

The household bio-waste management: a case study of Latvia

D.Āriņa¹, I.Teibe^{1;2}, R.Bendere¹, L.Jākobsone¹

¹Waste Management Association of Latvia, Riga, LV-1006, Latvia

²Public Utilities Commission, Riga, LV-1039, Latvia

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Presenting author email: dace.arina@gmail.com

Introduction

The Cabinet of Ministers of Republic of Latvia adopted The National Waste Management Plan 2021-2028 (NWMP2028) on January 22, 2021 developed in accordance with the Waste Framework Directive 2008/98. NWMP2028 aims to reduce the generation of waste and its landfilling (10% landfilling target in 2035) by introducing measures to support material and goods circularity, and ultimately – reduce the environmental and carbon footprint of the economy, thus facilitating climate neutrality. The EU LIFE Integrated Project “Waste To Resources Latvia - boosting regional sustainability and circularity” (LIFE Waste To Resources IP, LIFE20 IPE/LV/000014) will focus on full implementation of the NWMP2028. The work reflects one of the sub-actions of the LIFE WasteToResources IP Project – Demonstration of solutions for reduction of biological and food waste and improving food waste measurements:

- A system for separate collection and management of bio-waste, including food waste established and introduced in the selected pilot areas of 4 municipalities in Latvia;
- Recommendations for accounting and integration of bio-waste recycling results from home composting in official waste statistics.

In Latvia (Āriņa, 2022), 157 thousand tons of food waste or 83 kg per capital living in household was produced in 2020, of which into the mixed municipal waste stream was collected 117 thousand tons, as part of food waste are recycled or reduced at source (home composting, pets feeding, sewerage etc.).

Accordingly Abeliotis *et al* (2015), home composting is a waste prevention measure related to the management of the household's food waste, garden trimmings, and other smaller organic household waste streams, and home composting is environmentally preferable for Greece. Malamis *et al* (2015) concluded that effective source separation of bio-waste is prerequisite for good quality production and marketing of compost.

Materials and methods

To raise awareness of home composting the 100 households with backyard territory were involved in the project to evaluate bio-waste in their households - 68 households in Liepāja city (68 thousand capital in 2021) and 32 households in Preiļi county (17 thousand capital in 2021). Each household kept a diary of generated kitchen waste amount throughout the year and generated garden waste in the summer season. To motivate the households to provide data on the generated bio-waste, composting containers are allocated for indefinite private use as part of the project.

In order to start the sorted collection of food waste from households in apartment buildings, specialized biological waste collection containers (120 litres and 240 litres) were purchased and small 6 and 10 litter containers were distributed to residents to put food waste in the kitchen. Food waste is collected once a week. Waste collection method: replacing the full container with a clean one. The contents of the container are transported to a pre-treatment centre and then further to a bio waste processing plant for the production of methane gas.

Measurements of the amount and content of waste take place from November 2022 to December 2023.

Results and discussion

Studies of the composition of the collected food waste show that the amount of impurities in the mass is 0-0.1% (as received). The impurities found are plastic bags.

Conclusions

In order to involve the population in the extensive collection of organic kitchen waste, the active action of house managers is necessary. It is necessary to allocate funds for the purchase of small kitchen containers from the funds saved for home management, and to supplement the existing waste management contracts or conclude new contracts with residents, which determine the involvement of residents in the separate collection of kitchen waste in process.

Due to the national diversity of the residents, the information must be illustrative both on the kitchen bins and on the biological waste collection containers.

For disposal of biological waste, waste management companies must purchase specialized containers. It is necessary to monitor the replacement of containers and their cleanliness. Regular washing of containers is mandatory.

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