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Guidelines for Organic Waste Management in the Middle East and North Africa (MENA) Region

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Abstract

Municipal solid waste management represents a growing challenge across the Middle East and North Africa (MENA) region. Current estimates indicate that approximately 155 million tonnes of municipal solid waste are generated annually, with quantities expected to almost double by 2050. Organic waste constitutes the largest fraction of municipal solid waste in most MENA countries, yet a significant share is still disposed of in dumpsites or landfills. The mismanagement of organic waste contributes to methane emissions, groundwater contamination, air pollution from open burning, and the loss of valuable nutrients and organic matter that could be returned to the soil. These challenges are particularly relevant in arid and semi-arid regions where soil degradation, declining soil fertility, and water scarcity threaten agricultural productivity. To address these challenges, the project Focus and Discourse on Organic Waste: Jordan and Egypt (Biowaste EgJo) developed the Guidelines for Organic Waste Management in the MENA Region. The project is implemented by the University of Rostock (Germany), the Egypt Solid Waste Management Center of Excellence at Ain Shams University, and Jordan University of Science and Technology. The guideline aims to support municipalities, decision-makers, project developers, practitioners, and academic institutions in planning and implementing sustainable organic waste management systems, with a particular focus on decentralized composting solutions. The guideline provides a step-by-step roadmap covering policy, technical, operational, and financial aspects of organic waste management. It begins with an overview of the importance of organic waste diversion and introduces the main sources and characteristics of organic waste. Relevant European policy and regulatory frameworks are presented as reference examples, including restrictions on biodegradable waste landfilling, requirements for separate collection, and quality standards for compost products. The technical sections describe composting processes, key operational parameters, and different composting systems suitable for varying local conditions. A major focus of the guideline is the practical implementation of decentralized composting projects. It provides guidance on estimating feedstock quantities, determining land requirements, site selection, permitting procedures, ownership and partnership models, business planning, and financial sustainability. In addition, the guideline presents design considerations for composting facilities, operational procedures, process monitoring, quality control measures, and strategies for compost utilization and marketing. The guideline is intended as a practical decision-support tool that translates international experience and technical knowledge into an accessible framework adapted to the environmental, economic, and institutional conditions of MENA countries. By promoting source-separated collection and decentralized composting of organic waste, the

guideline contributes to reducing greenhouse gas emissions, improving soil health, conserving water resources, and advancing circular economy objectives throughout the region.

Keywords: Circular Economy, Decentralized organic waste managment, Composting, Methane Mitigation

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