Analysis and perspectives on home and community composting in Portugal

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Municipal waste produced in Portugal in 2024 was near 5,550,000 t, corresponding to a production of 519 kg per capita. The largest fraction of municipal waste consists of biowaste, accounting for approximately 38% (APA, 2025), representing a per capita generation of around 197 kg. According to Eurostat (2026), in 2023 Portugal recycled approximately 88 kg per capita through composting and anaerobic digestion, a figure below the European average of 96 kg per capita. European countries are obliged to reduce the amount of biodegradable municipal waste going to landfills to 10% until 2035.

In compliance with the current waste legal framework (Decree-Law No. 102-D/2020), from December 31, 2023, bio-waste must be mandatorily collected separately or recycled at source, aligning with effective waste management guidelines and in order to contribute to circular economy. This scenario has driven the implementation of decentralized solutions, such as home and community composting, which allow for treatment at the source, avoiding the costs of collection, transportation, and final disposal of bio-waste (Oviedo *et al*., 2025).

In order to carry out home or community composting, it is necessary to provide the population with appropriate equipment for this purpose, such as the community composter adopted by the Municipality of Almada (Figure 1), located on the southern bank of the Tagus River, within the Lisbon Metropolitan Area, and forming part of the Setúbal District. This approach is a pillar of the sustainability of circular economy, promoting the closing of the nutrient cycle by transforming waste into stable, high-quality resources.

Figure 1. Municipal community composter in Portugal

Studies in similar European contexts, such as the case of Italy, demonstrates that decentralized composting serves as reference model for Mediterranean countries. The Italian system proves to be an effective solution to overcome the lack of centralized facilities and achieve resource valorisation and urban sustainability targets (Bruni *et al*., 2020). Furthermore, this effectiveness is supported by evidence that identify decentralized composting as the best cost-benefit ratio and sustainable way of bio-waste management at the end-user level, bringing forth positive economic and environmental effects that outperform conventional models (Sulewski *et al*., 2021).

The present study aims to examine and evaluate the domestic and community composting programme currently being implemented by municipalities and waste management authorities in Portugal, with a view to assessing its scope, effectiveness, and contribution to sustainable waste management practices.

The methodology adopted in the present study is grounded in a comprehensive review of relevant scientific literature, including peer-reviewed articles and master's theses, as well as an analysis of information available on the official websites of Portuguese municipalities. In addition, empirical data are being collected through the administration of a structured survey designed specifically for this research. The questionnaire is composed predominantly of closed-ended questions in order to ensure consistency, comparability, and statistical robustness in the subsequent analysis of the collected data. The survey is directed at municipalities in mainland Portugal that have implemented domestic composting programmes. It is structured around three key analytical dimensions considered critical for assessing the effectiveness and development of such initiatives: (i) project participation and

overall scope, including levels of public adherence and geographical coverage; (ii) operational procedures and collection logistics, encompassing implementation strategies, monitoring mechanisms, and support provided to participants; and (iii) the typology of equipment made available, as well as the profile and engagement of participating households or communities. It should be noted that this research is ongoing, and the findings are therefore preliminary and subject to further validation.

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