

## DETERMINING THE LANDFILL GAS POTENTIAL FOR ELECTRICITY GENERATION IN KERUGOYA KUTUS MUNICIPALITY

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### ABSTRACT

Landfill Gas Technology involves the use of renewable source of energy where biogasis generated from organic wastes and subsequent use of the gas to produce electricity. This study assesses the use of KerugoyaKutus Municipality Solid Wastes from Kagio, Kutus and Kerugoya markets, through Landfill Gas technology to electricity production. The organic solid wastes generation potential in tonnes and the subsequent methane gas generation potential in m<sup>3</sup>/year, will be estimated for a period of 10 years from 2023-2033. This will be followed by determining the electricity generation potential in Kwh/year. Economic viability of the project in this Municipality will be done based on the Net Present Values in U\$, Levelized cost of energy and Payback Period. Environmental impact analysis based on green gas emissions potential withand without energy recovery will be done. To undertake the wastes potential, a Land Gem model version 3.02, using the inventory defaults will be used. This research will provide a scientific guidance on viability of LFG electricity generation project in this municipality making the paper useful to Kirinyaga Local Authority who need to manage their organic wastes from thethree localmarkets. The research will also be beneficial to investors who may want to evaluate the LFG production potential.

**Keywords;** *Landfill Gas, Municipal Solid Wastes, Generation Potential, Green Gas Emissions, Land Gem Model*