

PREDICTIVE MODELS FOR MUNICIPAL SOLID WASTE (MSW) GENERATION AND COMPOSITION.

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To develop an effective municipal solid waste management strategy for a given community, it is essential to know the amount of waste generated and the composition of the waste stream at a given time and to identify a mechanism for reliable estimation of future waste quantities and compositions. It has been shown in literature that the amount of waste generated in a country is proportional to its population and the mean living standards of the people or their income in addition to many other demographic factors.

This paper presents the findings of a study carried out in a suburban Municipal area in Sri Lanka to develop a predictive model to estimate waste generation patterns at a given time. Here, an attempt was made to analyse the quantity and composition of waste generation in a sample of households in the study area over a time period and relate this to various demographic factors. Over 300 households were studied for this purpose. Through regression analysis the amount of waste and waste composition was related to the demographic factors. It describes the basis for the sample selection, socio-economic parameters used for modeling and the methodology adopted for effective data collection. Stratified random sampling methodology based on Municipal wards and property value was used for the data collection. A technique that consider both the number of households in a particular income group (property value range) and the standard deviation of property values within a given income group was used to determine the appropriate sample sizes for each municipal ward.

The per-capita waste generation and average composition of waste generated were derived by analysing descriptive statistics. Organic waste constitutes the largest component of the generated waste in the area and regression analysis shows that the per-capita generation of organic waste per day in kg decreases as the number of persons per household increases. It is also shown that the generation of organic and paper waste per household very clearly increases with the increase in property value.