(171)

Towards Sustainable Organic Waste Management at the Institutional Canteens in Vavuniya, Sri Lanka

Ekanayaka, D.M.L.E.*, Kayanan, S.
Department of Bio Science, University of Vavuniya, Vavuniya, Sri Lanka
*dmlerandika@gmail.com

Abstract

Organic waste generated in institutional settings poses a major environmental challenge due to improper management practices that lead to odour nuisance, pest infestation, and greenhouse gas (GHG) emissions. This study focuses on assessing organic waste management practices in five institutional canteens in Vavuniya, Sri Lanka, aiming to propose sustainable strategies for organic waste valorization. The research was conducted from June to September 2024. The methodology integrated waste audits, on-site field observations, and semi-structured interviews with canteen operators and relevant stakeholders to evaluate existing practices and challenges. The collected data were analyzed using quantitative analysis of waste generation, collection, recycling and disposal rates, supported by qualitative thematic analysis of interview responses to identify behavioral, operational, and policy-related challenges. A detailed waste flow analysis was conducted to trace the movement of organic waste from generation to final disposal and to identify points of inefficiency and resource loss. Results revealed that approximately 450 kg of solid waste is generated daily from all canteens, of which 92.34% was organic, varies from 40 kg to 100 kg per day throughout the canteens, including cooked food leftovers, vegetable and fruit peels, and other biodegradable residues. The absence of source separation at generation points results in inefficient handling and limited opportunities for recycling and resource recovery. All generated waste is collected by the local authority and is directly disposed of at an open dumpsite, creating severe environmental problems such as foul odours, attraction of flies and stray animals, and leachate contaminates the soil and groundwater. Moreover, anaerobic decomposition of this waste emits methane, a potent GHG contributing to climate change. The study identifies the lack of organic waste valorization initiatives and absence of institutional policies as major causes. It recommends introducing composting and biogas units, along with the source segregation programmes, and conducting stakeholder awareness campaigns to convert biodegradable waste into valuable resources and renewable energy. These measures will support Sri Lanka's National Waste Management Policy (2021), Nationally Determined Contributions (NDCs), and Sustainable Development Goals (SDGs) 11 and, 13 contributing to more sustainable and climate-resilient waste management.

Keywords: *Organic waste, Source separation, Open dumping, Composting, Biogas production*