**GEF EO Terminal Evaluation Review Form**

| **1. PROJECT DATA** | | | | |
|---|---|---|---|---|
| | | | Review date: | |
| GEF Project ID: | **128** | | at endorsement (Million US$) | at completion (Million US$) |
| IA/EA Project ID: | **P047309** | **GEF financing:** | **15** | **11.9** |
| Project Name: | Energy Efficiency | IA/EA own: loan | 105.5 | 38.1 |
| Country: | Brazil | Government: | | |
| | | Other*: | | |
| | | **Total Co financing** | 105.5 | 38.1 |
| Operational Program: | | **Total Project Cost:** | **125.5** | **49.0** |
| IA | World Bank | Dates | | |
| Partners involved: | Eletrobras and PROCEL(National Energy Conservation Program) | Work Program date | | **07/01/97** |
| | | CEO Endorsement | | 05/18/99 |
| | | Effectiveness/ Prodoc Signature (i.e. date project began) | | **02/07/01** |
| | | Closing Date | Proposed: **12/31/03** | Actual: **06/30/06** |
| Prepared by: Soledad | Reviewed by: Neeraj | Duration between effectiveness date and original closing: **34 months** | Duration between effectiveness date and actual closing: **64 months** | Difference between original and actual closing: **30 months** |
| Author of TE: Xiaoping Wang Team Leader: Todd Johnson | | TE completion date: **01/25/07** | TE submission date to GEF OME: **04/20/07** | Difference between TE completion and submission date: **3 months** |

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

**2. SUMMARY OF PROJECT RATINGS**

Please refer to document "GEF Office of Evaluation Guidelines for the verification and review of terminal evaluations" for further definitions of the ratings.

| | Last PIR | IA Terminal Evaluation | Other IA evaluations if applicable (e.g. IEG) | GEF EO |
|---|---|---|---|---|
| 2.1 Project outcomes | **S** | **MS** | **MS** | **MS** |
| 2.2 Project sustainability | **N/A** | **MU** | **MU** | **MU** |
| 2.3 Monitoring and evaluation | **MS** | **MU** | **MU** | **MS** |
| 2.4 Quality of the evaluation report | **N/A** | **N/A** | **S** | **S** |

**Should this terminal evaluation report be considered a good practice? Why?**

Yes, but with some considerations. The TE presents a detailed account project background, preparation, implementation, and results. However, and in agreement with the IEG evaluation, it is more descriptive than evaluative. In addition, the M&E assessment is rather weak. Although the report contains the targets in a ten-year period for the three key relevant indicators, it does not provide a timetable for progress on these indicators.

**Is there a follow up issue mentioned in the TE such as corruption, reallocation of GEF funds, etc.? No.**

**3. PROJECT OBJECTIVES AND ACTUAL OUTCOMES**

**3.1 Project Objectives**

**What were the Global Environmental Objectives of the project? Were there any changes during implementation?**

According to the Project Appraisal Document, the global environmental objectives are to: (i) remove market barriers

to application, implementation, and dissemination of energy-efficient technologies, and (ii) reduce global warming through lessening GHG emissions that would be produced by thermal generation using hydrocarbons.

According to the TE, there was no change to the project GEO of increasing energy efficiency in Brazil even though the project was restructured in 2003.

**What were the Development Objectives of the project? Were there any changes during implementation?**
According to the Project Appraisal Document, the project development objective was to improve efficiency in the supply and use of energy in Brazil, with a focus on electric energy. The key objective of the project is the creation of a market –based energy efficiency industry by removing market barriers, enhancing institutional delivery mechanisms, and encouraging the development of energy service companies.

During 2001 Brazil experienced a major energy supply crisis as a result of a prolonged drought, compounded by the country's heavy dependence on hydroelectric energy, and under investment in energy supply capacity for a number of years. As a result, the project was restructured in May 2003. There were no changes to the development objectives during the project implementation.

**3.2 Outcomes and Impacts**

**What major project outcomes and impacts are described in the TE?**
According to the TE, the following outcomes and impacts were achieved vis-a vis the stated project development objectives (after the 2003 restructure).

- The project incorporated the global environmental objective to reduce greenhouse gas emissions by helping remove barriers to the increase in energy efficiency. The achievement of the objective is measured by energy savings, reduction in CO2 emissions and postponement in investment in electricity supply. The target values of these key permanence indicators were set to be achieved by the end of the EE program, 10 years after project approval in 1999.
- The distribution companies have invested on average US$100 million per year on EE projects since 1999 with partial funding from the wire-charge and other programs, resulting in energy savings of 5,218 GWh over the 7-year period or 0.2 percent of the country's total consumption. This is equivalent to a reduction of 4.8 million tons CO2 emissions.
- The PROCEL program, which received the GEF grant for strengthening and expanding its operations, yielded energy savings of 13.3 TWh from 1999 to 2005, which corresponded to 12 million tons of CO2.

**4. GEF EVALUATION OFFICE ASSESSMENT**

**4.1.1 Outcomes (use a six point scale 6= HS to 1 = HU)** **OVERALL: MS 4**

| **A Relevance** | **Rating: 5 S** |
|---|---|
| Project outcomes were consistent with the country's environmental agenda, and with GEF Operational Program 5, namely the removal of barriers to EE and energy conservation. | |
| **B Effectiveness** | **Rating: 4 MS** |
| Taking into account the restructuring of the project, the project outcomes are commensurate with the expected outcomes and most of the barriers the project was to address. However, according the IEG evaluation, the project fell short in addressing the barrier of the lack of supporting mechanisms for Energy Service Companies (ESCOs) because the EE Financial Facility and Portfolio Building under the project was cancelled. In this way the project objectives were lower than expectations. | |
| **C Efficiency (cost-effectiveness)** | **Rating: 3 MU** |
| The TE does not provide a discussion over cost effectiveness. The fact that the project was delayed several times, had to be restructured, and suffered changes in its financing, cost effectiveness was affected. | |

**4.1.2 Impacts**

The project's accomplishments have been significant in facilitating the removal of market barriers to EE and energy conservation in Brazil. The GEF-funded activities helped establish an EE information center to disseminate information on EE products, services and delivery mechanisms, delivering a marketing strategy and action plan and a public marketing campaign, and increasing consumer awareness of the PROCEL seal. Through the acquisition and installation of testing equipment, the project helped establish 23 specialized laboratories around the country for testing and certifying the efficiency of equipment and appliances. Following the marketing campaign supported under the project, the recognition of the PROCEL seal increased from 35 to 45 percent.

In addition, according to the preliminary results of the market survey, *some* EE measures adopted by the consumer – such as the use of compact-fluorescent light bulbs –were permanent.

**4.2 Likelihood of sustainability.** Using the following sustainability criteria, include an assessment of **risks** to sustainability of project outcomes and impacts based on the information presented in the TE. Use a four point scale (4= no or negligible risk to 1= High risk)

| **A Financial resources** | **Rating: 2 MU** |
|---|---|

The demonstration activity promotion of solar water pre-heaters in the state of Sao Paulo was shown to be economically justified at the PAD stage. However, because the low income households for which the project target got electricity for free as a result of the government's welfare program, they had no incentives to adopt solar water heaters for a nominal fee. In this regard, only 210 heaters were distributed instead of the original target of 500. Thus, the proposed solution does not make economic sense to the intended users. This poses considerable risk to the sustenance of the benefits from the project.
In addition, according to the TE, two risks that were not considered significant in the PAD were high interest rates and their affect on EE investments by utilities or consumers directly or through ESCOs, and fluctuations in exchange rates between Real and US dollar which also affected the utilities' decision-making and ultimately contributed to the cancellation of the World Bank loan. The energy crisis did not cause the upheaval in Brazil's credit and foreign exchange markets -- high interest rates and currency risk already existed at the time the of the project's inception.

| **B Socio political** | **Rating: 3** | **ML** |
|---|---|---|
| According to the TE, the project had social and political support to a certain extent. On the one hand, there was an Energy Efficiency Law enacted in 2001, according to which, the government plays a key role in determining the maximum level of energy consumption and the minimum requirement for energy efficiency for commercial equipment. On the other hand, the sustainability of the Information and Dissemination Center, a key outcome of the project, largely depends on continuous funding from the government. The reason for this is that the Center is housed in the PROCEL program in Eletrobras and its operation largely depends on the funding availability for PROCEL. [Both Eletrobras and PROCEL are governmental agencies) In this respect, according to the TE the interest of utilities in demand-side energy efficiency investments was limited, and it took one year for Eletrobrás to sign the required two subsidiary agreements for project effectiveness. This lack of interest was exacerbated by the energy crisis. | | |

| **C Institutional framework and governance** | **Rating: 3** | **ML** |
|---|---|---|
| The legal framework, national policies and governance structures do not pose threats to the continuation of the process. However, according to the TE, the continuation of the current institutional capacity will depend in part on management decisions by the Government and Eletrobrás for PROCEL. | | |

| **D Environmental** | **Rating:** | **4 L** |
|---|---|---|
| The project does not face any environmental risks. | | |

**4.3 Catalytic role**

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| **a. Production of a public good**<br>The project contributed to the production of new knowledge and awareness on efficient energy. A marketing strategy was defined and elaborated and a survey was carried out after the main campaign was aired. Public recognition of PROCEL increased from 35 percent to 45 percent due to the marketing campaigns. |
| **b. Demonstration**<br>210 solar water pre heaters were installed in the municipality of Americana, representing estimated energy savings of 160 MWh/year. A testing, certification and labeling system was completely implemented. |
| **c. Replication** |
| **d. Scaling up** |

**4.4 Assessment of the project's monitoring and evaluation system based on the information in the TE**

| **A. M&E design at Entry** | **Rating:** | **4 M S** |
|---|---|---|
| The PAD included three key performance indicators (reduction of CO2 emissions, electricity savings, and postponement of investment in electricity supply), targets at the end of the project and the methods to monitor and evaluate the realization of project objectives and outcomes. The project design failed to establish a timeframe for achievement of targets. | | |

| **B. M&E plan Implementation** | **Rating :** | **4 MS** |
|---|---|---|
| The independent market performance evaluations and PROCEL reports were used to gauge the extent to which the targets for the key indicators such as energy savings and CO2 emissions reduction were achieved at project completion. However, according to the IEG evaluation, at project completion it was difficult to estimate the value of the three key performance indicators of the project as a whole. The evolution of other physical indicators served to monitor implementation progress of project components and take corrective measures. | | |

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| **C.1 Was sufficient funding provided for M&E in the budget included in the project document?**<br>UA. |
| **C.2 Was sufficient and timely funding provided for M&E during project implementation?**<br>**UA** |
| **C.3 Can the project M&E system be considered a good practice** No**,** due to unrealistic expectations in project design and preparation. |

**4.5 Lessons and Recommendations**

Project lessons and recommendations as described in the TE

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|---|
| **What lessons mentioned in the TE that can be considered a good practice or approaches to avoid and could have application for other GEF projects?**<br>(1) Demand-side management programs can be successful only if the underlying incentives of the regulatory framework are in place. Electricity utilities may not have an automatic incentive to invest in energy efficiency measures, because this will lower their sales and revenues.<br><br>(2) Development of an energy efficiency industry -- including true Energy Service Companies that enter into shared-savings or performance contracts and provide financing for energy efficiency investments -- takes time and a conducive regulatory and financial environment. When ESCOs are small and undercapitalized companies, as is the case in Brazil, they will not be able to finance EE investments on their own and usually cannot obtain sufficient credit from commercial banks. Future operations may have more success by identifying specific barriers in specific sub sectors that can be overcome through discrete actions.<br><br>(3) Project indicators should be flexible and be adapted during implementation as conditions change and the project develops. Some of the indicators that were designed at the project concept stage became irrelevant later and the target values became unrealistic. In addition, the target values for some of the key indicators were set for the entire EE program which was envisioned to be implemented in two phases, and there were no intermediate values for Phase I which the project was set to be. As a result, it is difficult to evaluate the project achievements and impacts by measuring the outcomes against the target values which are essentially non-existent.<br><br>(4) The post-procurement audit identified weaknesses in the procurement process for the project that was handled by UNDP. Some deals were unable to conclude because UNDP could not issue letters of credit. |
| |
| **List (or if detailed summarize) the recommendations given in the terminal evaluation** |
| The TE does not present any recommendations. |

**4.6 Quality of the evaluation report** Provide a number rating 1-6 to each criteria based on: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, and Highly Unsatisfactory = 1. Please refer to document "GEF Office of Evaluation Guidelines for the verification and review of terminal evaluations" for further definitions of the ratings.

| **4.6.1 Comments on the summary of project ratings and terminal evaluation findings from other sources such as GEF EO field visits, etc.** | |
|---|---|
| None | |
| **4.6.2 Quality of terminal evaluation report** | **Ratings** |
| **A. Does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?** | 5 |
| **B. Is the report internally consistent, is the evidence complete/convincing and are the IA ratings substantiated?** | 5 |
| **C. Does the report properly assess project sustainability and /or a project exit strategy?** | 5 |
| **D. Are the lessons learned supported by the evidence presented and are they comprehensive?** | 5 |
| **E. Does the report include the actual project costs (total and per activity) and actual co-financing used?**<br><br>Information in Annex 3 on actual expenditure and cofinancing mobilized is incomplete. | 2 |
| **F. Does the report present an assessment of project M&E systems?** | 3 |

**4.6.3 Assessment of processes affected attainment of project outcomes and sustainability.**

| **Co-financing and Project Outcomes & Sustainability.** If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability, and if it did affect outcomes and sustainability then in what ways and through what causal linkage did it affect it? |
|---|
| The energy crisis in Brazil, apart from causing delays in the project, produced a decrease in the project cost – the World Bank cancelled the loan with the Brazilian government.<br><br>According to IEG's report: Project cost (US$49.0 million) was significantly less than the APL Phase I appraisal estimate (US$125.5 million) because the project restructuring cancelled most of the EE demonstration subprojects |

of the associated APL Phase I. The GEF grant financed the equivalent of US$11.9 million and the balance was financed by the borrower.

**Delays and Project Outcomes & Sustainability. .** If there were delays in project implementation and completion, then what were the reasons responsible for it? Did the delay affect the project's outcomes and/or sustainability, and if it did affect outcomes and sustainability then in what ways and through what causal linkage did it affect it?

The factors that led to project delays, simultaneously led to the curtailment of the project scope. The energy crisis, which was unpredictable; and the project restructuring, affected the delays and outcomes of the project. First, the energy crisis in Brazil produced delays and changes in the project implementation (already explained in items 3.1 and 3.2). Second, the downsizing of Eletrobras affected the delay of the GEF Grant Agreement. While the project was approved in September 1999 and the GEF Grant Agreement signed in December 2000; it only became effective in February 2001 because downsizing at Eletrobras delayed compliance with two key effectiveness conditions – staffing the Project Management Unit and signing two subsidiary agreements with project participants in demonstration projects. Third, and as a result of the previous two, the GEF grant closing date was extended three times for a total of 2.5 years: from the original December 31, 2003 to December 31, 2004 (during the 2003 restructuring due to lack of progress in implementation), later on to December 31, 2005 (when the implementation progress improved) and finally to June 30, 2006 (to allow full disbursement of the GEF grant). Last but not least, according to the IEG evaluation, although the project was restructured in 2003 in consultation with the GEF and OPCS and formally approved by the Bank, there was no change to the project GEO of increasing energy efficiency in Brazil. However the target values for the three key relevant indicators of the project now cover a much longer period than the project life. The World Bank APL of US$43.4 million associated with the project was cancelled in 2004 and the GEF grant de-linked from it.

| **4.7 Is a technical assessment of the project impacts described in the TE recommended?** Please place an "X" in the appropriate box and explain below. | **Yes:** | **No: X** |
|---|---|---|
| Explain: Impacts are well documented in the TE | | |

**4.8 Sources of information for the preparation of the TE review in addition to the TE (if any)**

IEG's ICR Review (2007)
Terminal Evaluation Report
Project Concept Document
Implementation Status Results and Report (2006)