

Solid waste generation and characterization in Hai Chau District, Da Nang City for sustainable waste management

Nghia Nguyen Van^{1,2} Thu-Trang T. Nguyen³, Ngan-Ha Ha³, Kieu Lan Phuong Nguyen⁴, Thanh-Khiet L. Bui⁵

¹Faculty of Technology, Dong Nai Technology University, Bien Hoa City, Vietnam

²Advanced Applied Sciences Research Group, Dong Nai Technology University, Bien Hoa City, Vietnam.

³Center for Supporting Green Development, Hanoi City, Vietnam;

⁴Institute of Applied Technology and Sustainable Development, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam.

⁵Institute for Circular Economy Development, Vietnam National University-Ho Chi Minh City, Ho Chi Minh City, Vietnam

Presenting author email: blt.khiet@iced.org.vn

Any effective waste management policy must start with waste characterization. In this study, the Standard TCVN 9461:2012 on municipal solid waste, "Method for determining the composition of untreated urban MSW," was used to characterize and analyze MSW for markets and apartment complexes, and "Solid waste assessment and label audit. Practice introduction. Volume 1: Household Solid Waste," developed by GreenHub, was used to audit household waste. The primary goal of this study was to ascertain the rate of generation and composition of municipal solid waste in order to provide baseline data for the establishment of a sustainable waste management system. The results show that the total average volume of MSW emissions from households in Hai Chau district is 322.51 ± 31.78 g/person/day, and the volume of recyclable waste was quite high in households in Hai Chau district, accounting for 37.13% of the total amount of MSW generated, including organic waste for livestock (63.5%), paper (18.48%), glass (7.34%), metal (3.69%), and high value plastics including HDPE/LDPE/PP (4.52%), and PET (2.48%) (compared to the amount of recyclable waste). For apartment complexes, the proportion of recyclable waste accounts for 40.02% of the total audited MSW. Organic waste for livestock is 78.94%, paper 6.45%, glass 4.04%, metal 2.47%, and high-value plastics, including HDPE/LDPE/PP (5.37%) and PET (2.71%). Although the district has implemented a model of collecting resource waste from households, it has not been effective and lacks uniformity. This is an extremely large waste resource if there is an effective collection method. The volume of low-value and unrecyclable plastic waste was quite high. For households, the proportion of low-value plastic waste accounted for 9.4% of the total amount of audited MSW. At the apartment complex, the proportion of low-value plastic waste accounted for 7.6% of the total amount of MSW audited. The data reflects the fact that the rate of low-value plastic was still quite high. It is necessary to promote propaganda work to promote green consumption and reduce the use of nylon, foam, and disposable plastic waste. One-way ANOVA test results show that there is a statistically significant difference in the difference in MSW emissions between low-income and high-income households in Hai Chau district. According to the statistical report on the current status of the city's MSW in 2019, the amount of waste generated in Hai Chau district is leading compared to other districts in the city. However, in this study, comparison with the research results in Thanh Khe district (2020) shows that the amount of MSW emitted by households in Hai Chau district is lower (the emission amount of Thanh Khe district is 397.37 ± 39.2 g/person/day) (WWF-Vietnam, 2020). In addition, compared to the amount of MSW emitted in Hoi An city (2020) there is no difference (315.8 ± 31.16 g/person/day) (IUCN-Vietnam, 2020). Options for waste management that maximize recycling, reuse, and reduce waste generation were discussed.

Reference

IUCN-Vietnam (2020) Solid waste audit in Hoi An City.

WWF-Vietnam (2020) Solid waste audit in Thanh Khe district, Da Nang city.