



University of Venda

SCHOOL OF ENVIRONMENTAL SCIENCES

DEPARTMENT OF ECOLOGY AND RESOURCE MANAGEMENT

A Techno-Socio-Economic Potential Assessment of Organic Waste-To-Energy Conversion through Biogas Technology for Rural Households in Vhembe District of Limpopo.

By

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## Abstract

Although biogas technology has been in South Africa as early as 1950, its spreading and adaptation have met limited realisation. So far it has not made any tangible impression on the national total energy contribution, and with the increasing concern on the environmental problems, many countries are pursuing efforts to adopt renewable energy sources as an alternative future energy resource, for example biogas. Like in many communities in the southern African countries, biogas technology has not been known and hence implemented to the expected levels in the Province of Limpopo of South Africa. Lack of enough demonstration systems and limited knowledge in the form of, for example, awareness-raising campaigns of the technology in the province have been among others, the main reasons for this extreme lack of information availability to communities about the technology and hence its unpopularity. The majority of rural people still depend on the use of traditional fuels like fire wood to meet their energy needs. This study is thus an attempt to qualify and quantify the techno-socio economic potential of biogas technology in rural areas of Vhembe district to stimulate its sustainable acceleration, adoption and dissemination. The methods adopted in this study included questionnaire, reviewing existing literature, and field survey. The analysis methods included cost benefit analysis and biogas potential analysis. The findings from this study revealed a potential for biogas technology doing away with energy poverty which threatens social and financial development. The technology is easy and can be applied in any rural area. All the benefits, financial, social and environmental derived from biogas technology through generation of biogas (methane) and its utilization for heating, the slurry used as a fertiliser are properly addressed and explained. Energy from biomass may be environmental-friendly and renewable if appropriate technology is used and definitely will play an important role in satisfying society's demands for energy.