UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)

Call for Expression of Interest

For establishment of a Recovery, Recycling and Reclamation center of CFC, HCFC and HFC in IRAN

13 December 2020

Background Information

As a signatory to the Montreal Protocol, Iran is required by the international agreement, to control the import and use of ozone-depleting substances and to phase out the use of the stated substances over a prescribed period of time. A group of such substances includes hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) refrigerants.

The HCFC Phase-out Management Plan (HPMP) Stage II was approved at the 77th meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol. The main objective of the HPMP Stage II focuses is to phase-down and ultimately phase-out the use of HCFCs in various industrial sectors through a harmonized national strategy. HCFCs are widely used in refrigeration, foam, solvent, aerosol and firefighting sectors as a transitional substance to substitute Chlorofluorocarbons (CFCs). These activities are ongoing through a scheduled national strategy to comply with Montreal Protocol's targets. Iran does not produce HCFCs. However, Iran does import HCFCs for various industrial uses.

The Kigali Amendment added to the Montreal Protocol targeted the phase-down of the production and consumption of HFCs. HFCs are commonly used as alternatives to ozone-depleting substances. Although HFCSs have less potential of Ozone-depleting, greenhouse gases can have high global warming potentials (GWPs). As one of the article 5 countries, Iran is planning to freeze and phase down HFCs during the next years. In figure 1, the estimated total amount of refrigerants available in the country from 2015 to 2025 is presented.

To implement the control of F-gases (refrigerants containing fluorine), a number of legal provisions will be put in place, including the control of import and sale of HCFCs and HFCs

through a reducing quota system and the anticipated regulations to make a recovery and reclamation of refrigerants mandatory and profitable for all refrigeration service operations.

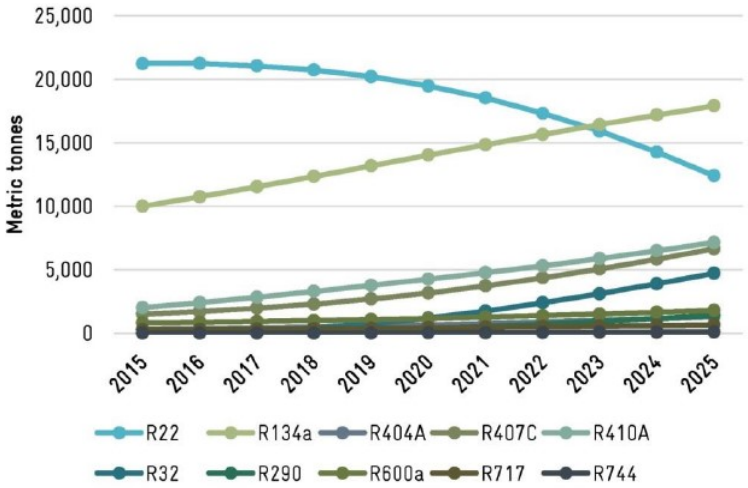

Figure 1 The total amount of refrigerants potentially available for management in Iran (Reference: ODS bank inventory, Islamic Republic Of Iran; GIZ and DoE)

By reducing and banning the import of HCFCs and later HFCs to the country, the recovery, recycling, and reclamation of them would be a financially acceptable option for industries. Recycling is including simple processes of filtration and drying of the used gases. In comparison, reclamation reprocesses the recovered/recycled fluorinated gases to match it with the virgin gas specification. Reclamation process through the more complex operations such as fractional distillation technology separates refrigerant blends (azeotropic/zeotropic) that would be destroyed otherwise.

Recycled or reclaimed HFCs are not subject to the limits of the HFC phase-down. Several reasons, including the economic challenges in the country and shortage of production of these gases in other countries, have raised the refrigerant gas prices rapidly and considerably. The COVID-19 pandemic has intensified this situation, and it is expected that this upward trend to continue.

An evaluation is in progress to assess the viability of the market in Iran to set-up a refrigerant recovery, recycling, reclamation and Destruction (RRRD) center. Also,regulations will be developed to encourage the recovery and reclamation of refrigerants. If approved, the pilot demonstration project for refrigerant recovery and reclamation service is to be implemented to demonstrate a successful RRRD facility's feasibility and operability.

In Iran, some companies have started to recover refrigerants in the framework of HCFC phase out management plan, stage II. In addition RAC contractors (both in buildings and mobile air conditioning sector) and end-users are also the key part of this project, and systematic training and awareness-raising are required to increase their commitment and participation.

Project Model & Associated Services

The project will implement a pilot scheme for the HCFC and HFC Reclamation in Iran. The objective is to establish the business feasibility criteria of the RRRD center based on the the local Iranian market. Developing a successful financial model ensure the supply of recovered, and reclaimed F-gases to the local servicing market, thereby reducing the demand and consumption of virgin gases. The success in the reclamation center's establishment and operation will set a solid foundation for promoting the recovery/recycling/reclaim of refrigerants in Iran and will result in a smooth phase-out of HCFC and HFCs.

A detailed description of the required services

The expected capacity is 100 tonnes annually. Reclaimed refrigerants should be certified to meet the same exacting AHRI 700/740 standards as newly manufactured material.

Required services are categorized into three parts: 1) business feasibility assessment and finding the best financial and executive mechanism for establishment of an F-Gas reclamation center and F-Bank in Iran and, 2) Providing unit operations for processing the gas and laboratory equipment and 3) Developing a sustainable network for collection (and recovery) of gases and delivery of reclaimed gases;

1. **Business feasibility assessment of refrigerants reclamation**

- Market study including trends of refrigerants prices in the local market, drivers and demands
- Designing the best financial and logistic model for pilot project implementation and its development and scaling up phases
- Review and present appropriate policies to attract stakeholder participation and cooperation based on the best practices of other countries and the conditions of Iran

2. **Providing unit operations of recycling and reclamation**

- The reclamation process would be consisting of a recycling system and also a combination of distillation, cleaning, and drying processes. This process removes particulates, non-condensable, oils, chlorides, waxes, acids, and moisture and restores refrigerants to manufacturers' specifications.
- Laboratory equipment to confirm the specifications are according to the AHRI 700;

3. **Logistics and required services for the collection of gases**

Providing appropriate services for the collection of gases and delivery of the reclaimed gases to end users or distribution centers is an important part of this project that could guarantee the viability of the project. The main costumers and also resources of gathering gases could be:

- Installation and Maintenance Contractors of RAC systems in buildings;
- Industrial Refrigeration systems;
- Mobile air conditioning service centers;
- Current recovery centers;
- Technicians and wholesalers, etc.

It is expected that a reliable network for collection of gases from the costumers be designed and implemented. UNIDO will support awairness raising and trainings for the main target groups as part of the provided support in this project.

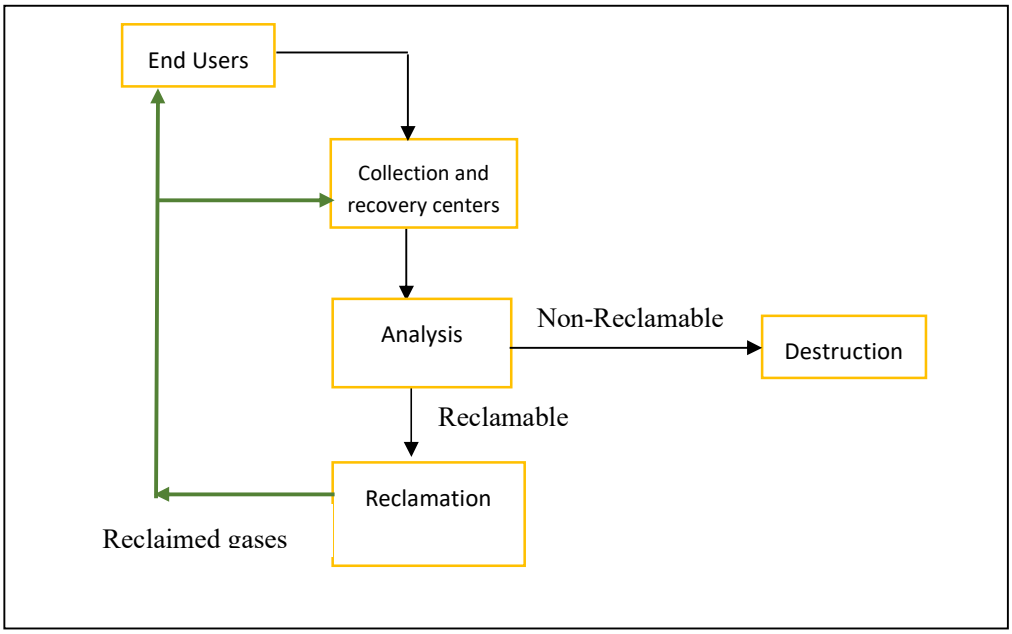

Figure Predicted primary structure of the gas collection network

CALL FOR EXPRESSION OF INTEREST

UNIDO supports supply of equipment for recycling and reclamation process and laboratory equipment and here is looking for eligible companies capable of operating this system and providing the requested reliable network of gas collection and invites them to express their intrest and readiness.

If you wish, please, while responding to the subject of this call, provide your initial financial and technical pre-feasibility study for this project and introduce the advantages and capacities of your company for the operation of this facility.

Besides, provide information about your company by completing the below table and attaching a current version of your company brochure or any relevant company information.

The deadline for receiving the EOIs is 11 January 2021. Please send your reply to m.sayahi@unido.org. You can also apply for more information through this address.

Company name:	
Business nature :	
Address :	
Contact person :	Position :
Telephone no :	Mobile no :
E-mail :	Company web site:

Completed and signed by: Name and position:

Date:

Disclaimer:

Calls for Expressions of Interest do not constitute a solicitation. UNIDO reserves the right to change or cancel the requirement at any time during the call for expression of interest and/or solicitation process.

Nothing in or relating to this Call for Expression of Interest shall be deemed a waiver, express or implied, of any of the privileges and immunities of UNIDO.