

The Future of Urban Waste Management: Integrated modelling in view of circular economy and environmental impacts

Abstract

Driven by the need for increased resource efficiency and sustainability, policy initiatives, e.g. the EU Circular Economy Action Plan, require waste management systems to transform. Present initiatives, however, largely neglect the role of consumers and do not differentiate between public and private spaces. Both spaces are highly relevant in cities. The goal of the project is to understand the generation of municipal solid waste flows at source and their alterability by means of design and infrastructural measures. To do so, knowledge and methodologies of three disciplines (waste management, social psychology, industrial design) are combined and applied to two Austrian case study cities (Vienna, Krems). Firstly, factors for participation in waste source segregation will jointly be investigated. Contextual factors will be considered as well as the effects of urbanisation. Secondly, designs to promote source segregation will be developed and tested during field studies. Field research will focus on public and semi-public spaces (e.g. bus stations, office buildings) and will include data collection on waste composition and quantity. Thirdly, impacts on the urban waste management system, its circularity and environmental impacts due to potential changes in source segregation will be assessed. Finally, the findings will be synthesized in a planning tool in order to support decision makers in enhancing source segregation to benefit Circular Economy and reduce environmental burdens.

Scientific disciplines:

207101 - Waste engineering (50%) | 501021 - Social psychology (35%) | 604015 - Industrial design (15%)

Keywords:

waste management systems, consumer behaviour, Circular Economy, recycling rates, environmental impact, source segregation, industrial design, waste composition, material flows

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Further links about the involved persons and regarding the project you can find at

https://archiv.wwtf.at/programmes/environmental_system/ESR20-019