TERMS OF REFERENCE (ToR)
National Individual Consultants

1. Individual Consultant (IC) General Information

Consultant:	National Consultant
Consultant's Task:	Build a detailed inventory of refrigeration and air conditioning equipment and systems installed, imported, exported and manufactured in Trinidad and Tobago with HFCs and alternative substances (ammonia, carbon dioxide, hydrocarbons, among others) in the 2017-2021 period.
Place of destination:	Trinidad & Tobago
Type of contract:	Individual Contract
Contract Term:	4 months

2. Background

Following the outcomes of the 80th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol and subsequently Decision 80/50(e), funding was approved for Trinidad and Tobago for Enabling Activities to prepare for the HFC phase-down and to assure the early ratification of the Kigali Amendment (KA) which happened on Nov 11, 2017.

Taking into consideration that the Kigali Amendment to the Montreal Protocol came into force on the 1st of January 2019, and that Trinidad and Tobago has updated its reporting mechanism to include HFCs, the country will be able to follow up on the standard reporting obligation under the Kigali Amendment. Trinidad and Tobago has already created an enabling environment for the phasedown of HFCs.

3. Objectives

i. Estimate the number of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport units, which may contain HFC and other alternative substances (ammonia, carbon dioxide, hydrocarbons, among others), and may have been imported, produced and sold annually in the country in the **2017 - 2021 period.**

ii. Determine **how the equipment is distributed among user or consumption sectors** (e.g. hotels, hospitals, shopping centers, etc.) of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport applications installed in the country and according to the attached table.

iii. Estimate current and future **(up to 2030) growth/decrease rates** of import, sales and installation of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport equipment in the different user sectors (e.g., hotels, hospitals, shopping malls, etc.).

iv. Characterize the different HFC-based RAC technologies and the alternatives used in **Trinidad and Tobago** including the initial refrigerant charge, annual maintenance recharges, energy consumption per equipment and sectoral consolidation according to the Servicing Sectors considered in Appendix 1 below.

4. Tasks and Responsibilities

The consultant is expected to deliver the following results:

i. Build the inventory of the number of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport units with HFC and other alternative substances (ammonia, carbon dioxide, hydrocarbons, among others), which were imported, manufactured, sold and installed in the country in the 2017 - 2021 period. This entails the calculation of equipment and refrigerants stock in equipment (Business as Usual). i.e. Equipment stock from imports, export and end of life of appliance based on initial charge. Preference for an Emission factor approach).

ii. Define the share of total final electricity consumption per year that was used by RAC equipment and the emission reported in the following sectors; Energy Industries, Electricity generation. This includes the documentation of how the share of total electricity consumption by RAC equipment was estimated.

iii. **Determine sales of equipment**: Statistical data on sale of RAC equipment at the appliance level (e.g., air conditioners, domestic and commercial refrigerators, transport refrigeration etc.) and area of the country where the equipment is used source of electricity generation).

iv. **Determine cooling equipment stock** from statistical data on existing installed RAC equipment at the appliance level (e.g air conditioners, domestic and commercial refrigerators, transport refrigeration, etc) and area of the country where the equipment is used source of electricity generation).

v. **Forecast of future equipment stock** and equipment sales by area of the country where the equipment will be used/source of electricity generation) on grid or off-grid)

vi. Identify the technical characteristics, refrigerant charge and energy consumption of the different types of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport equipment, imported into and manufactured in the country. Technical parameters for baseline equipment must include: typical annual energy consumption of equipment or average cooling capacity, energy efficiency parameters (coefficient of performance (COP), Energy Efficiency Ratio (EER), Annual operating hours and National grid emission factor, grid transmission losses, Off-grid electricity generation equipment performance, Fossil fuel emission factor differentiated by fuel including fossil fuels used for electricity generation in off grid areas (natural/disel).

vii. Determine the distribution of installed air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport equipment in the different user sectors (e.g. hotels, hospitals, shopping centers, etc.) according to the attached table.

viii. Calculate the growth/decrease rates of import/ sales and installation of air conditioning (stationary and mobile), commercial refrigeration, industrial refrigeration and refrigerated transport equipment in the different user sectors (e.g. Domestic refrigeration and air conditioning, Mobile Air Conditioning, Commercial Refrigeration and AC, Industrial and Transportation; as well as fire extinguishers, solvents and aerosol sectors), which may subsequently allow estimating the CO2-eq emissions (direct and indirect) related to refrigeration and air conditioning equipment.

ix. Assessment on the energy consumption and appliance labeling standards in each sector or subsector.

Specifically, according to the attached table:

- Make a sampling of equipment per sector to be able to infer the number of equipment and the HFC and alternatives installed in such equipment.
- Submit a final document with the description of the methodology applied in the inventory, the results of the sectorial and total inventory of HFC in Trinidad and Tobago, the equipment installed per sector, the substances installed, the annual demand for maintenance service, the energy consumption per sector and the trends towards 2030.

5. Deliverables and payment schedule

The consultant will be responsible for the following deliverables:

Product	Deliverables	Delivery Date	Payment Percentage
First Product	Upon approval of Proposal with the general methodology, calculation model and model parameters, method to obtain the values to feed the model, and characterization of the productive sectors to be assessed.	1 month after signing the contract	20%
Second Product	Upon approval of Sampling plan (surveys, interviews and other methodological instruments)	2 months after signing the contract	30%
Third Product	Upon approval Presentation of Inventory Results	3 months after signing the contract	30%
Fourth Product	Upon acceptance and approval of Final document with the requested adjustments and calculations	Within 4 months of contract signing	20%

Should there be observations on the reports, they must be resolved within a 5-calendar-day period. Similarly, UNDP will review and submit observations/conformity to the products within a 5-calendar-day period.

Appendix 1 - SUBSECTORS TO BE INCLUDED IN THE KIP SURVEY

Servicing Sectors	Subsector	Subsector/ Areas for Proxy Data	Application	Energy consumption labeling required in the sector (Y/N)	Actual energy consumption (Kwh/year)
Domestic refrigeration	Domestic refrigeration	Domestic refrigeration	Refrigeration		
Domestic Air conditioning	Residential Air Conditioning	Domestic AC (mini-splits and multi-splits)	AC		
Mobile (Transportation) Air conditioning	Automobile Sector	Automobiles	AC		
Light Commercial Refrigeration	Self-contained commercial Refrigeration Equipment	Commercial refrigeration (bottle coolers, chest freezers, etc.)	Refrigeration and Foams		
Large commercial refrigeration and AC	Minimarkets and supermarkets	Minimarkets and supermarkets	Commercial refrigeration		
	Cold storage rooms	Groceries distribution centers, fisheries, etc.	Commercial refrigeration		

Servicing Sectors	Subsector	Subsector/ Areas for Proxy Data	Application	Energy consumption labeling required in the sector (Y/N)	Actual energy consumption (Kwh/year)
	Shopping centers and department stores	Shopping malls Department stores	Commercial refrigeration and AC		
	Hotels & Convention Centers	Hotels Convention centers	Commercial refrigeration and AC		
	Restaurants & Food Chains	Restaurants Food chains	Refrigeration and AC		
	Banks and Convention Centers	Convention centers, banks	Commercial AC		
	Hospitals and Clinics	Hospitals and Clinics	Refrigeration and AC		
Refrigerated transport	Food cold chains and other transport refrigerated and AC	Refrigerated transport	Refrigeration		
		Frozen transport			
		Commercial vessel refrigeration			
		Touristic vessel refrigeration and AC			
		others			
	Industrial Processes	Ice cream factories			

Servicing Sectors	Subsector	Subsector/ Areas for Proxy Data	Application	Energy consumption labeling required in the sector (Y/N)	Actual energy consumption (Kwh/year)
Industrial refrigeration		Ice Factories	Industrial refrigeration and chillers		
		Dairy Industry			
		Others			
Foams			Foams		
Fire extinguishers			Fire extinguishers		
Aerosols			Aerosols		
Solvents			Solvents		

6. Deadline

The consultancy ought to be carried out **within 4-month period**, including due product submission.

The start date shall be the day following the signing of the contract. Deliveries before the stated deadlines do not entail additional compensation, but they will be assessed favorably.

7. Form of Payment

Payments will be made within **15 working days** after the products have been received satisfactorily (not simply receiving them), after the electronic bills have been received, and according to the schedule and percentages established herein. Conformity will be stated by UNDP in coordination with the General Directorate of Industry Environmental Affairs of PRODUCE.

Should there be any observations on the submitted products, the payment term will begin when the consultant has resolved the observations.

The consultant shall keep strict confidentiality of all the information he/she may have had access to in the framework of the contract, except for public information.

8. Profile

The consultant may not have any conflict of interest with the activities included in the consultancy.

According to UNDP policy, individuals whose father, mother, son, daughter, brother or sister is an employee of UNDP or any United Nations agency in Trinidad and Tobago, under any contract type, may not participate, and the restriction may extend to any other relative.

ADDITIONAL REQUIREMENTS FOR THE RECOMMENDED CONTRACTOR
The recommended Individual contractor below age 65 is required to submit a statement of good health and a copy of his/her medical insurance prior to commencement of services in any offices or premises of UNDP, or before engaging in any travel required by UNDP or connected with the performance of the contract. Medical examination is not required.

The recommended Individual contractor aged 65 and older is required to submit a statement of good health signed by a recognized physician and a copy of his/her medical insurance prior to commencement of services in any offices or premises of

UNDP, or before engaging in any travel required by UNDP, or connected with the performance of the contract. The medical examination shall be paid by the consultant..

Academic Background:

- Minimum BSc. degree in economics, engineering, environmental sciences and/or related fields.
- Training (desirable) in:
  - Environmental topics such as environmental regulations, green certification, Montreal Protocol and related topics.
  - Inventory Management
  - Skills excel, database analysis or statistical software such as STATA or similar.

Professional Experience:

- At least 4 years' experience in the public or private sectors.
- At least 3 years' experience in data analytics or experience in creating inventories
- Experience in project management.
- Experience in economic and market studies in the manufacturing and trade sectors as well as impact and cost-benefit assessments.
- Experience in collecting primary information through surveys, interviews and focus groups.

9. Evaluation Criteria

Method: Highest total score of weighted desk review and financial criteria: The price proposals of all consultants, who have attained a minimum 70% score at the Desk Review, will be compared. UNDP will award a contract to the individual who receives the highest score out of a predetermined weighted, Desk Review and Financial criteria as follows: 70% Desk Review criteria, 30% Financial criteria.

Table 1

	Desk Review Criteria	Maximum points*
1	Relevance of Education/ Degree	25
2	Years of Relevant Experience	30
3	Adequacy of Competencies for the Assignment	50
4	Knowledge of the RAC Sector	25
5	Special Skills/Training	20
	Total	**150**

Once the candidates have attained a score of at least 70% on the desk review, based on the requirements in the Terms of Reference, only then, their financial proposals to be evaluated.

The final evaluation process is based on a 70:30 weighting, with 30 points being allocated to the financial component.

The following formula (cumulative analysis) is used to determine the financial scoring: $p = y(\mu/z)$,

Where:

p = points for the financial proposal being evaluated
y = maximum number of points for the financial proposal
μ = price of the lowest priced proposal
z = price of the proposal being evaluated