



GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND: GEF Trust Fund
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PART I: PROJECT INFORMATION

Project Title:	Energy Efficiency through the Development of Low-carbon RAC Technologies in Trinidad and Tobago		
Country(ies):	Trinidad and Tobago	GEF Project ID: ¹	9789
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5957
Other Executing Partner(s):	Ministry of Planning and Development (MPD)	Submission Date:	7 June 2017
GEF Focal Area(s):	Climate Change	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/> Corporate Program: SGP <input type="checkbox"/>		
Name of parent program:	N/A	Agency Fee (\$)	489,478

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 1	GEFTF	5,152,392	13,619,809
Total Project Cost		5,152,392	13,619,809

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To promote the adoption of low-carbon technologies for Refrigeration and Air Conditioning (RAC) end-use.						
Project Components	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Co-financing
I. Enhance national policy, regulatory and institutional frameworks for sustainable end-use of RAC technologies.	TA	1.1 The national policy, regulatory and institutional frameworks for Energy Efficiency (EE) gains for RAC technologies have been strengthened.	1.1.1 Improved inter-governmental coordination for integrated policy making of environmentally-friendly approaches among national public institutions. 1.1.2 Strengthened a national planning and policy framework for market development of EE gains for RAC end-uses. 1.1.3 Standards & Labeling (S&L) regulations for RAC technologies developed, approved and ready for	GEFTF	710,000	1,492,750

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](#).

³ Financing type can be either investment or technical assistance.

			<p>enforcement by the T&T Bureau of Standards (TTBS), including enhancement of technical capacities of public officers to assure S&L compliance.</p> <p>1.1.4 Guidelines and model documents for mainstreaming the public procurement of RAC EE equipment, including considerations for not-in-kind technologies and natural refrigerants, implemented.</p> <p>1.1.5 Fiscal instruments and economic incentives for the import of high EE rating RAC equipment with natural refrigerants where applicable, developed.</p> <p>1.1.6 Strengthening technical capacities in the formal academic sector and in the specialized technical CSO (ARIA) to promote market development of energy efficient, low carbon refrigeration and cooling systems, including: design, assembling, installation, operation and maintenance.</p>			
II. Accelerate RAC market transformation towards less energy intensive and low-GWP technologies.	TA	2.1 Investment path along the RAC market chain enhanced.	<p>2.1.1 Market analysis for RAC replacement initiatives and impacts at the national level carried out.</p> <p>2.1.2 In-country technical capacity and backstopping for assembling energy efficient RAC systems has been improved.</p> <p>2.1.3 A structure for ensuring that RAC equipment meets international energy efficiency standards through the TTBS established.</p> <p>2.1.4 Capacities for project investment analysis and customized financing</p>	GEFTF	1,020,000	2,000,000

			mechanisms in the financial sector to support market change for energy efficient RAC systems strengthened.			
	INV	2.2 Investment portfolio on replacement of energy intensive technologies implemented.	<p>2.2.1 District Cooling technical and financial performance feasibility study completed; aiming at the installation of two District Cooling Zones, including potential developers and end-users (Piarco Intl. Airport and the University of T&T in the Island of Trinidad).</p> <p>2.2.2 Implementation of District Cooling concept at Piarco International Airport and the University of T&T.</p> <p>2.2.3 Early-retirement of decentralized, energy-intensive old units and replacement with more energy efficient, centralized-based AC units in two large facilities with high visibility in public facilities installed and operating (Tobago Island Intl. Airport and EMA Building).</p> <p>2.2.4 Early retirement of low-efficiency, light units (split/window systems) and their replacement with more energy efficient commonly used units in the residential and commercial sectors triggered.</p>		2,520,000	8,457,750
III. Information outreach and Monitoring & Evaluation (M&E) implemented.	TA	3.1 An information strategy to share knowledge gained, lessons-learned and best practices developed.	<p>3.1.1 An awareness raising campaign and information strategy implemented, including lessons learned and best practices dissemination at the national, regional and global levels.</p> <p>3.1.2 National capacities for the public and private sectors for calculations and monitoring of global impact indicators enhanced.</p>	GEFTF	402,041	487,000

	TA	3.2 A Monitoring and Evaluation plan and adaptive management applied in response to needs, as per the UNDP/GEF ProDoc procedures and of its environmental progress and impact indicators, has been designed and implemented.	3.2.1 Design and implementation of a module for data collection on GHG and HCFCC/HFC emissions by residential and commercial buildings integrated with the national MRV system (including the consolidation of relevant indicators). 3.2.2 Design and approval of a monitoring and evaluation plan, including gender and reporting indicators as well as UNDP Social and Environmental Screening Procedures (SESP). 3.2.3 Monitoring of project progress in compliance with UNDP and GEF guidelines. 3.2.4 Carrying out of project progress report(s), including PIRs, Mid-term Review and a Terminal Evaluation.	GEFTF	255,000	533,750
Subtotal					4,907,041	12,971,250
Project Management Cost (PMC) including up to 70,000 in Direct project Costs ⁴ (select)					245,351	648,559
Total Project Cost					5,152,392	13,619,809

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ()

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	Ministry of Planning and Development	In-kind	330,750
Recipient Government	EMA	In-kind	420,000
Recipient Government	Trinidad and Tobago Bureau of Standards	In-kind	839,458
Recipient Government	Airports Authority of Trinidad and Tobago	Cash	5,785,448
Recipient Government	University of Trinidad and Tobago	Cash	1,225,000
Recipient Government	Multilateral Fund for the Montreal Protocol	Grants	2,258,433
Private Sector	National private Sector Entities	Cash	1,888,423
CSO	Air Conditioning and Refrigeration Association (ARIA)	In-kind	420,000
CSO	Refrigerant Recover and Recycling Association (RRRA)	Cash	352,297
GEF Agency	UNDP	In-kind	100,000
Total Co-financing			13,619,809

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% 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) 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
UNDP	GEFTF	Trinidad and Tobago	Climate Change		5,152,392	489,478	5,641,870
Total GEF Resources					5,152,392	489,478	5,641,870

a) Refer to the [Fee Policy for GEF Partner Agencies](#).

E. PROJECT PREPARATION GRANT (PPG)

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: \$150,000					PPG Agency Fee: 14,250		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency Fee (b)	Total c = a + b
UNDP	GEF TF	Trinidad and Tobago	Climate Change	Mitigation	150,000	14,250	164,250
Total PPG Amount					150,000	14,250	164,250

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

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)	1,5 million tons CO _{2eq} mitigated over a 20-year period.

PART II: PROJECT JUSTIFICATION

A. The global environmental problem, root causes and barriers that need to be addressed.

1. This project proposal aims to provide a significant market change for the adoption of low-carbon technologies for Refrigeration and Air Conditioning (RAC) end-use in order to reduce GHG emissions in the residential and commercial sectors in Trinidad and Tobago (T&T). It will bring about integrated institutional planning and coordination of ground-breaking technology interventions aligned with, greater efficiency, and increasingly equitable socioeconomic returns on low-emission public and private investments in a very innovative way. The project will look at treating the issue of energy efficiency for large-scale systems as well as smaller scale units to represent a holistic approach to encouraging a more sustainable energy consumption path. The project will look for synergies between the implementation of the UNFCCC and the Montreal Protocol.
2. Located in the Eastern Caribbean region, Trinidad and Tobago consists of two islands (Pop. 1.32 million, 2016) with an extension of 5,128 square kilometers of land; the main island is Trinidad -where the capital, Port of Spain, is located- and most political and economic activity takes place thanks to a growing economy mostly influenced by

the petroleum industry where oil and gas account for about 40% of GDP and 80% of exports⁵, the mainstay of national economic development, while the tourism sector plays a minor role –mostly concentrated on the Island of Tobago- in contrast with most other Caribbean countries. National development policies in place move toward improved sustainable development of the country; this has fueled an expansion in infrastructure with ongoing plans for the construction of new ports, schools, hospitals, public office buildings and business facilities, spurred by both, public and private developers.

3. Rising global demand for Refrigeration and Air Conditioning equipment is very worrisome worldwide -globally speaking the RAC equipment penetration is growing 8-10% annually in developing countries- and Trinidad and Tobago is following this international trend due to their location in the Tropical belt, with an average temperature of 26.5° Celsius and humidity levels above 80% year-round. Moreover, as recognized by the IPCC in its 2013 Report, it is likely that a warmer climate and the growing demand for RAC equipment will put greater pressure on the demand for thermal power generation over the long term. In this BAU scenario, new RAC equipment, both to replace existing ones and to establish a new, expanded installed base, tend to use high-GWP HFC refrigerants used in air-conditioning units and cooling systems, which are likely to generate more direct and indirect CO₂ emissions when compared to existing commercial, low-GWP alternatives worldwide. All activities related to phase-out of HCFCs and HFCs, as well as the introduction of e.g. natural refrigerants will be financed and implemented via projects funded by the Multilateral Fund for the implementation of the Montreal Protocol (MLF).
4. In accordance with UNFCCC decisions, Trinidad and Tobago presented plans for reducing global GHG emissions through the intended Nationally Determined Contribution (iNDC) to the UNFCCC in Paris (Aug. 2015), based on a Carbon Reduction Strategy developed for its industrial, power generation and transportation sectors; these being the major emitting sectors of the economy, and consistent with implementing the provisions stated in the National Climate Change Policy (July 2011). The country's aim is to achieve a reduction objective in overall emissions from these three sectors of 15% by 2030 from BAU, which in absolute terms is an equivalent of one hundred and three million (103,000,000) tons of CO_{2eq}. It is expected that by accessing project grants and international support, would help addressing the current high growth in emissions in the RAC sector. The accurate incremental figure due to this incremental contribution will be further analyzed during the PPG stage.
5. This country accounts for only 0.1% of GHG emissions in the global context, but has a relatively high per-capita emission, on the order of 23.87 t/CO₂, the highest in the Caribbean region as a result of having a small population coupled with being a leading producer of oil and natural gas. The country has been moving rapidly towards the use of natural gas, as a relatively clean-burning resource, as its primary means of meeting its growing energy demands; the petrochemical and heavy industry sectors which are the main contributors of GHG emissions, followed by power generation and then the transportation sector. Emissions from power generation have increased from 1,736 gigagrams (Gg) to 2,488 Gg, a growth of 43% over the period 1990-2006⁶. The 2005 World Resources Institute report ranked Trinidad and Tobago as the 10th highest per capita emitter of greenhouse gas emissions⁷.
6. As a Small Island Developing State (SIDS), Trinidad and Tobago is particularly vulnerable to the adverse impacts of climate change such as those related to global temperature increases, changes in precipitation and sea level rise. These effects are aggravated by its small land space, limited human and technical capacity and the challenges of international trade, specifically the economic variations in the price of a barrel of oil. In this regard, it is in the country's interest to enhance energy security through a low-carbon intensive economy, in particular for power generation.
7. In the policy field, the Ministry of Planning and Development (MPD) is responsible for the alignment of the activities of the Government's thrust towards national development by focusing on restoring growth, diversity and confidence. This Ministry, under the umbrella of the Environmental Policy and Planning Division, includes the:

⁵ *Guidebook for Hydrodynamic Considerations in Coastal and Marine CEC Applications*, Environmental Management Authority (EMA), August 2011.

⁶ *National Climate Change Policy*, Government of Trinidad and Tobago, July 2011.

⁷ *State of the Environment Report 2010*, Environmental Management Authority (EMA).

(a) National Ozone Unit (NOU), which acts as the focal point for Montreal Protocol issues and is responsible for the national implementation of programs and projects related to the Ozone layer.

(b) Multilateral Environmental Agreements Unit (MEAU), which ultimately oversees all other multilateral environmental agreements. This Unit houses the climate change subunit and supports governmental policy and planning on the related issues.

8. In the energy policy arena, the leading entity is the Ministry of Energy (ME), with a main focus on creating partnerships and innovations that foster self-reliance and a resilient energy sector, and a very strong emphasis on extractive energy sources, mostly in the oil and gas industries. Nevertheless, through its Energy Research and Planning Division, there is a mandate to provide guidance on drafting local legislation on renewable energy and energy efficiency policies. Along this path, this project proposal will strengthen and facilitate current efforts in T&T to curb the growth of CO₂ emissions in the energy sector. In fact, T&T, as a signatory to the UNFCCC, has stated in its National Climate Change Policy (July 2011) that it will provide policy guidance for the development of an appropriate administrative and legislative framework, in harmony with other sectoral policies, for the pursuance of a low-carbon development path through suitable and relevant strategies and actions to address climate change, such as increasing energy efficiency measures in the commercial and residential sectors, in an effort to reduce the carbon footprint of the country.
9. More specifically, the implementation of climate change and the ozone programs are also effected in conjunction with several government stakeholders such as the Ministry of Finance (Customs and Excise Division), the Ministry of Trade and Industry (Trade Licensing Unit and the Trinidad and Tobago Bureau of Standards), and the Ministry of Transport (Public Transport Service Corporation). However, due to several issues, including a separate source of public funds, separate administrative controls by various ministries, and national priorities given different national plans and policies, it is difficult to apply joint/synergistic work on cross-cutting themes as championed through the MEAU and the NOU units throughout the entire Government. The lack of inter-governmental coordination is particularly evident in matters that are under another Ministry's authority, such as issues related to energy (with the Ministry of Energy) or fiscal barriers (Ministry of Finance), and this has been considered a stumbling block to any eventual holistic approach to promote the adoption of a sustainable market trend for low-carbon, ground-breaking technologies for RAC end-use.
10. As a specific energy policy, the country has the political ambition to implement energy efficiency standards necessary to support renewable energy and energy efficient technologies and to reduce the Government's fuel subsidy liability over time. Under the aegis of the Ministry of Trade and Industry, the Trinidad and Tobago Bureau of Standards (TTBS) is the designated national authority to ensure adherence to standards for goods produced or used in the country. As a "Standards Taker" player in terms of energy efficiency standards and labeling aspects of RAC equipment, the TTBS has nowadays some limited action in the area of Standardization, Verification and Certification of RAC systems. However, RAC guidelines continue to be established in the international setting and they are mainly geared to manufacturing countries in a different type of climate (with different technical skills) and, therefore, not completely adequate to the Trinidad and Tobago weather setting. Yet, a lack of institutional and technical capacity has been identified that could enable the country to undertake more proactive action in this area, also based on the lack of a proper laboratory facility and certified professionals that could handle this new generation of low-carbon RAC technologies and their environmentally-friendly refrigerants.
11. Final energy consumption in the country stands at 269 kboe/day⁸. The industrial sector accounts for 45 kboe/day, followed by transport with 21 kboe/day, residential with 7 kboe/day, and commercial with 2 kboe/day. Other consumption accounts for the majority of consumption with 194 kboe/day⁹. As an oil-producing country, total

⁸ Thousand barrels of petroleum equivalent per day.

⁹ *Energy Dossier: Trinidad and Tobago*, Interamerican Development Bank, Technical Note No. IDB-TN-938, February 2016.

energy supply depends mostly on its domestic production and consumption of natural gas (71%) and crude oil (27%). The country produces all of its electricity from a large installed thermal power capacity of 2,428 MW, split between four electricity producers while the Trinidad and Tobago Electricity Commission (T&TEC) is solely responsible for power distribution in both islands (9,363 GWh/468,906 customers in 2016). Peak demand for 2013 was 1.434 MW¹⁰.

12. Due to the country's energy-intensive industries, per capita consumption of electricity is among the highest in the Caribbean at over 6,500 kWh¹¹. The industrial sector represents by far the largest consumer of electricity, accounting for 60 percent of sales (4,825 GWh). The residential sector consumed 29 percent (2,412 GWh) and with an average annual compounded growth rate of 3.6 %. The commercial sector came in as the third largest consumer with 773 GWh, representing 10 percent of power sales, with an average growth rate of about 7% per year. Other end-uses, primarily street lighting, accounted for sales of 109 GWh representing one percent¹². Electricity pricing is controlled by the Regulated Industries Commission (RIC); however, it is heavily subsidized with an average price in the commercial sector on the order of 6.0US\$/KWh being kept since 2011 and at 4.3US\$/KWh for the residential sector¹³ -the lowest electricity prices throughout the Caribbean where the average is of 33US\$/KWh- a major challenge to the promotion and implementation of energy efficiency programs.
13. Historically, the T&T power sector scheme has adopted a traditional supply-side approach encouraged by the low-cost electricity pricing structure. Specifically, electricity consumption for air conditioning and refrigeration equipment by sector is not officially available. In the residential sector (415,360 customers), electricity end-use for refrigeration with light systems depends on the operation of standard self-contained household single units. In addition, there is a growing penetration of air conditioning light units in this sector of the conventional imported split/window cooling systems with quite ample ranges of energy efficiency.
14. Within the commercial sector (49,860 customers), the highest end-users of electricity include *hotels and restaurants*, *services facilities* (mainly hospitals and offices), and *retail stores*. Electricity end-use for refrigeration with light systems is made up mainly of medium and small enterprises, while centralized units are commonly used in large facilities with areas larger than 500 square meters and are imported into parts to be installed on-site, for example, for large retail stores and supermarkets. Both sub-sector end-uses also have in operation self-contained units for medium and low refrigeration which are assembled locally or imported as single units. In addition, both subsectors have also installed air conditioning units for acclimatization with different cooling capacities, depending on the size and use of the facility. A more precise context description for the residential and commercial target sectors will be carried out during the PPG stage.
15. T&T is a signatory of the Montreal Protocol (MP) on substances that deplete the ozone layer under a Multilateral Environmental Agreement (MEA) which aims to phase-out the consumption of Ozone-Depleting Substances (ODS). As a country working under the Article 5 of the Montreal Protocol, for Trinidad and Tobago the Montreal Protocol has set specific phase-out targets for consumption of Hydrochlorofluorocarbons (HCFCs), which must be eliminated through a staggered reduction approach as follows: 2015 (10%), 2020 (35%), 2025 (67,5%), 2030 (97,5%) and 2040 (100%).
16. Apart from their depletion effects to the ozone layer, HCFCs are also potent greenhouse gases (GHG). The most common HCFCs used in RAC applications can cause severe side effects to the global climate. Although low-GWP technological solutions exist at commercial levels, they are mostly applied in developed countries, where the enabling policy and regulatory environments are better suited to support this transition. In this case, it is being noticed that developing countries, due to many political, technical and economic barriers, are widely adopting high-GWP Hydrofluorocarbons (HFCs) substances as an interim leading solution in this HCFCs phase-out process. All

¹⁰ TTEC: *Energy Sales and Peak Demand Forecast*, October 1st, 2015

¹¹ Ibid 10.

¹² Ibid 10.

¹³ The Regulated Industries Commission (RIC).

activities related to HCFC phase out (and high GWP HFC phase down in the future) and introduction of natural refrigerants will be fully funded by the MLF as described below.

17. In this regard, T&T is subject to this environmental challenge. The country, under the leadership of The Ministry of Planning and Development (MPD), carried out in 2009 the inventory of consumption and use of HCFCs which identified an estimated charge of refrigerant of about 745,000 tons of these refrigerants. This study identified that the use of HCFC-22 represents the largest annual consumption (97%), while HCFC-123, HCFC-141b and HCFC-124 the remaining¹⁴. This Ministry -with responsibility for the environment- is seeking now opportunities and leading the path to introduce low-GWP alternatives with more efficient technologies to deviate from the projected business-as-usual (BAU) scenario, which is the substitution of HCFCs by HFCs. With the adoption of the Kigali amendment at the 28th Meeting of the Parties to the Montreal Protocol, the phase down of HFCs will be funded by the MLF.
18. Due to the commitment of Trinidad and Tobago in Phase I under the Montreal Protocol for the elimination of HCFCs, HCFC-22 most likely will be switched away by a high consumption of HCF refrigerants, typically R-134a, R-404A, R-410A and R-507C, substances that have a lower market price but a higher GWP. The main cause for this situation is that market suppliers of cooling refrigerants have promoted compliance with effective Montreal Protocol enforcement without giving proper attention to climate change mitigation impacts and the limited availability of updated, more global climate-friendly cooling technologies. The following table shows from the 2010 Survey Report that the total charge of HCFC-22 refrigerant in the servicing sector (723,233 tons), where the residential and small commercial consumption accounts for 77% of total demand (562,500 tons), followed by commercial refrigeration and air conditioning (12%), industrial refrigeration (7%), and chillers, marine and transport, the remaining 4%¹⁵.

Table 2: Consumption of HCFC-22 in the servicing sector

SECTOR	Total number of units	Total charge of refrigerant (tonnes)	Service frequency per annum	% of equipment requiring charge annually	Average recharge amount (kg)	Service demand (tonnes)	
						mt	ODP
Residential & small Commercial	375,000	562,500	2	30	2	168.75	9.28
Transport	60	90	1	10	2.5	0.02	0
Commercial ref	12,235	18,352.5	1.5	25	20	61.18	3.36
Commercial ac	49,440	74,160	1.5	10	50	247.20	13.60
Marine	30	45	1.5	25	3.75	0.03	0
Industrial Refrigeration	35,000	52,500	1.5	20	4	28	1.54
A/c Chillers	10,390	15,585	1.5	10	180	187.02	10.29
TOTAL DEMAND	482,155	723,233				692.20	38.07

19. In T&T, the supply chain of electro-mechanical parts, refrigerants, equipment installation and post-sale servicing for commercial refrigeration is made up of a complex network of manufacturers, suppliers, maintenance companies and servicing technicians. This market condition, from the supply side, needs to be integrated into the project with a holistic approach, including training, implementation of technical standards and labeling, safe handling and disposal of refrigerants, among other issues, in order to trigger an alternative low-carbon market, such as the use of natural refrigerants which are more energy-efficient, like Hydrocarbons (HC), Carbon Dioxide (CO₂) and Ammonia (NH₃) that offer alternative solutions and the possibility to promote greener businesses.
20. There is also a need to assist in the establishment of a structure for ensuring that the equipment being imported into the country in the RAC industry meets international standards from an energy efficiency perspective. This is

¹⁴ Trinidad and Tobago: *Ozone Depleting Substances: 2010 Survey Report*.

¹⁵ Ibid 14.

specifically crucial given that the ratings on the equipment is usually derived in countries with vastly different weather conditions and operating temperatures and are therefore inaccurate for application locally. Compounded with this is the need for a labeling scheme to ensure proper testing of the equipment for an energy-consumption rating perspective. With regard to the refrigerant disposal, at present Trinidad and Tobago where possible engages in recovery and recycling of refrigerant during the servicing and regular maintenance of the RAC equipment. There is currently no solution to the final disposal of spent refrigerant, however, this issue is now being addressed through activities funded already by the Multilateral Fund under the Montreal Protocol Programme at the national level. In addition, there is a Refrigerant Recover and Recycling Association (RRRA) set up at the national level which is involved in devising refrigerant management plans for companies as well as is exploring possibilities for final disposal.

21. In the prevailing institutional context of the Republic of Trinidad and Tobago and its global commitments with the UNFCCC and the Montreal Protocol, this project will make a significant change in the existing consumption of inefficient technologies for refrigeration and air conditioning, mostly in the commercial and residential sectors, but with ample opportunities to expand the global impact into other sectors of the national economy, like the growing and large industrial sector due to its role in the national economic development. During the PIF preparation stage, UNDP in close collaboration with the Environmental Policy and Planning Division of the Ministry Planning and Development used a participatory approach with other policymakers, national and international private market actors and Civil Society Organizations (CSOs), to identify those structural barriers that limit the potential for establishing an innovation-friendly, market approach for the adoption of low-carbon technologies for RAC end-use as well as not-in-kind technologies.
22. The comprehensive analysis of these barriers –preliminarily presented in the following table- confirming their extent, root causes and interrelationships, will be carried out in the PPG phase and documented in the Project Document at the CEO endorsement stage.

Barrier Type	Barrier Descriptions
<p data-bbox="228 321 358 348">Institutional</p> <p data-bbox="164 394 423 541"><i>Lack of an integrated and updated framework to implement more energy efficient, low-GWP RAC technologies.</i></p>	<ul data-bbox="451 218 1549 863" style="list-style-type: none"> <li data-bbox="451 218 1549 394">• Need to strengthen policy making coherence. T&T has introduced in very recent years a shift in the institutional governance to implement its global commitments as an oil producer country. There is a need for improved coordination between the leading Ministry of Planning & Development and other public agencies as it relates to the synergies between Ozone Depleting commitments and actions on Climate Change mitigation to achieve additional gains in energy efficiency and lower greenhouse gas emissions. <li data-bbox="451 432 1549 579">• Traditional focus on abundant thermal power generation that would not help create a long-term market-based shift for enabling more supportive energy efficiency policies at the national governmental level, precluding the application of updated policy instruments for planning and implementation of more energy efficient RAC systems, technical regulations and standards and labeling. <li data-bbox="451 617 1549 743">• Absence of public policies that can enhance and promote the introduction of low-carbon RAC technologies which usually have higher phase-in costs, since all equipment are imported, either in parts for the installation of centralized systems or self-contained light units in the residential and commercial sectors. <li data-bbox="451 781 1549 863">• Limited institutional capacity at the national level to mainstream energy efficiency measures into current actions in the RAC sector. For instance, to increase the use of natural refrigerants, as well as weak capacity to enforce existing compulsory energy consumption labeling of RAC EE equipment.
<p data-bbox="228 1052 334 1079">Technical</p> <p data-bbox="164 1125 407 1302"><i>Lack of institutional and human capacities and awareness to access and apply more efficient, low-GWP RAC technologies.</i></p>	<ul data-bbox="451 875 1549 1581" style="list-style-type: none"> <li data-bbox="451 875 1549 1087">• Insufficient technical assistance and high upfront costs for implementing early EE investments that could lead to a significant “market-push” for more energy efficient technologies. This is due to the fact that technology transfer to improve large energy efficient technologies is usually governed by intellectual properties of international manufacturers to comply with suitably guaranteed technical specifications and standards, coupled with the limited capacity existing in T&T to provide timely maintenance and servicing under heavy marine and coastal environments, which overall contribute to higher operational costs of “high-end” technology equipment. <li data-bbox="451 1125 1549 1251">• Absence of awareness raising and technical capacities on issues related to the safe handling and use of low carbon technologies to establish the basis for market transformation. This type of technologies, like those using natural refrigerants, pose one or more safety-related issues due to sensitive parameters like high toxicity and high flammability, especially for end-users. <li data-bbox="451 1289 1549 1415">• A vast majority of multi-split and split systems in major buildings is a barrier for the development of a District Cooling and other large centralized systems due to extensive building modification required to convert to ducted-centralized cooling and air conditioning systems, thus, leading to additional high upfront costs and technical complexities of this alternative. <li data-bbox="451 1453 1549 1581">• Limited information dissemination mainstreaming for alternative technologies. Practical, well-documented experiences are lacking regarding: project due diligence and project financing and implementation modalities, project risk mitigation and demonstration and promotion of innovative, commercially-driven technologies such as the District Cooling system approach and handling of natural cooling refrigerants and not in-kind solutions.

<p>Economic/Financial</p> <p><i>Constrained access to market-oriented mechanisms to finance low-carbon and low-GWP investments in RAC technologies.</i></p>	<ul style="list-style-type: none"> • The existence of highly subsidized, relatively low-energy tariffs for electricity consuming sectors (industrial, commercial and residential), thanks to a large natural gas-fired power plant capacity, affects financial return on EE investments. This national energy pricing policy severely disturbs the sector's innovation and upscaling capacity to deliver energy-efficient, low-carbon alternatives that are readily available –worldwide- to enhance T&T's compliance with the UNFCCC and the MP. • Public investments of low-carbon technologies in key infrastructure and large public services –the segment of the so called "sensitive owners" as schools, universities and healthcare institutes that operate under a different economic regime– have lagged due to the narrow perspective of the approached projects focusing only on specific end-uses, such as the lighting aspect, and not on encompassing the building envelope as a whole, which guarantees greater energy savings and greater socioeconomic returns. • Financial institutions still consider investments in EE projects as high risk ventures. This is a very important barrier in Trinidad and Tobago due to the lack of local experiences on EE targets, payback/cost-effectiveness analysis and business models sustaining large investments in energy efficiency carried out by public and private investors. • Fiscal instruments and economic incentives to stimulate the articulation of well established, qualified professionals and engineering firms in the field of refrigeration and air conditioning investments with financiers, to match the circumstances of the targeted beneficiaries, are lacking.
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B. The baseline scenario.

23. This FSP will build upon ongoing efforts of the Government of the Republic of Trinidad and Tobago to fulfill its global environmental commitments through the implementation of two legal instruments. One is the UNFCCC, which aims at reducing GHG emissions to contribute to voluntary climate change mitigation, as well as strengthening collateral socioeconomic and environmental sustainability reforms at the national level, through engagement with key ministries and other public and private stakeholders. In this regard, this project will also build on significant baseline national policies as well as on enacted programs that are in the planning stage for implementation in the coming years to address a change in the current paradigm for the use of RAC technologies with a long-term strategic vision, in accordance with its National Plan for Climate Change. The other one is to strengthen compliance with ongoing actions to reduce the consumption of HCFCs that affect the ozone layer as a signatory of the Montreal Protocol and the recent approval of the Kigali amendment on HFCs, and funded by the MLF. However, the baseline actions on these two fronts have significant limitations; one of these is the need to ensure –jointly- the maximum delivery of global environmental benefits and boost climate change resilience.
24. Trinidad and Tobago does not produce refrigerant therefore all refrigerant including ODS alternatives in the country are imported. HFC-134a and R-410A are the main HFC refrigerant imported into the country, used predominantly for servicing refrigeration and air-conditioning equipment (RAC); some other alternatives used are hydrocarbons and carbon dioxide. The importers retail refrigerants on the local market and also export to neighboring islands.
25. From the institutional point of view, the baseline scenario is composed of a set of programs, policy initiatives and studies driven by the National Ozone Unit (NOU) and the Climate Change Unit (MEAU); both fall under the purview of the Environmental Policy and Planning Division of the Ministry of Planning and Development, which has a series of associated baseline projects being implemented. The key challenge for the national public interest is to transform policy instruments and energy saving targets into actions at the ground level. Government initiatives and programs under the baseline scenario include:
 - (a) The HCFCs Phase-out Management Plan (HPMP), funded by the Multilateral Fund for the Implementation of the Montreal Protocol United Nations Development Program (UNDP), which is delivering technical assistance to reduce by 35% the consumption of HCFCs in the country by 2020. These actions are based on a series of baseline activities to support the adoption of proper safe handling

of toxic and flammable low-GWP alternatives for HCFCs. Technical training is mostly focused on the end-user groups who handle RAC equipment on a daily basis, and therefore are the ultimate persons responsible for the safety of such systems, but currently without any consideration to energy efficiency measures and best practices. This global policy was recently strengthened with the approval of the Kigali amendment to the Montreal Protocol Treaty. This project will serve as co-finance and will deal with the safe handling and operation of equipment with natural refrigerants.

(b) The Government of T&T and the European Union signed a financing agreement for an EU Environment Programme on May 17, 2013. Under this agreement, the Government will be assisted with the following: i. T&T becoming an Extractive Industry Transparency compliant country, ii. Establishment of a new protected areas system, and iii. Mitigation of greenhouse gases in the medium term through the introduction of clean technologies, such as the conversion of public buses into Compress Natural Gas (CNG). Aligned with this UNDP/GEF project, this EU initiative will strengthen the institutional framework and provide clear strategic elements for reducing carbon emissions.

(c) The Government, in collaboration with UNDP, has initiated a 3-year project entitled “Low Emission Capacity Building Programme (LECB) for Trinidad and Tobago.” The LECB Programme will support and complement other climate change projects of the Ministry of the Environment and Water Resources namely the (ongoing) Carbon Reduction Strategy and the (completed) IDB Technical Cooperation Project: “Mainstreaming Climate Change into National Development in Trinidad and Tobago”, specifically to assist in the implementation of the National Climate Change Policy (NCCP). The LECB Project will also support the capacity required in various emitting sectors, including Government, industry, academia and the private sectors, to conduct and report on GHG inventories in order to facilitate the Third National Communication and first Biennial Update Report (BUR) reporting under the UNFCCC as well as to develop the respective MRV systems. Additionally, the LECB project will support the identification and formulation of NAMAs based on the outputs of the Carbon Reduction Strategy.

26. In the baseline scenario, other independent interventions funded by the Montreal Protocol will continue to have limited focus on specific technical assistance to small scale end-users, in order to phase-out HCFCs-based equipment. Although Decision XIX/6 – from the Parties of the Montreal Protocol – had urged that "low carbon technologies should be prioritized in the process", there are institutional, technical, economic and financial barriers that block a wider adoption of such advanced technologies in this country, as described in Section A. Moreover, the Montreal Protocol focuses its actions on the consumption of ODS (production + import - exports), and not on emissions of equipment already in place.
27. Related to the energy sector, the baseline scenario shows that Trinidad and Tobago’s hydrocarbon resources are critical for long-term economic growth and development. The country is a net exporter of petroleum products while the oil and gas industry is the most significant contributor to domestic growth. The growth of the local natural gas-based industry has been remarkable, achieving international and national prominence in the shift towards its use as the primary means of meeting its growing energy demands and the need to utilize a cleaner energy source. Local energy production and consumption have grown significantly in the last few decades and so, despite the increase in the focus on natural gas, local emissions of GHGs such as carbon dioxide continue to grow, with the energy sector being the leading contributor followed by power-generation and transportation. Notwithstanding the continued importance of the country’s petroleum resources, the Government recognizes that renewable energy, clean energy production and the maximization of energy efficiency are critical elements of the drive for sustainable development¹⁶.

¹⁶ *Framework for Development of a Renewable Energy Policy for Trinidad and Tobago*, Ministry of Energy and Energy Affairs, January 2011.

28. In light of the barriers to renewable energy development, in particular high up-front costs, it is critical to foster energy efficiency over the short to medium term. Increasing energy efficiency would have a spillover effect on savings in power generation and utility costs. This project is also seen as a way to introduce not-in-kind technologies with substantially improved energy efficiency gains like the District Cooling technology which can use local sources for cooling such as ground water, sea water, waste heat or solar heat. Of relevance, there is a group of existing compulsory standards for labeling of refrigerant cylinders and work in progress on standards for household refrigerators, freezers and air conditioners which are focused on the compliance of technical specifications but without the appropriate focus on the compliance of minimum energy performance standards and energy consumption labeling to promote the recognition and use of energy efficient appliances, in tune with the Framework for the Development of a Renewable Energy Policy for Trinidad and Tobago (January 2011).
29. Energy efficiency development in Trinidad and Tobago is currently at a rudimentary stage. A few initiatives and research projects have been undertaken, such as energy efficiency and green design into new residential and commercial developments incorporated by several local architects and the ongoing capacity building in the tertiary sector through incorporation of renewable energy and energy efficiency into the academic programs of institutions such as the University of Trinidad and Tobago (UTT) and the University of the West Indies (UWI). Of relevance, is the role of the Air Conditioning and Refrigeration Industry Association (ARIA), a not-for-profit organization established in 1998 devoted to promote professionalism, integrity and environmental awareness in the Air Conditioning & Refrigeration Industry. As a key player for this project, ARIA offers training programs to enhance knowledge and skills for technicians in the RAC industry through the ARIA Technical Institute Ltd (ATI), with support from the Environmental Management Authority (EMA), The United Nations Development Programme (UNDP), the Trinidad and Tobago Manufacturers Association (TTMA) and the Ministry of Trade and Industry.
30. In Trinidad and Tobago, there is no manufactures or assembly facilities for RAC equipment. As in many other Caribbean countries, there is a national capacity in the private sector to provide support for the design of conventional systems and for the provision of maintenance services, made up by well-trained engineering support firms, RAC equipment suppliers of most world-commercial brands as well as formal and informal small companies that provide regular maintenance to the installed systems.
31. Despite those programs and policy initiatives being undertaken in Trinidad and Tobago at the moment, their long-term successful continuance remains challenged due to the lack of coordinated implementation within the public sector responsible for the potentially synergic themes (ozone, climate, power sector, regulation, and ODS waste disposal). On the other hand, the National Climate Change Policy and the Multilateral Environmental Agreement under the Montreal Protocol aim to provide policy guidance for the development of an appropriate administrative and legislative framework, in harmony with other sectoral policies, for the pursuance of a low-carbon development path for Trinidad and Tobago through suitable and relevant strategies and actions to address climate change, including sectoral and cross-sectoral mitigation and ozone depleting measures such as capacity building and the market development of cleaner and energy efficient ground-breaking technologies and best practices.
32. However, without a proper coordination mechanism that can filter, evaluate, define priorities, monitor and guide holistic approaches and interventions, such baseline projects, programs and national policies may continue to have limited reach and may not be properly systematized and disseminated in an optimal manner. Moreover, without the appropriate roots for an enabling policymaking environment, private sector participation is limited to changing the current paradigm.

C. The proposed alternative scenario, GEF focal area strategy, with a brief description of expected outcomes and components of the project.

33. The project's strategy for "*Energy Efficiency through the Development of Low-carbon RAC Technologies in Trinidad and Tobago*" is based on two principles: (i) an integrated approach, creating synergies among the otherwise inefficiently coordinated actions and decisions of national policy-makers, in particular, between energy planners (Ministry of Energy), environmental planners (Ministry of Planning and Development and the

Environmental Management Authority), and energy regulators (Regulated Industries Commission) and, (ii) encouragement of reliable innovation implementation in fostering the necessary structural changes in public administration, and among key public stakeholders (such as University of Trinidad and Tobago) and private sector developers, equipment suppliers, engineering firms and large building operators (such as the international airport facilities in the two islands of Trinidad and Tobago); involved in the adoption of low-carbon RAC systems and best practices.

34. The project has three substantive components. The first one aims at embracing the policy, regulatory and institutional dimensions needed to reach the proposed structural change with regard to low-carbon for the use of RAC systems in the country. The second component strengthens technology implementation over the long run and customer confidence through the implementation of pilots as an effective way to remove the presence of systemic barriers and to change the existing highly subsidized electricity pricing landscape based on thermal power generation as well as on the lack of successful business cases by triggering investments and private sector involvement. A third component aims at collecting the lessons learned from the pilots as input for enhancement of technical regulation, for improving standards and labeling, learning from experience, and sharing a learning curve with similar contexts in the Caribbean as well as a full-fledged compliance verification of global environmental indicators that will take place during project execution under the supervision of UNDP.
35. The proposed project is aligned with GEF-6 CCM Program 1 “Promote the timely development, demonstration, and financing of low-carbon technologies and mitigation options”, specifically Category “b - Acceleration of low emission technology innovation and uptake through demonstration, deployment, and transfer using policies and mechanisms”.¹⁷ The detailed description of activities, their scope, and budget, will be developed in the PPG stage.
36. **Component 1: Enhance national policy, regulatory and institutional frameworks for sustainable end-use of RAC technologies.** The proposed project will address a number of aspects related to institutional capacity building and coordination mechanisms, that will then be responsible for defining standardized priorities, assessing information, and monitoring and oversight activities under implementation and development at the moment. This coordination mechanism will have the important role of identifying potential synergies and assuring additional gains and scaling up of interventions to avoid diffuse actions under the responsibility of the different ministries and public agencies.

Expected Outcome 1.1 - The national policy, regulatory and institutional frameworks for Energy Efficiency (EE) gains for RAC technologies have been strengthened.

37. The Project is considered instrumental for the national Government to effectively contribute and consistent with implementing the provisions of the national policy support in place, i.e.: the Framework for Development of a Renewable Energy Policy for Trinidad and Tobago (January 2011) and the National Climate Change Policy (July 2011). In order to encourage further growth and development of energy efficiency policies, baseline legislation need to be examined, noting where industry incentives can be included and in compliance with relevant policy measures being considered. In tune with the two national policies noted above, standards and labels will be the main driver of the national energy policy for energy efficiency in T&T, where alternative RAC technologies produced or sold in the country must have to comply with these new regulations. For instance, under the leadership of the Trinidad and Tobago Bureau of Standards (TTBS), the specific existing framework on Standards & Labeling is expected to be enhanced in order to remove barriers and promote the adoption of minimum energy performance technologies that can achieve the maximum energy efficiency possible.
38. These interventions will also serve to: i. build capacities in those entities that are responsible for oversight training of technical personnel and imports of equipment, ii. update the existing facilities to improve testing procedures, and ii. monitor global environmental impacts of the alternative technologies. These actions will be also useful for the

¹⁷ GEF-6 Programming Directions document (GEF/A.5/07/Rev.01, May 22, 2014), pp 59-64.

Government in terms of supporting decision making in policy and planning of synergic activities in the energy efficiency ground for other sectors.

The outputs proposed under Outcome 1.1 are:

1.1.1 Improved inter-governmental coordination for integrated policy making of environmentally-friendly approaches among national public institutions.

1.1.2 Strengthened a national planning and policy framework for market development of EE gains for RAC end-uses.

1.1.3 Standards & Labeling (S&L) regulations for RAC technologies developed, approved and ready for enforcement by the T&T Bureau of Standards (TTBS), including enhancement of technical capacities of public officers to assure S&L compliance.

1.1.4 Guidelines and model documents for mainstreaming the public procurement of RAC EE equipment, including considerations for not-in-kind technologies and natural refrigerants, implemented.

1.1.5 Fiscal instruments and economic incentives for the import of high EE rating RAC equipment with natural refrigerants where applicable, developed.

1.1.6 Strengthening technical capacities in the formal academic sector and in the specialized technical CSO (ARIA) to promote market development of energy efficient, low carbon refrigeration and cooling systems, including: design, assembling, installation, operation and maintenance.

39. **Component 2: Accelerate RAC market transformation towards less energy intensive and low-carbon technologies.** The GEF intervention will support the country in the acceleration of the RAC market transformation, aiming to phase-in less energy intensive environmentally-sound technologies, firstly by using the baseline activities of HCFC-based equipment replacement, but also by enabling the environment so the new installed stock of RAC equipment can be also composed of low-carbon alternatives. The safe handling of natural refrigerants would be dealt with under the HCFC Phase-Out Management Plans (HPMPs) for T&T in the context of the Montreal Protocol.

Expected Outcome 2.1 - Awareness along the market chain enhanced.

40. As part of the technical assistance intervention, the project will also assess and demonstrate the technical approaches and financial incentives of selected pilot interventions, calculate payback time, cost-benefits, cost-effectiveness and cost-opportunity of such interventions, delivering tools so the end-users in the residential and commercial sectors and financiers can make informed decisions on issues related to alternative technologies, economic and financial aspects for mainstreaming investments flows for major retrofitting, and technology change. It will also support ongoing efforts, led by the Trinidad and Tobago Bureau of Standards to enhance compliance with international EE standards.

The outputs proposed under Outcome 2.1 are:

2.1.1 Market analysis for RAC replacement initiatives and impacts at the national level carried out.

2.1.2 In-country technical capacity and backstopping for assembling energy efficient RAC systems has been improved.

2.1.3 A structure for ensuring that RAC equipment meets international energy efficiency standards through the TTBS established.

2.1.4 Capacities for project investment analysis and customized financing mechanisms in the financial sector to support market change for energy efficient RAC systems strengthened.

Expected Outcome 2.2 - Investment portfolio on replacement of energy intensive technologies implemented.

41. The project will promote a series of pilot activities, scaling up baseline interventions co-funded by the Montreal Protocol but mainly by the private sector. The pilot projects will prove the technology in the country and create stakeholder confidence. T&T is exploring the potential of District Cooling as a means of reducing the Government's fuel subsidy liability over time. This project will include driving the replacement of an ineffective centralized cooling plant servicing the Piarco International Airport, among others, based on a feasibility study that will look into all technical, financial and environmental aspects of a potential District Cooling Development including the main components such as the large facility hosting the absorption chillers and/or high efficient electric chillers, a distribution grid piping system to interconnect the complex and the adjacent neighborhood and customer Energy Transfer Stations (ETS), in an effort to get potential end-user approval, supplying cold water for the air conditioning systems of nearby large commercial facilities in a more efficient manner.
42. This outcome also supports the early retirement of low-efficiency, light commercial and air conditioning units owned by sensitive stakeholders (e.g. schools and hospital to be selected in the PPG phase); and finally looking at the light and central commercial refrigeration units to identify gains in energy consumption through the application of HC and CO₂ refrigerants in this sector. The performed pre-feasibility study identified several potential district cooling pilot projects of which Piarco Intl. Airport and University of T&T were highest ranked in terms of energy efficiency improvements, refrigerant-use reduction and reduction of CO₂ emissions. Also, the implementation of centralized solutions create opportunities for connection to District Cooling system in the future. The detailed analysis to be conducted during the PPG phase will identify specific interventions with clear financial viability, however, the project will not promote the use of High GWP alternatives in the pilots and early retirement programmes.

The outputs proposed under Outcome 2.2 are:

2.2.1 District Cooling technical and financial performance feasibility study completed; aiming at the installation of a District Cooling Zone, including potential developers and end-users (Piarco Intl. Airport and the University of T&T in the Island of Trinidad).

2.2.2 Implementation of District Cooling concept at Piarco International Airport and the University of T&T.

2.2.3 Early-retirement of decentralized, energy-intensive old units and replacement with more energy efficient, centralized-based AC units in two large facilities with high visibility in public facilities installed and operating (Tobago Island Intl. Airport and EMA Building).

2.2.4 Early retirement of low-efficiency, light units (split/window systems) and their replacement with more energy efficient commonly used units in the residential and commercial sectors triggered.

43. **Component 3: Information outreach and Monitoring & Evaluation (M&E) implemented.** This component is intended to provide necessary means for the monitoring and evaluation of results in order to furnish adaptive management of the program as well as to carry out an information strategy and an awareness raising campaign for knowledge gained, lessons learned and best practices for the improved alternative RAC systems throughout the course of project implementation.

Expected Outcome 3.1 - An information strategy to share knowledge gained, lessons-learned and best practices developed.

44. This outcome involves the design and implementation of a holistic strategy to increase public awareness towards the global environmental issues. Based on main results, and under the leadership of the MPD, this strategy will highlight local benefits and global impacts to raise awareness in the national population, including gender and social related issues.

The outputs proposed under Outcome 3.1 are:

3.1.1 An awareness raising campaign and information strategy implemented, including lessons learned and best practices dissemination at the national, regional and global levels.

3.1.2 National capacities for the public and private sectors for calculations and monitoring of global impact indicators enhanced.

Expected Outcome 3.2 – A Monitoring and Evaluation plan and adaptive management applied in response to needs, as per the UNDP/GEF ProDoc procedures and of its environmental progress and impact indicators, has been designed and implemented.

45. This outcome encompasses outputs aimed at monitoring and evaluation (M&E) of project progress in line with UNDP and GEF guidelines, including the design of an M&E plan during the inception phase of the project. Periodic reviews of project activities on social impact and gender aspects are foreseen and recommendations will be made to maximize impact and ensure a gender-sensitive approach balancing benefits for both male and female stakeholders. This outcome will further assist MPD and ME to implement a tool for monitoring, reporting and verification (MRV) of achieved GHG emission reductions in the residential and commercial sectors.

The outputs proposed under Outcome 3.2 are:

3.2.1 Design and implementation of a module for data collection on GHG and HCFC/HFC emissions by residential and commercial buildings integrated with the national MRV system (including the consolidation of relevant indicators).

3.2.2 Design and approval of a monitoring and evaluation plan, including gender and reporting indicators as well as UNDP Social and Environmental Screening Procedures (SESP).

3.2.3 Monitoring of project progress in compliance with UNDP and GEF guidelines.

3.2.4 Carrying out of project progress report(s), including PIRs, Mid-term Review and a Terminal Evaluation.

46. The capacity for monitoring of GHG emissions at a sectoral level is currently being addressed through two major initiatives. Trinidad and Tobago is due to initiate work on its Third National Communication and continue work on its Low Emissions Capacity Building Programme (both referenced in paragraph 25(c)). Between these two initiatives, a baseline inventory will be established for the current period for GHG emissions by sector and a national and sectoral monitoring, reporting and verification system will be established. Capacity building for both these activities has already been initiated under the National Carbon Reduction Strategy project and previous work done by the LECB programme. The private sector is an active stakeholder in these activities both as a contributor and as a focus of the interventions.

D. Incremental/additional cost reasoning and expected contributions from the baseline the GEFTE, LDCF, SCCF, and co-financing.

47. Without the GEF intervention, it is very likely the activities being mainly implemented at the moment in Trinidad and Tobago by both the Ministry of Planning and Development (MPD) and the Ministry of Energy (ME) related to the Montreal Protocol and to the UNFCCC, respectively, will continue to be independent and with limited reach in terms of potential synergies and potential overlap of high carbon technologies. It is expected that these independent activities will continue to be led by these two ministries without integrating other key public stakeholders, resulting in limited outcomes that will focus on only one aspect of the technology uptake at a time. The lack of coordination (and a proper institutional/regulatory framework that can enable such work) constitutes an important barrier to be overcome towards the market transformation of Refrigeration and Air Conditioning end-use in this leading Caribbean oil-producer country.
48. The GEF involvement will be essential in removing the barriers that can assure a larger GHG reduction (direct and indirect) in the residential and commercial sectors mainly; and support the country in meeting its obligations to the UNFCCC and its iNDC. Using as baseline the activities of ODS phase-out to protect the ozone layer, the project will be able to establish a proper coordination mechanism to help meet its obligations under the MP as well, the regulatory framework and the market triggering path required to promoting environmentally sound technologies in the long term, considering an integral governance approach in terms of the appropriate institutional context, the technical capacities and the backstopping to identify the suitable financial mechanisms for the alternative technology transfer and its appropriation over the long-term. The dominant technology in the RAC sector is High GWP refrigerants (HFCs and HCFCs). Currently, there is only a very limited penetration of natural refrigerants in T&T. In this regard, no GEF funding will be used to promote the use of equipment with High GWP refrigerants, and the focus will be on the introduction of natural refrigerants, when possible.
49. The project enhances the local needed environment to create synergies among public and private stakeholders for market development for energy-efficient technologies for refrigeration and air conditioning, which is unlikely to occur under the baseline scenario given the BAU conditions of: i. a lack of policy coherence with responsibilities divided mainly among three ministries; ii. conventional business-like market approach for the installation of RAC systems based on minimum upfront costs rather than life-cycle costs; and iii. a lack of knowledge and skills among policy makers, building designers, engineering firms, wholesale importers and retailers to create an alternative market place for low-carbon RAC technologies.
50. Of greater contribution to the baseline is the identified pilot project partners that will provide an in-cash contribution to the project. The associated investments for carrying out the pilot interventions represent a strong market push for centralized more efficient units in large commercial facilities. On the other hand, the project aims at introducing an innovative approach and business model for the first District Cooling Development in the country; if proven successfully, this technology will be a major breakthrough deployment for air conditioning not only in Trinidad and Tobago but also for all Eastern Caribbean countries.
51. In addition, adjusting end-use energy pricing is a critical step in overcoming a major barrier to energy efficiency in Trinidad and Tobago. In response, the project is strengthening the energy sector's governance with a consistent energy policy, for which a sustainable energy policy pricing is expected to contribute towards competitiveness and compliance with international global environmental commitments.
52. FSP activities are expected to result in the following incremental outcomes with GEF grant support to the baseline:

Component	GEF-supported alternative
<i>I. Enhance national policy, regulatory and institutional frameworks for sustainable end-use of RAC technologies.</i>	The GEF-supported intervention will develop an “Integrated Planning and Policy Framework” for coherent low-carbon, including not-in-kind path for the use of RAC systems in commercial buildings and household refrigeration and air conditioning units in the residential sector, by updating uncoordinated activities carried out by several public-driven programs, strengthening the capacities of policymakers at the ministerial level as well as delivering assistance to technical personnel,

	<p>engineering firms and financiers -at the national level- for the implementation of the pilot interventions.</p> <p>To support Project activities over the long-run, the enhancement of institutional competencies is geared by the Energy Policy Framework of 2011, endorsed by the current political administration (2015-2020) -under the leadership of the Ministry of Planning and Development- to foster inter-institutional coordination across the different ministries, regulators, and public utilities and will act as a platform for engagement with private developers, CSOs, academia and financiers.</p>
<i>USD 3,455,000</i>	<i>SUBTOTAL Component 1 = Cofinancing (USD2,345,000) + GEF (USD1,110,000)</i>
<i>II. Accelerate RAC market transformation towards less energy intensive and low-carbon technologies.</i>	<p>The Project will facilitate the creation of public-private partnerships to trigger large investments in more energy-efficient, large technologies for air conditioning in the commercial sector, mainly promoting the first District Cooling system in the country, more likely in large public facilities with high visibility, like international airport facilities on the two islands of Trinidad and Tobago. This initiative will reduce the amount of electricity needed to operate conventional on-site electrical driven chillers and reduce the load charge of new refrigerants.</p> <p>It will also drive an alternative market driven approach that is environmentally-friendly/centralized and light systems for refrigeration and air conditioning in the commercial and residential sectors by building up a strategic alliance with key CSOs (ARIA and the T&T Chamber of Industry and Commerce) and academic entities (the universities of T&T and West Indies).</p>
<i>USD 10,776,250</i>	<i>SUBTOTAL Component 2 = Cofinancing (USD 7,636,285) + GEF (USD3,140,000)</i>
<i>III. Information outreach and Monitoring & Evaluation (M&E) implemented.</i>	<p>Communication and sharing of information with relevant stakeholders (public and private sectors and CSOs) will be an integrated part of the coherent planning and policy framework and the envisaged pilot investments, with a view toward securing their engagement and establishing a solid platform for continual improvements post-project. In collaboration with the national project partners, active communication will be maintained to obtain inputs for defining energy performance criteria and indicators.</p> <p>The change in the current institutional setting and the successful implementation of the alternative investments will translate into a better standing in terms of: (a) reduced thermal-power generation, (b) reduced GHG emissions; (c) improved overall quality of life and comfort for building residents, visitors and housing dwellers; and (d) improved the country's commitments and image in the context of the international conventions, particularly the UNFCCC and the Montreal Protocol; as a leading oil and gas producer country in the America's context.</p>
<i>USD 1,677,791</i>	<i>SUBTOTAL Component 3 = Cofinancing (USD 1,020,750) + GEF (USD657,041)</i>

E. Global environmental benefits (GEFTF).

53. The anticipated global environmental benefits of the proposal are GHG emissions avoided (both direct and indirect) with the deployment of more energy efficient technologies in the RAC sector (detailed target reductions will be calculated in the PPG phase). This reduction is inherent to the economic savings of alternative equipment and refrigerants and will alleviate the burden of emissions in energy, since in Trinidad Tobago electricity is 100% generated using natural gas and diesel oil units. On the other hand, a significant volume of CO₂ is also expected to be reduced thanks to the country's commitment under the Montreal Protocol and the activities implemented with funding from the Multilateral Fund. The co-finance from the Multilateral Fund (MLF) for the implementation of the Montreal Protocol is dedicated to the safe introduction of natural refrigerants (HC, NH₃, CO₂, H₂O, etc.) in T&T. MLF funding will not be used to improve the energy efficiency, which is the main focus of the GEF funding. Therefore, MLF funding will be complementary to the GEF funding. The incremental cost of introducing for example District Cooling systems is huge, but the Global Environmental Benefits are also expected to be substantial. The cost of implementing a new technology is always higher in the beginning, and GEF funding will assist with the RAC market transformation towards new and more energy efficient technologies.
54. This FSP is expected to yield direct emission reduction benefits of 357,500 tCO₂ (of initiatives directly supported by the FSP). The GHG benefits resulting from the implementation of a more energy-efficient path in the residential

and commercial sectors have an estimated mitigation potential of about 335,000 tCO₂ (direct-post project emissions) over a 20-year period, due to the implementation of technological changes to replace inefficient RAC equipment with more efficient systems, such as highly rated Energy Efficiency Ratio (EER) air conditioning and refrigeration systems and large cooling units; using the GEF project-based methodology for calculating GHG emission reductions from energy efficiency projects¹⁸, complemented by the execution of end-use best practices. In addition, it is expected to achieve more global environmental benefits by the deployment of the first District Cooling system in a commercial area with large cooling demand in the Island of Tobago with replication potential in the future in the order of 135,000 tons of CO₂ over a 20-year period. In addition, preliminary calculations were estimated by the replacement of centralized existing units at the Tobago Intl. Airport and EMA Main Building by more energy efficient centralized systems, in the order of 11,000 tons of CO₂ over the same period.

55. For ODS replacement efforts, a huge potential to mitigate GHG emissions on the order of at least 62,500 tCO₂ exists under the current phase II of the Montreal Protocol (2015, 10% ODS reduction only); by replacing conventional, high GWP technologies, mostly compressors running with HCFC-22 with “low-carbon” preferred technological solutions, like natural refrigerants. This calculation does not take into account the extra gain by reducing the cooling refrigerant charge of the proposed alternative. Over the long run (20 years) additional GEBs can be achieved if a full market for low-carbon, more efficient RAC technologies is developed; for two main reasons, i. an increased use of natural refrigerants for a variety of cooling devices operating in T&T, and ii. by expanding the District Cooling alternative with higher efficiency to the downtown area Port of Spain in the Island of Tobago, including shopping malls and office buildings. A full estimation of direct and indirect emission reduction benefits in both GEF thematic areas, i.e.: climate change mitigation and ozone layer depletion will be carried out during the project preparation stage of this proposal. In total, the estimated GEBs in terms of GHG emissions avoided will about 1,5 million tons of CO₂ eq.

F. Innovation, sustainability and potential for scaling up.

56. While this Project is presented to the GEF on climate change, it will also support the deployment of innovative RAC equipment, processes and practices that are considered the proper long-term solution for the replacement of currently used technologies. Such low-carbon technologies have the positive side effect of enabling the country to replace high-GWP HFCs that are listed in the UNFCCC as very potent GHGs (co-funded by the MLF).
57. Specifically, the innovative approach of the three components will promote the Project’s sustainability since it is focused on the medium and long term. First of all, the Project enhances an integral approach linking, for the first time, national policies in T&T of two main global conventions, the UNFCCC and the MP. Second, the Project will create, train and support key players in the public sector that look at energy consumption for air conditioning in large public facilities and refrigeration end-use in the residential and commercial sectors, by integrating harmonized decisions for the use of alternative technologies; and third, the Project will create and sustain an alternative commercial market for RAC technologies by building country capacities with the private sector (equipment suppliers, engineering firms and financiers), CSOs (traders and technical trainers), and universities (formal trainers). Of special attention is the District Cooling system which is a well-proven technology with many systems in operation -mostly in developed countries- and can operate with a multitude of sources and production technologies and thus providing a basis for higher energy efficiency than conventional cooling systems.
58. Sustainability will be assured through a variety of means. The Project will support substantial institutional strengthening and establishment of the necessary architecture to permit more coordinated future policy and regulatory frameworks in both thematic areas, i.e.: the mitigation of Greenhouse Gases (GHG) and the reduction of Ozone-Depleting Substances (ODS). Sustainable approaches will be ensured by fully involving the relevant stakeholders in the design of the Project at the PPG stage, its implementation in particular, with regard to technical (capacity building), economic (energy pricing) and environmental (marketing of low carbon technologies), aspects that are key to ensuring the long-term use of highly EE technologies. The project will also increase human capital

¹⁸ <http://www.stagef.org/focal-area/climate-change-mitigation>

in the country by establishing high-level training programs, enabling technical and professional staff by training them to handle more advanced RAC systems and, as result, by also increasing their incomes indirectly. In addition to these considerations, it is anticipated that the sustainability of this project will be propelled by the current economic prevailing factors in Trinidad and Tobago. As an oil-based economy and given the low oil prices, the introduction of these new RAC systems will allow for energy and cost savings, both of which are finding favour currently with public and private stakeholders, and it is anticipated this will continue in the long term; as it is in the best interest of these groups to derive cost-effective ways to move forward their operations.

59. The Project will also look for guidance from national stakeholders, their related institutions and thematic areas under their expertise, and will promote the enhancement of a set of regulations and minimum standards for energy efficiency to be further used in the national decision making process, as guidance, for future interventions, for instance, in the large energy-intensive industrial sector. It is foreseen in its framework to scale up the results through the awareness-raising campaign and promote the replicability of activities and outputs nationwide. The successful implementation of this project in the public sector will also serve as an attractive a model for replication and scale up by triggering significant investments within the private sector; given the local economic environment based on the dependence of low oil prices. Additionally, since other Eastern Caribbean countries share similar challenges, this FSP will create innovative tools and a knowledge learning path to help other Caribbean SIDS states, through the Caribbean Community platform (CARICOM), to become more resilient towards climate change, ODS, and sustainable development.

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.

60. The project has, in principle, no direct implications for indigenous people. Any potential implications will be clarified during the project's PPG phase, and if necessary will be subject to further socioeconomic studies during the project's implementation phase, when corresponding mitigation strategies will be developed in consultation with the stakeholders concerned.

61. The following table provides a preliminary listing of identified project stakeholders and potential partners.

TYPE	STAKEHOLDER	ROLE
National Government	Ministry of Planning and Development (MPD)	The MPD is the lead partner responsible for development and detailed design of the project, and as such, member of the Project Steering Committee. It is also responsible for liaison work with the other public agencies and during implementation, for its overall management, under the leadership of a national project coordinator; the Project Management Unit (PMU) will be located in their premises. During the PPG stage, it will ensure that FSP documentation responds to national goals.
	Ministry of Energy (ME)	The ME is in charge of enforcing the country's energy policy and planning. In this regard, its role in promoting fiscal instruments for triggering alternative RAC technologies is central to the main objective of the project through its Energy Research and Planning Division. The ME will be also an official member of the Project Steering Committee.
	Ministry of Trade and Industry (MTI)	The MTI is a key stakeholder in the implementation of the Montreal Protocol through the licensing system of refrigerants and refrigeration equipment. It grants import and export permits and as such closely regulates what can come in and out of the country. MTI will be also an official member of the Project Steering Committee.
	Ministry of Finance (MOF)	The MOF is in charge of fiscal appropriations of Government funds for various projects and programmes such as climate change, energy efficiency and any other related programmes inclusive of environment.

	Trinidad and Tobago Bureau of Standards (TTBS)	The primary role of TTBS is to develop, promote and enforce energy efficiency standards and labeling in order to improve the quality and performance of RAC technologies used in the country, based on minimum energy performance indicators and testing procedures.
Public agencies	Environmental Management Authority (EMA)	EMA will be in charge of providing guidance and surveillance for compliance with environmental regulation, in particular, issues and concerns related to the development of a District Cooling system as well as with the standards and guidelines on safety transportation, handling and use of natural refrigerants.
	Trinidad and Tobago Airports Authority	This public agency manages the Piarco International Airport, which has become a major air transportation facility in the Caribbean region. It is made up by two terminals: the North Terminal inaugurated in 2011 is dedicated to the commercial passenger movements and the South Terminal, which is a 24-hour servicing cargo facility. Both demand a permanent cooling load based on a large chiller system.
	Trinidad and Tobago Electricity Commission (T&TEC)	The T&TEC is the single power utility servicing the whole country and the largest utility in the entire English speaking Caribbean. Its role is to participate in the project as a key leading actor for the sustainable management of the demand side, in particular, supporting the change in the existing paradigm for appropriate RAC technologies and business models for electricity end-users.
	Regulated Industries Commission (RIC)	RIC regulates public sector services (water, wastewater and electricity) and represents the interests of consumers. RIC can participate in setting up appropriate tariffs for upcoming cutting-edge technologies, such as the District Cooling Development.
	University of Trinidad and Tobago (UTT)	The UTT is a state-owned university established in 2004. There are several campuses located throughout the country with a diverse range of disciplines taught. The <i>Couva Point Lisas</i> Campus is known as the energy campus; as it looks at renewable energy and energy efficiency major initiatives. The UTT could also serve as an important pilot intervention for the District Cooling Development.
CSOs	Air Conditioning and Refrigeration Association (ARIA)	As a Civil Society Organization, ARIA will support in-country capacity building activities to enhance technical capacity for assembling and manufacturing of low-carbon, low-GWP RAC alternatives as well as on safety transportation, handling and use of low-GWP/HCFCs alternatives.
	Refrigerant Recovery Recycle Association (RRRA)	RRRA is a non-profit organization formed to encourage and support all stakeholders involved in the protection of the Ozone Layer and reducing Global Warming. Its main role in the project will be to assist in the recovery, recycling and final disposal of refrigerants.
	T&T Chamber of Industry and Commerce	This CSO will bridge the interest of the private sector, mainly wholesale traders of RAC equipment and importers and retailers, with key public stakeholders, mainly MPD and ME, to foster a sustainable business strategy for low-carbon, HCFC phase-out alternatives. It participates in the execution the National Carbon Reduction Strategy initiative.
Private Sector	National private sector entities	It is an active player since private sector entities are eager to provide capital for investments for RAC sector when the investments have a good internal rate of return and on top of that provide good environmental benefits.

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.

62. Gender equality is expected to be relevant for this project in terms of utilization and ownership of more energy efficient RAC technologies. In daily life, men, women, and children are exposed to different kinds of chemicals, in

varying concentrations. Biological factors — notably size and physiological differences between women and men and between adults and children — influence susceptibility to health damage from exposure to chemicals, including those used as refrigerant fluids in RAC equipment. In order to assess the scope and nature of gender inequalities related to the project, more information and analysis is needed.

63. Therefore, during the project’s PPG phase, a detailed analysis of exposure and impacts related to gender will be undertaken, based upon which project activities will be tailored so that the groups at risk, whether these turn out to be children, women or men, will be targeted in such a way to have their participation taken into account in the project as a manner to promote gender equality and women’s empowerment. The PPG process will iteratively assess gender issues and mitigation measures to enhance project design between the project developers and UNDP’s reviewers.
64. Transversally, the project will mainstream gender issues through several strategies including: i) political and technical dialogue to ensure the participation of women in the decision-making process to select the most appropriate RAC alternatives; ii) specific training to build the capacities of public institutions for mainstreaming gender in the proposed institutional processes (e.g. gender sensitive comfort in indoor environments), iii) promoting participation and involvement of women in project activities (e.g. training activities); and iv) awareness raising on gender issues in the private sector.

4 Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).

65. The approach set forth for this FSP faces several inherent risks which are not directly under the control of the project. Particular attention will be paid to at least the following four kinds of risks during its preparation:

Risk Type	Rating	Mitigation Measures
<p><i>Political</i></p> <p>Changes in public sector representatives (decision makers) affect project design, implementation and the adoption of the proposed pilot investments.</p>	<p>Probability: Low Impact: High</p>	<p>The FSP will develop institutional mechanisms at national levels under the highest political umbrella of the national Government for coordinated planning and long-term policy making, while budgeting across sectors involving private sector stakeholders; these are expected to withstand changes in individuals, as well as political shifts given the fact that the political term of the present Executive Government is for 5 years (it began in Sept 2015).</p> <p>Furthermore, a strong FSP Management Unit will be put in place to ensure adequate coordination among all institutions and stakeholders, with clearly defined roles and responsibilities and decision-making channels.</p>
<p><i>Financial</i></p> <p>Low levels of motivation from private sector investors to implement significant technology shifts and to trigger a full market transformation after the project completion.</p>	<p>Probability: Low Impact: High</p>	<p>During the PPG design stage, it shall be ensured that the mechanism for financing low-carbon RAC alternatives is clearly adapted to capital funding needs of the different target sectors to implement the pilot investments, based on the feasibility studies prepared and validated with the project’s stakeholders, as proposed under Outcome 2.2.</p> <p>Also, mitigation to this risk will consider the energy pricing issue in T&T during the Project’s scope and time horizon. Strengthening of sector governance and the legal framework towards competitiveness and international global commitments is expected to contribute to consistent energy policy pricing in the medium term (Outcome 1.1).</p>
<p><i>Technical</i></p> <p>Delays occur in the implementation of a market driven path for RAC</p>	<p>Probability: Medium Impact: High</p>	<p>This FSP will build on the awareness and momentum created by the on-going UNDP initiative funded under the Montreal Protocol including the Kigali Amendment on HFCs, by extending methodologies, tools, and best practices to the private sector (funded by the MLF).</p>

Risk Type	Rating	Mitigation Measures
alternatives by both public and private sector developers.		Moreover, a mitigation action is the creation of institutional capacities for mainstreaming the procurement of RAC equipment that encompasses EE end-use and natural refrigerants (where feasible) in the public sector (Output 1.1.4).
<i>Environmental</i> Introducing the District Cooling alternative should not affect any critical maritime habitats or environmentally sensitive areas on either of the two islands.	Probability: Low Impact: High	A thorough feasibility study for District Cooling is a critical step for the decision-making process to develop this alternative on a larger scale. Sea Water Air Conditioning (SWAC) does not seem to be a feasible option, and viable options should not have a negative effect on the environment. As part of this analysis, a chapter dedicated to environmental issues and concerns will be carried out, under the guidance and surveillance of the Environmental Management Authority (EMA), which is a key stakeholder in the project and the GEF Operational Focal Point. The intention is to provide a Preliminary Environmental Assessment including preliminary direct and indirect environmental impacts and benefits of SWAC and Hybrid District Cooling systems in the selected locations.

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

66. At the national level the Project expects to coordinate with the following relevant GEF-financed initiative:

- The Multilateral Fund for the Implementation of the Montreal Protocol and UNDP are promoting the concept of District Cooling as a means of promoting the use of not-in-kind technologies as well as promoting the use of more energy efficient systems in the large commercial air conditioning sector. Feasibility studies to develop a business model for District Cooling development, which are underway by an international consulting firm, will identify the potential barriers to the introduction of the District Cooling alternative and propose a way forward to overcome the existing barriers. The expected result is to provide inputs to this project for the development of an output on the District Cooling technology in the context of Trinidad and Tobago.

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.

67. The present project is directly relevant to Trinidad and Tobago’s development policy and national obligations as a UNFCCC party and the adoption of strategies related to the protection of the ozone layer, within the framework of the commitments made under the Vienna Convention and the Montreal Protocol. It is oriented towards the introduction of environmentally sound long term solutions in the residential and commercial RAC sectors.

68. Through the National Climate Change Policy, the Government has proposed to accomplish sustainable development via a low-GHG economic development pathway across all sectors of the economy. As mentioned before, the country’s aim is to achieve a reduction objective in overall emissions of 15% by 2030 from BAU, which in absolute terms is an equivalent of one hundred and three million (103,000,000) tons of CO₂eq, while achieving economic and social benefits from lower carbon development and increasing the country’s economic competitiveness. Accordingly, Policy Directive 9.2 on mitigation actions clearly states: “i. the formulation and adoption of energy efficiency standards through the Trinidad and Tobago Bureau of Standards to increase EE in the commercial and residential buildings, ii. retrofitting emitting sectors with cleaner technologies and, iii. providing fiscal incentives and disincentives to encourage the use of cleaner technology”¹⁹.

69. As stated in the iNDC, “Trinidad and Tobago is a small island developing state with the attendant limitations of small size, limited technological, technical, financial and human resources, relatively small economy, accounting

¹⁹ Ibid 6.

for less than 1% of global greenhouse gas emissions and more critically, acutely vulnerable to the adverse impacts of climate change. Notwithstanding, the Government of Trinidad and Tobago has placed equal importance on mitigation and adaptation because it recognizes the need for developing a low carbon economy in order to assist in the achievement of sustainable development objectives. To this end, Trinidad and Tobago has begun to put in place the necessary policy and legislative framework and has committed to unconditional mitigation action consistent with the implementation of the National Climate Change Policy”²⁰.

70. Also, as a national priority, the Government has expressed a commitment to the development of an Energy Policy for Trinidad and Tobago through a process of public consultations and discussion, which would incorporate the fullest development of the country’s RE resources. To this end, the Framework for the Development of a Renewable Energy Policy for Trinidad and Tobago recognizes the importance of developing the country’s renewable energy resources and the complementary role of EE to the achievement of long-term sustainable development and energy security and as a mitigation strategy to address the issue of Climate Change. Such development holds great potential for promoting increased investment, enhancing research and development, providing opportunities for the creation of high-value jobs while generating increased foreign exchange and revenues²¹.

7. Knowledge Management. Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

71. At the national level -in terms of knowledge management- communication and sharing of information with relevant private sector, CSOs and academia stakeholders will be an integrated part of the full project cycle for the envisaged pilot investments, with a view on securing their engagement and establishing a solid platform for mainstream alternative RAC technologies. In collaboration with these national project partners, active communication will be maintained to obtain inputs for defining energy performance criteria (through S&L technical committees), and to identify viable business plans and financing models for innovative, low-carbon RAC investments for implementing energy efficiency and climate change policies.
72. The project will take advantage of the country`s experience in the implementation of GEF and MLF funded projects, and will undertake in its own implementation and the documentation of the lessons learnt in terms of:

- The Ministry of Planning and Development acts as the responsible agency for Climate Change and ODS issues and policies, and will be enforced in order to centralize the receipt, organization and dissemination of information and data to be generated under this project proposal; the implementation team will work in close collaboration with the technical staff of the stakeholders to support the systematization of information and lessons learnt, through consultation meetings, and translate the information into a user-friendly format;

- Coordination will be promoted with the responsible agencies in charge of other projects and interventions (being GEF-funded or not) to exchange information and lessons learnt with these interventions, and share and apply in the field with public and private stakeholders. The involvement of ME in the project as a public energy policy support agency, is expected to contribute to the quality of data analysis and reporting for power consumption and RAC imports, while opening a valuable channel for mainstreaming of project results such as standards and labeling best practices, energy efficiency technical guidelines and manuals.

- The Project Management Unit, in the beginning of the project, will convene with an Action Plan to register, sort and document the activities and lessons learnt by each outcome of the project. Experiences gained during project implementation will be documented as inputs for fine-tuning of sector priorities and mainstreaming of

²⁰ *Intended Nationally Determined Contribution under the United Nations Framework Convention on Climate Change.* Trinidad and Tobago.

²¹ Ibid 16.

financial models (such as District Cooling development) and for updating the Climate Change National Communication, iNDCs and other reporting instruments under the UNFCCC.

- The project shall use different communication strategies to reach the target public, such as materials and information systems, to facilitate the dissemination of the lessons learned, including: Reports, Manuals, Guidelines, Website, Press and Social Media (minding that each piece of communication must be tailored to the target public).

73. UNDP will assume a proactive role in systematizing lessons learned for sharing with the GEF. In the regional context, it presents an opportunity for UNDP and GEF to facilitate the transfer of knowledge to the other Caribbean SIDS. The country has been a vocal supporter of the Kigali Amendment on HFCs, and has played an important role in the Caribbean and globally to move an HFC agreement forward in recent years.
74. As an active member of the Caribbean Community (CARICOM), this regional platform has agreed that climate change is an urgent issue for the countries of the region and therefore, regional governments have committed to addressing the issue at local, regional and international levels. CARICOM states have established a Caribbean Community Climate Change Centre (CCCCC) which would have the responsibility of providing the necessary backstopping for countries of the region to implement innovative approaches to help a SIDS economy become more resilient and a demonstration on how to integrate climate change into more sustainable national planning, and a cost-effective demonstration on how to translate knowledge transfer into investments.

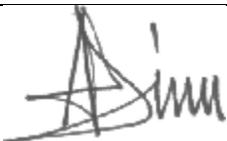
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT 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)
Hayden Romano	GEF Operational Focal Point	ENVIRONMENTAL MANAGEMENT AUTHORITY	02/15/2017

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies 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
Adriana Dinu UNDP-GEF Executive Coordinator		06/07/2017	Kasper Koefoed	507-302-4573	kasper.koefoed@undp.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.