Analysis of the Impact of Household Solid Waste Valorization on Electricity Demand Compliance (Case Study: Semail Village, Bantul, Yogyakarta)

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Abstract:

Energy consumption in Indonesia is classified into household, industrial, business and social sectors. The household sector is the largest consumer of electrical energy in Indonesia, with consumption consistently rising due to population growth. In 2024, Indonesia's electricity consumption reached 1,411 kWh per capita, an increase from 1,089 kWh per capita in 2020. The growing population also leads to an escalation in waste generation volume. By 2022, Indonesia generates 68.5 million tons of household solid waste, with nearly 14 million tons of waste generation per year. This study aims to assess the influence of community involvement in the waste management program on meeting household electricity demand. The research was conducted in Semail Village, Bantul, Indonesia. The solid waste sampling was obtained during Semail Waste Bank activities. The questionnaires were distributed to gather data on electricity usage as well as household societal and economic characteristics. The correlation between electrical consumption and its driving factors are assessed by multiple linier regression analysis using SPSS. The results show that family size and home appliances had a significant effect on the monthly electricity bill. On the other hand, the family size do not significantly influence the waste generation. The composition of solid waste in Semail was primarily consisted by plastics (40.2%) and paper (36.8%). The average value of waste valorization is around Rp. 20,000. It is able to meet at least 10% of the household electricity needs. Given these facts, the government should be more active in providing and empowering waste banks.

Keywords:

Electricity demand, household solid waste, valorization.