



## 1. Project Data

**Project ID**

P126537

**Project Name**

BR Energy &amp; Mineral Sctr Strengthening

**Country**

Brazil

**Practice Area(Lead)**

Energy &amp; Extractives

**L/C/TF Number(s)**

IBRD-80950

**Closing Date (Original)**

30-Jun-2016

**Total Project Cost (USD)**

33,442,641.25

**Bank Approval Date**

20-Dec-2011

**Closing Date (Actual)**

31-Dec-2018

**IBRD/IDA (USD)**
**Grants (USD)**

Original Commitment

49,604,127.00

0.00

Revised Commitment

33,442,641.25

0.00

Actual

33,442,641.25

0.00

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## 2. Project Objectives and Components

### a. Objectives

The Project Development Objective as stated in the Loan Agreement (Schedule 1, page 6) and the Project Appraisal Document (PAD, page 6) is:

**"To strengthen the capacity of key public sector institutions to improve the contribution of energy and mineral resources to accelerated national economic growth and increased environmental sustainability in a context of globalization and technological change".**



“Strengthening capacity” corresponds directly to the project’s components and comprise input activities that yield specific outputs. The long-term goals of “accelerating national economic growth” and “environmental sustainability” are complementary, under the Bank Group’s over-arching mission for supporting environmentally sustainable development. Hence this assessment is based on the single PDO.

**“To improve the contribution of energy and mineral resources to accelerated national growth and increased environmental sustainability in a context of globalization and technological change”.**

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

No

**c. Will a split evaluation be undertaken?**

No

**d. Components**

There were four components (PAD, pages 7-9).

**1. Strengthening the capacity of the government to drive the sustainable development of the energy and mineral Sectors.** (cost at appraisal US\$8.94 million; actual cost US\$5.42 million). This component provided technical assistance for strengthening the government's capacity in the two sectors. There were two sub-components: (i) capacity building of the Ministry of Mines and Minerals (MME) to formulate long-term policies and improve governance; and (ii) capacity building of the Energy Secretariat of the MME.

**2. Strengthening of Regulatory Institutions.** (cost at appraisal US\$2.33 million; actual cost US\$2.85 million). This component aimed at improving the regulatory capacity in the sectors. There were two sub-components: (i) strengthening the regulatory capacity of the National Electricity Regulatory Agency (ANEEL) and the National Department of Mineral Production (DNPM); and (ii) institutional strengthening of DNPM and the Company for Mineral Resources Research and Geological Survey (CPRM).

**3. Technology Development** (cost at appraisal US\$35.69 million; actual cost US\$24.23 million). This component provided support for improving research in the power sector and enhancing the CPRM's capacity to use geophysics equipment for preventing natural disasters. There were two sub-components; (i) rehabilitating the technological laboratories of CPRM and the National Center for Research in Electricity (CEPEL); and (ii) financing studies in research and development for the sectors.

**4. Support to South-South Cooperation** (cost at appraisal US\$2.52 million; actual cost US\$0.83 million). This component provided capacity building support to the MME for developing internal procedures and information systems for South-South Cooperation and technical assistance to support South-South Cooperation in regulation, developing renewable energy, clean energy, preparing geological surveys and developing information systems.

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



**Project cost.** The appraisal estimate was US\$53.60 million. The revised estimate was US\$37.44 million. The estimates were revised in view of the significant project savings from the devaluation of the Brazilian Real *vis-à-vis* the US\$-denominated loan. The actual cost was US\$40.66 million.

**Project financing.** The project was financed by an IBRD loan of US\$49.60 million. US\$16.16 million of the loan was cancelled due to the 56% devaluation of the Real relative to the US\$ during implementation. The revised estimate was US\$33.44 million. The amount disbursed was US\$33.44 million.

**Borrower contribution.** At appraisal, the borrower contribution was estimated at US\$4.00 million. At closing, the actual contribution was higher at US\$7.22 million.

**Dates.** The project was approved on December 20, 2011, became effective on May 30, 2012 and was scheduled to close on June 30, 2016. The project closed on December 31, 2018, with a delay of two and a half years.

**Other changes.** There were two Level 2 restructurings. These changes were made through the first restructuring on June 2016:

- The closing date was extended by a year, to complete the ongoing activities and the new activities, that were added during implementation. The savings in US\$ terms due to the depreciation of the Real relative to the US\$, besides enabling cancellation of part of the loan, also allowed for expansion of the project scope.

These changes were made through the second restructuring on April 2017.

- The closing date was extended by 18 months for implementing new activities that were added to support the new government's reform agenda. The ICR (paragraph 25) notes that shortly after the first restructuring, the President of Brazil was impeached, and a new government was formed. Activities that focused on the government's new strategic direction for the gas sector were added. These activities were: (i) an analysis on barriers for exploration, storage and diversification of the gas market; (ii) fiscal and regulatory incentives for the sector; (iii) integration of renewables into the National Interconnected System; (iv) energy efficiency measures; and (v) capacity building activities in the mining sector. There was also a reallocation of funding among project components.

### 3. Relevance of Objectives

#### Rationale

**Country context.** Despite a period of economic stability in the years before appraisal, Brazil faced the challenge of inclusive growth, with variations in service delivery in the different regions of the country. In this context, the energy and the mining sectors were crucial for Brazil's economic development, given Brazil's endowments of energy and mineral resources. Addressing the challenges faced by (i) the energy sector in the areas of financing, planning and regulation and (ii) the mining sector in the areas of regulation and economic, social and environmental impacts, were important. The regional dimensions of the project were also important, given that Brazil's Ministry of Mines and Energy had been approached by other



countries to share experiences in the energy sector and had provided support for business development initiatives aimed at South-South cooperation, in Latin America, Caribbean and Africa.

**Government strategy.** Before appraisal, the government had undertaken several steps to encourage competition in the oil sector. These included revoking Petrobras' monopoly on key segments of the supply chain (exploration and production) in 1997 and creating an independent agency, the National Petroleum Authority for granting concessions and monitoring industry performance. The strategic vision of the new government in 2016 aimed at increasing the size of the gas market and encouraging private sector participation in the market. The National Mining Plan 2030, launched by MME and approved by the government in 2011, identified three priorities for the sector: improving governance, value-added processes and sustainability.

**Bank strategy.** The Bank has had a historical record of contributing to transformation of the energy sector in Brazil, including by projects aimed at improving the concessioning of hydropower plants, and helping Electrobras strengthen the efficiency of its distribution business through technological and new management techniques. The PDOs of this project were well-aligned with the Bank strategy. At appraisal, the Country Partnership Strategy (CPS) for 2012-2015 noted the importance of (i) increasing the efficiency of public and private investments and (ii) sustainable management of natural resources and climate resilience, for achieving inclusive and sustainable growth. The CPS also highlighted the need for: (i) strengthening Brazil's policy and regulatory framework for the energy sector for promoting cost-effective and sustainable energy; (ii) improving the regulators' capacity for monitoring the sector; (iii) financing investments in research and development to transport efficiently large blocks of energy across continent-wide distances; and (iv) managing mineral resource endowments in a sustainable manner. At present, the PDOs are well-aligned with two of the three focus areas of the Bank's current Country Partnership Framework for 2018-2023:

- Focus Area two (private sector investment and productivity growth) highlighted the need for addressing regulatory barriers in the energy and mining sectors for enabling private investment in the sectors.
- Focus Area three (inclusive and sustainable development) highlighted the need for addressing issues of sustainable delivery of services.

## Rating

Substantial

## 4. Achievement of Objectives (Efficacy)

### OBJECTIVE 1 Objective



To improve the contribution of energy and mineral resources to accelerated national growth and increased environmental sustainability in a context of globalization and technological change.

## Rationale

**Theory of Change.** The project activities combined capacity building activities with hard infrastructure investments, in the energy and mining sectors. The chain between the project activities, their outputs and outcomes were logical and causally linked as explained below:

**Energy Sector.** The project activities aimed at capacity building of the Energy Secretariat of Mines and Minerals for formulating long-term sector policies, developing internal procedures for South-South Cooperation. The activities for the National Electricity Regulatory Agency for improving regulatory oversight, were aimed at institutional strengthening. Hard infrastructure investments (rehabilitating the technological laboratories of the National Center for Research in Electricity), were aimed at improving research in the energy sector. The outputs of these activities can plausibly be expected to increase the energy sector's contribution to economic growth.

**Mining Sector.** Capacity building of the Ministry of Mines and Minerals for formulating long-term sector policies, and to the National Department of Mineral Production for improving regulatory oversight, were aimed at institutional strengthening of the mining sector. Infrastructure investments (providing geophysics equipment to the Company for Mineral Resources Research and Geological Survey), were aimed at preventing natural disasters. The outputs of these activities can plausibly be expected to contribute to increase the mining sector's contribution to economic growth.

The relatively small scale of environmental activities supported by the project for both the energy and the mining sector does not convincingly establish that achievement of "environmental sustainability" - as envisaged in statement of the project's objectives - can be attributed to those disparate project activities, such as databases, environmental licensing, etc.

**Outputs: Energy Sector** (ICR, paragraphs 31 -34).

*These outputs were produced as targeted, for preparing the Ministry of Mines and Energy's (MME) Strategic Plan.*

- Six new databases were created for planning and socio-environmental monitoring, as targeted. Two databases developed under the project provided the first energy efficiency analysis of the (a) the service sector and (b) six industrial segments (aluminum, paper and cellulose, steelworks, ceramic, food drinks and chemical). Six new methodologies were created and utilized. Three training programs were created.
- Procedures and tools were developed to account for climate change and its impact on the flow of rivers for hydroelectric production.
- The ultra-high voltage transmission technology and computer clusters were operational. The synchronized real-time phasor measurement system, through which the national grid operator can monitor the transmission system and maximize the use of transmission lines, was operational (This system was important for connecting the North and Northeast of Brazil to the Southeast and South in the national grid). This system was expected to help the operator in monitoring, identify the causes of disturbances or failures in minutes, and help in preventing system blackouts by enabling the



- operator to make preemptive and corrective actions. The ICR notes that Brazil was among the 11 countries in the world using cutting-edge technology for large grid systems.
- Long distance testing center was established at the National Center for Research in Technology, for operating the major trunk lines. This center included testing arrangements for the Ultra-High Voltage transmission lines.
  - Phasor Measurement Unit testing laboratory was installed at the National Center for Research in Electricity, to monitor large-scale disturbances in the National Integrated System.
  - Software for improving the data structure reports was provided to the National Electricity Regulatory Agency. This software provided for savings in data storage.
  - A customized postgraduate training course was developed for government staff in the energy sector. A management system for environmental licensing for electricity generation and transmission, and a socioeconomic cadaster of the populations affected by the dams were developed.
  - Three power transmission technologies (ultra-high voltage transmission technology, computer cluster and a synchronized real-time phasor measurement technology) were developed and operational. Three geophysical technologies were developed.
  - Mechanisms were put in place for activities between Brazil and countries in Africa (Ethiopia, Nigeria, Mozambique and Mauritius) between 2012-2016, in the areas of transmission, renewables, biofuels, gas and power utility reform. A study tour was organized through the World Bank Brazil and Egypt teams about the potential for renewable energy and energy-efficient programs in Brazil.

*The following activities were not fully completed.*

- Ten additional activities envisioned in the project were completed, short of the target of 24 (discussed in section 5). The completed studies included: (i) identifying tariff challenges; (ii) recommendations regarding the commercialization of the sector in line with international best practices, applicable to Brazil, where the state still owns the assets; and (iii) studies for the National Electricity Regulatory Agency, analyzing the cost of electricity interruptions.

## **Outputs: Mining Sector**

*These outputs were produced as targeted, for preparing the Ministry of Mines and Energy's (MME) Strategic Plan.*

- The inventory of the small-scale mining sector was completed, and the mineral and geological data was updated to support the National Mining Plan 2030.
- One of the two expected entities (the National Mining Agency) was restructured, as specified in the new Regulatory Framework prepared by MME.
- The new Regulatory Framework for the sector and the National Mining Agency (ANM), for modernizing the regulatory capacity, were created.
- A customized postgraduate training course was developed for government staff in the mining sector. Information Technology equipment was provided to the ANM for increasing its monitoring capacity.
- Geophysical equipment was provided to the National Company for Mineral Research (CNPm) to increase the CNPM's capacity to create susceptibility maps, used for identifying mineral deposits and reducing the risk of natural disasters by mapping regions susceptible to landslides, flooding or seismic activity.





- The small-scale mining sector inventory was disseminated in seminars with other Latin American countries. Information Technology equipment was acquired for increasing ANM's monitoring capacity.

*The following activities were not completed when the project closed.*

- Activities aimed at regulatory strengthening of the mining sector were not fully developed, given the delays in implementing ANM.

### **Outcomes: Energy Sector**

The outputs produced by the technical assistance activities (preparation of databases, methodologies and training programs), were crucial for achieving better energy forecasts and addressing issues associated with imbalances between demand and supply for electricity, due to external reasons, as indicated below.

**The energy purchasing/dispatch arrangement.** The ICR (paragraph 34) notes that Brazil's installed capacity grew from 78,000 Megawatts (MW) at appraisal to over 164,000 MW in February 2019 and was expected to increase to 10,000 MW by 2021. Accurate forecast of energy dispatch was required to make adjustments to the energy purchase plan, given the size of energy dispatch. Given that 25% of the concession contracts of generation capacity, 82% of the national transmission system and 42% of distribution companies were to expire between 2015-2017, the government had to decide about the operational arrangements for the next 20 to 30 years. The government decided to extend the concessions in 2012, using the energy forecast database provided by the project.

**Issues of over contracting of energy.** Demand for energy was decreasing in the wake of the political and economic turmoil in the first four years of the project. The ICR notes that usually generation capacity is over contracted, to act as a safety net to meet unexpected increase in demand. Over contracting of 5% was permissible under Brazilian legislation and over 5% and up to 8% of over contracting was allowed; however, the contracting entity was still expected to pay for the over contracted energy, irrespective of whether there was demand. The analysis provided by the project aided MME in making adjustments to minimize the impact of over contracting. Legislation for these adjustment mechanisms were drafted and enacted. A "Disengagement Mechanism" was developed in 2017 in a competitive manner, whereby generators paid 106 million Brazilian Real (R\$) to terminate the contracts of 25 power plants. This initiative led to avoided fines of 183 million R\$ charged to generators.

Reducing over contracting of generation through adjustments to future Power Purchase Agreements, and establishing the Ultra High Voltage Testing Center, were expected to generate savings. Likewise, the phase synchronization measurement system would entail savings, by reducing the number of major outages (the ICR notes that preventing just one power outage over the next five years would save US\$64 million to the country's Gross Domestic Product). These cases could be expected to lower energy tariffs to consumers.

This review concludes institutions in the energy sector were strengthened by the activities and that institutional strengthening plausibly contributed to improving the energy sector's contribution to economic growth.

### **Outcomes: Mining Sector**

The indicators were output-oriented. According to the ICR (paragraph 39), "key activities in the mining sector were unable to be fully developed, especially those aimed at regulatory strengthening." Given that activities



relating to the regulatory strengthening of the mining sector were not completed, and the delays in ANM implementation, this review concludes that the project activities made a modest contribution to improving the mining sector's contribution to economic growth.

**Rating**  
Modest

## OVERALL EFFICACY

### Rationale

On balance, the project's efficacy in achieving the project objective is rated as Modest, in view of the limited evidence on achievement of outcomes in the mining sector, which plays a highly critical role in Brazil's economy and environment. Further, the relatively small scale of environmental activities supported by the project for both the energy and the mining sector does not convincingly establish that the achievements were "environmentally sustainable".

**Overall Efficacy Rating**  
Modest

**Primary Reason**  
Low achievement

## 5. Efficiency

**Economic analysis.** An Economic Rate of Return (ERR) was not calculated at appraisal, as most of the project activities (such as better prioritization of activities in the ministry through the strategic plan and greater efficiency in providing mining licenses) were qualitative in nature. At closing, the potential economic benefits in the energy sector were assumed to come from savings due to: (i) cost reductions due to the Ultra-Voltage lines (UVLs) testing laboratory (before the project there were no well-established techniques or maintenance procedures for UHV lines); (ii) outage prevention through the synchronized measurement technology (through better understanding of how/when/when a blackout took place); and (iii) the Contractual Balance in the Energy Market study, which identifies possible imbalances between power supply and demand and their impacts on healthy market functioning. On this basis, the ICR calculated the net present value and economic rate of return, using a discount rate of 10%, at US\$99.20 million and an ERR of 218.5%, respectively.

**Administrative and operational issues.** There were delays in the first three years of implementation due to a combination of factors, including (i) leadership changes which affected coordination among the implementing agencies; (ii) inadequate adjustment of activities to changing circumstances; and (iii) procurement delays. These factors, together with external factors, such as a multiyear severe drought, contributed to implementation delays. Although the government enacted the mining legislation (with delays), other mining activities were not





complete when the project closed (such as training women who live around mineral ventures) . There was lack of commitment by the Government to promote greater South-South Co-operation. Although additional activities were added following the formation of the new government using the savings due to the depreciation of the Brazilian Real during implementation, these were not completed due to the budgetary caps at the end of the project. The ICR (paragraph 88) notes that following the Presidential Impeachment and the formation of the new government, the Interim Government capped all spending to be line with the national law prohibiting public spending by any government entity. These caps prevented the execution of the activities as targeted.

In sum, efficiency of the project is rated as modest, in view of the administrative and operational shortcomings during implementation.

## Efficiency Rating

Modest

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    |                 | 0               | 0<br><input type="checkbox"/> Not Applicable            |
| ICR Estimate | ✓               | 218.50          | 0<br><input checked="" type="checkbox"/> Not Applicable |

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

## 6. Outcome

The relevance of the PDO to the government and Bank strategy is Substantial. The project's efficacy in achieving the project's objective - "to improve the contribution of energy and mineral resources to accelerated national growth and increased environmental sustainability in a context of globalization and technological change" - is Modest, in view of the partial and delayed activities and limited evidence in the mining sector. Efficiency is Modest, in view of the administrative and operational inefficiencies. Based on these sub-ratings, the outcome is rated as Moderately Satisfactory. This is in line with IEG guidelines dated July 25, 2017 (Table 9.1, page 42) and the Bank Guidelines for ICR Preparation dated September 27, 2018 (Appendix H, page 38).

### a. Outcome Rating

Moderately Satisfactory

## 7. Risk to Development Outcome



**Government commitment.** The commitment of the new government was demonstrated by its new gas sector policy, and new strategic direction to broaden the national gas sector market. It is unclear, however, whether the government would remain committed to providing the needed investment in the energy sector.

**Institutional risk.** The non-completion of mining sector activities is an institutional risk that could jeopardize the sustainability of the outputs achieved.

## 8. Assessment of Bank Performance

### a. Quality-at-Entry

This project was prepared based on a prior Bank-financed technical assistance project (Brazil - Energy Sector Technical Assistance Project). Lessons incorporated at design included technical assistance activities for addressing key sector issues, and a flexible design, which would enable adding activities based on the new government's energy sector priorities. This aided in adding new studies in the gas sector, in line with the priorities of the new government. The implementation arrangements were appropriate, with the Project Management Unit located in the Executive Secretariat of the Ministry of Mines and Energy - the agency responsible for project coordination. Several risks were identified at appraisal, including substantial risk associated with the weak implementation capacity of the agencies to address procurement issues. The mitigation measures adopted at design included supplementing procurement expertise through consultants and training program for participating entities in procurement issues. With mitigation measures, the project risk was rated as Low at appraisal. The arrangements made at appraisal for monitoring and evaluation and safeguards and fiduciary compliance were appropriate (discussed in section 10).

There were moderate shortcomings in design. The project underestimated the government's commitment to the mining sector program and the South-South Cooperation initiative. This contributed to the limited performance of the mining sector. There were also moderate shortcomings in M&E design (discussed in section 10a).

On balance, the Bank's quality at entry is satisfactory, since the project's theory of change and design for the major components and activities were sound, with some weaknesses in the relatively small component related to promoting South-South cooperation activities.

**Quality-at-Entry Rating**  
Satisfactory

### b. Quality of supervision



Twelve Implementation Status Results Reports were completed during implementation. Supervision missions were conducted to Brasilia about twice a year and the missions included energy and mining experts (ICR, paragraph 109). The missions included visits (at least once a year) to the sub-implementing agencies (the National Operator of the Transmission System, the National Center for Research in Electricity and the Company for Mineral Resources Research and Geological Survey), located in the state of Rio de Janeiro. The Task Team Leader was located in Brasilia from July 2013 and this aided in making proactive adjustments to accommodate the new government priorities, using the large project savings (due to the devaluation of the Brazilian Real), that were reflected in the second project restructuring. The supervision team was proactive in adjusting the activities through two restructurings, in the face of adverse external shocks during implementation.

### **Quality of Supervision Rating**

Satisfactory

### **Overall Bank Performance Rating**

Satisfactory

## **9. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The key outcome targets - number of databases created for planning and socio-environmental monitoring and the number of new methodologies created, were appropriate for monitoring the PDO of strengthening the capacity of public sector institutions. The key outcome targets - number of power transmission technologies and the number of geophysical technologies that were developed - were appropriate for monitoring the PDO associated with improving the contribution of energy and mineral resources to economic growth.

There were no indicators for monitoring performance with respect to improving the social and environmental sustainability of the mining sector; however, it could be argued that the PDO intended to contribute to sustainability as a long-term goal beyond the project's implementation period. It is not clear what is meant by "in a context of globalization and technological change". An intermediate indicator pertaining to the preparation of geophysical maps was over-ambitious. The ICR (paragraph 93) indicates that, given that one full geological map of an area can actually take weeks to produce, creation of 247 maps during the project lifetime was clearly inappropriate.

The Project Management Unit staff, with support from the participating entities in the energy and mining sectors, were responsible for collecting the data for monitoring project performance (PAD, paragraph 33).

### **b. M&E Implementation**



Indicators were added in line with the added activities during implementation. One key feature of monitoring during implementation was conducting workshops at the completion of key studies (such as on energy efficiency, analysis of gas tariffs and small-scale mining and socio-environmental impacts of dams), which were discussed with stakeholders. These discussions provided useful in making adjustments during implementation. A tool (lista unica) developed by the Bank and updated during implementation, was used for tracking all processes (an Excel file that tracks all steps associated with the contracting process).

### **c. M&E Utilization**

The indicators were used for monitoring project performance. The reports produced by the lista unica tool were used to inform the relevant government agencies to prepare reports. An example of this was a report analyzing bottlenecks in the energy sector, which resulted in contract risk avoidance of over 130 million Brazilian Real in 2017.

On balance, although one indicator related to the targeted number of geophysical maps was unrealistic, M&E design is rated substantial.

### **M&E Quality Rating**

Substantial

## **10. Other Issues**

### **a. Safeguards**

The project was classified as a Category B project, under World Bank safeguard policies. Four safeguard policies were triggered: (i) Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.04); Forests (OP/BP 4.36); and Physical Cultural Resources (OP/BP 4.11. (PAD, page vi). An Environment and Social Management Framework (ESMF) was developed and a specific Environmental Management Plan (EMP) was prepared. Both ESMF and EMP were publicly-disclosed at appraisal (PAD, paragraphs 48 and 49).

The ICR (paragraph 98) notes that there was compliance with environmental safeguards. There were no adverse environmental impacts (given that project activities were mainly conceptual studies), and there were no adverse impacts of investments in the National Center for Research in Electricity.



## b. Fiduciary Compliance

**Financial Management.** A financial management assessment conducted at appraisal concluded that the financial management arrangements were satisfactory and rated the financial management risk as Moderate. (PAD, paragraph 44). The ICR (paragraph 102) notes that there were no financial management issues during implementation. The project complied with the relevant requirements of the Loan Agreement. There were no instances of ineligible expenditures during implementation. All audit reports (excepting for the final audit report combining the 2018 and 2019 report, which was pending when the project closed), were unqualified.

**Procurement.** An assessment of the procurement management capacity of the participating entities was conducted at appraisal. The assessment concluded that procurement risk was moderate, and a procurement action plan was prepared (PAD, paragraph 45). The ICR (paragraph 104) reports that there were some procurement issues during implementation, due to the insufficient understanding of Bank procurement rules and long execution period of some activities. These issues were eventually resolved following a revision of the Procurement Plan and reinforcement of the Project Management Unit's procurement team. The ICR does not report any case of mis-procurement.

## c. Unintended impacts (Positive or Negative)

The ICR (paragraph 77) notes that there was an unintended outcome from the postgraduate training program, provided under the auspices of this project. Under this program, a student prepared a thesis on the daylight savings program. The thesis demonstrated that Brazil was not obtaining any gains by adopting the program. This thesis was presented at the 24th National Seminar for Production and Transmission of Electric Energy and used as the basis for a technical evaluation and ministerial note to the President's office on the Ministry of Mines and Energy's position on the subject, which contributed to the decision by the Federal Government in 2019, to discontinue the daylight savings program.

## d. Other

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## 11. Ratings

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



Quality of ICR

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Substantial

## 12. Lessons

The ICR (pages 35-36) draws the following main lessons from the experience of implementing this project, with some adaptation of language.

**(1) A flexible design for Technical Assistance (TA) activities allows for continuous client support in the face of shifting priorities.** This can be particularly important for a middle-income country that is willing to borrow for policy TA. The flexible design in this project enabled the Bank to respond to the new government's priorities in the gas sector.

**(2) Specific studies and reports targeting improved regulations can increase efficiency in the energy sector, while leveraging private investments.** The study of Contractual Balance in Energy Market, with its recommendations, enabled the government to measure and solve the problem of over contracting in the energy sector, which benefitted both the government and the contracting parties.

**(3) The dissemination of project outcomes through workshops for higher government management and other stakeholders can aid in continuous government commitment.** In this project, workshops during implementation proved helpful in clarifying to the many sector stakeholders the importance of the targeted interventions.

## 13. Assessment Recommended?

No

## 14. Comments on Quality of ICR

The ICR is clear and provides a good description of the way the project activities aimed at better energy forecasts, which were used for addressing issues associated with electricity dispatch and over contracting. It is also candid about discussing issues related to the limited implementation of mining sector activities and those that arose following the formation of the new government. The ICR is consistent with the IEG and Bank guidelines and draws good lessons from the experience of implementing this project.

The ICR however is unduly long and contains repetition at several places (the main text of the ICR at 36 pages, is more than twice the length of the recommended text of 15 pages). It would have been appropriate to put detailed information in appendices. It would also have been useful to give a condensed English version of the borrower ICR provided in pages 63- 161.





**a. Quality of ICR Rating**  
Substantial