# Optimum Location Analysis for Wood Waste-to-Energy Plant in Ilorin, Nigeria

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**Source:** The Journal of Solid Waste Technology and Management, Volume 41, Number 1, February 2015, pp. 50-59(10)

**Publisher:** The Journal of Solid Waste Technology and Management

**DOI:** https://doi.org/10.5276/JSWTM.2015.50

Abstract Availability of feedstock and suitability of location are major decision criteria in siting a waste-to-energy facility. In this study, the amount of wood waste available for energy generation in Ilorin, Nigeria was evaluated and an assessment was made on twenty potential energy facility sites. The Single Facility Location with Rectilinear-Distance Model was employed to determine an optimum location for the energy generating facility based on the impact of four major constraining factors; the net amount of waste available, transportation cost, social effect, and environmental effect. The study revealed that 61.25 % (73.92 tons per day) of the total wood waste generated is left unutilized and the optimum location for a waste-to-energy facility corresponded to (X, Y) coordinates (940.1253, 507.4959). This spatial position unfortunately coincided with an existing recreational facility, thus making it unsuitable. The most feasible location away from the optimum location was chosen through the construction of a contour map and it corresponds to coordinates (939.2536, 507.8525), which is within the Industrial zone of the City.

**Keywords:** ENERGY FACILITY; ILORIN; NIGERIA; OPTIMUM LOCATION; WOOD WASTE

**Document Type:** Research Article

Publication date: February 1, 2015