

**Development of a Sustainable Solid Waste Management System for Kikuyu
Municipality, Kiambu County, Kenya**

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ABSTRACT

Provision of sustainable waste management services is essential for the well being and development of most cities in the developing world. Improper waste management has led to substantial negative environmental, health and safety problems. This thesis evaluated the solid waste management system in Kikuyu Municipality, Kiambu County in order to develop a framework for sustainable solid waste management for the future. The study analyzed the current solid waste management system and identified its strengths and weaknesses. Understanding how a sustainable waste management system functions in a developing city is important for policy makers and investors. The study observed that the current solid waste management system practiced in Kikuyu was unsustainable because there were no provisions for the segregation of waste and also the collection and transportation of waste was inadequate and inappropriate. Majority of the waste collected is dumped in open landfill and along the roadside and stakeholders are not involved in solid waste management decision making process. Heavy metals were determined from selected dumpsites and statistical analysis of the results showed that the concentration of cobalt, nickel, copper and lead are comparatively less than those obtained for other metals. The descending average heavy metal contents was found to be Fe>Cr>Cd>Ag>Zn>Pb>Ni>Cu>Co. The study established that the current solid waste management system is not sustainable and can be improved following the recommendations provided. A model of solid waste management was developed and to help in future management software that estimates the quantities of solid waste was also developed. The study shows that the current solid waste management system is unsustainable in the long run. The municipal council should come up with an integrated solid waste system that involves the private, informal and other stakeholders in waste management.

