USAID DIV Program

Life Changing and Revenue Generating Electricity for Sub-Saharan Africa:
EGG-energy's Franchised Solar Hubs

Grant No. AID-OAA-G-12-00014

Final Report
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Introduction

Since February 2012, USAID has provided EGG-energy with critical support towards the development of our franchised solar hubs. Throughout the duration of this Stage 1 project, activities have been conducted for site selection and franchisee recruitment and training, ultimately resulting in the establishment of six franchised solar hubs in the Iringa region of Tanzania, as of the date of this report. Through this project, management processes and tools have been developed and improved, in order to demonstrate the financial sustainability and operational scalability of this franchising model for rural electrification.

EGG-energy's franchised solar hub offering enables rural entrepreneurs to earn additional sources of revenue. For qualified entrepreneurs, EGG-energy provides financing that lowers their upfront costs and distributes risks over time, and provides sourcing, maintenance and marketing support. These locally owned and operated solar-powered energy hubs will bring affordable, reliable and clean electricity to rural neighborhoods. The franchises are designed to be profitable for both the franchisee and for EGG-energy, and will grow, with the support of EGG-energy, to meet the growing energy needs of the communities

Our first solar hub in Tungamalenga (Iringa region) currently brings its owner nearly TZS 400,000 ($250) of net profit per month – an amount much higher than other types of non-agricultural self-employment. At this hub, after 6 months of operations, about 450 mobile phones are charged each week, and four battery systems and one solar system were sold.

Using lessons learned in our first solar hub offering, we have modified the offering to better suit the needs of the communities in the Iringa region. We now have two 200Wp solar hubs and four 50Wp solar hubs installed, and are aiming to get 50 by the end of 2013. With the support of USAID, we have made significant progress towards a scalable model for distribution of electricity services.

Highlights

June 2012 – Initial community study for site profiling and selection was completed in collaboration with blueEnergy, a France and US-based renewable energy NGO. Four regions in Iringa were identified for the establishment of EGG-energy's first solar hubs.

July 2012 – Informational event conducted to recruit solar entrepreneurs

July 2012 – Start of formal training for EGG franchisees (two-day program, covering six important solar and business modules)

July 2012 – Team of interns from HEC Business School in Paris complete social impact assessment of EGG-energy's services

October 2012 – Solar hub established in Tunamalenga, 100km outside of Iringa town

November 2012 – Peter Khaemba and Carolyn Edelstein from USAID DIV visited EGG-energy in Tanzania

December 2012 – Solar hub established in Matanana at Moyo kwa Moyo orphanage

January 2013 – Sales training workshop conducted in Dar es Salaam for all employees, including the new sales manager and technicians in Iringa.

February 2013 – EGG-energy takes over Iringa operations from Said Kibwana, our battery station franchisee

March 2013 – Franchisee information/training event conducted. This has led to two additional solar hubs in Bumalayinga and Mlowa. As the crops in the area are sold in June through August, we expect a significant increase in franchisees.

April 2013 – Franchisee information event for teachers in the Iringa region conducted

June 2013 – Two more small solar hubs (50Wp) installed in Makombe and Kitisi

Project Objectives

Using USAID funding, our purpose was to execute a pilot project to identify and solve implementation issues associated with bringing power to customers through small businesses. The goal was to prove the scalability and sustainability of distributing electricity via franchises. This DIV stage 1 project focused on the following objectives:

- Determine the proper product, sizing, and pricing for power generation systems for our solar franchises.
- Develop systematic training procedures and build local expertise on solar system operations within the EGG-energy workforce and the solar hub operators.
- Set up scalable procedures to identify and select local businesses that will become solar franchises.
- Establish robust long-term agreements between franchisees and EGG-energy, especially with regards to financing, customer service, and proper use of assets to avoid early degradation.
- Assess and perfect models of physical protection of generation (solar modules and charging equipment) assets. Confirm volume of maintenance required, and cost of customer service.

EGG-energy was successful in achieving these objectives. After we did not find enough qualified franchisees that were interested in the 200Wp solar hub, we changed the size of the hub to 50Wp. From our initial franchisee recruiting and training sessions, we also saw that the battery swapping business was not as appealing to the franchisees as other uses of electricity in their communities. Our new, smaller franchise offering is more broadly appealing.

To execute this effectively, we have developed training procedures, contracts, and processes that will allow us to efficiently scale our franchising program. We have also worked on developing the capacity to source, distribute, sell, install, and maintain solar PV, and are working with pay-as-you-go companies to integrate this technology into our offering. In addition, the experience in executing these projects has driven the development of an IT system to manage these operations and in-house financing capabilities for all of our customers.

Project Outcomes, Milestones, and Indicators

This table outlines this project's activities and outcomes, with reference to the Project Implementation Plan submitted in February 2012.

PLANNED ACTIVITES	**OUTCOMES**
1a) Site selection: Regional study for ward profiling and selection	Work in Q1 2012 was dedicated to collecting and analyzing available data for the regions of interest (Dar es Salaam, Pwani, Iringa) from the National Bureau of Statistics, Tanesco, World Bank, and other sources. The Iringa region was chosen for this project, and district-level data was analyzed. The results of this are reported in *Appendix 1 - Regional Study for Site Selection.docx*.
1b) Site selection: Travel to targeted communities to gather income and electricity needs data	Village profiles were developed for community studies and potential districts in Iringa were visited. This work was done performed in Q2 in partnership with blueEnergy, directed by Joel Lagoutte, a former doctor from the Red Cross and a specialist of needs identification in Africa. The two main outputs of this successful work are: 1) a precise identification of the energy needs of 4 remote areas, including 21 villages, in the Iringa region and 2) a concrete process to scale the site and franchisee identification process. After administering surveys in each village, it became apparent that regions with more wealth are able to afford solar home systems, bypassing the initial investment in battery swap technology. Results of this are reported in *Appendix 2 - Initial Community Study for Site Profiling and Selection of EGG-energy's Franchised Solar Hubs Project.pdf.*
1c) Site selection: Select communities and sites for operations	Criteria development and initial strategy for selection and analysis of communities for solar-based charging viability was also part of project by Joel Lagoutte, presented in *Appendix 2*.
1d) Site selection: Quantitative feasibility and pricing study of the selected communities	The results from Joel Lagoutte's project are outlined in the report in *Appendix 2*. We also continued to learn about pricing throughout the project, on both the franchisee level and customer level: Franchise level: Data collected in Iringa show that the potential franchisees expect a similar return on investment compared to one of traditional businesses (farming, livestock, transport). It helps us improve the design of the solar hub, considering them more as an "energy–station" that enables phone charging, battery swapping, and other services. Customer level: Demand varies by region, as some will go straight to solar and others prefer a battery system first. It helps us a lot providing the right service to the right market.
1e) Refine procedure for solar franchise site selection	At the conclusion of the project, Joel Lagoutte revised the community questionnaire and developed guidelines for site selection. This is outlined in *Appendix 3 - Procedures and instructions to conduct community surveys in villages for initial site profiling and selection.pdf.*

2a) Franchisee Selection and Training: Establish solar hub operator contract and training procedures	The initial proposed franchise contract is provided in *Appendix 4 - Solar Hub Contract.doc*. An outline of our training program is given in *Appendix 5 - Solar hub operator training procedures.docx.*
2b) Franchisee Selection and Training: Conduct franchisee recruiting events in targeted communities	25 potential franchisees registered for an information event in July. Out of those 25, 8 turned out to be very interested and came to the event. The following presentation (in Kiswahili) was presented to the potential franchisees at the event: *Appendix 6 - Solar Hub informational event presentation.pdf.*
2c) Franchisee Selection and Training: Conduct training events for potential franchisees	We have run 2 training events, covering all the competencies necessary to run a solar hub (finance, marketing, technical, accounting...). Those one-day trainings have also been useful finalizing the selection of the franchisee. The training outline is provided here: *Appendix 7 - Solar Franchisee Training Plan.pdf.*
2d) Franchisee Selection and Training: Identify five franchisees to operate first solar hubs	To evaluate the potential franchisees and to gather baseline information, we used this following document: *Appendix 8 - Baseline survey.docx* Eight potential franchisees went to the recruiting event, from which we chose three eligible candidates. Two of the complete baseline surveys are provided: *Appendix 9a - Candidate Registration Twalibu Ubwa.pdf* *Appendix 9b - Candidate Registration Yoneck Eliah.pdf*
2e) Franchisee Selection and Training: Due diligence process for selected franchisees	After we are happy with the initial candidate registration, we follow up on supporting documents and references to confirm that the franchisee has a good reputation in the community. We also ask the franchisee to provide collateral to cover the financed portion of the solar system.
2f) Franchisee Selection and Training: Train local technicians to perform solar system installation and maintenance	Three major trainings have been organized, two on technical subjects (how to install solar, and a focus on the frame installation) and one dedicated to sales. We now have a good set of documents that can be easily used again for new trainings. For now, the technicians are directly employed by EGG-energy. We have found that it is easier to ensure quality and availability this way, and have not had much trouble finding and training good solar technicians.
2g) Franchisee Selection and Training: Refine procedure for recruitment, selection, and training of franchisees	This is under continuous refinement. This year we have downsized the initial offering to 50Wp, a quarter of the size and price of our original offering. We did this after seeing the difficulty in producing the upfront payment for the 200Wp system, and seeing that currently the highest-margin service an off-grid business can provide with solar is mobile phone charging.

3a) Project Implementation: Source components and appliances	We are always looking for products suited for the solar hubs and our other customers. We tested a Schneider system built for solar-powered battery charging businesses in Msanga and at EGG-energy headquarters. The product was inadequate and we provided Schneider with feedback regarding our problems. For our current solar hubs, we have been using systems assembled from parts sourced in Dar es Salaam. We have been testing equipment from various manufacturers in China, and are working on sourcing our own equipment from China, both to lower costs and to ensure quality. We have a container on order with Symtech Solar, an American company that sources solar equipment in China, due to arrive in Dar es Salaam in Q3 2013. The part list that we decided on is given in *Appendix 10 - Solar Hub Description.pdf*. We have since simplified the offering to a 50Wp system with mobile phone charging as a default, with the option to purchase the other accessories.
3b) Project Implementation: Install solar charging stations	We have installed 4 solar franchises in the Iringa region, starting in October with a 200Wp system for Yoneck Eliah in Tungamalenga. Technicians from Dar es Salaam performed this installation. Since then we have hired and trained two technicians from the Iringa region.
3c) Project Implementation: Monitor performance at new solar hubs – Develop remote monitoring capability suitable for station context	We have identified no less than 10 start-ups developing pay-as-you-go solar systems, which could definitely answer our monitoring and collection needs for our solar hubs. We have been testing equipment from Devergy and Mobisol, and are looking to integrate these products into our offerings.
3d) Support franchisees and their technical staff	We have been providing continuous support for our franchisees, including answering technical questions and working with them to increase sales in their area. As mentioned above, we are employing our own technical staff for the time being.
4a) Monitoring, Evaluation, and Process Development: Submit baseline survey, franchise contract, training procedures, and evaluation roadmap to USAID	EGG-energy conducted a baseline survey in March 2012 (*results in Appendix 11 - Customer Baseline Survey Results – March 2012.docx).* The franchise contract (*Appendix 4*), training procedures (*Appendix 5*), and evaluation roadmap (*Appendix 12*) were all submitted to USAID in April 2012.
4b) Monitoring, Evaluation, and Process Development: Obtain and analyze customer data to assess impact	In June and July 2012, we hosted a group of interns from HEC (France) from Planete d'Entrepreneurs that conducted an evaluation of EGG's economic, social, and environmental performance based on a tool developed by ENEA consulting. This can serve as a useful baseline for our ongoing post-intervention studies. The report can be found in *Appendix 13 - Planete d'Entrepreneurs Final Report.pdf*. In June 2013, we will conduct another impact assessment of our economic, social, and environmental performance. This will be conducted by a Tanzanian intern, with advice and support from an economist from the World Bank. We will be happy to share this report with USAID when it is completed.

4c) Monitoring, Evaluation, and Process Development: Measure impacts on hub operators	Considering that it would be difficult to collect comprehensive financial information from the franchisee (remote location, difficulties in getting accurate accountancy), we decided to not to attempt a revenue share with the franchisee but instead ask for a flat, fixed weekly fee. We are currently limited to surveys of our franchisees. At this time our only franchisee that has been operating long enough for good information is Yoneck Eliah in Tungamalenga. We followed up with him 6 months after the installation, and the report is in *Appendix 14 - Yoneck Eliah solar hub operator survey.docx*.
4d) Monitoring, Evaluation, and Process Development: Complete USAID DIV Grant reports and evaluations	All reports have been submitted to USAID according to the schedule provided, except for this final report, which is about 1 month late.
4e) Monitoring, Evaluation, and Process Development: Develop fully-scalable model for franchise development	We believe that the current offering is an inviting one for a businessperson in the Iringa region, and that we have the correct processes in place. We expect the numbers of these franchises to increase significantly in the second half of 2013 as the crops in the area are sold. We will be continually tweaking the franchise model to make sure that it suits the market and that we take advantage of existing technology. To this end we are developing an IT system to help manage these franchises, building financing capacity within the company, and are working on incorporating pay-as-you-go technology.

Completion Date	**Milestone**		**Status**
March 1, 2012	1	Project Implementation Plan	Completed
April 31, 2012	2	Baseline survey that includes: 1) baseline survey; 2) final proposed terms of contract between local entrepreneurs and EGG-energy; 3) solar hub operator training procedures; 4) project monitoring activities; 5) evaluation roadmap.	Completed
July 30, 2012	3	Progress Report that includes: 1) status on support hub operations; 2) 1st project evaluation with emphasis on: smoothness of operations; robustness and appropriateness of contractual arrangements between EGG-energy and hub operators; whether there is need for additional training of EGG-staff and/or hub operators; and actual changes in customers' energy uses.	Completed
October 30, 2012	4	Progress Report that includes: 1) status on support hub operations; 2) recruitment of additional hub operators.	Completed
January 31, 2013	5	Final project evaluation that includes administering customer and solar hub operator surveys	Completed
90 days after close of project		Final Impact Evaluation Assessment	Completed

INDICATOR	OUTCOME
Number of local entrepreneurs trained in EGG-energy technology (franchisees and distributors)	28 (6 franchisees, 22 distributors)
Proportion of target population who report satisfaction with using EGG-energy technology	Insufficient data
Number of solar charging stations using EGG-energy technology	6
Geographical distribution of solar charging stations reached by EGG-energy technology	Approximately 100km radius outside of Iringa town.
Number of batteries charged per week using EGG-energy technology	~500
Cost savings obtained from using EGG-energy technology instead of traditional/conventional technology	$1.97/month per customer including customer transport costs, $4.52/month excluding customer transport costs (according to Planete d'Entrepreneur study in June 2012)
Reduction in Kerosene use obtained from using EGG-energy technology instead of conventional technology	5.8 liters/month per customer
CO2 equivalent mitigated (tons) by using EGG-energy technology instead of traditional/conventional technology	10.8 kgCO2/month per customer

Monitoring and Evaluation

This section outlines the monitoring and evaluation activities that EGG-energy used to assess performance of the solar hub franchise project supported by this USAID grant. It includes evaluation on the level of each solar station, as well as their contribution to EGG-energy's business model and its broader social and environmental impact. The outline below details Key Performance Indicators, tools used to measure them, methods and sources of gathering data, and the expected completion date or frequency of measurement. Given the difficulties in measurements of some of our originally proposed metrics, we scaled back a bit from our initial proposal. As we develop the IT system and the ability to monitor systems remotely we will be able to introduce improved monitoring.

1) Franchise Level: The performance of each solar franchise, and the franchisee managing it, will be evaluated using training assessments, franchise statistics, and feedback from the franchisee and customers to EGG management.

a) Overall franchise performance
    a. Number of sales referrals each month
    b. Franchise revenues, profits
    c. Franchisee feedback to EGG on hub operations
b) In addition to the evaluations mentioned above, a feedback mechanism between the franchisee and EGG management will be established to allow continuous monitoring of the franchisee's progress, and to enable EGG to response to problems. This will be coordinated by the District Franchise Manager, an EGG-energy employee responsible for oversight of franchises within one district.

2) EGG-energy Level: EGG-energy has formed a partnership with the sustainable development consulting firm ENEA Consulting. ENEA created a performance evaluation tool that enables EGG to monitor project characteristics through a series of indicators. These indicators are divided into economic, social, and environmental categories, allowing EGG to assess the company's impact and sustainability from three different perspectives. The ENEA tool will be used on an annual basis to compile company-wide data from various sources into one performance report. The inputs for the tool are derived from EGG's financial and operational data, as well as results of the customer surveys, and are outlined below.

a) EGG-energy Business Performance
    a. Number of new customers (per station or franchise)
    b. Revenue from installations, product sales, battery swaps, subscriptions
    c. Number of active customers

In addition to measuring business performance, EGG-energy is concerned with evaluating the social, economic, and environmental impact of the company on individual customers and on the communities where it operates.

b) Social and economic impact
    a. Baseline customer surveys – Used to establish baseline energy consumption and related expenditure as well as other social indicators. Interviewees may be people living in potential areas of expansion to establish a baseline for the community, or new EGG-energy customers to form a baseline for follow-up surveys. EGG-energy employees and franchisees conduct surveys on an on-going basis. Baseline data can be found in *Appendices 2, 9, 11, and 13*
    b. Follow-Up customer surveys – Used in comparison with baseline surveys to determine impact of EGG-energy's service. Conducted within a year after a customer joins EGG. These are conducted once a year.

c) Environmental Impact
    a. The environmental benefit from EGG's service is calculated based on the reduction of kerosene and disposable battery use reported as reported in baseline and follow-up surveys.

EGG-energy conducts a yearly assessment of its economic, social, and environmental impact. Our last assessment, conducted in June and July 2012, showed that our customers' kerosene usage for lighting had decreased by 98%, saving about $6.61/month. However, it also showed that customers who lived far from a distributor or charging station were losing about half of their savings to transport. These results have led us to expand our network of battery distributors to make sure they are close to our customers, and precipitated us towards moving towards solar PV. Our customers, franchisees, and distributors are all seeing benefits from the energy services we provide, and we are continually refining our services and operations. We are conducting another impact assessment this July, and look forward to the results.

Direct and Indirect Beneficiaries

Direct beneficiaries of EGG-energy's solar franchising program are small business owners and entrepreneurs who decide to become EGG-energy solar hub owners. Our intent is to increase income for our franchisees and to use them as a foundation for a distribution network to serve their communities. EGG-energy franchises can improve their income with a solar system that enables new services such as mobile phone charging, internet, cinema, barber shops, or charging batteries for EGG-energy household customers. In addition, they are able to stay open longer and increase their income from existing activities. In 2010, there was an estimated 91,000 non-electrified rural small businesses in Tanzania[1]. Many of these businesses would operate after dark if they had adequate lighting.

Indirect beneficiaries of EGG-energy include community members that use the services provided at the solar hub. These services include charging mobile phones, battery charge and swap, and selling or renting products like solar

[1] Camco Tanzania. The Tanzanian Market for Rural Lighting Technologies (Lighting Rural Tanzania Competition 2010: April 2010).

lanterns. Based upon data from our solar hub in Tungamalenga, Iringa, in the long term, we expect each solar franchise to provide benefits to 400 people in their community.

Beneficiaries and Gender Implications

EGG-energy is dedicated to helping low-income customers in Sub-Saharan Africa gain access to clean, reliable, and affordable energy. Our company policies foster gender equality in the workplace and among program beneficiaries.

In the workplace, EGG-energy policies eliminate gender discrimination in areas such as hiring, promotion, and pay. We seek to recruit and employ Tanzanian women within our office staff, sales teams, and technical teams with a target of at least a 20:80 female to male gender ratio. As we scale the solar business in East Africa, we will focus on proportionally increasing the number of women employed.

In addition, we consider gender integration during planning and project design. As a renewable energy company, we seek to use innovation within solar technology to enhance women's participation in the paid labor force. EGG-energy staff members encourage female entrepreneurs in peri-urban and rural areas to become EGG-energy distributors. On average, our distributors swap and charge 20 batteries per week, resulting in an additional income of 20,000 TZS. An impact assessment intern will measure how many of our businesses are female owned in summer 2013.

Also, using solar instead of conventional energy methods within homes improves indoor environmental air quality for women and children, who spend a disproportionate amount of time in the home. Solar lighting also improves education for young girls. Statistics show that children with access to solar lighting study 45 minutes more per day.[2] As a company, we have also provided design and installation services for a school computer lab and an orphanage outside of Iringa, a province in western Tanzania.

Project Improvement

Our acquisition of solar hubs was slow compared to the targets set out in the contract. Our target was to franchise five modular solar hubs to local entrepreneurs and support their customer acquisition and service efforts. The intention was to install 200Wp of capacity for each of these franchises by the end of 2012. We have reached 6 franchisees by June 2013 but only the first two installed 200Wp systems; since then we have downsized the hubs to 50Wp.

The delay in project targets was due in part to delays and uncertainties in securing cash from financing sources. We made good progress in terms of company development, particularly in terms of improved operations and sales procedures, the development of the IT system, the start of the solar franchising program, and the development of our solar services offerings. Though the time scale for results from this work is longer than we'd like, we expect all of these efforts to bring good results in 2013.

Sales of EGG systems were slower than anticipated through 2012, but clear progress is being made in our operations and sales. Total revenue for 2012 was more than double our revenue from 2011. We have reoriented our sales teams to increasingly focus on establishing distributors and coordinating large events over selling door-to-door. We are also developing improved training programs to increase our employees' sales skills, product knowledge, and process. Sales incentives have been increased as of October 2012. We are also improving our marketing efforts to increase the visibility and knowledge of EGG-energy's brand.

Despite continuing slow sales, we have made significant progress in the development of the organization. We have made several key hires, including Donatien Mourmant, our Director of Solar Programs, and Barry Shapira, the

[2] World Bank, "*Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits* (Barnes 2002).

Director of Information Systems. We have made improvements in the organizational structure and employment processes.

Highlights of improvements include the following:

Sales and Marketing: Facing difficulties on our sales, many improvements have been made during the USAID DIV grant period:
- We have introduced a new discount, commission, and referral structure
- We have been developing new sales events: night-time market events utilizing the entire team after normal work hours, enabling them to reach the decision-makers and show the brightness of our product.
- We have built a large number of small mobile demonstration kits carried directly into the houses and built demo kits for our TV and business systems (barber and phone charging). We have also started letting potential customers keep a demonstration kit in their home for a few nights, letting them experience the benefits of our product offering.
- We used a brighter, more noticeable EGG-energy sales team uniform
- Events are centered around the distributor in the area or the Village Executive/Chairman's office. After an announcement and demonstration there, the sales, team disperses to go door to door.
- The database now holds a list of prospects with contact information, desired system, follow-up date, and other notes. Follow-up is made by the original salesperson or by our customer relations manager at headquarters.
- In January 2013, a group of MBA students from MIT with backgrounds in sales and marketing helped conduct a successful sales workshop for our staff. The agenda is given in *Appendix 15 - Sales Workshop Agenda.docx.*

New products: Our customers have shown a great interest to the solar offerings we started advertising in July 2012. We have learned a lot about the different issues (design, sourcing, rooftop installation, maintenance, sales, etc.) of solar PV systems for rural Tanzanian customers.
We tried to experiment with a swapping service for solar lanterns, but have not received a strong response so far. We are currently testing televisions and other products that could work well with our solar systems.

Information Technology: A management dashboard for Customer Resource Management has been developed, including subscription and battery management. A system for the tracking of batteries has been developed for use at the charging stations. Targeted SMS to our existing customers is enabled from our computer system. Continued projects include the use of mobile phones to improve management of the sales and technical teams, and to streamline the sales process. *Appendix 16 - MIS screen shots.docx* shows our progress so far on this.

Lessons Learned

We have learned a variety of lessons during the execution of the USAID DIV stage 1 project and our years of operations in Tanzania. The most substantial challenges we face here are operations and management, and many other companies we have interacted with have said the same. We have learned to devote more resources towards the training and the development of employees. Over time our employee recruitment, evaluation, compensation, and disciplinary processes have greatly improved, but still have room for further improvement. These things, which are often not prioritized by new companies, require attention early.

Also, a strong system of checks and visibility on the operations of distributed teams is difficult but essential. We are taking advantage of modern information technology to achieve this, and believe that it can help us improve our sales and customer service while lowering costs.

Site selection for now will depend on the evaluation of people on the ground. Data from government sources so far are insufficient, irregular, and unreliable for anything more than an initial list of targeted areas.

Cost Effectiveness

A small but growing number of consumer solar companies are operating in East Africa with a range of offerings including portable solar lanterns and home solar products. EGG-energy does not focus on product but instead concentrates on distribution, where these companies are struggling the most. With the help of USAID funding, we are developing capabilities to provide energy product companies with opportunities for mutually beneficial partnerships such as offering our network as a distribution channel for their products. As a result, we see many of these product companies more as potential partners than competitors.

In the last two years, many startups specializing in solar pay-as-you-go systems have entered into this market. Many of these companies are currently focusing on systems that do not require a skilled installer, but can instead be handed to the customer at the point of sale. We believe that our sales, technical, and financing network would be helpful to distribute such products (up to 10Wp), but absolutely essential when customers want to move up in energy usage.

When we look at comparable systems offered by solar distributors in Tanzania, our prices are often at a slight premium (~10%). However, we use our own technicians, have a higher quality standard, and honor our 1-year warranty on the system. We can do this while achieving an average gross margin of 40% over the cost of goods sold (not including sales, distribution, or maintenance costs). Prices for our fully-installed standard systems, including household wiring, go from $280 (15Wp) up to $1320 (150Wp). With the ability to finance these systems, and the savings that come from efficient operations and scale, we will be able to offer a superior service with a more inviting offering to the customer.

From current estimates, EGG-energy will be a profitable company within 5 years, therefore reducing our cost per development outcome to zero. As the company scales the solar hub business and becomes more self-sustainable, we will not need to rely on grant funding to provide reliable and affordable energy services to our customers, and can instead provide a return.

Anticipated demand and prospects for financial sustainability

EGG-energy is in a unique position to scale the solar hub business in Tanzania, as we have more than 3 years of experience with sales, marketing, distribution, installation, and servicing of electrical systems for homes and small businesses. We are seeing strong demand for franchised solar hubs for off-grid services and favorable evidence for the viability of these hubs. These hubs in turn serve as a basis for providing reliable and affordable energy services for their communities. We are now actively building the foundation for scaling this franchised solar hub business. This has not yet been done profitably on a large scale to distribute energy in Tanzania.

We are also pushing towards sustainability of future solar hubs through new financing options and partnerships. We believe we have the potential to scale the solar market in East Africa. In 2010, there was an estimated 91,000 non-electrified rural small businesses in Tanzania[3]. In five years, we expect to be able achieve a penetration rate of 2%, or 1820 businesses in Tanzania. We plan to enter the Kenyan and Ugandan market within 5 years and reach nearly 5000 businesses in 10 years.

With our improved management information system, we will be able to monitor operations and key business metrics in real time, including the health of our financing portfolio, the status of our sales pipeline, and the status of customer complaints. We are using information technology to manage an energy distribution network more efficient and scalable.

In April 2013, the company applied for a second DIV Stage 1 grant to seek USAID support to scale the solar hub business through innovations in information systems and solar financing. In addition, EGG-energy has raised $325k in equity from GDF-Suez Rassembleur d'Energies and $500k in grant + repayable grant funding from the African

[3] Camco Tanzania. The Tanzanian Market for Rural Lighting Technologies (Lighting Rural Tanzania Competition 2010: April 2010).

Enterprise Challenge Fund. Combined with these funds, this USAID DIV Stage 1 grant will help us hit the targets and achieve the milestones we need to reach the next stage of funding.

To scale further will require the participation of a variety of organizations. Initial growth will require a combination of equity and grants to support further organizational development and debt to support customer and franchisee financing, totaling about $2-3m. For the grants and equity, we expect to raise funds from development organizations like USAID DIV (stage 2) and from impact investors with energy funds such as Persistent Energy Partners (formerly E+co), Bamboo finance, responsAbility, and Acumen. Low-cost debt also seems to be available, also from development agencies and impact investors. For example, Invested Development is setting up a factoring fund that could be useful for the financing of pay-as-you-go systems. We expect this next round to carry the company to profitability, after which we hope to be able to offer market-rate returns, opening us up to a much broader set of investors.