

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BARBADOS

SUPPORT FOR SUSTAINABLE ENERGY FRAMEWORK FOR BARBADOS (SEFB) I

(BA-L1022)

LOAN PROPOSAL

This document was prepared by the project team consisting of: Christiaan Gischler (INE/ENE), Project Team Leader; Gastón Astesiano (INE/ENE); Jorge Ordóñez (INE/ENE); Lumas Kendrick (ENE/CHA); Paula Louis-Grant (CCB/CBA); Rochelle Franklin (CCB/CBA); Ana Maria Vidaurre (SCF/INF); Desmond Thomas (CCB/CCB); and Hyun Jung Lee (LEG/SGO); under the supervision of Leandro Alves, Energy Division Chief (INE/ENE); and Anneke Jessen, Representative (CCB/CBA).

CONTENT

PROJECT SUMMARY

I.	DESCRIPTION AND RESULTS MONITORING.....	2
A.	Background, Problem Addressed, Justification.....	2
B.	Objective, Components and Cost	7
C.	Key Results Indicators.....	10
II.	FINANCING STRUCTURE AND MAIN RISKS	11
A.	Financial Instruments and Contractual Conditions	11
B.	Environmental and Social Safeguard Risks	11
C.	Other Key Issues and Risks	12
III.	IMPLEMENTATION AND MANAGEMENT PLAN	13
A.	Summary Implementation Arrangements.....	13
B.	Summary of Arrangements for Monitoring Results	13
C.	Policy Letter	14

Annexes	
ANNEX I:	Development Effectiveness Matrix (DEM) - Summary
ANNEX II:	Policy Matrix

Required Electronic Links	
1. Policy Letter	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35327627
2. Means of Verification Matrix	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35217828
3. Results Matrix	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35217824

Other Electronic Links	
1. Sustainable Energy Framework for Barbados (volume 1)	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35232781
2. Sustainable Energy Framework for Barbados (volume 2)	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=35232784
3. Evaluation and Monitoring Annex	
	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=350292065

Abbreviations

AC	Air conditioning
BAU	Business as Usual
bbl/d	Barrels of oil per day
BCIC	Barbados Cane Industry Corporation
BE	Bio-energy
BL&P	Barbados Light and Power
BNOCL	Barbados National Oil Company Limited
CO ₂	Carbon Dioxide
CBB	Central Bank of Barbados
CCB/CBA	IDB Country Office in Barbados
CFL	Compact Fluorescents Lamps
CHENACT	Caribbean Hotel Energy Efficiency Action Program
EA	Executing Agency
EC	Energy Conservation
EE	Energy Efficiency
Energy PBP	Energy Programmatic Policy-Based Loan
ESCOS	Energy Service Companies
FCA	Fuel Clause Adjustment
FTC	Fair Trading Commission
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GOBA	Government of Barbados
IDB	Inter-American Development Bank
INE/ENE	Energy Division of the Infrastructure and Environment Department
kWh	Kilowatt hour
LAC	Latin America and the Caribbean
MW	Megawatts
MWh	Megawatt hour
MFIE	Ministry of Finance, Investment, Telecommunications and Energy
PCR	Project Completion Report
PM	Project Manager
PV	Photovoltaic
RE	Renewable Energy
SECCI	Sustainable Energy and Climate Change Initiative
SEFB	Sustainable Energy Framework for Barbados
SME	Small and Medium Enterprise

SWH	Solar Water Heaters
TC	Technical Cooperation
tCO ₂ e	Tons of Carbon Dioxide equivalent
WE	Waste to Energy

PROJECT SUMMARY
BARBADOS
SUPPORT FOR SUSTAINABLE ENERGY FRAMEWORK FOR BARBADOS (SEFB) I
(BA-L1022)

Financial Terms and Conditions			
Borrower: Government of Barbados (GOBA)		Amortization Period: 20 Years	
Executing Agency: Ministry of Finance, Investment, Telecommunications and Energy (MFIE)		Grace Period: 5 Years	
Source (US\$)	Amount	Disbursement Period: 5 Years	
IDB (OC)	45,000,000	Supervision and Inspection Fee: *	
		Interest Rate: LIBOR-based	
Local	-	Credit Fee: *	
		US Dollar from the Single Currency Facility of the Ordinary Capital	
Total	45,000,000	Currency:	
Project at a Glance			
Project Objective/Description: The general objective of this program is to reduce Barbados' dependency on fossil fuel by promoting sustainable energy, diversifying, consequently, the country's energy matrix and reducing its exposure to oil price volatility. The specific objectives are to: (i) support the formulation of policy and legislation that will contribute to the promotion of Renewable Energy (RE), Energy Efficiency (EE), and rational and efficient use of energy; (ii) encourage measures to promote mitigation of greenhouse gas (GHG) emissions as well as initiatives for adaptation to climate change in the energy sector; and (iii) support institutional strengthening, public education and awareness and capacity building requirements to promote sustainable energy and energy conservation initiatives.			
Special contractual clauses: This loan will be disbursed in a single tranche of US\$45 million once the operation is eligible for disbursement and the authorities of the Government of Barbados have provided the Bank at its satisfaction with documentation verifying that the policy conditions described in Annex II (Policy Matrix) have been duly fulfilled in accordance with the Means of Verification Matrix (electronic link 3) (see ¶1.18-1.33, and the Policy Letter included in electronic link 2 and mentioned in ¶3.7).			
Exceptions to Bank policies: None			
Project consistent with Country Strategy:	Yes [X]	No []	
Project qualifies for: SEQ[] PTI [] Sector [] Geographic[] Headcount []			
Procurement:			

(*) 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 a keynote¹ address delivered on June 11, 2008, the Prime Minister mentioned that Barbados² spent US\$208 million on oil imports in 2007, representing about 7% of Gross Domestic Product (GDP), a level comparable to government expenditure on education,³ with a significant negative impact on direct production costs, and therefore on the competitiveness of Barbadian businesses. The Prime Minister then announced the government's commitment to reducing Barbados' energy bill and protecting its citizens from the impacts of imported fossil fuels.
- 1.2 **Economic Background.** The international economic crisis, which is having a severe impact in the Caribbean and in particular on the Barbadian economy, has added urgency to the foregoing commitment announced by the Prime Minister. According to estimates announced by the Central Bank of Barbados (CBB), the GDP contracted by 5.3% in 2009 as global demand slowed down and the tourist industry contracted by 8.7%. These negative shocks have resulted in rising unemployment, which jumped from a rate of 8.6% in June 2008 to over 10.1% at present. Lower economic growth has depressed fiscal revenues, increased pressures on expenditures and increased the Government's fiscal needs. The Government has pursued anti-cyclical measures, both monetary and fiscal, to attempt to ameliorate somewhat the effects of the global economic crisis on the domestic economy. This has pushed up the fiscal deficit to some 8% of GDP for FY 2009/10 and the debt to GDP ratio to some 115%. The Government is well-aware of the dangers of this situation and has published a Medium Term Fiscal Strategy with a program to limit fiscal deficits starting in 2011/12 and to bring the debt to GDP ratio down. The Barbadian authorities have a good track record of pursuing these types of commitments when the situation dictates. While the economic and in particular the fiscal situation is then very difficult, largely due to a set of severe external shocks caused by the global crisis, the Government's commitment to bring the fiscal deficits and debt levels under control as the economy recovers, allows the IDB to move forward with this Programmatic Policy Based Loan.
- 1.3 The Government's higher financing requirements have prompted it to request US\$45 million through this Program as confirmed by their letter dated June 23rd 2010. This amount is relatively small compared to the overall budget deficit anticipated for FY 2010/11 (8.9% of GDP or some US\$383mn) but will assist the Government in implementing its financing program. The alternative would be for

¹ Keynote Address delivered by The Prime Minister of Barbados, The Honorable David Thompson, at the opening of the Latin American Finance Conference held in Trinidad and Tobago, 11 June 2008.

² Barbados, a small island country of 431 square kilometers and a population of about 272,000, ranks high among Latin America and Caribbean (LAC) countries in terms of economic and social indicators (Barbados ranks 37th in the United Nation's Human Development Index, which corresponds to a high level of human development).

³ United Nations data. <http://data.un.org/CountryProfile.aspx?crName=Barbados>.

the Government to issue more debt on commercial terms potentially pushing up interest rates (Barbados has a fixed exchange rate with capital controls and most public debt is internal debt) placing the incipient economic recovery in some danger. This loan is then consistent with both the Government's financing strategy and the aim to seek an early recovery from the recent recession, as well as allowing the Government to seek greater efficiency in the energy sector. It is also consistent with the sector priorities and suggested financing envelope of the IDB Country Strategy with Barbados (2009-2013).

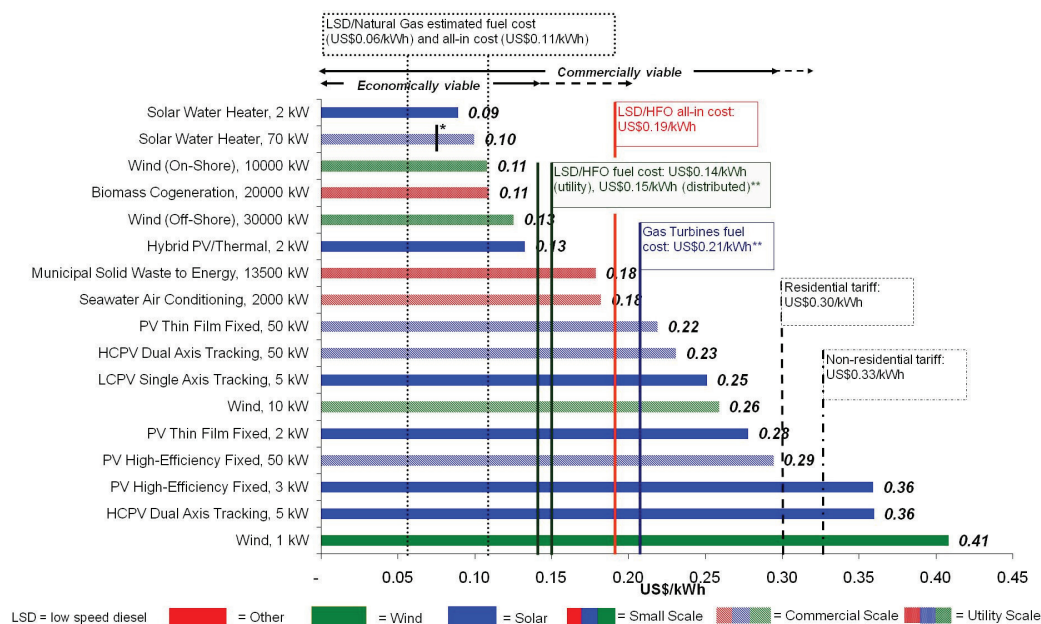
- 1.4 **Barbados Energy Sector.** In these difficult times, Barbados needs above all to enhance the efficiency of public spending and minimize the cost of inputs including costly energy imports. Action to promote sustainable energy and improved Energy Efficiency (EE) can contribute substantially to the achievement of these goals through its impact on energy costs and import expenditure. In addition, these interventions support efforts to improve environmental practices and obtain benefits such as carbon emission reductions. In addition to the effects of the economic crisis mentioned above, Barbados' high dependence on fossil fuels risks jeopardizing the sustainability of its economic and social development, as well as the country's competitiveness. The country's electricity installed capacity of 239.1-megawatts (MW) is 100% fossil-fuel based: 82% of generation plants use heavy fuel oil, of which 19% goes to steam plants and 63% to low-speed diesel plants; and 18% use diesel fuel.⁴
- 1.5 Power generation represents the main use of fuels in the country (50%), followed by transportation (33%). Barbados has some oil production, but domestic demand, approximately 10,000-barrels of oil per day (bbl/d) greatly exceeds local supply (approximately 1,000-bbl/d). This results in imports in excess of 9,000-bbl/d, which represents a significant expenditure and drain on Barbados' foreign reserves, particularly considering the usual high degree of volatility in international oil markets.
- 1.6 Given the economic challenges mentioned above, the Government of Barbados (GOBA) requested technical assistance from the Inter-American Development Bank (IDB) in order to design a comprehensive energy policy to promote sustainable energy practices both on the supply side, mainly using Renewable Energy (RE) sources, and on the demand side, encouraging 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. To this end, the IDB approved four technical assistance operations (see paragraphs 1.14 to 1.17 below), currently under execution, whose results will support the fulfillment of the policy matrix conditions for this program.
- 1.7 **Renewable Energy Potential.** As shown in figure 1, the RE potential for wind utility scale (10-MW or more), biomass cogeneration (20-MW), Waste to Energy

⁴ Based on the 2008 report of the Barbados Light & Power Company (BL&P).

(WE) (13.5-MW), and solar water heaters, is both economically and commercially viable (when compared to the avoided cost of diesel for electricity generation, see the Low Speed Diesel (LSD) fuel cost line in figure 1); therefore, these technologies are all recommended⁵ and may operate below the avoided cost⁶ of fossil fuel. Solar Photovoltaic (PV) panels are also being recommended given that the annual decreasing costs of PV. The overall RE potential is estimated in 28.9% of the total installed capacity of electricity (in terms of MW).

Figure 1: Analysis of technically and economically feasible RE technologies available in Barbados

(Report Prepared By Castalia Consulting Firm, 2010)



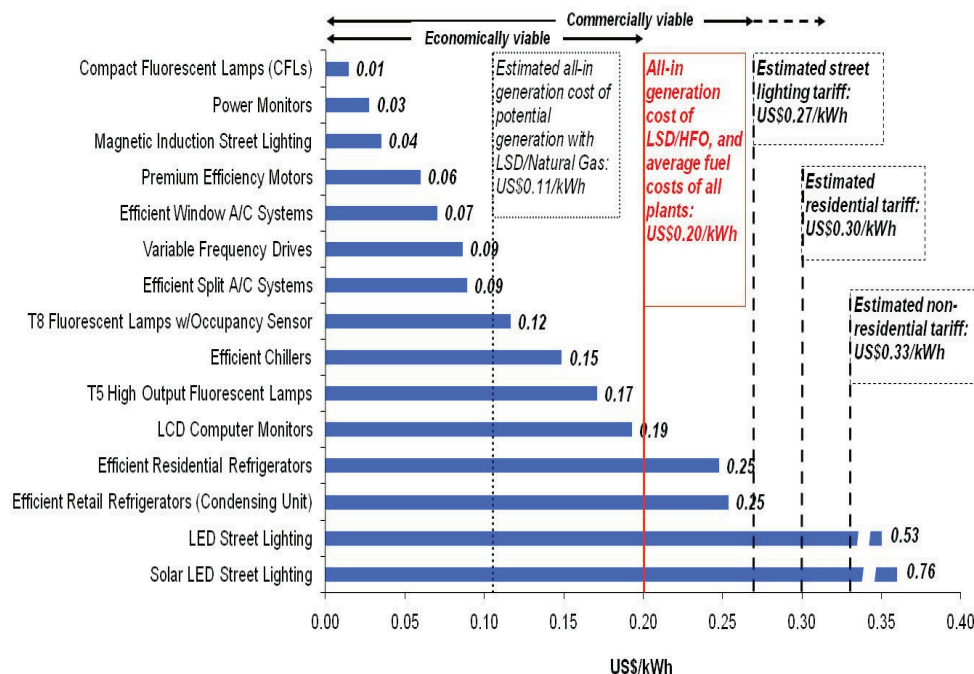
1.8 Energy Efficiency potential. In figure 2 below, the commercially and economically EE appliances and technologies are listed. The most cost effective appliances for Barbados' market are Compact Fluorescents Lamps (CFLs), power monitors, premium efficiency motors, efficient Air Conditioning (AC) systems, variable frequency drives and efficient chillers, when these are compared to the avoided cost of diesel for electricity generation (see all in generation cost for LSD in figure 2). If the population of Barbados used these technologies, the potential savings generated through EE would be 19.4% of the total electricity consumption in MWh.

⁵ The assessment for the recommendation of technologies was made by the Consulting Firm Castalia using a reference price of US\$100 per barrel of oil over a period of 20 years.

⁶ The avoided cost of oil is equivalent to cost the importation and operation of fossil fuels. Therefore if a RE technology can operate below this cost, the utility would save money by purchasing power generated by this technology instead of operating their fossil fuel based generator.

Figure 2: Analysis of technically and economically feasible EE technologies available in Barbados

(Report prepared by Castalia Consulting Firm, 2010)



- 1.9 The RE and EE potentials were 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 reduced number of RE and EE projects in the energy matrix versus a sustainable energy scenario where a substantial number of technically and commercially viable RE and EE projects are incorporated in the energy mix.
- 1.10 **The instrument used to promote sustainable energy.** The GOBA requested to use the IDB's Programmatic Energy Policy-Based Loan (Energy PBP) as the instrument to catalyze the regulatory, policy and legislative reforms required to promote sustainable energy. The Energy PBP approach consists of individual operations that are independent of one another, but technically interlinked. The Energy PBP approach presents the advantage of promoting the on-going policy dialogue between the GOBA and the IDB, allowing for a more flexible implementation strategy during the always dynamic policy reform process. This program is structured in two individual programmatic operations, the first one (US\$45 million) presented in this document and a second operation (BA-L1021) expected to be presented for approval in the fourth quarter of 2011.
- 1.11 The program will address the following barriers that prevent the development of the RE and EE projects: (i) Policy, legal and regulatory barriers. There is no clear national policy that promotes and guides the implementation of RE and EE projects and initiatives; (ii) Institutional barriers. Key energy institutions in

Barbados, such as the Energy Division of MFIE for the policy function; the Fair Trading Commission (FTC), Barbados' electricity regulator; and BL&P, Barbados' sole electricity supplier; have limited familiarity with RE and EE policy, regulations and skills, due to the country's long experience almost exclusively with fossil fuel-generated electricity; (iii) Professional and technical capabilities barriers. Shortage of in-country professional and technical capabilities for EE and RE. Specialized EE services, such as energy auditing, and performance contracting, are insufficiently provided. Similarly, there are scarce local skills and experience in the evaluation, development, operation, electricity dispatching and financing of grid-connected RE projects; and (iv) Awareness barriers. The general public lacks sufficient information on ways to use and conserve energy more efficiently. On the supply side, there is little familiarity with RE technologies apart from Solar Water Heaters (SWH).⁷

- 1.12 **Economic and financial barriers.** There is a lack of resources and effective financing vehicles to implement RE and EE projects within the different sectors of the economy. For this reason, a parallel operation called “**Sustainable Energy Investment Program (Smart Fund)**” (BA-L1020) is being prepared in parallel to the Energy PBP. The Smart Fund (US\$ 10 Million) will focus on the design and implementation of key financial mechanisms necessary to jump start the RE and EE market in Barbados, targeting Small and Medium Enterprises (SMEs) as well as the residential sector.
- 1.13 **Role of the IDB.** The program is fully coherent with the new IDB Country Strategy of Barbados (2009-2013) (GN-2539) for the energy sector, as it provides technical and financial support to reduce Barbados' dependency on fossil fuels by promoting sustainable energy, mainly RE and EE. The indicators used to monitor this program are similar to those that will measure achievement progress in the Country Strategy's energy objectives.
- 1.14 The GOBA is acquiring extensive knowledge of the energy sector in Barbados through a series of Technical Cooperations (TC) financed by the IDB which are currently under execution. The Sustainable Energy Framework for Barbados (SEFB) (ATN/OC-11473-BA) is assessing the energy matrix and analyzing the potential of RE, EE and Bio-energy (BE) for the island. The results of the SEFB will support the fulfillment of the policy matrix conditions for both operations of the Energy PBP, which will help catalyze the regulatory, policy and legislative measures required to promote sustainable energy.

⁷ To date, the most successful story of renewable energy in Barbados has been SWH. It is estimated that approximately one in every three residences in the island has installed a SWH. Experience of the SWH industry shows that GOBA incentives can and do make a difference in the promotion of renewable energy. The GOBA used a number of incentives to support the industry: (i) removal of import duties on raw materials for manufacturers; (ii) imposition of a 30% consumption tax on electric heaters; and (iii) income tax deduction of the full cost of the system.

- 1.15 The Caribbean Hotel Energy Efficiency Action Program (CHENACT) (ATN/OC-11465-RG) will encourage the implementation of EE practices and RE micro generation in the Caribbean tourism sector, hence improving the competitiveness of small, medium and large hotels. Half of the CHENACT funds will be directed to a case study that will take place in Barbados to show the potential benefits of implementing EE measures in the hotel industry, therefore providing important information that will feed into the SEFB.
- 1.16 The Global Environment Facility (GEF), through the IDB, is funding the Sustainable Energy Implementation Program (GRT/FM-12075-BA), also called the SEFB Pilot Program. This pilot program, executed in cooperation with BL&P and the GOBA, will install 3,000 power meters, 15,000 CFLs, 28 PV systems and 1 micro wind system, in selected households. This pilot project will provide the foundation to facilitate its replication at the national scale, using financing provided by the Smart Fund, once it is operative.
- 1.17 The IDB, through its Infrastructure Fund (INFRAFUND), is financing on a contingent recovery basis the Support Studies for the Upgrade and Expansion of the Natural Gas Network (ATC/OC-11995-BA). These will include an assessment of the most efficient use of fossil fuels. The recommendations from this assessment will be used as a policy condition in the second operation of this Energy PBP. In this way, the entire energy sector of Barbados will have concrete recommendations to make a rational and efficient use of both RE and fossil fuels.

B. Objective, Components and Cost

- 1.18 The general objective of this program is to reduce Barbados' dependency on fossil fuels by promoting sustainable energy diversifying, consequently, the country's energy matrix and reducing its exposure to oil price volatility. The specific objectives are to: (i) support the formulation of policy and legislation that will contribute to the promotion of RE, EE, EC, and rational and efficient use of energy; (ii) encourage measures to promote the mitigation of Greenhouse Gas (GHG) emissions as well as initiatives for adaptation to climate change in the energy sector; and (iii) support institutional strengthening, public education and awareness and capacity building requirements to promote sustainable energy and energy conservation initiatives.
- 1.19 This Energy PBP includes two individual programmatic operations. At this stage, only the specific policy conditions for the first operation presented in this loan proposal will be negotiated and included in the loan contract. The policy conditions for the second operation, as currently described in the policy matrix, are indicative. However, the Energy PBP is structured in such a way that each policy condition of the first operation could be conditionality for the second one. To proceed to the definition of the specific policy conditions to be included in the second operation, it will be necessary for the GOBA to have advanced substantially in the procedural steps necessary for formal adoption of new policy and legislation for EE and RE. In this sense, it will be a trigger to begin the

preparation of the second operation that a draft policy for EE and RE has been prepared (see paragraphs 1.22 & 1.24 below). In an effort to overcome the main bottlenecks in the sector mentioned above in this document, the Energy PBP will have the following components (see Annex I for details in the policy matrix and see electronic links to volumes I and II of the Sustainable Energy Framework study providing analytical background information and the detailed recommendations of the policy and regulatory reforms for each of the policy conditions):

- 1.20 **Component 1: Macroeconomic stability.** Its objective is to verify that the macroeconomic context of Barbados is consistent with the objectives of the present program and with the guidelines established under the Policy Letter referred to in paragraph 3.7 below.
- 1.21 **Component 2: Development of a Sustainable Energy Framework in Barbados (SEFB).** Under this component, the subcomponents are the following:
- 1.22 **Support the preparation of new policy and legislation for RE, which includes WE and BE.** In order to support this activity, for preparing the RE section of the Sustainable Energy Framework of Barbados (SEFB) proposal, a study assessing the RE generation potential will be developed. The conclusions and main recommendations of this study will be presented to Cabinet. Based on this study, the following will also be presented to Cabinet: (i) specific targets as well as recommendations for RE policy and legislation⁸; and recommendations for establishing an economic mechanism to promote investments in RE, the “Smart Fund”. The approval by Cabinet of the agreed RE policy and the draft legislation to implement such RE policy are triggers for the preparation of the second operation of the Energy PBP.
- 1.23 The SEFB Pilot Program, sponsored by GOBA, BL&P and IDB, will benefit from the FTC’s recent approval of allowing private individuals or companies to feed excess power from RE technologies into the grid for a pilot period of two years. FTC’s RE rider⁹ will introduce 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. The approval by FTC of such RE rider has been included as a policy condition in this first operation of the Energy PBP.

⁸ RE policy and legislation recommendation include the possibility of Independent Power Producers being able to sell power to the grid, if this cost of this power is below the avoided cost of oil. Small Power Producers (residential) will be able to sell excess power to grid using a similar conditions as those used under the SEF pilot project (see paragraph 1.23).

⁹ 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.

- 1.24 **Support the preparation of new policy and legislation for EE.** For the preparation of the EE section of the SEFB proposal, a study assessing EE potential together with EE targets and recommendations for EE policy and legislation will be developed under this first operation of the Energy PBP. Additionally, guidelines for a study to phase-out incandescent lamps will also be prepared as a way to encourage the installation of energy saving lamps. As part of this first operation, the recommendations for establishing an EE component under the Smart Fund will also be presented to Cabinet. The approval by Cabinet of the agreed policy and the draft legislation promoting EE are triggers for the preparation of the second operation of the Energy PBP.
- 1.25 Under the SEFB Pilot Program, a policy recommendation to distribute 15,000 CFLs and 3,000 power monitors will be presented to Cabinet. As the next step, the approval by Cabinet of the phase-out plan for incandescent lamps throughout the country, based on the SEFB Pilot Program, is intended under the second operation of the Energy PBP.
- 1.26 **Introduction of ethanol and Bioenergy (BE) in the energy matrix.** This subcomponent will include the establishment of a RE unit within the Barbados National Oil Company Limited (BNOCL) that, in the future, would support the preparation of ethanol blending mandates.
- 1.27 Furthermore, in collaboration with the Barbados Cane Industry Corporation (BCIC), the IDB is funding an environmental and social policy assessment of alternatives for the sustainability of the sugar cane sector. This study will provide information for critical decision making for the BE sector of Barbados. The presentation of the recommendations of this study to Cabinet is intended as part of the second operation of the Energy PBP.
- 1.28 **Efficient and rational use of fossil fuels.** In addition to the incorporation of RE and EE as part of the energy matrix, the efficient use of fossil fuels must also be considered, as fossil fuels will still constitute the larger fraction of the energy mix. The GOBA requested support for a policy analysis and formulation of recommendations for: (i) upgrading and expanding of the natural gas transmission and distribution network; and (ii) improving the efficiency and sustainability of fossil fuels consumption. The objective in this subcomponent is to implement the recommendations of efficient and sustainable use of fossil fuels as a measure on energy conservation for the country. The agreed recommendations of this study would be presented to Cabinet as part of the second operation of the Energy PBP.
- 1.29 **Component 3: Measures for mitigation and adaptation to climate change in the energy sector.** As a small island, Barbados' GHG emissions¹⁰ are miniscule on the global scale. However, the introduction of RE and EE will generate carbon emission reductions, motivated by energy savings. As part of this component the

¹⁰ As Barbados' energy matrix is entirely fossil fuel based, any changes in this matrix by including RE and EE, will reduce the amount of fossil fuel burned and will therefore automatically reduce carbon emissions.

SEFB will include a GHG emission reduction section as part of the first operation of the Energy PBP, which will include the GHG emissions reduction potential and recommendations to assess the best way to market those emission reductions in the international carbon markets. It is important to mention, that these carbon emission reductions will be made using economically viable technology options as mentioned in paragraphs 1.7 and 1.8, therefore CO₂ emissions will be reduced without an additional cost (subsidy) for the country.

- 1.30 From an adaptation to climate change point of view, the pilot projects executed as part of SEFB Pilot Program and the Smart Fund will incorporate design considerations to enhance resilience to climate change related impact, mainly to withstand extreme weather (e.g., hurricanes). With these measures, it is expected that in the future all sustainable energy projects will take into consideration resilience to climate change.
- 1.31 **Component 4: Institutional strengthening, capacity building and public education and awareness for sustainable energy.** This component contribute to the development of the institutional section of the SEFB, which will: (i) support the implementation of recommendations and guidelines for institutional strengthening of the energy sector; (ii) improve capacity building and strengthen institutional capabilities for RE and EE; and (iii) support public education and awareness to promote RE and EE.
- 1.32 Under this component, recommendations for institutional strengthening to upgrade the capacity to assess the environmental impact of RE projects will be provided.
- 1.33 The approval by Cabinet of the agreed recommendations to upgrade the capacity to assess the environmental impact of RE projects and their implementation are intended as part of the second operation of the Energy PBP.

C. Key Results Indicators

- 1.34 The program will create an institutional and policy framework that will set the appropriate incentives to generate substantial energy savings, both from the energy and financial point of view. This initiative will contribute to a reduction of oil imports and hence liberate funds for other purposes (social, and educational). Through EE and savings, the program will also enhance the competitiveness of the Barbadian economy by reducing energy related transaction costs. The country will increase the use of RE technologies and will maximize energy conservation by adopting EE measures and efficient use of fossil fuels. The project team estimates that, with all the GOBA initiatives combined¹¹ (see electronic link to the

¹¹ The 2 operations of the Energy PBP, the Smart Energy Fund investment loan, the SEF pilot project, the CHENACT project and the RE and EE implemented projects and as well as projects to promote efficient use of fossil fuels.

Sustainable Energy Framework volume I study), Barbados would generate¹² US\$283.5 million in electricity costs savings over the next 20 years, will reduce oil imports' cumulative cost over 20 years from US\$ 2.648 billion to US\$ 1.978 billion; will possibly reduce electricity tariffs by 15 to 20%; and will reduce¹³ more than 4.5 million tCO₂e, which are concrete environmental benefits, over the same period. Moreover, this program will contribute to the consolidation of energy initiatives in a single coherent approach, and support for the preparation of the National Sustainable Energy Policy (NSEP).

- 1.35 The results matrix (see link) presents results indicators linked to the program. These have been formulated and projected over two scenarios, a short term (year 2012) and medium term (year 2015). The indicators have been analyzed and agreed with the different agencies involved in this program, who would also contribute to monitoring the progress of the results.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financial Instruments and Contractual Conditions

- 2.1 The proposed operation is structured to support policy reforms under a programmatic modality, consisting of two individual and independent loan operations, technically interlinked. The Energy PBP, the instrument of choice, facilitates the dialogue with the sector authorities, usually with several stakeholders of the sector, and it is flexible enough to adapt the program to requirements needed by a sector that has a constant evolution, such as energy.
- 2.2 The fulfillment of the program is supported by the technical assistance provided through the SEFB technical cooperation along with other non reimbursable and contingent recovery technical cooperation described in paragraphs 1.14 to 1.17.

B. Environmental and Social Safeguard Risks

- 2.3 According to the IDB's environmental and safeguard policy this operation has triggered directive B. 13 and consequently does not need classification.
- 2.4 This program does not finance physical investments. It is not expected to have direct negative impacts on the environment. Nonetheless, some energy generation investments that would be promoted through the SEFB, like WE, wind farms and BE projects, are likely to have some environmental implications (e.g., air emissions, and visual impact).

¹² Cost benefit analysis showed that if all RE and EE projected (and recommended) investments are made, there would be a net benefit of US\$ 283.5 Million over a period of 20 years.

¹³ The country will achieve carbon emission reductions, which eventually could be sold in the world carbon markets. The assumptions for energy savings and carbon emission reduction are made considering that both operations (first operation of the Energy PBP and the Smart Fund investment loan) are executed simultaneously.

- 2.5 The institutional strengthening required to assess the environmental implications of large RE project will be further studied as part of the conditions to be fulfilled under the Energy PBP, including the adequacy of the current regulatory framework and institutional capacity to deal with environmental issues likely to be raised by the new type of RE projects promoted by the SEFB. The main findings of this assessment and any additional actions identified for incorporation in the Energy PBP will be presented to the Cabinet of Barbados, as part of the conditions to be fulfilled under the first operation of the Energy PBP. Recommendations of the analysis will be considered for the second operation of the Energy PBP.
- 2.6 **Fiduciary Risk.** In this operation, the fiduciary risk is substantially reduced due to the sound financial management framework of the GOBA, which is governed by the Constitution and Financial Management and Audit Act. As this is an Energy PBP operation, funds will be disbursed in one disbursement upon the approval and signature of the loan contract and the fulfillment of the conditions prior to the first disbursement established therein; hence, no relevant fiduciary risk is foreseen in this operation.
- 2.7 **Execution Risk.** Due to the nature of this program, policy conditions are all expected to be fulfilled prior to the presentation of the Energy PBP for approval by the IDB's Board of Executive Directors. Thus, the full amount of this loan is expected to be disbursed very soon after it is approved; therefore, no execution risks are foreseen.
- 2.8 The main value added of this programmatic approach is approval of both operations of the Energy PBP, as only the fulfillment of both operations will provide the support for the GOBA to facilitate the enactment of the recommended policy and legislation. In this respect, the GOBA has indicated its interest in having the second operation (BA-L1021) of this Energy PBP approved in the annual budget for 2011 and will accordingly seek the necessary approvals. Therefore, there is no major risk that the second operation would not be approved, providing the necessary continuity to this program.

C. Other Key Issues and Risks

- 2.9 This operation is prepared in parallel with the Smart Fund (BA-L1020), which has been conceived as a vehicle to materialize the regulatory changes included in the Energy PBP into actual sustainable energy projects. In this sense, the GOBA has prioritized the main areas of intervention of the Smart Fund, which mainly will allow access to finance and promote RE and EE in SMEs,¹⁴ productive, industrial and commercial sectors, as well as the residential sector. There is a strong commitment of the GOBA to approve and execute the Smart Fund in a timely manner; therefore the risk of not approving the Smart Fund is considered low.

¹⁴ Productive, industrial and commercial SME, including small and medium hotels

- 2.10 The Energy PBP and the Smart Fund are complementary. The recommendations for the implementation of the Smart Fund are part of the conditions of the first operation of the Energy PBP, while the capitalization and operation of the Smart Fund will be part of the conditions of the second operation of the Energy PBP. On the other hand, the Smart Fund is a first step towards materializing the EE and RE recommendations in the Energy PBP (in the second operation of the Energy PBP) and providing GOBA with a financial vehicle to promote the use of EE and RE.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary Implementation Arrangements

- 3.1 **Borrower and Executing Agency.** The Borrower is the GOBA while the executing agency for the project will be the Ministry of Finance, Investment, Telecommunications and Energy (MFIE). Within the MFIE, the Finance Division will be receiving the disbursements of the IDB; the Energy Division of the MFIE will gather the evidence to fulfill conditions of the Energy PBP; and the Investment Division of the MFIE will monitor that all conditions have been met and will continue the dialogue between the IDB Country Office in Barbados and the Energy and Finance Divisions of the MFIE. The policy matrix has been agreed by the three divisions of the MFIE and will be monitored through the Investment Division of the MFIE.
- 3.2 The Energy Division of the MFIE, among others, will: (i) prepare reports providing evidence that the conditions have been met, and any other reports that the IDB may need to approve the disbursement and (ii) support the actions required for the second operation of this Energy PBP. Once the disbursement of the first PBL is completed, the Energy Division of the MFIE will gather and prepare the required information and performance indicators so that the IDB and GOBA can follow up, measure and evaluate the results of the program. The latter will be monitored by the Investment Division of the MFIE.

B. Summary of Arrangements for Monitoring Results

- 3.3 From the IDB, the project team based in Washington DC and in Barbados will be in charge of the follow-up of the program. The borrower and the IDB have agreed to carry out follow-up meetings, at least quarterly. Once each program has been completed and disbursed, the project team and MFIE will prepare a progress report, showing the evolution of results, with the objective of identifying progress and required additional support to fulfill the conditions.
- 3.4 In agreement with the IDB policies, a Project Completion Report (PCR), funded by the IDB, will be prepared six months after the last phase of the program has been fully disbursed. The PCR will evaluate the impact and results obtained by the program.
- 3.5 The borrower, through the Energy Division of the MFIE, is responsible for the gathering of information and data required for monitoring and evaluation (see

electronic link to the Evaluation and Monitoring Annex). The Energy Division of the MFIE will fund the costs incurred for collection and processing of the information.

- 3.6 As part of the SEFB (ATN/OC-11473-BA), a project coordinator has been hired to support the Energy Division of the MFIE. The contract of that project manager will be extended, as part of the GEF project (GRT/FM-12075-BA). Additionally, a consultant will be hired to facilitate the execution of the GEF project. Both professionals will be also assisting the Energy Division of the MFIE in the fulfillment of the conditions of both operations of the program.

C. Policy Letter

- 3.7 The IDB has agreed with GOBA on the macroeconomic policies and sectors included in the Policy Letter (see required electronic link) signed by the Minister of State, Ministry of Finance, Investment, Telecommunications and Energy of Barbados, describing the main components of the GOBA's strategy for this program and reaffirming its commitment to implement the agreed activities with the IDB. The Policy letter has been presented to the IDB on August 24 2010.

**Development Effectiveness Matrix
Summary**

Indicator	Score	Maximum Score
I. Strategic Relevance	Low-High	
1. IDB Strategic Development Objectives	4.5	10
Country Diversification	2.0	2
Corporate Initiatives	2.5	2.5
Harmonization and Alignment	0.0	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	8.8	10
4. Evaluation & Monitoring Plan	5.3	10
5. Cost-Benefit or Cost-Effectiveness	10.0	10
6. Risks & Mitigation Monitoring Matrix	7.5	10
III. IDB's Role - Additionality		
7. Additionality	10.0	10
Technical Assistance provided prior the project	3.0	3
Improvements in management of financial, procurement, monitoring or statistics internal controls	4.0	4
Improvements in environmental, health and labor performance	3.0	3

I. Strategic Relevance: This operation supports the adoption of sustainable energy in Barbados, in line with the Bank SECCI initiative. There is no indication of the use of country systems. The operation is consistent with the Contry Strategy.

II. Evaluability: The operation is based on a robust assessment of the development problem, a well structured proposal of policy solutions and a cost-effectiveness analysis of these solutions. The project logic is also sound. The project's outcomes, outputs and metrics are clearly defined. The project includes a plan for monitoring activities. Although it is less specific in terms of evaluation activities, the project includes a brief description of a reflexive evaluation methodology.

III. Additionality: The preparation of the project was supported by a specific technical cooperation project. The project also contributes to improving monitoring of the energy sector in Barbados and to the country's environmental management.

Barbados: Support for Sustainable Energy Framework for Barbados (SEFB)
BA-L1022
POLICY MATRIX

Objective: Reduce Barbados' dependency on fossil fuel by promoting sustainable energy, therefore contributing to the country's competitiveness.

Objectives	Institution/ responsibility	First Programmatic PBL (August 2010)	Second Programmatic PBL (November 2011)
I. Macroeconomic Stability			
General Macroeconomic Framework is stable	MFIE	1. Macroeconomic framework is consistent with the objectives of the program and with policy letter.	1. Macroeconomic framework is consistent with the objective of the program and with policy letter.
II. Development of a Sustainable Energy Framework in the Barbados (SEFB)			
II.1. Support the preparation of new policy and legislation for Renewable Energy (RE), which includes Waste to Energy (WE) and Bio-Energy (BE)	MFIE ¹	2. Sustainable Energy Policy Framework Proposal has been presented to Cabinet, which includes a RE Section containing the following: (i) RE generation potential; (ii) indicative targets for RE; (iii) recommendations for RE policy and legislation; and (iv) recommendations for establishing "Smart Energy Fund" to have the financial instruments and mechanisms to promote investments in RE.	2. Sustainable Energy Policy Framework Proposal, including (i) the RE policy, and (ii) the draft legislation for implementation of RE policy, which will allow 5-10 MW of RE installed capacity and any distribution assets necessary for connection to network, has been approved by Cabinet. 3. "Smart Energy Fund" to promote investments in RE has been created and capitalized, and is operational.
	FTC ² , MFIE and BL&P	3. Rider to introduce special tariffs and terms for RE projects, including the SEF pilot project, has been approved by FTC.	4. SEF Pilot Project has been implemented.
II.2. Support the preparation of new policy and legislation for Energy Efficiency (EE)	MFIE	4. Sustainable Energy Policy Framework Proposal has been presented to Cabinet, which includes an EE Section containing the following: (i) EE potential by sector; (ii) indicative targets for EE by sector; (iii) recommendations for EE policy and legislation; and (iv) recommendations for establishing "Smart Energy Fund" to have the financial instruments and mechanisms to improve investments in EE.	5. Sustainable Energy Policy Framework Proposal, including (i) the EE policy, and (ii) the draft legislation for implementation of EE policy, which will allow at least 2000 MWh/yr saved by implementation of the SEF pilot program ³ , has been approved by Cabinet. 6. "Smart Energy Fund" to promote investments in EE has been created and capitalized, and is operational

¹ Ministry of Finance, Investment, Telecommunications and Energy (MFIE)

² Fair Trading Commission (FTC)

³ Comparison between the business as usual hypothetical consumption pattern and the situation with project from the beginning of the implementation of the SEF pilot project

Objectives	Institution/ responsibility	First Programmatic PBL (August 2010)	Second Programmatic PBL (November 2011)
	MFIE and BL&P	5. Policy Recommendation for a phase-out plan for incandescent lamps, based on the SEF pilot program, which will distribute Compact Fluorescent Lamps (CFLs) and power monitors, has been presented to Cabinet.	7. Phase-out plan for incandescent lamps, based on the SEF pilot program implementation (which shall have distributed at least 15,000 CFLs and at least 3,000 power monitors), has been approved by Cabinet.
II.3. Introduction of ethanol and BE in the energy matrix	MFIE and BNOCL ⁴	6. Resolution to establish a RE unit in BNOCL has been approved by the Board of BNOCL	8. RE unit in BNOCL has been established and is operational, with at least the following duties: (i) collaborate with MFIE in the presentation to Cabinet of the conclusions of assessment to replace MTBE with ethanol E10 and higher blends; and (ii) collaborate in the preparation of the proposal to be presented to Cabinet to phase out MTBE in gasoline blends and substitute it with dehydrated ethanol blended with MTBE free gasoline.
	MFIE and BCIC ⁵	7. Environmental and Social Policy Assessment of alternatives for the sustainability of the sugar cane sector for Barbados is in preparation.	9. Recommendations from the Environmental and Social Policy Assessment of alternatives for the sustainability of the sugar cane sector have been presented to Cabinet.
II.4. Efficient and rational use of fossil fuels	NPC ⁶ , BNOCL, and MFIE	8. GOBA, through NPC, has agreed on the TORs for a Policy Analysis and formulation of recommendation for: (i) upgrading and expanding the natural gas transmission and distribution network; and (ii) improving the efficiency and sustainability of fossil fuels consumption.	10. Policy recommendations for (i) upgrading and expanding the natural gas transmission and distribution network; and (ii) improving the efficiency and sustainability of fossil fuels consumption, have been presented to Cabinet.
II.5. Consolidation of energy initiatives in a single document, and support for the preparation of a Sustainable Energy Framework for Barbados (SEFB) as part of the National Sustainable Energy Policy (NSEP)	MFIE		11. Recommendations for drafting of the National Sustainable Energy Policy (NSEP) have been presented to Cabinet.

⁴ Barbados National Oil Company, Limited (BNOCL)

⁵ Barbados Cane Industry Corporation (BCIC)

⁶ National Petroleum Corporation (NPC)

Objectives	Institution/ responsibility	First Programmatic PBL (August 2010)	Second Programmatic PBL (November 2011)
III. Measures for Mitigation and Adaptation to Climate Change in the Energy Sector			
III.1. GHG emissions reduction potential by sector and for Barbados as a whole	MEWD ⁷ and MFIE	9. Sustainable Energy Policy Framework Proposal has been presented to Cabinet, which includes a GHG Emission Reduction Section containing the GHG emissions' reduction potential and recommendations for doing so.	
III.2. Adaptation to climate change of the energy sector	MEWD and MFIE	10. The design of RE projects under SEF Pilot Project and the "Smart Energy Fund" incorporates resilience to climate change impacts.	12. RE projects implemented under SEF Pilot Project and the "Smart Energy Fund" incorporates resilience to climate change measures.
IV. Institutional Strengthening, capacity building and public education and awareness for sustainable energy.			
IV.1. Strengthen institutional capabilities for RE and EE and public education and awareness	MFIE, GEED ⁸ Town and Country Planning	11. Sustainable Energy Policy Framework Proposal has been presented to Cabinet, which includes an institutional strengthening section containing recommendations for: (i) institutional strengthening and capacity building for key entities of the energy sector; (ii) supporting public education and awareness to promote RE and EE; and (ii) strengthening and capacity upgrading to assess the environmental impact of large RE projects.	13. Sustainable Energy Policy Framework Proposal containing the recommendations for (i) institutional strengthening and capacity building for key entities of the energy sector; (ii) supporting public education and awareness to promote RE and EE; and (iii) strengthening and capacity upgrading to assess the environmental impact of large RE projects, has been approved by Cabinet. In addition, to implement those recommendations: (i) capacity and institutional strengthening plan for the energy sector has been approved by Cabinet; (ii) the public education and awareness program to promote RE and EE is in execution; and (iii) approved recommendations to strengthen and upgrade capacity to assess the environmental impact of large RE projects are being implemented.

⁷ Ministry of Environment, Water Resources and Drainage

⁸ Government Electrical Engineers Department (GEED)

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION

Barbados. Loan ____/OC-BA to the Government of Barbados
Support for Sustainable Energy Framework for Barbados (SEFB) I

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 program for support for Sustainable Energy Framework for Barbados (SEFB) I. Such financing will be for an amount of up to US\$45,000,000 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-35220313-10
BA-L1022