



CLEAN POWER
EAST AFRICA 

A FIT FOR PURPOSE DISTRIBUTION NETWORK -Mini Grids-

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Presentation Outline

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INTRODUCTION

- Mini grid refers to electricity distribution infrastructure within an area or neighborhood supplied at a single point.
- Mini-grids can be designed using a range of technical approaches which can include single generation technologies or a hybrid system that comprises of two or more technologies.

KEY DRIVERS OF LOCALIZED DISTRIBUTION

- Government policy on electrification access and commitment to cause social – economic transformation of a nation through among others promoting access to electricity.
- Enabling national legislation that permits the generation and sale of electricity by private entrepreneurs other than national utilities.
- Low rates of electrification implying that there is demand for electricity.

KEY DRIVERS OF LOCALIZED DISTRIBUTION (cont'd)

- Availability of natural resources /sources of electricity generation namely abundant sunshine, waterfalls, biomass, diesel etc.
- Willingness and ability of consumers to pay for electricity service.

CHALLENGES IN IMPLEMENTATION OF MINI GRIDS

- Mini-grid schemes need to overcome significant challenges in their development.
- Technical challenges include poor matching to local context and poor maintenance.
- Asia has been relatively successful in mini-grid development, while the challenges are greatest in Africa.

REQUIREMENTS FOR SUCCESSFUL IMPLEMENTATION

Successful mini-grid development requires:

- Design based on detailed analysis of local context including natural resources, supply chains, energy demand and current/future energy policies.
- A favourable policy environment which may involve changes to national laws which favour grid electrification.
- In community schemes sufficient time is required during project design to establish clear governance structures and to build community trust.
- Mini-grid schemes need to be linked into wider rural development strategies in order to match demand.
- Securing sustainable finance to cover upfront costs. Ideally, at least the operation and maintenance costs must pay for themselves (through tariffs) in the long run for schemes to be feasible.

ACHIEVEMENTS & OPPORTUNITIES IN MINI GRID DEVELOPMENT IN UGANDA

1. Developed 300kW mini grid serving over 400 customers including a 60-bed hospital – Kisiizi.
2. Established 32kW biomass gasification projects at Sekanyonyi & Tiribogo serving over 220 customers.
3. Constructed a mini grid on Kalangala Island powered by a 1.6MW solar/diesel hybrid.
4. Developed a mini grid powered by 22.5kW solar facility in Kabunyata.

ACHIEVEMENTS & OPPORTUNITIES IN MINI GRID DEVELOPMENT IN UGANDA...

5. Over 70 habited Islands in Lake Victoria which are not yet electrified.
6. Various micro and pico hydro sites in mountainous areas.
7. Concentrated settlements and trading centres located far from the national grid.
8. Abundant solar potential - 5kW per sq. metre

INNOVATION & DEVELOPMENTS TO BRIDGE THE METERING GAP AND REVENUE PROTECTION

- Use of prepaid metering technology as opposed to post paid meters.
- Adoption of low cost technologies that are suited for rural electric loads.
- Location of electricity supply source sufficiently close to load centre so as to minimize costs of long evacuation lines to the load centres.

EXPECTATIONS OF MANUFACTURERS AND LARGE SCALE USERS OF ELECTRICITY

- Reliable supply of electricity – availability in the quantities and the time it is needed.
- Good quality of electricity supply – voltage, frequency and other technical aspects.
- Good quality of customer service by the service providers
- Affordable electricity tariffs to make their products competitive.

CONCLUSION

- Achievement of universal access to electricity in African nations will require application of a combination of both grid connected and localized distribution solutions.