PARTNERSHIPS ON COMMUNITY ELECTRICITY

UGANDA CASE STUDIES

• Kisiizi: Micro-Hydro IPP
• Magale: Genset Power supply to the Community
• Bufumira: Battery Charging Community Project
Kisiizi Micro-Hydro System

• Located: Kisiizi, Rukungiri District
• Capacity: 60KW Being Expanded to Close to 300KW
• Background: Originally built in 1963 to produce 7.5KW. Expanded in 1980s to present capacity through funding from Tear Fund (UK NGO).
• Ownership: Kisiizi Hospital Under the Church of Uganda
• Hospital serves over 150,000 Rural People
• Existing Partnerships
  • Kisiizi Hospital
  • The Church of Uganda- North Kigezi Diocese
  • The Hospital Staff (Part of the Community)
Kisiizi Micro-Hydro System

Trends and Reactions

Trends:
- Hospital Expansion and Modernization
- Increase in Staff numbers and Hospital Equipment
- More Demand for Power
- Uncontrolled Usage and Overloading.

Reactions:
- Observed need for Expansion of the Power Generation Capacity.
- Demand Side Management and Power Rationing
  - Load Shedding
  - Installation of a Load Management System
  - Discourage use of Heavy Electric Gadgets: Cookers, Kettles..
Kisiizi Micro-Hydro System

Developments

• Strategy to increase production to 300KW.

• Creation of the Kisiizi Power Company (IPP)- Joint Venture between Hospital and C.O.U. North Kigezi Diocese.

• Plan to extend power to the Community to benefit up to 800 New Customers

• Multiple Financing of Proposed Expansion of Electricity Generation to 300KW:

• Other Partners: Uganda Government (MEMD)- Public
  World Bank- Donor
  Global Environmental Facilities- Donor
  A Commercial Bank- Private Sector
  Kisiizi Residents- Community
Kisiizi Micro-Hydro System

Lessons from Availability of Electricity (60KW)

• Relatively Good Quality Medical Services at the Hospital.

• 60Kw not adequate for the demand therefore a need for Increased Production

• Hospital able to use excess Electricity productively – Maize grinding mill, Welding garage and a Carpentry shop.

• Increased demand experienced required increased production of Electricity.

• Importance of Good Financing Mechanisms for Increased Production of Electricity to have a direct benefit for the Community.

• General anxiety from the Community and a clear indication of the need for Electricity.
Kisiizi Micro-Hydro System

General Observations

• It has attracted a lot of attention and quite some Investment (Time and Financial).

• It is happening and the process has already taken off.

• It is not a straightforward process and requires good strategizing.

• Different Partners play different yet specially important roles.
Magale Hospital Generator Power Supply

• Located: Magale Village, East Bubulo, Mbale District
• Capacity: 37KW
• Background: Originally for supplying Magale Hospital
  Power Production quite high Compared to the then Existing Demand at the Hospital
  Power Supply was extended to the Surrounding Community to Subsidize high maintenance Costs for the Hospital.
  Power Supply for 3 hours every night
  Generator Monthly Running Cost – Ug Shs 600,000
  Tariff was set Ug Shs 3,000 to 12,000 depending on the Load of the Beneficiary.
• Ownership: Magale Hospital Under the Catholic Church, Tororo Diocese.
Magale Hospital Generator Power Supply

Existing Partnerships

• Magale Hospital
• The Catholic Church - Tororo Diocese
• The Magale Community – Schools, Shops and Homes

Power Distribution

From three Phase Power Produced by Generator

• Phase 1: Trading Centre (Included Homes, Schools and Small Businesses
• Phase 2: Hospital & Sister Establishments (School) owned by Church
• Phase 3: Hospital Staff Quarters
Magale Hospital Generator Power Supply

37kva 3-phase Low Voltage Diesel Generator
Trends, Reactions and Challenges

Trends & Changes:

- Increased Demand and Load on the Generator.
- Better Lighting and Increased Business Hours.
- Observed Increase in Number of Establishments near Hospital
- More Fuel Usage
- Increase in Monthly tariff

Reactions:

- Unwillingness to pay Bills. Willing to use Power- Observed thefts after Disconnection due to non payment.
- Introduction of Tripping Circuit Breakers for Protection against Overload resulted in Unrest
- Steady Increase in Users until Tariff was adjusted Upwards
Magale Hospital Generator Power Supply

Challenges:

• Bill Collections and Payments

• Understanding between the Hospital Management and the Community.

• Belief from the Community that Government was funding this Project and therefore no need to Pay Electricity.

• Unwillingness of the Community members in the technical implementation of the Project.

• Maintaining few loyal customers at a realistic tariff
Magale Hospital Generator Power Supply

Developments and Results

• In the first four months of Supplying power to the community, the Users Increased from 0 to 61 contributing close to Ug Shs 600,000 per month.

• Failure to consistently run and maintain Generator

• Failure to consistently supply power.

• Eventual Cancellation of Service

• Hospital Acquisition of a Stand Alone Inadequate Solar Power System and hence limitation on the used Hospital Equipment – Mainly Lighting

• Schools acquired their own yet very expensive to maintain Generators

• Mixed reactions from the Community depending on how the Generator Power Supply had benefited them
Lessons

• Electricity has to be Affordable

• Involvement of the Community/ Market in the general Setup to create Trust and Understanding.

• Need for Clear Policies and Guidelines.

• Educating Users and Management of Demand

• Designs require considering maximum usage costs

• Tariffs must be conveniently set and acceptable depending on the Load.

• Running a Diesel Generator for Power Production is quite Costly
Magale Hospital Generator Power Supply

Opportunities

• The need still exists – Reported visits from community businessmen to try and re-establish the service.

• High business area creating good power purchasing ability from community. Over 150 Small Shops.

• Available nearby Water fall – Unknown Potential.

• Surrounded by good Business town including Lwakhakha Border town.

• High Agricultural Productivity.

• Those using Generators (Especially Schools) preferred the Service.
Bufumira Island Battery Charging

•Located: Misinzi Village, Bufumira, Kalangala District
•Capacity: 2.2 KW of Solar Photovoltaic and Wind Power
•Background: Designed to charge Batteries for a Densely Populated Misonzi Fishing Village Island.

No Electricity at all

Power Production using Solar Modules and Wind Generators

Community expected to Benefit by having a Battery Charging Service brought Closer to them. Was Originally Being done at Kasenyi - Mainland

High Costs and Risks Involved in Using Water Transport to carry batteries for Charging.

Funding from UNDP GEF

Tariff (For Battery Charging Set at Ug Shs 1,500 for Small Battery and Ug Shs 2000 fo Big Battery.

•Ownership: Bufumira Island Development Association – A Community Based Organisation.
The Misonzi Battery Charging House
Bufumira Island Battery Charging

Existing Partnerships

• Bufumira Island Development Association Executive – Rep. Community and Managing Project

• UNDP GEF/ SGP – Donor

• The Misonzi Community – Homes
 Bufumira Island Battery Charging

**Trends and Challenges**

**Trends:**
- Establishment of a team of Battery Charging Technicians
- Wiring of 12V Battery Powered Homes with 12V Lighting
- Smaller Replication of Project at Bukasa and Bufumira Island.
- Preferred Point of Charge than the Mainland – Misonzi and Nearby Islands

**Challenges:**
- Wind Technology Inadequate. Installed with a Capacity of 1.2KW Capable of only producing a Maximum of 300W in very few months a year per day.
- Inadequate Capacity for Overwhelming Battery Numbers
- Failure to Fully Charge Batteries in One day as required hence.
- Replacing the Wind Generators with Preferred Solar Power. Existing Peak Power 1KW
Bufumira Island Battery Charging

Results and Lessons

• Completion of Battery Charging Station Building using funds from Battery Charging.

• Increased Battery Owners

• Point of Charge for over 15 Mobile Phone Every day

• Involvement of the Community in Planning of this Project played key role in its continuation despite Inadequate Power Supply

• Choice of technology requires a good initial assessment.

• Wiring of Houses a sign that there is a need for good power

• Employment
Bufumira Island Battery Charging

Battery Charging
In Progress.
Bufumira Island Battery Charging

Opportunities

• Dense Settlement – Grid Extension Easily possible
• Demand for Power supply
• High Purchasing Power from Fishing – Main Economic Activity.
• Badly needed increase in Power Supply for Battery Charging.
• Renewable Energy – Solar Electrification Potential
PARTNERSHIPS ON COMMUNITY ELECTRICITY
ESD – KONSERVE ROLES

• Information.
• Identification of Key Stake Holders
• Market Development
• Technical Support
• Identification of Financial Support
• General Energy Project Implementation
END- Thank you