

## ABSTRACT

To achieve the renewable energy consumption target, Indonesia can utilize bioenergy. Biogas is a form of renewable energy and a sustainable business sector that can provide alternative energy for consumption activities. This study aims to 1) assess the economic feasibility of small-scale biogas plant from cacao waste, 2) analyze the possible direct benefit (economics, environmental, and social) that can be obtained and its challenges, 3) evaluate the knowledge, perception, and attitude of the Gambiran Hamlet members on biogas, and 4) investigate the factors affecting the perception of the Gambiran Hamlet members on biogas. The potential biogas production data from Sari Mulyo farmers' group cacao pod husk (CPH) analyzed in the laboratory were used for the economic feasibility calculations. Then, the results were categorized into 6 scenarios according to the amount of CPH and biogas reactor size. Meanwhile, net present value, internal rate of return, and payback period were used to determine the economic feasibility of biogas production scenarios. Furthermore, the other socio-economic data were collected by doing surveys and observation. Logistic regression was used to determine the factors affecting the perception of biogas. Biogas from cacao waste in Gambiran Hamlet is currently not feasible. Furthermore, possible direct benefits include reduced household expenditures, reduced plant disease incidence, reduced waste, space savings, additional revenue, and reduced air pollution caused by firewood burning. Overall, Gambiran Hamlet members' perception regarding CPH biogas is positive. Moreover, the higher the educational attainment and being male, the greater the chance of positive perception of biogas. However, household size, age, and income are statistically insignificant. It is suggested to mix other organic waste like cow manure with CPH so that the project can be economically feasible. Furthermore, socialization, training, and mentoring are needed for biogas installation.

**Keywords:** *biogas, economic feasibility, perception, cacao pod husk*