

***Utilizing the Potential of Biogas Energy from Cow Manure for Electricity
Generation in Tegalmulyo Hamlet Bungatan District Situbondo***

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ABSTRACT

The ever-increasing demand for energy drives the importance of developing renewable energy sources, especially in rural areas that are not yet fully connected to PLN electricity. This research aims to utilize cow manure as an alternative energy source through the application of biogas technology for electricity generation in Tegalmulyo Hamlet, Bungatan District, Situbondo Regency. From a total of 12 cows, approximately 1,081 kg of waste is obtained per day, producing approximately 8.65 m³ of biogas with a methane content of 65%. This volume is capable of producing approximately 96.6 kWh of electricity per day, sufficient to meet street lighting, livestock barn lighting, and some household needs. In addition to producing clean energy, this biogas system also contributes to reducing livestock waste and producing organic fertilizer. Research results indicate that implementing a community-scale biogas installation is feasible, efficient, environmentally friendly, and sustainably strengthens local energy security.

Keywords: Biogas, cow dung, electricity, renewable energy.