

1. Project Data:		Date Posted : 06/21/2013	
Country:	Vietnam		
Project ID:	P071019	Appraisal	Actual
Project Name:	Demand-side Management & Energy Efficiency Project	Project Costs (US\$M):	18.56
			25.83
L/C Number:		Loan/Credit (US\$M):	5.2
			2.54
Sector Board :	EMT	Cofinancing (US\$M):	5.5
			4.81
Cofinanciers :	GEF	Board Approval Date :	06/24/2002
		Closing Date :	03/30/2007
			06/30/2010
Sector(s):	District heating and energy efficiency services (70%); District heating and energy efficiency services (70%); Power (30%); Power (30%)		
Theme(s):	Climate change (67% - P); Other financial and private sector development (33% - S)		
Prepared by :	Reviewed by :	ICR Review Coordinator :	Group:
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2. Project Objectives and Components:

a. Objectives:

The project development objectives presented in the Project Appraisal Document (PAD, page 2) and in the Global Environmental Facility (GEF) Grant Agreement (page 19) are:

- "To develop and expand demand side management business programs and to test new market transformation efforts within Electricity of Vietnam (EVN); and
- To develop sustainable business models and mechanisms to support energy efficiency retrofitting investments in commercial and industrial facilities."

The project's Global Environmental Objective (PAD, page 2) is "to contribute to the reduction of greenhouse gas (GHG) emissions in the energy sector through the systematic removal of barriers to Demand Side Management (DSM) and Energy Efficiency (EE) investments."

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

No

c. Components:

Component 1. A Demand Side Management (DSM) Program (Appraisal US\$8.22 million, Actual US\$17.04 million). This component was implemented by the Electricity Company of Vietnam (EVN). It was developed during the First Phase of a program financed by the Swedish International Development Cooperation Agency (SIDA). Its objective was to achieve over 120 MW in system peak reduction and 500 GWh of electricity savings through the implementation of the following DSM measures :

1a) Time Of Use Metering (Appraisal US\$2.35 million; Actual US\$12.00 million): EVN and its power companies were to install 5,600 meters in about 4,000 large and medium sized customer to help conserve electricity consumption during peak periods.

1b) Pilot Direct Load Control Program (Appraisal US\$ 0.72 million, Actual US\$0.0): EVN, in collaboration with two

local power companies were to introduce a pilot ripple control systems to curtail demand, on a voluntary basis, of about 2,000 large customers.

1c) Compact Florescent Lamp Promotion: (Appraisal US\$1.79 million; Actual US\$1.72 million): GEF funds were to be used to support the first year launch and full -scale operation of a three year EVN program to sell one million compact fluorescent lamps to households in areas of high loads and network congestion . GEF funds were to finance lamp procurement and marketing and to test alternative delivery financing mechanisms for the lamps .

1d) Florescent Tube Lamp Market Transformation (Appraisal US\$0.78 million; Actual US\$0.74 million): In conjunction with EVN and participating manufacturers, GEF funds were used to provide marketing support for the marketing of high-efficiency 18/36 W T-8 florescent tube lamp bulbs . EVN's internal funds would be used to support project management and administration .

1e) Supporting Programs and Technical Assistance (Appraisal US\$2.58 million; Actual US\$2.58 million): GEF funds were to support Demand Side Management business opportunities studies and program monitoring and evaluation . Associated IDA funds were used to support a new DSM Research Center .

Component 2. Pilot Commercial Energy Efficiency Program (EEP) (Appraisal US\$10.34 million; Actual US\$8.80 million): This component, implemented by the Ministry of Industry (Mol), supported the establishment of a group of commercial service providers or "project agents" in all phases of energy-efficiency project identification, development and implementation. Sub-components were:

2a) Comprehensive Project Agent Training Program (Appraisal US\$1.25 million; Actual US\$1.13 million): Technical training was to be provided for energy auditing, technical system analyses and recommended efficiency improvements in the four end-use systems targeted, financial analyses of energy efficient investments and technology options.

2b) Sub-project Audit and Investment Grants (Appraisal US\$7.80 million; Actual US\$6.23 million): This component was to provide grants to project agents and their customers for energy audits and investments for over 200 sub-projects.

2c) Program Marketing, Monitoring and Administration Activities (Appraisal US\$1.30 million; Actual US\$0.88 million): This component includes support for marketing of the program to various stakeholders, periodic monitoring and evaluation of the program achievements and benefits, and administration of the program by the Mol, and the Administrative Unit (AU) of Electricity of Vietnam. Specific activities include: Program marketing (e.g., identification and recruitment of project agents, raising awareness of potential end -use customers of energy-efficient services; and Program administration and monitoring (e.g., AU management fees, technical support, program database development and monitoring, and post-installation inspections, evaluation and reporting).

2d) Ministry of Industry and Trade pilot programs and policy advice (Appraisal US\$0.00; Actual US\$0.55 million): This component was added at the time of the mid-term review through the reallocation of funds from EVN . It involved a pilot program evaluating solar water heater designs (including installation, monitoring and evaluation of 150 heaters); a review of technical standards for and labeling of air -conditioner efficiencies; and technical assistance for the finalization of an Energy Efficiency and Conservation law .

d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:

Project cost increased from US\$18.56 million to US\$25.83 million due to EVN's expansion of the Time of Use Metering, the cost of which rose five-fold (by US\$9.65 million, from US\$2.35 million to US\$12.0 million). There were significant decreases in expenditures in program marketing, evaluation and administration (from US\$1.30 million to US\$0.88 million), subproject financing and grants (from US\$7.80 million to US\$6.23 million), pilot Commercial Energy Efficiency Programs (CEEP), and related training and policy advice (from US\$13.34 million to US\$9.35 million). The unused portion of the EVN component (\$510,000) was reallocated to the Ministry of Industry to support a new Vietnam National Energy Efficiency Program.

Financing: This GEF project was a continuation of a Swedish International Development Cooperation Association (SIDA) financed Demand Side Management project, "Program Design and Investment Plan Phase II 2003-2005". It was originally intended to be part of the much larger SDR 177.9 million (US\$220 million equivalent) Systems Energy Efficiency Improvement, Equalization and Renewables Project (SEIER, Cr. 3680-VN), which was approved by the Board on June 25, 2002. SEIER was originally designed with two GEF components, one covering renewable energy and the other energy efficiency . However, towards the end of the processing of SEIER, it was discovered that GEF rules did not allow for two separate GEF components in one IDA project . Since both components were considered important for Vietnam's energy sector, the Bank took the Energy Efficiency component out of SEIER and made this separate Demand Side Management and Energy Efficiency Project . The project under review also had both GEF and IDA components (US\$5.5 million and US\$5.2 million respectively). The project's actual expenditures on GEF activities was US\$4.8 million and on IDA activities was US\$2.5 million. The unused balances of US\$ 0.7 million of GEF funds and of US\$2.7 million of IDA funds were cancelled.

Borrower Contribution: EVN expanded the Time Of Use metering program with its own resources . Its financial contribution to the project increased from the PAD estimate of US\$ 1.22 million to US\$12.15 million. Local sources provided US\$5.3 million for efficiency investments, compared with the Appraisal estimate of US\$ 6.6 million.

Dates: The EVN Demand Management portion of the project was closed in June 2007, at the original scheduled date. The Ministry of Industry project component was extended twice, for a total of three years, to provide more time to use the grant fund provided for commercial energy efficiency investments. The first two year extension was because lending had fallen behind schedule due to delays in completion of the necessary implementation training program. The second one year extension was related to the domestic and international financial crisis of 2008 and 2009, which delayed many sub-projects. The project closed on June 30, 2010, three years behind schedule.

3. Relevance of Objectives & Design:

a. Relevance of Objectives:

High: The project objectives were highly relevant to Vietnam's national development priorities for improving efficiency of the country's energy infrastructure, reducing energy investment requirements, and increasing efficiency in the use of energy resources. The project was also relevant to the Bank's assistance strategy for Vietnam, which included the support of market-oriented energy efficiency investments, and private sector participation in a commercial energy efficiency service industry. These priorities continue to be relevant in the 2011 Country Partnership Strategy for the period FY 12-FY16, which lists competitiveness as the first Pillar of its engagement framework, with a focus, *inter alia*, on improving the quality and efficiency of infrastructure services (para 63), and places a high priority on improving market institutions and advancing infrastructure investments (para 42).

b. Relevance of Design:

Substantial: The statement of Project Objectives was clearly defined and measurable, and there was a clear logical causal chain between the activities supported by the project, their expected outputs, and intended outcomes associated with the project objectives. Specifically, both the demand side management program supported by EVN (which included the time of use metering, load controls, and fluorescent light substitution programs), and the pilot energy efficiency programs, supported by the Ministry of Industry, directly aimed at decreasing electricity usage.

4. Achievement of Objectives (Efficacy):

1. Development and expansion of demand side management business programs and the testing of new market transformation efforts within Electricity of Vietnam (EVN): Rating: **Substantial**

Outputs

- More than 60,000 time-of-use meters had been installed by the end of the project, more than ten times the PAD target of 5,600. EVN financed this expanded program with its own resources.
- The marketing campaign for fluorescent tube lamps (CFLs) was successfully implemented with the dissemination of promotional documents and videos for broadcast on radio and television.
- One million CFLs were imported in bulk by EVN in 2004 and 2005 under the project.
- High efficiency fluorescent tube lamp systems were designed and installed in 135 schools.
- 1000 load research meters were installed and data collected, and a Plan for the expansion of this research program was developed. Demand Side Management (DSM) planning and policy support was initiated.
- The pilot program for limiting peak demand through a ripple control system was a voluntary program which, after the introduction of financial incentives, was expected to attract about 2,000 large customers. However, the proposed financial incentive package was not approved by the Ministry of Finance, so the program was not implemented.
- EVN has established a DSM Center, with expanded staffing, increased autonomy, and budget resources needed to plan and oversee a strong, nationwide DSM effort.
- Demand Side Management programs are now integrated into EVN's power development master plan.

Outcomes

- The evaluation study was unable to estimate the load impacts of time-of-use meters, because no baseline data were available.
- The project far exceeded the appraisal targets for peak load reduction (Appraisal 120 MW, Actual 310 MW) and energy savings (appraisal target 496 GWh, actual 2,859 GWh). Furthermore, these estimates are probably conservative, since they do not include the impact of Fluorescent Tube replacements, the impact of which was not assessed.
- The consumer education and marketing program combined with the initial subsidized supply program that introduced Compact Fluorescent Lights (CFLs) led to a substantial transformation in the market for CFLs. One million CFLs were sold during the period 2004-2005 when the project supported the purchase and sale of CFLs. In the following three years (2006-2009) an additional 25 million CFLs were purchased in the open market, leading to further energy savings of 280 MW and 2260 GWh, compared to what would have been needed if the same lighting had been provided by incandescent bulbs.
- A CFL Program Beneficiary Survey of 300 randomly selected customers found that overall satisfaction was over

90 percent, and was a key factor in influencing the rapid growth in the purchase of CFLs in the private market subsequent to the project supplied units.

- Installation of improved energy-efficient fluorescent tube lighting in 435 classrooms in 135 schools in 127 provinces and cities throughout the country had the desired effect of demonstrating their usefulness, and as a result about 15,000 classrooms had these improved energy-efficient lighting systems installed by 2010. A survey of the school lighting demonstration program found that both teachers and pupils were highly satisfied with lighting improvements in terms of blackboard and desktop vision and reduction in eye fatigue .
- Energy savings from the introduction of fluorescent tube lamps were not estimated .

2. Development of sustainable business models and mechanisms to support energy efficiency retrofitting investments in commercial and industrial facilities . Rating: **Substantial**

Outputs

- The Government finalized and issued an Energy Efficiency and Conservation Law in 2003 (the Decree on Efficiency Utilization of Energy and Energy Conservation), and launched a National Energy Efficiency Program in 2006.
- The Pilot Commercial Energy Efficiency Program (CEEP) was marketed through four Energy Efficiency Newsletters, a talk show on the national TV channel and a website .
- A Comprehensive Project Agent Training Program focused on developing basic technical, financial and business skill of Project Agents (PA) and financial service providers to enable them to effectively market, sell and deliver efficient energy services on a commercial basis .
- The training program certified 171 Project Agents to conduct Energy Efficiency audits and design energy saving projects. At least 10 commercial energy service providers are now active, compare to the appraisal target of seven to ten providers
- An evaluation of technical standards for solar water heaters (including installation, monitoring and evaluation of 150 solar water heaters) was completed and a method for labeling of air -conditioner efficiencies was introduced .
- Marketing materials using this information were disseminated for solar water heater and air -conditioners.
- By implementing energy-efficient investments supported under this project, Techcombank, the largest financier of energy-efficient investments in Vietnam, has strengthened its ability to provide detailed analysis of the financial benefits of such investments for potential customers, which has enabled it to promote energy -efficient investment projects more effectively .

Outcomes:

- The commercial energy service providers have been responsible for approving 128 sub-projects with a total investment of US\$5.34 million (included US\$0.81 million in investment grants from this GEF program). The number of sub-projects was substantially below the appraisal estimate of 200. However, the average investment per sub-project was considerably higher than anticipated at appraisal, so that the total investment was 20% below the appraisal estimate .
- The highly positive financial results of the 95 subprojects implement by the Project Agents, with payback periods averaging 2.3 years, (described in detail in section 5, below) indicate that a sustainable business model has been established as well as the mechanism to support energy efficiency retrofit investments in commercial and industrial facilities .

3. The Project's contribution to the Global Development Objective of reducing greenhouse gas emissions in the energy sector :

The ICR estimates that the project reduced CO₂ greenhouse gas emissions by 3.4 million tons of CO₂, almost three times the PAD target of 0.96 million tons (ICR page 11).

5. Efficiency:

For the Commercial Energy Efficiency project component (34% of the project cost at closure), the PAD analyzed the payback periods for 20 potential sub-projects with investments under US\$250,000. This analysis showed payback periods of between one and four years, with 80 percent having a payback period of less than three years . For comparison, the ICR undertook the same payback period analysis for 95 completed sub-projects with investments of between US\$10,000 and US\$168,000. The results were payback periods of between 0.3 years and 6.6 years with an average of 2.3 years. The ICR also calculated the financial rate of return (FRR) and the economic rate of return (ERR) for these subprojects. The FRR ranged from 13 percent to 306 percent with an average of 43 percent and the ERR ranged from 17 percent to 372 percent with an average of 53 percent.

For the Demand Side Management project component (66% of the project cost at closure), the PAD reported the aggregated efficiency of all the elements (including the time-of-use metering program, the Compact Fluorescent Lights (CFL) program, the High-efficiency Fluorescent Tube light (FTL) replacement, and the Direct Load Controls (DLC) program), but did not report on the efficiency of the individual elements . Because the Project Management Unit

did not collect the full set of data that would have been needed for the ICR to estimate the efficiency of each of the various DSM project elements, the ICR was unable to make an ex-post comparison with the appraisal estimates. Most of the ICR's efficiency analysis was, of necessity, based on indirect measures, as no direct measurement data were available.

For the CFL program (10% of the DSM component and 7% of total project cost at closure), the ICR calculated the benefits for the bulbs sold in 2006, the year after EVN completed its bulk procurement program. Over six million bulbs were purchased that year, which was 15 times the number projected at the appraisal stage. This market transformation resulted in a reduction of peak load demand of 310 MW, nine times the appraisal reduction target of 33.4 MW. With an avoided capacity cost of US\$ 1.5 million per MW, this saved EVN US\$465 million of new investments. The ICR estimated the benefits to the customers who purchased the bulbs at about 8.4 times their costs, compared to the original estimated benefit cost ratio of 6.4.

Since the Project Management Unit did not collect the data needed for analysis of the FTL school lighting program (4% of the DSM component at closure), the ICR undertook a simulation analysis using data from a similar school lighting project financed under the UNDP's Vietnam Energy Efficiency Public Lighting Project. This project had a simple payback period of 1.6 years and a financial internal rate of return of 51 percent. The new lighting system also greatly improved the quality of light over that provided by the previous substandard lighting system. This improvement contributed to a better learning and teaching environment.

No data were collected on the outcome of the time-of-use meters program (71% of the DSM component and 47% of total project cost at closure). However, the fact that EVN financed a substantial expansion of the program with its own resources strongly suggests that the savings were considerable.

Actual project cost was 39% higher than the appraisal estimate; however, this was almost entirely due to the expansion in the time-of-use metering program financed by EVN. Administrative inefficiencies partly explain the 75% time overrun from the appraisal estimate of four years to an actual seven. Although one of the extra three years could be explained by the fact that many sub-projects were delayed, halted, or did not come forward for financing because of the consequences of the 2008-2009 international financial crisis, the other two years reflected delays in the Investment Grant sub-component because the associated training program was behind schedule. In addition, the failure to correct staffing shortage issues in EVN's Demand Side Management Department hindered monitoring and evaluation of project results.

Taking account of the fact that economic analysis was performed on less than 40% of total project cost and of operational and administrative efficiencies, efficiency is assessed as **modest**.

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

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	No		
ICR estimate	Yes	53%	34%

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

6. Outcome:

The need to reduce the growth of the power sector and to minimize additional investment in generating capacity through influencing consumer demand through market oriented forces was a highly relevant objective for Vietnam, and for the Bank's assistance strategy. Project design was well focused on activities that would lead to the attainment of the objectives. Efficacy of both project objectives is substantial: evidence indicates that demand-side management programs were successfully expanded in EVN, and market transformation efforts were tested. Sustainable business models and mechanisms to support energy efficiency retrofitting investments in commercial and industrial facilities were developed. Efficiency is rated modest: the returns on investment were high for those components where this could be measured, but these accounted for less than half of final project cost; there were, moreover some operational and administrative inefficiencies. Overall, outcome is rated **moderately satisfactory**.

a. Outcome Rating : Moderately Satisfactory

7. Rationale for Risk to Development Outcome Rating:

The risk to the improvements in energy efficiency is low . Time-of-use metering has become widespread and is strongly supported by EVN . Consumers have accepted CFLs and are buying them in ever increasing quantities on the open market (10 million in 2006, 16 million in 2007, 25 million in 2008 and 30 million in 2009). Those consumers who have shifted to efficient CFL and T 8 fluorescent lighting are unlikely to switch back to incandescent bulbs .

The risk to continuation of an effective demand side management program is low . The Government has made a strong commitment on energy efficiency activities . It has promulgated an Energy Law that supports further energy efficiency investments, and has approved phase two of the Vietnam energy efficiency program for 2011-2016. In addition, establishment of the energy regulator and its initiatives on DSM regulations, including load research regulations will ensure the continuity and expansion of the DSM programs .

Continued support, particularly to power companies, will further mitigate the risk . EVN has recognized that its current Demand Side Management set-up is inadequate to achieve its targets . In recognition of this situation, the President of EVN has established a plan for an EVN Demand Side Management Center, with expanded staffing, increased autonomy, and the budget resources needed to plan and oversee a strong, nationwide effort .

The ongoing programs of other donors, together with the IFC financed credit line for energy in conjunction with Techcombank, and the development of new lending products with other Vietnamese commercial banks, is expected to mitigate the potential risk of sustainability of further commercial energy efficiency investments .

a. Risk to Development Outcome Rating : Negligible to Low

8. Assessment of Bank Performance:

a. Quality at entry:

This GEF project was separated from the larger SEIER project late in the appraisal process (see Section 2d above). The result was that the overall design of the GEF project was well integrated with the policy objectives of SEIER, and the individual project components were well focused on the need to reduce the growth of energy demand. However, the close linkages between the two projects did add complexity to implementation arrangements, monitoring and evaluation . Several issues were inadequately addressed, including, most importantly, the staffing of the Project Management Unit that EVN established specifically for this operation, which was inadequate for the complex job of collecting outcome performance data . In addition, the procurement packaging, designed for SEIER, was unnecessarily cumbersome and time consuming, given the low values of the packages in this smaller operation,

Training for the agents who were to undertake the efficiency sub -projects (the so called "Project Agents") for the Commercial Energy Efficiency Program was initially planned to proceed in parallel with implementation of the sub-projects. Only after negotiations did the Bank decide that the training needed to be implemented before the program could move forward. This oversight was rectified before the project became effective, but it did slow project implementation relative to the agreed implementation schedule .

Quality-at-Entry Rating : Moderately Unsatisfactory

b. Quality of supervision:

With the task team leader and most core task team members based in the field, it was possible to supervise the project closely. The task team maintained a focus on the project's development impact and played an effective role in addressing physical implementation problems as they arose . However, they were unable to convince EVN to strengthen its Demand Side Management cell and did not press the cell to supervise adequately the M&E plan and to complete final reporting of project costs in a timely manner . These failings have made quantitative assessment of the achievements of the key project -supported programs difficult.

Quality of Supervision Rating : Moderately Satisfactory

Overall Bank Performance Rating : Moderately Satisfactory

9. Assessment of Borrower Performance:

a. Government Performance:

Project preparation was part of the preparation for the energy sector loan, (the SEIER Project) for which the Government worked closely with the Bank. The Government issued a Decree on Efficiency Utilization of Energy and Energy Conservation in 2003, and launched the National Energy Efficiency Program in 2006, thereby providing the enabling environment for successful project implementation. However, the Ministry of Finance refused to agree to the financial incentives that were necessary for successful implementation of the Direct Load Control Program. When the Ministry of Finance decided to not approve these incentives, this project component had to be dropped.

Government Performance Rating

Moderately Satisfactory

b. Implementing Agency Performance:

There were two implementing agencies, EVN and the Ministry of Industry. The Ministry of Industry demonstrated strong commitment to achieving the project development objectives and provided adequate staff resources to enable successful implementation of the project. It showed a high degree of ownership and focus on project results. Minor shortcomings were in the meeting of its financial reporting obligations to the Bank in a timely manner.

EVN efficiently implemented the key sub-components of its Demand Side Management activities, especially the time of use metering program and the compact fluorescent lamps program, which yielded them substantial financial benefits. However, EVN failed to address the critical staffing issues in the Demand Side Management department, which greatly hindered effective monitoring and evaluation of the outcomes of its subprojects, even when outputs were known. Procurement was slow as a result of delays in the finalizing of procurement arrangements under the EVN component, due in part to the under-staffing of their Demand Side Management Unit. Nevertheless, most procurement contracts were adequately implemented.

Implementing Agency Performance Rating :

Moderately Satisfactory

Overall Borrower Performance Rating :

Moderately Satisfactory

10. M&E Design, Implementation, & Utilization:

a. M&E Design:

M&E design included clear performance indicators and targets. Key performance indicators of project outputs (numbers of CFLs and FTLs sold and resultant energy savings, number of energy-efficient projects implemented, carbon dioxide emissions) were clearly linked to outcomes and project objectives. However, measures needed to collect baseline data needed for comparison with results at project completion were not adequately established and implemented, which made it impossible to evaluate the benefits of the time of use metering program, among others. The M&E plan for the Commercial Energy Efficiency Program was to be implemented by the Project Management Unit of the Ministry of Industry. Data related to Demand Side Management was the responsibility of EVN's DSM Unit.

b. M&E Implementation:

Collection of indicator data was adequate and was included in the progress reports to the Bank in a timely manner. However, one of the consequences of the under-staffing of EVN's Demand Side Management unit, (the implementation unit for EVN) was that cost data for the various components were not collected, and baseline data were not collected for the time of use metering program. Lack of this data greatly hindered the assessment of achievements of the Demand Side Management programs.

c. M&E Utilization:

M&E information was used to monitor project implementation, and during the mid-term review for assessing needed project adjustments, reallocation of resources, and modifications of operating procedures. It was not, however, sufficient to monitor most of the project's achievements.

M&E Quality Rating : Modest

11. Other Issues

a. Safeguards:

No safeguards policies were triggered by this Category "C" project.

b. Fiduciary Compliance:

Audits were performed throughout project implementation by the independent auditing firm Auditing and Accounting Financial Consultancy Service Company Ltd. According to the ICR (page 8), the project was in compliance with the Bank's financial management Policies and audits were "satisfactory." Shortcomings in internal controls and timely submission of audit reports of the Ministry Of Industry and Trade component during the early period were addressed satisfactorily. The last audit received by the Bank was for the year 2009. This report had no qualifications. The project closed on June 30, 2010. The project team was unable to say whether there would be a further audit for the project's final year.

c. Unintended Impacts (positive or negative):

d. Other:

12. Ratings:	ICR	IEG Review	Reason for Disagreement /Comments
Outcome:	Satisfactory	Moderately Satisfactory	Efficiency is rated modest: the returns on investment were high for those components where this could be measured, but these accounted for less than half of final project cost; there were, moreover some operational and administrative inefficiencies.
Risk to Development Outcome:	Moderate	Negligible to Low	The main risk identified in the ICR was the risk to continued access to funds for expanding the EE investment program. This may, possibly, be a risk to the growth of the program, but it is not seen as a risk to maintaining the benefits from current energy-efficient investments.
Bank Performance :	Moderately Satisfactory	Moderately Satisfactory	
Borrower Performance :	Moderately Satisfactory	Moderately Satisfactory	
Quality of ICR :		Satisfactory	

NOTES:

- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons:

Lessons -The following three key lessons from the experience of this project are taken from the ICR with some adaptation of language:

- Under certain conditions, bulk procurement from a single supplier can considerably reduce costs. In this case, the cost of compact fluorescent lamps was reduced to half that resulting from previous open market individual procurement efforts. This reduced cost greatly increased the subsequent market share of the fluorescent

lamps.

- The design of Demand Side Management programs should ensure that the utility has a strong incentive to implement them. In this case they did, which is one of the reasons for the program's success .
- The model used in this project for supporting energy -efficient investments, which included marketing efforts by energy companies, training for both the sellers and the potential purchasers of such systems, and grant incentives for early adaptors, was an effective way of establishing market capacity and delivering energy efficiency services; it is one that could be adopted in other countries .

In addition, it was noted that procurement arrangements for energy sector projects, which are generally very large, may need to be modified for smaller Demand side management and energy efficiency projects such as this one .

14. Assessment Recommended? Yes No

15. Comments on Quality of ICR:

The ICR focused on the project results and identified the implementation weaknesses . Both the quality of the evidence provided and the quality of the analysis, which included the evaluation of 95 EE investments, was fully consistent. The lessons focused on issues, both positive and negative in nature, that should be helpful for designing future Demand Side Management and energy-efficiency projects.

a.Quality of ICR Rating : Satisfactory