

## **The Economic feasibility of 50 Pilot-Scale Biogas Systems in Maputo, Mozambique**

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**Abstract:** A biogas is a technology that depends on microorganisms that converts fermentable organic matter into a combustible gas and matured organic manure. Anaerobic decomposition works in the absence of oxygen, yielding methane, carbon dioxide, and water. Biogas obtained through this biological process could be from several matters (animal or agricultural waste) that are available in surrounding environment. Beneficial uses of biogas entail direct heating and lighting process, and the effluent released from the biogas digester could be an excellent fertilizer. The production and utilization of biogas from anaerobic digestion provides many environmental and socio-economic benefits for the society as well as for the farmers. The utilization of the biogas enhances the local economic capabilities, provides employments and jobs in rural areas, decreases local purchasing power, and improves a living standard that contributes the economic and social development. Farmers also have many benefits from the biogas products include, the farmers can use the biogas plant effluent as fertilizers instead of chemicals one that affected the soil quality and fertility. The biogas utilization biogas reduces environmental impacts including the reduction of pollutants, minimization of odors, preserves natural resource, and abate climate change impacts, compared to other fuels. This research study aims at the construction of a biogas plant in “Matutuine District in Maputo, Mozambique” Province. Feed includes livestock manure (cow and chicken manure) and the agricultural waste that is available in the country, the expected biogas production will be used to generate electricity for lighting (of 50 households spread across the town) and to feed electricity and produce fertilizers for land application (250 ha) of Matutuine agricultural land.

**Keywords:** Biogas, anaerobic digestion, chicken manure, methane, methanogenic bacteria