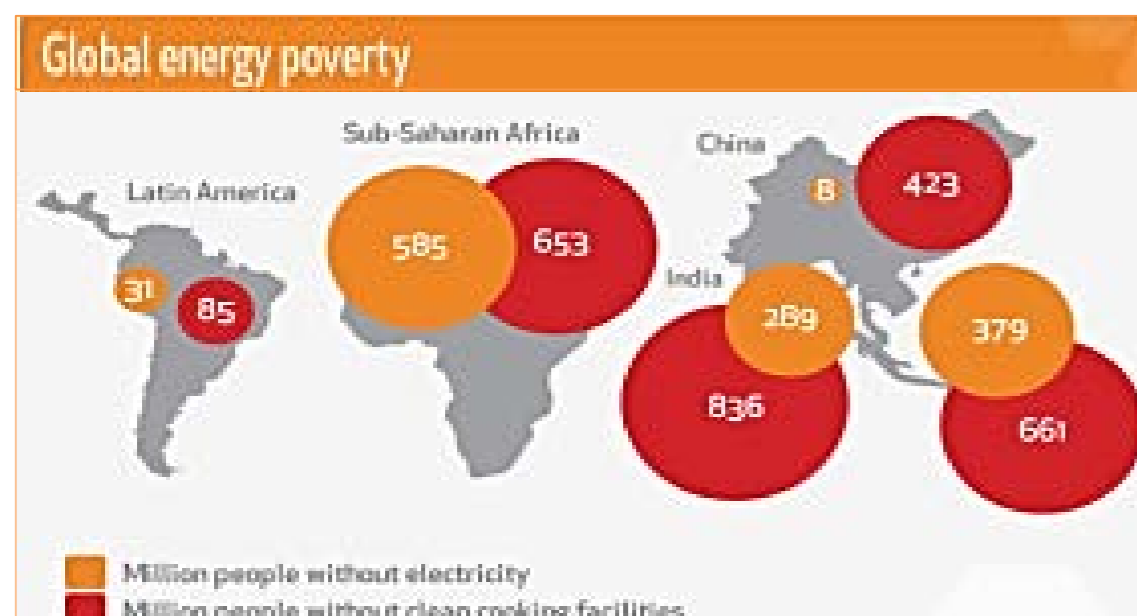


# Economic Analysis of Renewable Energy Access in Sub-Saharan Africa: A case study of Biogas Digesters in Ghana

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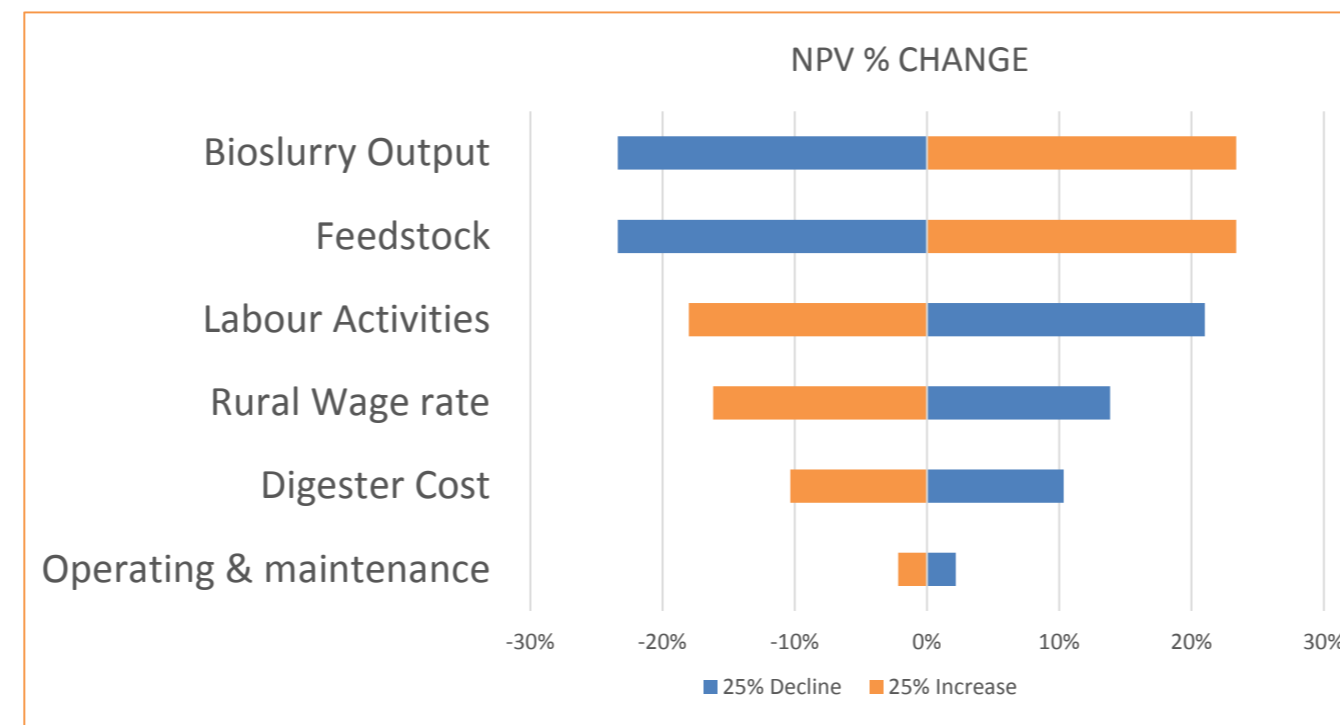
## Introduction

- Access to energy is a major challenge in the world today despite the quality it adds to human life.
- In Sub-Saharan Africa (SSA), 80% of the population still rely on traditional solid biomass for energy - cooking and lighting.
- Ghana is the largest consumer of charcoal in West Africa (Lund et al. 2009) leading to Deforestation and 16,600 deaths p.a. from Indoor Air Pollution.
- How can adoption of Biogas Digesters, which provide renewable & sustainable access to energy, be increased to resolve this problem?



## Methodology

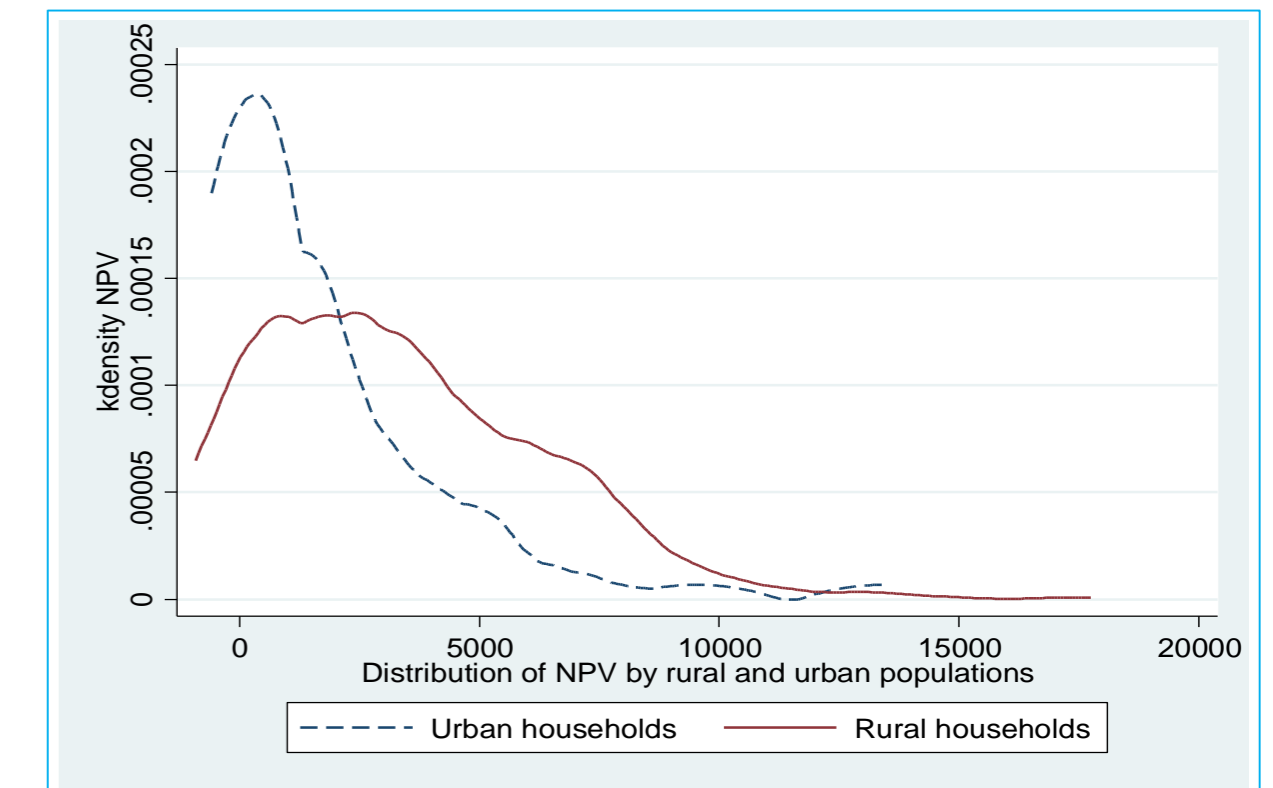
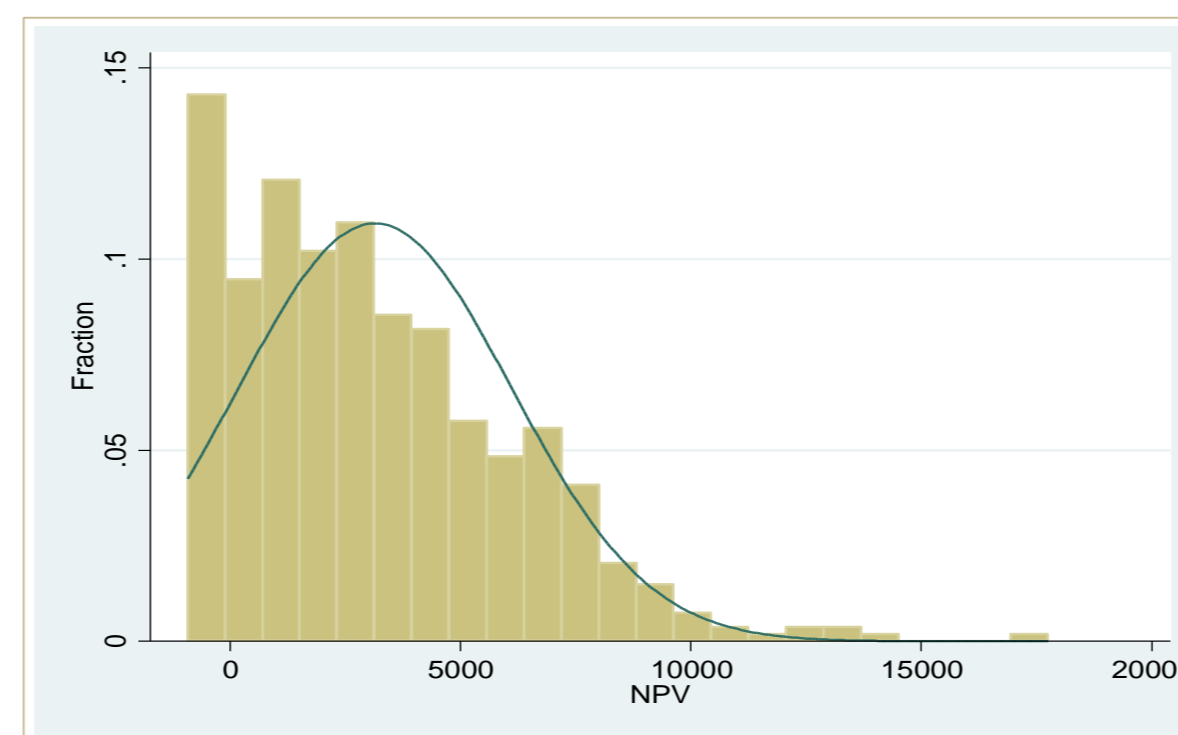
- This study examines the low adoption rates of biogas digester technology in SSA to assess its feasibility and profitability.
- A comparative analysis of the costs and benefits of adopting the digester is discussed using the Cost-Benefits Analysis technique to arrive at the Benefit cost ratio.



- A distribution of NPVs for eligible households is identified from the dataset using the Discounted Cash Flow Model.

## Results

- 11% out of a dataset of 5,000 actual peasant farm households (PFH) in Ghana qualify to deploy a biogas digester.
- 88% of these eligible PFHs are located in rural areas while only 12% are found in urban areas



- Mean NPV was positive \$3,149 which demonstrated that 85% of eligible PFHs will enjoy positive returns after 20 years of installation.
- Benefit Cost Ratio supports the overall feasibility of digester adoption with 84% acceptance by PFHs against 16% rejection.

## Conclusion

- There is overall feasibility as well as profitability of Biogas Digester implementation in Ghana.
- Use of bio-slurry as fertiliser should be the central point for digester dissemination
- Government and donor agencies should provide water close to the digester.
- The cost of the digester should be subsidized by government to encourage adoption
- Environmental and health benefits have to be effectively communicated to enhance the adoption decision making.