-door • Containers in recycling centres 	<ul style="list-style-type: none"> • Tender process for collection in city • Communication to households • Wage support for reuse centres • Target for reuse 	Yes	<ul style="list-style-type: none"> • Collaboration of organisations with complementary strengths under single brand • Removal of containers from streets in favour of manned posts • Focus on local reuse and recycling solutions • Mix of collection types 	<ul style="list-style-type: none"> • 12% increase in collection rates in first year • Creation of 80 jobs for disadvantaged groups 	<ul style="list-style-type: none"> • Agreeing on collective communication and brand • Developing single strategy for collected textiles • Living up to goals for local reuse and recycling • Expanding collaboration to new cities • Wage support for sorting/processing to be phased out
Copenhagen, Denmark	<ul style="list-style-type: none"> • Containers in recycling centres • Swap shops and small containers in local recycling stations • Containers in multi-apartment housing 	<ul style="list-style-type: none"> • Tender processes • Pilot projects in small recycling stations 	Yes	<ul style="list-style-type: none"> • Swap shop in recycling stations • Visual communication on non-reusables • National campaign on non-reusables 	<ul style="list-style-type: none"> • Increasing collection rates in large and small recycling centres • Increasing collection of worn out textiles 	<ul style="list-style-type: none"> • Reduced market price for collected textiles with higher share of worn out textiles • Collectors who specifically ask for worn-out textiles become waste collectors with associated need for registration
Gothenburg, Sweden	<ul style="list-style-type: none"> • Containers in multi-apartment housing 	<ul style="list-style-type: none"> • National targets for reduction of textiles in garbage • Pilot project • Accreditation process 	Yes	<ul style="list-style-type: none"> • Collection in multi-apartment housing next to ordinary waste • Communication to residents via leaflets and via housing service managers 	<ul style="list-style-type: none"> • Higher collection rates than Swedish average • Half of residents who previously didn't deliver any textiles now do 	<ul style="list-style-type: none"> • Higher costs of collection compared to street containers • Some believe that all delivered textiles are recycled and don't deliver good quality textiles • Scepticism from some housing managers to bad maintenance of textile

						containers in past • Theft from containers
Paris, France	<ul style="list-style-type: none"> • Mobile containers • Containers in social housing and schools • Mini street containers 	<ul style="list-style-type: none"> • EPR regulations with targets • Wage support for reuse centres 	Yes	<ul style="list-style-type: none"> • National EPR system – producers pay • Wage support for sorting facilities • Investment in recycling technologies • Mix of collection types • Increase in collection density 	<ul style="list-style-type: none"> • Increased collection rates • Reduced quantities of textiles in garbage 	<ul style="list-style-type: none"> • Collection rates remain low compared to national averages • Collection point density remains low compared to national averages due to high housing density • French citizens don't want to see their used textiles exported – leads to lower reuse shares
Albano Laziale, Rome, Italy	<ul style="list-style-type: none"> • Containers in recycling centres • Containers in streets 	<ul style="list-style-type: none"> • Accreditation process 	No	<ul style="list-style-type: none"> • Communication and accreditation to win trust of citizens 	<ul style="list-style-type: none"> • Collection rate increased from 3.5 to 5.8kg/capita 2014-2017 • Collection rate 2.5 times national average 	<ul style="list-style-type: none"> • Gaining trust of citizens that textile collection leads to environmental and social gains and not money in the pocket of the mafia
Rotterdam, Netherlands	<ul style="list-style-type: none"> • Containers in recycling centres • Containers in streets • Boxes in workplaces 	<ul style="list-style-type: none"> • Accreditation process • Responsible for emptying containers • Collection rate targets 	Yes	<ul style="list-style-type: none"> • Doubling of container density • Distinctive marking of containers • Gift vouchers in return for clothing collected in work places distributed to those in need 	<ul style="list-style-type: none"> • Collection rate increased 70% from 2.3kg/capita to 3.2kg/capita 2014-2016 	<ul style="list-style-type: none"> • Collection rates remain low compared to national averages • Collection in high rise is problematic • Kerbside collection not possible due to theft
BEST bag, Netherlands	<ul style="list-style-type: none"> • Kerbside collection with bags 	<ul style="list-style-type: none"> • Collection of bags • Communication • Wage support for reuse centres 	Yes	<ul style="list-style-type: none"> • Combining kerbside collection with other streams • Bar code for each household • Sorting and processing by long-term unemployed/ 	<ul style="list-style-type: none"> • 544 tons of textiles delivered per year via BEST bags in two regions • Creation of 80-90 jobs for disadvantaged groups 	<ul style="list-style-type: none"> • Theft of bags • Protest from local charities • System's success is limited in multi-apartment housing • Collection costs 20% higher than via containers (but quality better)

				disadvantaged groups		<ul style="list-style-type: none"> Lack of recycling solutions for worn out textiles negatively affects economy of local sorting
OptiBag, Sweden (Box 15)	<ul style="list-style-type: none"> Kerbside collection with bags 	<ul style="list-style-type: none"> Collection of bags Communication 	Yes	<ul style="list-style-type: none"> Combining kerbside collection with other streams Automated near infrared sorting of worn-out textiles by fibre-type/colour 		Not investigated
Textile bag, DuoFlex system, Denmark (Box 11)	<ul style="list-style-type: none"> Kerbside collection with bags 	<ul style="list-style-type: none"> Collection of bags Pilot project Communication 	Yes	<ul style="list-style-type: none"> Combining kerbside collection with other streams Automatic sorting of bags Households can state preference for who should benefit from profits 		Not investigated

Some of these goals may conflict with one another and care must be taken when choosing goals and criteria to be included in an accreditation process/tender. Some examples of such conflicts are described below. Such issues are being tested under the Nordic Commitment, an accreditation system being developed for the Nordic countries. This system was piloted in Copenhagen and one other Nordic municipality

6.5 Spreading eggs between baskets

The cases showcase a whole range of collection methods, each of which have their own merits and target groups for utilisation under various contexts.

In Paris, especially, a wide spectrum of collection methods have been used to reach out to as many people as possible: street-side containers and containers in recycling centres, smaller multi-stream containers, mobile containers, supermarkets and reuse shops for use in the densely built city centre with little spare street space, small containers inside multi-storey social housing to reach a segment where collection rates have traditionally been low; and containers in schools and children's institutions where there is a high turnover of clothing and where the containers also have an educational and behavioural change function.

Some additional methods are used in other cities in our cases including kerbside collection (Antwerp) mixed in some cases with other waste streams (BEST bag in Netherlands, Optibag in Sweden, DuoPlex in Denmark), collection in workplaces (REBOX in Rotterdam), and collection in libraries, post offices and shops (Antwerp) and finally collection in containers in the waste areas of multi-apartment housing (Gothenburg, Copenhagen).

Street containers and containers in recycling centres can be viewed as the 'workhorse' of collection. These have a relatively low cost per tonne of collection and will reach a large part of the population of a city. However, there will be less-motivated segments of the population who will only deliver their used textiles if the collection point is near-at-hand or part of their daily routine, and easy to use. That is the approach behind kerbside collection, collection in multi-apartment housing and in supermarkets and workplaces. Surveys of residents in multi-apartment housing in Gothenburg indicated that once they were aware that there were collection points in the building, many made use of these who otherwise dispose of used clothing in mixed waste.

There is a cost to convenience. Kerbside/door-to-door collection and collection from multi-apartment housing has a higher cost per kg collected than street-side containers. Two actors noted that this extra cost is partially offset by lower contamination than street-side containers. Moreover, it is likely that collection costs decrease where collection is combined with other waste streams although we did not get figures for this.

Organised theft can also be a major hindrance to kerbside collection as has been reported widely in the UK (LWRB, 2016) and has held Rotterdam back from implementing such a scheme. It is unclear whether this is a phenomenon limited to large cities since bag-based schemes in smaller towns in the Netherlands and in Sweden have so far been less plagued by organised theft. WRAP UK (2015) recommendations to municipalities suggests that theft is reduced where bags are placed in boxes or wheeled

bins with other waste streams but that this can also reduce the potential for these bags to be separated later.

6.6 From competition to collaboration

In terms of providing a range of collection types to cover different niches, de Collectie in Antwerp is of particular interest. Here collectors who each implement a different collection method including street-side containers, containers in recycling centres, door-to-door collection and collection via reuse shops came together in a collaboration where each of their activities complement one another.

The focus on networks and collaboration in Antwerp Municipality's well-designed tender documents laid the foundations for this cooperation instead of for competition between actors, as is more typical with tender processes.

Paris is a further showcase of how a wide range of actors can collaborate, complimenting one another rather than acting directly in competition. This model is representative of France as a whole where activities are coordinated to a certain extent by the central producer responsible organisation EcoTLC. This collaboration aids in both ensuring efficiency but also in communication with citizens.

The collaborations have been based on the principle of not reinventing the wheel. Many collectors of used textiles have been operating for decades, have tried and tested many methods of collection and have a good understanding of global markets and good contacts within these markets. Any new approaches or policies to used textile collection should take account of existing actors and activities and work on nudging these in new directions rather than attempt to replace them with something new. Bringing different actors together where they can complement one another by reaching to different groups of citizens both in terms of collection and in communication can raise new opportunities for increased collection rates.

Further actors that can potentially be brought into such collaborations are clothing brands, who both can collect used clothing in their own shops in return for vouchers or other rewards, and at the same time have strong expertise in marketing and communication that can potentially be used for the benefit of all actors within the collaboration. This has been tried in various countries by various brands but often proves to be short-lived. Perhaps with stronger collaboration from municipalities/national governments these efforts could be longer lasting. Global Fashion Agenda (2017) recent Call for Action to which brands representing 8% of global sales of clothing had signed up by end 2017, includes commitments to collection of used textiles in shops.

6.7 The importance of branding, communication and signage

When the five organisations in Antwerp that form de Collectie began working together instead of in competition, it was in the understanding they would operate under a common brand. This has significantly simplified and amplified communication to citizens while not having a huge initial impact on the organisations actual activities, although they aim to develop more common operations and strategies for the processing and sale of used textiles in the future.

Similarly, organisations in France that become registered collectors under the EcoTLC must show the EcoTLC brand on their containers and communication materials. This simplifies communication with citizens and provides them with an assurance that the textiles they deliver will be treated in a socially and environmentally responsible way. The Nordic Council of Ministers hopes that the code of conduct it has been piloting in Copenhagen and elsewhere under the Nordic Commitment will provide a similar sign of assurance for Nordic citizens.

The strength of communication should not be underestimated particularly in the area of transparency and motivation. As described earlier, Humana managed to increase collection by 65% in Albano Laziale close to Rome simply via communicating to citizens on what it does with collected textiles and what it does with the money raised from them (see an explanation in next section).

A clear brand and signage reduces the confusion of citizens in relation to where they should put their used textiles. Collectors in Berlin reported that there are many places in the city where several organisations have placed containers all with different colours, forms and types of information. This can confuse citizens and reduce the clarity of the message to deliver used textiles. These containers can often be subject to contamination for ordinary trash. In Rotterdam it was found by colouring all containers in the same clear pink colour and placing them above ground away from containers for waste, contamination by non-textile waste was reduced. In the Netherlands a standard signage (pictogram, colour and wording) will become available for all municipalities and collectors in 2018.

One particularly tricky area with respect to communication is that concerning worn-out textiles. The message that worn-out textiles should be delivered along with used textiles has, as described earlier, been part of several of the approaches to increasing textile collection in city cases. Communication has been carried out via written information and visual signage showing pictures (Copenhagen) or symbols (Rotterdam) of rags, old socks etc. Surrey County Council in the UK made a whole marketing campaign with this as the central message (Porter, 2016).

However, this type of campaign if not designed exceptionally carefully can have an unwished for (from the collectors point of view) effect; namely that some people only deliver their waste textiles and not the higher quality reusable ones which they then deliver elsewhere.

A survey of residents in multi-apartment housing in Gothenburg, where the message that worn-out textiles are welcome was included on containers, illustrates the difficulties. On the one hand, just under half of those that knew about the containers didn't know that they could deliver their worn-out textiles there, and disposed of them in mixed waste. On the other hand, 23% of those that knew about the containers *only* delivered their worn-out textiles; they delivered their good quality textiles to charity shops. The reason was that they believed that everything that is delivered to the containers in the buildings would be recycled and not reused, and did not realise that it was a charity that was behind the collection.

These false beliefs may have been encouraged by the placing of textile containers in close vicinity to waste containers for other waste streams. In the Gothenburg pilots, containers are now being moved elsewhere in the building, with the aim of reducing the risk of contamination both by non-textile waste but also by the smell of waste⁵⁴.

6.8 Citizens care who benefits from used clothing

The reason that the communication carried out in Albano Laziale had such a significant effect and why some people in Gothenburg didn't use containers in the building, but rather took the good quality clothing to charity shops, is that many citizens care *who* benefits from their used clothing.

The Gothenburg survey found that 60% of those who donate/deliver their used textiles wish them to give social/humanitarian benefits, while only 15% do it for the sake of the environment and to save resources.

Conversely, a survey in Paris found that a significant part of the population do not wish their used textiles to be exported to other parts of the world, but would prefer that they benefit Frenchmen and provided French jobs.

This demonstrates the importance of investigating citizen preferences and feelings before adjusting becoming involved in the organisational or technical aspects of used textile consumption. For example, in a region where a significant share of citizens wish used textiles to provide humanitarian benefits, it would be ill advised for a municipality to take over used textile collection without the involvement of charitable organisations.

Following a pilot project in Jutland in Denmark (see Copenhagen case) where textiles were collected by the municipal waste company in a sealed bag to be placed along with other waste streams, the project developers will now test a new element where households can state their preference for who benefits from the sale of the textiles that they have delivered. It will be possible to state this preference either on the bag itself or via a website. This may be one way of taking accounts of citizens' preferences in the future.

6.9 The double-edged sword of worn-out textiles

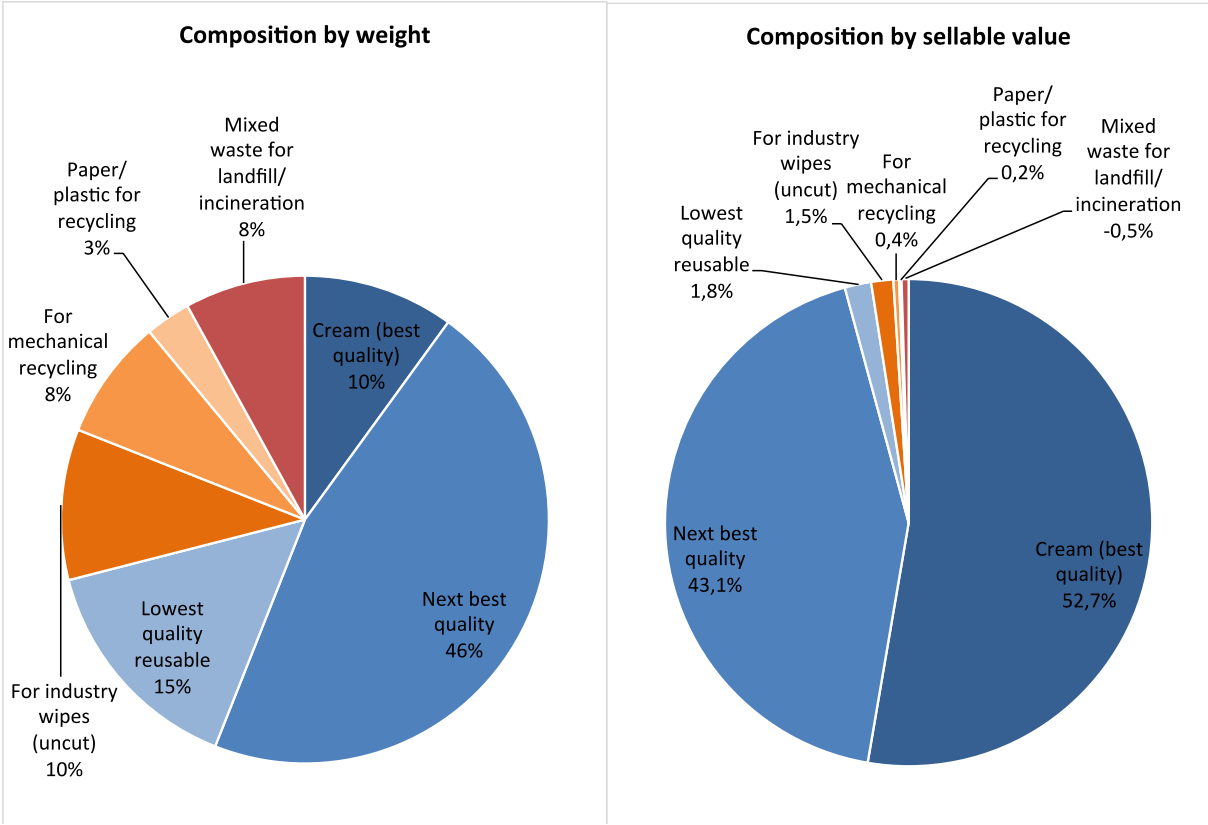
One recurring theme in all but one (Albano Laziale) of the cases was the new focus on collection of worn-out textiles along with reusable textiles. The issue here is very much about communication – making it clear to citizens that their worn-out clothing also has a value in terms of the material it contains. Studies (e.g. by Surrey County Council in UK⁵⁵) have found that one hindrance to increased collection of textiles is that householders don't know what is reusable and not reusable, and don't wish to deliver what they themselves do not see as reusable. Citizens are not reliable sorters. Much of what northern Europeans feel is not reusable can be sold for reuse in other parts of the world.

⁵⁴ Matilda Nyström, City of Gothenburg personal communication

⁵⁵ Porter (2016) 36% of respondents in a survey carried out by Surrey County Council were not sure which clothing and home textiles can/can't be recycled. This was the most often stated obstacle to using textile containers.

A message that everything is accepted that has been identified in a number of city cases potentially solves this issue, can increase collection rates and divert more textiles from landfill and incineration (although this is a potential challenge in terms of communication - see later).

Figure 6: Composition by weight and sellable value (at 2015 prices) of a typical load of separately collected used textiles



Reusable textiles are in blue, recyclable/waste textiles in orange/red
 Source: Watson et al, 2016

On the other hand, collecting worn-out textiles negatively affects the economy of used textile collection. As can be seen in Figure 6, the value of collected textiles lies almost entirely in the better quality textiles. Lower quality reusables and recyclables may make up around 45% by weight of a typical load of separately collected textiles, but provide just 4% of the income.

As the share of these lower qualities increases, collection costs per tonne remain relatively unchanged, but the sorting costs may increase, and the price per kg that can be gained on global markets falls rapidly. It is particularly difficult to find markets for recyclable textiles and global prices are at rock-bottom (Ljungkvist et al, 2018).

6.10 The benefits and challenges of local solutions

As mentioned earlier, used textile policy/tender processes in some countries/ municipalities favour local solutions to processing, reuse and recycling of collected textiles. This can be a reaction to citizens' wishes that the used textiles they donate benefit their neighbours and not people in far off countries (Paris case) or governments'

own concerns that the export of used textiles is not sustainable, combined with a wish to create local jobs and provide local social support (France, Flanders, Netherlands).

As an example, Flanders has a goal for the *Kringloop* reuse sector, that by 2022 the sector will resell 7kg of used goods (electronics, books, clothing etc.) per person for the entire population, for reuse in Flanders. Sale for reuse in other countries does not count towards the goal.

The approach follows true closed loop thinking where society becomes responsible for its own waste, and begins to return this into the system; for reuse to offset new production and for recycling to offset the use of virgin resources.

In the short term, as identified by Watson et al (2016), this is not the most environmentally beneficial approach to used textiles, since reuse provides by far the highest environmental benefits and domestic reuse markets in Europe are limited to the top 10-20% of quality of used textiles. The remainder can only be reused via exports to developing countries. Current recycling methods give far lower environmental benefits than reuse (Schmidt et al, 2016).

On the other hand, there are indications that global markets for used textiles are beginning to become saturated as supply increases but demand stagnates. Especially for lower quality used textiles (Ljungkvist et al, 2018). This suggests the need for more local closed-loop thinking - the development of textile to textile recycling. This is being tried in the Netherlands (Rijkswaterstaat, 2017).

Until these kinds of solutions are up and running, actors in Antwerp, Rotterdam and Paris, are finding it difficult to live up to goals for local reuse and recycling and are continuing to sell collected used textiles on international markets. Moreover, due to the high costs of labour in western European countries it is difficult for local processing to be economically viable without financial support. Finally, local sorting runs the risk that with limited local demand for the non-reusable textiles, these end in incineration.

Municipalities and national governments with goals for local processing, reuse and recycling should be pragmatic with respect to when these can be reached and what the short-term economic consequences might be on collectors.

6.11 Economic support and social benefits

A few municipalities are exacerbating the economic pressures on collectors and sorters, by taking a fee for collection on public land or in recycling centres or conversely by carrying out collection themselves for sale in own shops, and passing on the lower quality, low value textiles to the traditional collectors (Ljungkvist et al, 2018).

Other municipalities are taking a wider perspective and have taken actions to counter the negative effects that their demand for worn-out textile collection and for local solutions has on collectors' economies, and are also investing in domestic recycling solutions. These municipalities believe that collection and processing of textiles should be economically viable for the actors involved if it is to thrive in the long term.

In Antwerp and Rotterdam sorting and processing of collected clothing is partially subsidised by the municipality/region via wage support for long-term unemployed and/or disadvantaged groups. Subsidising these activities serves both environmental and social goals. In France it is clothing producers via the EPR-system that subsidise wages in sorting facilities and in reuse shops under similar agreements. In all cases the theory is that supporting the economy of sorting, also indirectly supports the economics of collection, especially where it is the same organisations involved in both. This is discussed in more detail in the next section.

In France clothing producers also provide financial support for R&D in new methods for material recycling of rags. The long-term goal is to create viable recycling industries that can make use of the increasing volumes of non-reusable textiles for valuable products, and are willing to pay a reasonable price for them. The same thinking is emerging elsewhere, for example in Flanders⁵⁶, Netherlands⁵⁷, Sweden⁵⁸ and Denmark⁵⁹, though funding is often coming from bodies that are unconnected to the collection of used textiles.

6.12 Legal aspects of collection

There is one further aspect of the collection of worn-out textiles along with reusable textiles that needs attention. This is who has the right to collect and process them. These legal questions are guided by the EU Waste Framework Directive but are also influenced by how the Directive has been implemented in a country.

The answer to the question of 'what is waste' can depend not only the state of a product and whether it is reusable, but also on the intention of the person who delivered it, and how they delivered it. Reusable textiles are often found mixed with non-reusable textiles in charity and other collection containers.

Where collectors state that they don't wish for waste textiles, or do not openly advertise for them, the operations have traditionally not been seen as waste collection, even if they include waste. However, where collectors advertise for worn-out textiles (if for example they have been asked to by municipalities) this should be interpreted as waste collection, in which case special rules may apply. In Germany, Netherlands and Norway, for example collectors of used textiles must be registered waste collectors. There are indications that other countries may follow suit.

Conversely, in Denmark, until a legal judgment provided clarity in summer 2017, it was not clear whether municipalities and their waste companies had the right to collect and sell reusable textiles (Danish Waste Management Association, 2017). This may also be a question in other countries around Europe.

⁵⁶ see for example <http://vil.be/project/cilotex-circulaire-logistiek-voor-de-textielindustrie/>

⁵⁷ See: <https://www.circle-economy.com/case/fibersort/#.WobDPmcybDQ> The Fibersort is working at sorting facility in the Netherlands.

⁵⁸ IVL is running a project called SIPTex that is testing automatic sorting of non-reusable textiles into fibre types and colours to aid recycling. See <https://www.ivl.se/toppmeny/pressrum/pressmeddelanden/pressmeddelande---arkiv/2017-03-06-har-ar-tekniken-som-kan-revolutionera-textilatervinningen.html>

⁵⁹ REALLY ApS has developed a technology for recycling cotton rags into 100% recyclable laminated panels for producing high quality furniture <http://reallycph.dk/> Advanced Non-Woven is developing non-woven products from waste textiles <https://groenomstilling.erhvervsstyrelsen.dk/advance-nonwoven-geanvendelse-af-fibermateriale-ved-timebaseret-leasing>. Both have received funding from various government green growth funds in Denmark

7.0 Considerations for municipalities and collectors

With a background in the cross-cutting analysis of city cases and other research, the following gives an overview of considerations that municipalities can take when engaging directly or indirectly in used textile collection. Many of the considerations are also applicable to collectors.

Considerations for municipalities and collectors

Set measurable targets related to textile collection and then set up systems for monitoring of these. Reporting systems will need to include all collection actors.

Carry out a citizen survey before designing measures for meeting targets – the reasons for non-delivery of used clothing and textiles may be complex and include many factors that you were unaware of. Many citizens care what happens to their textiles and what the money is used for. Some may want to see them support local jobs and social activities. Others may wish them to support development projects abroad.

Consider increasing/ensuring transparency in the fate of collected textiles and how the money raised from them is used for example via an accreditation system such as the Nordic Reuse and Recycling Commitment.

Consider providing a range of collection/delivery possibilities or ensure that such a range is provided by collectors. Citizens differ in their daily habits and motivation for delivery. The city landscape may differ from high to low density and suitability of different collection types.

Collaboration between different actors can strengthen collection, subsequent processing and sale. Actor's strengths can supplement one another in their collection activities, communication strengths and ability to reach out to certain citizen segments.

Make use of existing actors experience and knowledge of textile collection, used textile processing and global markets. This is a huge asset and should be made use of. Engage and build on these instead of reinventing the wheel.

Consider a common brand for all types of collection activities, containers and actors to reduce confusion/inaction among citizens and strengthen messages on collection.

Ensure the economic viability of collection and processing for all actors in the value chain otherwise collection initiatives will not last. Demanding fees from collectors or demanding them to accept non-reusable textiles will squeeze their margins in an already difficult market. By collecting non-reusable textiles, they will reduce municipal mixed waste collection costs. Consider channelling some of these savings to the collectors.

Ensure that collection and processing solutions adhere to national legal frameworks. Existing collectors of used textiles may not be permitted to advertise for non-reusable textiles without becoming registered waste collectors for example.

Be pragmatic about local solutions. Having a goal that all textiles will be reused and recycled locally cannot always be realised. In the long term local solutions can be developed, but reuse should generally be prioritised over recycling even if this takes place in other

countries.

Social, circular economy and environmental gains can be made by combining wage support for long-term unemployed, or disadvantaged groups in employment/training in collection, sorting, processing and sale of used textiles.

Ensure clarity on communication on non-reusable textiles. If these are to be collected, then choose the communication carefully so that citizens realise that 1) both reusable and non-reusable waste textiles are accepted 2) that delivered textiles will be used in the most optimal way possible – good quality textiles will be reused and worn-out textiles will be recycling as far as possible.

Consider increasing collection convenience if collection levels are low, by increasing collection point densities or collection in the home or work place. Costs of increased convenience can potentially be reduced by mixing collection of textiles with other reusables and recyclables from households, but be aware of the risks of theft and risk of contamination by other waste streams.

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Appendix A: List of interviews

Antwerp Interviews:

Sam Elinck, Project Coordinator De Collectie

Tom Peeters, Marketing and Communication Manager, Stad Antwerpen

BEST Bag Interviews:

Lenard van Kan, Rd4

Michiel Westerhoff, Circulus Berkel

Copenhagen Interviews:

Tina Winberg, Copenhagen Municipality

Kaj Phil, UFF Humana

Ann-Christin Lystrup, Teamleader, Red Cross

Gothenburg Interviews:

Klaus Rosinski, Human Bridge

Matilda Nyström, Kretslopp och Vatten, Gothenburg Municipality

David Dalek, Renova

Paris Interviews:

Anita Ravlic Deve, Agence d'Écologie Urbaine, City of Paris

Christel Poussin, Tisseco

Albano Laziale, Rome Interviews:

Alessandro Strada, HUMANA People to People, Italy

Luca Andreassi, Municipality of Albano Laziale

Rotterdam Interviews:

Jolande Uringa, ReShare

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