Modelling the socio-economic impacts of modern bioenergy in rural communities in Ghana - DTU Orbit (08/11/2017)

Modelling the socio-economic impacts of modern bioenergy in rural communities in Ghana

This study analyses ex-ante socio-economic impacts of biogas systems using a remote rural community in Ghana as a case study. An analysis was performed for a 300 m3 bio-digester that relies on crop residue and animal manure as feedstock to produce methane gas for cooking using selected bioenergy economic and social indicators. With a 10% discount rate, a 30 year bio-digester lifetime and methane tariff starting at US$ 0.7/m3, the project will have a Net Present Value of approximately US$ 22,000, 16 year payback and an Internal Rate of Return of 11%. The project will create 4 full time unskilled labour positions during the investment year and 3 positions during operation years. Using methane from the bio-digester for cooking will displace approximately 170 tonnes of firewood per year and save the women in the community a total of 3400 hours per year not fetching firewood. However, only 5% of households are willing to pay the base tariff of US$ 30/m3 with up to 60% willing to pay less than half the monthly tariff. To make tariffs affordable to rural households, there is the need for subsidy schemes from government or relevant agencies. © 2016 Elsevier Ltd. All rights reserved.

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