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Abstract

As part of an effort to improve access to health services and education in Sierra Leone, Zion Ministries has partnered with Seven Hills Global Outreach (SHGO) in order to create a centralized campus for the purpose of providing maternal and infant health services, a nutrition center, a well, a primary school and a community meeting space for a population of over 13,000 people.

Currently, there is not a sustainable way to charge mobile electronics on this campus. NewBorn Solutions has researched the systems most commonly employed for mobile device charging in rural Africa, with the goal of providing recommendations to Zion Ministries outlining a sustainable and cost-effective charging strategy. One device stands out as the most promising solution: the ReadySet Solar Kit, a simple, reliable and low-cost solar charging product produced by Fenix International. Working with Seven Hills, NewBorn Solutions has developed a set of guidelines for installation, maintenance and use of the ReadySet system on campus. If this pilot implementation is a success, it can serve as a model for future implementation in other regions of Sierra Leone and elsewhere in Africa.



Project Background

Widespread Healthcare Problems

- The Sierra Leone Civil War (1991-2002) had devastating effects on healthcare availability.
- Maternal/infant health issues are extremely dire. "One in eight women in Sierra Leone dies from pregnancy related complications" ("Reducing the Dangers").

Local Issues – Bandawa Community Campus

- The campus could use mobile phones for communications, but there is currently no electrical power access beyond an expensive generator.
- A reliable, inexpensive and easy to maintain source of power is needed to charge electronics on campus.



Bandawa Campus. Source: Seven Hills, Flickr, 2012.

Methodological Overview

Background Research Phase

Initial research topics included:

- History of Sierra Leone; long-term effects of Civil War.
- State of the Bandawa community campus.
- Previous implementations of cell phones for rural health initiatives:
 - General research
 - Campus-specific (discussion with SHGO)



Bandawa Campus Well. Source: Seven Hills, Flickr, 2012.

Recommendations Phase

How can we enable mobile phone charging on the Bandawa campus?

- Determined preferred charging method: solar (PV cell).
- Selected ReadySet Solar Kit by Fenix International as a possible solution and evaluated its viability.
- Established recommendations.

ReadySet Solar Kit

Commercial-Off-The-Shelf Solution

- The ReadySet Solar Kit by Fenix International is a solar power system with an internal reservoir battery.
- The ReadySet could potentially provide renewable energy for 10 smartphones per day on the Bandawa campus.
- Kit cost is US \$275 plus shipping.
- Battery is end-user replaceable.



ReadySet Solar Kit. Source: Fenix International, 2012.

Implementation Strategy

Installation, Training and Usage Protocols

- Chief health and education officers will maintain a ReadySet unit on campus and ensure that it is kept charged whenever possible.
- When the campus generator is operating to provide light at night, the ReadySet battery may be charged directly via AC.
- The solar panel is small and light; it may be brought indoors during the night to avoid damage or theft.



Right: Edmond, Zion Ministries' Chief Health Officer at the Clinic-School Campus in Bandawa, shares his work with SHGO from his office inside the Maternal and Child Health Clinic.

Chief Health Officer. Source: Seven Hills, Flickr, 2012.

Future Development Goals

On Campus

- Electronic relationships with doctors should be formed to enhance the level of expertise available.
- As cell phone infrastructure improves, internet access could be made available on campus.



Selected Bandawa Campus Photos. Source: Seven Hills, Flickr, 2012.

Off Campus

- Citizens with ReadySet units could act as "micro-utilities" for their communities.

Conclusion

The correct application of a power system such as the ReadySet will result in an improvement to the quality of campus services. This conclusion is based upon the assumption that new technologies can be introduced to the campus over time, and that Seven Hills and Zion Ministries can establish partnerships with medical professionals in and out of Sierra Leone.

Many thanks to Jesse Mattleman and Ashley Emerson Gilbert at Seven Hills Global Outreach!

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