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Productive Uses for  
Rural Electrification

## KEY ACHIEVEMENTS

19,900 producers  
assisted in 14 regions

Small enterprises invest  
US\$ 14 million in electrical  
equipment (vs. target  
of US\$ 1.8 million)

Electricity usage by  
producers totals  
18.8 GWh/yr

## Electrification Program Helps Boost Incomes in Rural Peru

In recent years, the Government of Peru has made remarkable strides in extending electricity service into rural areas. A 2007 census found that only 30 percent of rural households had access to electricity—one of the lowest rates in Latin America. Over the next four years, the government more than doubled this number through a multi-faceted national program spearheaded by the Ministry of Energy and Mines (MEM).

One component of Peru's successful strategy was a US\$ 144 million Rural Electrification Project. Launched in 2006 with US\$ 50 million in World Bank financing and US\$ 10 million from the Global Environment Facility (GEF), the government-led project included an innovative program to help small rural enterprises take advantage of income-generating opportunities afforded by the availability of electricity.

Former Energy and Mines Minister Pedro Sánchez Gamarra said the inclusion of a productive uses program in the rural electrification project reflected an awareness that, in rural areas, electricity was primarily being used to power lights and small appliances in the home.

"Once the Rural Electrification Project had connected new areas to the grid, we found that usage rates were generally very low," Mr. Sánchez said. "This is where the impetus for a 'Productive Uses' program came from."

'Productive Uses' programs help local entrepreneurs in rural areas use electricity to modernize their production methods and add value to their products through additional processing. They also provide help to small businesses to strengthen technical and management skills and access capital from existing sources.

“While making electricity available in rural areas immediately improves the wellbeing of communities through better lighting and communications, putting it to use in production often requires an extra effort.”

Ms. Janina Franco  
Energy Specialist  
World Bank Latin America  
and Caribbean Region



“Productive uses was very important because in many rural areas people were still doing a lot of work manually. Using motorized equipment freed them up to do other more productive activities.”

Pedro Sánchez Gamarra  
Former Energy and Mines Minister

“While making electricity available in rural areas immediately improves the wellbeing of communities through better lighting and communications, putting it to use in production often requires an extra effort,” said Ms. Janina Franco, an Energy Specialist with the World Bank’s Latin America and Caribbean Region and the Team Leader for the Rural Electrification Project at the World Bank.

To introduce this concept in Peru, a US\$ 4 million Pilot Program to Increase Productive Uses of Electricity was included as one component of the Rural Electrification Project. By early 2013, the Productive Uses Program had helped nearly 20,000 small producers to improve their production using electricity.

ESMAP played a key role in this successful outcome by financing a total of US\$ 225,000 of technical assistance from 2008-2011 that brought international experience to help design the Productive Uses Program and build the capacity of the MEM project team, the non-governmental organizations (NGOs), and the electricity distribution companies that implemented it.

ESMAP’s support enabled the Productive Uses team to adapt lessons from two World Bank-assisted Rural Electrification Projects in Indonesia that pioneered a Business Development Services (BDS) approach to promoting productive uses in which PLN, the national electricity utility, reached out to small rural businesses through a team of NGOs. Using a marketing strategy that addressed issues such as tariff barriers and quality of service, the Indonesia projects helped over 66,000 enterprises.

The Productive Uses Program in Peru targeted geographical areas that shared common characteristics: a low load factor on the distribution network; a range of collective or individual production units that might benefit from electricity; availability of basic supporting infrastructure and complementary programs; and an electricity distribution company committed to supporting productive uses of electricity.

Following the Indonesia BDS model, the Productive Uses Program in Peru launched its initial activities in Cusco in 2008, Junín in 2009, and Lima Provinces in 2010. Competitively selected NGOs—Soluciones Practicas (in consortium with S&Z) in Cusco, Swisscontact in Junín, and Desco in Lima—were contracted to help local enterprises to identify appropriate electrical equipment, conduct market assessments, prepare business plans, access existing sources of finance, and link with suppliers and buyers. Other assistance included helping businesses analyze the profitability of equipment and electricity infrastructure investments, and prepare applications for new connections .

The NGOs attracted participation in the scheme by launching community mobilization activities such as “electricity fairs” that brought together small enterprises, equipment suppliers, distribution companies, and finance organizations. Desco used community theatre and outreach to schools to create

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enthusiasm for the program.

Soluciones Practicas, near Cusco, helped 1,466 families adopt electrical equipment to process cereals, coffee, cocoa, and baked goods, as well as produce handicrafts, and wood and metal items. The benefits included faster processing times, lower costs, and an increase in the quantity and quality of products.

In Junín, Swisscontact worked mainly with cooperatives focusing on coffee production and grain milling.

In Lima Provinces, Desco targeted water pumping for agriculture, ceramics, and dairy products. In one project, Desco worked with a group of 46 farmers in Piedra Grande to help them invest in new grid-connected electric pumps that were operated by safe, above ground switches.

Previously, to operate the diesel or gasoline pumps, the farmers descended into a well to turn the pumps on and off up to six times a day, facing the risks of working at depth and in a confined space full of carbon monoxide. This resulted in fatal accidents, the most striking involving a family that in a single event lost five members trying to rescue stranded relatives, one after another.

Ms. Franco said the success of the Productive Uses Program hinged on the active participation of the country's electricity distribution companies, with whom the NGOs worked closely to demonstrate how the improved productivity of small rural enterprises could raise electricity usage levels and make its provision more cost effective.

"The program enabled the distribution companies to appreciate the upside of rural electrification rather than viewing the downsides—the large distances and rugged terrain separating isolated communities, the high cost of installing equipment, the low-level consumption rates in most rural households," she said.

Ms. Franco cited the example of a collective mill in Piura in north-western Peru whose 1,000 members had long processed their grain by hand. The productive promotion program helped the farm workers purchase mechanized equipment and worked with a local distribution company to install a transformer and electricity lines that connected the cooperative to the grid.

The result was a "win-win" scenario in which the cooperative tripled its output and the electricity company enjoyed a source of new revenue.

By 2011, the Productive Uses Program had expanded beyond the initial three areas into Arequipa, Puno, San Martín/Loreto, Piura, Tumbes, Lambayeque/Cajamarca Norte, La Libertad/Cajamarca Sur, Ancash, and Ucayali.

Under the Program, more than 19,900 producers in 14 regions were assisted by 8 competitively selected NGOs. The small enterprises had invested more than US\$ 14 million in electrical equipment, far exceeding the US\$ 1.8 million target envisioned in the World Bank's Project Appraisal Document (PAD). The increase in electricity usage by the producers participating in the Program also surpassed expectations, at 18.8 GWh/year against the PAD target of 18 GWh/year.

Former Energy and Mines Minister Pedro Sánchez Gamarra said the Productive Uses Program enabled small businesses to find more lucrative ways to spend the average workday.

"Productive uses was very important because in many rural areas people were still doing a lot of work manually," he said. "Using motorized equipment freed them up to do other more productive activities, to work on expanding their businesses rather than just producing things by hand."

As evidence of its success, productive uses of electricity were





specifically mentioned as a priority by Peru's premier when he set out his government's objectives in his first speech to Congress in August 2011.

In April of the same year, the World Bank approved a US\$ 50 million loan to continue supporting the government's electrification efforts through the Second Rural Electrification (RE2) Project.

The RE2 Project is expected to contribute to the government's objective of increasing the national electrification rate to 88 percent by 2020. Based on the success of the first Productive Uses Program, the scheme will be continued in RE2 and is expected to assist an additional 5,000 rural producers by the close of its activities in 2015.

Ms. Franco said one of the important lessons of the work in Peru has been that well-designed rural electrification projects can promote local development, as well as expand energy access.

"The government now recognizes that rural electrification is about more than just connecting people, it also involves facilitating the economic development to make the electricity system sustainable," Ms. Franco said. "And how can it be made sustainable? By improving the productivity and incomes of the populations that use them."

She also noted that the technical support provided through ESMAP had played a critical role in the success of this innovative program, together with the efforts of the Ministry of Mines and Energy, NGOs, distribution companies, and, most importantly, the producers themselves.



## ESMAP MISSION

The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by the World Bank. It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Denmark, Finland, France, Germany, Iceland, Lithuania, the Netherlands, Norway, Sweden, and the United Kingdom, as well as the World Bank.

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