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Utilization of palm oil processing waste (palm oil mill effluent/POME) as a biogas raw material in Indonesia: Economic and institution approach

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Statement of the Problem: The growth of average energy consumption in Indonesia is 7% higher than the global energy consumption (5.6%). The growing of population number also effect in incraesing on energy demand. Indonesia need to find new alternative energy to change the oil and gas as a non-renewable resources. Oil palm is the main plantation commodity in Indonesia which is the raw material of CPO production. One of CPO processing by-product is palm oil processing waste known as Palm Oil Mill Effluent (POME). The utilization of POME into biogas as an environmental friendly alternative fuel needs to be further improved in line with the times and support sustainable development. The purpose of this study is to determine the potential and the utilization of palm oil processing waste (POME) as a biogas raw material in Rokan Hulu District, Riau Province-Indonesia.

Methodology & Theoretical Orientation: The research was conducted in 2015 in Rokan Hulu District, Riau Province. Primary data were collected through direct interviews using structured questionnaires to oil palm farmers and users of oil palm biogas. The data analysed by quantitatively and qualitatively analysis. Furthermore, for the development of biogas presented an economic comparison analysis between Biogas Power Plant with Diesel Power Plant. Data analysis results are presented in the form of analytical tables which then discussed descriptively.

Findings: Riau province has the potential POME waste in 2015 amounted to 29.01 million tons. The potential of this waste is generated from oil palm plantation area of about 2.40 million hectares with production potential of fresh bunches (TBS) amounted to 47.98 million tons/year. Total palm oil processing unit (PKS) in Riau as many as 223 units with an average production capacity of 9.670 tons/hour, so that in a year it takes about 58.02 million tonnes of TBS. Biogas Power Plant (PLT Biogas) in Riau has an installed capacity of 1 MW is equivalent to 30 tonnes of TBS per hour. From such capacity is currently only used about 75%, with total customers as much as 1,540 families covering three villages. The economic advantages from PLT Biogas compared with diesel power are: a) cost electricity customers biogas electricity is much cheaper than diesel (Rp. 45.000 vs Rp. 120.000 per month), b) price per KWh of electricity is cheaper (Rp. 1.900 vs Rp. 4.000 per KWh), c) operating time up to 24 hours, d) quality more stable electric current.



Figure 1: Flow of Palm Oil Processing Waste as a biogas power plant raw material

Biography

Endro Gunawan has expertise in agricultural economic and public policy. He is evaluating the model of agricultural bio industry where the farming system has zero waste and environmental friendly. He is pursuing his PhD at Asian Institute of Technology (AIT) Thailand major on agribusiness management. He conducts research on agricultural supply chain and the assessment of warehouse receipt system for agricultural commodities in Indonesia.

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