

# Title : Farm Household Renewable Energy: An Enquiry into Widespread Adoption in Sub-Saharan Africa (A Ugandan Case Study)

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## Introduction

- ❖ Energy plays a crucial role in driving development in a country.
- ❖ Despite its importance sub-Saharan Africa (SSA) suffers the widest energy deficit in the world.

Fig. 1: Map of the world at Night



## Problem

- ❖ The problem is even more severe in rural SSA
- ❖ Approximately 80% of the population depend on traditional biomass for primary energy
- ❖ There is need for significant decline on this dependence; in order to achieve the bulk of the Millennium development goals.
- ❖ Efforts at increasing access to sustainable energy for rural households have proved futile.

## Objective

- ❖ Construct a model that examines the impacts of adopting sustainable energy technology on farm households objective( where objective is maximisation of family income)
- ❖ Tribogo village-Ugandan case study

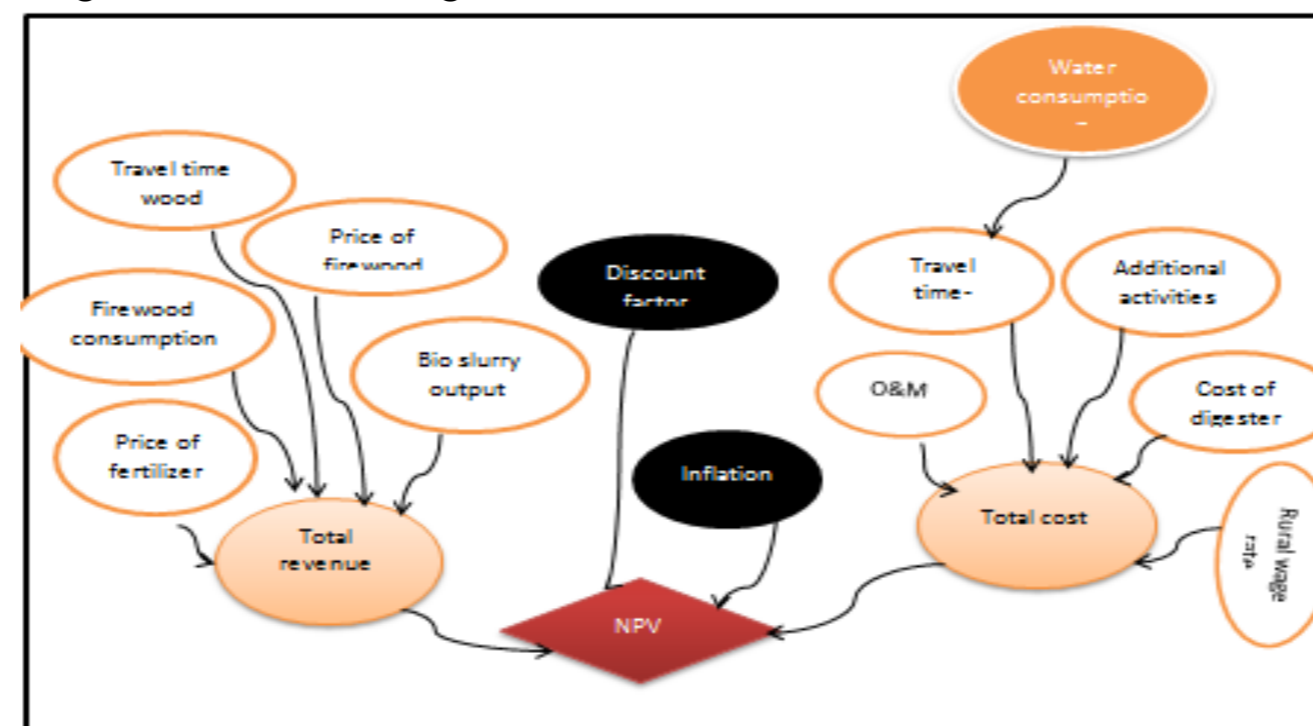
## The transition



## Methodology

- ❖ Simple NPV analysis
- ❖ Inputs consisting of only factors that farm households can monetise

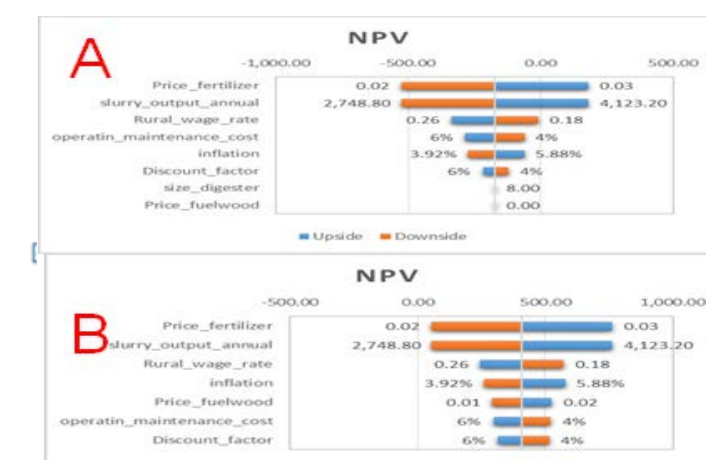
Fig 3: Influence diagram



## Results and sensitivity analysis

- ❖ Adoption partially reduced firewood consumption:23%/yr.
- ❖ Water consumption of household increased drastically.
- ❖ Total labour hours increase by 6.47/wk.
- ❖ Base case resulted in negative NPV of \$-172.

Cost of the Digester Sensitivity Analysis Base Case				Cost of the Digester Sensitivity Analysis Alternative			
Value	NPV	PBY	IRR	Value	NPV	PBY	IRR
200	553	6	0.23	200	1001	4	0.39
250	454	8	0.185	250	901	5	0.3
300	354	9	0.14	300	801	6	0.24
400	155	12	0.08	400	602	8	0.16
478	0	15	0.05	478	447	10	0.13
565	-172	17	0.021	565	274	11	0.1
600	-242	18	0.01	600	204	12	0.08



## Conclusions

- ❖ Adoption of the technology is not financial feasible for farm household.
- ❖ Marketing of digester along with its organic fertilizer benefit is crucial for increasing adoption
- ❖ Subsidy would go along way in making the digester a feasible venture, however the impact of this should not be overstated
- ❖ Household are less sensitive to cost than they are to the value of the organic fertilizer
- ❖ Firewood valuation has a crucial role to play in the economic feasibility of the digester.