HOUSEHOLD WASTE SORTING AT THE SOURCE

A procedure for improvement

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Abstract

Sustainable waste management systems are needed to handle the increasing amount of household waste across the globe. EU Waste Hierarchy as a strategy could manage this issue, where reducing the waste is preferred to recycling which is, in turn, preferred to generating energy from the waste. Increased material recycling in a household waste management system is a challenging task that involves both social and technical aspects. The intersection of these two aspects is a key part of source separation i.e., separating the waste where it is generated.

Some Swedish stakeholders, including recycling companies and landlords, felt that material recycling was challenging due to the lack of an analysis tool that can help improve the source separation system at the local level. The central point of this thesis focuses on creating an analysis tool that can be used to improve sorting at the source in any waste collection system. The objectives were to answer the following research questions: 1) How can the current sorting behaviour be evaluated? 2) How can appropriate interventions for improving this behaviour be identified? 3) How can the effect of interventions be assessed?

A participatory research based on Action Research framework (Look, Think, Act) was designed in a pilot area in the city of Borås, Sweden. Data was collected based on a combination of quantitative and qualitative methods since recycling behaviour is a complex phenomenon. Pick analysis (waste composition study) was found to be a relevant method to evaluate the recycling behaviour and assess the effects of interventions in a recycling scheme. Similarly, using interviews strengthened the understanding of the need of inhabitants to participate in the source separation system in order to identify effective interventions. A Recycling Behaviour Transition (RBT) procedure was developed based on the pilot study. The RBT procedure proved to be an effective tool for improving recycling behaviour. Also, the procedure was designed for being adaptable for any waste separation system. It was concluded that the factors influencing recycling behaviour are complex and sensitive to local circumstances and individual perceptions. Therefore, the RBT procedure helps identify the appropriate interventions based on the local context.

Data collected in the pilot area revealed that the convenience factors in recycling behaviour are crucial for improving participation in the recycling scheme. By placing recycling containers close to the vicinity of waste generation, which is a convenience factor, the miss-sorted fraction decreased by up to 28% (wt%). Similarly, easy access to relevant information is another intervention that significantly improved the recycling behaviour in the pilot area. Furthermore, it was concluded that Action Research, as a participatory methodology, is particularly appropriate when seeking the link between social and technical factors in waste management.

Keywords: recycling behaviour, source separation, waste management, resource recovery, household waste, waste composition study, waste sorting, waste collection, separate collection, municipal solid waste, circular economy