Technical Cooperation Abstract

I. Basic Project Data

- Region: Caribbean Region
- Name: **B**uilding capacity and **R**egional **I**ntegration for the **D**evelopment of a **G**eneration of **E**ntrepreneurs in Sustainable Energy and Information and Communication Technologies (BRIDGE).
- Technical Cooperation (TC) Number: RG-T2179.
- Team Members: Adriana M. Valencia (INE/ENE) Team Leader, Rafael Anta (IFD/CTI) Alternate Team Leader, Christiaan Gischler (INE/ENE), Claudia Piras (SCL/GDI), Laura Rojas (INE/ENE), Carlos Guaipatin (IFD/CTI), Alison Cathles (IFD/CTI), and Guillermo A. Eschoyez (LEG/SGO).
- Indicate if: Client support.
- Reference to Request: Regional TC.
- Date of TC Abstract: May 15th, 2013.
- Beneficiary: Barbados, Jamaica, and Trinidad and Tobago. Potential for other Caribbean countries.
- Executing Agency and contact name: IDB (TL Adriana M. Valencia and Rafael Anta).
- IDB Funding Requested: US$900,000.
- Local counterpart funding, if any: US$195,000.
- Disbursement period (which includes execution period): 4 years.
- Required start date: August 2013.
- Types of consultants: international consulting firm and individual consultants.
- Prepared by Unit: INE/ENE & IFD/CTI, in collaboration with SCL/GDI.
- Unit of Disbursement Responsibility: IDB Headquarters.
- Included in Country Strategy: Yes (CS for Jamaica is under revision). TC included in CPD: Yes. [1]
- GCI-9 Sector Priority: Climate change, Gender equality, Integration, and supporting development in small and vulnerable countries.

II. Objective and Justification. The **general objective** of the TC (or Program) "Building capacity and Regional Integration for the Development of a Generation of Entrepreneurs in Sustainable Energy and Information and Communication Technologies (BRIDGE)" is to aid in meeting the expected future demand for technicians, professionals and entrepreneurs in the Sustainable Energy (SE)[2] and Information and Communication Technology (ICT) sectors, while promoting gender equality and contributing to poverty reduction. The **main components** include: a) Technical and professional capacity baseline analysis; b) Capacity building and institutional strengthening; c) Facilitating the academic and professional partnership between companies and trained individuals; and d) Development of a platform to encourage internships, employment, innovation and entrepreneurship in SE and ICT.

Justification: The demand for energy in the Caribbean region is expected to increase by 3.2% annually in the next two decades. Similarly, the mix of energy sources (which for the most part has been highly fossil fuel dependent) is likely to be diversified to include more RE sources.[3] With a growing demand for sustainable energy, it is expected that there will be a need for trained labor to fulfill the demand for experienced and skilled technicians, professionals and individuals at various levels, capable of designing, developing, installing, operating, advising, maintaining, and managing the aforementioned energy related systems.[4] The demand for sustainable energy in Caribbean economies is matched by the increasing demand for ICTs, mostly broadband connectivity, which is

1 The Country Strategy for Barbados identifies the strengthening of school-to-work transition and technical and vocational training as an IDB Strategic Objective.

2 Sustainable energy includes Energy Efficiency (EE), including production, use, reduction in transmission losses, and conservation, as well as Renewable Energy (RE), including wind, solar, hydro, geothermal, and waste to energy and more.

3 E.g. Due to concerns and raised awareness over high fossil-fuel prices, the uncertainty of available fossil fuel reserves, and to some extent the desire to be more sustainable.

4 The tourism industry is a clear example of a sector that has a growing need for trained individuals in sustainable energy (in tourism agencies and tourism services, such as hotels).

crucial for regional and global integration as well as for increasing competitiveness.[5] For the Caribbean digitalization would represent significant gains[6] for the region's economies. Smart-grids will play a strong role in connecting RE and EE and ICT. Smart grids will aid in modernizing existing electricity grids and in designing future ones, while also helping to address challenges faced by the electricity sector.

Despite the predominance of female students entering tertiary institutions in the Caribbean, females have a disproportionately low representation in the Pure and Applied Sciences and Engineering, unlike the social sciences. The ratio of males to females entering Engineering at the University of the West Indies is 2.74:1 and 3.8:1 at University of Technology in Jamaica.[7] The development of the growing SE sub-sector and ICT sector present a unique opportunity to foster a gender balanced new professional and technical cadre by encouraging both women and men to become trained and enter the labor force in fields of growing demand. In the Caribbean, women continue to struggle with barriers associated with gender segregation in the labor market and wage gaps; in fact, in Barbados and Jamaica, women earn 38% and 52% less than men in the electricity sector, respectively. By incorporating gender considerations as an integral part of the SE and ICT sectors' human capital practices, the project will contribute to increase the participation of women in non-traditional sectors and improve their status relative to men. Improving the labor market prospects of low-income women (frequently single mothers) and men can help reduce poverty in many households in the participating countries. Although Trinidad and Tobago is a relatively high income country compared to other countries in Latin America and the Caribbean, poverty is estimated at 17% of the population[8], with "pockets of poverty" reaching 30% in some areas. The country partly depends on the energy sector[9] and partly on tourism (e.g. Tobago). Tobago has a tourism based economy with higher poverty, income inequality and retail prices, but lower unemployment than Trinidad[10]. In Barbados, the situation is similar to Trinidad and Tobago in that it is also a relatively high income country. However, there is still a 'core' of poverty which still remains and also a group of vulnerable individuals/households living just above the poverty line[11]. In Jamaica the headcount ratio at national poverty line was reported as 17.6% in 2010 and unemployment levels are also high.

The components of this Program will function as demonstrative activities to support needed changes in regulations/policies in SE and ICT. In fact, the Energy Division is preparing Policy Based Loans (PBLs) that are aligned with what is being proposed in the BRIDGE TC.[12] There is also potential to replicate and expand the work in this TC, through the Sustainable Energy for the Eastern Caribbean (SEEC) Program that the IDB is preparing and that has received clearance from the Global Environmental Facility. The SEEC Program has a capacity building component that is very similar to the BRIDGE TC and which will be beneficial for regional training opportunities and for the mobility of technicians and professionals. In addition, given the goal of linking trained individuals with the industry and potential employers, various institutions (i.e., General Electric, Phillips, and Scottish Development International) are interested in partnering with the IDB in providing training opportunities related to the BRIDGE

[5] This was one of the main conclusions from an IDB Caribbean Policy Dialogue on Science, Technology, and Innovation held in 2011.

[6] Recent estimates show that a 10% increase in broadband penetration in developing countries is associated with a 1.38 percentage point increase in economic growth (World Bank, 2010).

[7] Data presented by Professor Patricia A. Martin-DeLeon at the lecture "Increasing the Caribbean's human capital in the STEM (Science, Technology, Engineering, and Mathematics) fields: The pivotal role of mentoring" at the Caribbean Development Bank, in Nassau, Bahamas in 2010.

[8] Other estimates state that the poverty levels are close to 22%.

[9] According to the country strategy with the IDB, 'the non-energy sector of the economy is highly dependent on public sector expenditure and subsidies, which are in turn dependent on the energy sector revenues'.

[10] The World Bank reports that for 2010 the percentage of unemployment for people with a secondary education was 67.8%.

[11] This is according a macroeconomic and social assessment of Barbados (1995-2010), which also states that this group is susceptible to economic and personal shocks which can catapult them into poverty (http://www.gisbarbados.gov.bb/MacroeconomicSocialAssessment-B%27dos.pdf).

[12] Specifically, the Second Generation of Reforms in Support for Sustainable Energy Framework for Barbados (SEFB) I (BA-L1024) has a Component designated to strengthen institutional capabilities for RE and EE, public education and awareness and training. The PBL has targets for a Public Education and Professional Strengthening Plan for Sustainable Energy. Similar PBLs are also expected to be approved for Jamaica in 2013 and Trinidad and Tobago 2014.

Program. The Program will aim for an increased participation of women, creating trust in employers to eventually hire and provide salaries at equal levels as men.

The Program will be carried in close coordination with the University of the West Indies (UWI). Given its experience in regional coordination through its campuses and contributing countries, UWI will be an active participant and contributor to the Program. UWI is an autonomous regional institution supported by and serving 17 English-speaking countries and territories in the Caribbean. The University is located in three countries (Jamaica, Trinidad and Tobago and Barbados) and has a Centre for Hotel and Tourism Management in The Bahamas. UWI has over 800 programs, including some environmental science, energy, ICT, and engineering programs. Other universities such as University of Trinidad and Tobago have expressed interest in taking part in aspects of the Program.

The Program is aligned with the IDB's institutional priorities as outlined in the Ninth General Capital Increase in Resources for the Inter-American Development Bank Report (GCI-9, AB-2764) as it incorporates a gender perspective and it contributes to the goals of a) "supporting development in small and vulnerable countries" which is the case of Barbados, Jamaica and Trinidad and Tobago, b) "supporting micro, small and medium enterprises", and c) "support climate change initiatives, renewable energy and the environment", which includes the 'need to increase the knowledge base, strengthen frameworks and build capacity'. In addition, the Program is in line with the Operational Policy on Gender Equality in Development (GN-2531-10) and Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy (GN-2609-1).

III. Description of Activities and Outputs

Component 1. Baseline analysis (disaggregating, when possible, the information by gender per participating country to address possible gender based constraints), including: a) an assessment of technical and professional capacity for sustainable energy and ICT; b) an assessment of current enrolment and graduation rates at technical and professional tracks in Caribbean academic institutions related to SE and ICT, c) the quantity and type of sustainable energy projects and broadband development plans that the countries would expect to implement in the coming decade; d) estimation of the number of professionals and technicians needed to sustain a diversified energy growth and penetration of ICT in the private sector; e) a list of firms and institutions working on SE and ICT and employment data; f) a list of competencies that firms are lacking from professionals and technicians; and g) assessment of future needs of human resources and technical services arising out of evolving technologies.

Component 2. Capacity building and institutional strengthening (assessment on the institutional strengthening needs of participating institutions and provision of capacity training for professionals, students and teachers). The component will encourage the participation of women in the program, using quotas and incentives. Outcomes will target a percentage of female beneficiaries, as well as low-income participants which will be determined based on the baseline analysis conducted in component 1 (since that analysis will be disaggregated by gender and income, when possible). Subcomponents include: a) participatory qualitative analysis of specific curriculum changes and investment needs that may be required in order to get these institutions ready for the demand for SE and ICT trained individuals and increase accessibility for low-income individuals (students and faculty members will be engaged in the process of curriculum reform); b) design and implement strategies to increase female participation in the labor force in these sectors, including a communication campaign to attract female students, promotion of young women in science awards; c) design and implement university-level support schemes to attract low-income students participation, promotion of awards for excelling low-income individuals; d) training of technical and university teachers in SE and ICT, including gender awareness; e) training of students, promoting mentorship of female students and student participants facing financial hardship; and f) facilitation of national and regional field visits, encouraging female and financially constrained student participation.

Component 3. Academic and professional partnership (enabling environment to allow students to carry out part of their studies in national, regional, or international firms/laboratories, through internship assignments). Component 3 is designed to enhance the participation of females and males in the program, using quotas and incentives. Component 3 will include events that will assist students and firms/laboratories to be partnered in internships or jobs and a provision of a small stipend which will make it possible for the students to conduct their internships. Component 3 also includes workshops/events to facilitate the partnerships and a mentorship program in the workplace for women interns.

Component 4. Innovation Platform (provide a space for employers and students to communicate regarding internship/employment opportunities and foster ICT and SE innovation and entrepreneurship in order to help grow the base of firms that supply innovative SE and ICT-based services and solutions for the Caribbean private sector, to eventually lead to job creation). Component 4 will support the development of a challenge-driven innovation[13] program which will provide the space for identifying entrepreneurial opportunities and ideas for developing ICT and SE solutions under an open innovation context at the national and international level[14]. Component 4 includes designing and implementing a training program on entrepreneurship, challenge-driven innovation, crowdsourcing and crowd-funding and a related virtual platform. The platform aims to be sensitive to gender concerns – i.e., make training accessible to women and men, support gender balanced enterprises and social advancement.

IV. Indicative Budget (in US$)

Component	Description	IDB	Gov't or UWI Funding, in kind	General Electric, in kind	Phillips, in kind	Scottish Development International, partly in kind	Total
1. Baseline gap analysis	Production of baseline report (1 on SE and 1 on ICT).	55,000				5,000	60,000
2. Capacity training program	a) Assessment of institutional strengthening needs; b) Strategies to increase female participation in these sectors; c) Training of technical teachers and professors; d) Training of students	300,000	30,000	52,000	15,000	30,000	427,000
3. Facilitate the academic and professional partnership between companies and trained individuals	Internship placements; career fairs and similar events	170,000	30,000	48,000	15,000	23,000	286,000
4. Innovation Platform	a) Set up of virtual platform to encourage internships and employment and IDEAS and entrepreneurship; b) Training program; c) Pilot platform and advertise use of the platform to the public and businesses	100,000					100,000
Project Management	1 Overall Project Manager	250,000				5,000	255,000
Auditor		10,000					10,000
Contingency		15,000				5,000	20,000
Total		900,000	60,000	100,000	30,000	68,000	1,158,000

V. Executing agency and execution structure

The Executing Agency will be the IDB, through the Energy Division in Washington (INE/ENE) with support of the IDB country offices in Barbados, Jamaica and Trinidad and Tobago. A Project Manager (PM) will be hired under this TC to facilitate the execution of the Program.

Overall Monitoring and Evaluation. 20 months after of Program execution, the IDB will contract an independent consultant to do the final evaluation and audit to evaluate the key Program outcomes. The PM will provide progress

[13] A challenge is a well-formed problem whose solution has value to a company. Challenge Driven Innovation is an innovation framework that accelerates traditional innovation outcomes to help organizations develop and implement actionable solutions to their key opportunities and challenges. (This is done by leveraging open innovation and crowdsourcing along a defined methodology, process, and tools).

[14] There is a possibility that the IDB will support the IDEAS Contest at the University level (this may provide opportunities for Universities in the USA, Latin America, Europe, and Asia to collaborate with Universities in the Caribbean to compete).

reports summarizing results and updates quarterly and submit these to the IDB. There will be a mid-term review when 50% of the funds are disbursed or half of the execution time is accomplished, whichever occurs first. A final progress and monitoring report will be prepared at the completion of the Program period, 90 days from the last disbursement and it will have disaggregated gender information on activities, outputs, outcomes and lessons learned. An ex-post evaluation will be performed to measure the impact in terms of number of trained technicians and professionals, potential new jobs created, % of females trained and in new jobs.

VI. Project Risks and Issues

Careful design, close supervision during the critical stages of the activities (i.e., baseline report, student selection and send off for training, curriculum design), and division of tasks should allow for successfully meeting the main objective and specific objectives of the Program without significant risks. The team will work closely with consultants to ensure that the deliverables are produced according to the planned scheduled.

VII. Environmental and Social Classification

There are no envisioned environmental or social risks associated with this operation. C classification is expected.

Vo. Bo. Original signed
Leandro Alves, INE/ENE