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**GUIDELINES FOR THE PREPARATION OF
REFRIGERANT MANAGEMENT PLAN (RMP)**

(Submitted by UNEP)

1. INTRODUCTION

The Multilateral Fund for the implementation of the Montreal Protocol was established as an environmental fund to assist developing countries to eliminate the use of substances that are controlled under the Montreal Protocol.

Developing countries, whose calculated consumption of Ozone Depleting Substances (ODS) is less than 0.3 kg per capita per year are considered to be operating under Article 5, paragraph 1 of the Montreal Protocol and are eligible for assistance under the Multilateral Fund to enable their compliance with the control measures of the Protocol.

Financial assistance under the Multilateral Fund is provided in two main categories - Investment projects and Non-Investment projects (including Country Programmes, Institutional Strengthening projects, Technical assistance and training projects, Networking and information dissemination). Though the number and costs of the different types of projects vary considerably, each constitutes a critically important element for Article 5 countries in reaching the 1999 freeze targets and in obtaining their goal of complete ODS phase-out by 2010.

The first step toward implementation of the directives of the Montreal Protocol is the formulation of a Country Programme. The Country Programme incorporates a comprehensive account of the current consumption of ODS in the country, defines the institutional, political and industrial framework and estimates the economic and social consequences of meeting national commitments under the Montreal Protocol.

Once the Country Programme has been prepared and approved by the Executive Committee, financial assistance can be requested for investment and non-investment projects, in accordance with the Action Plan defined in the Country Programme. Institutional Strengthening projects, which are aimed to strengthen national capacities to coordinate and monitor phase out activities are normally approved concomitant with approval of the Country Programme.

As of May 1997, the Executive Committee of the Multilateral Fund has approved 109 Country Programmes and 76 Institutional Strengthening projects.

2. BACKGROUND

2.1 *Characteristics of LVCs and VLVCs*

In 1997, 118 countries were classified as Article 5 countries of which 86 were classified as low-volume ODS-consuming countries (LVCs). LVCs are those countries whose consumption of ODS is less than 360 tonnes per annum. Very low volume ODS-consuming countries (VLVCs) are those whose consumption is less than 30 tonnes per annum¹. LVCs (hereinafter includes VLVCs) consume small amounts of ODS, but these ODS can be

critical to their economy, especially in export and foreign exchange earning sectors. Few LVCs manufacture ODS and ODS-containing equipment and their needs are met by larger Article 5 and non-Article 5 countries. Most LVCs consume about 70 - 100% of their total ODS consumption in the Refrigeration sectors, mostly for servicing and maintenance of refrigeration equipment.

2.2 Barriers to Phase-out

There are a number of barriers to the phase-out of ODS in LVCs, including inadequately skilled manpower, institutional constraints, large and diverse informal sector, lack of information and training on ozone issues, low economies of scale of phase-out projects and lack of sufficient involvement by all stakeholders².

Since many LVCs do not have any investment projects, effective implementation of non-investment activities such as training, information dissemination and Recovery and Recycling is imperative to enable them to meet their phase-out obligations. It is particularly important that institutional arrangements (such as establishment of legislations, monitoring ODS consumption and increasing public awareness etc) and industrial sector activities (conversion, training etc) are implemented in a coordinated and synchronized way. However in many LVCs these different actions have often not been well coordinated, sometimes under the responsibility of different agencies.

2.3 Need for Refrigerant Management Plan

Until now, the approval of Country Programmes and Institutional Strengthening projects has been followed by a "project-by-project" approach for the purpose of phase out of ozone depleting Refrigerants (ODR). The need for such projects have been identified at different times and stages of Country Programme implementation. Typical projects submitted and approved for LVCs have included:

- Training of refrigeration and air-conditioning technicians
- Training of Customs officials
- Recovery and Recycling and Conversion projects

Such a "project-by-project" approach has often resulted in delays and inefficiencies in project approval and implementation processes. The absence of a specific policy framework has also resulting in sluggish responses and prevented the effective translation of the phase-out strategy as identified in the Country Programme.

One approach for overcoming the above mentioned inefficiencies could be to institute a multi-criteria approach which will enable a comprehensive phase-out plan to be prepared and implemented at the national level. A Refrigerant Management Plan (RMP) comprises such a comprehensive phase-out strategy for the Refrigeration and Air-conditioning sectors in LVCs.

By July 1999, Article 5 countries are committed to freeze their consumption of Annex A CFCs at the average of 1995-97 levels. The RMP will ensure that LVCs meet their freeze commitments and further phase-out obligations.

Additionally the RMP will assist LVCs in meeting the decision taken at the 9th Meeting of the Parties that all countries need to adopt legislative and administrative measures to regulate export and import of products, equipment components and technologies.

The Guidelines for the development of a RMP are based on a paper jointly prepared by UNEP and the Government of France and subsequent discussions with other relevant stakeholders.

These Guidelines are, at present designed to meet the phase-out requirements in the Refrigeration and air-conditioning sector of LVCs. However these Guidelines can be customized for larger volume ODS consuming countries also. The Guidelines are a broad based reference document and should be adapted to meet the specific needs and requirements of each country. Other related documents could be used for reference such as:

- *"Reducing CFC use in Refrigeration: Strategic Options for countries with low CFC consumption"* by UNIDO/USEPA
- *"ODS Pollution Prevention Management Plan"* by Environment Canada
- *"Regulations to control ODS – A Guidebook"* by UNEP/SEI
- *"Monitoring Imports of ODS – A Guidebook"* by UNEP/SEI

3. PRINCIPLES AND STEPS IN FORMULATING RMP

The necessity to develop and implement a RMP originates from the need to resolve the many complex and interrelated issues defined above so as to eliminate the use of ODS refrigerants.

The RMP is a critical management tool for LVCs for a smooth transition to non-ODS refrigerants and includes strategy elements such as containment, Recovery and Recycling, retrofits and provision for the critical stocks for the 'service tail' through internal conservation techniques. The RMP will contribute to the country's phase-out of ODS by identifying all the activities required, describing all the Government measures that will be necessary to ensure the success of projects and planning how all these activities will be implemented over time.

The RMP will result in:

- accelerating progress of ODS phase-out by enhancing efficiency of project implementation
- reducing national dependence on ODS
- improving planning, management and coordination of national phase-out activities by National Ozone Units (NOUs)³, and industries
- synchronizing policy setting with phase-out activities

3.1 Steps for formulation of RMP:

- *Undertake country-specific review and analysis of:*
 1. Refrigeration and air-conditioning sector and sub-sector
 2. Consumption of CFC and HCFC refrigerants and their availability, sources of supply and distribution channels

3. Production of refrigeration and air-conditioning equipment
 4. Servicing and maintenance workshops
- *Characterize the relative importance of sub-sectors on the basis of:*
 1. Level of consumption of ODS refrigerants
 2. Economic importance
 3. Trade orientation.
 - *Assess the available and feasible options, including:*
 - ◆ Technical options such as:
 1. Good Practices,
 2. Recovery and Recycling
 3. Conversion, retrofitting, replacements etc
 - ◆ Policy options such as:
 1. Voluntary programmes/Agreements,
 2. Legislation and Regulations
 3. Economic Instruments.
 - *Evaluate the alternative options for:*
 1. Cost-effectiveness
 2. Feasibility and timing
 3. Maximum impact
 - *Formulate a Refrigerant Management policy (which will include all or some of the following elements, in accordance with country - specific needs):*
 1. Training programme for refrigeration technicians
 2. Recovery and Recycling system
 3. Training programme for customs officials
 4. Improved system for collection and monitoring and control of consumption of ODS refrigerant

While developing the RMP, it must be recognized that implementation of all the components should be timed to complement one another so as to ensure maximum impact on ODS phase-out in accordance with national phase-out time-schedules and obligations under the Montreal Protocol.

4. GUIDELINES FOR FORMULATION OF RMP

Step 1: Setting up Coordinating Team

The establishment of a Coordinating Team will ensure the involvement of all relevant stakeholders in the development of the RMP and will facilitate the flow of information from different sectors and provide feedback and inputs into the phase-out strategy.

- ***If the Country Programme is under formulation:***
the Ozone Focal Point and the National Team⁴ could act as the Coordinating Team.
- ***If the Country Programme has already been approved:***

the National Team could be reactivated with the help of the NOU (set up under the Institutional Strengthening project).

In both cases, the Coordinating Team could be enhanced with representation from typical stakeholders in accordance with their sectoral and economic importance. (Examples of some of the stakeholders who could be part of the Coordinating Team are provided below)

Ministerial representation:

- Agriculture and Fisheries
- Tourism
- Industry and Commerce
- Customs
- Economic planning
- Transport
- Defence
- Environment, etc

Industrial, Institutional and other representation:

- Professional federations for the different economic sectors (refrigeration, fishing, slaughterhouses, tourism, etc)
- Chambers of Commerce and Industry
- Large supermarket chains
- Training organizations
- Importers and distributors of ODS refrigerants
- Refrigeration and air-conditioning technicians, etc

Step 2: Data Collection

4.2.1: Responsibility for Data Collection

- ***If the Country Programme is under formulation:***
the Coordinating Team will undertake this exercise in conjunction with Country Programme activities
- ***If the Country Programme has already been approved:***
the basic information can be obtained from the Country Programme which can be updated as necessary

4.2.2: Sectors to be covered

It is important that the reliable data is collected as it will be analysed to determine major trends in the national consumption patterns and to define a phase-out strategy. Data must be collected from government departments and importers, distributors and final users.

Refrigeration:

- domestic and retail
- commercial and industrial (centralized refrigeration units with plant rooms and cooling distribution systems, restaurants, large chillers, display cabinets, cold stores, units with separate condensers)
- refrigerated transport
- warehousing

- agro-food processes
- service workshops
- other industrial processes;

Air conditioning:

- water cooling units
- public and domestic air conditioning
- vehicle air conditioners.

More details in Annex 2.

Step 3: Structure of Sector phase-out strategy

The strategy for phase-out should clearly indicate the commitment of government and other economic actors to eliminate the use of ODS refrigerants in accordance with a definite phase-out schedule and timetable. The elements listed below include all the possible components – however the phaseout strategy in each individual RMP should be formulated in accordance with country-specific needs and requirements:

4.3.1 Economic Instruments

- ♦ *Introduction and/or amendment of existing legislative, regulatory and incentive framework related to:*
 1. Controlling and monitoring ODS imports and ODS-containing equipment
 2. Monitoring ODS consumption
- ♦ *Application of economic incentives or market stimuli*
 1. Economic incentives for recovery and recycling and for promoting the use and consumption of non-ODS refrigerants
- ♦ *Education, information dissemination, training including*
 - 1 Increasing public awareness
 - 2 Training of Customs officials
 - 3 Training of technicians for good practices in repairing and maintaining systems and use of alternative technologies and equipment
 - 4 Training in converting existing facilities (drop-in and retrofitting) and use of alternative technologies and equipment

4.3.2 Institutional Arrangements:

- ♦ *Encourage professionals to group together*
- ♦ *Encourage stakeholders that are part of the Coordinating Team to be involved in the implementation of RMP*
- ♦ *Arrangements for certifying service technicians*

4.3.3 Industrial framework

- ♦ *Recovery and recycling and/or reclamation*
- ♦ *Conversion and adaptation of existing system, including retrofits*

Step 4: Drafting the RMP

Based on the data and country-specific evaluation, the RMP will be developed and should include the following elements (detailed format in Annex I):

- i) assessment of use of and ODS and ODS using Refrigeration and air-conditioning equipment;
- ii) assessment of potential impact of and need for increased public awareness and established policy instruments to meet the obligations of the Montreal Protocol;
- iii) basic refrigerant management policy, including objectives, national strategy, activities and time-table.
- iv) specific plan for improving operations and maintenance practices
- v) specific plan for establishing and enforcing refrigerant containment practices (usually a code of good practices, certification scheme, etc.);
- vi) specific plan for implementing refrigerant recovery, recycling and reclamation;
- vii) specific plan for establishing and enforcing related policy for equipment procurement;
- viii) specific plan for establishing supporting legislation/regulation and awareness raising campaigns.

All specific activities will be accompanied by time schedules and appropriate measurable ODS phase-out targets.

5. GUIDELINES FOR CONSULTANT

- ***If the Country programme has already been approved:***
the consultant (international or national) will work in close consultation with the NOU and the Coordinating Team and Coordinating sub-groups to undertake the following tasks:

- i) Study the Country Programme and review the current situation
- ii) Assess current consumption, trends in the industry, economic growth and trends, impact of market forces, existing legislation, trade flows, etc
- iii) Assess need for establishment of new regulations and legislation, modification of existing ones and the costs involved.
- iv) Determine what actions have been taken at a national level to raise awareness and their impact
- v) Determine whether training programmes have been conducted, and assess their impact
- vi) Estimate number of technicians in organized and informal sector and determine the scope of a training programme for refrigerant technicians

- vii) Assess the need, commitment and cost for establishment of certification programmes
- viii) Evaluate the benefits and costs of an awareness programme aimed at the technicians in the informal sector.
- ix) Assess need and costs of training programme for Customs officials
- x) Determine feasibility and necessity for a recovery & recycling project⁵.
- xi) Determine feasibility and necessity for retrofitting and conversion
- xii) Draw up the phase-out strategy in close consultation with national stakeholders
- xiii) Define specific projects and costs involved for phase-out in the refrigeration and Air-conditioning sector
- xiv) Formulate the RMP, including time-schedule for each activity, total cost and mechanism for coordination of activities.

➤ ***If the Country Programme is under formulation:***

the consultant will work in close consultation with the Ozone Focal Point and the Coordinating Team to collect the required data and follow the above steps.

6. PROJECT MONITORING

➤ ***If the Country Programme is under formulation:***

the Ozone Focal Point and the National Team and/or the Coordinating Team will have the responsibility for the monitoring of the development of the RMP and coordination with other coordinating groups, with the Implementing Agencies and the consultant.

➤ ***If the Country programme has already been approved:***

the NOU and the Coordinating Team will be responsible for this activity.

The Coordinating Team will have the responsibility of ensuring that the RMP is approved by all relevant stakeholders, before submission to the Executive Committee, with a signed Transmittal Letter from the Government and for implementing the RMP, when approved by the Executive Committee.

ANNEX 1

BASIC FORMAT FOR THE RMP

1. COUNTRY SITUATION:

1.1 *Status of the country with regard the Montreal Protocol*

Provide a brief summary of status of ratification of the different treaties (Montreal Protocol, Vienna Convention, London Amendment, Copenhagen Amendment)

1.2 *Status of Country Programme:*

Has the Country Programme been prepared:

If yes:

i) Attach the Action Plan

ii) Indicate whether proposed phase-out schedule has been met. If not, specify why not and indicate difference between the forecast and the real situation with regard to consumption of ODS refrigerants

iii) Indicate whether data is reliable and updated

iv) Indicate current Institutional framework established for the implementation of the Country Programme

If no:

i) Define status of Country Programme preparation

ii) Proposed time-frame for completion

1.3 *Status of Institutional Strengthening project*

Does the NOU exist:

If yes:

i) Indicate progress made with project implementation

ii) Indicate progress of Country programme implementation

iii) Specify any difficulties encountered

1.4 *Current Situation*

Define the pattern, level and structure of ODS consumed in each sector, under the following headings:

i) Domestic refrigeration and air conditioning

ii) Commercial refrigeration

iii) Industrial refrigeration and air conditioning

iv) Automobile air conditioning

For each of these sectors and sub-sectors, provide an assessment of the current situation of:

i) policy (legal and regulatory) framework;

ii) economic importance (contribution to GNP, number of employees, export involvement, foreseeable trends);

iii) number, quality and geographic dispersion of the systems and their likely trends;

- iv) situation regarding the quality of systems and their maintenance by comparison with international standards;
- v) qualitative and quantitative description of the human resources involved

Detail identified needs, based on above analysis

2. JUSTIFICATION FOR RMP

Give the reasons why it is necessary to develop and implement RMP

3. ASSISTANCE RECEIVED

Indicate sources and nature of assistance received for preparation of RMP, including:

- i) multilateral and bilateral agencies
- ii) companies and industry
- iii) Government departments and agencies
- iv) Non-Governmental organizations etc

4. COMPONENTS OF THE PHASE OUT STRATEGY

Define the strategic objectives and constraints on which the Action Plan will be based.

5. ACTION PLAN

- i) Indicate the specific actions to be undertaken in each sector and sub-sector. Each element of the action plan must be accompanied by a precise and realistic timetable
- ii) Define projects, their objectives, costs and precise impact. Each project should be accompanied by ODS phase-out targets
- iii) Total Cost of the Action Plan
- iv) Financial and technical assistance needed to implement the Action Plan

6. INSTITUTIONAL FRAMEWORK

- i) Identify the lead agency which will be responsible for implementation of RMP. In most cases, it will be the NOU already established under the Institutional Strengthening project.
- ii) Define a precise timetable for implementing institutional arrangements and Action Plan
- iii) Describe the arrangements for monitoring of effective implementation of RMP

7. IMPACT

Define foreseen impacts with regard to:

- i) meeting Montreal Protocol control measures
- ii) reduction in ODR consumption
- iii) strengthening national capacity and expertise

ANNEX 2

DATA TO BE COLLECTED

The following table summarizes the sources and types of data that can be collected.

Customs:

- Quantities and types of imported ODS refrigerants and equipment containing them
- Numbers and types of imported systems containing or capable of containing ODS
- Name of importers (ODS and units)
- Import licenses, quotas, import taxes, if any (ODS, units containing them and equipment)
- Quality of inspection and monitoring of imports
- Amount of exports of ODS or units containing them, if any
- Origin of imports and destination of exports (ODR and equipment)

Industry:

- Industrial firms using refrigeration and/or air conditioning
- Economic importance and trends
- Degree of electrification of country and trends
- Extent of foreign investment

Agriculture:

- Inventory of storage systems
- Survey of consumers

Tourism:

- Number of hotels, restaurants, etc and ODS containing systems
- Economic importance and trends
- Extent of foreign investment

Fishing:

- Names and geographical distribution of fishing firms and fish processing units
- Economic importance and trends
- Estimated extend of foreign investment

Commerce:

- Economic importance of commerce using ODS (supermarkets, other shops) and trends
- Estimated extent of foreign investment

Informal Sector:

- Estimated number of craft workers and workshops in the refrigeration sector and trends
- Analysis of the structure of this sector (informal, formal, etc...)

Education and Vocational Training:

- Data on training centers for occupations connected with refrigeration
- Analysis of the quality of training

Transport:

- Estimated number of air conditioned vehicles and trends
- Estimated number of refrigerated vehicles and trends

Statistics:

- Number of households with refrigerators, freezers, air conditioning and air conditioned vehicles
- Macro-economic data and trend

Importers:

- Quantities and types of imported ODS and trend
- Names of customers and types of business

Distributors:

- Quantities and types of ODS distributed and trend
- Names of customers and businesses
- Types of packaging used (throwaway or re-usable)

Final users:

- Type of activity
- Quantities and types of ODS consumed and trends of needs
- Qualifications of personnel
- Costs of manpower, maintenance, etc

ANNEX 3

GLOSSARY AND REFERENCES

1. At its 17th Meeting, the Executive Committee defined "*Low ODS Consuming Countries*" as countries with ODS consumption of less than 360 metric tonnes (Decision 17/11).
2. Reference: Paper presented by UNEP at the 20th Executive Committee meeting, entitled "*Proposed framework for Overall approach for addressing the needs of Low Volume ODS consuming countries (LVCs)*".
3. *NOU*: Institutional Strengthening projects enable the establishment and/or strengthening of National Ozone Units (NOUs) which are responsible for the coordination, management and monitoring of national phase-out activities and implementation of the Country Programme
4. *National Team*: Under UNEP's methodology for formulating Country programmes, the Government is encouraged to designate an official Focal Point and to formulate a National Team consisting of representatives from relevant ministries, associations, Non-Governmental Organizations, institutes, etc., who would be actively involved in the Country Programme exercise.
5. UNEP is in process of developing the following documents which will facilitate identification of some of the components of the RMPs:
 - "Implementation and Design of Codes of good servicing practices in Refrigeration for Article 5 countries"*
 - "Guidelines for the establishment of Recovery and Recycling Systems and Related Legislation for LVCs"*
 - "Training module for National Training courses on good practices in Refrigeration"*