



ACCIONA: Enabling access to electricity in rural Peru

Summary

ACCIONA is a leading company in the areas of infrastructure, renewable energy and water services. In November 2008, the company set up the Microenergy Foundation (FUNDAME) with the aim of promoting social development in remote rural areas through increased access to basic services including energy, water and infrastructure. For its part, FUNDAME established a non-profit association in Peru known as *ACCIONA Microenergía Perú* (AMP) with the ultimate goal of promoting development in rural, off-grid areas through expansion of electricity services. AMP introduced a so-called “service rate management model” designed to ensure the project’s economic sustainability by charging users affordable monthly payments. Under the framework of its *Luz en Casa* (“Light at Home”) program, AMP aims to expand access to basic electricity services powered by solar home systems to 3’500 rural families by 2013 in Peru’s Cajamarca region.

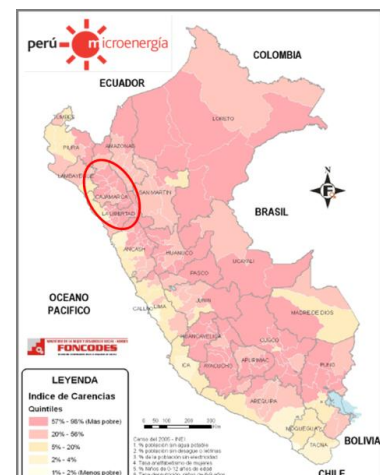


This WBCSD case study provides context for ACCIONA’s Microenergy Foundation and discusses the pay-per-use social enterprise model utilized to facilitate a self-sustaining project in Peru.

Development context

Peru has one of the lowest rural electrification rates in Latin America. Considerable efforts have been made to extend Peru’s national grid as part of the country’s ten-year plan to increase rural electrification from 35% to 70% between 2008 and 2017. Despite these efforts, the ambitious goal of extending the electricity grid to over two million people over the next five years is unlikely to be reached.

In rural areas, which account for 85% of the population of Peru, with more than six million people lack access to electricity. The lowest electrification index can be found in the Cajamarca region of northern Peru (see the map on the right). According to the Peruvian Social Fund (FONCODES) and the National Institute of Statistics and Information (INEI), more than 76 percent of the population of Cajamarca is below the poverty line with 12 percent living in extreme poverty signifying an average annual income equivalent to US\$710. Fossil-based energy production is on the rise, leading to a gradual increase in energy-based greenhouse gas emissions.



Peru’s renewable-based rural electrification master plan identifies the need to expand renewable electricity to more than 361,847 homes, of which around 90,000 are located in

the Cajamarca region. The plan calls for 10,829 villages with 10 households or more as target villages for electrification by photovoltaic (PV) panels. The plan is divided into four phases, with the aim of reaching completion in 2020 with the electrification of 261,520 households through the use of PV panels.

ACCIONA's approach to social development

In November 2008, ACCIONA established the ACCIONA Microenergy Foundation (FUNDAME) with the aim of promoting social development in remote rural areas through increased access to basic services including energy, water and infrastructure. In January 2009, FUNDAME established a non-profit association in Peru, modelled as a social enterprise and known as *ACCIONA Microenergía Perú* (AMP), to address the issue of energy poverty in the country's rural areas. The association uses a sustainable and affordable pay-per-service model to cover the operating, maintenance and equipment replacement expenses related to energy provision and thus ensures the sustainability of the project in under-served rural communities.

ACCIONA's "Light at Home" program: A social enterprise model

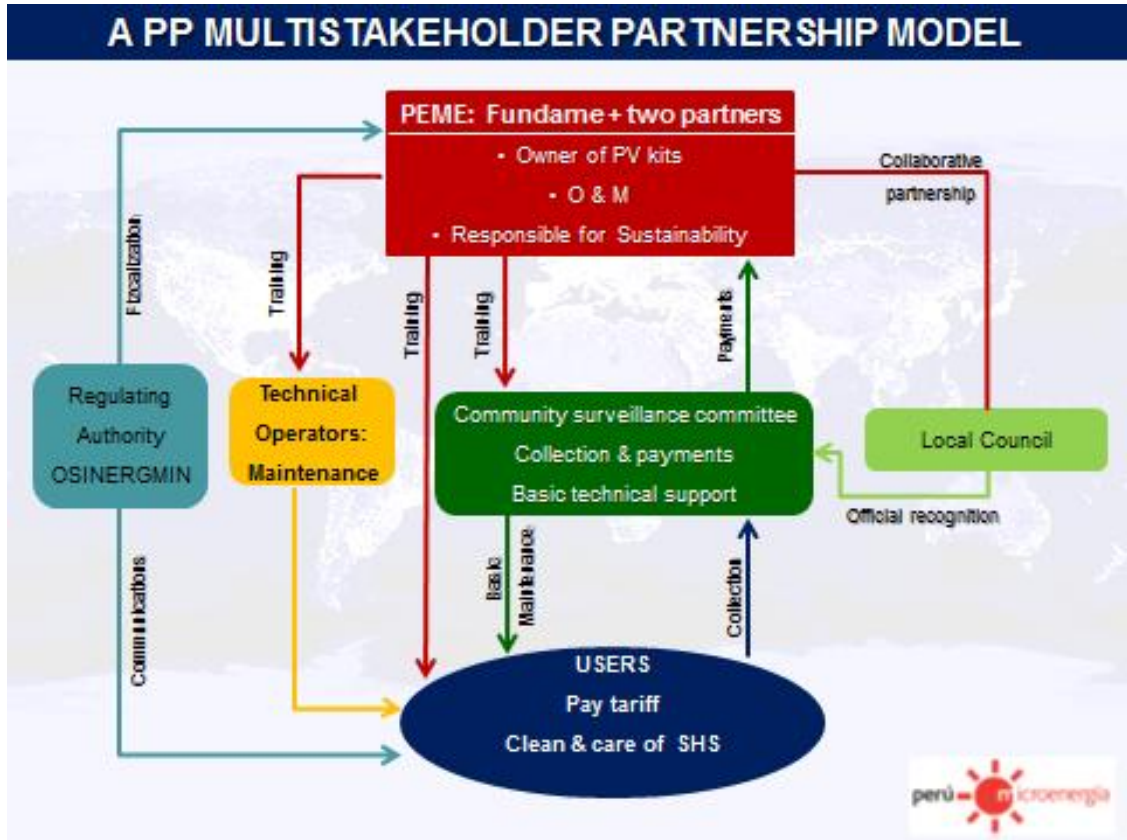
In August 2009, AMP began the *Luz en Casa* ("Light at Home") program with the aim of expanding access to basic electricity services powered by solar home systems. The program also attempts to leverage efforts by local councils to improve living standards of inhabitants thanks to increased access to electricity.

"Light at Home" aims to provide electricity to 3'500 families scattered in rural areas at 3,000 meters above sea-level in several provinces of Peru's Cajamarca region using domestic PV solar home systems. All participants in the programs are excluded from the Peruvian government's plan to extend the national grid or are unable to use local electrification services.

The core innovative feature of the "Light at Home" program is the utilization of the management model (see image below) applied by AMP, which is tailored specifically to running domestic solar home systems throughout isolated rural areas. This management model has been developed with the economic, technical and managerial support of ACCIONA.

A model capable of guaranteeing a service, making it accessible and economically sustainable is essential to the success of any rural electrification initiative. Coordination with public authorities, charging a small monthly fee for services, and utilizing local organizations as interlocutors has helped to make the AMP model a success where others have failed.

Development alliances can play a decisive role with regard to seeking out viable technical and organizational solutions for delivering basic services. Thanks to the collaboration with stakeholders from different fields and sectors, ACCIONA devised a model tailored to rural communities that holds potential to be scaled up.



The “Light at Home” program began with a pilot phase, which entailed the installation of ten household photovoltaic systems in homes throughout the Cajamarca region to familiarize potential users with the features and limitations of the service. In November 2010, a further 610 systems were purchased through an ACCIONA donation in view of expanding what had proven to be a successful pilot. ACCIONA Microenergía Perú handled incidents and billing for these 610 solar home systems following installation.

In order to identify 600 families eligible for participation in the expansion phase, program organizers established a plan centered on community visits in an effort to increase awareness through educational meetings. This process primarily aimed to provide potential beneficiaries with information about the Institution, the scope of its project, the advantages associated with solar lighting and the managerial model based on monthly payments-per-service.



Central to these efforts was the perceived importance of community-wide involvement, which was realized through the establishment of Photovoltaic Solar Electrification Committees (PVSEC). The primary role of the PVSEC is provision of technical assistance

and financial consultation. Additionally, the committees act on behalf of the local community in its dealings with AMP.

Prior to installation, a working plan was created for both users and PVSECs regarding proper system maintenance. Each user who underwent training received a certificate upon completion. Additionally, training participants were required to sign an agreement with AMP committing them to using the system properly as well as making the agreed payments.

Following the completion of these initial administrative and training measures, the solar home systems were installed and supervision activities were set up to ensure the functionality of each system. Subsequently, a special inauguration ceremony of the “Light at Home” project was held in November 2010 in the town of Carrerapampa.

A further 700 systems are currently being installed, and there are plans to equip another 1,700 households in 2013. Overall, this will give access to energy to more than 3,000 families and make the “Light at Home” program economically sustainable.

Access to energy as a development enabler in northern Peru

The “Light at Home” program helps to improve the living conditions and capacities of the end beneficiaries, thereby enabling the advancement of local development goals. Thus far, the program has seen the following results:

- Up to four more hours of light per day, which can be allocated to income-generating activities such as crafts, care of livestock and cheese production.
- Decreased time allocated to purchasing candles, kerosene, batteries and other such items as well as charging mobile phones, thereby further increasing the ability to participate in income-generating activities.
- Increased participation in income-generating activities, which allows for increased savings among beneficiaries, with the potential to reach 100% of the population following changes in the regulatory framework.
- Increased opportunity for children to actively participate in educational activities both during and after school hours.
- Increased access to information through radio and television, which improves general knowledge and awareness through informal channels of education.
- Reduction in fire hazards and removal of associated negative health risks, including burns and smoke inhalation as a result of the use of solar lighting as opposed to traditional kerosene lighting
- Improvements in gender equality by freeing women and girls from managing alternative energies. This time can then be allocated to attending school or carry out other productive activities.



- Environmental benefits, including reductions in greenhouse gas emissions as a result of photovoltaic solar generation and decreased use of batteries, which decreases waste levels.

Direct and indirect beneficiaries also gain the following benefits:

- Increased technical knowledge regarding the basic notions of electricity as well as the ability to manage domestic solar home system units.
- Greater organizational skills through establishment of collaborative and disciplinary roles and improved managerial skills with regard to payments management and communications.
- Improved interaction between local communities and their local, district and provincial councils, allowing for a more dynamic community setting. Communities are located in remote areas of each district and province; collaborative agreements and subsequent actions therefore strengthen ties between society and governing bodies. This, in turn, aids social stability and development in these underprivileged regions.
- Continued interaction between Peru's Ministry of Energy and Mining and the regulatory body (OSINERGMIN) regarding efforts to establish efficient regulatory framework in favor of lower-income communities in isolated rural areas.
- Strengthened capacity of AMP through promotion of the non-profit as a social services enterprise committed to underprivileged communities.

By adopting the solar home system technology, participating families receive immediate access to energy in their homes. Beneficiaries are also able to assert increased independence while modestly contributing to reducing carbon emissions resulting from electricity generation—an environmental goal linked with climate change.

This initiative also contributes toward gender equality as it particularly favors women who predominantly carry the responsibility of day-to-day activities in the home. Additionally, by improving overall living conditions for local peasant families, the initiative is likely to decrease Cajamarca's emigration rate, which, at 10 percent, is currently among the highest in Peru.

In short, the "Light at Home" program meets its two-fold objective of improving communities' living conditions and developing organizational, technical and managerial skills at local, municipal, regional and national levels.

In February 2010, the Foundation was added to a register established by Peru's international cooperation agency, Agencia Peruana de Cooperación Internacional (APCI) which lists Peruvian development NGOs eligible for international technical cooperation. In 2011, AMP was recognized by the regulatory body OSINERGMIN as a public electricity service, making AMP the main supplier of an electrical service relying exclusively on solar home systems.

In addition to the above mentioned projects, in 2011, AMP, along with Energy without Borders and the ICAI Engineers for Development Foundation, began to jointly promote the so-called "Community Light" project in Cajamarca. The project aims to provide some 40

community centers (which serve as schools, health centers, churches and meeting places) in three rural districts throughout the Cajamarca and San Pablo provinces with access to basic electricity, exemplifying ACCIONA's on-going commitment to providing affordable and sustainable energy to under-served rural communities.

In July 2012, the Directorate-General of Electricity of Peru's Energy and Mining Ministry granted AMP a rural electricity concession to provide energy to the town of La Lucmilla, in the Cachachi district (Cajabamba Province). This is the first rural electricity concession awarded in Peru based exclusively on domestic PV solar home systems. Applications have already been made for electricity concessions in the other towns and areas covered by AMP.

In addition, in August 2012, the Inter-American Development Bank (IDB) approved a US\$ one million loan for AMP for the purchase of 1,700 domestic PV solar home systems. This credit line will help to drive and further develop the project, and has been welcomed as a guarantee for the sustainability of the project and its business model, which is rather unusual in this kind of financing. This financing follows an intense process of explanation and documentation of the proposal, with ACCIONA corporate volunteers and staff from the ACCIONA Microenergy Foundation and AMP having worked in close collaboration with the IDB's professionals to structure the deal.

The two abovementioned developments constitute milestones in the consolidation of a social micro-enterprise project. However, the project will only be sustainable over time if those who benefit from the systems help to run them. Accordingly, and as mentioned before, AMP organized special training sessions for end-users and set up PV Electrification Committees in each town. The committees' mission is to provide information on the correct use of the equipment and acquaint users with preventive maintenance procedures. The first beneficiaries to receive training at this stage were the inhabitants of the Tumbadén district of San Pablo Province (Cajamarca region) in the towns of El Suro, Ventanillas, Chaupiloma, El Progreso, Tumbadén Grande, Chacapampa, Choro El Triunfo, Inгатambo, Vista Alegre, Maraypampa and Peña Blanca. Local residents showed an interest in getting involved in the project, with many of them turning up for the sessions and subsequently signing their respective contracts for the use of the domestic PV solar home systems as well as the service agreement for parts and maintenance.

Video

To watch the video of ACCIONA's work in Peru, [click here](#) or on the image to the right (the video will open in a separate window).

