

Status for developing methods for using waste as a resource for knowledge about the use phase of clothing

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This document summarises part of the report “METHOD for PICKING ANALYSES OF TEXTILES, Wasted Textiles” published 11. August 2023 [1], and at the same time it discusses how we can use waste to gain knowledge about use, making it possible to use waste to identify fast fashion and to describe the duration of service, thus making it easier to regulate clothing production.

Background

The wish to regulate clothing and other textiles is growing, but to do it knowledge is needed. There is a lack of knowledge about the clothing use phase making it difficult to develop meaningful LCAs and LCA-based systems such as PEF. How long and how much the product has been used are important for the impact of the product and without reliable information it is also difficult to develop a ranking of environmental impact. The biggest problem in the clothing sector is the quantities produced. These quantities are far above the global population’s potential to wear clothing out. The result is that none of the CE tools (longer life, more repair, sharing, stronger materials and so on) reduces the environmental impact. To develop regulations targeted toward minimising the surplus production, knowledge of which items are used for a long time, and for which there is no demand, is crucial.

Waste audits, also called waste composition/characterization studies or picking analyses, as in the report (from Norwegian “plukkanalyse”), are well known in the waste industry and used for many different consumer goods. Waste streams are analysed by picking out, sorting and registering the different fractions. The interest in such analyses is growing. The proposed new waste framework directive asks for robust data. The country implementing regulations on textiles fastest, Refashion has made an impressive analysis of 122 tonnes of French textiles, representing around 720,000 items in the incoming streams and 74,000 items in the outgoing streams [2]. The aim was to know the downstream possibilities. On the other hand, no information about the upstream conditions of the textiles is mentioned in this extensive report: the report says nothing about the origin or the prior use of the textiles. Waste audits are used to understand the use of other consumer goods. For food, this type of analysis is used to monitor the volumes of edible food being discarded in private households [3], and to monitor and reduce food waste from public institutions. Using waste as a resource for knowledge will make it possible to do the same for clothing. This is in line with the waste hierarchy where minimising waste should be given priority over recycling. In the following, we summarise the new report and its implications.

Method for waste audits, Wasted Textiles

Analysed waste

The textiles analysed in the report originated from various waste streams: Mepex's "Klesbyttedag" (clothing swap day), Trondheim Municipal Waste Company (TRV) collection pilot, and residual waste. Residual waste is much harder to work with because of smell and humidity, the latter also making it difficult to obtain accurate weight of the items. In the report, the TRV waste is the most important, representing 91.4% of the material.

Table 1 Waste streams of the analysed discarded textiles.

Source	Number of items	Weight (kg)	Percent (%)
TRV	2764	974.57	91.4
Residual waste	139	47.16	4.6
Mepex clothing swap	121	5.91	4
Total	3024	1027.66	100

The project examined a total of 3024 items, which equated to a combined weight of 1027.66 kg, detailed in Table 1.

The TRV pilot is a part of a larger project with several pilot collection areas in Norway and textiles from the TRV pilot should only have been damaged textiles. Residents of the pilot area in Trondheim are given instructions and special bags for damaged textiles, clothing and shoes. They are encouraged to deliver usable textiles to collection boxes already located in the area and to put the bag with damaged textiles outside for collection. Norway does not have a separate collection of textile waste, only donations to NGOs for reuse. The material from TRV is the closest to unsullied residual clothing waste found in a Norwegian context. The information to the consumer states that the collection concerns textile waste and not usable textiles. At the same time, this is a pilot and the consumers have not had time to adopt new habits. The results from the TRV sample as well as the full-scale scale, national sample show that a large number of usable textiles has been discarded in the textile waste collection bags [4]. <https://sortere.no/tekstilpilot>

Results

Labels

Of the sample of 3024, 2419 items (80%) had labels, of which only 128 (4.24%) were not readable. This means that 76.48% had readable labels. In comparison, the French study found readable labels only on 43% of analysed items [2]. In the Norwegian case, this is sufficient to use the label for information collection. Some product categories may lack labelling, an issue that needs further investigation. The accuracy of the information on the label may also be an issue. This is discussed in particular related to fibre content [5]. Concerning the ongoing work with labelling in the EU and the plans for a digital product passport, we would like to underline that the labelling already today can give information, including information that is useful for this development work.

Brand and origin

2564 of 3024 clothing items had the brand present either on the label or a visible logo. 708 distinct

Table 2 Overview of top 10 companies.

		Weight & Number of Items Top 10 Companies										
		Others	None	H&M	Cubus	Lindex	KappAhl	Dressmann	Princess	Kid	Pierre Robert	Bik Bok
Number of Items	n.	1,671	460	349	120	105	104	46	43	43	41	40
Weight (KG)		476	369	64	23	15	18	16	20	14	2	9

brands were found, but some dominated the findings, as shown in Table 2.

Despite origin labelling not being mandatory in Norway, the report shows that 1743 clothing items of 3024 items (57,6%) had production country on the label. Table 3 shows the distribution by country.

Table 3 Distribution of weight and number of items from the top 10 production countries.

		Weight & Number of Items Top 10 Countries										
		Unknown	China	Bangladesh	Others	India	Turkey	Vietnam	Pakistan	Italy	Cambodia	Norway
Number of Items	n.	1,279	697	344	268	117	107	53	49	38	38	32
Weight (KG)		593	178	71	67	23	31	19	19	10	9	9

99% of the clothing volume was imported. This in alignment with earlier studies on Norwegian textile consumption [6]

Textile age

Of the 3025 analysed textiles, only 95 items had the production year on their care labels. Of these clothing pieces, 14 were from Namelt, 7 from Vero Moda, 7 from Selected, and 6 were from Bik Bok. For the remaining individual brands, there were 61 items with a production year. Several brands have labels with codes that in all likelihood contain this information, but that is not readable for consumers or researchers. Some work was done to contact brands to gather this information from but due to reluctance from the brands, the short time frame and the project taking place during the summer holidays, these efforts yielded few results.

The project trialled the potential of estimating the age of textiles. The results are difficult to assess as there were fewer items with production year to compare with going further back in time. The students undertaking the study did neither have a textile background nor the time to develop methods for this. It would be possible to work with both digital recognition and other methods to improve the accuracy of the estimations. Should mandatory production year labelling be introduced, it would still be necessary to estimate the age of older textiles.

Used, but not used up

The clothing's potential for reuse is discussed both in this study and in other waste audits. The same information also says something about the extent to which the clothing has been used. A high percentage of reusable clothing gives a low clothing utilisation rate, which is the most important indicator of an ineffective and environmentally destructive value chain. To determine whether the clothing is used, a differentiation between damage due to low technical quality and damage due to

use has to be made. This has not been done in this report. The analysis can still give some information about the use of the clothing.

The clothing was categorised into 5 different usability grades. Grade 5 perfect condition, down to 1-not usable, the same scale as in another part of the Wasted Textile project [7]. 21 items had a price tag on them, indicating that the items were brand new. This represents 0.7% of the clothing. 92.91% of the items examined possess usability scores between three and five, with a mean score of 3.68 and a mode of 4. There is a subtle difference between the genders where male discarded textiles score lower on the usability scale, while more female clothing was discarded but this was also in better condition. Notably, 17.66% of items had a maximum usability score of five, indicating a considerable number of unused items being discarded.

Conclusion and recommendations

In our opinion, the report shows that waste audits can be used to gain information about clothing duration of service and utilisation rate. A large majority of the textile waste has a care label and logo which enables brand identification. The condition of the clothing, such as the remaining price tag and usability can say something about how much the items have been used. It is therefore possible to discuss the utilisation rate for different clothing brands, groups of users, such as men, women or children or according to other clothing characteristics.

The analysis would be faster and more accurate if information about the production date and brand were found in all pieces of clothing. This should be made mandatory immediately, and not be delayed until the work with a digital product passport is finalised. We would encourage all brands to start this kind of labelling or to improve their existing version so that it becomes readable to external parties. Standardising is urgent for quick and reliable recognition both for consumers and researchers.

Further development of the waste audit method is necessary, both in terms of knowledge of the downstream potential for the textiles and of use. A positive point is these two analyses overlap considerably. We believe work should be done to create a scale for conditions to identify how this can best give information both about use (upstream) and useability (downstream) simultaneously. We also believe that it is urgent to develop more accurate methods of estimating production dates where this information is not available. This can be both digital methods and technical characteristics. Fibre scanning shows that the reliability of the information provided by the industry itself is not good enough but should be supplemented with other sources.

A more in-depth analysis of the difference between collection methods and waste streams will be necessary to develop a representative sampling method using the least resources, and that makes comparisons between countries and studies possible. When more textile waste is collected separately, this will be easier.

We believe that analysing textile waste gives a good indication of the utilisation rate for clothing and that this can be used to set clear political targets for a sustainable development that include both the volumes of waste, the useability of the textiles and their age.

References

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