RETASTE Conference Abstracts
RETASTE-W2E-1237-In-person Oral
Rethymno, September 16-18, 2026
© Author(s) 2026 CC BY 4.0 License
DOI:10.5281/zenodo.23678286

What a Wonderful Waste

Ana Ramos

LAETA-INEGI, Portugal

Abstract

With the global population increasingly concentrated in cities, and projections indicating that nearly 70% of people will live in urban areas by 2050, the challenge of waste management is no longer peripheral; it is central to urban sustainability, public health, and economic resilience. This work reframes urban waste (including food waste) as a strategic asset, emphasizing not just the technology that enables transformation, but the vision, innovation, and social benefits that make it real. Drawing inspiration from cutting-edge developments in waste-to-energy (WtE) technologies, the study explores how cities can turn waste streams into energy flows, materials, and resources, applying industrial symbiosis strategies and aligning with circular economy principles to create low-carbon, resilient urban systems. WtE solutions are not merely mechanical processes; they operate within communities, ecosystems, and urban economies. Beyond the technical dimension, this work emphasizes the societal and environmental stakes associated to these solutions. Social acceptance, policy frameworks, and equitable access shape which technologies succeed and which fail. Real-world case studies of cities converting organic waste into district heating, transforming plastics into energy-rich fuels, and creating urban hubs where waste streams become shared economic resources are presented. This allows to explore the hidden value in urban refuse, envisioning a future in which waste becomes a central driver of innovation and sustainability, and industrial symbiosis takes part in the process as an enabler strategy. Ultimately, this work argues that urban waste is not a problem to hide, but a platform for transformation. By rethinking refuse as energy, materials, and opportunity, cities can reduce environmental impact, advance the low-carbon transition, and create resilient, sustainable systems that benefit both people and the planet.

Keywords: waste as resource, WtE, sustainability, social engagement

Acknowledgments: This work is funded by national funds through the FCT – Fundação para a Ciência e a Tecnologia, I.P. and, when eligible, by COMPETE 2020 FEDER funds, under the Scientific Employment Stimulus - Individual Call (CEEC Individual) - 2021.03036.CEECIND/CP1680/CT0003; DOI - 10.54499/2021.03036.CEECIND/CP1680/CT0003(https://doi.org/10.54499/2021.03036.CEECIND/CP1680/CT0003). The authors acknowledge Fundação para a Ciência e a Tecnologia (FCT) for its financial support to LAETA via the project UID/50022/2025 (DOI: https://doi.org/10.54499/UID/50022/2025.

ACCEPTED