



<b>1. Project Data :</b>
<b>OEDID:</b> TG014
<b>Project ID:</b> P007492
<b>Project Name:</b> High Efficiency Lighting Pilot Trust Fund
<b>Country:</b> Mexico
<b>Sector:</b> Electric Power & Other Energy Adjustment
<b>L/C Number:</b> GEF Grant No. GE-7492
<b>Partners involved :</b> Norway
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**2. Project Objectives, Financing, Costs and Components :**  
 The main objective of the project was to demonstrate the technical and financial feasibility of high efficiency fluorescent lightbulbs (FLs) as means to reduce emissions of greenhouse gases (GHG) and local pollution in Mexico, as a model for the developing world. Other objectives were (i) to build institutional capacity of CFE (the Mexican Federal Electricity Commission) for technological change and energy conservation, (ii) provide a replicable model for demand-side management (DSM), and (iii) strengthen CFE's capacity to practice DSM on a sustainable basis.  
 The project included: (a) the acquisition and resale of FLs at subsidized prices; (b) the purchase of vehicles and equipment; (c) consultant services for canvassing, marketing, testing, auditing and evaluation, (c) the cost of engineering, monitoring, billing and accounting; and (e) office and administrative costs of implementing the project. The total project cost of \$25.9 million was financed by a Global Environmental Facility (GEF) grant of \$10.7 million, a grant of \$3.1 million from the Kingdom of Norway, and counterpart funds of \$ 12.1 million from CFE.

**3. Achievement of Relevant Objectives :**  
 The project did not achieve its main objective of demonstrating the financial feasibility of FLs for residential consumers, either by inducing additional sales at market prices (the "free driver effect" expected at appraisal), or by showing that the sale of FLs at subsidized prices is a financially attractive activity for CFE.  
 Other objectives were partially achieved: (i) CFE strengthened its already extensive energy conservation program, including pilot promotion of FLs before the project, to successfully implement the expanded FL sales program; (ii) the DSM impact of the project was less than half of the level expected at appraisal. The ICR provides no indication of the extent to which CFE's capacity to practice DSM on a sustainable basis has been strengthened.

**4. Significant Achievements :**  
 The project sold 1.7 million FLs in Guadalajara and Monterrey, and reduced electricity use by 911 GWh and CO2 emissions by 764,000 tons. Results indicate that FLs are economically feasible. Uncertainties about the ability of FLs to withstand voltage fluctuations and operate under the rugged developing country conditions have been resolved. CFE is expanding the program to the rest of the country, with its own funds at a reduced subsidy.

**5. Significant Shortcomings :**  
 The project did not demonstrate the financial feasibility of FLs for residential consumers in Mexico. Due to inadequate implementation of the monitoring and evaluation (M&E) provisions under the project, there is no information on non-subsidized sales that might have been induced i.e. of the project's effectiveness in stimulating the market for FL's by overcoming the lack of information about energy savings, and the difficulty of affording the high front-end costs.  
 It is, however, possible, that the impact of the project, in terms of induced sales, has not been well documented (given shortcomings in the implementation of M&E provisions) or has not yet reached its full potential (given that it is still too early for the replacement of the long life FLs). Given the global demonstration value of the project, it is essential that a planned follow-up exercise collect the additional information to satisfactorily establish (or not) the commercial viability of this new technology.

6. Ratings :	ICR	OED Review	Reason for Disagreement /Comments
<b>Outcome :</b>	Satisfactory	Marginally Unsatisfactory	The financial feasibility of high efficiency lightbulbs was not demonstrated. Other objectives were only partially achieved.
<b>Institutional Dev .:</b>	Substantial	Modest	Strengthening CFE's capacity to distribute FLs can only be rated as a modest institutional development impact, given that it already had an energy conservation program, including pilot promotion of FLs, before the project.
<b>Sustainability :</b>	Likely	Uncertain	The likelihood that the project will maintain its benefits in the future, as the participants replace the lightbulbs, remains to be demonstrated.
<b>Bank Performance :</b>	Deficient	Unsatisfactory	
<b>Borrower Perf .:</b>	Satisfactory	Satisfactory	
<b>Quality of ICR :</b>		Satisfactory	

### 7. Lessons of Broad Applicability :

A demonstration project needs to be designed from the beginning with a clear strategy for achieving convincing results. A demonstration of the financial feasibility of a new technology needs to be based on the achievement of agreed benchmarks for financial feasibility, or a clear indication of the project's place in a phased strategy for achieving financial feasibility. In the absence of agreed benchmark indicators, and rigorous monitoring and reporting of results, the success or failure of the project is difficult to determine, and the demonstration value of the project is undermined.

### 8. Audit Recommended? Yes No

**Why?** It would be useful to reconsider the outcome and sustainability rating based on additional information on induced and follow-up sales, and additional financial information and analysis to evaluate the long term financial sustainability of the program from CFE's perspective.

### 9. Comments on Quality of ICR :

The ICR provides a candid and comprehensive analysis of the implementation experience of the project. Its main weakness is that it does not rigorously evaluate the clarity of the objectives and the adequacy of the design of the project, which do not bring out the underlying logic for the demonstration, i.e. through the stimulation of demand for high efficiency lightbulbs (at market prices) by overcoming the potential consumers'; (i) lack of information about the FLs energy saving benefits, (ii) reluctance to pay the high front-end costs of FLs; and (iii) uncertainty about the performance of the bulbs under rugged developing country conditions.

Finally, in addition to information on induced sales, it would also have been useful for the ICR to provide some indicators of the sectoral context, such as total lightbulb sales, electricity consumption, GHG and other pollutant emissions in the area of influence of the project.