Medium-Sized Project Grant From the Global Environment Facility (GEF) To the International Institute for Energy Conservation (IIEC) For The IFC/GEF Argentina Efficient Streetlighting Program

FINAL REPORT

April 2002

IIEC

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FINAL REPORT of the IIEC Executed IFC/GEF ARGENTINA EFFICIENT STREETLIGHTING PROGRAM

EXECUTIVE SUMMARY

The Argentina Efficient Streetlighting Program ("the Program") was a technical assistance program funded by the Global Environment Facility (GEF) with a grant of $736,250. The International Finance Corporation (IFC) was the executing agency for the GEF funds through the World Bank as GEF Implementing Agency and the Program was implemented by International Institute for Energy Conservation (IIEC). The Program was initiated by the IIEC in a proposal it made to the IFC, which was in turn funded by the GEF. During its tenure (Jan. 1999 – June 2001), the Program collaborated with many municipal and provincial governments, electric distribution utilities, banks, and engineering and contracting firms in Argentina. Through a range of technical assistance activities conducted with all parties, the Program supported development, structuring and financing of municipal streetlighting (SL) projects which use efficient lighting technologies in order to improve public SL services, save energy and money, and reduce the emission of greenhouse gases. Specifically, the Program succeeded in:

- Expanding the Argentine market for energy efficient SL technologies
- Identifying SL project opportunities and marketing them to potential developers
- Catalyzing key legislation to open the SL market
- Assessing the new systems' technical and economic feasibility
- Designing an innovative procurement document for SL services
- Advising cities, utilities, and engineering firms on how to develop SL projects
- Creating financing structures for SL projects
- Identifying financing sources for SL projects
- Disseminating the Program's SL project development "know-how" throughout Argentina

The Program's legacy of innovative models and tools for developing SL projects is summarized in a guidebook, which has been distributed to interested parties and available on key websites. Thus, Argentine municipalities, distribution utilities, ESCOs, professional associations, government agencies, and university departments can continue to apply the Program's methods to develop and implement efficient SL projects.

THE IFC/GEF ARGENTINA EFFICIENT STREETLIGHTING PROGRAM

PROGRAM SUMMARY

Title:	The IFC/GEF Argentina Efficient Streetlighting Program
Program financed by:	Global Environment Facility (GEF)
Program GEF Implementing Agency:	World Bank
Program GEF Executing Agency:	International Finance Corporation (IFC)
Program Execution:	International Institute of Energy Conservation (IIEC)
Location:	Argentina
Contract Date:	Nov. 1, 1998 – March 31, 2002
Starting Date:	Nov. '98–Jan. '99 Program start-up Feb. 1, 1999 – Program launched
Completion Date:	June 2001
Program Cost:	US $736,250

Summary of Program's Activities:

The Argentina Efficient Streetlighting Program was a technical assistance program funded by the Global Environment Facility (GEF). The International Finance Corporation (IFC) was the executing agency for the GEF funds acting through the World Bank as GEF Implementing Agency and the Program was implemented by, the International Institute for Energy Conservation (IIEC). During the Program's tenure (Jan. 1999 – June 2001), it collaborated with many municipal and provincial governments, electric distribution utilities, engineering firms, and banks in Argentina. It encouraged them to use innovative financing schemes to retrofit municipal streetlighting systems with more efficient lighting technologies in order to save money and reduce the emission of greenhouse gases. The Program's structure, activities and results are detailed in the following pages. The Program produced a guidebook containing examples of the key documents that the Program created while developing efficient streetlighting projects; references to the guidebook are made throughout this report.

THE IFC/GEF ARGENTINA EFFICIENT STREETLIGHTING PROGRAM

Background and Rationale

The Argentina Efficient Streetlighting Program ("the Program") was conceived in order to overcome the barriers that prevented the financing and implementation of energy efficient streetlighting (SL) systems in Argentina. Several reasons led to its launching.

First, Argentina's municipal SL systems are largely inefficient, so the potential to save energy through technological improvements is significant; investments in efficient SL systems can achieve the GEF's objectives of reducing the emission of greenhouse gases. Second, municipalities demonstrated strong interest in undertaking SL project investments and many qualified firms with engineering, contracting and equipment supply capacities were ready and interested to implement projects. Market assessment indicated that the main missing ingredients were project development and finance structuring capacities and the need to develop credit-worthy investment structures to overcome a principal barrier of weak municipal credit. Third, in the mid-to-late 1990's, IFC had extended credit lines to several Argentine commercial banks. Financing for efficient SL projects were eligible uses of proceeds for some of these credit lines; however, these banks required SL projects to be effectively prepared and structured to be made creditworthy. An original Program intention was to develop transactions for financing by those domestic banks with whom IFC has existing or newly developed credit lines.[1] For these reasons, the International Institute for Energy Conservation ("IIEC") applied to the IFC for a GEF medium sized grant, which enabled IIEC to implement a technical assistance program to try to overcome the barriers to energy efficiency. The Program's objective was to develop and demonstrate replicable viable project contract structures and finance security mechanisms to implement projects on commercial terms.

Objectives

The Program had five key objectives:

(1) To bring energy efficient municipal streetlighting projects to financial closing
(2) To develop innovative financial structures, tailored specifically to the requirements of energy efficient SL transactions;
(3) To increase local knowledge about how to develop SL projects by creating and disseminating a methodology and tools;
(4) To reduce greenhouse gas (GHG) emissions
(5) To transfer knowledge from Program participants to nonparticipants about how to develop energy efficient municipal SL projects.

Program Management and Implementation

[1] Unfortunately, by the time the Program had projects to present, the IFC credit lines had been fully used or cancelled and could not be extended because of IFC's then current credit exposure limits in Argentina

The executing agency for GEF funding was the IFC's Environmental Markets Group in the Environment and Social Development Department; **Mr. Dana Younger** served as Task Manager for the Program. IIEC, an international NGO headquartered in Washington, DC, managed and implemented the Program. IIEC implemented the Program through three main local partners, who IIEC contracted on a consulting basis: a Program Manager, a financial advisor, and the director of the Argentine government's office on energy conservation. IIEC reported to the IFC every quarter on the Program's progress, unless circumstances merited more frequent consultation. In addition to IIEC, an IFC consultant Mr**. John MacLean**, a specialist in financing energy efficiency projects, provided independent technical advice to the Program on behalf of IFC. Mr. MacLean provided strategic guidance and assistance on developing the SL projects and structuring their financing, and assumed some supervision responsibilities for the Program, along with Mr. Younger.

IIEC has over a decade of experience in addressing the market barriers to energy efficiency in developing countries. In particular, IIEC has had success in fostering the transfer of energy-efficient technologies to developing countries, establishing innovative finance mechanisms for energy efficiency, assisting utilities to develop and implement demand-side management programs, and encouraging developing country government agencies to implement policies that foster energy efficiency in the private sector.

IIEC was responsible for the following tasks:

- Hiring and administrating the contracts of the local consultants;
- Participating in SL project development through:
    - Meetings and follow-on communication with project sponsors,
    - Contributions to project analyses and documentation, and
    - Facilitating communication among the Program team;
- Managing Program resources;
- Reporting on Program activities to the IFC on a quarterly basis;
- Managing and participating in the dissemination of Program results, including compiling a guidebook; and
- Commissioning an outside party (**Fundacion Bariloche**) to evaluate the Program.

IIEC appointed **Ms. Shir Ashar Naveh**, an IIEC Project Manager, to oversee the day-to-day Program activities. Overall IIEC's Director of Programs provided supervision and guidance. From Jan. 1999 through Aug. 2000, the Director was **Ms. Kelly Gordon**; when Ms. Gordon resigned from IIEC, **Ms. Denise Knight**, IIEC's Director-Strategic Programs, assumed supervision of the Program from Sept. 2000 through its termination.

After interviewing numerous local candidates, IIEC selected and contracted **Ing. Luis Ciarfaglia** to serve as the Argentine **Program Manager**. His main responsibilities were to:

- Market the Program throughout Argentina;
- Help SL project sponsors to develop their projects, especially by facilitating technical and legal assistance, and by promoting the SL projects among all parties relevant to the project
- Contract local technical specialists to perform energy audits, and SL project feasibility studies (primarily **Ing. Carlos Freitas and Dr. Gautam Dutt**), and review procurement documents -- the Program Manager managed the budget for technical assistance;
- Remain updated on the progress of the various SL projects that the Program was assisting and report on them to IIEC; and

- Disseminate the Program's know-how, especially by presenting at conferences and individual meetings and by helping to compile the guidebook.

In consultation with the IFC and program participants, IIEC retained Aguirre y Gonzalez (**AyG**), an Argentine investment bank, to serve as the Program's local **financial advisor**. AyG appointed one of its partners, Mr. Federico Molina, to work on the Program. AyG's role was to help SL project sponsors do the following:

- Assess the financial feasibility of their proposed SL projects;
- Obtain financing for their SL projects, including: writing a business plan, modeling the financial projections, structuring the financing for the project, and marketing the business plan to international and local financing sources; and
- Educate local financing sources about the benefits of financing SL projects and about innovative financial structures that make SL projects attractive investments.

IIEC initially contracted with the Argentine government's office on energy conservation, Uso Racional de Energía **(URE)** to help support the project locally. URE's primary responsibilities were to:

- Provide the Program Manager with an office and with administrative support;
- Help conduct the initial SL market research, using data it had collected previously and its familiarity with the market;
- Help market the Program, using its contacts among the municipalities; and
- Facilitate the support of the Ministry of Energy.

Unfortunately, a few months after the Program was launched, URE was dissolved due to political changes in the Argentine government. The most direct impact on the Program was that the Program Manager had to rent out office space independently, and that he had to market the Program without URE's contacts and without the support of the Ministry of Energy. Furthermore, IIEC had to spend significant time on administrative matters resulting from URE's departure from the Program. However, the Project Manager and IIEC took immediate steps to revise the budgets to accommodate the added costs, develop a program marketing plan, hire the technical experts directly, and proceed with the Program implementation.

The Program experienced a number of management and staffing changes and contractual issues during the operation of the Program; these were dealt with contemporaneously by Program management. Lessons learned from this experience for operation of similar EE project development and finance support programs are being evaluated by IIEC and IFC for application in future work, in support of the GEF objective to remove barriers to energy efficiency and energy conservation.

The Program team communicated on a regular basis, usually via email, but also through teleconferences. Shir Naveh from IIEC and John MacLean made two trips to Argentina every year, to oversee the Program implementation and to help to achieve the identified goals. The IFC was kept up-to-date, and participated in important project activities where appropriate.

Budget

Attachment A presents the original Program budget, the revised budget, and the actual expenditures. During the Program's second year, it became apparent that the Program would need

additional time to achieve its goals. The IFC therefore suggested that IIEC extend the Program's end date from Jan. 31 to June 30, 2001. To fund this five-month extension, IIEC re-allocated the funds remaining from the original budget. It should be noted that this budget did not cover the time and expenses of Mr. John MacLean, which were covered by IFC's project supervision budget.

The Program's extension caused the following major changes in the budget. First, the Program Manager's services, including rental of his office space, were contracted for five additional months. This was partially covered by a budget contingency item of $23,750. Second, it was decided to limit the dissemination strategy's cost by "piggy-backing" onto conferences and workshops held by other organizations, rather than having the Program sponsor a conference. Furthermore, some dissemination funds were allocated to provide additional technical assistance to an Argentine municipality (conducting a SL project feasibility study). Finally, it was recognized that IIEC's costs of managing the Program were much higher than anticipated, due to its heavy involvement in facilitating communication among the team members and to its ongoing participation in developing the SL projects; this was partially covered by the funds previously allocated for URE's time.

Activities and Achievements

To attain the Program's objectives, the Program's implementors carried out five main activities according to the following workplan:

1. Streetlighting Market Research

The Program's first action was to research the Argentine SL market. The primary purpose of this research was to obtain baseline information about current market conditions that would form the Program's activities, including technical, regulatory, legal, contractual, and procurement aspects of the existing municipal SL systems. A second objective was to identify cities and/or utilities with which the potential for developing SL projects was high. Third, with this research, project financing and contracting structures were devised that would meet the institutional requirements of municipalities and utilities and create creditworthy financings to meet bank requirements.

2. Marketing the Program

Based on its market research, the Program launched a targeted marketing campaign about the benefits of retrofitting SL systems with energy efficient technologies. It promoted the idea that energy efficient SL technologies provide an opportunity for earning additional revenues to Argentine cities, provincial governments, electric distribution utilities, engineering firms, and professional associations, thus expanding the SL market. A main objective of this campaign was to identify specific projects for further technical assistance and project development services. The Program introduced Argentine cities to an innovative approach to implementing and

financing SL projects. It encouraged them to retrofit their currently inadequate SL systems with energy efficient technologies, paying for these retrofits from three new revenue sources: (1) the energy savings; (2) the additional SL tax revenues collected by the electric utility; (3) the SL maintenance savings from outsourcing these services. The benefits of retrofitting include reduced municipal electrical costs, improved lighting quality and public safety, and reduced emissions of greenhouse gases. (See document 1 in the guidebook for the Program's brochure that elaborates on these concepts).

The Program Manager promoted efficient SL at meetings that the Ministry of the Interior organized and that were attended by municipal officials from all parts of Argentina. Furthermore, the Program Manager organized press conferences for cities in the provinces of Buenos Aires, Entre Rios, Santiago del Estero, and Chubut that were attended and sometimes led by municipal and utility officials. He also met with many utility and industry representatives individually to promote the Program.

The Program's marketing campaign was very successful, as is evidenced by the wide spectrum of collaborators that the Program attracted. These included Argentine engineering firms ICSA, Lesko, Construman, Citelum, Cidem, and Tevycom, and Argentine equipment manufacturers, including: General Electric, Siemens, Alstom Power, Lithonia Lighting, Holophane, Umpi Elettronica, and Phillips. In addition, the Program collaborated with professional associations, including the Italian Association of the Lighting Industry, the Biennial Electric and Lighting Industry, the Association of Engineers of Mar del Plata, and Adeera (the association for distribution utilities), and signed a Memorandum of Understanding (MoU) with the Pan American Engineering Association.

The Program persuaded numerous electric distribution utilities that retrofitting streetlighting systems with efficient technologies was a profitable business as is evidenced by the MoUs that it signed with 4 utilities (Eden, Edes, Edelap, and Edeersa), committing the Program to help the utilities develop SL projects (guidebook document 2). The Program's activities were extensively covered in the Argentine media (see compilation of articles in Appendix B) ensuring these innovative concepts also reached individuals and organizations that did not have personal contact with the Program team. Thus, the Program's advocacy for efficient SL raised awareness and expanded the market for energy efficient SL technologies in Argentina.

3. Project Development Services

After assessing the wide interest resulting from the promotion activities in the first year, the Program team made a strategic decision in the second year to focus on developing the most promising SL project leads. They set out to do this armed with a set of project development tools ranging from marketing to engineering to municipal level legislative services. They worked closely with city officials, electric distribution utility officials, and engineering firms.

The Program Manager was key in offering marketing assistance to interested SL project developers. In individual meetings with officials of numerous cities, he won support for the SL project from the different – and sometimes opposing - city officials. To demonstrate their commitment to developing and implementing the SL project, city officials were asked to take two concrete steps. First, mayors were asked to write an official Letter of Intent for undertaking the SL project (guidebook document 4). Second, city public works directors were asked to fill out a questionnaire about the city's SL system (guidebook document 1).

Based on the data from these questionnaires, the cities' lighting systems were screened for their potential to develop energy efficient SL projects. To identify the most promising projects, evaluation factors, such as the city's political will, streetlighting project size, the city's need for technical improvements, the financial viability of the potential borrower, and the utility's interest in participating in the SL retrofit, even if only as collector of the SL tax, were considered. The projects were summarized in monthly pipeline reports that indicated the location of the project, the utility involved, the potential engineering firm that would do the retrofit, the potential financing source for the project, the project's estimated cost, and the next steps in developing the project.

The Program also worked closely with the electric distribution utilities, encouraging them to collaborate with cities in their service areas to develop SL projects. The Program Manager used the information gathered from the cities' questionnaires to interest the utilities in developing the SL projects. The utilities have a unique position to develop SL projects because they have access to capital, can (with city authorization) collect SL taxes from the general utility customers residing within a city's boundaries, and have engineering and contracting capabilities. From a business development standpoint, once the utility develops the capacity to retrofit the SL system of one city, it can readily replicate this retrofit in another. In the province of Entre Rios, for example, the Program introduced the Edeersa utility to these concepts. It then obtained Letters of Intent from nine cities and helped Edeersa craft an attractive offer to these cities (guidebook document 3), which was presented at a press conference attended by sixty municipal officials representing about 90% of the streetlights in the province.

Targeted technical assistance was offered to cities and utilities that showed the greatest potential for successfully retrofitting their inefficient SL systems. First, inventory audits were conducted and/or supervised and technical and economic feasibility studies of SL projects at eight municipalities throughout Argentina[2] (guidebook documents 6 and 7) were prepared. For municipalities in the Entre Rios province, an assessment of the positive environmental impact of implementing their SL projects (guidebook document 8) was conducted. Based on these studies' conclusions, an outline of options for developing and financing the projects (guidebook document 9) was provided for the cities. By supporting preparation of the inventory audit, feasibility study, and implementation plan for these eight SL projects, the Program provided the threshold information basis for decision-making by the city, the utility and contractors to implement the projects. For example, based on the Program's inventory audit and feasibility study in the city of Concepcion del Uruguay, Siemens and the Edeersa utility have offered to implement a SL project.

In some cases, the greatest hurdles to developing SL projects were posed by local political and legislative factors. Here, too, the Program proved its ability to find innovative solutions to overcoming barriers. The Program was the engine behind passing a municipal ordinance at the city of Mercedes that transferred the collection of the SL tax from the city to the distribution utility, Eden. Eden was better positioned to collect the tax than the city, because Eden can collect the tax on its customers' monthly invoice for electricity services, while the city has few means to enforce tax payment (guidebook document 5). Eden's higher collection rate is expected to generate for the city additional annual revenues of $350,000, which the city can use to guarantee a loan or to pay directly for its SL project.

[2] These cities were: Mercedes, Santiago del Estero, Puerto Madryn, San Nicolas (in Buenos Aires Province), Concepción del Uruguay, Nogoyá, Basabilbaso, and Crespo

Another legislative Program success was its contribution to the Oct. 2000 Provincial Decree 3570 of the Province of Buenos Aires, which established the SAPE Program (SAPE = Sistema de Alumbrado Público Eficiente). SAPE's organizers signed a MoU for collaboration with the Program, and relied on the Program's valuable input and advice in crafting this new legislation. SAPE legally permits cities in the province to outsource the retrofit of their SL systems directly to certain third parties, without going through a lengthy public procurement process. These third parties are special-purpose joint ventures between utilities and engineering firms in which the utilities collect the SL tax and use it to pay the engineering firm to install the energy efficient SL system. The estimated required investment for retrofitting the Province's SL projects total $500 million. Anxious to get a piece of this lucrative market, these joint ventures have been quickly forming and proposing SL projects to cities in the province. A description of such a project that is currently being implemented is included as a case study[3], Appendix C.

4. Procurement Services

In addition to the marketing, technical, and legislative services described above, the Program helped interested cities to develop procurement plans and tender documents required to outsource various combinations of development, implementation, financing and maintenance services for SL projects. For example, for the city of Mercedes, the Program designed a novel procurement document that included an embedded methodology for comparing proposals with different combinations of services: the retrofit, long-term maintenance, and/or financing of the SL project. A second unique characteristic of the Mercedes procurement document is that it is performance-based rather than prescription-based, a still-nascent concept in Argentina that motivates the bidder to create optimal system designs, and saves the city significant resources in preparing the tender document. Mercedes' procurement document (guidebook document 10) can be easily adapted to other cities' needs.

5. Contractual and Financial Advisory Services

The Program also introduced innovative financial structures for SL projects into the market. At the core of these structures (detailed and diagrammed in guidebook document 11) is a SL project that is financed and secured by: (a) the energy savings from the efficient SL equipment, and (b) the SL maintenance savings, and/or (c) the SL tax, which is collected by the electric distribution utility. These innovative structures were promoted through many individual meetings with project sponsors and financing sources, and through presentations at conferences.

The Program also offered individual assistance with financing to numerous cities, utilities, and engineering firms[4]. To the utility, the Program explained that it can finance the projects from its operating cash flows, or with borrowings. It can borrow either by pledging its assets or by pledging the SL tax receivables if the city transferred collection to the utility. Furthermore, the utility can take out a financing facility (such as a credit line) from which it can finance SL projects in several cities in its service territory. For the city and engineering firms, the Program created business and financing plans that defined the security structure of the SL project and

[3] The case study is included as a separate attachment; it was not disseminated because its writers (Argentineans who are familiar with the industry) felt that wide distribution would violate the confidentiality and threaten the success of its implementers.

[4] These project sponsors included: (A) Cities: Santiago del Estero, Mendoza, San Martin, San Miguel, Mercedes, a group of cities in western Buenos Aires Province, Concepcion del Uruguay, Basabilbaso, and Nogoya; (B) Utilities: Eden, Edes, Edelap, Edese, Edenor, Edeersa, and Edesur; (C) Engineering firms: Citelum, Construman, ICSA, Siemens, Cidem, and Tevycom.

projected its cash flows (guidebook documents 12 and 13). Once the project sponsor commits to do the project, these business plans can be presented to banks as applications for financing.

In parallel, the Program generated an awareness and interest for financing SL projects among different financing sources. Commercial banks (including Bancos Galicia, Rio, Frances, Dresner, Bansud, HSBC, BGN, ING), both their departments covering municipal finance and corporate and structured project finance" were approached, some of whom had already extended credit to the utilities. The interest of multilateral sources (including the IFC and IDB/IIC), in financing SL projects, was explored. The multilateral sources could either finance utility-sponsored SL projects, or they could extend credit to commercial banks for on-lending to engineering firms who, due to their small size, could not borrow directly from the multilaterals. The development of a newly established Argentine government trust fund available to cities in the Buenos Aires province was monitored and pre-qualification guidelines for interested borrowers (guidebook document 14) were drafted.

Information Dissemination

From the Program's activities, its team members gained important experience and "know-how" in developing SL projects that they disseminated throughout Argentina. The Program team made presentations at six seminars and conferences attended by municipal and provincial officials, equipment distributors, utilities, engineering firms, and university faculty[5]. The Program wrote an article that was published in the May-June 2001 issue of the industry magazine *Economía y Negocios*, and its press conferences were covered in local newspapers and radio and TV programs (see compilation of articles).

In addition, many one-on-one meetings were held with government officials and with SL project sponsors at utilities and engineering firms. It encouraged Program participants to learn from each other about developing SL projects, facilitating a meeting between the utilities Eden and Edeersa, and between contractor ICSA and the utility Edenor. It also arranged meetings between officials of the SAPE program and officials of the Entre Rios and Chubut provinces who are interested in launching similar provincial initiatives. Finally, the Program made presentations to numerous cooperative utilities in Buenos Aires province about how to develop SL projects.

The Program summarized its "know-how", i.e., its methodology for developing efficient SL projects, in a guidebook. This guidebook contains samples of the key documents that the Program and project sponsors (municipalities, utilities, and engineering firms) created as they defined and designed the efficient SL project and prepared it for implementation. The Program published this guidebook on a compact disk and followed a three-pronged strategy for disseminating it. First, the Program sent the guidebook to project developers who had worked with the Program. Second, the Program advertised the guidebook on the website of the Argentine Interior Ministry that is accessed by all the municipalities and the guidebook will be sent in response to requests from interested cities. Finally, IIEC posted the guidebook on its own and on the IFC/GEF Efficient

[5] The seminars/conferences were: Seminario de Alumbrado Público Provincia de Buenos Aires (Sept. 2000); Seminario de Alumbrado Público Parque Norte (Oct. 2000); 2nd Workshop on Energy Efficiency (Mar. 2001); Conferencia Ciudad de 9 de Julio (Mar. 2001); Seminario de Alumbrado Público San Nicolás (Apr. 2001); and Conferencia Zona Mar del Plata (May 2001)

Lighting Initiative's (ELI) websites, thus making it available globally. Please see Attachment D for the Guidebook distribution list.

Challenges Faced and Lessons Learned

The Program encountered many challenges while developing efficient SL projects. First among these was the slow pace of decision making at the municipalities. Due to the Oct. 1999 elections, municipal officials did not commit to new projects in the approximately 3 months before and after the elections, causing delays for our Program. After the elections the Program had to re-establish its contacts in cities whose administration had changed. Later on, mayors that did decide to retrofit their SL systems often fought a prolonged political battle for approval of the project against the opposing party in the city council. Even if the mayors won initial approval, they often had to fight for each individual ordinance and budget allocation related to the SL project. While the Program made important headway in developing many SL projects, two and one-half (and originally just two) years is not enough time for guiding a city from initial exposure of an innovative concept through to its adoption.

Aware of the slow pace of political change, the Program worked in parallel with electric distribution utilities. However, finding a committed sponsor was much more difficult than had been anticipated. The Program approached seven privatized utilities and many cooperatively owned utilities; together, these firms distribute most of Argentina's energy. The Program especially worked closely with four of the privatized companies: it signed MoUs for collaboration, drafted a blueprint for establishment of a streetlighting services subsidiary, estimated the demand for their SL services, and offered to identify financing and help with marketing. In one case (Edeersa), the utility was unwilling to borrow additional funds for the SL projects until existing debt was refinanced, and, further this utility was in the midst of divestment by its major shareholder. Another set of utilities (AES-owned utilities, Eden/Edes/Edelap) was reorganized mid-way through their participation in the Program and their business development staff with whom the Program had worked most closely were re-located to other positions in their companies. Other utilities, notably Edesur and Edenor, have renewed interest in undertaking SL projects pursuant to the SAPE scheme, which the Program helped developed. In the final months of the Program, Edesur asked the Program's financial advisor to help it obtain a $40 million facility for several municipal SL projects. Project financing has been made extremely difficult to obtain in the midst of Argentina's current financial crisis. We anticipate that Edesur will remain committed and, will use the Program's tools and the interest generated among cities in its service area, to carry out the SL projects. Once Edesur sets the example, other utilities are expected to follow their example.

Identifying suitable financing sources presented another challenge. Initially, two commercial banks (Galicia and Rio) conceptually agreed to finance municipal SL projects, but only if the cities pledged their co-participation revenues (inflows from the federal government) as security. Later on, as Argentina sank into economic recession, these banks withdrew their offers and adopted a "wait and see" attitude regarding new municipal financing. Finally, banks in Buenos Aires province agreed to finance municipal projects only by pooling funds (and sharing the risk) with other banks in a special trust fund that was approved in July 2000 but that has not yet started lending due to the adverse financial market conditions. The international banks with local branches and multilateral development banks were interested in financing SL projects only if the final borrower was a large private-sector entity, such as a utility with a credit-worthy parent. As

explained above, all the utilities except for Edesur were not sufficiently interested during the Program's tenure to make such a commitment at the corporate level. It is essential that decision makers at the municipality, utility, and engineering firms (as appropriate) collaborate closely to develop and implement an energy efficient SL project.

Despite the Program's assistance, no single SL project developer emerged that was able to overcome these political, utility-related, and financial hurdles and bring a SL project to financial closing and implementation within the Program's timeframe. However, it is very possible that once Argentina's economy recovers, the framework established and tools developed by the Program will lead to development and implementation of viable SL projects. To assess the Program's impact, these SL projects would have to be re-evaluated in several years time.

Available commercial financing sources are likely to remain staunchly conservative for the foreseeable future, especially given the current economic crisis. The traditional method for securing municipal loans is for the lender to receive an assignment of the city's co-participation revenues, i.e., revenue sharing from provincial and national governments. The Program has promoted an alternative method of securing loans: an assignment of the SL taxes collected by the utility. In the near-term, once the national financial crisis eases, a hybrid security has been discussed with lenders and could be used; loans would be secured initially by *both* revenue sources and then the co-participation revenue as security would be phased out as the SL tax revenue collection performance has been proven by meeting defined targets for collections performance and debt service coverage. Once the alternative security method using SL tax revenues has been established, the market for SL project finance will be opened considerably.
Another option is for multilateral banks (such as the IDB and IBRD) to lend to commercial banks that would on-lend to cities and/or engineering firms to carry out the SL projects. Once the Argentine economy recovers, a fourth possible financing source may be the Argentine pension funds; pension funds seek local currency income for a medium-to-long investment term, such as the income that the SL projects generate.

CONCLUSION: THE PROGRAM LEGACY

In summary, IFC/GEF Argentina Efficient Streetlighting Program implemented by IIEC made important progress towards overcoming the barriers to energy efficient streetlighting systems in Argentina. First, through its extensive marketing, project development, and dissemination activities, the Program introduced Argentine cities, utilities, engineering firms, equipment manufacturers, professional associations, and financing sources to innovative ways to finance and implement SL projects. Thus, the Program expanded the market for energy efficient SL technologies. Second, the Program's technical assistance to individual cities and utilities will become a catalyst for future SL projects development and implementation. In one city in particular (Mercedes), the Program was key to creating a revenue stream of $350,000/year that could help pay for the SL project. Additionally, the Program crafted an innovative procurement document that can serve as a template for a tender that is cheaper for a city to prepare and whose resulting bids can be evaluated more accurately. Finally, the Program was a major contributor to the SAPE legislation in the Buenos Aires province, which will further expand the Argentine market for energy efficient SL technologies and pave the way for new actors (the joint venture companies) to enter it.

The Program crafted innovative technical, legal, financial, and business models and tools for converting Argentine municipal SL systems to energy efficient technologies. These tools – the Program's legacy – will continue to be disseminated throughout Argentina, and thus encourage cities, utilities, engineering firms, and financing sources to adopt efficient technologies.

APPENDIX A

IFC/GEF Argentina Efficient Streetlighting Program
IIEC Financial Report
Program Period: From: November 1, 1998 To: March 31, 2002

Budget Categories	ORIGINAL Budget	REVISED Budget	ACTUAL Expenditures
IIEC			
Management & Finance (salary & expenses)	$104,000	$193,703	$209,258
IIEC expenses	$30,000	$12,095	$6,203
Travel	$20,000	$14,355	$11,992
Contingency (subject to IIEC approval)	$7,500	$7,500	$7,500
Total IIEC	**$161,500**	**$227,653**	**$234,953**
Conference, Publications, Promotion IIEC (1)	**$40,000**	**$16,131**	**$9,528**
Subcontractors (w/o financial advisor)			
Program Manager (PM)	$144,000	$171,000	$183,377
Engineering support (Freitas, Dutt, lawyer)	$60,000	$59,943	$57,326
URE Support & Management (inc. Dutt while at URE)	$50,000	$24,483	$24,483
Office+admin assist.for PM, inc. communication exp's	$35,000	$39,179	$33,378
Office equipment & equipment maintenance	$10,000	$2,141	$1,641
Travel within Argentina for PM & technical assistants	$17,000	$17,426	$24,264
Legal municipal contracts, procurements	$20,000	$10,000	$8,380
Total subcontractors	**$336,000**	**$324,172**	**$332,849**
Financial Advisor, Aguirre y Gonzales			
Retainer (7500/mo)	$135,000	$135,000	$135,000
Expenses	$15,000	$8,294	$2,243
Total AyG	**$150,000**	**$143,294**	**$137,243**
Evaluation for GEF - Outside Party	**$25,000**	**$25,000**	**$25,558**
Contingency IFC	**$23,750**	**$0**	
TOTAL	**$736,250**	**$736,250**	**$740,131**

(1) The dissemination budget covers direct dissemination expenses, not time spent on disseminating
The actual dissemination cost includes $9850 for the feasibility study for the city of San Nicolas

APPENDIX B

Compilation of Media Articles
(available only with hardcopy report)

APPENDIX C

CASE STUDY

PROPUESTA DE GESTIÓN INTEGRAL DE UN PARQUE DE ALUMBRADO PÚBLICO

PROPUESTA DE GESTIÓN INTEGRAL DE UN PARQUE DE ALUMBRADO PÚBLICO

En el caso presente se detallan los distintos aspectos vinculados al repotenciado, ampliación y mantenimiento del alumbrado público de un municipio tipo.

En lo que sigue se efectúa una breve exposición de las condiciones económicas y financieras que permitirán concretar su realización, y constituir un esquema autofinanciado en base al ahorro energético obtenido. Se adjuntan planillas de cálculo.

La propuesta se basa en el sistema de adjudicación directa a un Operador constituído por la Distribuidora Eléctrica más una empresa de mantenimiento, de acuerdo a la legislación vigente en la Provincia de Buenos Aires. En el caso específico considerado, el Ejecutivo Municipal contó con el apoyo del Concejo Deliberante para la aprobación de las Ordenanzas que corresponden.

Este plan propone la realización de obras de remodelación y ampliación del parque existente, las que deberán completarse en un plazo de 1 año. Esto representa una inversión importante, por lo que el operador ofrecerá una financiación para el pago de estas obras en 8 años. También durante esos 8 años, el operador será responsable del mantenimiento del sistema.

Esquema de Ingresos

Los ingresos necesarios para realizar estas obras y afrontar los gastos mensuales del sistema se obtendrán de las siguientes fuentes :

1) El canon (6 %) que las distribuidoras deben abonar a los municipios.

2) La mejora en la recaudación de fondos que se obtiene al transferir la gestión de cobranza de las tasas de alumbrado público a las empresas distribuidoras de energía eléctrica. La experiencia indica que en ese caso la recaudación asciende al 95% de lo facturado. La morosidad actual de la tasa cobrada por el municipio es de 55%, es decir que tiene una efectividad de 45%.

3) El ahorro de energía que se obtendrá con las obras, como resultado de la actualización tecnológica del parque, lo que se traducirá en una reducción del gasto actual. Se usarán lámparas de vapor de sodio de alta presión.

Esquema de Egresos

Los egresos mensuales que se deben afrontar para la ejecución del plan son los siguientes:

1) Consumo de energía del parque remodelado.

2) Consumo de energía del parque agregado.

3) Consumo de energía de dependencias municipales.

4) Mantenimiento de todo el parque resultante (remodelado más ampliación).

5) Amortización de la obra de remodelación y ampliación.

6) Comisión de cobranza de la tasa a pagar a la Distribuidora.

Este Municipio cuenta actualmente con 10.031 luminarias, de las cuales 1.800 ya son de sodio. Se propone efectuar una obra de repotenciación de 8.231 luminarias, y agregar otras 1.500 nuevas de SAP 100W, lo que representa una inversión de $ 3.443.331. También se incluye en esta oferta el mantenimiento correctivo y preventivo de todo el parque durante 96 meses, a razón de $4 por luminaria/mes.

Se ha previsto transferir la cobranza de una tasa cuyo valor mensual es de $ 4.50 por cliente a la distribuidora de energía. En el municipio la distribuidora cuenta con 53.000 clientes, por lo que si cobra el 95 % de lo facturado, la recaudación neta mensual será de $ 226.575

Por otra parte se ha determinado que al efectuar la obra de repotenciación, se obtendrá un ahorro de $ 35.448 respecto a los $ 100.434 que actualmente abona en promedio por consumo de energía del alumbrado público. Es decir, el consumo del parque una vez repotenciado se reducirá a $ 64.986 mes.

Resulta así el siguiente balance:

Disponibilidades

Canon 6 % a abonar por la distribuidora de energía:	$ 75.855
Recaudación a obtener de la cobranza cedida:	$ 226.575
Total disponibilidad mensual:	***$ 302.430***

Gastos mensuales

Consumo de energía del parque remodelado:	$ 64.986
Consumo dependencias municipales	$ 34.441
Consumo de energía 1.500 luminarias nuevas (SAP 100W)	$ 8.557
Mantenimiento de todo el parque resultante ($4/mes/luminaria)	$ 46.124
Comisión por cobranza 3.5% sobre lo recaudado	$ 7.930
Amortización de la obra de remodelación y ampliación	$ 59.750
Total egresos mensuales	***$ 221.988***

El monto considerado para amortización de la obra, es el que corresponde al pago de la misma y su carga financiera en un plazo de 8 años con sistema francés y tasa de 12% anual .

Como se observa, el esquema planteado permite financiar sin ningún gasto adicional el consumo de energía del municipio, las obras de remodelación, ampliación, mantenimiento, e instalación de un parque de alumbrado moderno, y en condiciones óptimas de funcionamiento.

Mensualmente la Operadora deberá rendir cuentas a la Municipalidad de la recaudación obtenida, la cancelación de los pagos previstos y el saldo que quede disponible deberá ser depositado a disposición del municipio.

Como dato importante debe tenerse en cuenta que toda partida presupuestaria que estuviera destinada a mantenimiento ,mejora del alumbrado, o instalación de nuevas luminarias en el presupuesto actual quedará libre, ya que este gasto resultará cubierto por la obra y el mantenimiento contratados.

Efectos del sistema propuesto sobre el presupuesto municipal actual

El municipio actualmente debe afrontar mensualmente al saldo que resulte de la compensación con la Distribuidora .En este caso resulta:

-Consumo actual de energía de A. P. $ 100.434

-Consumo Dependencias $ 34.441

-Total consumos $ 134.875

MENOS

-Canon a abonar por la distribuidora $ 75.855

Saldo a pagar por el municipio: $ 59.020 por mes

Por otra parte al ceder la cobranza de tasas de alumbrado deja de percibir la recaudación correspondiente:

-Facturación cuya cobranza se cede ($ 4.50 x 53.000) $ 238.500

Cobranza real actual 45 % $107.325

El funcionamiento del sistema prevée que el operador mensualmente efectuará la liquidación de los gastos acordados y el saldo de lo recaudado quedará a disposición de la Municipalidad

-Disponibilidad del Operador (Canon + Tasas cobradas) $ 302.430

MENOS

-Compromisos a cancelar $ 221.988

Saldo libre a disposición del municipio $ 80.442

Resulta así el siguiente balance mensual con respecto a la situación actual del municipio:

-Saldo que deja de pagar a la distribuidora $ 59.020

MENOS

-Recaudación por tasas que deja de percibir $ 107.325

MAS

-Saldo libre a disposición del municipio $ 80.442

Crédito neto que resulta para el municipio $ 32.136

Beneficios económicos futuros

Un aspecto importante a considerar es que al colocar luminarias actualizadas en su tecnología, que incluyen una adecuada corrección del factor de potencia, la Municipalidad se pondrá a cubierto de los futuros recargos que aplicarán las distribuidoras de energía, debido a los inconvenientes que producen en sus líneas el bajo factor de potencia de los equipos anticuados.

Otro beneficio futuro es que transcurridos los 8 años que durará el período contractual quedará funcionando para el Municipio un parque de alumbrado que sumará a su bajo consumo de energía, su buen estado de conservación y uniformidad en el tipo de luminarias, y el conocimiento real del patrimonio y de su estado lo que permitirá lograr costos operativos mensurables y definitivamente inferiores a los actuales.

Caso de Estudio

Impacto del proyecto en el Balance Mensual del Municipio

(1) Consumo actual de energía				$ 134.875,10
(2) Cánon Distribuidora				$ 75.855,00
Saldo a pagar mensualmente por el Municipio= (1)-(2)**				**$ 59.020,10**

**Saldo a pagar mensualmente por el Municipio =Consumo actual de energía-Canon a abonar por la Distribuidora

Recaudación por Tasa que deja de percibir el Municipio

Clientes			53.000,00	
Tasa		4,50		
Total				$ 238.500,00
% de Cobranza real		0,45		
Recaudación por Tasa que deja de percibir el Municipio				**$ 107.325,00**

Balance Mensual del Municipio luego del Proyecto

1-Saldo que deja de pagar a la Distribuidora				**$ 59.020,10**
2-Saldo Libre a Disposición del Municipio				**$ 80.441,61**
3-Recaudación por Tasa que deja de percibir el Municipio				**$ 107.325,00**
Crédito neto que resulta para el Municipio =1+2-3				**$ 32.136,71**

Hoja 1

Análisis de factibilidad del Proyecto

Concepto		Cantidad	Tasa mensual	Total Mensual
Contribución mensual			$4,50	
Cantidad de Clientes		53.000		
Recaudación				$238.500
Efectividad		95%		$ 226.575
Recaudación Mensual				$226.575
Canon Distribuidora				$ 75.855
Disponibilidad mensual				**$ 302.430**

Egresos:

A) Costo de energía

Parque Actual remodelado

Consumo de energía promedio actual				$ 100.434
Ahorro de energía mensual previsto				$ 35.448
(1)Costo mensual consumo de energía parque remodelado en $				**$ 64.986**
Consumo de energía por ampliacion (SAP 100W)				
Cant. de lamparas agregadas		1.500		
Horas mensuales encendido		334,58		
Consumo p/ lamp incl equipo kw		0,11		
Consumo mensual ampliación kwh				55.206,25
Costo Kwh AP		$0,155		
(2)Costo mensual consumo de energía ampliación en $				**$ 8.557**
(3) Costo mensual consumo de energia Edificios municipales				**$ 34.441**
A)Consumo Total de Energia en $ = 1+2+3				**$ 107.984,27**
B) Mantenimiento				
		Pque Actual	Ampl	Total
Cant de Puntos luz		10.031,00	1.500,00	11.531,00
Precio unitario $ / lampara		4,00		
B)Total mantenimiento del parque repot.			**$ / mes**	**$ 46.124**

Hoja 2

Análisis de factibilidad del Proyecto

C)Amortización préstamo

Obra que se propone realizar

Recambio de luminarias				
Cantidad de luminarias		8.231		
Precio unitario		$ 340		
Total recambio de luminarias				$ 2.798.540
Instalación de nuevas luminarias				
Cantidad de luminarias		1.500		
Precio unitario		$ 363		
Total nuevas luminarias				$ 544.500
Varios				$ 100.291
Monto total de obra				$ 3.443.331

Ejecución y Financiamiento de Obra

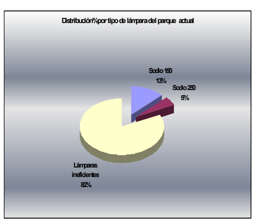
Plazo de ejecución	12 meses	
Plazo de financiamiento	96 meses	
Tasa de Interés (TNA)	12,00% anual	
C)Cuota mensual préstamo sist frances Iva s/int incluido		**$ 59.950,00**
D)Costo de Cobranza	**3,50%**	**$ 7.930,13**
Egresos mensuales totales = A+B+C+D		**$ 221.988,39**

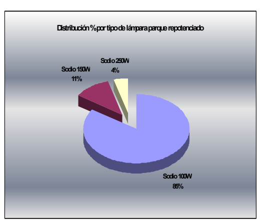
Cuadro de Resultados (mensual) del Proyecto

Disponibilidad mensual neta				**$ 302.430**
Gastos a pagar				**$ 221.988**
Saldo libre a disposición del Municipio				**$ 80.442**

Hoja 3

Gráficos





Hoja 4

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