



LUZ EN CASA

ACCESS TO SUSTAINABLE ENERGY IN RURAL COMMUNITIES IN PERU

Acciona Microenergía Peru is a social enterprise that has implemented an innovative pay-for-service model. This model will allow them to reach economic sustainability, while offering quality energy to low income families through Solar Home Systems (SHS)

INVOLVED ACTORS ACCIONA MICROENERGÍA PERÚ (AMP) | ACCIONA MICROENERGÍA FOUNDATION | LOCAL AND NATIONAL PUBLIC ADMINISTRATION | MICRO-BUSINESSES | PHOTOVOLTAIC ELECTRIFICATION COMMITTEES (CEF) | RURAL COMMUNITIES

DEPARTMENT OF CAJAMARCA, PERU

1,507,486 PEOPLE

52.5% POVERTY RATE

21.3% EXTREME POVERTY RATE

30% of rural households still WITHOUT ELECTRICITY

36% in the number of rural households with access to energy (2001 - 2011)



COMMUNITY ENGAGEMENT

The community development process of AMP's program begins by identifying rural communities currently excluded from the electrical grid in order to prepare for their participation in the program

Participation from the community is promoted through CEFs, responsible for coordinating all the different actors, including the final users

85 CEFs HAVE BEEN CREATED SO FAR

13 AGREEMENTS SIGNED WITH MUNICIPALITIES



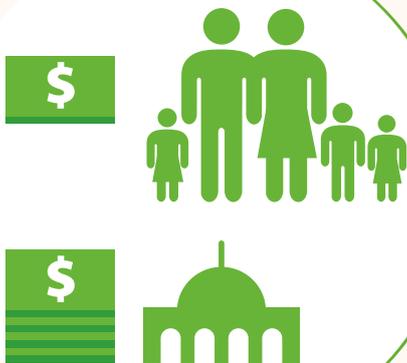
QUALITY SERVICE

The SHS installed include 80 Wp solar panels that provide 3 low consumption lights and energy outlets for at least 4 hours a day

Users are trained on proper use of the SHS, CEFs carry out basic system supervision and payment management and local technicians are trained in system installation and maintenance

5.91 DAYS AVERAGE WAIT FOR RESOLUTION OF PROBLEMS IN 2012

30 TECHNICIANS PROVIDING TECHNICAL ASSISTANCE TO 75 COMMUNITIES



BUSINESS MODEL

Families pay a monthly fee for the electricity offered, maintenance and equipment replacement for 20 years

For each SHS installed, the government's Electrical Social Compensation Fund provides a price subsidy to AMP, who then offer consumers a final price adjusted to their level of income

3,000 SHS IN USE → 12,600 DIRECT BENEFICIARIES



SUSTAINABILITY



The Ministry of Energy and Mines has certified the SHS as an alternative for energy service in rural areas



The default rate in 2012 was 0.19%, decreasing from 3.03% in 2011



The price structure is based on a cross-subsidy that allows families with consumption levels below 100kWh/month a discount financed by those families who have a higher consumption

In 2014 AMP will reach operational sustainability by providing service to more than 3,000 families



EXTENSION OF THE MODEL

The government has launched a program that will install half a million domestic photovoltaic systems throughout the country

AMP has played a key role in developing Peruvian legislation and regulation for isolated electrical systems

Acciona Microenergía Foundation has developed an energy program that will install 10,000 SHS in the region of Oaxaca, Mexico

39%

REDUCTION IN AVERAGE ELECTRICITY EXPENSES PER FAMILY



+PRODUCTIVE HOURS +TIME FOR STUDYING



INCREASE IN ACCESS TO MOBILE COMMUNICATION



↘ *Luz en Casa: Access to sustainable energy in rural communities in Peru*

Acciona Microenergía Perú (AMP) is a social enterprise that was founded by the Acciona Microenergía Foundation (FUNDAME) in 2009 to supply electricity to rural inhabitants of the Department of Cajamarca in Peru. The *Luz en Casa* (Light at Home) program provides electricity through Solar Home Systems (SHS)¹⁸ that use solar panels to supply residential homes with low consumption lighting and energy outlets for up to four hours a day. The program has been carried out in two phases with the initial installation of 1.300 SHS prior to 2012 and a further 1.700 put in place in 2013.

AMP has developed a model in which users pay a monthly fee for the service provided. This model has carefully positioned SHS within a comprehensive program that involves constant dialogue with national and municipal authorities, a high quality of service installation, operation and maintenance, and the dedicated capacity-building of local users.

Close collaboration with community users is ensured through local Photovoltaic Electrification Committees (*Comités de Electrificación Fotovoltaica* or CEF). In addition to liaising with AMP on information relating to the Program, the CEF assist with service inspections, tariff collection and protection of the SHS against theft. Community endorsement of the CEF has been assisted by AMP's work to ensure their similarity to traditional organizational structures and promote equitable gender representation. Explicit support for the CEF has also been obtained from municipal authorities with whom AMP has signed partnership agreements that endorse the *Luz en Casa* program and ensure easy access for the installation of the SHS.

Alongside the development of the CEF, AMP has worked to capacity-build members of the community to use the SHS and trained a network of local technicians to install and maintain them. A Technical Entrepreneurship Program for qualified technicians also offers instruction on opportunities for setting up micro-businesses that service installations, as well as sell equipment such as lamps, bulbs, mobile chargers and power adapters.

The roll-out of the entrepreneurial program has been important in addressing challenges related to technical service cover and the supply of spare parts. AMP has also responded to consumer demand for improved services by introducing higher strength LED lamps to boost lighting, and is looking into the possibility of using cell phones to transmit repair requests

¹⁸ Solar Home Systems (SHS) supply residential electricity using solar panels as the main source of power.



and make payments. In this way it is hoped that CEF fee collection systems, which often involve extensive travel and exposure to the risk of theft, will be enhanced.

The development of a positive relationship between AMP, the Energy and Mining Investment Supervisory Body and the Ministry of Energy and Mines has ensured clarity around regulatory requirements and the development of rules and regulations for new energy technologies in country-wide service expansion plans. As a result of this ongoing dialogue at national level, AMP was granted Peru's first photovoltaic-based electricity concession in May 2012.

Close interaction with the Peruvian government has also meant that the pay-for-service model adopted by AMP is affordable at household level. The standard price arrangement subsidy administered by the Electrical Social Compensation Fund (FOSE), by which users who consume more pay a higher fee that compensates a lower tariff for those who consume less, has been extended to off-grid users receiving services from renewable energy sources. In this cross-subsidy arrangement FOSE compensates AMP with 80% of the tariff so that users only pay 20%. This arrangement allows AMP to assume the costs of service installation, operation and maintenance, and offer customers a fair user fee based on careful prior analysis of economic capacity and ability to pay.

The *Luz en Casa* program has been well-accepted by the community and the default rate is extremely low. As well as the social benefits of improved access to electricity and mobile communication, the average cost of electricity has been reduced as the service is cheaper than paying for kerosene and candles. Meanwhile, having reached its target of providing a SHS service to 3.000 families, AMP has achieved financial sustainability and a balance between service costs and income from monthly fees.

4P Innovations

- ▶ **Product:** Delivery of photovoltaic technology within a comprehensive service program that includes maintenance, community capacity-building alongside continuous testing of more portable and efficient systems.
- ▶ **Process:** Capacity-building of community users to ensure they understand SHS systems and development of local CEF. Promotion of network of local technicians to maintain the SHS with exploration of further job opportunities related to the service.
- ▶ **Position:** Growth in demand for SHS services as a result of ongoing community engagement and delivery on commitments. Acceptance by government of new energy technologies for isolated rural populations in country-wide service expansion plans.
- ▶ **Paradigm:** Service provision is centered upon recognition of rural communities as users, clients and entrepreneurs.

AMP's close proximity to the community, and its special attention to the features of the specific environment in which it is working, have reinforced a perception among users that AMP delivers what it promises while also promoting opportunities to improve local livelihoods. The success of the model is also based upon a culture of open and continuous learning. This strategy combines exchanges of knowledge, experience and information and has enabled the model to respond well to challenges and make improvements. This way of working owes much to FUNDAME and its Director who have been instrumental in positioning and promoting AMP and the *Luz en Casa* program, both nationally and internationally.

Due in large part to the positive impact of the *Luz en Casa* program, the Peruvian government is launching a scheme to install half a million SHS throughout the country. While this institutional push is a huge opportunity, understanding of particular local contexts and adjustment to the requirements of different users are important considerations for expansion. AMP's conscientious tailoring of its work to address the specific circumstances and community needs in Cajamarca has been central to its success. This commitment has been duly taken on board by FUNDAME as it adapts the model in Mexico using, in this case, a microcredit scheme to pay for installation and services among families in small villages.



Summary of key success factors

- Positioning of SHS within a comprehensive service program that includes community capacity-building, liaison with government and continuous improvement.
- Constant technical reinforcement and oversight at local level to ensure proper SHS use and maintenance.
- Close and ongoing dialogue with the public sector to enable cross subsidy support for a fair tariff and improved access in isolated areas.
- Proactive engagement with the community from the start with dedicated tailoring of the program to their specific needs and circumstances, and recognition of their roles as users, technicians and potential entrepreneurs.
- Ongoing learning and information-sharing to improve and expand the model.