

Thesis Title	Assessment of Potential of Power Generation in Agronomy Industries and Waste from Agriculture
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Abstract

The objectives of this research were to estimate available biomass quantity from agro-industries and agricultural residues, which could be used as energy sources and assessment of technical and financial potentials of cogeneration system in palm oil mills.

Biomass quantity in 1997, from agro-industries and from agricultural residues to had more than 60 million tons or 20 million tons, of oil equivalent including amounted to straw (20 million tons), bagasse (17 million tons), corn cob (9 million tons), cassava stalk (7 million tons) and husk (5 million tons) respectively.

The representative cogeneration system requires electrical power more than steam, steam was therefore generated in large amount for generating electrical power. The excessive steam was blownout about 20-50 % of total steam generated. For ideal cogeneration system which is assumed to generated an excess electrical power about 76 % of total electrical power generated.

Cost analysis of electrical power and steam generated. It was found that the representative cogeneration system were about 0.010 US\$/kWh and 0.003 US\$/MJ respectively, (the cost of mix fuel is neglected) and were about 0.022 US\$/kWh and 0.006 US\$/MJ respectively, (the cost of mix fuel is included) and the ideal cogeneration system will be about 0.016 US\$/kWh and 0.004 US\$/MJ respectively, (the cost of mix

fuel is neglected) and will be about 0.023 US\$/kWh and 0.006 US\$/MJ respectively, (the cost of mix fuel is included).

The ideal cogeneration system in case of non-firm with a payback period and internal rate of return at about 7.7 years and 11.4 % respectively, (the cost of mix fuel is neglected) and will be about more than 20 years and less than 1 % respectively, (the cost of mix fuel is included) and case event of firm with a payback period and internal rate of return at about 5.5 years and 17.5 % respectively, (the cost of mix fuel is neglected) and will be about 10 years and 7.8 % respectively, (the cost of mix fuel is included).

Cost analysis of electrical power from biogas of palm oil mill effluent. It was found that will be about 0.017 US\$/kWh, in case of non-firm with a payback period and internal rate of return at about 4.3 years and 22.8 % respectively, in case of firm with a payback period and internal rate of return at about 2.6 years and 39 % respectively.

Keywords : Biomass / Cogeneration / Biogas