Document of the Inter-American Development Bank

**JAMAICA**

**Energy Management and Efficiency Programme**

**(JA-G1003)**

**Lessons Learned**

**IDB and Energy Efficiency Projects in the Latin American and Caribbean Region**

1. **Summary.**

The Inter-American Development Bank (IDB) has carried out several projects that provide lessons-learnt to be considered for this project[[1]](#footnote-1), especially with regards to procurement and retrofit management issues. Table 1 below summarizes a few of those lessons learned and this document expands on the description of each operation.

**Table 1. Lessons Learned from Similar Project**

| Main lessons learnt from previous similar projects |
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| Operation | Subject | Lesson Learnt |
| BA-L1025 | Procurement | Performance Based Contract should be consider as a good procurement approach since it allows expanding the scope of the retrofits and leveraging private capital. |
| BA-L1025 | Management | delays during the execution have been due to the lack a well-staffed PEU, being advised to have this assignment of the staff coinciding with the signature of the loan agreement |
| BA-L1025 | Management | The establishment of a Project Steering Committee involving key stakeholders has been beneficial in the decision making process, especially during selection of buildings to be retrofitted and for the ESCO model discussions. |
| BA-L1025 | Management | project implementation plans are consistent with and take into account the policy expectations of all stakeholders |
| NI-L1040 | Procurement | If deep retrofits are planned, especially if it involves wiring, it is advisable to reach pre-agreements with the government in order to put a limit to the investment before the approval of the loan |
| NI-L1040 | Procurement | The implementation plan should consider a flexible approach that allows it to adapt to new technologies availability |
| NI-L1040 | Procurement | The support of a consultant with expertise in procurement for EE in similar markets to the one where the project is implemented is highly recommended since the evaluation of the offers is tricky and requires proof of fabric and samples to be sent |
| ME-L1150 | Procurement | One of the main limitations seen for the development of ESCO models for EE retrofits is the difficulty of measuring the savings that would later define the repayments, which make it advisable to have ex-ante agreements on the measuring methodology. Besides, in general, retrofitted installations are difficult to be used as a guarantee for payments and in those countries were an specialized legal intermediary does not exist, ESCOs find it too risky to invest |
| AR-G1002 | Procurement | In order to speed up procedures and to support a PEU that is considered to be weak, it is advisable to contract a consulting firm to develop the technical specifications, work plan and necessary designs for a representative sample. |

1. **The previous program in Jamaica: “Energy Efficiency and Conservation Program” (JA-L1025).**

The US$20 million program was approved in 2011, however delays in execution lead to only 23% of the loan being disbursed in 2015. Subsequently the government decided to cancel the project by June 2015.

**Activities.** The project was designed with 3 components: (i) Institutional Strengthening, (ii) Investments in EE and EC and (iii) Demand Side Management Program. The second component included the retrofitting of government offices (mainly lighting replacement, A/C installation, cool roof coating and window films). The list of buildings to be retrofitted was identified with a previous Technical Cooperation “Energy Efficiency and Technical Assistance, EECTA”, planning fourteen (14) detailed audits and twenty two (22) walkthrough audits.

**Procurement.** The procurement was organized on the basis of EECTA findings (36 facilities), which represented 31% of the public sector consumption (in JA-L1056, the 6 IGAs represent 3% of total public facilities consumption and 15% of total HEPA sectors facilities consumption). The results from EECTA were extrapolated to the 4,400 facilities targeted, concluding that US$17 million were necessary to apply A/C, envelope and lighting EE measures in buildings. It was intended to create a framework contract approach to develop the investment grade audits necessary and implement the retrofits, guaranteeing this will lower costs, facilitate higher speed and update technology.

**Impacts.** The project was designed to save 22.6 GWh a year, producing annual savings in electricity expenses of US$6.7 million. This annually reduced CO2 emission by 19,150 tones and number of oil barrels imported in 13,886. By the time of cancellation, 10% of the loan had been used for EE retrofits, mainly air conditioning systems and services, and also government buildings. The program carried out energy retrofits in government buildings with envelope measures and new A/C systems saving almost US$800,000 in 3 years.

**Lessons Learnt.** During the cancellation dialogue, the IDB and the GOJ defined the following main lessons learnt:

* **It is essential to prepare a well consolidated PEU.** Most of the delays which happened during the implementation of the loan were due to the lack of a consolidated, well-staffed PEU with the technical preparation to be able to formulate appropriate technical specifications during procurement. The PEU should be trained on procurement processes and educated about the Bank’s policies in advance, in an effort to avoid misprocurement, the need for additional consultancies and misunderstandings on communications with the Bank.
* **It is necessary to verify that all buildings are prepared to facilitate retrofitting.** Audits carried out during the short-listing of the buildings that are to be targeted, need to be comprehensive in order to label the needs for further preparation of the facility to allow functioning EE retrofits. In the event further preparation actions are identified, the GoJ needs to be aware that loan’s scope can be modified if requested. Changes in shortlist need to respect initial criteria and has to be agreed on with the Bank.
* **Seek adequate initial energy audits**. In order to avoidinadequate audits to comprehensively guide the preparation of requests for proposals and thus leading to protracted procurement processes; it is recommended to carry out thorough inspection of all facilities, including building envelope, before contractors are allowed to start working within these facilities.Thecollection of data should be more extensive and complete, including the installation of data loggers at least six months before the retrofitting of any facility. Theconsumption usage needs to be better understood by doing bills analysis and identifying its relation with JPS metering system.Sustainability has to be an important aspect and it is necessary to have more background work done on other similar programs.
* **To improve communications between the Bank and the PEU**. In order to speed up approvals,it is advised to sign off a communication plan with PEU before implementing, establishing a clear reporting system for managers and contractors to communicate issues and including follow up on progress report on a monthly basis.
* **Thoroughly educate all participants on the application of IDB’s procurement policies.** The application of the policies should be clear to all participants in order to avoid misunderstandings and the feelings of varied application. In order to have a closer control on procurement processes an ex-ante approach may be used. Eventual misprocurement as well as the recognition on the loan of other EE procurement has to be carefully managed with the appropriate justifications.
* **Harmonizing strategy implementation and facility managers.** In order to avoid high transaction costs associated with oversight strategies, it is advised that the Energy Conservation Team be in place at each facility before retrofits commence. In order to engage the heads of retrofitted; the team should facilitate holding awareness meetings, more detailed vetting and sign off requirements and also operational characteristics. It is also advised to carry out more vetting on contractors and avoid spreading out contracts over several facilities.
1. **Public Sector Smart Energy (PSSE) Program (BA-L1025).**

This program of US$26.6 million for Barbados that was approved in 2012 and is under execution, has the objectives of financing EE retrofits in government buildings and public lights, carrying out two (2) RE pilot projects and creating capacity building and public awareness on EE. The first component of the program expected to retrofit 12 government buildings with EE technologies and PV systems and to also retrofit 85% of Barbados’ public lights, saving up to 148 GWh of electricity.

**Procurement.** Regarding the procurement, the project uses baseline information from the sector energy audits and the pilot project carried out with the CHENACT (RG-T1431). The program is suffering delays in execution partly because of the negotiations to change the procurement methodology for the buildings’ retrofits. Although initially a traditional procurement methodology was established, the feasibility studies concluded that a Performance Based Contracting (ESCO based) may be more convenient. This methodology selects ESCO bidders on the basis of already audited buildings and EE/RE measures proposals, where guaranteed savings and costs have already been identified. The share of savings above the guaranteed ones is negotiated during the tendering process. This would allow expanding the scope of the retrofits since the proposals lay the bases for further ones and it would allow leveraging private capital since the monitoring ensures fair remuneration and it would ensure the better compliance of international standards. For the retrofitting of buildings, it is agreed to carry out a Performance Based Contract based on GoBA’s experience. In the POD, EE retrofit needs are budgeted in US$9.6 million for the first 18 months of implementation.

**Lessons learned**. Besides the procurement innovation, in a more general aspect, delays during the execution have been due to the lack of a well-staffed PEU, being advised to have this assignment of the staff coinciding with the signature of the loan agreement. Also, the establishment of a Project Steering Committee involving key stakeholders has been beneficial in the decision making process, especially during selection of buildings to be retrofitted and for the ESCO model discussions. Another project management related lesson learnt is that it is critical to ensure that the project implementation plans are consistent with and take into account the policy expectations of all stakeholders.

1. **National Sustainable Electrification and Renewable Energy Program (PNESER) (NI-L1040)**

This project was approved in 2010 and it allocates US$309 billion (in 3 phases) to carry out works on rural electrification, formalization of services, distributed electrification with RE, pre-investment studies for RE and development of EE programs.

Previously to the implementation of the loan, a TC entitled Development Energy Efficiency in Nicaragua (NI-T1034) was developed to identify the needs in EE retrofits in the buildings of the country, implement pilot projects and study the financing options, considering ESCOs and the creation of a revolving fund for EE equipment and systems.

**Activities.** The development of EE programs is assigned with US$19.8 million to retrofit lighting systems in the residential sector, government facilities and street lighting. These resources will also support the development of policies and regulations related with EE and the definition of indicators, monitoring approaches and capacity building that will allow the government to manage the creation of an appropriate and sustainable EE retrofits market.

**Lessons learnt.** The implementation of the lighting systems to public facilities (mainly hospitals) is underway and some lessons learnt have been identified. The first is in refernce to the auditing of the buildings and the budgeting of the necessary retrofits: if deep retrofits are planned, especially if it involves wiring, it is advisable to reach pre-agreements with the government in order to put a limit to the investment before the approval of the loan; during the execution of this loan it was found that the facilities were in a worse state than expected and the retrofitting inferred construction work. The second finding refers to lighting technology: when the loan was designed LED technology was expensive enough to propose a diversification of technologies, but at this moment lower prices make it advisable to use LED for all lighting retrofits. The third, and most important, concerns the procurement activities and the preparation of technical specifications for biddings; the support of a consultant with expertise in procurement for EE in similar markets in comparison to one where the project is implemented is highly recommended since the evaluation of the offers is tricky and requires proof of fabric and samples to be sent.

**Procurement.** The procurement figures (US$4.78 million in efficient lightning and thermic systems) are based on the needs identified under the TC NI-T1034, which made 30 audits in the industry and commerce and developed a pilot project. Also, the TC proposed a Trust Fund mechanism. The GoN decided to make retrofits in buildings a non-reimbursable investment for them, leaving the assets property of each institution and not creating any specific financial model.

**Impacts.** The projectexpects to reduce annual barrels imports by 1,540, reducing electricity consumption by 150 GWh annually with EE measures.

1. **BA-L1020: Sustainable Energy Investment Program**

This loan of US$10 million was approved in December 2010. The objective of this project is to promote the increased use of renewable energy (RE) and the implementation of energy efficiency (EE) measures through the design and implementation of the Sustainable Energy Investment Program, also known as the “Smart Fund.” This is a government initiative comprising a package of financial instruments and technical assistance to support investments in RE and EE. Ultimately, the project will help reduce Barbados’ fossil fuel dependency and promote sustainable energy supply as well as carbon emission reductions.

**Activity**. The main activity of this loan is creating financial mechanisms to support EE (lightning, AC) and ER systems.

**Procurement.** It is a financial mechanism for EE and RE. It will provide Discretionary Grant funding (US$1 million) of the Sustainable Energy Investment Program expecting to have goods to be procured including the following: (a) solar photovoltaic (PV) panels, Compact Fluorescents Lamps (CFLs), RE and EE equipment for retrofitting government buildings, Public Lighting Equipment (b) Public Relations Materials including brochures. The procurement plan will be updated annually, whenever necessary or as required by the Bank.

**Impact**. The project expects to support avoiding 5,000 tons of CO2 and save 500MWh through energy efficiency applications funded by the Smart Fund.

1. **RG-G1004/RG-G1009/RG-GL1071: Sustainable Energy Facility (SEF) for the Eastern Caribbean**

This is a US$71.5 million project, with multiple sources of funds: ORC (US$20 million), CTF (US$19.5 million), GEF (US$3.03 million), CDB (US$29.4 million), JICA (US$41 million). The objective of this project is to create a facility to finance EE, RE and institutional strengthening and improvement of the regulatory framework.

**Activities**: This project includes in Component I the financing of street lighting and building retrofits (US$28.6 million) with grant funds.

**Procurement:** Needs were budgeted during the preparation, but the details of retrofitting are left to be defined during implementation: it is defined as "demand-driven" and it does not include a procurement plan.

1. **AR-G1002: Energy Efficiency and Renewable Energy in Low-income Housing**

This US$86.4 million project (IDB/GEF -US$14.63 million) approved in 2015, plans to build 128 pilot project energy efficient houses based on the findings under the TC AR-T1120. Four (4) prototypes are planned to be defined as part of the studies and procurement details are developed during the execution.

**Lesson learnt:** In order to speed up procedures and to support a PEU that is considered to be weak, it is advisable to contract a consulting firm to develop the technical specifications, work plan and necessary design for a representative sample.

1. **Other projects concerning financing EE programs in México.**

The Bank has carried out several projects in Mexico concerning the EE market. The “Energy Efficiency in Mexico” (ME0204), finished in 2006, had the objective of creating a local market for commercialization and development of EE technologies as well as promoting the creation of ESCOs among the Mexican companies. This experience showed that developing and consolidating EE markets should be accompanied by EE standardization programs in order to obtain sustainability in the medium and long run. The project focused on financial and market incentives and did not involve implementation of retrofitting measures. More recently, the Technical Cooperation “Residential Use of Renewable Energy and Energy Efficiency in Baja California” (ME-T1023) supported the implementation of EE measures (A/C and PV systems) in residences of the city of Mexicali, developing feasibility studies and fixing an amount for financing first retrofitting measures in houses.

The private window of the Bank is currently carrying out two projects in Mexico. The “Green Bond Mexico” (ME-L1150) seeks to support the consolidation of an ESCO market in the country and the “Optima Energía (OE) energy efficient roadway lighting” (ME-L1166) is supporting the EE financial vehicle company OE to develop a financial framework for the retrofitting of roadways’ light lamps using an ESCO model. These and previous experiences have shown the difficulties of commercial banks to finance EE given the relatively small investment of each individual project and, due to the lack of experiences in the region, the unfamiliarity with them. Besides, ESCOs generally provide neither finance nor savings guarantees, but operate as energy specialists engineering, procurement and construction companies that receive payments through turn-key contracts.

One of the main limitations seen for the development of ESCO models for EE retrofits is the difficulty of measuring the savings that would later define the repayments, which make it advisable to have ex-ante agreements on the measuring methodology. Besides, in general, retrofitted installations are difficult to use as a guarantee for payments and in those countries where a specialized legal intermediary does not exist, ESCOs find it too risky to invest.

1. **Other energy efficiency programs in Jamaica**

In Jamaica there are similar initiatives from multilateral organizations from which the Program can share lessons learned and identify potential synergies.

*National level.*

The United Nations Development Program (**UNDP**) is currently implementing the project ¨**Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector¨** (2014-?, US$12M) which focuses in the introduction of RE and EE in the health sector. In consultation with UNDP key lessons learned have been identified such as (i) the importance of developing technical preparatory work which is usually overlooked, (ii) the need to have relevant policy and legislative framework in place and (iii) the need to identify and include gender considerations. The current program design by the IDB is guaranteeing the technical training of management teams in all components to be able to manage and operate the equipments installed, is dedicating Component III to institutional strengthening to the development of an IRP and is including specific gender additionality.

The **World Bank**´s **¨Jamaica Energy Security and Efficiency Enhancement Project¨** (2011-2017, US$15M) has a strong focus on supporting the implementation of the GoJ´s Energy Policy, covering preparation of EE legislation and regulations integrating work already done for the current Building Code and other sub-sectoral regulations, which are not intrinsically included in this Program. This project had to be extended due to not strong enough project executing unit, reason why the IDB’s program is dedicating specific funding to guarantee a well-staffed and capable PEU previous to the project implementation.

*Regional level*.

The Pan American Health Organization/World Health Organization (**PAHO/WHO**) **¨Smart Hospitals Programme¨ (**2016-?, US$53M) which seeks to implement structural safety and EE measures in health facilities located in the 10 countries in the region. Although, Jamaica is not part of this Programme yet, it is expected that there will be institutional sharing of implementation successes that could enhance project outcomes in the future. The project will seek to work closely in coordination with the Caribbean Centre for RE and EE (CCREEE) which aims at the accelerated development, adoption and execution of regional and national gender sensitive RE & EE policies, targets and incentives.

Also, The United States Agency for International Development (**USAID**) through its **“Caribbean Clean Energy Program”** (2015-2020, US$15M) is assisting Caribbean nations to become more energy efficient through policies and incentives that promote low emission growth and greater public/private sector investment in clean energy development. The objective of the program is to accelerate clean energy development in the region, with special focus on Jamaica and the Eastern Caribbean. Key activities include support of policy formulation, improving the enabling environment for clean energy development, greening the grid – optimizing variable renewable energy integration, private-sector leverage in clean energy investment, energy efficiency and donor coordination.

1. Experience with EE started in 1994 with technical assistance for EE interventions within JPSCo (TC 9401093; US$127,911); Then in 2009, the IDB provided support to an EE Fund with the Development Bank of Jamaica (ATN/FC-8711-JA; US$44,900), followed by further support to the Fund in 2010 (ATN/MC-12015-JA; US$581,000), which aimed to support seven small and medium companies with resources to fund audits and capital investments in solar PV and EE measures (timers, inverters, power factor corrections, HVAC units, etc.). Although the pilots represented good investment options (29% electricity savings) key findings pointed to the need to target the EE and RE interventions more carefully for each of the companies providing technical expertise to improve project management and follow-up, promote a sustained consumer awareness program and improve financial instruments for Small Medium Enterprises interested in this area [↑](#footnote-ref-1)