

**PROJECT INFORMATION DOCUMENT (PID)  
APPRAISAL STAGE**

Report No.: AB6280

<b>Project Name</b>	Second Rural Electrification Project
<b>Region</b>	LATIN AMERICA AND CARIBBEAN
<b>Sector</b>	Power (80%);Renewable energy (20%)
<b>Project ID</b>	P117864
<b>Borrower(s)</b>	GOVERNMENT OF PERU
<b>Implementing Agency</b>	Ministry of Mines and Energy
	Ministry of Energy and Mines Av. Las Artes Sur 260 San Borja Lima, Peru Tel: /Fax: (51-1) 475-0065
<b>Environment Category</b>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
<b>Date PID Prepared</b>	January 11, 2011
<b>Date of Appraisal Authorization</b>	January 6, 2011
<b>Date of Board Approval</b>	April 12, 2011

## 1. Country and Sector Background

### *Country Context*

1. Peru is the third largest country in the region after Brazil and Argentina. It spans over 1.28 million square kilometers with a population of 28.8 million and a density of 22 inhabitants per square kilometer in 2008. An estimated 8 million people lived in rural areas, accounting for 29% of the population. With a GNI per capita of US\$3,450 in 2008, Peru has one of the best performing economies of Latin America (annual GDP growth from 7.7-9.8% in 2006-2008). Even during the current financial crisis, Peru remains one of the few countries whose GDP grew in 2009, by just under 1 percent. Economic growth was 8 percent in the first half of 2010.

2. Sustained economic growth over the last six years has had a positive impact on reducing poverty and creating jobs, but poverty (52 percent nationally in 2008) and inequality still remain a major concern. Reasons for the continuation of poverty despite healthy macro-economic growth rates include: (a) growth has been driven principally by capital-intensive industries, particularly commodity extraction, which has a low demand for labor and hence a low direct impact on poverty; and (b) growth has historically been very volatile in Peru, with per capita income levels only now returning to the levels of the 1970s.

3. The national poverty rate masks important differences across urban and rural areas, and across regions. Poverty levels are significantly higher in rural areas, particularly the Sierra region where the percentage of people living in poverty was 67.7 percent vs. 19.4 percent in Lima in 2007. Inequality in Peru, measured by the Gini coefficient, stood at 0.43—below the Latin American average of 0.52, but still high by international standards.

## *Sectoral and Institutional Context*

4. The 2007 census indicated that the electrification rate was 89.1 percent in urban areas and 29.1 percent in rural areas, one of the lowest levels of rural electricity access among Latin American countries and particularly low for a middle-income country. There is also a wide disparity in electrification by regions within Peru, for example, Ucayali had an electrification rate of 11 percent in 2007 while Lima had a 94 percent coverage rate. Finally, there has been limited progress as yet in addressing the electricity demand of isolated areas (off-grid), and developing renewable energy technologies. This is an especially important gap because the Ministry of Energy and Mines (MEM) Master Plan for Rural Electrification with Renewable Energy estimates that more than 300,000 isolated and dispersed rural households in Peru can only be reached with renewable energy, mainly individual solar photovoltaic (PV) systems.
5. Lack of electricity in rural areas, together with lack of access to other infrastructure, results in a lower quality of life, poor medical care and education, and limited opportunities for economic development. Health clinics do not have adequate access to light, water pumps, refrigeration for drugs and vaccines, medical instruments, or fans and sterilizers. Without electricity, women have limited hours in which to complete their indoor work, limited educational and employment possibilities, and limited participation in community and political affairs. As well, the use of kerosene lamps contributes to respiratory illnesses that affect especially women and children.
6. President Garcia's administration is making a strong effort to increase electrification overall and reduce the gap between urban and rural areas, in particular. It has increased public investment in electrification markedly, taking advantage of the country's current macroeconomic health, and is seeking alternative approaches, such as involving the distribution companies and regional governments as well as using new technologies—especially renewable energy—to serve remote populations. As a result of the joint efforts of the MEM, the electricity distribution companies and regional and local governments, electricity coverage in rural areas increased from an estimated 29 percent in 2007 to 42 percent at the end of 2009.
7. MEM's 2009 National Plan for Rural Electrification has the following targets:
  - Increasing rural electricity coverage to 69 percent by 2011 and 84 percent by 2018.
  - Mobilizing US\$2.2 billion for this effort during the next ten years (2009-2018).
  - Establishing an integrated management system to provide adequate support and data control of the projects designed and executed within the context of the National Plan.
8. Subsequently, the Ministry's "Light for All" (Luz para Todos) Program, announced in January 2010, set even higher goals of reaching 92 percent nationally by the end of 2011, implying a rural electrification rate of 79 percent by 2011, 10 percent higher than foreseen in the National Plan for Rural Electrification.
9. Within MEM, the General Directorate of Rural Electrification (DGER) is responsible for rural electrification (see Sector Background Annex) through its two sub-directorates. The larger Directorate of Projects (DP) uses a fully subsidized and centralized model where the DP

constructs and pays the full cost of the rural electrification projects and then transfers them to the electricity distribution companies or the government owned holding company ADINELSA. The Directorate of Competitive Funds (DFC), supported by the World Bank and GEF assisted Rural Electrification (“First RE”) Project, co-finances rural electrification subprojects developed, constructed and operated by the distribution companies, aiming at economic efficiency, sustainability and attracting financing from service providers

10. The First RE Project (US\$144 million total, US\$50 million IBRD, and US\$10 million GEF), under implementation by MEM since mid-2006, is contributing significantly to meeting the Government's ambitious rural electrification goals (see Sector Background Annex). The objective of the RE Project is to increase access to efficient and sustainable electricity services in rural areas of Peru. This is being done through: (a) investment in subprojects co-financed and carried out by electricity service providers, using both conventional grid extension and renewable energy sources; (b) demonstration of a model that attracts investment from private and public sector electricity providers, as well as governments; and (c) a pilot program to increase productive uses of electricity in rural areas.

11. In total, the First RE Project will provide cost-effective access to electricity service to over 110,000 households, increasing rural electricity coverage by an estimated 6 percent by its close in December 2011. Eight distribution companies are financing about twenty three percent of the subproject costs in sixteen departments while regional governments co-financed two projects. The First Project approach of working through the distribution companies has been institutionalized within the DGER of the Ministry. The First Project is also developing an innovative model for sustainable PV system service provision hand in hand with the distribution companies and the regulator, OSINERGMIN. Finally, the productive uses pilot is showing promising results, 1,500 family production units were helped in the first contract under the pilot in Cuzco and an additional eight contracts are in process in different areas to replicate the results.

## **2. Objectives**

12. The development objective of the Project is to increase access to electricity in rural areas of Peru on an efficient and sustainable basis. The Project would build on the achievements of the Rural Electrification Project currently under implementation with IBRD and GEF assistance.

## **3. Description**

13. The Second Rural Electrification Project would have two components: (i) investment in rural electrification subprojects by electric distribution companies to provide new electricity connections using both conventional extension of the electricity grid and individual household renewable energy systems (mainly photovoltaic systems) that would serve dispersed or remote populations; and (ii) technical assistance to build the capacity of stakeholders for rural electrification, especially that of the electricity distribution companies and electricity consumers, as well as promotion of productive uses of electricity and renewable energy.

14. In addition, the Project will include financing to support Project administration. (a) investment in rural electrification subprojects by electric distribution companies to provide new electricity connections using both conventional grid electricity and renewable energy systems that would serve dispersed or remote populations; and (b) technical assistance to build capacity for rural electrification, as well as promotion of productive uses of electricity and renewable energy. It would also include funding for project administration.

#### **4. Financing**

Source:	(\$m.)
Borrower/Recipient	6.925
International Bank for Reconstruction and Development	50.000
Others (Enterprises)	19.720
	Total 76.645

#### **5. Implementation**

15. The activities of the second Project are a continuation of two of the First RE Project's components and would thus be implemented with the same organizational, technical and administrative structure as the current RE Project. Building on the experience of the First Project, the Second Project will be implemented by the existing Project Unit (PU) within the Directorate General of Rural Electrification (DGER) of the Ministry of Energy and Mines (MEM). Project implementation is expected to take four years.

#### **6. Sustainability**

16. A major advantage of the model developed under the First RE Project and to be used in this second Project for investment in rural electrification subprojects is enhanced efficiency and sustainability. The subprojects are proposed, constructed, owned and operated by electricity distribution companies that are responsible for provision of long-term regulated electricity service under the supervision of OSINERGMIN, the sector regulator. To be selected, the subproject must be financially viable at current tariff levels after the application of the partial capital cost subsidy. The main risk in terms of sustainability is with respect to the medium and long-term operation of solar PV systems by the distribution companies. The First RE Project includes the installation and operation of such systems as part of the regulated service of the distribution companies, which activity is supported by their contracting local SMEs for operation and maintenance. While the model is promising, it is not yet fully demonstrated as the first subprojects are still being implemented. There may be a need to adjust the model further in the second Project, based on experience gained.

#### **7. Lessons Learned from Past Operations in the Country/Sector**

17. Lessons learned from the First RE Project and other operations have been used in the design of the Second Project, including the need to:

- (i) provide flexibility in subproject eligibility criteria, such as minimum number of connections and maximum subsidy, to adapt to a dynamic situation;

- (ii) focus the implementation of proposed subprojects in the distribution companies, to ensure financial viability, efficiency and sustainability;
- (iii) consider actual costs from the First RE Project, as well as inflation and exchange rate changes, in preparing cost estimates and key indicators of this second Project;
- (iv) utilize data on average consumption in SERs from the First RE Project and OSINERGMIN in evaluating viability of subprojects;
- (v) recognize in the indicators that the Project is constructing long-term infrastructure and that only a percentage of the potential connections will be realized during the Project life;
- (vi) include technical assistance activities to increase awareness of rural electricity users about electricity use, safety and opportunities for productive uses;
- (vii) include costs of compensation for land use and mitigation of minor environmental damage in the cost of each subproject; and
- (viii) support distribution companies compliance with social and environmental safeguards by providing practical tools and expert advice from the Project team.

## 8. Safeguard Policies (including public consultation)

<b>Safeguard Policies Triggered by the Project</b>	Yes	No
<a href="#">Environmental Assessment (OP/BP 4.01)</a>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Natural Habitats ( <a href="#">OP/BP 4.04</a> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pest Management ( <a href="#">OP 4.09</a> )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Indigenous Peoples ( <a href="#">OP/BP 4.10</a> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Physical Cultural Resources ( <a href="#">OP/BP 4.11</a> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Involuntary Resettlement ( <a href="#">OP/BP 4.12</a> )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Forests ( <a href="#">OP/BP 4.36</a> )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams ( <a href="#">OP/BP 4.37</a> )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways ( <a href="#">OP/BP 7.50</a> )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects in Disputed Areas ( <a href="#">OP/BP 7.60</a> )*	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## 9. List of Factual Technical Documents

World Bank, *Project Appraisal Document on a Proposed Loan in the Amount of US\$50 million to the Republic of Peru for a Rural Electrification Project*, Washington, 2006.

World Bank, *Peru National Survey of Rural Household Energy Use*, Washington, 2010.

## 10. Contact point

Contact: Susan V. Bogach

Title: Sr. Energy Econ.

Tel: (202) 458-2689

Email: [Sbogach@worldbank.org](mailto:Sbogach@worldbank.org)

\* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

**11. For more information contact:**

The InfoShop

The World Bank

1818 H Street, NW

Washington, D.C. 20433

Telephone: (202) 458-4500

Fax: (202) 522-1500

Email: [pic@worldbank.org](mailto:pic@worldbank.org)

Web: <http://www.worldbank.org/infoshop>