DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BARBADOS

SUSTAINABLE ENERGY INVESTMENT PROGRAM (SMART FUND)

(BA-L1020)

LOAN PROPOSAL

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Electronic Links

REQUIRED

- Plan of activities for first disbursement and the first 18 months of implementation http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35382628
- Monitoring and evaluation arrangements
 http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35382633
- 3. Fiduciary Financial Management and Procurement Arrangements and Requirements http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35382592

Other Electronic Links

- Sustainable Energy Framework for Barbados (volume 1) http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35232781
- Sustainable Energy Framework for Barbados (volume 2) http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35232784
- Inputs for the Operating Guide of the Smart Fund http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35400315

Abbreviations

AC Air Conditioning
BAU Business As Usual
bbl/d Barrels of oil per day

BE Bioenergy

BL&P Barbados Light and Power

CO₂ Carbon Dioxide

CBB Central Bank of Barbados

CCB/CBA IDB Country Office in Barbados CFLs Compact Fluorescents Lamps

CHENACT Caribbean Hotel Energy Efficiency Action Program

EA Executing Agency
EC Energy Conservation
EE Energy Efficiency

EGFL Enterprise Growth Fund Limited

ETD The Energy and Telecommunications Division

FCA Fuel Clause Adjustment
FTC Fair Trading Commission
GCI General Capital Increase
GDP Gross Domestic Product
GEF Global Environment Facility

GHG Green House Gas

GOBA Government of Barbados

HVAC Heat and Ventilation and Air-conditioning systems

IDB Inter-American Development Bank

INE/ENE Energy Division of the Infrastructure and Environment Department

IPP Independent Power Producers

kWh Kilowatt hour
MW Megawatts
MWh Megawatt hour

MFIE Ministry of Finance, Investment and Energy

ODS Ozone Depleting Substances

OGSF Operating Guide of the Smart Fund PBP Programmatic Policy Based Loan

PCR Project Completion Report
PEU Project Execution Unit

PI Project Idea
PV Photovoltaic
OC Ordinary Capital

RE	Renewable Energy
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SEFB Sustainable Energy Framework for Barbados

SFTC Smart Fund Technical Committee
SME Small and Medium Enterprise

SPP Small Power Producers SWH Solar Water Heaters

SFTC Smart Fund Technical Committee tCO2e Tons of Carbon Dioxide equivalent

PROJECT SUMMARY BARBADOS

SUSTAINABLE ENERGY INVESTMENT PROGRAM (BA-L1020)

F	inancial Terms ar	nd Conditions	
Borrower: Government of Barbados (GOBA)	Amortization Period:	25 Years
Executing Agency: The Prime Mini	ister's Office, acting	g	
through the Energy and Telecomn	nunications Division	n	
(ETD), with Enterprise Growth Fund	Limited (EGFL) as a	a	
sub executing agency.		Grace Period:	5 Years
Source (US\$)	Amount	Disbursement Period:	5 Years
IDB (OC)	10,000,000	Supervision and Inspection Fee:	*
		Interest Rate:	LIBOR-based
Local		Credit Fee:	*
			US Dollar of
			Single Currency
Total	10,000,000	OCurrency:	Facility
	Project at a	Glance	
Project Objective/Description:			
Investment Program, also known as financial instruments and technical ass help reduce Barbados' fossil fuel dependentations.	istance to support in	vestments in RE and EE. Ultimately	, the project wil
Special contractual clauses as a cond	ition prior to first d	lisbursement:	
1. Approval by the Office of the Prime M (OGSF), with prior non-objection by the B			of the Smart Fund
2. Signature and entry into force of an ag the establishment and management of the terms previously agreed with the Bank (¶3	Smart Fund under Com		
3. The selection and appointment of the Pr ETD (\P 2.12).	ogram Manager for the	e Smart Fund by the Office of the Prime	Minister, through
Exceptions to Bank policies: None			
Project consistent with Country			
Strategy:	Yes [X]	No []	
Project qualifies for: SEC	Q[] PTI[] Sector	[] Geographic[]Headcount []	

^(*) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable provision of the Bank's policy on lending rate methodology for ordinary capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

I. DESCRIPTION AND RESULTS MONITORING

A. Background, Problem Addressed, Justification

- 1.1 In his February 2008 inaugural speech, the Prime Minister of Barbados stated that "the single biggest challenge of our generation is the drain on foreign exchange created by the high cost of oil", and that the Government of Barbados (GOBA) was "prepared to be bold and move aggressively in the area of energy conservation, reducing the oil import bill and preserving our delicate environment for the future".
- 1.2 The Prime Minister highlighted three main objectives related to energy, namely, to: (i) reduce energy costs; (ii) achieve greater energy security; and (iii) improve environmental sustainability. These objectives reflect the need to address the predominance of imported fossil fuels in Barbados' energy sector. In 2009, all of the electricity generated in the country was produced with fossil fuels.
- Barbados Energy Sector. In addition to the effects of the economic crisis of 2009, Barbados' high dependence on fossil fuels risks jeopardizing the sustainability of its economic and social development, as well as the country's competitiveness. According to a 2008 report of the Barbados Light & Power Company (BL&P), the national electricity utility, the entirety of the country's electricity generation is fossil-fuel based: 82% with heavy fuel oil (of which 19% is used in steam plants, and 63% in low-speed diesel plants), and the remaining 18% with diesel fuel.
- 1.4 Power generation represents the main use of fuel in the country (50%), followed by transport (33%). Barbados produces some oil, but domestic demand (about 10,000 barrels per day) greatly exceeds local supply (about 1,000 barrels per day). This results in imports of more than 9,000 bbl/d, representing a significant expenditure and drain on Barbados' foreign reserves.
- 1.5 Energy costs are a concern for the GOBA both at the macroeconomic level and at the level of individual consumers. In 2007, Barbados spent US\$208 million in oil imports, which represents about 7% of the Gross Domestic Product (GDP), a percentage comparable to Government expenditure on education. This generated significant effects in the economy, and therefore affecting the country's competitiveness.
- 1.6 BL&P can directly pass through fuel costs to consumers by using a Fuel Clause Adjustment (FCA). The FCA reached an all-time high in August 2008 of US\$0.25 per kilowatt hour (kWh). This would have meant a monthly electricity bill of about US\$158 for a residential customer consuming 400kWh per month. This figure is striking when compared to other countries in Latin America and the Caribbean. However, residential customers were cushioned from the full impact of the increase through a government subsidy on fuel oil used for electricity generation. This subsidy on the FCA¹ cost the GOBA approximately US\$18 million in 2008. If the price of oil increases, this will represent an additional burden on the national budget through a possible subsidy on the FCA.

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¹ The FCA is currently in use and it applies to all tariff categories and it is calculated before every billing month by BL&P.

- 1.7 Given the aforementioned economic challenges, the GOBA is committed to promoting sustainable energy practices both on the supply side, mainly using renewable energy (RE) sources, and on the demand side, by encouraging energy efficiency (EE) and energy conservation (EC) as means to reduce the country's dependency on fossil fuels, enhance security and stability in energy supply, improve the economy's competitiveness, and achieve greater environmental sustainability.
- 1.8 The GOBA decided to take a twofold approach with the Inter-American Development Bank (IDB): (i) develop a Programmatic Policy Based Loan for the Energy Sector (Energy PBP)² (2410/OC-BA) as an instrument to catalyze the regulatory, policy and legislative measures required to promote sustainable energy, and (ii) implement a Sustainable Energy Investment Program also called "Smart Fund" (this project). The recently approved Energy PBP was prepared in parallel with this project in order to harness all the synergies of both operations. While the Energy PBP focuses on regulatory and policy actions required to promote EE and RE, the Smart Fund will develop a package of financial instruments to address the main market failures that prevent the country from adopting RE and EE.
- 1.9 To date, the most successful story of RE in Barbados has been that of solar water heating. It is estimated that approximately one in every three residences on the island has installed a solar water heater (SWH). Experience of the SWH industry shows that government incentives can and do make a difference in the promotion of RE. The GOBA used a number of incentives to support the industry: (i) removal of import duties on raw materials for manufacturers of SWH; (ii) imposition of a 30% tax on electric water heaters; and (iii) income tax deduction of the full cost of the SWH system.
- 1.10 To advance the implementation of RE and EE projects, the GOBA requested IDB technical assistance to develop several initiatives, currently under execution:
 - (a) The "Sustainable Energy Framework for Barbados (SEFB)" (ATN/OC-11473-BA) is assessing the energy matrix and analyzing the potential of RE, EE and bioenergy (BE) for the island. The results of the SEFB will support the fulfillment of the policy matrix conditions for both phases of the Energy PBP, which will help catalyze the regulatory, policy and legislative measures required to promote sustainable energy; the SEFB has also provided recommendations for the preparation of the Smart Fund.
 - (b) The "Caribbean Hotel Energy Efficiency Action Plan (CHENACT)" (ATN/OC-11465-RG) will encourage the implementation of EE practices and micro generation with RE technologies in the Caribbean tourism sector, hence improving the competitiveness of small, medium and large hotels. Half of the CHENACT funds will finance a case study in Barbados to show the potential benefits of implementing EE measures in the hotel industry, providing information that will feed into the SEFB. The outputs of the CHENACT project

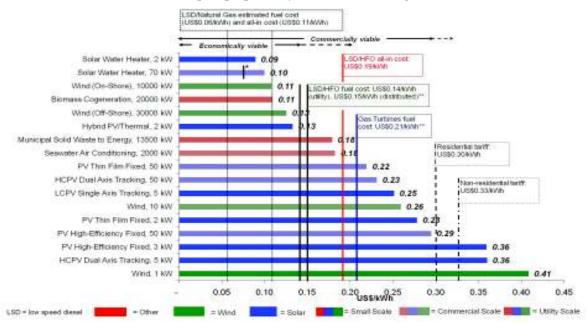
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 $^{^{\}rm 2}$ Approved by the IDB on September $15^{\rm th}, 2010$

will be essential for the implementation of the Smart Fund, as small and medium hotels would be eligible for financing under the Smart Fund.

- (c) The IDB, through the Global Environment Facility (GEF), is funding the "Sustainable Energy Implementation Program" (GRT/FM-12075-BA), or "SEF Pilot Program". This program, executed in cooperation with BL&P and the GOBA, will install 3,000 power meters, 15,000 compact fluorescent lamps (CFLs), 28 photovoltaic (PV) systems and 1 micro wind system in selected households.
- 1.11 These initiatives are not enough to jump start a sustainable energy market in the country. For this reason, the GOBA decided to replicate the SEF Pilot Program with a national RE and EE promotional program through the Smart Fund, mainly targeting the residential sector, government buildings and business enterprises, including the tourism sector.
- 1.12 **RE Implementation Potential.** As shown in figure 1, the implementation of utility scale wind farms (10 Megawatt (MW) or more), biomass cogeneration (20MW), waste to energy (13.5 MW) and SWH are economically and commercially viable (when compared to the avoided cost of diesel, line marked in red in figure 1); therefore, these technologies are all recommended and may operate below the avoided cost of fossil fuel. Even today some of the PV technology would be commercially viable in Barbados and it is expected for the rest of the PV applications costs to drop in the future. The overall RE potential that could be deployed is estimated at 28.9% of the total installed capacity of electricity generation (in terms of MW).

Figure 1: Analysis of technically and economically feasible renewable energy technologies available in Barbados (Report prepared by Castalia Consulting Firm, 2010).



1.13 *EE Implementation Potential.* In figure 2 below are listed the commercially and economically energy efficient appliances and technologies. The most cost effective appliances for Barbados' market are CFLs, power monitors, premium

efficiency motors, efficient Air Conditioning (AC) systems, variable frequency drives and efficient chillers (when these are compared to the avoided cost of diesel, the red line in figure 2). If the population of Barbados used these technologies, the potential for EE would be 19.4% (in terms of Megawatt hour (MWh) saved compared to the total electricity consumption).

Commercially viable -Economically visible Compact Fluorescent Lamps (CFLs) Estimated all-in All-in Estimated street generation Mighting sariff: generation cost of Power Monitors US\$0.27/kWh potential cost of Magnetic Induction Street Lighting peneration with LSD/HFO, and LSD/Natural Gas: average fuel Premium Efficiency Motors Estimated USSO, 11.9Wh costs of all residential tariff: Efficient Window A/C Systems niants: US\$0.30/kWh USS0.20/kWh Variable Frequency Drives Efficient Split A/C Systems Estimated non-T8 Fluorescent Lamps w/Occupancy Sensor residential tariff: USS0_33/kWh **Efficient Chillers** T5 High Output Fluorescent Lamps LCD Computer Monitors Efficient Residential Refrigerators Efficient Retail Refrigerators (Condensing Unit) LED Street Lighting Solar LED Street Lighting

0.10

0.15

0.20

USS/kWh

0.25

0.30

0.35

0.40

Figure 2: Analysis of technically and economically feasible energy efficiency technologies available in Barbados (Report prepared by Castalia Consulting Firm, 2010).

1.14 The RE and EE potential was calculated considering a baseline of zero RE and EE projects implemented as of May 2010 and extrapolated over a period of 20 years, comparing a business as usual (BAU) scenario with reduced³ number of RE and EE projects in the energy matrix versus a sustainable energy scenario where technically and commercially viable RE and EE projects are incorporated in the energy mix.

0.05

0.00

1.15 The RE and EE market barriers. Although many RE and EE technologies are commercially viable, their uptake in Barbados is low, mainly due to the following barriers: (i) limited access to capital, as many consumers would have need to borrow to install RE or EE technologies and cannot find financing at reasonable rates; (ii) limited and uncompetitive RE and EE equipment supply; (iii) lack of information; and (iv) agency problems. The latter takes place when the person that should invest in the equipment is not the same person that uses it. This happens in the public sector, in the development of new construction, and in leased buildings or rented homes. In these cases, very often, there is no interest to reduce energy consumption. This barrier will be addressed through public awareness and education (see paragraph 1.29b). A complete analysis of the

³ The BAU scenario would consider a minor portion of RE projects (10 MW of wind).

- barriers for RE and EE can be seen in the link to the Sustainable Energy Framework for Barbados (volumes 1 and 2).
- 1.16 **Bank's Country Strategy**. The strategy that the country is pursuing for the energy sector seeks to ensure energy security and reduction of imported oil by introducing RE in the energy matrix, maximizing EE measures, diversifying the energy matrix, allowing Independent Power Producers (IPPs) and Small Power Producers (SPPs) to sell power to the grid, achieving environmental benefits such as carbon emission reduction and ensuring timely and effective implementation of the previous objectives. The project is fully coherent with the new IDB country strategy for Barbados (2009-2013) (GN-2539) in the energy sector.
- 1.17 Contribution to the Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy as part of the IDB's 9th General Capital Increase (GCI). The activities of the Program will contribute to the IDB's strategy towards the promotion of RE and EE contained in the Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy, as part of the GCI. The project will be an important step towards energy conservation in Barbados and will encourage the reduction of imported fossil fuels, which will generate greenhouse gas (GHG) emission reductions.
- 1.18 *The Financial Intermediary*. In January 1998, the Enterprise Growth Fund Limited (EGFL) commenced operations as a limited liability company⁴ to provide venture capital to the Small and Medium Enterprise (SME) sector. The total capitalization of funds currently managed by EGFL is US\$108,914,055 (see the link to the Fiduciary Arrangements and Requirements).
- 1.19 The loan financing and venture capital (equity financing) provided by EGFL from its own capital account ranges from US\$100,000 to US\$1.5 million, and the target group consists of dynamic, small and medium sized Barbadian companies in the productive sectors. In addition, EGFL provides business advisory services and technical assistance to its client companies.
- 1.20 Given EGFL's track record⁵, and its role and experience in development of the country and its mandate to promote business for SMEs, in addition to lower transaction costs, the GOBA has chosen EGFL to sub execute the project.
- 1.21 The Energy and Telecommunications Division (ETD) of the Office of the Prime Minister. This Division, previously in the Ministry of Finance, Investment and Energy (MFIE) (see paragraph 2.5) is responsible for the management of the energy sector of Barbados, through the monitoring of activities of the Barbados National Oil Company and the National Petroleum Company; pricing of petroleum products; and setting goals and objectives of policy direction for the

⁴ EFGL shareholder participation is comprised of type A shares: National Insurance Board (5.76%), RBTT Bank Barbados (2.88%), SAGICOR Life Inc. (5.76%) and the Central Bank of Barbados (5.76%); and type B shares: GOBA (65.19%) and CRL Limited (14.67%). Including type A and B shares the GOBA has the majority of shares.

⁵ Since 1998 EGFL has approved 248 loans for an amount of US\$141.5 million. The cumulative disbursements in this period amount to US\$116.5 million.

sector. The Division is also responsible for the development of the current tax incentives for the support of RE and EE. The Division has produced a draft National Energy Policy which was presented and approved by Parliament in 2007. The current SEFB activities support the further development of a comprehensive National Energy Policy. The Public Sector Energy Conservation Program is the responsibility of the Division. The SEFB has been an initiative of the Division to ensure an economically, socially and environmentally sustainable energy sector for the island.

- 1.22 **The Project:** The Smart Fund seeks to develop a package of financial instruments and provide technical assistance designed to remove the main barriers and respond to the demand⁶ for the implementation of commercially and economically viable RE and EE technologies (see figures 1 and 2), which will contribute to reduced electricity costs, improved energy security, a more diversified energy matrix and enhanced environmental benefits, such as carbon emission reductions.
- 1.23 The Smart Fund has been structured using the following criteria: (i) simplicity in the structure and functioning and in the management and allocation of funds; (ii) ease of access for end users; and (iii) financial and technical sustainability of the mechanism. The adherence to these criteria should help provide end users with a product that is easy to use and that facilitates the adoption and increased use of EE and RE technologies.
- 1.24 Selection Criteria for projects to be funded by the Smart Fund. As to the technologies, type of projects and end users that would benefit from the Smart Fund, the loans and technical assistance provided by EGFL to the end customers will be based on the following criteria: (i) energy savings and contribution to avoided oil imports; (ii) payback period; (iii) size of the investment; (iv) carbon emission reductions; and (v) target population or sectors as prioritized by GOBA. The observance of these criteria will help maximize the cost effectiveness of the projects funded by the Smart Fund. Further details of the operation of the Smart Fund will be found in the Operating Guide of the Smart Fund⁷ (OGSF). Approval by the Office of the Prime Minister, through the ETD, and by EGFL of the OGSF, with the prior non-objection of the Bank, and its entry into force is a condition prior to the first disbursement.

B. Objective, Components and Cost

1.25 The objective of this project is to promote the increased use of RE and the implementation of EE measures through the design and implementation of the Sustainable Energy Investment Program, also known as the "Smart Fund", a Government initiative consisting of a package of financial instruments to support investments in RE and EE. Ultimately, the project will help reduce Barbados' fossil fuel dependency, promote sustainable energy and reduce carbon emissions.

⁶ The technical studies to support this project show that at least US\$18.3 million in RE distributed generation investments and US\$234.1 million in EE at all levels will be required to achieve a sustainable energy matrix by 2029, along with US\$300 million in large scale RE investments such as wind farms, waste to energy plants, etc.

⁷ See electronic link to the inputs for the preparation of the OGSF. The OGSF will cover both components 1 and 2 of the project.

- 1.26 The program has two components, component 1 executed by EGFL, as sub executing agency, and component 2 executed directly by the ETD:
- 1.27 Component 1: Encouraging EE and RE projects (US\$ 9.0 Million): This component will promote the adoption of RE and EE appliances in the residential sector and business enterprises, including the hotel sector⁸. The overall financial terms and conditions to access the financial instruments under each subcomponent will be defined in the OGSF. This component will have the following subcomponents:
 - a. A grant provision facility (US\$ 0.5 Million) for pre-investment studies (feasibility studies, EE audits, environmental assessments, etc.) and detailed design of RE and EE projects. The aim of this subcomponent is to support the development, funding and execution of projects. This facility will work in a scheme, in which the developer will be required to provide counterpart funding in a range from 25% up to 75% of the total grant awarded, depending on the size and risk of the project, and the track record of the developers/sponsors.
 - b. Loans to support RE and EE projects (US\$ 6 million). The projects developed in subcomponent (a) and other selected projects can be financed using this subcomponent. RE equipment, such as solar PV panels, hybrid solar PV/solar water systems, and other small size applications, would be eligible to be financed. In the case of EE applications, equipment such as power monitors, CFLs, efficient refrigerators, efficient public lighting, efficient Heat and Ventilation and Air-conditioning systems (HVAC), efficient electric motors, among other equipment designed to reduce power consumption, will be eligible for financing. Financing will be limited to a maximum of US\$ 750,000 per applicant.
 - c. Financial mechanism for individual customers to access RE and EE systems (US\$ 0.5 million). Retailers with experience in the hire-purchase sector, that are actually selling, or planning to sell, RE and EE equipment will be eligible for financing under this subcomponent. In turn, the retailers or energy sector firms should provide better financing conditions to their customers. Under this subcomponent, the end users will have the opportunity to purchase RE and EE equipment from retailers at reduced interest rates.
 - d. *Distribution of CFLs and other EE lighting systems (US\$ 0.5 million)*. This subcomponent will promote and encourage the use of CFLs and other costeffect EE lighting systems, by providing a subsidy, as a continuation of the GEF funded SEF Pilot Program (see paragraph 1.10 (c)). The proposed execution mechanism of this subcomponent will be detailed in the OGSF.

⁹ The selection of RE and EE projects to be funded through the Smart Fund will use the criteria developed in the OGSF and EGFL's terms and conditions for financing.

⁸ Priority will be given to SMEs, in accordance with the criteria established in the OGSF.

- e. *AC rebate mechanism (US\$ 1.5 Million)*. The rebate mechanism will be set up to replace¹⁰ inefficient AC systems, particularly those using Ozone Depleting Substances (ODS), with more efficient and ODS free AC units. The ETD will issue vouchers to replace the ACs using ODS and inefficient ACs with new EE certified and ODS free units. Eligible customers¹¹ will use the "AC vouchers" as a 50% discount of the cash price offered by retailers. The retailers will then be able to cash in the vouchers at EGFL on a regular basis.
- 1.28 The amounts of all subcomponents in this component 1, except for subcomponent (a), are indicative, as funds may be reallocated among the subcomponents depending on the success and demand of each one of these mechanisms of the Smart Fund, providing additional flexibility to the project.
- 1.29 Component 2: Institutional Support for the execution of the Smart Fund (US\$ 1 million): The GOBA has requested resources for the following activities to support the Smart Fund:
 - a. Facilitate the execution of the Smart Fund, including the issuing of the vouchers for subcomponent (e) of component 1. This subcomponent can expand the GEF program (see paragraph 1.10 c) to purchase RE and/or EE equipment for retrofitting government buildings, public lighting among other EE applications. Additionally, this component will finance the Project Execution Unit (PEU) in ETD, including a Program Manager;
 - b. Allow the GOBA to implement an awareness and education program to promote RE and EE throughout the country, including schools, universities, labor unions, and broader civil society; and
 - c. Data collection and monitoring of the program, including support for project management.

C. Key Results Indicators

1.30 Expected Results. Through the financing of RE and EE equipment, the project will promote the generation of at least 1 MW of RE distributed generation and energy savings of at least 500 MWh, as well as financial savings from the reduction in electricity bills. The baseline, results and target for the Smart Fund can be found in the Project Results Framework (see annex II). The financing of RE projects will increase self generation and distributed generation with the possibility of selling excess electricity to the grid, thereby lowering the energy bill of end users and contributing to reduced fossil fuel electricity generation that would have been necessary without this project. The SEF Pilot Program, sponsored by GOBA, BL&P and IDB, will benefit from the Fair Trading Commission's (FTC) recent approval of a rider allowing private individuals or companies to feed excess power from RE technologies into the grid for a pilot

The Operative Guide of the Smart Fund (OGSF) will define the criteria for eligibility of customers and the methodology for the distribution of the AC vouchers.

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¹⁰ Or by acquiring a new energy efficient and ODS free AC systems; however, priority will be given to replacing AC containing ODS.

- period of two years. FTC's RE rider¹² introduces tariffs and terms for a feed-in tariff for PV and micro wind applications. It is expected that after the two year trial, FTC could approve the same policy for a longer period of time.
- 1.31 Overall, the Smart Fund, as part of the Sustainable Energy Framework for Barbados, will contribute to reduced GHG emissions and mitigate climate change. The project team estimates that, with all the GOBA initiatives combined, ¹³ Barbados would generate US\$283.5 million in electricity costs savings over the next 20 years and would avoid the production of more than 4.5 million tCO₂e, ¹⁴ which are concrete environmental benefits, over the same period.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financial Instruments and Contractual Conditions

2.1 The proposed operation is structured as an investment loan. Ninety percent (90%) of the loan will be managed by EGFL, under component 1, to provide loans to purchase RE and EE equipment. Ten percent (10%) will be managed by the ETD directly under component 2 as institutional support for the execution of the Smart Fund (see table 1 below).

Table 1. Program Costs

Component	Total (US\$million)
1. Encouraging EE and RE projects	9.00
1.1 Grant provision facility	0.50
1.2 Loans to support RE and EE projects	6.00
1.3 Financial mechanism for individual customers to access RE and EE systems	0.50
1.4 Distribution of CFLs and other EE lightings systems	0.50
1.5 AC rebate mechanism	1.50
2. Institutional support for the execution of the Smart Fund	1.00
2.1 Execution support	0.30
2.2 Public awareness and education program	0.40
2.3 Data collection and monitoring of the program	0.20
Other Costs	
Financial Auditory	0.05
Contingencies	0.05
Total	10.00

B. Environmental and Social Safeguard Risks

2.2 The project will have net positive environmental effects due to the potential impacts in GHG emission reductions, substitution of fossil fuel based electricity generation and climate change mitigation brought by the implementation of EE

¹³ The Energy PBP (phase 1 and 2), the Smart Fund, the SEF Pilot Program, the CHENACT project and the RE and EE studies provided by SEFB, and studies to recommend efficient use of fossil fuels.

¹² The Rider approved by FTC will allow at least 200 RE connections, of which 29 connections will be financed by SEF Pilot Program, mainly PV systems, with a value of 1.8 times the Fuel Clause Adjustment (FCA) (equivalent to US\$0.16 per kWh) for a period of 2 years. This policy commitment was included the first phase of the Energy PBP.

¹⁴ The country will achieve carbon emission reductions, which eventually could be sold in the world carbon markets.

and RE measures. The policies triggered under this operation are OP-703, as well as the non investment lending and flexible lending instruments under policies OP-704 and OP-102. According to the IDB's Environmental and Safeguard Compliance Policy (OP-703), this operation has triggered directive B.13 and consequently does not need classification.

- 2.3 The type of operations currently envisioned for support by the Smart Fund (EE appliances and measures, distributed power generation using RE technologies, such as solar PV systems and small wind turbines connected to the distribution grid, mainly targeting households, government buildings and SMEs) are likely to have minimal to moderate adverse environmental impact.
- 2.4 The eligibility criteria of the Smart Fund will be identified in the OGSF, explaining the use of resources as well as any other management system needed to ensure proper use of resources from the Smart Fund.

C. Risks and Special Considerations

- 2.5 **Fiduciary Risk**. An Institutional Capabilities Assessment (SECI, acronym in Spanish) determined that the capacity of the Energy Division of the MFIE, the name of the Executing Agency until October 2010, now called the ETD of the Office of the Prime Minister, will need to be strengthened in the area of RE and EE to ensure successful execution of the Smart Fund and SEFB in general. To ensure successful execution, both RE and EE have to be given a higher priority in the activities of the ETD. Given the importance of RE and EE in the energy policy for Barbados, the ETD and EGFL will be strengthened with the required expertise to meet the demand for Smart Fund resources. The head of the ETD, its staff, infrastructure and technological support have remained unchanged. Therefore, the SECI evaluation made for the Energy Division of the MFIE is still valid for the ETD.
- 2.6 The fiduciary financial management assessment indicates that EGFL possesses adequate institutional capacity to manage the execution of the Smart Fund under component 1. The analysis shows that EGFL has acquired significant experience over the years in Barbados as fund manager; therefore, the fiduciary risk related to EGFL as Fund Manager for the Smart Fund is low. The evaluation of the financial management system, the internal control and external control systems concluded a satisfactory development level and low risk for both financial management and external control systems. The assessment showed a medium development level and medium risk for the internal control systems.
- 2.7 Based on the SECI evaluation and the IDB project team's assessment, EGFL has the capacity to execute the Smart Fund given its knowledge of the banking sector and the business community, its experience with managing similar financial instruments and the strength of its financial management, external and internal control systems used for the monitoring of resources. Considering the nature of

¹⁵ The expertise will be in the form of new qualified staff and/or the services of a consulting firm under a retainer contract. The institutional strengthening required and the corresponding terms of reference will be specified in the OGSF.

this program, EGFL will require strong technical support from the ETD, particularly in the areas of RE and EE, as well as an energy auditor/consultant who should be hired on a retainer basis, within the first year of operation of the project, to ensure successful execution of the program. This intervention is to be funded by the project budget under component 2 and included in the project execution plan.

- 2.8 **Procurement Risk**. Under component 1, no procurement will be performed as EGFL will only provide funding to business enterprises, including hotel sector, and retailers, in order to access end users. In the case of component 2 (see paragraph 1.29), all the procurement of goods and services will be carried out in accordance with IDB procurement policies and procedures. No major risks are foreseen.
- 2.9 Procurements for this project will be carried out in accordance with the Policies for the Procurement of Works and Goods Financed by the Inter-American Development Bank (GN-2349-7), of July 2006; the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (GN-2350-7), of July 2006; and the provisions established in the loan contract and the procurement plan.
- 2.10 **Procurement Plan.** The procurement plan for Component 2 covering the first 18 months of the program (from January 2011 to August 2012) is summarized in Annex III. It indicates the procedure to be used for the procurement of goods, the contracting of works or services, and the method of selecting consultants, for each contract or group of contracts. It also indicates cases requiring prequalification; the estimated cost of each contract or group of contracts; the requirement for *ex ante* or *ex post* review by the Bank; and estimated dates for the publication of specific procurement notices and completion of the contracts included in this project. The procurement plan will be updated annually or whenever necessary or as required by the Bank.
- 2.11 The possible procurements to be made under component 2 for the proposed project are: (i) goods: (a) solar PV panels, CFLs, RE and EE equipment for retrofitting government buildings, public lighting equipment, and (b) public relations materials such as brochures; and (ii) consulting Services to: (a) prepare public education materials, (b) support the execution of the Smart Fund through technical expertise and consultants to support the work of the ETD and EGFL, and (c) develop public awareness campaigns, implement and execute public education and awareness activities and media relations.
- 2.12 **Execution Risk**. The Smart Fund presents some risks for the execution of this loan, given the limited institutional capacity of both the ETD and EGFL in the management and execution of an RE and EE financial facility, due to its innovative nature. This risk will be mitigated with the implementation of a PEU, ¹⁶

¹⁶ The OGSF will provide detailed terms of reference for the PEU, including staffing needs in order to ensure adequate execution capacity within the ETD from a managerial, technical, and administrative (finance/procurement and monitoring/evaluation) point of view.

- including a project manager, funded through component 2 of this loan. The selection and appointment of the Program Manager for the Smart Fund by the Office of the Prime Minister, through ETD, will be a condition prior to first disbursement. The IDB, through INE/ENE and CCB/CBA, will also provide technical assistance to assist in the execution upon request of the GOBA.
- 2.13 The lack of interest from end users to use the Smart Fund could also be a possible risk. In order to mitigate this risk, public awareness and education campaigns to promote RE and EE among SMEs, the residential sector and government officials will be financed and implemented through component 2 of this loan. The promotional campaign is expected to generate an increased response from endusers. The lessons learned from the implementation of the GEF project (see paragraph 1.10 c) that include public awareness will be taken into account in the design of activities under component 2.

D. Other Issues

- 2.14 The GOBA has expressed its interest in the preparation of a second phase of the Smart Fund (Smart Fund II) for 2012. The preparation and implementation of the Smart Fund II will depend on the success achieved (use of funds) and lessons learned in the first phase of the Smart Fund, as well as the IDB's programming exercise with the GOBA..
- 2.15 This operation is being prepared with a view to executing it in parallel with the first phase of the Energy PBP (2410/OC-BA), in order to obtain as much synergy as possible from the two loans, so that the regulation and policy impacts from the Energy PBP will contribute to new investments in sustainable energy projects, facilitated with the financial assistance of the Smart Fund.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary Implementation Arrangements

- 3.1 Borrower and Executing Agency. The GOBA will be the borrower and the Office of the Prime Minister, acting through the ETD, will be the executing agency. EGFL with the technical support and supervision of the ETD, will be the sub executing agency for component 1; ETD will execute component 2 directly. ETD will be responsible for the entire execution of the Smart Fund. Signature and entry into force of an agreement between the Office of the Prime Minister, through the ETD, and EGFL for the establishment and management of the Smart Fund under component 1, including its operating terms and conditions, on terms agreed previously by the Bank, will be a condition prior to first disbursement.
- 3.2 EGFL will sub execute 90% of the resources of the Smart Fund (US\$ 9 million) under component 1, as shown in paragraph 1.27. The ETD and EGFL will agree on the terms and conditions under which EGFL will be compensated and the fee

recovery scheme¹⁷. In any case, EGFL will not charge any fees to ETD or against the project resources. The terms and conditions for loans and grants, collateral requirements, disbursements and repayment mechanism to EGFL from the end users will be defined in the OGSF. The expected disbursement schedule for this operation is shown in table 2 below (disbursements may vary from year to year depending on demand; if demand is high, disbursements could be frontloaded). The IDB will disburse the funds to ETD which will then provide EGFL with funding for component 1. The specific disbursement arrangements between the Bank and the ETD, and between ETD and the EGFL, will be specified in the OGSF.

Table 2. Disbursement Schedule

US\$ Millions	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Disbursement	2	2	2	2	2	10
Percentage	20	20	20	20	20	100

3.3 **Execution period.** The execution period will start as of the entry into force of the loan contract, for a period of 5 years. The Smart Fund should be totally disbursed in that period. Nevertheless, the Smart Fund, as an instrument of the GOBA to promote RE and EE, will continue as the loans from EGFL to SMEs and their repayment may take longer than 5 years. These loans will follow the terms and conditions of EGFL (see link to the inputs of OGSF). The repayment of loans under component 1b by customers to EGFL will be used to prepare other loans under the Smart Fund for a period of at least 5 years.

B. Project Cycle within the Smart Fund

As shown in figure 3, the project cycle begins with a project idea (PI) submitted to EGFL. The PI is forwarded to the Smart Fund Technical Committee (SFTC), ¹⁸ based in the ETD, who will decide from a technical point of view if the project is sound for financing, if it needs technical assistance to improve it or if it should be rejected. If the project needs technical assistance, the PI can be eligible for a grant provision facility (see paragraph 1.27 a). Once the PI obtains technical approval by the SFTC, the PI will be eligible for financing by EGFL (see paragraph 1.27 b and c). The PI will then have to comply with the financial requirements of EGFL, in order to get final approval. EGFL will apply the terms and conditions established in the OGSF and the agreement between EGFL and ETD to oversee credit and risk decision for each operation funded under component 1.

¹⁷ As part of the mid-term review (2 years of execution from the date of signature of the loan contract or when 50% has been disbursed, whichever occurs first), the IDB and ETD (through an independent auditor) will review the performance of the Fund and agree to adopt appropriate measures, mutually acceptable to the parties to remedy any observed underperformances in accordance with the OGSF.

¹⁸ The SFTC is expected to be composed by the Permanent Secretary of Energy or designated representative (at least a Senior Technical Officer or related grade from ETD) who will chair the committee, the Program Manager of the Smart Fund (or designated representative from the PEU), a Representative of the Government Electrical Engineering Department, a Representative of the Barbados Light and Power Co. and a Representative of the Barbados National Oil Company. The terms of reference of the SFTC will be detailed in the OGSF.

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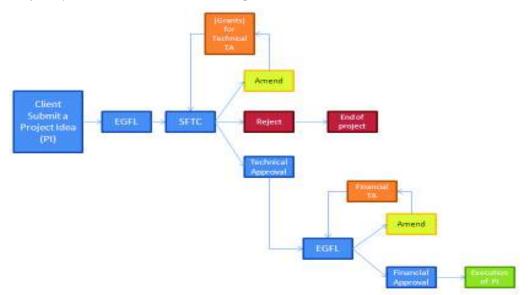


Figure 3: Project Cycle within the Smart Fund (component 1)

C. Summary of Arrangements for Monitoring Results

- 3.5 From the IDB, the IDB project team both located in Washington and in the Barbados Country Office will be in charge of the follow-up of the program. The borrower and the IDB have agreed to carry out follow-up meetings, initially on a quarterly basis. ETD, through the PEU, will prepare a semi-annual progress report for the Bank's non-objection, with inputs from EGFL pertaining to component 1 (showing the evolution of disbursements and repayments as well as technical assistance provided under the Smart Fund). These reports will include technical information in terms of cumulative MW of RE introduced and/or MWh saved with EE measures or equipment. The PEU will also monitor and evaluate the progress of the project in relation to the results framework (see annex II), and include such information in the semi-annual reports. ETD will also submit to the Bank annual audited reports for component 1 (sub executed by EGFL), unaudited semi-annual reports for component 2 (executed by ETD), and a final audited financial statement of the Program.
- 3.6 The ETD, through the PEU, will collaborate with BL&P to monitor installed RE equipment, and to estimate excess energy sold to the grid from SPPs and energy savings. With the information gathered through the monitoring process, ETD will prepare a mid-term (end of year 2 of operation) and final evaluation of the Smart Fund (see link Monitoring and Evaluation arrangements).
- 3.7 A Project Completion Report (PCR) will be prepared within six months after the last disbursement of the project. The PCR will evaluate the impact and results obtained by the program. The borrower, through the PEU, is responsible for the gathering of information and data required for monitoring and evaluation. The ETD will fund the costs incurred for collection and processing of the information, using the funds of component 2.

Development Effectiveness Matrix Summary

Indicator	Score	Maximum Score
I. Strategic Relevance	High	
1. IDB Strategic Development Objectives	5.0	10
Country Diversification	2.0	2
Corporate Initiatives	2.5	2.5
Harmonization and Alignment	0.5	3.5
Beneficiary Target Population	0.0	2
2. Country Strategy Development Objectives	9.6	10
Country Strategy Sector Diagnosis	6.0	6
Country Strategy sector objective & indicator	3.6	4
II. Development Outcomes - Evaluability	Highly Satisfactory	
3. Evidence-based Assessment & Solution	10.0	10
4. Evaluation & Monitoring Plan	5.8	10
5. Cost-Benefit or Cost-Effectiveness	7.0	10
6. Risks & Mitigation Monitoring Matrix	7.5	10
III. IDB's Role - Additionality		
7. Additionality	6.0	10
Technical Assistance provided prior the project	3.0	3
Improvements in management of financial, procurement, monitoring or statistics internal controls	0.0	4
Improvements in environmental, health and labor performance	3.0	3

- *I. Strategic Relevance:* This is an investment project that will take place in Barbados, classified as a C country. The project falls under the corporate initiative related to SECCI. The project is strongly aligned with the Country Strategy.
- *II. Evaluability:* The problems being addressed through the project are clearly defined and its diagnosis is empirically based. The main factors that contribute to these problems are clearly specified, as are the interrelationship among factors and the magnitudes of their deficiencies. The project's outcomes and outputs are clearly stated and show vertical logic. All indicators have baselines, targets and sources of information and are SMART.

The documentation presents a thorough monitoring plan with substantial resources allocated. It also presents an evaluation plan with a budget for this activity. Some of the components of the project were analyzed using a cost-effectiveness analysis. The risks of the operation are identified and classified and present mitigation measures, however, no indicators, baselines or targets are included to monitor these measures.

III. Additionality: A technical cooperation has been provided to increase the likehood of success of the project. In addition, externalities are expected to be generated in the environmental area.

BARBADOS

SUSTAINABLE ENERGY INVESTMENT PROGRAM – "SMART FUND" (BA-L1020)

RESULTS FRAMEWORK & INDICATOR MATRIX

Project Objective

The objective of this project is to facilitate the increasing use of Renewable Energy (RE) and the implementation of Energy Efficiency (EE) measures through the Sustainable Energy Investment Program also known as the "Smart Fund", a Government's program consisting of a package of financial instruments through which resources will be made available, facilitating and providing the mechanisms, for funding for investments in RE and EE. Ultimately, the project will help reduce Barbados' fossil fuel dependency, promote sustainable energy as well as carbon emission reductions.

Outcome Indicators		Baseline 2010	Target level 2014		
	V of installed generation capacity	0 MWh of saved energy	1 MW of installed distributed RE generation capacity financed or leveraged by the Smart Fund, as part of the Sustainable Energy Framework for Barbados (SEFB) and/or 500 MWh of saved energy financed or leveraged by the Smart Fund as part of the SEFB		
		Smart Fund 100% undisbursed	Smart Fund 100% disbursed		

Components/ Outputs	Baseline 2011	2012	2013	Target level (2014)
Component 1: Encouraging EE and RE projects				
A grant provision facility, disbursed (US\$ 0.5 Million)	US\$ 0 in technical assistance to develop RE or EE projects facilitated	US\$ 0.2 million in technical assistance to develop RE or EE projects facilitated	US\$ 0.4 million in technical assistance to develop RE or EE projects facilitated	US\$ 0.5 million in technical assistance to develop RE or EE projects facilitated
Loans to support RE and EE projects (US\$ 6 million).	US\$ 0 in EE or RE loans to SMEs	US\$ 1million in EE or RE loans to SMEs	US\$ 3million in EE or RE loans to SMEs	US\$ 6million in EE or RE loans to SMEs
Financial mechanism for individual customers to access RE and EE systems	or EE projects	US\$ 0.1 million in RE or EE projects for	US\$ 0.3million in RE or EE projects for	US\$ 0.5 million in RE or EE projects for

Components/ Outputs	Baseline 2011	2012	2013	Target level (2014)
available (US\$ 0.5 million).	costumers	individual costumers	individual costumers	individual costumers
Distribution of CFLs and other EE lighting systems (US\$ 0.5 million).	US\$ 0 in CFLs distributed	US\$ 0.1 million in CFLs distributed	US\$ 0.3 million in CFLs distributed	US\$ 0.5 million in CFLs distributed
AC rebate mechanism available (US\$ 1.5 Million).	US\$ 0 in transactions for AC rebate mechanism	US\$ 0.3 million in transactions for AC rebate mechanism	US\$ 1million in transactions for AC rebate mechanism	US\$ 1.5 million in transactions for AC rebate mechanism
Component 2: Institutional Support for the execution of the Smart Fund (US\$ 1 million):				
Human resources to facilitate the execution of the Smart Fund incremented ¹		1 new position filled	2 new positions filled	4 new positions filled
Awareness and education program to promote RE and EE implemented	0 Workshop developed	1 Workshop developed and delivered	2 Workshops developed and delivered	3 workshops developed and delivered
Data collection and monitoring of the program implemented	No data collected	Data collection is system operative and data is available	Data collection is system operative and data is available	Data collection is system operative and data is available

¹ These positions are consistent with the recommendations made under the Energy Policy Based Loan (BA-L1022).

SUSTAINABLE ENERGY INVESTMENT PROGRAM

Procurement Action Plan (PAA) Component 2: Institutional Support for the execution of the Smart Fund (US\$ 1 million) for the period of 18 Months 2011-2012

Description of the contract		Amount		Review (prior or	Source of financing and percentage		Prequali- fication			Status (pending,	Comments
		(US\$000)	method ¹	post)	IDB %	Local/ other %	(Yes/No)	Publication of specific procurement notice	Completion of contract	in process, awarded, cancelled)	Comments
Component 2: Insti Support for the execu the Smart Fund (million)	tutional ition of US\$ 1										
1. Consulting Serv	<u>ices</u>										
1.1 Project Managem	ent	200	NICQ	Post	100	0	No	Jan 2011	Dec 2014	Pending	A project management team will be hired to support project execution. Size and personnel will be defined during execution
1.2 Awareness Camp	eaign	150	NCB	Post	100	0	No	Feb 2011	Nov. 2014	Pending	A consulting firm will be hired to design and implement an awareness campaign. The activities of the campaign will be defined during the project's execution.
1.3 Supervision and Monitoring		150	ICB	Prior	100	0	No	Jun 2011	Nov. 2014	Pending	A consulting firm will supervice project execution and achievement of results
2. <u>Non Consulting</u> <u>Services</u>											
3. Other services											

ICB: International competitive bid ding; LIB: limited international bidding; NCB: national competitive bidding; PC: price comparison; DC: direct contracting; FA: force account; PSA: Procurement through specialized agencies; PAs: Procurement agents; IA: Inspection agents; PLFI: Procurement in loans to financial intermediaries; BOO/BOT/BOOT: Build, own, operate/build, operate, transfer/build, own, operate, transfer; PBP: Performance-based procurement; PLGB: Procurement under loans

guaranteed by the Bank; PCP: Community participation procurement; QCBS: Quality- and cost-based selection QBS: Quality-based selection FBS: Selection under a fixed

budget; LCS: Least-cost selection; CQS: Selection based on the consultants' qualifications; SSS: Single-source selection.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-	/1	0)
	-		

Barbados. Loan _____/OC-BA to the Government of Barbados Sustainable Energy Investment Program (Smart Fund)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Government of Barbados, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a Sustainable Energy Investment Program (Smart Fund). Such financing will be for an amount of up to US\$10,000,000 from the Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ___ 2010)

LEG/SGO/BA-35404304-10 BA-L1020