Energize the Chain
Partnership Overview

September, 2014
Energy and Development

Energize the Chain’s work addresses a core developmental challenge caused by the lack of reliable energy in Africa

1.3 Billion People Lack Access to Electricity Globally


- 590 million people in Sub-Saharan Africa (SSA) lack access to electricity
- Most SSA countries are focusing more on generation capacity, rather than energy distribution, leaving last mile locations un-electrified
- Access to electrification has increased at approximately ~1% per annum in most SSA countries
- A significant portion of health clinics and facilities are expected to remain off-grid in the next 10-20 years

Effective Storage, Transport & Distribution of Vaccines Requires Temperature Stability

Most vaccines require continual refrigeration between 2 and 8 degrees Celsius

1.3 Billion People Lack Access to Electricity Globally!

- Vaccines
- International transport
- National airport
- Transit storage facilities (2°C to 8°C)
- Primary vaccine store
- Cold room (2°C to 8°C) and freezer room (-15°C to -25°C)
- Intermediate vaccine store
- Cold room (2°C to 8°C) and freezer room (-15°C to -25°C)
- Intermediate vaccine store
- Refrigerators (2°C to 8°C) and freezers (-15°C to -25°C)
- Health center
- Refrigerators (2°C to 8°C) and cool boxes
- Health post
- Refrigerators (2°C to 8°C) and cold boxes/vaccine carriers
- Child and mother

Unreliable energy and insufficient backup power compromises vaccine quality and the number of off-grid health clinics that can participate in vaccination programs.

Existing cold chain systems are constrained with the introduction of new vaccines, as seen with rotavirus and pneumococcal. As new vaccines are introduced, such as HPV, they will exacerbate the need for resilient cold chain systems.
Opportunity

The mobile phone explosion in SSA presents a unique opportunity to strengthen vaccine cold chain by utilizing energy capacity in off-grid areas

- Mobiles cover over 75% of the world and have extended to the last mile in developing countries
- Cell towers are the only type of infrastructure in many rural areas
- Research shows the generators used to power each cell tower may create 5 to 10kWh of excess electricity daily

Cell phone towers are often located in remote villages, photo from GSMA
Energize the Chain

Vision

- Energize the Chain (EtC) was founded in 2013 to solve the missing link in the delivery of vaccines to the world’s poorest utilizing a unique off-grid energy model.
- Our mission is to make effective vaccine delivery as accessible as global cell phone coverage.

Basic vaccines remain inaccessible, often due to the absence of reliable energy. 1.5 Million children under 5 die every year of vaccine preventable deaths. Nearly 22 Million infants remain unimmunized globally each year.
Background

Concept

Supporting vaccine refrigeration at cell towers in close proximity to rural clinics to extend the cold storage chain

- We aim to **deploy and secure refrigerators** in close proximity (less than 500m) to cell phone towers. Clinics within walking distance to these towers are provided with a **‘vaccine box’** with integrated cold packs to transport the vaccines.

- If last mile clinics are not in close proximity to a cell tower but within cell phone coverage, EtC will still **implement leveraging solar or existing power systems**

- In each refrigerator, EtC has deployed a WHO certified refrigerator equipped with a **custom designed remote monitoring and logging unit to track temperatures** (inside and outside) and when the refrigerator has been opened. Information is available in **real-time using GSM data networks**

- Energize the Chain works closely with **Health Ministries and local health partners**, integrating into existing health systems based on local need
Energize the Chain work involves a range of activities from site assessment and planning, to installation, maintenance and remote monitoring.
Delivery Models

Energize the Chain has experimented with different models based on the differing needs of rural clinics and access to cell towers.

1) Clinic Present & in Close Proximity to Cell Tower
   - Vaccine refrigerator is located at a cell tower base station near an existing hospital or clinic. In this model, the refrigerator uses minimal power from the cell tower base station, can use AC/DC/both voltage and is housed within a secure shelter that is accessible by health workers at the Hospital/Clinic.

2) Vaccine Cold Storage at Cell Tower
   - Vaccine refrigerator is located at a cell tower base station to serve as an additional storage location to extend the cold chain. The refrigerator uses minimal power from the cell tower base station, can use AC/DC/both voltage and is housed within a secure shelter. Clinics are provided with a ‘vaccine box’ with cold packs for transport.

3) Stand-alone Solar
   - A standalone solar refrigerator is located at a remote clinic and has network coverage from a nearby cell tower. In this model, a cell tower is not immediately present and the refrigerator is solar powered, using DC voltage and may be housed within a secure shelter at a local clinic.

4) Refrigerator Replacement
   - An existing refrigerator is replaced at either a Hospital or Clinic and has network coverage from a nearby cell tower. In this model, the refrigerator is powered by traditional means – either Grid or Diesel, is likely AC voltage and is housed within a clinic or hospital. The Hospital or Clinic has reliable energy sources, but poor refrigerator equipment only.

Tower Network Coverage – Remote Monitoring

Cell Phone Tower Co-Location & Power

- AC & DC Power
- DC Power
- AC Power

Hospitals & Clinics

- Hospitals & Clinics
- Clinics Only
Pilot Test

Energize the Chain was first launched in Zimbabwe in partnership with Econet and rolled out successfully to over 110 operational sites

Lessons Learned

- **Partnerships are critical** - within telecommunications companies, at least one champion must be identified to help map the position of cell towers, provide connectivity support and secure access to cell towers.

- **The model must integrate with the existing health system** to understand current vaccine programs and Ministry of Health priorities.

- **During in-country pilot testing, it may be easier to partner with the non-government run hospitals for ease of implementation**, but the expansion of the program depends on working with government facilities.

111 operational sites, 58 sites under construction
100 sites being planned

Current site locations are indicated in a red H
Energize the Chain’s board and team is made up of development practitioners, public health specialists, business consultants and telecommunications experts.

**TEAM**

**MANAGEMENT TEAM**

Harvey Rubin
Energize the Chain & University of Pennsylvania
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**BOARD OF DIRECTORS**

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Energize the Chain Foundation Creation
Development of a Foundation to Expand the Model to SSA

Having proven the Energize the Chain (EtC) model in Zimbabwe, EtC is currently working to develop a formal foundation based in Johannesburg as an organization focused on replicating the model in Sub-Saharan Africa.

- EtC Foundation will coordinate between the global organization and country-specific deployment teams.
- EtC will manage local relationships, fundraising, and coordination of vendors and local support.
- EtC Foundation will work in parallel to the 501(c)3 non-profit established in the United States.
- EtC is currently working with Accenture Development Partnerships (ADP) on formalizing the EtC Foundation organizational model and legal frameworks.
- EtC is also in the process of recruiting and hiring core staff in the development of this organization.
- EtC Foundation is aiming to be ‘officially’ launched in November 2014.
Future Development Plans

A partnership with Power Africa could help us build the foundation and replicate the success of our pilot efforts in Zimbabwe to other countries in Africa.

I: Building a Foundation for Replication

- Packaging the results of Zimbabwe and building a toolkit for replication
- Developing EtC Foundation, based in Johannesburg, as an organization that will facilitate expansion into SSA
- Preparations for deployment in Burundi and Lesotho
- Further expansion to additional sites in Zimbabwe, building local health resilience
- Facilitating new partnership relationships for future expansion

II. Validating EtC in New Countries

(Future Countries selected are based on current partnership conversations)

- Deployment of EtC Model in Burundi and Lesotho (both Econet markets)
- Initiate pilot implementations in new geographies that have attracted interest: including Nigeria, Uganda, Kenya & Mozambique (as well as other Power Africa focus countries)
- Refine refrigeration technology and supplier agreements based on market needs
- Develop remote monitoring system to include advanced services such as inventory management

III. Expanding EtC Throughout SSA

- Expand and scale into new geographies
- Refine long-term business model
- Build active partnerships and integrate closer with existing vaccination strategies
- Packaging the results of Zimbabwe and building a toolkit for replication
- Preparations for deployment in Burundi and Lesotho
- Further expansion to additional sites in Zimbabwe, building local health resilience
- Facilitating new partnership relationships for future expansion

# of People Vaccinated

- 200K
- 200-500K
- 500K-1M
Questions & Next Steps

We look forward to discussing partnership opportunities with you!