Improving people’s lives by providing access to electricity and fostering the development of sustainable businesses.
Our Mission

To improve people’s lives by providing access to electricity and fostering the development of sustainable businesses.
Who We Are

We are all volunteers from a variety of backgrounds, united by the common desire to end energy poverty around the world.
What We Do: Electrification

We partner with in-country NGOs, vendors, and distributors to establish renewable energy solutions for less economically developed communities, from cell phone charging to refrigeration to solar home systems.
What We Do: Sustainable Business

We work with communities to develop long term business plans and train the owners and operators to establish social enterprises that will be successful for years to come.
What We Do: Remote Monitoring

We design, build, and install data acquisition systems which allow us to monitor the health of our installations in real-time. We regularly publish our lessons learned to help the broader energy development community.
Current Projects

- Muhuru Bay
- Filibaba
- Chalokwa and Munyama
- TBD
Muhuru Bay, Kenya - 2014

• 5kW wind and solar charging station
• Services:
  – Cell phone, battery charging
  – Cold drink sales
  – Ice sales for fishing community
  – Food sales
  – Portable battery kit rentals
  – Electricity for home of local school headmaster
Business Operations

- ~$5,500 of revenue recorded after 18 months of operation
- Initial success of rentable battery kits dwindled over time
- Kiosk owners identified opportunity for the sale of ice for fisherman

Muhuru Bay - Sources of Revenue

- Cold sodas
- Phone
- Battery kits
- Ice
- Other

*Ice making business only in operation for five months
Maintenance & Upgrades

• Follow up visits:
  – Inspection of major components
  – Ensure batteries are not dehydrated
  – Untwisting of wind turbine cables
  – Training (and re-training) on switches, cleaning, emergency operation, multi-meter usage and battery equalization

• 18-month upgrades:
  – New data logger with improved transmission
  – New energy meters allow consumption from home and kiosk to be separated
Summary

Challenges

• Stolen funds and departure of former kiosk manager
• Falsified income records
• Co-mingling of funds with those for the primary school
• Lack of correlation between initial survey results and actual participation in services

Successes

• Nearly 5MWh of energy consumed
• No major system downtime
• Validation of technical design
• New, community-identified revenue sources
• Stimulation of economy in the form of new businesses & activities
Filibaba, Zambia - 2015

- 1.8kW solar system
- Services:
  - Cell phone, battery charging
  - Talk time sales
  - Dry goods market
  - Cold drink sales
  - Payment plans for small solar home systems
  - Wired electric services for the church and two homes
Business Improvements

- Improved community surveys and analysis methods
- Shifted from rentable battery kits to rent-to-own solar home systems
- Improved record keeping methods
Expanded Services

• Rent-to-own solar home systems with lights, rechargeable radios, and some with TVs
• Dry goods and refrigerated drinks for sale
• Wired electricity service to two homes and a church
Technical Improvements

- Improved load profiling using data from Kenya
- Enhanced data logger with additional sensors
Summary

Challenges

• High demand for more expensive and capable solar home systems
• Low profit margins on sales of groceries and talk time

Successes

• Over 500 kWh produced
• Zero downtime
• Over 1500 mobile phones charged
• More than $4,000 in revenue
• Host site for an IEEE Smart Village Operator Workshop
Chalokwa, Zambia - 2016

- 2.4 kW solar system housed in a repurposed shipping container
- Services:
  - Cell phone, battery charging
  - Payment plans for a variety of solar products
  - Laptop for local school
  - Ice sales for fishing community
  - Cold drink sales
  - Frozen meat sales
Business Operations

- Strongest, most-experienced NGO partner to date
- Established Memo of Understanding
- 3-tiered structure of solar home products available
- Laptop provided for the local school
- Stronger focus on refrigeration with plans to expand capacity

Profits in First 2 Months of Operation

- Airtime
- Eggs
- Beef
- Croc meat
- Mealie-meal
- Bread
- Ice
- Charging
- Kapenta
- Processed pork
- Chicken
- Softdrinks and ice lollie
Munyama, Zambia - 2017

• Fishing community near Chalokwa/Lake Kariba
• Anticipated ~5 kW solar system
• Primary focus: ice and refrigeration
  – Also possible: solar home kits, battery charging

• Anticipated schedule:
  – Fall 2016: Technical/business design
  – Spring 2017: Select vendors, travel team; finalize design
  – Summer 2017: Installation trip
Philippines - TBD

• April 2016 assessment trip
  – Determined site was not suitable for a project
  – Installed a data logger in a rural area
  – Identified new partnership with Hybrid Social Solutions

• Currently identifying community needs and scoping an energy kiosk solution
How Can You Help?

Volunteer  Donate  Share

Kilowattsforhumanity.org
Questions?