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Connectivity, Electricity, and Education for Entrepreneurship (CE3)



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Outreach (BOSCO)
2018

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FOR DEVELOPMENT COOPERATION

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List of Abbreviations

BOSCO	Battery Operated System for Community Outreach
CE3	Connectivity, Electricity, and Education for Entrepreneurship
HIV	Human Immunodeficiency Virus
ICT	Information and Communications Technology
LRA	Lord's Resistance Army
NDIGD	University of Notre Dame Initiative for Global Development
UPDF	Uganda's People Defence Force

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Experience in Detail
"Connectivity, Electricity, and Education for Entrepreneurship (CE3)"

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1. General Information

The organisation Battery Operated System for Community Outreach (BOSCO) is located in Gulu, Northern Uganda. For eight years, BOSCO has been working in solidarity with residents of northern Uganda to recover from decades of conflict and displacement. Initiated in 2006 under the umbrella of Gulu Archdiocese, BOSCO Uganda has been implementing ICT and Development Centres in Gulu and Amuru district (including Choo Pe, Unyama, Lacor, Pagak, Pabbo and Jengari), self-reliable and with internet. Since 2012 BOSCO-Uganda is also working in the sectors of sustainable provision of energy in off-grid locations as well as Entrepreneurial Education where BOSCO runs its own ecosystem for social and economic development (BOSCO Uganda, n.d.).

This document presents the experience of the program “*Connectivity, Electricity, and Education for Entrepreneurship (CE3)*” which is a collaborative partnership in between BOSCO-Uganda, Accenture Foundation and the University of Notre Dame Initiative for Global Development (NDIGD, n.d.).

The CE3 project was executed in two main phases, during which substantially different strategies were pursued. CE3 phase 1 was conducted from approximately June 2013 – June 2015, and CE3 phase 2 was conducted from July 2015 to July 2017. This report will focus only on CE3 phase 2 (based on the author’s involvement).

The project was implemented in two countries: Uganda and South Africa. In Uganda 5 CE3 sites were implemented in the Acholi and Lango sub-region. This report will focus only on the activities undertaken in Uganda, based again on the author’s involvement.



Figure 1 Location of the experience

This experience is relevant as the goal of the CE3 is to stimulate economic growth by supporting entrepreneurs in three key areas:

- 1) Provision of reliable, clean energy
- 2) Making the world’s information accessible to entrepreneurs via internet access
- 3) Providing business training & mentorship to entrepreneurs

Any project with similar focuses on promoting livelihoods by supporting entrepreneurs in the developing world is well positioned to benefit from the lessons learned through this project.



2. Context of the Experience

Northern Uganda was engaged in a major conflict from approximately 1987 to 2008, which has been variously characterized as an insurgency, refugee/humanitarian crisis, civil war and as an ethnic conflict. The 2 primary belligerents in this conflict were the LRA (Lord’s Resistance Army, n.d.) and the UPDF (Uganda’s People Defence Force, n.d.). The narrative of this conflict and division of blame between the involved parties remains a highly contentious issue to this day but it resulted in two million people being displaced from their homes and tens of thousands killed. Since 2008 the LRA has not been present in Northern Uganda and the region has maintained peace and has experienced a steady (but not rapid) economic development. HIV/Aids remains a major social problem in this region, with infection levels at approximately 10 to 12% of the population.

In recent years, there has been relative stability in northern Uganda, but the people and communities still have limited access to electricity, connectivity, and jobs, resulting in crippling isolation. Only about 15% of Ugandans have access to grid electricity, and it is only about 75% reliable for those who are connected.

Launched in 2006 by a group that included Notre Dame alumni and faculty, BOSCO-Uganda began leapfrogging the missing technical infrastructure to supply ICT connectivity and training, strengthening communities in war-affected rural villages. Highspeed intranet connected users with one

another across regional communities, and a modest shared Internet connection brought news of events elsewhere in Uganda and abroad. Soon other international partners such as UNICEF and HORIZONT3000 joined the effort.

From the beginning, BOSCO's communities began to leverage surplus solar power—beyond what was needed to power ICT—for small entrepreneurial ventures such as mobile phone charging and print services. The group began to discuss how they might build on that small start, equipping BOSCO users with entrepreneurial skills and micro-scale solar energy in support of new business ventures. There were obvious synergies, and CE3 was born to make the most of them (University of Notre Dame, 2017).



3. Main Characteristics of the Experience

The Connectivity, Electricity and Education for Entrepreneurship (CE3) project develops an ecosystem approach to energy ownership and sustainability in three pilot sites in post-insurgency Northern Uganda.

Computer-based entrepreneurial training bolstered by mentorship from Accenture volunteers is fostering new business starts and job creation to generate economic activity with kilowatt-scale solar hybrid microgrids. In that environment, energy costs can be recaptured toward expansion and sustainability in the context of community ownership of renewable energy resources.

CE3 is developing a long-term, sustainable ecosystem that goes further than solar power, connectivity or any standalone solution. Instead, CE3 fosters an integrated package, a system approach that includes (BOSCO Uganda, n.d.):

- Providing disconnected communities with clean, efficient, renewable energy on the kilowatt scale to power businesses and schools, with recaptured revenue to support expansion and sustainability.
- Computer access, intranet and Internet connectivity and training to enable access to information and resources, unleashing the creativity and motivation of the Ugandan people.

- Entrepreneurial training in schools and community centers, coupled with local and remote mentorship, providing basic leadership and business knowledge that leads to greater economic activity.

Since the inception of the CE3 project beginning with phase 1 in 2013, a handful of individuals have served as project management leads, with different practices implemented by each project manager. Briefly, implemented practices can be illustrated as follows:

- Business/financial literacy training activities: Entrepreneurship Essentials curriculum implemented at several community and school sites in both phase 1 and 2. Entrepreneurship curriculum implemented at 5 schools in Lira in both phase 1 and 2
- Installation, maintenance & revenue collection of solar systems: Three 1.5kW systems installed in phase 1 (2 schools + 1 community site) and two 30kW systems installed in phase 2 (2 schools)
- Installation, maintenance & revenue collection for internet service provision
- Mentorship activities conducted between local entrepreneurs and international mentors: Approx. 50 mentorship pairs were implemented in phase 1 for approximately 3 months. And around 120 mentorship pairs implemented in phase 2 for approximately 4 months.
- Business training follow-up activities: 5 business plan competitions were held in phase 2. Support was provided to 2 groups in phase 2 through savings and credit groups.

By the beginning of phase 2, the curriculum and best practices for business training activities were largely already in place based on phase 1. One evolution which took place early into phase 2 was the introduction of follow-up activities for trainees, launched under the branding “Entrepreneurship Club Uganda”. These activities (business plan competitions and local savings groups) were introduced by BOSCO's CE3 team in order to enrich the program and to keep entrepreneurs engaged even after the completion of business trainings. Business plan competitions (which give small cash prizes to the winning teams with minimal strings attached) were (perhaps unsurprisingly) found

to be popular among local entrepreneurs and were instrumental in raising enrolment and interest in business trainings.

Activities that BOSCO has engaged in the 2 local savings have been relatively steady, with the groups meeting at regular intervals to deposit savings (to avoid high withdrawal fees & savings fees charged by local banks) and to apply for loans from the group for small business activities. In one of the groups, several cases of loan defaults have occurred and are unresolved, leading to some loss of confidence in the group by both the group members and by BOSCO team members.

Mentorship was attempted in both phase 1 and 2. Communications between local mentees and international mentors (volunteer Accenture consultants) were found to be difficult based on lack of fluency in English by some of the mentees as well as a lack of typing and computer skills (communications were conducted by Skype and email). This necessitated the hiring of highly educated local translators to assist in translation and communication between the mentors and mentees. In both cases, the mentorship program was eventually terminated due to the costs involved as well as the difficulty in quantifying the benefits to mentees and/or mentors.

Installation of solar systems and internet at the 5 sites in Uganda was perhaps the highest priority activity for this project, with a large fraction of the project's overall budget going towards investment in batteries, solar panels and other components for these systems. Some unexpected incidents including the bankruptcy of SunEdison who had promised to donate panels to the project, as well as gaps in experience by the implementers of this project in terms of contract management, caused installation of these solar systems to be completed at a much later date than anticipated, leading to lower revenues than expected from these systems. Additionally, collection of revenue from the sites has proven to be difficult. This is unexpected because based on needs assessments, these energy sites should be saving a large amount of money, which they would have previously been spending on diesel used to power generators. Revenue collection at one of the phase 2 sites may be complicated by the fact that this school

has an outstanding line of credit with a local bank. This bank may have interests which diverge from the interests of the CE3 project, while also having greater experience and legal authority to make collections.

The following tools were instrumental in the implementation of this experience:

- Questionnaires delivered to business trainees at the beginning and end of each training
- Metrics tracking table tracking the following metrics:
 - Number of individuals trained
 - Jobs created / affected by the project
 - Businesses started / affected by the project
 - kW of energy produced
 - kW of energy consumed
 - Revenue collected from energy/internet consumers
- Documentation on energy billing practices & educational training practices
- Documentation on best practices for marketing, executing & judging biz plan competitions.
- EngageSpark: a tool for marketing & communicating to beneficiaries by SMS



4. Stakeholders and Partners – Roles and Responsibilities

Based on this project's goal of creating economic growth in this region, the targeted beneficiaries were quite diverse (small business owners, self-employed individuals and people soon entering the work force). The main beneficiaries of this experience are, on one hand the places where the energy micro-grids were installed:

- Pope John Paul II College Gulu (30kW, serving ~900 staff & students)
- Skyland High School, Lira (30kW, serving ~800 staff & students)
- Pabbo Subcounty, Amuru District (1.5kW, serving ~50 people)
- King James College, Lira (1.5kW, serving ~50 staff & students)

- St. Mary's Lacor, Gulu (1.5kW, serving ~50 staff & students)

And, on the other hand, those involved in the education program:

- Secondary school age students in northern Uganda
- Self-employed adults in northern Uganda

The involved organisations and positions are:

- **BOSCO Uganda:** Implementing partner based in Gulu, Uganda.
 - CE3 Project Manager – Project lead based in Uganda.
 - Field Coordinators (2) – Implementation of business trainings.
 - CFO – Invoicing and revenue collection for internet & energy.
- **BOSCO Uganda local partners:**
 - Utility Manager (5) – One individual hired & trained to manage each energy site.
 - Entrepreneurship Training Instructors (2 currently) – Teachers who lead business trainings at the various CE3 sites.
- **University of Notre Dame – Initiative for Global Development:** This project is structured as a sub-grant from Accenture to NDIGD to BOSCO Uganda.
 - CE3 Project Manager – Lead from ND, works closely w/ BOSCO to implement the project.
 - Industrialization Manager – Financial administration & oversight of the grant.
 - M&E Specialist – Provides expertise & oversight on monitoring & evaluation activities
- **Accenture Foundation:** Lead funding partner, also provides technical expertise via one position dedicated to supporting the project, as well as mentorship volunteers.



5. Resources

The resources needed in this experience depend on the different programs.

Education program: The education component of this project could easily be extended to any number of schools and/or

community sites. At each site, this program requires the following:

- Human: 1 Training Instructor (often a teacher at the school, paid approx. \$200 per term)
- Finance: ~\$600 per trimester for printing materials + prize money for end-of-term business plan competition activity
- Knowledge/methodology: Entrepreneurship Essentials curriculum (HTML + PDF versions)

Energy program:

- Human: 1 responsible position + administrative overhead
- Financial: investment depends on system size (approx. \$ 4.5k capital required per kilowatt)
- Expertise: each solar system should be tailored to the target site. In some cases BOSCO has procured this expertise from contractors after posting requests to tender.

Mentorship program:

- International volunteer mentors
- Paid local translators (approx. cost: \$30 per mentorship pair per month)
- Space in ICT Centres w/ internet access. Cost could not be calculated per mentorship pair because BOSCO provides these services freely to the CE3 project.



6. Impact of the Experience/ Practice

Data collected in the questionnaires given to trainees indicates a statistically significant economic benefit to individuals who complete the Entrepreneurship Essentials curriculum training program. The data suggests that small business owners who go through this program increase their overall volume of sales and also have higher profit margins than they did prior to joining the program.

One major effect of this project which I have observed, but which is not captured quantitatively in project metrics, is a positive shift in perception towards entrepreneurship. Ugandan culture places a high value on educational degrees and formal employment, while self-employed farmers, street vendors etc.

are considered less prestigious. On the other hand, NGOs and humanitarian organizations which once provided high paying jobs have reduced their presence in the region since the resolution of the LRA conflict. Despite the higher prestige, NGO workers, accountants, doctors and other professionals are paid low wages in this region, resulting in “brain drain” to urban Centres such as Kampala. By discussing entrepreneurship and giving individuals the opportunity to present their business plan to their peers in a formal setting, I observed a boost in self-confidence among the trainees, which I would attribute to the beneficiaries. I expect that this paradigm shift could have a large positive impact in the economy here if implemented at scale.



7. Lessons Learned and Recommendations

The education program implemented in CE3 is partly standardized by the Entrepreneurship Essentials curriculum. However, I found that the quality of our trainings varied widely across the different sites. Educational resources and documentation can only go so far in ensuring high quality of education in a program like this – hiring great teachers is critical to success but can be costly.

For the energy component of this project, dealing with schools and local government offices (who host and pay for our solar systems) was challenging in many ways. Schools in Uganda are chronically underfunded, and many have serious institutional problems. One private school hosting one of our larger solar micro-grids is quite well organized, in good financial shape and has been able to meet their financial commitments with only minor delays. At another school, administrators seemed unable to complete basic commitments and we eventually opted to move the system to another site. Although the new site (also a school) appears to be well run, they have also had trouble meeting their financial commitments. In retrospect, it would have been good to require detailed financial records including disclosure of all lines of credit to vet potential energy site partners prior to signing MOUs.

Another lesson learned for me, was the importance of prioritizing organizational issues rather than only focusing on project goals. In

interacting with our international partners, the focus was primarily on checking the progress of project milestones and this also carried over to my own thinking. I believe things could have gone more smoothly if I had focused more on ensuring people were in the right position and resolving any poor relationships between team members rather than being fixated on directly meeting project milestones.



8. Challenges

Some challenges are already included in the section above. Additionally some organizational challenges within BOSCO Uganda were experienced in this project. BOSCO is 10+ years old and has operated primarily as an implementing partner working with larger institutions, with minimal income from self-sustaining sources. Such a long existence is unusual under these circumstances, and serves as a testament to BOSCO's stability.

In terms of job stability it needs to be stated that, as Ugandan labour laws show great protection for employees (what is in itself a great thing) NGOs have a tendency in instead of let go of a staff member that is underperforming to wait for his/her end of contract. This can harm the performance of the organisation in reaching its objectives/outcomes and consequently the organisation.

Some actions have been taken to address the challenge of employee motivation. One which has been very helpful is the introduction of performance reviews, to be completed by each employee and his/her superior. This interaction is very important for ensuring healthy communication between employees, but was not previously in place.

The requirement for employees to submit monthly work plans and timesheets are also good steps towards resolving BOSCO's organizational challenges. The requirements to submit work plans and timesheets have been met with some small resistance by staff. However, based on recent discussions I am optimistic that these requirements will be for filled in the near future completely.

The viability of the CE3 energy utility business model remains in jeopardy due to the difficulties experienced so far in collecting money from the sites in a timely manner.



9. Sustainability

I don't anticipate that CE3's education and mentorship activities can be self-sufficient in the absence of external funding. The CE3's energy program on the other hand (and closely related: BOSCO's business as an internet service provider) have the potential to achieve self-sustainability.

Despite challenges in collecting money for these services, some money is certainly coming in, and some of this money can be used as unrestricted funds to support BOSCO's operations. The amount of revenue coming in for these services is an important contributing factor to BOSCO's ability to support staff and activities.

Environmentally, CE3's energy business could potentially achieve a higher level of sustainability by pursuing grid-tied solar systems which (unlike off-grid systems) do not require lead-acid batteries which eventually have to be disposed of and also have an environmental footprint from the mining of raw materials.



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10. Experience Sharing/ Up-scaling

For business trainings, the Entrepreneurship Essentials curriculum that we used should be translated / customized to another local context in order to get a high level of engagement from the beneficiaries.

The business plan competition practice that we developed is relatively straight forward and could be applied elsewhere, but would likely require customization of the judging rubric and other documentation.

The business plan competition concept has already been shared with Hive Co-lab and Geneva Global, towards the implementation of a similar project.