Basic Textile Data:

Best Practices and Case Studies for Municipalities

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Image credits: Above – Ryoji Iwata, Below – Etienne Girardet

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Introduction

7 million of tonnes[1] of European clothing and household textiles eventually go to landfill or incineration. While policy is drastically increasing the pressure for change in textiles, a lack of timely, useful information is a major roadblock to transition.

The right data in near-real time supports municipalities and their collection and sorting partners to keep textiles circulating. By tracking basic textile flow information, problems are quickly identified, solutions are easily replicated, excess waste is minimized and new technologies can be implemented successfully. This includes a range of local and international reuse efforts.

Leaders in Estonia and the Netherlands are paving the way to circular textiles using data. This document builds on the Lessons Learned released in September 2023 with best practices and examples of how these leaders are using data to support better textile management.

Image credit: Lucky Octavia

Image credit: Krzysztof Hepner

1 - Why textile data matters

Textiles require a completely separate collection system from other waste to retain their value. They are technically challenging material to sort for reuse and recycling, and the economic incentives are not yet strong enough to drastically increase collection, reuse in Europe and fiber to fiber recycling. Citizens must also be engaged in order to make the system work.

Good data quantifies what is and is not working, supports an economically viable textile management infrastructure, provides transparency and measures the system's progress over time. For example:

[1] McKinsey's estimate with 2020 data including post-consumer from residential and commercial sources is 6.4MT, excluding UK quantities; JRC estimates from 2018 data and this data plus additional sources are 5.4 and 6.4, respectively, excluding UK. Data available for such estimates is inconsistent. We use 7M tonnes as a very rough estimate for quantities put on market 2020-2025 in the EU-27 and UK.

1. Textile management infrastructure must be adjusted based on the amount of textiles put on the market within a specific area, the population density of that area and citizen behavior.
2. EPR fees paid by producers must support the actual costs of collecting, sorting and redistributing textiles, so accurate textile flow data at the national level is needed to set up the system according to actual costs and conditions and make adjustments over time.
3. Textile flow data at the local level highlights opportunities and problem areas at the collection stage such as under and over-served areas, optimization of collection practices or citizen knowledge gaps and behaviors that need to be addressed.
4. Citizens are the starting point for textile collection, and there is growing anecdotal evidence[2] that a lack of trust in the current system could lead to less participation in separate collection options. Data provides transparency for citizens to trust the system.

2 - Setting a baseline

A baseline is the foundation for everything. It measures the concrete starting point, is the point of comparison for any changes happening in the system, supports collaboration and informs decisions and activities to improve textile flows from the local to the international level. Every municipality, collector and sorter needs a baseline.

Priority areas for baseline

- Collection points
- Sorting inflows and outflows
- Population and geographic information
- Actors

Baseline data should include 12 full months of activity for each actor in the chain, preferably within the same timeframe for all actors. If parts of the infrastructure begin measurements at different times, new parts are added or measurement methodologies change, comparisons and analysis should take this into account.

3 - Data to collect

Quantitative and precise information

These are the minimum data points to set a baseline and compare data over time. Alternatives are suggested if fine details are not available. The short list of data points is in Table 1 below. A full list of recommended data to collect is available in Annex 1.

[2] TEXroad interviews in 2023, Dutch citizen surveys conducted by a municipality and waste collector

Qualitative information

Feedback from citizens gives context to the numbers, leading to better analysis and more effective solutions. A simple survey to measure knowledge about and participation in textile collection and reuse should be carried out. Questions should be aligned across municipalities within the same country. Responses should be analyzed locally and aggregated for a national level analysis.

In the case of events and projects, participants should be asked for their impressions and recommendations. This information can then be used to follow up with key stakeholders and guide future plans.

Subject	Data points	Data reporting frequency
Collection points	• Location • Type of collection point • Collector (legal entity)	During baseline, update as changes occur
Textile quantities collected	kg or tonnes • Preferred: data is available per pick up • Alternative: weekly or monthly totals • Worst case: Daily totals for a collection route and a list of specific containers on the route • See Annex 2 for alternatives to weight measured on a scale	Preferred: Monthly Alternative: Quarterly
End points of collected materials	kg, tonnes or % of total • Export out of EU before sorting • Textile reuse - Country of collection • Shoe reuse - Country of collection • Textile reuse - Outside country of collection • Shoe reuse - Outside country of collection • Recycled - All types • Waste	Preferred: Quarterly Alternative: 6 months Minimum: Yearly
Entities	• Legal name • Location • Registry name • Registration number • Activities	During baseline, update as changes occur
External data needed	• Estimated total kg of textiles in circulation in the country • Square km in collection area • Population in collection area	Yearly

Table 1. Minimum list of data to collect

4 - Metrics

When municipalities, collectors and sorters have a common understanding of textile flows and infrastructure, collaboration and data-driven decision making becomes much easier. It is best to start with basic metrics and then build on this foundation over time.

Critical textile flow metrics are:

- % of total textiles collected
- % of total textiles sent to reuse in the country of collection
- % of total textiles sent to reuse outside the country of collection
- % of total textiles sent to recycling
- % of total collected textiles sent to waste

Some countries prefer to report in kg / person. The same base data can be used for % or kg / person metrics.

Note: % of total requires agreement on the total weight of 100%. This can be different based on measurement methodologies and stakeholders. Therefore, it is critical to define how much 100% is in kg and what this is based on when providing % based metrics.

Key collection infrastructure metrics should also be prioritized:

- Number of collection points
- Number of people / collection point
- Number of people / square km
- Number of square km / collection point

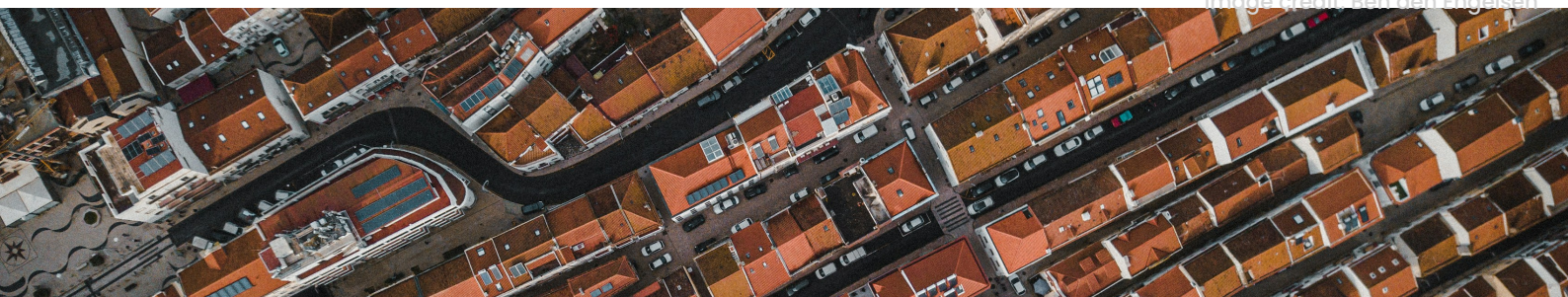
These metrics can be used to compare similar municipalities for a basic analysis using the metrics above. Further details are required for a deeper analysis (e.g. type and age of collection points, neighborhood demographics, what is communicated to citizens about what they should do with unwanted and damaged textiles).

Recommended metrics for community events, reuse centers and local projects:

- Number of people participating or served
- kg textiles reused or recycled

These types of activities are great for raising awareness and engaging citizens, and it is really important to quantify results. Information that is possible to collect will vary, so there is a need to figure out what can be measured simply and consistently, and to define this clearly when collecting and reporting data.

Image credit: Ben den Engelsen



5 - Textile Data: Step-by-step for municipalities

Step 1: Getting started questions

Work with municipality colleagues to answer the following questions. Use the answers as a basis for moving forward.

1. What are collectors already doing, and what is missing?
   - Consider any blind spots in current activities or activities happening in other municipalities within the country that are not happening in yours
2. What can we do as local authorities?
   - Consider goals and ambitions as well as responsibilities and policy obligations
3. What more do we have to do to support collection and reuse?
   - Consider feedback received in the past and known gaps in the current system
4. What are the most important data and metrics for our baseline?
   - See the minimum list in section 2 above and the long list in Annex 1

Step 2: Start the data flow

Begin requesting specific data about post-consumer textiles from legal entities such as collectors, sorters, reuse organizations and waste managers. It is also good to collect data from others who hold events and textile based activities, when relevant.

- Define the request by making a data request list or a reporting form
  - Include a brief overview of data collection goals and data uses
  - Be specific, and make the data points and reporting format clear and simple
  - Indicate how frequently reporting is required
  - Consider the different stakeholders and tailor the request for each one, if needed
  - See the minimum list in section 2 above and the long list in Annex 1
- Communicate reporting expectations to textile partners at least 2 months before the first reporting deadline
  - Explain why data collection is happening, and answer questions
  - Share the data request list or reporting forms
  - Identify items that need clarification, and adjust data list or forms as necessary

- Begin data collection
  - 2 weeks before first reporting deadline, remind textile partners to report
  - Review first reports from textile partners, ask questions to clarify uncertainties
  - Address any reporting challenges or issues with data
  - Communicate next reporting deadline

- After 12 months of data has been collected, set a baseline for the current system
  - Document starting quantities per administrative unit and entity
    - e.g. Saku vald, Humana Estonia
    - e.g. Saku vald, Uuskasutuskeskus
    - e.g. Lääne-Harju vald, Uuskasutuskeskus
  - Document end points reported by each sorter or waste manager
    - e.g. Humana Estonia, Reuse in Estonia
    - e.g. Humana Estonia, Reuse outside Estonia
    - e.g. Humana Estonia, Recycling
  - Estimate and document metrics
    - See section 2 above
  - Complete Steps 3.1 and 3.2 below
  - Set targets

NOTE: The baseline can be from a previous year, if the data is available

- Collect comparison year data over the next 12 months
  - Document changes to the system or within the area that may influence textile collection in the baseline year and comparison year
  - Changes to measurement methodologies will reset the baseline

Step 3: Basic analysis

At least 1 time per year, carry out a basic analysis and evaluation of efforts by following the steps below. Tailor your analysis based on your own goals, needs and limitations.

1. Revisit Step 1: Getting started questions, update answers if necessary, and ask the questions below
    - Are there any transparency issues among collectors and sorters?
    - What are the improvements or changes that are needed in data collection?
    - What are the unmeasured activities that should be taken into account?
    - What are the influences on citizen behavior regarding collection?
    - What are citizens saying about the textile infrastructure?
2. Review textile flow data and quantitative metrics
    - See section 2 above for simple metrics
    - For every evaluation period:
        - Compare data and metrics to previous reporting periods and your baseline
        - Compare metrics for your municipality with municipalities with a similar number of citizens and population density
            - Note similarities and differences in infrastructure and performance
            - Are there any conclusions that can be drawn immediately?
                - e.g. number of collection points per person is outside of recommended metric range
        - Compare textile metrics with other municipalities in the same country
            - Note similarities and differences in infrastructure and performance
            - Identify differences in programs, communications and citizen attitudes and behaviors related to waste and “green” programs
        - Compare the separate textile collection rate to other separately collected waste streams (e.g. plastics, glass, paper)
            - How does this compare to other municipalities within the country?
            - Are there conclusions that can be drawn from this comparison that relate to separate textile collection?
    - For comparing the second year to the baseline year or comparisons over time
        - Compare metrics for the baseline and comparison years
            - Were there any changes?
                - What can these be attributed to?
            - Were changes expected that didn’t happen?
                - What are the potential reasons for this?
        - After the second year, baseline and YoY comparisons should be made

3. Look to other municipalities for insight
   - Review programs and activities in place in comparable municipalities in Europe or leading municipalities in your country, and contact them directly for insights
   - Identify changes and other interventions that you think are possible for you and your stakeholders

Step 4: Put data and analysis into action

Remember data should be used to improve results for you and your partners. It is important to collect good quality data that is comparable to data from other areas. It is also important that reporting is as easy as it can be for your partners. It may take time to find the right reporting process and to get partner buy-in.

- For every evaluation period:
  - Request feedback on textile management and data reporting process from collectors and sorters
  - Review performance with collectors and sorters
- For comparing the second year to the baseline year or comparisons after baseline data is available
  - Highlight focus areas based on your priorities or challenges to address; this should be informed by
    - Answers to questions in Step 1 and Step 3,1
    - Metrics where performance is outside the range for comparable municipalities or the national average
  - Work together to set feasible targets and areas of improvement for the coming year
  - Identify specific interventions to improve performance moving forward, for example:
    - Changes to the infrastructure
    - New reuse programs
    - Citizen information campaigns
    - Pilots and waste characterization studies

Image credit: Jason Dent

Image credit: Nour Betar

6 - CASE STUDY: Saku

Saku is a small municipality with citizens who already practice good waste separation. Textile collection in Saku has been effective since 2022, and this is likely supported by the larger culture of environmentally friendly practices promoted across the municipality beyond textiles. Humana's textile collection container located at the local Selver has been among their top 5 highest performing collection points across the country. Separate collection for waste textiles is also available at Saku jäätmejaam through Eesti Keskkonateenused.

Reuse points serviced by Uuskasutuskeskus' were installed at the end of 2021 and during 2023 are giving citizens an opportunity to find textiles and other items for reuse before collection. These sites are controlled access sites housed within shipping containers and are becoming an important part of Saku's textile management infrastructure. They are also clever tool to increase citizen awareness of and engagement in reuse. Circle houses are in planning and development stages, which will function as a meaningful next step from simple reuse points to a more robust circular economy solution for the local community.

Saku has taken the initiative with other interesting projects such as shopping bag trees and camouflage nets for the Ukrainian Army. These projects mainly use post-industrial textiles, so they will not be detailed further in this case study.

Infrastructure metrics:

- 66 people / square km
- 5 collection points
- 2251 people / collection point
- 34 square km / collection point

Image credit: Saku vald

Collection Container

Humana has serviced a standard textile collection container at the local Selver since 2015. It is consistently among the top 5 collection locations by quantity in Harju county. Citizens drop off their textiles, and the container is emptied multiple times per week.

2022 - Baseline

- 46.837 kg collected

2023

- 46.912 kg collected

Image credit: Saku vald

Reuse points

These are controlled-access sites where citizens can drop textiles and small household items for other citizens to take home or go to simply find something new for themselves.

Uuskasutuskeskus, a local non-profit reuse organization, regularly picks up what citizens leave behind to ensure the reuse points don't get overloaded. Saku also monitors these points to ensure they are well maintained.

2022

- Visual estimates only, data not usable as baseline

2023 - Baseline

- 12.157 kg collected after citizens picked up items for reuse

Separate collection for non-reusable textiles:

Waste management sites in and near the municipality borders also offer an alternative for separate collection of non-reusable items. Available figures for collected quantities are very limited and inconsistent, however they do indicate an increase in textiles dropped off at these sites, as well. Because of the potential inconsistency in reporting, a baseline has not been set.

2022

- 16.065 kg reported

2023 - 01.01-30.06

- 7988 kg reported

How To: Measuring Textile Collection

Collection Containers

Process

1. Citizens drop textiles into collection bin
2. Textile collection organization's employee empties containers regularly
3. Driver returns to the sorting facility to drop off textiles, and the total amount is weighed on a scale
4. The total weight of collected items are reported to Saku on regular basis

Units measured - kg

Textiles measured separately from other items

- Container is specifically for textiles
- Non-textile items are measured during the sorting process
- An average annual waste figure for the sorting facility that includes non-textile items can be provided to municipalities

Reporting

- Location of container
- Week of collection
- Total kg collected per week

Reuse Point

Process

1. Citizens drop off and pick up items from the Reuse Point
2. Collection partner picks up left behind items at regular intervals
3. Textiles are put into 150L bags by the collector and number of textile bags are counted separately from non-textile items collected
4. Number of bags is converted to kg using a standard, simple average bag weight
5. The total number of bags collected and total estimated weight for each time the collection partner completes a pick up is reported to Saku

Units measured - Number of bags, converted to KG using a simple average bag weight

Textiles measured separately from other items - Yes

Reporting

- Location of reuse point
- Date of collection
- Total number textile bags collected
- Total estimated kg of textiles

Image credit: Waldemar

7 - CASE STUDY: Lääne-Harju

Lääne-Harju is a municipality with a large geographic area and small population. When it comes to textiles, Lääne-Harju is far enough away from densely populated areas that the typical approaches to textile collection, such as fixed public collection points, are not a viable option for Estonian textile collectors at this time.

Their forward-thinking environmental team has therefore prioritized collection events and has piloted a reuse room for textiles and small household goods as a way to reduce consumption and thereby decrease citizens' carbon footprint and waste. They use simple methods to measure textile quantities in order to track the impact of reuse efforts and changes over time.

Simple reuse solutions and awareness raising activities enable Lääne-Harju to take action on textiles using their available resources. They set a baseline for textile collection through collection event days in 2022 and have seen an increase in citizen interest and quantities collected in 2023. The reuse room pilot was also carried out successfully, and the team now has a baseline to compare to for the next time a reuse room is set up.

Another option for citizens is separate textile collection at waste points. These textiles are not sorted for reuse or recycling, however, the waste management company does report collection figures.

Infrastructure metrics:

- 20 people / square km
- 5 collection points
  - 3 are event based, which cannot be compared to fixed collection bins
  - Square km / collection point metric does not apply

Image credit: Lääne-Harju vald

Collection event days:

Residents can bring their textiles and other household items to 3 locations during a 30 minute period on collection days. The collection events in 2022 and 2023 have taken place on weekdays during working hours. Uuskasutuskeskus stops at each location in turn, with the first collection event opening at 11:00 and the last closing at 13:30. Two collection locations are in the main population centers of Paldiski and Laulasmaa, and a third is 25-30 km away from these locations in the less populated area of Vasalemma.

2022 - Baseline

- 3 collection events
- 1550 kg total
- Average 517 kg per event
- Average 172 kg per location per event

2023

- 2 collection events
- 1700 kg total
- Average 850 kg per event
- Average 283 kg per location per event

Citizen feedback:
These events are increasingly popular. Residents have requested collection events to also take place on weekends so people who work during the week have more opportunities to bring their reusable items for separate collection.

Reuse Room:

The Lääne-Harju environmental team has engaged fellow municipality colleagues by opening a room in their office building where textiles and household items can be dropped off and picked up for reuse. Items that are not exchanged are collected by local reuse organization Uuskasutuskeskus. The Reuse Room was planned for 1 week in November 2023, however it was popular enough to keep it open for 3 weeks. This simple, innovative solution has initiated discussions and raised awareness about reuse among municipality employees.

Image credit: Lääne-Harju vald

2023 - Baseline

- Room use
  - Open 15 working days
  - 346 items brought in
  - 85 items reused by employees
  - May be clothing, shoes, books, or other small items
- Picked up by Uuskasutuskeskus
  - 65 kg of clothing
  - 30 kg of shoes
  - 20 kg of books
  - Additional household items and toys

Image credit: Texco Kwok

Use and comments

- The room was used at least 40 times
- 6 employees provided feedback, and all of them said answered “yes” when asked:
  - Do you think it was a good idea to make a reuse room?
  - Could we do similar things again in the future?

Separate collection for non-reusable textiles:

Waste management sites in and near the municipality borders also offer an alternative for separate collection of non-reusable items. Available figures for collected quantities are very limited and inconsistent, however they do indicate an increase in textiles dropped off at these sites, as well. Because of the potential inconsistency in reporting, a baseline has not been set.

2022 - 01 January - 31 December

- 652 kg reported

2023 - 01 January - 31 May

- 1072 kg reported
- No textiles were reported in June - December

Image credit: Julius Jansson

How To: Measuring Textile Collection

Collection event days:

Process

1. Textile collection points and dates are decided and communicated to citizens
2. Collection is carried out using a van, which stops at multiple locations in one day
3. Textiles are put into 150L bags without other types of items and number of textile bags are counted
4. Number of bags is converted to kg using a standard, simple average bag weight
5. The total weight of collected textiles are reported to Lääne-Harju, and each collection location is allocated an equal share of the total weight.

Units measured - Number of bags, converted to kg using a simple average bag weight

Textiles measured separately from other items - Yes

Reporting

- Number of collection events
- Locations of collection events
- Total number textile bags collected
- Total estimated kg of textiles (day)

Reuse room:

Process

1. Reuse room is set up, and communications are sent to municipality employees
2. Employees drop of and / or pick up items
3. Employees write number of items dropped off and / or picked up on a paper form in the room
4. Environmental team checks the room periodically to keep it in order
5. Environmental team weighs textiles that are left over when the room closes
6. Uuskasutuskeskus picks up left over items
7. Environmental team analyzes data and gets feedback from users

Units measured - days, items/pieces, kg

Textiles measured separately from other items - Yes

Reporting

- Total number of days room is open
- Total number of items dropped off
- Total number of items picked up
- Total number of room uses (assumed based on drop offs and pick ups reported)
- Quantity in kg of left over items picked up by Uuskasutuskeskus

ANNEX 1 - Data List

Geographic and Population Data

- Square km in collection area
- Population in collection area

External textile estimates

- Estimated total kg of textiles in circulation in the country
  - There are various methodologies used for this measurement
  - Use the latest textile study that measured quantities of post-consumer textiles that is available for your country, if it is credible and available
  - If a credible textile study is not available, trade data can be used to estimate put-on-market figures

Detailed Textile Data List

1. Collection points
   - Location
   - Type of point (may include containers, shops, events, and areas serviced with door-to-door collections)
   - Age
   - Collector (legal entity picking up textiles from this location)
2. Quantities collected per collection point (kg)
   - Date of collection
   - Time of collection
   - Kg collected
3. Quantities per administrative unit and entity
   - Total kg collected per municipality
   - Total kg collected per collector
   - Total kg received per sorter
   - Total kg received per waste manager
4. End points of sorted materials (kg or % of total)
   - Export out of EU before sorting
   - Textile reuse - Country of collection
   - Textile reuse - EU
   - Textile reuse - Export
   - Shoe reuse - Country of collection
   - Shoe reuse - EU
   - Shoe reuse - Export
   - Recycled - Fill / wipers
   - Recycled - Fiber to fiber
   - Waste - Too dirty / damaged
   - Waste - No market

ANNEX 2 - Alternative Measurements

Quantifying project impact

Some efforts are not easily measured. In this case, it is good to focus on what can be measured in a simple and consistent way, and use that as a starting point to estimate the impact of the effort. For example:

- A clothing swap event
    - Minimum data
        - Number of people attending
        - Quantity of textiles left over after the event
        - Feedback from attendees
    - Bonus data
        - Quantity of textiles brought to the event
        - Quantity of textiles attendees took from the event

Data quantity and quality can be improved over time. In the short term, it is important to get into the habit of measuring efforts at the beginning to set a rough baseline to evaluate success and communicate externally.

See the Case Study How To sections for specific examples.

Simple textile quantity measurements

Quantities are best measured as a weight from the beginning, but a conversion factor can be used when this is not available. Setting the goal to move toward weight based measurements together with collection and sorting partners is strongly recommended. Occasional sampling and conversion factor adjustments over time is required to increase accuracy of conversion factor estimates for a specific region or partner across multiple seasons and product types.

- Common conversion factors
    - Number of pieces
    - Number of bags
    - Number of boxes
- Creating a conversion factor
    - Pieces / kg varies significantly
        - 3,3-4,4 pieces / kg is recommended for adult clothing
        - If a scale is available, take at least 3 sample measurements of 100 pieces per sample
    - Kg / bag should specify the size of the bag in liters
        - If bags are different sizes, create 2-3 conversion factors to account for variation
        - Use a scale and take at least 10-20 sample measurements of each bag size

        - Be sure to get a range of clothing types in the samples: a 150L bag of jeans weighs a lot more than a 150L bag of winter jackets
    - Kg / box should specify the dimensions of the box
        - If box sizes are different, create enough conversion factors to account for variation
        - If boxes are heavy, account for the weight of the box
        - Use a scale and take at least 10-20 sample measurements of each box size

- Tip: A cheap luggage scale is great to weigh bags of clothes at events or to create these conversion factors!