TECHNICAL COOPERATION DOCUMENT

I. BASIC INFORMATION FOR TECHNICAL COOPERATION (TC)

▪ Country/Region:	BARBADOS
▪ TC Name:	Supporting Energy Transition Implementation and Smart Energy Technology Expansion in Barbados
▪ TC Number:	BA-T1065
▪ Team Leader/Members:	Prado, Veronica Rodrigues Do (INE/ENE) Team Leader; Snyder, Virginia Maria (INE/ENE) Alternate Team Leader; Archer-Headley, Janette (CCB/CBA); Carvalho Metanias Hallack, Michelle (INE/ENE); Chung, Sangyong (INE/ENE); Franklin, Rochelle (CCB/CBA); Goldenberg Lopez, Federico (INE/ENE); Jimenez Mosquera, Javier I. (LEG/SGO); Johnson Naveo, Odile Ivette (INE/ENE); Madrigal Martínez, Marcelino (INE/ENE); Marquez Barroeta, Fidel (INE/ENE); Masson, Malaika Ebony Anietia (INE/ENE); Seminario, Ana Cecilia (ITE/ITE); Suber, Stephanie Anne (INE/ENE)
▪ Taxonomy:	Client Support
▪ Operation Supported by the TC:	
▪ Date of TC Abstract authorization:	23 May 2019.
▪ Beneficiary:	Government of Barbados (GOB)
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	Knowledge Partnership Korea Fund for Technology and Innovation(KPK)
▪ IDB Funding Requested:	US$550,000.00
▪ Local counterpart funding, if any:	US$0
▪ Disbursement period (which includes Execution period):	24 months for execution and 30 months for disbursement
▪ Required start date:	November 30, 2019
▪ Types of consultants:	Consulting firms and individual consultants
▪ Prepared by Unit:	INE/ENE-Energy
▪ Unit of Disbursement Responsibility:	CCB/CBA-Country Office Barbados
▪ TC included in Country Strategy (y/n):	N/A
▪ TC included in CPD (y/n):	N
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Environmental sustainability

II. OBJECTIVES AND JUSTIFICATION OF THE TC

2.1 The main objective of this Technical Cooperation (TC) is to assist the Government of Barbados in transitioning its energy sector to achieve its goal by financing a wide range of studies and activities directly linked to the implementation plan of the Barbados National Energy Policy 2019-2030 (BNEP). The specific objectives are to: (i) provide the Ministry of Energy and Water Resources (MEWR) with analytical tools to strengthen decision-making processes; (ii) support the implementation of the BNEP; and (iii) promote the appropriation and generation of knowledge on planning tools, smart technologies and dissemination activities.

2.2 Barbados is an island of 431 km^2 and a population of approximately 280,000 inhabitants and ranks high among the LAC countries in terms of social and economic indicators. In terms of energy, Barbados depends on imported fossil

fuels for over 90% of its total energy needs, leading to high economic vulnerability resulting from changes in fuel prices. Between 2007 and 2016, Barbados spent approximately US$295 million on fuel imports which represents approximately 7% of GDP annually. In 2018 the fuel import bill for Barbados stood at US$253 million. Average annual sales of electricity total 900 million kWh; of this total 44 million kWh (5%) are produced from Renewable Energy (RE) sources.

2.3 The high dependency on fossil fuels risks jeopardizing the sustainability of its economic and social development, the competitiveness and the resilience of the economy. Given these economic challenges, the GOB, though the Ministry of Energy and Water Resources (MEWR), is committed to promoting energy practices both on the supply side, mainly using RE sources, and on the demand side, by encouraging Energy Efficiency (EE), and energy conservation to reduce the country's dependency on imported fossil fuels, enhance security and stability in energy supply, improve the economy's competitiveness, resilience and achieve greater environmental sustainability.

2.4 Since 2009, the IDB has supported the GOB in the implementation of the Sustainable Energy Framework for Barbados (SEFB). At the core of the SEFB are the legal, policy and regulatory changes, financial instruments, technical measures, and strengthening of institutional capabilities. The IDBs support has included a package of policy-based lending, technical assistance programs and investment loans.

2.5 With the loans, the IDB is supporting the GOB in realizing investments both by public and private sector, which is critical to achieving the overarching goals of the SEFB. Under previous Programmatic Policy Based Loans (2609/OC-BA and 2410/OC-BA) the GOB developed relevant policy instruments and plans such as the policies for RE and EE, the drafting of legislation to allow Independent Power Producers to supply electricity to the grid, the phase-out plan for incandescent lamps and the plan for energy sector capacity and institutional strengthening, public education and awareness. This led to the Electric Light and Power Act (ELPA) passing at the end of 2013.

2.6 The GOB has also presented the Barbados National Energy Policy 2019-2030 (BNEP). This policy identifies the goals and timelines for a transition to a more sustainable energy sector, including a long-term vision of 100% RE, an interim goal of 49% reduction in fossil fuel consumption by 2023, and an annual reduction of US$200 M–US$400 M in fuel imports by 2030 as well as carbon neutrality.

2.7 To achieve these goals, the paradigm shift across various sectors, towards the realization of full integration of RE into the energy mix. The Implementation Plan for the BNEP recognizes the importance of the government institutions in facilitating regulatory, technical and other policy-related adjustments to streamline existing processes and effectively adapt to the changing local and international realities in the RE sector. The plan promotes the increase in the reliability of the energy supply, reduce negative impacts on the environment, economic growth and the development of jobs, employment and the increase democratization of the RE sector.

2.8 **Strategic Alignment.** The TC is aligned with the Country Strategy with Barbados 2019-2023 (GN-2953-1) as it relates to the objective of reducing the country's dependence on imported fossil fuels by increasing the contribution of clean energy sources including RE and EE, and by promoting investments in the Public Sector.

This TC is consistent with the Update to the Institutional Strategy 2010-2020: Partnering with Latin America and the Caribbean to Improve Lives (UIS) (AB-3008) and aligned with the: (i) establish institutional frameworks for infrastructure development to ensure an effective institutional frameworks to establish and maintain a transparent interactions with governments; (ii) productivity and innovation, as it contributes to the development of knowledge focused on energy; and (iii) increase of knowledge and expertise to partner with countries to enhance its overall value added and sharing the knowledge among policymakers across the region. This TC is consistent with the Energy Sector Framework Document (GN-2830-3): regulatory framework and institutional strengthening since it promotes knowledge for Barbados. Finally, the TC is aligned with the objectives of the Ordinary Capital Strategic Development Program for Infrastructure (GN-2819-1) since it will focus, among other things, on studies to carry out regulatory analysis as an input for improvements of current national legal and regulatory frameworks focused on facilitating secure and enabling environments.

2.9 This TC is aligned with the Ordinary Capital Strategic Development Program for Infrastructure as it will support the design of a regulatory framework that encourage further investments and enhance the performance of the energy infrastructure sector. Additionally, it will support the dissemination and awareness of the best practices of the energy industry.

III. DESCRIPTION OF ACTIVITIES/COMPONENTS AND BUDGET

3.1 The proposed TC will develop tools and conduct studies for modeling and forecasting national energy demand and developing a Digital Platform and Investment Strategy for Smart Technologies. Studies for the expansion of the Smart Energy Building initiative will be conducted and analysis will include sector support for the development and implementation of the Integrated Resource and Resilience Plan (IRRP) for Barbados. Under Component 3, the main outputs will be training, certification and dissemination workshops. The IRRP will be developed in collaboration with the key stakeholders within the context of the multi-criteria approach of the Barbados National Energy Policy 2019-2030. The IRRP studies will consider resilience along with economic, social, environmental and fiscal considerations for the deployment of RE generation and storage.

3.2 **Component I: Energy Transition Implementation (US$200,000).** This component will support: (i) the development of a tool for modeling and forecasting national energy demand and deployment.[1] The tool should consider physical and geographical parameters, fiscal and economic considerations and social and sustainability guidelines consistent with the Barbados National Sustainable Energy Policy 2019 -2030. The tool should support the deployment of the Integrated Resource and Resilience Plan (IRRP) by informing the process for licensing and deployment of renewable energy and storage technologies; (ii) a second study will focus on conducting demand-side and resource deployment studies to assess:

[1] The basic data needed to design and populate the modeling tool current exists within the different government agencies in Barbados, nevertheless, much work still needs to be done in order to improve the normalization of the data by validating the methodological approaches used for date consistency, standardization, and accuracy. The design of this tool would not only support the Government of Barbados in producing strategic information for the energy transition, but it would also enhance the overall quality of data being produced by the energy sector.

(a) the feasibility of deploying Smart Energy Technologies, Energy Matrix Composition, Energy Efficient Technologies, Energy Conservation, and optimum timeframe and distributed RE generation on the demand-side including the integration of electric mobility in the public and private sector which consider charging infrastructure and vehicle-to-grid integration; and (b) technical assessments to support the preparation of the IRRP including but not limited to the assessment of energy storage technologies which are suitable for small island states and geospatial assessments for the deployment of utility scale renewable energy and energy storage technologies; (iii) a third study will focus on supporting the Barbados National Oil Company (BNOC) in the preparation of a Strategic Plan for its transformation to a clean energy company in line with the Barbados National Energy Policy 2019 – 2030 vision of being a 100% fossil free and carbon neutral economy.

3.3 **Component II: Smart Energy Technology Expansion (US$280,000).** This component will finance two key studies: (i) a series of assessments for the expansion of the Smart Energy Building initiative considering the deployment of complementary smart buildings technologies and smart grid infrastructure. These assessments should include, but not be limited to support for further data gathering, feasibility studies to assess the deployment of technologies, regulatory and tariff requirements and licensing requirements under a specific smart-building and smart grid framework; and (ii) the development of a Digital Platform & Investment Strategy tools which utilize the collection of real-time generation, demand and consumption patterns to forecast future smart technology deployment and build out a framework for wider investment as identified under Component I.

3.4 **Component III: Capacity Building, Institutional Strengthening and Public Awareness (US$70,000) as a requirement for the Barbados National Energy Policy under the Project Execution Unit of the Ministry of Energy and Water Resources (MEWR).** This component will finance training sessions for the Ministry of Energy and Water Resources and other institutions on: (i) Integrated Resource and Resilience Planning; (ii) smart metering, smart building and smart grid technologies and their deployment; and (iii) monitoring and forecasting RE generations, energy demand and energy consumption patterns to support the deployment of smart technologies. This component will also finance project management support costs which are not recurrent and are important and necessary support to the MEWR.

3.5 The following table provides the total amount of funding need to achieve the expected outputs by main component.

Table 1. Indicative Budget (in US$)

Activity/Component	Description	IDB/Fund Funding
Component I	Energy Transition Implementation	200,000.00
Component II	Smart Energy Technology Expansion	280,000.00
Component III	Capacity Building, Institutional Strengthening, Public Awareness	70,000.00
	Total	**550,000**

IV. EXECUTING AGENCY AND EXECUTION STRUCTURE

4.1 The Executing Agency (EA) of the TC will be the IDB, through the Energy Division (INE/ENE) in coordination with IDB Country Office in Barbados and the MEWR. In compliance with the Operational Guidelines for TC Products - Revised version (GN-2629-1), this TC is classified as Client Support. The technical responsibility will be overseen by INE/ENE. The focal point designated and sector specialist responsible executing this TC will be the Energy Specialist, Veronica R. Prado.

4.2 The Ministry of Energy and Water Resources has expressed its interest in the IDB being the EA considering the Bank's experience on the topic and considerably limited operational capacity to facilitate timely execution of the activities that are part of this TC.

4.3 A part-time Program Manager (PM), to be based in Barbados, will be assigned to support the execution of this TC, and more importantly serve as a liaison between the Bank and the GOB to closely coordinate the different aspects of all activities and facilitate the overall communication throughout the execution period. The PM will provide monthly progress reports summarizing results and submit these to the IDB for approval.

4.4 **Procurement.** The IDB project team will contract individual consultants and firms in accordance with the Bank's procurement policies and procedures. The Bank, though INE/ENE, will contract individual consultants, consulting firms and non-consulting services in accordance with the Bank's current procurement policies and procedures as follows: (i) the individual consultants will be hired in accordance with the AM-650 Administrative Manual 'Complementary Workforce'; (ii) the procurement process for consulting firms will follow the Bank's Policy for the Selection and Contracting of Consulting Firms for Bank-executed Operational Work (GN-2765-1) and the related Operational Guidelines (OP-1155-4) for hiring consulting services of intellectual nature; and (iii) the procurement of non-consultant services will follow the Bank's Corporate Procurement Policy (GN-2303-20). The initial procurement plan provides information on the contracts foreseen and their applicable monitoring and contracting methods.

V. MAJOR ISSUES

5.1 Risks include the fact that the Division of Energy within the MEWR is short-staffed and as such requires additional support. This will be mitigated by the hiring of a Part-Time PM.

VI. EXCEPTIONS TO BANK POLICY

6.1 There are no exceptions to Bank Policy.

VII. ENVIRONMENTAL AND SOCIAL STRATEGY

7.1 According to the Environment and Safeguards Compliance Policy (OP-703), this TC has been classified as a Category C. No environmental assessment studies or consultations are required for Category "C" operations (see: Safeguard Policy Filter Report (SPF) and Safeguard Screening Form (SSF).

Required Annexes:

Request from the Client_18477.pdf

Results Matrix_799.pdf

Terms of Reference_97095.pdf

Procurement Plan_44098.pdf