United Nations Development Programme

TERMS OF REFERENCE

National Consultant for preparing the Training Manual for service refrigeration and air-conditioning technicians

Job Title: National Consultant
Duty Station: Chisinau, Moldova
Reference to the project: HCFC Phase-out Management Plan (HPMP), stage 1
Type of Contract: Individual Contract (IC)
Expected workload: 40 working days
Duration of Assignment: May- July 2014

I. BACKGROUND

The XIXth Meeting of the Parties to the Montreal Protocol in September 2007, through its Decision XIX/6, adopted an accelerated phase-out schedule for HCFCs. The 54th Meeting of ExCom in April 2008, through Decision 54/39, adopted guidelines for preparation of HCFC phase-out management plans. These guidelines provided indicative outline and contents of the HCFC phase-out management plans, which are essentially based on earlier guidelines developed and followed for the Terminal Phase-out Management Plan (TPMP) (RMPs/TPMPs/SPPs/NPPs). The decision featured the following key elements:

a) Adoption of a staged approach to implementation of the HCFC phase-out management plans within the context of an overall national strategy. The first stage would focus on compliance with the 2013 freeze and 2015 reduction targets. The second stage would focus on HCFC phase-out in compliance with the future reduction control targets;

b) Commitments to achieving the 2013 (freeze at the 2009/2010 baseline level) and 2015 (10% reduction) control milestones through performance-based agreements.

The HCFC Phase-out Management Plan (HPMP) for the Republic of Moldova for the period 2011-2015, stage 1 has been prepared by the National Ozone Unit of the Ministry of Environment of the Republic of Moldova to meet obligations that the Republic of Moldova has assumed as a Party to the Montreal Protocol. At the 63rd ExCom meeting in December 2010, the HPMP-stage I for Moldova was approved for implementation.

The primary focus of the HPMP-stage 1 is on the actions required to achieve the immediate phase target of a 2013 freeze at the baseline (determined by the average consumption of HCFCs in 2009 and 2010) and the subsequent 10% reduction of the baseline by 2015.

The HPMP is the first stage of the long term strategy directed to meeting the 2020 (35 % baseline reduction) and 2025 (67,5% baseline reduction) phase out targets & ultimately complete elimination of HCFCs consumption in 2040.

II. PROJECT DESCRIPTION

The activities included in the HCFC Phase-out Management Plan (HPMP) for the Republic of Moldova for the period 2011-2015, stage 1 are meant to support the country in achieving a 10% reduction (4.15 metric tones – 0.23 ODP tones) in HCFCs consumption by 2015, and concentrate exclusively on servicing sector as a sole consumption sector in the country.

The action plan for 10%-reduction of the HCFCs consumption in the Republic of Moldova includes:

- Regulatory measures consisting of:
  - Harmonization of legislation with the EU legislation, (F-Gas Regulation);
  - HCFC chemical import quotas, permits and environmental taxation;

- o Bans on specific HCFC equipment;
- o Reporting system for the servicing sector.

The following policy instruments will be implemented through modifications of the existing Regulation on ODSs and alternative refrigerants as follows:

- Mandatory two-level training and certification of technicians will be gradually introduced;
- Mandatory logbooks for users of the equipment containing more than 3 kg of charge (HCFCs);
- Development of the electronic, web-oriented reporting system.

• Technical Capacity Development:

o Training and certification of approx. 50 technicians (acc. to EU Regulations No. 842/2006 and No. 303/2008), with supply of basic service equipment (20 sets of service equipment):

- Portable recovery machines capable of dealing with HCFCs and HFCs;
- Double stage vacuum pumps;
- Required multiuse cylinders;
- Leak detectors; and
- Basic service tools.

o Support to improve knowledge base at vocational schools;

o Support to the National Refrigeration Association (Web-site, Workshops, Service tools);

o Training of 25 Customs officers, update of training materials and the supply of modern multigas identifiers (in order to detect and prevent illegal trade of ODSs and equipment with ODSs).

• Monitoring of activities: (timely implementation of the HPMP components, interacting with major stakeholders and interested parties, and providing feedback on the effectiveness of the proposed measures to achieve project objectives).

III. OBJECTIVE OF THE ASSIGNMENT

The objective of this consultancy service is to prepare the Training Manual for service refrigeration and air-conditioning technicians, moving the process of training and certification of refrigeration technicians to a higher level, in line with the international level requirements.

IV. SCOPE OF WORK AND EXPECTED OUTPUTS

Although the efforts to improve the basic skills of technicians in the servicing sector have been made earlier under the projects RMP, RMP update, TPMP, it has been shown that the refrigeration servicing sector is still in need of adapting and improving knowledge for the new technologies, practices and procedures typical for HFCs blends and even more so for natural refrigerants.

This Manual is part of a series of teaching aids and training manuals produced by Ozone Unit within the National Programmes for the Phase-out of ODSs in the Republic of Moldova, in order to establish appropriate good practices for the refrigeration servicing sector. Such good practices are an important part of the regulatory framework to support the phase-out efforts within the HCFC Phase-out Management Plan (HPMP).

Taking into consideration that the HPMP Phase-out Management Plan implementation project has as a general objective the phase-out of HCFCs, and that the information on HCFCs and refrigeration and air-conditioning equipment containing HCFCs, as well as new practices for alternatives (natural refrigerants and HFCs blends) has not been included in previously produced training manuals, the contractor will include the information in the new training manual for service refrigeration and air-conditioning technicians.

The manual will be used by teaching staff of vocational schools for the purpose of developing training resources or as a part of training courses, as well as a general guide for the students and technicians that will be trained in order to pass an examination for obtaining of Certificate of training.

The manual should consist of relevant topics such as basic refrigeration principles, influence of refrigerants on the environment, new low global warming potential (GWP) and non-HFC technologies based on the material developed internationally to comply with the upgraded training and certification scheme and comprise the skills and knowledge groups as follows:

1. Basic Thermodynamics.
2. Environmental impact of refrigerants and corresponding environmental regulations.
3. Checks before putting in operation, after a long period of non-use, after maintenance or repair intervention, or during operation.

4. Checks of leakage.
5. Environment-friendly handling of the system and refrigerant during installation, maintenance, servicing or recovery.
6. Component: installation, putting into operation and maintenance of reciprocating, screw and scroll compressors, single and two-stage.
7. Component: installation, putting into operation and maintenance of air-cooled and water-cooled condensers.
8. Component: installation, putting into operation and maintenance of air-cooled and water-cooled evaporators.
9. Component: installation, putting into operation and servicing of TEV and other components.
10. Piping: building a leak-tight piping system into a refrigeration installation.

The National Consultant is advised to undertake following activities in order to prepare the training manual:

1. Develop an outline of the new training manual, with a brief description on the approach and methods and circulate it to the Public Association of Refrigeration, Center for Continued Education of the Technical University of Moldova, Ozone Unit, independent reviewer, etc. to get their feedback and comments and finalize the outline;
2. Develop the content of the training manual;
3. Incorporate the feedback and suggestions from the independent reviewer and relevant stakeholders during the manual development process;
4. Submit the final draft of the manual to the Ozone Unit, which will present it to the Faculty of Mechanical Engineering and Transports of the Technical University of Moldova for publication approval .

V. DELIVERABLES

Deliverable	Deadline	No. of working days (estimated)
1. Structure and detailed outline of the training manual	16 May, 2014	5
2. First draft of the manual	30 June, 2014	17
3. Second draft of the manual, after sharing the training manual with the relevant stakeholders and the Project and incorporation of relevant comments and suggestions	22 July, 2014	15
4. The final draft of the manual	31 July, 2014	3

The manual is to be submitted in Romanian language, in electronic format.

The Contractor is not expected to do proof-reading and pre-print editing of the final version of the manual, nor the design and printing of the training manual.

VI. TIMEFRAME

The timeframe for the assignment of the National Consultant is planned tentatively through May-July, 2014.

VII. ORGANIZATIONAL SETTING

The consultant will work closely with the Ministry of Environment, under overall supervision of the Project Manager. The Project will provide all needed support to the consultant in order to facilitate the process. The consultant will report to the Project Manager.

VIII. FINANCIAL ARRANGEMENTS

All candidates will be requested to submit an aggregated financial offer ("aggregated financial offer" is the total sum of all financial claims of the candidate for accomplishment of the task). Payment will be made upon submission and approval of deliverables and certification by UNDP Moldova Programme Manager that the services have been satisfactorily performed.

IX. QUALIFICATIONS AND SKILLS REQUIRED

1. Academic Qualifications:

- Bachelors degree in education, science, engineering (Mechanics, Refrigeration) or any other relevant fields.

2. Years of experience:
   - At least 5 (five) years experience in the relevant field.
   - At least 5 (five) years experience in curriculum development, and course materials design and teaching aids, preferable related to technical, vocational and educational training.
   - Experience with working in international assistance projects. Previous experience with UNDP is a very strong advantage;
   - Experience in the usage of computers and office software packages (Ms Word, Excel, Outlook etc.).

3. Competencies:
   - Good knowledge of refrigeration and air-conditioning sectors: current situation, trends and problems to be solved, familiarity with the Montreal Protocol and country programme on ODS phase-out in Moldova, legal requirements of the EU Regulation no. 842/2006;
   - Skills to research, design, and produce quality knowledge products (manuals, reports, policy papers, research papers, curricula, etc.)
   - Demonstrate capacity of team-oriented work, excellent planning and organizational skills;
   - Ability to achieve results and deadlines in a timely manner, maintaining a high standard throughout;
   - Fluency in written and spoken Romanian and Russian. Knowledge of English will be a strong asset.