

Production of fashion waste from Cyprus households

C. Nisiotou*, I. Voukkali, I. Papamichael, A. Zorpas, M. Stylianou*

Laboratory of Chemical Engineering and Engineering Sustainability, Faculty of Pure and Applied Sciences,
Open University of Cyprus, Nicosia 2231, Cyprus

*Corresponding author: christalla.nisiotou@st.ouc.ac.cy; marinos.stylianou@ouc.ac.cy

Abstract

Most fashion industries follow linear model patterns ignoring the exhortations of the times to shift to a circular economy (Bottani et al. 2019). Waste reduction practices, reuse and recycling of generated waste must enrich the life cycle of clothing items in view of the gradual transition from a linear model to a circular economy model (Shou and Domenech 2022; Papamichael et al. 2024). The transition from the linear to the circular model is now imperative since the rate of consumption of raw materials exceeds by 1.5 times the rate at which the earth can respond (Mishra et al. 2020). The European Commission has set 1st of January 2025 as the final date by which Member States will have to introduce separate collection of textile products from households.

In Cyprus, clothing waste management relies exclusively on private initiatives. Citizens dispose of their clothing waste in special bins and then the waste is collected and exported to third countries. It is considered necessary to ensure quantitative and qualitative data regarding the collected clothing waste for a more efficient design of the procedures that may be implemented with the ultimate goal of promoting the reuse of these items. Quantitative and qualitative analysis of the collected waste may help to identify the items of clothing that are discarded the most and therefore need more attention in terms of information and public awareness.

For the needs of this work seven main sorting categories were defined and then for each category an additional division into subcategories was made. Five sorting procedures/measurements were carried out and the sample size analysed each time was approximately 150Kg to 170Kg. The sample size of each sampling campaign was approximately the amount of waste found in the collection bins. The total amount of waste analysed amounted to 856Kg. 2 sites were chosen for the sample campaigns (the warehouse of a private collection company and a Green Collection Point in Nicosia municipality). The sites chosen were easily accessible to the study team and the collected waste was from a large proportion of the population so that the sample was as representative as possible.

More than half of the measured sample (52%) belonged to the adult clothing category, while the children's wear and shoes categories comprised 23% and 15%, respectively. There was not much consistency between samples. The data indicates an increase in category participation due to a comparatively large drop-off of singular clothing items. Women's shoes dominate the shoes category. The subcategories with the highest percentages in both adult and children's wear are trousers, denim trousers, and t-shirts. Further research is needed to draw more reliable conclusions.

References

Bottani E, Tebaldi L, Lazzari I, Casella G (2019) A model for assessing economic and environmental sustainability dimensions of a fashion supply chain and a case study. IFAC-PapersOnLine 52:361–366. <https://doi.org/10.1016/j.ifacol.2019.11.147>

Mishra S, Jain S, Malhotra G (2020) The anatomy of circular economy transition in the fashion industry. Soc Responsib J 17:524–542. <https://doi.org/10.1108/SRJ-06-2019-0216>

Papamichael I, Voukkali I, Stylianou M, et al (2024) The Awakening of an Environmental-Conscious Fashion Era, Book: Sustainable Manufacturing Practices in the Textiles and Fashion Sector, Springer, https://doi.org/10.1007/978-3-031-51362-6_6

Shou M, Domenech T (2022) Integrating LCA and blockchain technology to promote circular fashion – A case study of leather handbags. J Clean Prod 373:133557. <https://doi.org/10.1016/j.jclepro.2022.133557>