



Advertisement Reference: (IUL)438-ENV/438/2020/27

## **TERMS OF REFERENCE**

## Retrofitting or/and Replacing HCFCs and HFC based refrigeration and air-conditioning equipment with R 290/R600a/HC blend alternatives in an establishment/facility

## BACKGROUND

Maldives is a Party to the Montreal Protocol on Substances that Deplete the Ozone Layer and has acceded to the Vienna Convention and Montreal Protocol in May 1998. As a party to the Vienna Convention and Montreal Protocol on Substances that Deplete the Ozone Layer, Maldives has phased out several ozone depleting substances (ODS). To comply with its obligations under the Montreal Protocol, Maldives is currently implementing the phase-out of Hydrochlouroflourocabons (HCFCs) by 2020.

With the import control on HCFCs accompanied with the ban on HCFC based equipment in December 2015, a tremendous increase in the import of Hydroflourocabons (HFCs) has been observed in the recent years. The ODS survey carried in the Maldives in 2016 shows that with the implementation of HPMP in 2010 and subsequent enforcement of regulations, the percentage of HCFC consumption has gradually decreased and consumption of ODS alternative refrigerants have increased.

The report shows that the consumption level of HCFCs at the end of 2015 was at 40% while ODS alternatives accounts for 60% of the total refrigerant consumed in the country. Consumption of all ODS alternatives are projected to grow more than 250% during 2016-2030 period.

Maldives has ratified the Kigali Amendment (KA) which proposes to phase down the production and usage of hydrofluorocarbons (HFCs) by mid-2040. HFCs are man-made chemicals that are widely used in air-conditioning, refrigeration and foam insulation and are powerful greenhouse gases, more potent than carbon dioxide. As such they contribute significantly to climate change. KA is therefore a significant milestone in the international environmental protection as its achievement could help to reduce the global temperature rise by 0.5 degree Celsius by the year 2100.

The Fisheries Sector and Tourism sector are the largest consumers of ODS and ODS alternatives in the Maldives. Maldives being a tropical island country with a hot and humid climate, various types of cooling, refrigeration and air conditioning equipment are used in



various establishments such as resorts, hotels, guesthouse, safari vessels, schools, hospitals and in fisheries complexes.

The Government of the Republic of Maldives through the Ministry of Environment is implementing “Go Green” financed by the New Zealand government and intends to apply part of the proceeds for the selection of an establishment for replacing and/or retrofitting HCFCs and HFC equipment with R 290/R600a/HC blend.

## OBJECTIVE

This project intends to completely phase-out HCFCs and HFC in an establishment by replacing the HCFC and HFC charged air-conditioners and refrigeration systems by replacing and/or retrofitting with R290/R600/HC blend.

## SCOPE OF WORKS

The tasks to be undertaken by the establishment include but are not limited to, the following:

1. Analysis of the past one-year energy usage of the facility
2. Provide the data of the refrigeration and air-conditioning systems in the provided format in Annex A.
3. If the replacement program includes air conditioners and refrigerators in the following range, it should meet the level 4 criteria set by the Maldives Energy Authority. MEA will verify the energy efficiency and ozone requirements based on the test reports submitted by the establishment.
  - a. Air conditioners: Single-phase single-split and unitary type air conditioners of both fixed speed and variable speed types, for household use including the rated capacities of up to 30000 Btu/hr.
  - b. Compression-type Direct-Cool (single-door) refrigerators and Compression-type Frost-Free (double-door, three-door and side-by-side) refrigerators including the rated capacities of 1001-6501.
5. Provide arrangements for the technician (s) to retrofit all the systems
6. Provide co-financing
7. Undertake the remaining retrofit of air-conditioners and refrigeration systems as co-financing from the establishment
8. Provide maintenance and servicing data as and when requested by the Ministry
9. Analysis of monthly energy bills for a one-year period after the retrofitting is completed to identify the savings occurred.

A technician would be hired by the Ministry of Environment to assist the National Ozone Unit and the establishment to carry out the tasks. Procurement of systems would be carried out by the establishment with the funding provided by the Ministry of Environment



## DELIVERABLES

MAJOR DELIVERABLE	DETAILS OF DELIVERABLE	DURATION	END PRODUCT
Draft Work plan	<ul style="list-style-type: none"> <li>Detailed plan for undertaking the retrofit <ul style="list-style-type: none"> <li>The plan should include the schedule of procurement of systems, submission dates of required data, undertaking the retrofit, etc.</li> </ul> </li> </ul>	1 week upon signing of agreement	Approved work plan
Analysis report	<ul style="list-style-type: none"> <li>Analysis report of the past one year energy usage of the facility</li> </ul>	2 weeks from acceptance of work plan	Approved report/data
Refrigeration and air-conditioning systems data (As per Annex A)	<ul style="list-style-type: none"> <li>Number of systems with HCFCs and HFCs data</li> <li>Total number of systems in the establishment/facility with their capacity</li> <li>Number of systems to be replaced (all HCFCs and HFC based equipment) with their retrofit and replacement choice. This should include the requirements set by MEA</li> </ul>	1 week upon signing of agreement	Approved data
Procurement	<ul style="list-style-type: none"> <li>Finalization of type of refrigerant/systems after discussing with the Ministry</li> </ul>	4 weeks from acceptance of work plan	Finalization of the refrigerant type
Retrofitting all the systems	<ul style="list-style-type: none"> <li>Retrofit as per the work plan submitted</li> </ul>	4 months from signing of agreement	Completed retrofit of all systems



## DURATION OF THE ASSIGNMENT

Duration of the project is 5 months upon signing the agreement

## QUALIFICATIONS AND EXPERIENCE

To be eligible for this project the establishment/facility must demonstrate capacity to undertake the servicing and maintenance of the systems and the financial capacity to provide co-financing.

## EVALUATION CRITERIA

The establishment/facility will be selected based on the following criteria:

Criterion	Weightage
Price for retrofitting of all the existing HCFC and HFC based systems (least cost based on the number of units and capacity of the units)	50%
Proposed co-financing from the establishment (based on the total number of units/systems)	40%
Demonstrate availability of a Refrigeration and Air conditioning technician to carry out the servicing and maintenance of the systems (At least one technician) <i>Experience of proposed technician (Each reference letter carries 2 marks)(maximum marks:10)</i>	10%

## PAYMENT SCHEDULE

The payment will be released as follows:

- a) 15% upon submission and approval of the work plan
- b) 20% upon submission and approval of Analysis report of the past one year energy usage of the facility and Refrigeration and air-conditioning systems data
- c) 40% upon submission of the shipment order
- d) 10% upon completion of retrofitting the systems with funds provided by Ministry
- e) 15% upon completion of total retrofitting the systems with co-financing from the establishment.



## Ministry of Environment

Male', Republic of Maldives.

دَسْرَسْجَيْرَهُ تَرْجَمَهُ

۱۰۰۰ میلیون دلار می‌باشد - این مبلغ می‌تواند برای این اهداف مورد استفاده قرار گیرد.

Note- Client will designate a technician to assist in retrofitting the systems and for any other technical assistance required.

## **SUBMISSION REQUIREMENTS**

Interested establishments may submit their applications along with the following documents in a sealed envelope

1. Profile of the Establishment
2. No: of air-conditioners and refrigeration systems (with type of the refrigerant)
3. Present mechanism for Servicing and Maintenance of the current systems
4. Co-financing percentage from the establishment (of the total proposed project cost)
5. Total budget required for retrofit or replacement
6. Work plan
7. Proposed duration of the assignment
8. Business registration and tax registration certificates (if applicable)
9. Relevant documents demonstrating the experience and qualification of proposed Refrigeration and Air conditioning technician

Interested establishments may submit their proposals no later than **1000hrs of 13 February 2020** to the following address.

Procurement Section  
Ministry of Environment  
Green Building, Handhuvaree Hingun, Maafannu  
Male', 20392, Republic of Maldives

For further information please contact the following.

National Ozone Unit  
3018361 / 3018369  
ozone@environment.gov.mv

