GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Medium-sized Project
TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title:	Strategic platform to promote sustainable energy technology innovation, industrial development and entrepreneurship in Barbados		
Country(ies):	Barbados (with wider regional impacts in the Caribbean)	GEF Project ID:[1]	9648
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	150123
Other Executing Partner(s):	Ministry of Industry, International Business, Commerce and Small Business Development (MIICS), Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)	Submission Date: Resubmission Date:	10/07/2016 02/10/2017
GEF Focal Area(s):	Climate Change	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program:	[if applicable]	Agency Fee ($)	168,766

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	**Trust Fund**	**(in $)**	
		GEF Project Financing	**Co-financing**
CCM-1 Program 1	GEF TF	1,776,484	13,300,000
Total Project Cost		**1,776,484**	**13,300,000**

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: Up-scaling the domestic sustainable energy manufacturing and servicing industry in technology areas with high GHG emission reduction an value creation potential

Project Components	**Financing Type[3]**	**Project Outcomes**	**Project Outputs**	**Trust Fund**	**(in $)**	
					GEF Project Financing	**Co-financing**
1. Industrial value creation and innovation policies	TA	1.1 Empowerment of innovative domestic sustainable energy entrepreneurs through enhanced institutional coordination and targeted support	1.1.1. A strategic platform to promote sustainable energy entrepreneurship, innovation and industrial development in priority technology areas with high GHG emission reduction and value creation potential is fully operational 1.1.2 Based on a	GEF TF	200,000	800,000

[1] Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.
[2] When completing Table A, refer to the excerpts on GEF 6 Results Frameworks for GETF, LDCF and SCCF and CBIT guidelines.
[3] Financing type can be either investment or technical assistance.

			market assessment a strategy to promote entrepreneurship and innovation in technology areas with high GHG emission reduction and value creation potential is adopted and under execution			
		1.2 New market opportunities for innovative domestic sustainable energy entrepreneurs through improved policy and incentive frameworks	1.2.1. Coherent demand and supplier oriented policy proposals to disseminate innovative technology solutions across all relevant sectors (e.g. tourism, agro-business, fishery, manufacturing industry, buildings) are implemented 1.2.2. Proposals to mainstream the identified priority technology areas into existing energy and industrial development programs, incentive frameworks and funding instruments are developed and implemented			
2. Industrial investment and business promotion	INV	2.1 Expanding investments in the domestic sustainable energy manufacturing and servicing industry in key technology areas with high GHG emission reduction and value creation potential	2.1.1. Based on a feasibility study, a sustainable energy industry cluster or technology park is established in partnership with the private sector and investors 2.1.2 Based on existing instruments a revolving private-sector innovation fund is created and provides continued finance and mentoring	GEF TF	1,000,000	10,000,000

			to entrepreneurs and start-ups in the identified priority technology areas			
	TA	2.2 Improved access of sustainable energy entrepreneurs to regional and international know-how and finance	2.2.1 A business and communication platform interlinks sustainable energy entrepreneurs (and other key actors of the innovation chain) systematically with entrepreneurs, investors, venture capitalists, financiers on other islands, the international level and the diaspora 2.2.2 A "go international" initiative managed by CCREEE will contribute to the dissemination of new technology solutions with high GHG emission reduction potential in the Caribbean	GEF TF	200,000	500,000
3. Capacity development and knowledge management	TA	3.1 Enhanced quality, innovation and capacity building frameworks for domestic sustainable energy entrepreneurs	3.1.1 Existing R&D funding streams for public/private applied research institutions will be strengthened in the context of the identified priority technology areas with high GHG emission reduction potential 3.1.2 A framework for certification, qualification and accreditation of sustainable energy products and services is developed and a hub for its implementation is created 3.1.3 More than 200 entrepreneurs are	GEF TF	164,985	1,000,000

			trained through national and regional train the trainer approaches facilitated by CCREEE in partnership with various institutions			
4. Monitoring and Evaluation	TA	4.1. Adequate and systematic monitoring of all project indicators (incl. gender) together with regular and comprehensive assessment of an on-going and / or completed activities to ensure successful project implementation	4.1.1. At least one annual meeting of the Project Steering Committee 4.1.2. Annual progress reports in accordance with the established monitoring plan 4.1.3. Mid-term review and terminal project evaluation conducted.	GEF TF	50,000	200,000
			Subtotal		1,614,985	12,500,000
			Project Management Cost (PMC)[4]	GEFTF	161,499	800,000
			Total Project Cost		**1,776,484**	**13,300,000**

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Recipient Government	Government of Barbados through various programs in different sectors (e.g. energy, education, research and development)	Grants	1,440,000
Private Sector	Private investors and companies	Equity	5,000,000
GEF Agency	Inter-American Development Bank through various national and regional programs	Loans	2,000,000
GEF Agency	UNIDO	Grants	55,000
GEF Agency	UNIDO	In-kind	205,000
Donor Agencies	European Union (through the national and regional envelope of the 11th EDF) Austrian Development Agency (ADA), AECID, GIZ, UNDP	Grants	4,000,000
Intergovernmental Organization	Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)	Grants	600,000
Total Co-financing			13,300,000

[4] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS [a)]

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
UNIDO	GEF TF	Barbados	Climate Change		1,776,484	168,766	1,945,250
Total GEF Resources					1,776,484	168,766	1,945,250

a) Refer to the Fee Policy for GEF Partner Agencies.

E. PROJECT PREPARATION GRANT (PPG)[5]

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $50,000					PPG Agency Fee: $4,750		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in $)		
					PPG (a)	Agency Fee[6] (b)	Total c = a + b
UNIDO	GEF TF	Barbados	Climate Change		50,000	4,750	54,750
Total PPG Amount					50,000	4,750	54,750

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO_{2e} mitigated (include both direct and indirect)	69,850 tCO2 (only direct emissions – the indirect emissions will be further clarified during the PPG phase) *metric tons*

[5] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

[6] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

[7] Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF, SCCF or CBIT.

PART II: PROJECT JUSTIFICATION

1. PROJECT DESCRIPTION

1.1 The global environmental and/or adaptation problems, root causes and barriers

The global-level background:

Globally, most of the developing countries have introduced targets to scale up renewable energy and energy efficiency markets and climate change mitigation throughout the next decades. However, the implementation of these commitments is hindered by a bundle of interrelated barriers, which need to be addressed (e.g. policy and regulatory, technical, financial, human and institutional capacity, knowledge, awareness, investment and business). Weak innovation and absorption capacities of the domestic sustainable energy manufacturing and servicing industry have become a major bottleneck for the further uptake of sustainable energy markets in many developing countries.

Many have introduced demand stimulating sustainable energy policies but have not sufficiently taken into account supplier oriented ones to support the participation of the domestic private sector. This has led to a miss-match between the increasing demands for specialized services and equipment and the limited capacities of the domestic private sector to meet them. Weak maintenance, quality and business models have questioned the sustainability of many decentralized renewable energy projects in developing countries (e.g. mini-grids in Sub-Sahara Africa or SIDS). The absence of innovation, qualification and certification frameworks has hindered the development and introduction of new adapted technology solutions and services with high GHG emission reduction and local value creation potential. The domestic value and job creation effects along the value chain of sustainable energy investments (manufacturing and distribution, project planning and development, construction and installation, operation and maintenance, decommissioning and recycling) remain often very limited. Equipment and services continue to be imported. This is further catalyzed by export-driven donor programs, which lack of business and sustainability models. In contrast to fossil fuel based solutions (e.g. diesel generators), the supply and logistical chains for sustainable energy solutions remain underdeveloped and products and services remain not available.

Transformational policies combine demand and supplier oriented sustainable energy elements smartly together. Demand related policies are instruments that create demand for sustainable energy services and products. This includes sustainable targets and strategies, support instruments and legislation (e.g. feed-in-tariffs, TGC and quotas, project related investment subsidies, grants and loans with reduced interest rates, public procurement, energy efficient building codes). In contrast to demand policies, supplier focused policies are very specific and target either a sector or firm. They can include selected measures regarding investment support, establishing discussion platforms, selective educational curriculums, and mandatory training in a special technology or activity. They range from protective instruments and interventions addressing market failures to creating a stimulating economic framework for selected firms or sectors/technologies (e.g. clusters, technology parks, R&D, grants or tax relief for certain production processes). The understanding of supplier focused policies is broad: from instruments to a process oriented policy engaging in collaboration with the private sector to find the right policy focus and instruments.

In line with its mandate to promote inclusive and sustainable industrial development (ISID), UNIDO is assisting developing countries to strengthen sustainable energy entrepreneurship, innovation and industrial development. With this approach, UNIDO addresses a major growth barrier for sustainable energy markets, reduces negative environmental externalities (GHG, local pollution) and promotes value and job creation simultaneously. In many regions, the sustainable energy sector is considered as a future growth sector, which offers business and employment opportunities particularly for Small and Medium Sized Enterprises (SMEs). SMEs create jobs and are essential for the overall development of the economy, accounting for 99% of the number of businesses worldwide. They show great potential as instruments for economic growth and development through increased productivity, enterprise creation and employment rates.

The national-level context

In the case of Barbados, the envisaged sustainable energy transformation as part of the "green circular economy" vision of the Government is facing a bundle of interrelated barriers, which need to be addressed. Among others, the weak innovation and absorption capacities of the domestic sustainable energy industry are hindering the further uptake of markets for innovative sustainable energy technologies and services with high GHG emission reduction and value creation potential. The local private sector continues to face various barriers and constraints. Although the Government of Barbados (GoB) has implemented many measures to foster innovation and support SMEs, there is still a clear need to develop incentives to promote and strengthen cooperation between the public sector, educational institutions and private sector in order to foster a beneficial environment of entrepreneurship. The domestic sustainable energy industry is currently inhibited by confusing signals on the future of the sustainable energy market:

(1) Lack of policy coherence and strategic steering

The country has introduced a number of policies and regulatory frameworks to promote sustainable energies. However, so far they do not consider sufficiently domestic value creation and the strengthening of industrial capacities in the sector. It is required to identify technology niche areas with high GHG emission reduction and value creation potential and to develop a coherent strategy to promote these priority areas throughout various sectors. There is need to better interlink demand stimulating with supplier oriented support mechanisms and incentive schemes to maximize local benefits along the sustainable energy value chain. The existing governmental sustainable energy promotion programs need a parallel supplier oriented support stream, which creates an enabling business environment for sustainable energy companies and start-ups (e.g. ESCOs, RESCOs, manufacturing, planning, installation and operation). There is also need for improved coherence between energy, industrial, human resource, research, innovation and export policies and support instruments. Cross-sectoral approaches need to facilitate the mainstreaming of sustainable energy solutions into key industries (e.g. agro-business, tourism, fishery, construction, transport).

(2) Missing link between applied research, innovation and entrepreneurship

Innovation and entrepreneurship in the sustainable energy sector are grounded in the application of scientific research. Science and technology is a major catalyst for the creation of innovative products and services. In 2015, Barbados ranked 37 out of 141 countries on the Global Innovation Index. However, Barbados continues to lag in innovation. More has to be done to create the enabling environment necessary to support the commercialisation of Barbadian innovations and the subsequent growth in entrepreneurship and micro, small and medium-sized enterprises. Ranking at number 128 in research and development was cited as a major weakness along with the percentage of graduates in science and technology. The 100th position in the ranking on infrastructure reflects poor scores in online services and e-participation. There is the need for a stronger cooperation between applied science institutions and the privates sector to work on innovative energy technology solutions with high GHG emission reduction and value creation potential. Some funding programs to support the linkage between R&D and technology innovation are in place (e.g. innovation fund) but have a limited focus on sustainable energies.

(3) Lack of human capacities along the sustainable energy innovation chain

Innovation and entrepreneurial activities need a right mix of education and training, research and development, applied science and technology, as well as financing. The promotion of sustainable energy markets requires training of many different stakeholders in different sectors on various skills (e.g. plumbers, architects, engineers, financiers, policy makers, farmers, consultants). In general, there is need for a sound certification, qualification and accreditation framework for sustainable energy services and solutions. Lack of local capacities was reported as a key bottleneck for the implementation of renewable energy and energy efficiency promotion programs in Barbados (e.g. by IADB). The country is well known for its technical, vocational and academic institutions. However, so far there are only a few educational and vocational programs, which target particularly renewable

energy, energy efficiency and related entrepreneurship. There is particular need to create awareness of young professionals on sustainable energy business opportunities.

(4) Lack of cooperation between companies and cluster-building

So far, the degree of cooperation and organization of the sustainable energy industry in Barbados is limited. The industry has started to organize itself through the Barbados Renewable Energy Association (BREA). However, so far no cluster approach as potential driver of enterprise development, internationalization and innovation was introduced or further studied. The approach will become more important in the context of growing domestic and Caribbean sustainable energy markets. Particularly in island environments, SMEs are often unable to reach economies of scale to take advantage of new market opportunities and frequently operate in institutional environments that are not responsive to their needs.

(5) Lack of knowledge-sharing and dissemination

Innovation happens in several entities like private sector industry, academia and universities, technology start-ups and research labs. However, collaboration and knowledge transfer between these entities in Barbados is rare, due to the different nature of drivers for each. There is need to build networks between SMEs, industrial clusters, national ministries, academia, industrial associations (e.g. Barbados Chamber of Commerce and Industry, Barbados Manufacturers Association, Barbados Renewable Energy Association, Barbados Association of Energy Professionals), financing institutions, foundations, the diaspora and venture capitals within Barbados and abroad.

(6) Lack of tailored financing mechanisms to incentivize technology innovation and industrial development

Businesses in Barbados - and particularly small businesses, which lack the access to international credit markets that some larger firms enjoy - find it difficult to access credit, despite the availability of funds in the financial system. Existing financing mechanisms of the Government to promote SMEs do not include sustainable energy as a priority or are only focused on promoting renewable energy and energy efficiency investments rather than industrial up-grading, the creation of start-ups or the promotion of innovative business models, products and services. In this context, also incentives for applied research and sustainable energy technology innovation need to be strengthened. Currently, there are no tailored instruments to systematically promote the cooperation of companies and applied research. In general, there was a perception among interviewees that traditional financial institutions do not provide financing for start-ups or R&D investments unless collaterally is made available (for example in the form of vehicles, land or houses).

(7) Barriers for regional and international market access

There is need for a well-coordinated strategy to promote the development of competitive innovative sustainable energy quality products and services with high GHG emission reduction potential and the ability to compete in the Caribbean and international context. Barbadian companies need a clear comparative advantage and/or serve as a hub for international companies. Such an export strategy has to be closely aligned with the domestic efforts to promote technology innovation, entrepreneurship and a cluster-approach. The example of the Barbadian solar thermal sector has demonstrated that it is possible under specific circumstances and a certain maturity of local productive capacities.

1.2. Baseline scenario and any associated baseline projects

Baseline scenario

Barbados, a country-island of 431 square kilometers and a population of approximately 287,000 (2015), ranks high among Latin America and the Caribbean (LAC) countries in terms of social and economic indicators. Since 1990, Barbados has been ranked in the Human Development Index (HDI) among the top 50 countries in the world. However, as a Small Island Developing State (SIDS), Barbados faces special challenges in relation to its

small size, remoteness from large markets, lack of resources, heavy dependence on imports, a significant trade deficit, and high dependence on a small number of economic sectors, direct investment and remittances inflow. Moreover, the country demonstrates a high dependence on expensive fossil fuel imports and economic key sectors are highly vulnerable to external economic, natural and climate shocks.

Barbados is facing the challenges of energy security, energy affordability and climate resilience simultaneously. Approximately 90% of the electricity produced is generated from fossil fuel oil. This dependency affects the Barbadian economy negatively at the macroeconomic level and at the consumer level. Fuel imports represent a significant expenditure and drain on Barbados' foreign reserves, particularly considering the high degree of volatility in international oil markets. According to the Government of Barbados (GoB), the fuel import bill (approximately 6% of Barbados' GDP) is equivalent to Barbados' expenditures on education. According to the Barbados Statistical Services, the country spent US$427 million in fuel retained imports in 2014.

The dependence on fossil fuels and high electricity prices are jeopardizing the productivity and competitiveness of Barbadian companies and industry. Power generation in Barbados depends highly on heavy fuel oil (HFO) which accounts for 54% of fossil fuel use in the country. HFO powers almost all of the electric utility's generation capacity. Barbados Light and Power (BL&P), a private entity and the sole utility in Barbados, has an installed electric capacity of 239 MW. In cooperation with the utility, the Government is supporting a transformational shift towards more sustainable fuels and technologies such as Liquefied Natural Gas (LNG), renewable energy and energy efficiency.

Without large-scale mainstreaming of renewable energy and energy efficiency solutions into key sectors of the economy (tourism, agro-business, fishery, manufacturing, construction, waste treatment, and transportation), the sustainable development, energy and climate mitigation targets of the country will not be attained. In the power sector, Barbados has opportunities to increase the renewable energy share considerably during the next 10 years. Approximately 104.5 MW of existing BL&P generating capacity is scheduled for retirement over the next ten years and electricity demand is expected to grow by an average of around 1.2% per year. Barbados has significant untapped solar, wind and bioenergy, as well as energy efficiency potential.

The GEF project is fully embedded in the current policy and strategy framework of Barbados. Barbados maintains an open, well-regulated and transparent environment for doing business, with high-quality institutions. The country's government effectiveness ranking in the World Bank's Worldwide Governance Indicators is among the highest for SIDS. However, the economy is currently recovering from the negative impacts of the recent global financial and economic crisis and is undergoing a general transformation. The economy has been almost stagnant over the past two decades, with growth averaging just 1.4% per year between 1995 and 2013. The slowdown in domestic and international economic growth has significantly weakened demand for most domestic businesses. The government's fiscal accounts have deteriorated fairly sharply, and there has been a consequent rapid increase in public-sector debt.

Tourism is the main driver of activity in the services sector, accounting for roughly three-quarters of services exports. The strong contribution of services to the economy is in part a reflection of a decline in the fortunes of agriculture (notably the sugarcane industry) and manufacturing. Despite isolated successes, the Barbadian manufacturing sector failed to move up the value-chain and consequently that sector became increasingly imperiled. Industrial production in Barbados today consists largely of petroleum products, food, and beverages, printing and fabricated metal products. In most instances, these industries largely supply the domestic market, but some firms also sell into the export market. Similarly, sugar has contracted by almost six per cent per year over the period as the industry failed to find a viable long-term strategy with the cessation of European Union's price support mechanism.

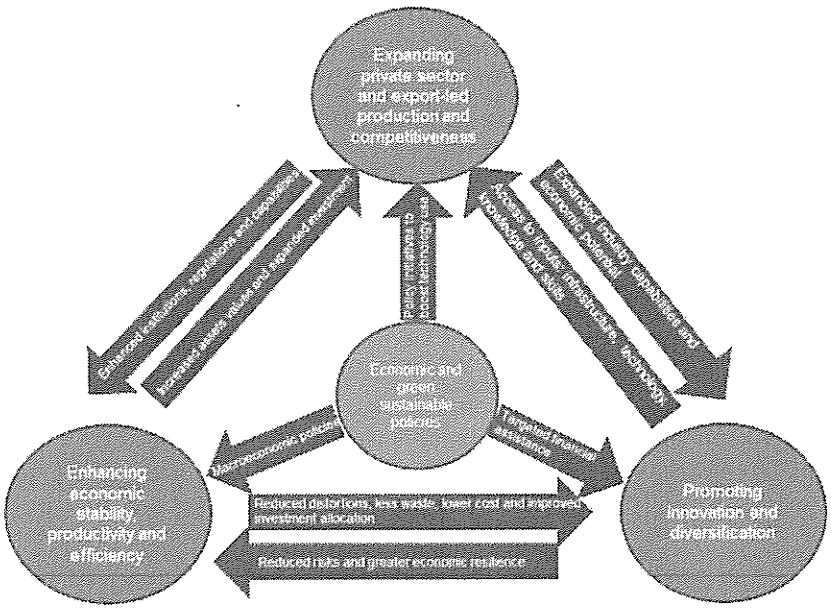
The private sector has traditionally been the main source of jobs in Barbados. At the end of 2013 approximately 93% of the labor force, or 126,200 people, worked in the private sector, according to the Barbados Statistical Service (BSS). Most firms operating in the domestic market can be classified as small—that is, having fewer than

20 employees. Barbados faces a high rate of unemployment. The private sector employs around 93% of the population in Barbados, and is dominated by the services sector, which contributed nearly 83% of GDP in 2012. Of a total labor force of 142,900, unemployment reached 11.7% in 2013, up from 7.4% in 2007, and is a particular issue among those workers aged 25-44 years.

As a reaction, the Government has introduced a bundle of forward-looking polices which aim to address the economic, social and environmental challenges simultaneously and seek a further diversification of the export base and competitiveness of the economy. In the National Strategic Plan 2005-2025, the Government has set the goal of becoming a "green circular economy" and the "most environmentally advanced green country in Latin America and the Caribbean". The adopted Medium Term Growth and Development Strategy 2013-2020 targets a return of the Barbadian economy to its historic growth rate of between 3.0 by 2018 and to 4.0 per cent by 2020.

The macro-growth and development model of the strategy combines targeted interventions to expand private sector and export-led production and competitiveness, to promote innovation and diversification and to enhance economic stability, productivity and efficiency. The model lays special emphasis on diversifying the economy through the strengthening of small and medium sized (SMEs) manufacturing and servicing companies and promoting technology innovation. Apart from tourism, international business, financial services, alcoholic beverages and education, the Private Sector Assessment of Barbados (2013) has identified "green energy" as promising growth sector.

Figure 1: Macro-Growth and development model of Barbados



The energy sector plays an important role in the pathway towards a green circular economy. In the Business as Usual (BAU) scenario the uptake of renewable energy and energy efficiency investments in Barbados will continue to be hindered by the weak innovation and productive capacity of the local sustainable energy industry. Under this scenario, the attainment of the set sustainable energy climate and green economy objectives would remain very uncertain. Moreover, the Barbadian industry would hardly take advantage of the growing sustainable energy markets in the Caribbean Community (CARICOM).

In line with the growth policy and at the backdrop of several oil price peaks and fluctuations since 2008, Barbados has increased also its efforts through the introduction of enabling sustainable energy policies and regulatory frameworks. The government's priorities in the energy sector, according to the latest draft national sustainable energy policy, are to reduce electricity prices, increase energy security, increase the use of cleaner fuels and reduce negative environmental impacts. Barbados has increased its efforts to promote renewable energy and energy efficiency. The Nationally Determined Contribution (NDC) includes targets for renewable energy to contribute 65% of total peak electrical demand by 2030 and a 22% reduction in electricity consumption by that date compared to a business as usual (BAU) scenario in 2029. Barbados has adopted an economy-wide GHG reduction objective of 23% by 2030 compared with the baseline year 2008. In the reference year, energy accounted to around 72% of the overall GHG emissions.

In parallel, the sustainable energy investments in the Caribbean Community (CARICOM) are growing. CARICOM has taken major steps to mainstream renewable energy and energy efficiency into its regional policies, programs and activities. The Forty-First Special Meeting of the Council for Trade and Economic Development (COTED) on Energy held in March 2013 approved the CARICOM Energy Policy and the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS). The latter aims to increase the renewable energy penetration in the electricity sector to 20% by 2017, 28% by 2022 and 47% by 2027. The CARICOM efforts resulted also in the creation of the UNIDO supported Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) in October 2015 with its Secretariat in Bridgetown, Barbados.

The GoB has introduced a number of policies, regulatory frameworks and incentives to promote sustainable energies. Significant tax incentives for RE&EE were introduced under the Income Tax Amendment (2013). A considerable pull factor for the PV sector was the introduction of the renewable energy rider by the national utility. It allows a limited number of privately owned renewable energy systems with a maximum capacity of 150 kW to inject into the grid. Based on the results of a commissioned renewable energy intermittent penetration study the Fair Trading Commission has recently recommended to raise the maximum limit of 9 MW of the total installed electric capacity to 20 MW.

However, the so far introduced RE&EE support policies and incentives by the Government have not led to economies of scales in terms of investment, local industrial value creation and innovation. So far, the 10 MW PV plant at Trents, St Lucy, it the only utility-scale project in place. The progress regarding the implementation of energy efficiency measures across various key sectors is moderate. Without a considerable strengthening of the domestic sustainable energy manufacturing and servicing industry, the GoB will not attain the set sustainable energy, climate and sustainable development targets. This would jeopardize the vision of the Government to transform into a green circular economy. The local value and job creation effects along the value chain of sustainable energy investments would remain limited. Equipment and services would continue to be imported. Exports would remain limited to the small-scale solar-thermal household sector. To move the agenda forward there is need for a critical mass of innovative export-oriented entrepreneurs, companies and private sector groups.

The existing domestic solar-thermal industry is at crossroads. Due to the small market size and limited export and innovation capacities, the turnover of the industry remains limited and mainly origins from the stagnating small-scale solar-thermal household sector. The market of medium-scale and more complex heating and/or cooling systems for large-scale consumers in the private and public sector (e.g. tourism, beverage and food processing sector, health care, airport, office buildings) is currently untapped. Since the 1970s the country succeeded in establishing an export-oriented solar-thermal manufacturing and servicing industry. Barbados has been a Caribbean leader in the manufacturing, sale, and use of solar water heaters. It is estimated that solar water heaters have reached a penetration of 60% in high-and middle-income households.

The success story of the solar-thermal industry has not been replicated in other technology areas. For a long time, the progress has been limited to a few small solar PV and wind systems installed by households, and experimental systems located at Government facilities. Since the recent introduction of demand side stimulating programs and

incentives the investments in RE&EE are growing (e.g. renewable energy rider, smart energy fund). It is estimated that the total installed capacity of solar PV lies currently between 8 and 13 MW. There are more than 710 solar-PV rooftop installations that are grid-tied with more than 100 applications for grid connection pending.

The increasing sustainable energy investments have not significantly translated in the creation of new industrial capacities so far. There are efforts to base a PV assembling company in Barbados. Some progress has been achieved in the tourism sector regarding the penetration of electric cars and the building up of local PV charging stations. Mega Power is a local company that found a niche in the sustainable energy sector. The company started to sell electric vehicles in the island and to build its own PV charging stations across the island. So far, it has managed to sell 120 electric vehicles to individuals, government institutions and private sector in Barbados and is aiming to start its operations in other Caribbean islands.

A more recent case study comes from the Caribbean LED Lighting, a company that started operating in 2011 to meet the growing demand for efficient lighting by consumers due to the high electricity cost. The company exports to over 14 countries and has a growing network of distributors across the Caribbean. The company designs and manufactures bulbs, tubes, flood lights, ceiling fixtures and flat panels specially adapted to the local needs. During the 1980's and early 1990's, the national utility, purchased electricity produced from bagasse during the sugar crop season by a number of local factories acting as industrial prosumers of renewable energy. However, these arrangements are not in existence anymore.

Baseline projects

The GEF project is fully in line with the policy and strategy framework of the Government. It will complement the existing primarily demand-side oriented renewable energy and energy efficiency programs through targeted supplier-side support. The GEF project complements and creates strong links to the following ongoing sustainable energy support programs:

- To promote entrepreneurship and the creation of SMEs across key sectors the Government has created various financing instruments such as the Enterprise Growth Fund, the Agricultural Development Fund, the Export Promotion and Marketing Fund, the Innovation Fund, the Industrial Investment and Employment Fund, the Small Hotel Fund, the Tourism Loan Fund and the Special Technical Assistance Programme, the Smart Energy Fund. However, in spite of the availability of funds from these windows, more than 30% of firms surveyed indicated that access to finance was a "major" or "very major" obstacle to doing business. Moreover, all of these funds do not specifically promote SMEs in the sustainable energy sector.

- Since 2012, the University of the West Indies developed a Masters' degree program in renewable energy management. Other post-secondary institutions such as the University of West Indies (Cave Hill), the Samuel Jackman Prescod Polytechnic, the Barbados Community College as well as private companies provide training in various aspects of renewable energy such as solar-PV technology design and installation, and energy audits.

- The Programmatic Energy Policy-Based Loan (PBL) from the Inter-American Development Bank (IDB) has served as one of the primary instruments to create the impetus for regulatory, policy, and legislative reforms necessary for the promotion of sustainable energy. Around USD 115 million of loans were signed with the Government for the implementation of the Sustainable Energy Framework for Barbados (SEFB I&II). Synergies exist also to the IADB supported BRIDGE program which is focused on developing human capital to meet the expected future demand for technicians, professionals and entrepreneurs in the sustainable energy and information and communication technology sectors.

- In 2011, a Smart Energy Fund was established and supports the mainstreaming of sustainable energy solutions into industries and SMEs (supported by loans and grants of IADB). Since 2014, the Public

Sector Smart Energy Conservation Programme (PSSEP) promotes RE&EE investments in public buildings and lighting (blending mechanism financed through the IADB and EU). PSSEP funds were also used to finance capacity building and public information campaigns to raise citizens' awareness about renewable energies and energy conservation.

- UNDP and the EU have recently launched programs for the promotion of solar photovoltaic systems for public buildings and schools (through GEF-5 and the EU National Indicative Programme 2014 to 2020). The IADB is currently preparing a USD 24 million loan program for the deployment of cleaner fuels (focus on Liquefied Natural Gas (LNG) to replace HFO for power generation). GIZ is supporting in the area of electric mobility.

- Barbados is also benefiting from a number of regional initiatives such as the Caribbean Hotel Energy Efficiency Action Programme, the Eastern Caribbean Energy Labelling Project (ECELP) or the GIZ-REEETA Programme. In addition to its national activities, the EU will support the Caribbean region with a EUR 54 million support program from the 11th EDF. This will include support through the EU Electrification Financing Initiative ElectriFI, the Caribbean Investment Facility, as well as the Technical Assistance Program for Sustainable Energy in the Caribbean (TAPSEC) to support the C-SERMS implementation process and CCREEE.

- Links to the Partnership for Action on Green Economy (PAGE) will be created. PAGE represents a mechanism to coordinate UN action on green economy. Bringing together the expertise of five UN agencies - UNEP, ILO, UNDP, UNIDO and UNITAR - and working closely with national governments, PAGE offers a comprehensive and coordinated package of technical assistance and capacity building services. Barbados will join the partnership in the course of 2017. First financial resources are available and a focal point was appointed in the Ministry of Environment and Drainage.

- The Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), which was established with technical support of UNIDO and financial assistance of the Austrian Development Agency (ADA) and the Government of Spain. Around USD 2,5 million are available for the first operational phase of the center (2015 to 2019). The center is part of a partnership with SIDS DOCK, which aims at the creation of a network of regional sustainable energy centers for SIDS in Africa, Pacific, Caribbean and Indian Ocean.[8] ECREEE, based in Cape Verde, is already operating in West Africa and the Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE) is currently establishing its offices in Tonga. CCREEE is also part of the Global Network of Regional Sustainable Energy Centers.[9]

1.3. Proposed alternative scenario

The project is in line with the GEF´s Climate Change Mitigation Focal Area Strategy under the GEF-6 Programming Directions and the Private Sector Strategy, as well as with UNIDO´s core mandate to promote inclusive and sustainable industrial development (ISID). The GEF-6 private sector engagement approach aims at supporting private or public energy service companies and SMEs to promote renewable energy and energy efficiency. It foresees also the identification of innovative business models, which can be adopted by the private sector to facilitate the up-scaling of low carbon energy options.

Project Approach

The PIF was designed based on first stakeholder consultations and interviews with key actors in the public and private sector in Barbados. During the meetings, the weak capacities of the domestic sustainable energy manufacturing and servicing industry were identified as a key barrier for the further uptake of sustainable energy

[8] https://sustainabledevelopment.un.org/partnership/?p=7639
[9] www.se4allnetwork.org

markets and investments and interrelated GHG emission reductions. A strengthening of the domestic industry in technology areas with high GHG emission reduction potential is perceived as an important contribution to the attainment of the climate change mitigation targets in the NDC. In this context, the Ministry of Industry, International Business, Commerce and Small Business Development (MIICS) proposed to establish a strategic platform to promote sustainable energy technology innovation, industrial development and entrepreneurship.

The GEF project will promote domestic sustainable energy entrepreneurs and industry by: (a) identifying priority technology areas with high GHG emission reduction and value creation potential in Barbados and the Caribbean, (b) establishing a strategic platform to promote coherent demand-oriented and supplier-oriented policies and support instruments, (c) establishing a sustainable energy cluster to attract investments and harness productivity gains, (d) establishing a business and communication platform to promote technology solutions with high GHG emission reduction potential in the Caribbean, d.) creating a framework and hub for qualification, certification and accreditation of equipment and services, and e.) creating stronger links between applied research instruments and sustainable energy entrepreneurs.

The project will mainly focus on improving the business environment for the domestic industry. Through this approach, the project will, with a relatively small GEF grant, catalyse investment to support and accelerate sustainable energy industrial development, entrepreneurship and technology innovation. This will lead to increase GHG emission reduction in Barbados and the entire Caribbean. The project will draw lessons learned from the GEF UNIDO Cleantech Programme for SMEs when it comes to the promotion of innovative clean tech start-ups and business ideas. However, the GEF project will go beyond the promotion of start-ups and will focus on classic elements of industrial development, cluster-building and value chain development. The project and the strategic platform will adopt an inter-disciplinary approach involving national Ministries and institutions, academia and research centres, industrial associations, financing institutions, foundations, venture capitalists and utilities.

The GEF project is being developed under the umbrella of a joint declaration, which was signed by the GoB and UNIDO at the margins of the Third International Conference on Small Island Developing States, held from 1 to 4 September 2014 in Apia, Samoa. The declaration agreed on UNIDO technical assistance for the operationalization of the Barbadian vision to become a green circular economy. The joint declaration is explicitly mentioned in the NDC of Barbados as an important instrument of implementation. The GEF project is also part of a strategic partnership with the Government on the Caribbean Centre for Renewable Energy and Energy Efficiency (CREEEE) in Bridgetown, Barbados.[10] The strategic platform to be established under the GEF project will take advantage of the regional knowledge management, capacity building and business promotion activities of the center.

Project Description

The project has three substantive components:

Component 1: Industrial value creation and innovation policies

The objective of this component is to introduce a coherent policy approach which combines the existing demand-stimulating sustainable energy policies and instruments with newly introduced supplier oriented ones. To steer and implement the envisaged holistic approach, a strategic platform to promote sustainable energy innovation, industrial development and entrepreneurship in Barbados will be created. Instead of establishing a centralized brick-and-mortar center, the platform will act as a connector and facilitator between key stakeholders and enablers. The platform will include selected policy makers and experts from the public and private sector and will organize regular steering committee meetings. The platform will facilitate the implementation of the envisaged activities across the various components of the GEF project. During the PPG phase and under the leadership of MIICS, the detailed composition, functions and activities of the platform will be determined in a consultative process involving all concerned public and private key stakeholders.

[10] CCREEE website: www.ccreee.org

Based on a market assessment, to be undertaken during the PPG phase, a national strategy to promote innovative sustainable energy products and services with high GHG emission reduction and value creation potential will be developed and adopted. A SWOT analysis of the existing sustainable energy industry will be undertaken as part of that process. The assessment will identify niche markets for the Barbadian sustainable energy industry or related industry with the potential for spin-offs. It will identify technology areas with high GHG emission reduction potential currently not available or not used widely in the market of Barbados and the wider Caribbean. The cluster design will allow an expansion to other environmental technologies. The following priority areas were identified in consultation with public and private key stakeholders (e.g. industry associations, companies) during the preparatory phase:

- Up-grading the solar-thermal industry towards more complex heating and cooling systems for bigger energy consumers (e.g. tourism, office buildings, food and beverage sector);
- Solar PV assembling, manufacturing, installation and maintenance;
- Energy efficient building and lighting solutions;
- Electric mobility powered by renewable energy;
- Energy management standards for small-scale industry and SMEs;
- Organic waste to energy (e.g. sugar bagasse, distilleries);
- Adapted solutions for small-scale industries (e.g. agro-processing, fisheries, tourism)

Already in the Sustainable Energy Framework for Barbados (SEFB) a number of renewable energy technologies (e.g. solar thermal, wind power at utility scale, biomass cogeneration at utility scale, small scale PV systems for households, municipal solid waste to energy) and energy efficiency solutions (e.g. efficient lighting - ranging from CFLs to LED Street lights for public use, power monitors, premium efficiency motors, variable frequency drives, efficient chillers, all air conditioning A/C technologies, LCD monitors) were identified as viable and feasible options. The framework revealed that many of them are not available sufficiently in the domestic market.

The priority technology areas, identified in the market assessment, with high potential for GHG emission reduction and local value creation will be promoted systematically through existing demand stimulating grant and loan programs (e.g. IADB, EU) across all relevant sectors (e.g. agro-processing, tourism, fishery, small-scale industries and SMEs). At the same time a strong supplier-side support stream will be introduced. Under component 2, an innovation fund to be created under Component 2 will provide incentives for innovative sustainable energy business start-ups and entrepreneurs to get active or expand to the defined priority technology areas. This will be further strengthened through the establishment of a technology cluster/park under Component 2. Simultaneously, CCREEE will facilitate the dissemination of these technologies in the Caribbean market (not to be funded through the GEF grant).

Simultaneously, Component 3 will facilitate a stronger cooperation between entrepreneurs, applied research and educational institutions and contribute to the establishment of a qualification and certification framework for sustainable energy products and services. The activity will be undertaken in close partnership with CCREEE and includes the creation of a hub for quality testing and certification of sustainable energy equipment and services for the Caribbean. The support of existing funding instruments for national/regional sustainable energy applied research programs on the defined priority technology areas is up-scaled in partnership with the financial sector (R&D will be not funded through the GEF grant).

Component 2: Investment and business promotion

Under supervision of the strategic platform, an enabling incentive framework to attract investments into sustainable energy servicing and manufacturing businesses and to enhance opportunities for innovative Barbadian technologies and services with high potential for GHG emission reduction and value creation will be established. The activity will be based on the identified priority technology areas in the market assessment.

A feasibility study on a sustainable energy industry cluster and/or technology park will be developed and its creation will be facilitated in partnership with the Government and the private sector in Barbados and abroad. A set of incentives to participate in the cluster will be established by the GoB. Opportunities to promote Barbadian technology and expertise under one label will be harnessed and cross-linked to marketing concepts in other growth sectors (e.g. sustainable tourism, agricultural products). Cluster initiatives generally are involved in a broad range of activities, e.g., supply-chain development, market intelligence, incubator services, attraction of foreign direct investment, management training, joint R&D projects, marketing of the region, and setting technical standards.

Clusters are a sectoral and geographical concentration of companies or individual producers that supply a similar range of goods or services and face similar threats and opportunities. Clusters are a voluntary alliance for companies focused on the promotion of exports and services of its members. By combining their knowledge, financial resources and contacts, they can improve their export potential and reduce costs and risks. Clusters may use the same suppliers of raw materials, cater to the same markets and clients, share the same territory, infrastructure and services, as well as face common challenges. Cluster building is a tool to upgrade productive capacities, increase access to international markets and generate innovation spin-offs. Such clusters can be strengthened through the establishment of export consortia (EC) and origin consortia (OC) programs. Such a cluster approach in Barbados will require close cooperation between local and national institutions, private sector associations, research and educational institutions.

To complement the cluster approach and address the financial and capacity barriers of sustainable energy entrepreneurs, a revolving private-sector innovation fund will be created. The fund will build on existing support instruments for SMEs. Based on the identified priority technology areas in the market assessment, the innovation fund will provide finance and mentoring for industrial up-grading, innovative start-ups, products and partnerships. It will be created in close cooperation with banks (e.g. commercial banks, IADB, CDB), industrials and investors. The range of support services of the fund will comprise grant schemes, loan facilities, mixed grant/loan arrangements, as well as mentoring.

In this context, synergies to the CTI Private Financing Advisory Network (PFAN) will be created. PFAN provides finance and mentoring for the development of clean energy business plans, investment pitch, and growth strategy, significantly enhancing the possibility of financial closure. PFAN is hosted by UNIDO and undertakes regular call for proposals. Simultaneously, the demand for the identified priority technology solutions will be stimulated through the existing demand-side oriented grant and loan programs (e.g. IADB, EU) across all relevant productive sectors (e.g. agro-processing, tourism, fishery, small-scale industries and SMEs). A communication and business platform, managed by CCREEE, will be created. It will interlink Barbadian sustainable energy entrepreneurs (and other key actors of the innovation chain) systematically with entrepreneurs, investors, venture capitalists, financiers from other islands, the international level and the diaspora. This should encourage the establishment of joint ventures, foreign investments as well as business-to-business partnerships on the identified priority technologies with high GHG and value creation potential. This will also include exchange with other SIDS in the Pacific and Africa. UNIDO will create strong linkages to the activities and regular investment forums organized by the CTI Private Financing Advisory Network (PFAN).

Linked to this platform, the GoB in cooperation with national/regional business and export promotion agencies and CCREEE will launch a "go international" initiative which will support companies and promising start-ups to take advantage of the growing sustainable energy market opportunities in the Caribbean. This activity will be funded through co-finance and not the GEF grant. The initiative will contribute also to make new technologies with high GHG emission reduction potential in the Caribbean market available. It goes also hand in hand with the intention to place Barbados as a hub for quality testing and certification of sustainable energy equipment and services for the Caribbean under Component 3. The hosting of the center in Bridgetown is part of the internationalization strategy of the Government.

Component 3: Capacity development and knowledge management

In close coordination with the activities under the other two components, the strategic platform will undertake concrete steps to strengthen the qualification, certification and accreditation framework for sustainable energy products and services. Qualification and certification are important pre-conditions for the functioning of sustainable energy markets. Lack of human and entrepreneurial capacities and quality issues have been a significant barriers for the commercialization of sustainable energy solutions in Barbados and the Caribbean. A review of the existing framework, particularly in the light of the identified priority technologies in the market assessment, will be undertaken and a strategy to establish Barbados as a hub for quality testing and certification in the Caribbean will be developed. This will be undertaken in close partnership with the Barbados National Standard Institute (BNSI), the private sector, CCREEE and the CARICOM Regional Organization for Standards and Quality (CROSQ), based in Bridgetown, Barbados.

In line with the Barbadian Human Resource Development Strategy 2011-2016 and based on the established qualification and certification framework a capacity building program for the promotion of sustainable energy entrepreneurship will be developed and its implementation facilitated. It will be designed and implemented in close partnership with post-secondary institutions such as the University of West Indies (Cave Hill), the Samuel Jackman Prescod Polytechnic, the Barbados Community College, and other private training institutions and companies. To increase its impact, the national program will be closely linked with the capacity building programs on regional level, coordinated by CCREEE. The creation of a CARICOM train-the-trainer networks will be facilitated in cooperation with CCREEE and UWI. Through the networks, more than 200 entrepreneurs will be trained and certified. Stronger linkages of training institutions with government agencies that oversee various aspects of sustainable energy technology development such as DoET, the Barbados National Standard Institute (BNSI), Fair Trade Commission (FTC), Government Electrical Engineering Department (GEED) and Barbados Light and Power (BL&P) will be created. Cooperation with PCREEE in Tonga and ECREEE in Cape Verde on the development of adapted sustainable energy island solutions will be initiated.

In addition, the GEF project will strengthen the innovation chain with regard to the identified priority technology areas in the market assessment. The approach is based on the assumption that innovation and entrepreneurial activities need a right mix of education and training, research and development, applied science and technology, as well as financing. This is also in line with the Medium-Term Growth and Development Strategy which identified a general lack of intensity and continuity in R&D in the areas of enterprise development, product development and ideas development. Existing R&D funding streams for public/private applied research institutions will be strengthened in the context of the identified priority technology areas with high GHG emission reduction potential. These activities will be closely linked to the sustainable energy cluster to be established under Component 2 and the efforts of the private sector with regard to the commercialisation of the technology solutions. The activity is also linked to the establishment of the sustainable energy qualification and certification framework under Component 3. These R&E activities will be not funded by the GEF grant but through co-funding. Synergies to the regional R&D network promotion activities of CCREEE and the University of West Indies (UWI) will be created.

1.4. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing;

The suggested GEF project complements the mainly demand-side oriented existing and planned sustainable energy programs through supplier-side support. Without the intervention of the GEF, these supplier-side activities will be not implemented and the lack of domestic entrepreneurship and industrial capacity will remain a major barrier for the up-take of the sustainable energy markets and the green economy vision of Barbados.

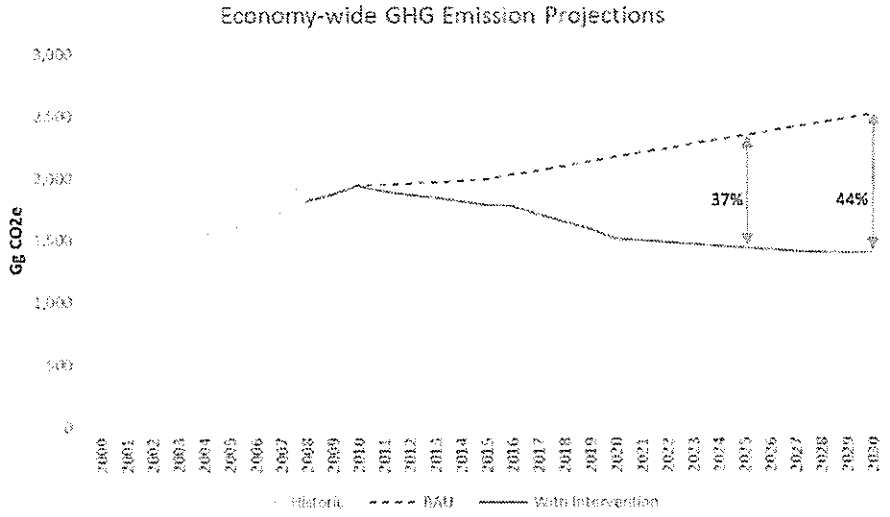
First discussions were already initiated with the European Union (11th EDF), IADB, the Austrian Development Agency (ADA), AECID, GIZ, the CARICOM Secretariat and CCREEE. UNIDO will ensure strong synergies with the work programs of CCREEE. If necessary, the activities will be modified in order to incorporate missing features of this proposed project, i.e., the concepts of innovation and value creation in the sustainable energy value

chain in Barbados. The promotion of innovation in the sustainable energy value chain will be carried out through the removal of barriers associated with the lack of support policies, regulations and institutional mechanisms, limited capacity and knowledge about mentoring entrepreneurs, development of business plans and research/adaption of technologies.

1.5. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The project approach is deemed to be most cost-effective to ensure sustainable results. The combination of funding from the GEF and support from the government and the private sector will leverage substantial investment in "green and clean" technologies not only during the project's period of implementation but also after the completion of the project as an indirect result by having created a wider portfolio of sustainable energy products and business models. In assessment of Barbados' low carbon growth path and given the specific focus of the project on promoting innovations in the sustainable energy value chain, a ten year horizon has been selected for estimating the indirect savings of GHGs. Based on Barbados's Intended Nationally Determined Contribution to the UNFCCC two scenarios of GHG emissions are considered by 2026. GHG emissions in the case of "business – as – usual" scenario will reach approximately 2,400 Mt CO2 eq. In the scenario "with interventions", that includes measures contributing to the reduction of GHG emissions planned by different mitigation measures on the energy and waste sectors, the emissions are estimated at 1,450 Mt CO2 eq. by 2026.

Figure 2: Projected BAU and 'With Intervention' GHG emission scenarios for Barbados (source: Barbados INDC, September 2016)



The detailed GHG emission reductions facilitated by the GEF project in Barbados and the wider Caribbean will be further studied during the PPG phase. Based on the lessons learned of the GEF UNIDO Cleantech Programme for SMEs, a methodology to project GHG reductions from the expansion of sustainable energy manufacturing and servicing will be developed and applied. It is forecasted that on a very conservative basis, this project could contribute 1% to the difference between the two scenarios identified in Barbados INDC as the project is expected to contribute directly and indirectly to the measures proposed in the document to lower the GHG emissions. Under this scenario, it is assumed that the project's cumulative direct GHG emission reductions would amount to approximately 69,850 tCO2. This translates to a unit abatement cost (UAC) of about US$ 28.6/ton CO2 (i.e., GEF$ per ton CO2). This measure of the project's cost effectiveness will be tracked using a monitoring and evaluation system that the proposed project will develop during the PPG phase. This UAC figure will be regularly re-evaluated and updated during the project implementation particularly in quantifying the potential energy savings from projected replications, and in coming up with the CO2 emission reduction estimates. Since the project will have also impacts in the wider Caribbean (exports of Barbadian products and services), a methodology for tracking the regional GHG emission reductions will be developed during the PPG phase.

1.6. Innovation, sustainability and potential for scaling up

The GEF project is fully in line with the mandate of UNIDO to promote inclusive and sustainable industrial development and SDG-9 on industry, innovation and infrastructure. The project builds on supportive GoB's strategies to promote economy modernization, youth employment, innovation of products and services, capacity building of its work force and regional integration. The focus and design of the project is innovative since -so far- there are not many GEF projects, which particularly focus on the creation and/or up-grading of the domestic sustainable energy servicing and manufacturing industry. During the PPG phase a sustainability strategy for the project will be developed. Under the capacity development component a train-the-trainer approach will be applied. It is envisaged that the Ministry in partnership with CCREEE will take lead in sustaining the strategic platform after the completion of the present GEF project. Under the established joint declaration between UNIDO and the GoB it is planned to extend the platform also to other climate resilient technologies in a second step. In terms of scaling-up, as the sustainable market in Barbados is limited, the proposed GEF project will work closely with the CCREEE as a vehicle to promote access of SMEs to the wider Caribbean market. Moreover, it is planned that through the CCREEE framework the project will be replicated in other Caribbean countries.

2. Stakeholders: Will project design include the participation of relevant stakeholders from civil society organizations (yes ☒ /no☐) and indigenous peoples (yes ☐ /no☒)? If yes, identify key stakeholders and briefly describe how they will be engaged in project preparation.

UNIDO is the implementing agency of the project, and is accountable for the GEF grant, and other funding resources to be provided by the Government, donors and private sector. UNIDO and MIICS undertook first stakeholder consultations during the development process of the PIF. The results from these meetings were incorporated in this document. The main beneficiaries of this project are the SMEs, business associations and entrepreneurs.

Stakeholders	Roles and Responsibilities in Project Preparation
Ministry of Industry, International Business, Commerce and Small Business Development (MIICS)	MIICS will host the project management unit and will be an important executing partner for the project. A national project coordinator will be located in the unit. The coordinator will be assisted by a senior sustainable energy expert to be seconded by DoET to CCREEE. MIICS will chair the Steering Committee (SC) of the strategic platform and lead the coordination with all relevant public and private stakeholders. It is envisaged that the Ministry in partnership with CCREEE will take lead in sustaining and expanding the platform after the completion of the present project. MIICS and other governmental bodies will not only provide technical assistance and overall logistical support for the project management unit, but also provide cash inputs for the project activities.
Energy and Telecommunications Division at Office of the Prime Minister (DoET)	The DoET is the lead executing agency for most of the donor financed renewable energy and energy efficiency promotion programs (e.g. IADB, EU, and UNDP). Significant synergies are expected between the existing demand-side oriented support programs and the supplier side oriented GEF Project. DoET is also part of the CCREEE Steering Committee.
Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)	CCREEE will be an important executing partner and co-financier of the GEF project. Synergies to the regional capacity development, knowledge management and business promotion activities will be created. CCREEE will provide a vehicle for Barbadian sustainable energy entrepreneurs to access new markets in the Caribbean. The GEF project will benefit also

	through co-funding provided by CCREEE.
Civil Society Organizations (CSOs), in particular Local Private Sector Associations: - Barbados Chamber of Commerce and Industry - Barbados Manufacturers Association - Barbados Hotel and Tourism Association - Barbados Small Business Association - Barbados Renewable Energy Association	Outreach to and involvement of target sectors and industries.
Relevant Ministries and National Institutions - Ministry of Environment and Drainage - Ministry of Finance and Economic Affairs - Ministry of Agriculture, Food, Fisheries and Water Resource Management	Political, substantive and financial (cash /in kind) support. In cooperation with the Ministry of Environment a potential extension of the project to other climate resilient technology areas will be studied.
Academic institutions, schools and training institutes - University of the West Indies - Cave Hill - Samuel Jackman Prescod Polytechnic - Barbados Community College - AEE-Intec and other international institutions	Execution of capacity building and research activities, knowledge accumulation and dissemination management; active participation in the meetings of the strategic partnership; providing inputs on key documents such as the capacity needs assessment and strategy;
Private sector institutions and companies, investors	Selected private companies and investors will be important executing partners in the context of cluster building and formation of business-to-business technology partnerships (e.g. solar-thermal sector). First indications of interest were received by SOLID concerning a potential business partnership on solar thermal heating and cooling.
Gender groups (particularly entrepreneurs)	Gender group(s) will be represented in the meetings of the strategic partnership and project steering committee.

3. Gender Equality and Women's Empowerment. *Are issues on gender equality and women's empowerment taken into account? (yes ☒ /no☐). If yes, briefly describe how it will be mainstreamed into project preparation (e.g. gender analysis), taking into account the differences, needs, roles and priorities of women and men.*

In general, Barbados has attempted to address many of the gender barriers that exist to doing business. Progress in relation to the gender gap can be assessed using the WEF's Global Gender Gap Report. Almost 44% of firms surveyed indicated that they had a woman participating in ownership, putting Barbados roughly in the middle of the group of comparator countries, and a similar story emerges with regard to the proportion of permanent female full-time workers. Barbados also scored highly in terms of the proportion of female top managers in its firms. The project aims to ensure that the benefits of the project will be accessible to both men and women. Special efforts will be made to involve gender groups as consultants, participants and entrepreneurs in all relevant activities of the strategic platform (e.g. capacity building, policies).

A gender analysis will be done during the PPG phase. This will include in-depth consultation of women in order to tailor the different project components to their needs. Women entrepreneurs will be especially targeted during project preparation to better understand the challenges they faced and the success factors that led them to succeed. The outcome of this consultation will be integrated in the project design with the objective to support gender mainstreaming. The Institute for Gender and Development Studies (IGDS), hosted at University of the West Indies - Cave Hill Campus, will be thoroughly consulted during the project preparation phase. The origins of this

institute remount to 1993 when it started to study the complexity of Caribbean gender relations and systems and its interactions with economic, social, political and cultural systems. Moreover, cooperation with the "Island Women Open Network (IWON) for Sustainable Energy & Climate Resilience in Island Nations" will be established.

4. Risks

The overall risk of this proposed project is low to medium.

Risk	**Rating**	**Mitigation**
Lack of interest by the public and private sectors in the platform, resulting in limited interest of local players in developing the sustainable energy value chain	Medium	During project design and implementation a very consultative participatory approach will be applied; form the very beginning the ownership of the platform will lie with MIICS and the local key stakeholders; A proper communication strategy will be prepared and implemented with adequate resources allocated to ensure effective and widespread communication of the platform.
Lack of capacity by the national counterpart	Low	The project is in line with national policies and the project will be executed in close coordination with the respective Ministries and authorities;
Lack of effective coordination between various project partners	Low	A proper coordination will be sought through the Project Steering Committee and the strategic platform. Consultation between MIICS and other GEF executing and implementing agencies has already happened during the preparation of this document.
Incentive and financial support system are insufficient.	Low	The capacity of financial and governmental institutions will be strengthened for the promotion of innovation and added value creation. Grant instruments will be developed and applied to ensure availability of financing resources.
Negative impacts of climate change	Low	The potential impact of extreme weather events on the industry-cluster and business models will be studied case by case.

5. Coordination. *Outline the coordination with other relevant GEF-financed and other initiatives.*

The project management unit that will be established by MIICS will coordinate with implementers of other GEF and non-GEF funded projects that are related to the proposed project. This is for the purpose of exploring and possibly making use of potential synergies, and for ensuring complementarities and building on best practices and lessons learned. Moreover, the strategic platform will have regular coordination meetings and interconnect a broad range of different public and private stakeholders. The GEF project complements and creates strong links to the ongoing sustainable energy support programs of IADB, EU, UNDP and GIZ as mentioned in the section on baseline projects. During the PPG phase a deeper stakeholder analysis will be undertaken.

6. Consistency with National Priorities. *Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes* ☒ */no* ☐ *). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.*

Barbados has signed and ratified the Paris Climate Agreement on 22 April 2016. The proposed project is consistent with Barbados' Intended Nationally Determined Contribution (communicated to the UNFCCC on September 28, 2015) and the First National Communication to the UNFCCC, particularly in the objectives related to climate change adaptation and mitigation in supporting green economic and social development. Barbados signed the Paris Agreement on 22nd April 2016 and submitted its first NDC (which does not include new updates from the INDC previously submitted). As described before, the GEF Project contributes directly to the renewable energy and energy efficiency targets in the NDC and has important cross-links to the proposed implementation

mechanisms. The project is implemented under the umbrella of the joint declaration "Resource Efficient Low Carbon and Circular Industrial Partnership Platform for Catalyzing Eco-Innovation and Entrepreneurship in Barbados (RECIPPEE-Barbados)", which is part of the NDC. The declaration was signed between UNIDO and the GoB during the Third International Conference on Small Island Developing States, held from 1 to 4 September 2014 in Apia, Samoa. Also the partnership between UNIDO and the GoB on the CCREEE falls under this declaration. In addition, the project has strong links to other initiatives in the NDC, such as the BRIDGE program supported by IADB or the CHENACT project targeting the Caribbean tourism sector.

Moreover, this is consistent with Barbados's National Climate Change Policy and Sustainable Development Policy that provides the strategies and guidelines for developing a society that promotes its human resources and develops a green economy. Specifically, the project is in accord with the following national and regional strategies: (1) National Strategic Plan 2005-2025, (2) Medium Term Growth and Development Strategy 2013 – 2020, (3) Human Resource Development Strategy 2011-2016, (4) The Barbados Sustainable Development Policy, (5) The draft National Sustainable Energy Policy, (6) The CARICOM Energy Policy and Climate Change Framework, (7) C-SERMS and SIDS DOCK targets, (8) Green Economy Scoping Study, (9) White Paper on the Development of Tourism in Barbados and National Adaptation, (10) Strategy to Address Climate Change in the Tourism Sector in Barbados;

7. Knowledge Management

The strategic platform includes several knowledge management, communication and network functions. The platform will continuously update interested entrepreneurs on market opportunities and trends. These functions will be further detailed during the PPG phase. The platform will be integrated in the general business promotion activities of CCREEE. Moreover, SIDS-SIDS knowledge exchange in partnership with the other regional sustainable energy centers based in Tonga (PCREEE) and Cape Verde (ECREEE) will be established. CCREEE is part of a UNIDO promoted SDG-7 partnership, which aims at the creation of a network of regional sustainable energy centers for SIDS in Africa, Pacific, Caribbean and Indian Ocean. The sub-network is part of the Global Network of Regional Sustainable Energy Centers (www.se4allnetwork.org).

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

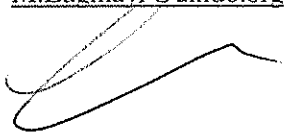
A. RECORD OF ENDORSEMENT[11] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Edison Alleyne (Ag.)	Permanent Secretary GEF Operational Focal Point	Ministry of Environment and Drainage	**10/13/2015**

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[12] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	**Signature**	**Date** *(MM/dd/yyyy)*	**Project Contact Person**	**Telephone**	**Email**
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation, UNIDO-GEF Focal Point		02/10/2017	Mr. Martin Lugmayr, Sustainable Energy Expert, Climate Policy and Networks Division, Department of Energy	+43/(0)1 26026 3595	M.Lugmayr@unido.org 

C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (APPLICABLE ONLY TO NEWLY ACCREDITED GEF PROJECT AGENCIES)

For newly accredited GEF Project Agencies, please download and fill up the required GEF Project Agency Certification of Ceiling Information Template to be attached as an annex to the PIF.

[11] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required
even though there may not be a STAR allocation associated with the project.

[12] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT