



1. Project Data

Project ID P127837	Project Name BO Access and Renewable Energy	
Country Bolivia	Practice Area(Lead) Energy & Extractives	
L/C/TF Number(s) IDA-54540	Closing Date (Original) 01-Dec-2021	Total Project Cost (USD) 10,404,925.67
Bank Approval Date 27-May-2014	Closing Date (Actual) 30-Apr-2019	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	50,000,000.00	0.00
Revised Commitment	15,314,088.63	0.00
Actual	10,420,765.12	0.00

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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) as stated in the Financing Agreement (Schedule 1) and the Project Appraisal Document (PAD, page 5):

“To expand access to electricity in the Recipient’s Unserved Areas under a model of electricity access expansion that supports the implementation of the national decentralized framework”.



b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

27-Jun-2018

c. Will a split evaluation be undertaken?

Yes

d. Components

Component 1: Electricity Services for Unserved Areas (estimated cost at appraisal was US\$52.45 million, of which US\$43.30 million IDA; actual cost at closing was US\$8.22 million IDA).

This component aimed at providing electricity services to households and social institutions (mainly schools) in two regions - Chuquisaca and Potosi. It included the following sub-components:

- Grid extension (US\$39.05 million, of which US\$30 million IDA – actual was US\$8.22 million)
- Individual Photovoltaic (PV) systems (US\$12.7 million IDA – actual was Nil)
- PV systems in public institutions (US\$0.7 million, of which US\$0.6 million IDA – actual was Nil)

Component 2: Support to Access and Clean Energy Strategies (estimated cost at appraisal was US\$2 million IDA; actual cost at closing was US\$0.33 million).

This component aimed at supporting the government's strategies on energy access and clean energy. Activities in this component included, design, installation and evaluation of pilot systems including pico-PV, training and capacity building, development of Monitoring and Evaluation (M&E) framework, design and implementation of communication strategies, and studies on clean energy.

Component 3: Project Management (estimated cost at appraisal was US\$4.7 million IDA; actual cost at closing was US\$1.86 million).

This component aimed at providing project management support to the Ministry of Hydrocarbons and Energy (MHE), including for M&E and project audits.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. At appraisal, the total cost of the Project was estimated at US\$59.1 million. The revised estimate following the restructuring of the the project was US\$11.17 million, (email from project team dated June 26). The actual project cost was US\$10.4 million.



Financing. The project was financed by an IDA credit of US\$50.0 million. The revised estimate following partial cancellation of the credit as US\$11.17 million. The amount disbursed was US\$10.4 million.

Borrower Contribution: US\$5.15 million was anticipated at appraisal to come from the Borrower and another US\$4 million from local beneficiaries. The actual contribution at closure, was US\$0.97 million from the borrower and US\$0.38 million, from local beneficiaries.

Dates. The Project was approved on 05/27/2014, became effective on 09/22/2015 and scheduled to close on 12/31/2021. The project closed 32 months ahead of schedule on 04/30/2019.

Other changes.

The project was restructured twice. The first restructuring on September 9, 2015, was intended to amend the Financing Agreement for facilitating project effectiveness.

The following major changes were made through a project restructuring on 06/27/2018, following the partial cancellation of loan.

- The project scope was drastically reduced, and the number of grid extension was reduced to eight, instead of the originally planned 30 grid extensions. All activities associated with renewable energy were cancelled.
- Funds were reallocated between disbursement categories.

The implementation schedule was reduced by 32 months, from 12/31/2021 to 04/30/2019.

3. Relevance of Objectives

Rationale

Country context. Strong economic performance (with average growth of Gross Domestic Product of 4.8 percent) before appraisal, the incidence of poverty was high in rural areas, with 61% of the rural population classified as poor. The incidence of poverty also varied across regions, ranging more than 60 in the autonomous departments of Potosi and Chuquisaca, to 20% in Taripa. In rural areas, access to electricity remained low (with 31% of the population having no access to electricity in Potosi and Chuquisaca), and this in turn contributed to limited opportunities for economic development. Improving access to electricity, especially in the rural areas of Potosi and Chuquisaca, was important for the government strategy.

Government strategy. Article 20 of the 2009 Bolivian Constitution established universal electricity access as a fundamental right. In 2011, the government established its Living with Dignity Electricity Program (PEVD), with the objective of achieving universal electricity access by 2025 by providing access to roughly 600,000 households, of which 350,000 households were in remote rural areas. The government also approved the legal framework for the Rural Electrification program for supporting renewable energy development and through the 2010 Autonomy Framework and Decentralization Law granted subnational agencies (such as, Gobernaciones (autonomous departmental governments), and municipalities) new responsibilities for: (i) design and implementation of investments; (ii) asset ownership; and (iii) operation and maintenance. This project was designed in response to this new agenda. It focused on the territory of



two of Bolivia's regional departments of Chuquisaca in the south of the country and Potosi adjacent to it in the southwest. The PDO was aligned to the Sustainable Energy for All Initiative, launched by the United Nations in 2010.

Alignment with Bank Strategy. The objective of the Project was fully aligned with the Bolivia Country Partnership Strategy (CPS) FY2012-2015 under the prioritized areas of "sustainable productive development" and "human development and access to basic services". It continues to be fully aligned with the Bolivia Country Partnership Framework (CPF) FY2016-2020 under Results Area 3: Human Development and Access to Basic Services" on page 22, where access to electricity is specifically highlighted.

Previous Sector Experience

The World Bank has supported the government in pursuing its electrification agenda since 2003, including through two lending operations that benefited 42,000 households. These projects supported an approach that focused on utility-owned grid extension, and user-owned off-grid systems. The Decentralized Infrastructure for Rural Transformation project (IDTR-I) that closed in 2011, financed the provision of access to electricity of over 30,000 households. The Decentralized Electricity for Universal Access Project (EDAU) that closed in 2013 benefited 12,000 households.

As indicated earlier, the scope of the project was drastically reduced. The project's reduced size and scope (particularly cancellation of the renewable energy subcomponents), undermined the government's PEVD program. The relevance of PDO is rated as Substantial.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

Expand access to electricity in the Recipient's Unserved Areas under a model of electricity access expansion that supports the implementation of the national decentralized framework

Rationale

Theory of Change. The links between the project activities, their outputs and outcomes were logical, and the intended outcomes were measurable. Activities associated with investments in grid densification, extension of low and medium voltage distribution lines, off grid photovoltaic systems, together with outreach and training of beneficiaries, distribution companies and contractors, were expected to increase access to electricity through grid connections and thereby expand access to electricity in Bolivia's unserved areas. Technical assistance activities were expected at establishing a model of electricity access expansion under the national



decentralized framework. The outcomes of these activities were expected to contribute to the long term development outcome of universal access to electricity.

Outputs.

- Eight subprojects were completed to provide electricity services in rural areas. The subprojects included extension of low and medium voltage distribution lines and grid densification in Chuquisaca and Potosi.
- 756.25 Kilometers (Kms) distribution lines were either constructed or rehabilitated under the project. This fell short of the original target of 800 distribution lines but exceeded the revised target of 669 distribution lines.
- A total of 24,030 people directly benefitted from the project activities, well short of the original target of 160,000 beneficiaries, but slightly short of the revised target of 26,700 beneficiaries. 48% of the beneficiaries were women as compared to the target of 50%.
- 63 outreach and training activities were conducted for beneficiaries, distribution companies and other relevant stakeholders, as compared to the original target of 70, but exceeding the revised target of 41 activities.
- Two energy sector studies were completed as targeted (as compared to the original target of five). One study was on the sustainability of photovoltaic systems in rural areas and the other study was a survey of population with no access to basic electricity services.
- Ten capacity building activities for subnational entities were implemented under the project, well short of the original target of 35 but exceeding the revised target of eight.

Outcomes.

A total of 20,210 people were provided with access to household connections. This fell well short of the original target of 135,000 beneficiaries, and marginally short of the revised target of 22,436 beneficiaries.

Rating
Modest

OVERALL EFFICACY

Rationale

The project's achievements fell well short of its original targets, and achievement on this account was negligible. After restructuring and cancellation of several components, the targets were revised significantly downwards. Revised targets were nearly met in most cases, meriting a rating of substantial. Taking into account the pre-structuring performance, overall efficacy is modest.

Overall Efficacy Rating

Primary Reason



Modest

Low achievement

5. Efficiency

Economic analysis. A cost-benefit analysis was conducted both at appraisal and at closure, for activities associated with the actual capital investment on grid extension. This component accounted for 79% of the actual cost at closure and 98.7% of the cost at appraisal. The costs included capital investment costs and annual operation and maintenance costs. The benefits of the project were assumed to come from increased energy consumption (savings in traditional energy sources and the value of additional consumers). The Net Present Value (NPV) at 10% discount rate was estimated at US\$1.95 million at closure. This was considerably lower than the NPV of US\$17.2 million at appraisal. This was primarily due to the cancellation of significant electrification subprojects. The ex post Economic Internal Rate of Return (EIRR) was 14.4 percent, as compared to the ex-ante EIRR of 19.7%. The lower economic return achieved by the project was due to the higher unit costs per connection (US\$2,034), caused by higher investment cost and lower level of connections.

Administrative and Operational issues. There were delays in credit effectiveness and the project became effective, almost sixteen months after approval, due to the slow progress on two conditions for effectiveness (signing of the Inter-governmental Agreement between the ministry and the Gobernacion de Potosi and the preparation and approval of the Project's operational manual. More than two years after implementation, only eight percent of the IDA credit had been disbursed. There were delays associated with the infrastructure component for providing electrical services for unserved areas. The slow start led to partial cancellation of the loan at government request. The implementation delays continued after effectiveness due to the inadequate government support, evidenced by the slow appointment of the Project Coordination Unit, and changes in authorities in early 2016. The Mid Term Review scheduled at the end of May 2019, could not be held due to the Government's cancellation decision, and a due diligence that could provide a greater insight of project performance and alternative course of action and help in minimizing the negative impact of the proposed cancellation, was not conducted. The revised closing date did not allow enough time for carrying out the habitual beneficiary survey.

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	17.70	98.70 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	14.40	79.00 <input type="checkbox"/> Not Applicable



* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of the PDO was rated as substantial, Efficacy of the single objective was rated as negligible before restructuring when 53% of the loan was disbursed, and substantial after restructuring when the balance was disbursed. Efficiency was rated as modest. Weighing by the share of disbursement before and after restructuring ($0.531 \times 2 + 0.469 \times 4 = 2.93$), the overall outcome was rated as moderately unsatisfactory.

a. Outcome Rating

Moderately Unsatisfactory

7. Risk to Development Outcome

Technical risk. The risk associated with grid extension techniques were assessed as modest, given that such techniques have been proven worldwide and posed no technical or commercial uncertainties.

8. Assessment of Bank Performance

a. Quality-at-Entry

The preparation of this project drew on the experiences from prior Bank-financed electricity projects in Bolivia (the Decentralized Infrastructure for Rural Transformation project and the Decentralized Electricity for Universal Access project). Lessons incorporated at design included, attempting to secure local commitment from subnational stakeholders from the early stages, training customers on the use and basic maintenance of PV equipment, and having a flexible design for meeting the conditions of each community. As the prior Bank-financed rural electrification projects often had a slow start, the design envisioned a seven-year implementation period. Several risks were identified at design, including high risk associated with the capacity of the implementing agency. With mitigation measures, the project risk was rated as substantial at appraisal (PAD, page 11). The implementation arrangements were appropriate, as the Project Coordination Unit (PCU) in the Ministry of Hydrocarbon and Energy (MHE), had experience executing Bank-financed projects in the past. The arrangements made at appraisal for safeguards and fiduciary compliance were appropriate (discussed in section 10).

The design underestimated the challenges associated with implementation of the specific decentralized model. The Bank could have been more proactive in introducing alternative arrangements that might be more workable, particularly given its experience with previous rural electrification projects in Bolivia that were successful.



Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

The Bank actively supervised the Project, including engaging frequently with the Bolivian authorities and conducting regular supervision missions. The Bank team included locally based staff in Bolivia. The team conducted regular supervision missions (twice a year as per the norm) and had significant ongoing engagement with the relevant Bolivian authorities, particularly for accelerating the implementation of the Project prior to its restructuring. In addition to regular supervision missions that included specialists in the subject, the Bank launched one mission to address financial management issues. The support provided by the team aided in fiduciary compliance.

However, neither a Mid-Term Review nor a due diligence that could have provided a greater insight of the project's performance could be conducted. These could have helped in minimizing the negative impact of the proposed cancellation of the loan.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The results framework was logical. The key outcome indicators were limited, and the targets established by the M&E framework were appropriate and measurable. The overall M&E framework was suitable for measuring progress in achieving the development objective.

b. M&E Implementation

The Project Coordination Unit (PCU) already had experience in handling this function in previous rural electrification projects, and proper data collection and reporting practices were followed. The PCU had a monitoring unit that maintained adequate measures of the project's progress. Especially given the very limited progress during implementation, it was not difficult to collect the data, and there is evidence from ISRs etc. that this was consistently done. The PCU was not fully staffed for relatively short periods (ICR, page 18).



c. M&E Utilization

The M&E data was used by the PCU and the Bank for monitoring the project's slow progress in early years.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The project was classified as a category B project, under World Bank safeguard policies. Five safeguard policies were triggered at appraisal: Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.12); Indigenous Peoples (OP/BP 4.10); Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.12). An Environmental Management Framework (EMF) to address issues pertaining to environment, natural habitats and physical cultural resources, an Indigenous Peoples Planning Framework (IPPF), and a Resettlement Policy Framework (RPF) were prepared and publicly disclosed, at appraisal. There was compliance with safeguards during implementation (ICR, page 19).

b. Fiduciary Compliance

Financial management. An assessment conducted at appraisal, concluded that the financial management arrangements were deemed to be acceptable (PAD, page 12). The Project Coordination Unit (PCU) had experience in executing Bank-financed projects. The ICR reports that external audits were not qualified. The financial reports were delivered in a timely fashion, and the ICR does not report non-compliance with financial covenants.

Procurement. The PCU was responsible for procurement activities and the contracting process. An assessment of the PCU was conducted at appraisal (PAD, page 38). Given the PCU's experience with executing Bank-financed activities, procurement risk was rated as moderate (PAD, page 39). The ICR (page 20) notes that overall procurement responsibilities were handled in a satisfactory manner, despite some delays on procurement processes due to legal review requirements, during implementation. The ICR does not report any case of mis procurement.

c. Unintended impacts (Positive or Negative)

d. Other



11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Unsatisfactory	Moderately Unsatisfactory	
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

Rural electrification projects implemented in remote areas and under difficult physical conditions require effective coordination among a multiple number of actors. The lesson from this project is that the implementing agency needs to be fully operational from the early stages of the project to minimize delays during implementation.

Decentralized models for rural electrification require efficient coordination between the national and subnational agencies. The experience from this project showed that hybrid models, where the two-level agencies share executive and financial roles (particularly the ownership of assets and debt obligations), added to the complexity of the implementation process. The lesson from this project is that given the challenges of a decentralized policy it is preferable to that the project needs to be executed, either at the national level or at the subnational level.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR was generally well written. It provided a candid assessment of the implementation difficulties that befell the project; However, it could have paid more attention to the underlying causes, particularly the poor design of the Project. The ICR draws good lessons from the experience of implementing this project.

The ICR however could have provided more details on what the Bank could have done at the design stage or during implementation to address the challenges.

a. Quality of ICR Rating



Substantial