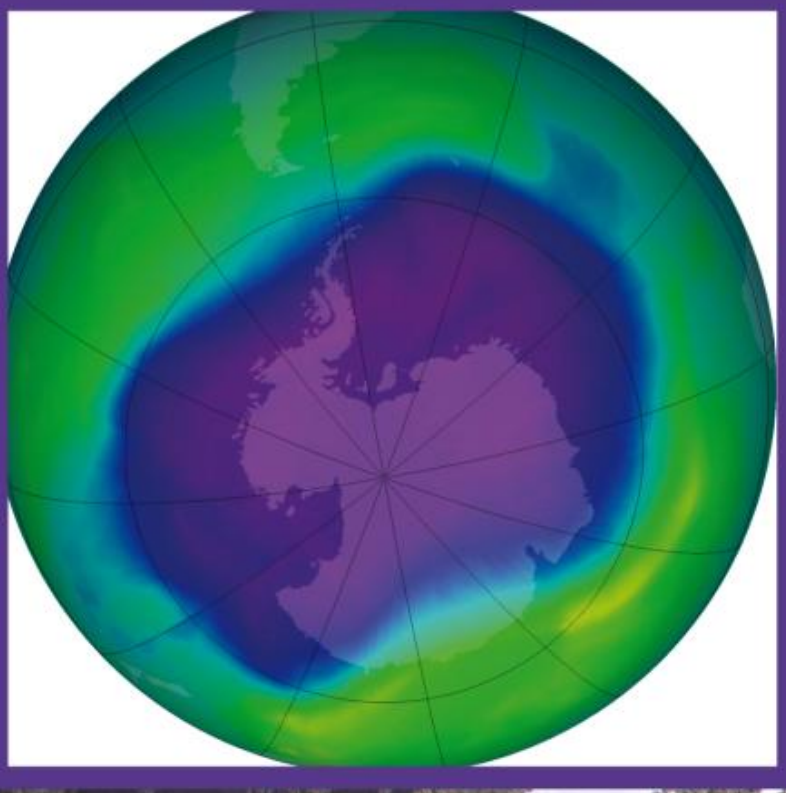
# UNEP Guide for National Ozone Officers



United Nations Environment Programme

**Disclaimer**

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the United Nations Environment Programme, nor does citing of trade names or commercial processes constitute endorsement.

# ACKNOWLEDGEMENTS

This document was produced by UNEP Division of Technology, Industry and Economics (UNEP DTIE) OzonAction Programme as part of UNEP's work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.

UNEP OzonAction gratefully acknowledges the assistance of the following for reviewing and providing comments on the draft text: Ms. Julia Anne Dearing, Information Management Officer, Multilateral Fund Secretariat; Licda. Michelle Corrales Sánchez, Ministerio de Ambiente, Energía y Telecomunicaciones Costa Rica / Dirección de Gestión de Calidad Ambiental, Oficina Técnica del Ozono; the UNEP CAP ROAP Team.

**The project was supervised by:**

Ms. Shamila Nair-Bedouelle, Head, OzonAction Branch

**The project was managed by:**

Mr. James S. Curlin, Network and Policy Manager
Dr. Ezra Clark, Programme Officer
Mr. Ruperto de Jesus, Programme Assistant
Ms. Mugure Kibe, Documentation Assistant

**This updated version of the handbook was researched and written by:**

Dr. Melanie Miller, Touchdown Consulting

**The first edition of the Guide was developed by the ROAP CAP Team in consultation with:**

Mr K. Madhava Sarma, Former Executive Secretary of the Secretariat for the Vienna Convention and the Montreal Protocol. Additional comments and suggestions were provided by the NOUs from SEAP, South Asia, ECA, Africa and Latin America networks; Montreal Protocol Units from UNDP, UNIDO and the World Bank; the Multilateral Fund Secretariat; the Ozone Secretariat; US EPA and GTZ; DTIE OzonAction Programme's Information Management Team and Capacity Building team; Ingrid Kokeritz and CAP teams from ROLAC, ROA, ECA and ROWA.

**Layout and design by:** Ms. Aurélie Ek

**Credits for photos and graphics:**

- Cover image: Jana Masickova
- Ozone layer on the cover page: NASA GSFC
- Environmental Investigation Agency (EIA) http://www.eia-international.org/
- Shutterstock

©shutterstock

# FOREWORD

A key factor contributing to the remarkable success of the Montreal Protocol on Substances that Deplete the Ozone Layer is the 'country-driven approach' promoted by the Executive Committee of the Protocol's Multilateral Fund (MLF). This approach places National Ozone Units at the centre of the action to protect the ozone layer.

The National Ozone Unit led by you, the National Ozone Officer (NOO), is the single most important element in your national strategy to comply with the Montreal Protocol. How well you and your team do your work - developing projects, managing strategies, reporting data, and working with national and international institutions - directly or indirectly affects your country's ability to meet its obligations under the Montreal Protocol treaty.

We at the United Nations Environment Programme's Division of Technology, Industry and Economics (UNEP DTIE), and all of the other members of the Montreal Protocol community, want you to succeed in your mission. My message to you is that you are not alone. Other NOOs have confronted and overcome the same challenges that you are facing. Their valuable experiences can help you to optimise the performance of your Ozone Unit.

The country-driven approach requires countries to have skilled and committed focal points who can effectively manage the implementation of their Country Programmes, HCFC Phase-out Management Plans and associated MLF investment and non-investment projects. Your government has committed itself to reduce, and eventually phase out, the production and consumption of ozone depleting substances by fixed dates. It is your responsibility to ensure compliance with these commitments.

Since 1991, UNEP DTIE's OzonAction Programme has promoted the concept of National Ozone Units. We recognise that the size and efficiency of the National Ozone Unit varies. In some countries, National Ozone Units are fully institutionalised in the government's programmes. In other cases, the nature of the responsibilities results in frequent staff turnover that may cause gaps in project implementation if the staff transition is not appropriately managed. A new NOO will need guidance, information and advice to understand the issues and work quickly and efficiently to meet Montreal Protocol targets.

This Guide aims to support National Ozone Units and the MLF's country-driven approach. It was originally developed by OzonAction through the Regional Office for Asia and the Pacific Compliance Assistance Programme (ROAP CAP), and has been updated to reflect important developments in the Protocol since 2005. The Guide is based on the experiences of numerous NOOs around the world, international agencies and individual experts. It represents the collective wisdom of the wider community of NOOs who lead National Ozone Units.

This quick reference tool aims to provide new and current Ozone Officers with essential working knowledge about the key subjects you need to know to perform your job. It helps you understand the workings of the Montreal Protocol system in all its dimensions. For areas that are beyond its scope, the guide directs you to appropriate sources of information.

I am confident that this document will be useful not only to NOOs but also to anyone who wants to learn how National Ozone Units work with Implementing and Bilateral Agencies, the Ozone and Multilateral Fund Secretariats, and entities at the national level, to achieve and sustain compliance with the Montreal Protocol. This Guide may also provide inspiration and ideas for the communities who implement other multilateral environmental agreements.

***Shamila Nair-Bedouelle***
**Head of OzonAction Branch**

# CONTENTS

This contents list contains hotlinks. When reading this Guide on a computer, press *ctrl + click* on a section title below to jump to the relevant section in the Guide.

©shutterstock

# BEFORE YOU BEGIN

## Introduction

This Guide is a summary of many important issues that are addressed by a National Ozone Officer (NOO).

Your government has ratified the Montreal Protocol and has committed itself to reduce in stages, and finally phase out, the production and consumption of ozone-depleting substances by fixed dates. If the government does not fulfil these commitments, it will be held to be in *non-compliance*, with negative consequences for the country.

The government expects the NOO to carry out many tasks that will result in the fulfilment of national commitments. Ideally the NOO would have a large, well-established National Ozone Unit. However, in most countries the ozone offices are short-staffed. Knowledgeable persons might have been transferred out and new persons might have joined the NOU. In some cases, the country may have ratified the Protocol only recently. Any person assuming responsibility will need some time to understand the ozone issues.

The NOO is a Government's focal point for discharging its commitments to protect the ozone layer. To help you fulfil these commitments, the Protocol has established institutions both at the international and regional level that provide resources and assistance. There are now many publications and websites of international organisations to inform and assist the NOO on ozone issues. In time, the NOO will gain mastery over these, but they may feel swamped by the extent of information available and may not know the priorities.

Why was the Protocol set up? What are the key organisations? How does it operate? What should the NOO do to fulfil the national commitments? This Guide aims to provide a handy overview and reference book for new NOOs, and assist NOOs in prioritising their work.

# Remember the fundamental objectives of your work

### Knowing the mission and ultimate objective

Ensuring that your country achieves and sustains compliance with the Montreal Protocol is the critical mission of your National Ozone Unit. Phasing out ozone depleting substances is an important part of that work. Safeguarding human health by protecting the Earth's ozone layer is your ultimate objective.

### Finishing line

The effectiveness of your Unit's performance is largely assessed on whether your country achieves compliance with specific Montreal Protocol targets and MLF project commitments. However, the ultimate measure of performance will be whether that compliance is *permanent and sustained*. This is the 'finish line' which we are all striving to reach.

### Mainstreaming

Establishing and enforcing effective ozone protection laws and regulations, and mainstreaming them in your national environmental policy, are important means to achieve sustained compliance.

### Learning by sharing

The precise steps needed for achieving compliance vary greatly, according to national circumstances. We cannot follow a 'one-size-fits-all' method. Nevertheless, experienced NOOs have identified a number of essential and effective activities, outlined in this Guide. We can all learn from each other, sharing experiences and gaining ideas and inspiration.

### Reaching the unreached

The world community has made amazing progress in some areas, for example eradicating certain diseases by grass-roots awareness programmes that employ innovative techniques. Your national programme to implement the Montreal Protocol may also need to reach the 'bottom of the pyramid' and involve the 'unreached' parts of society, such as villagers who are planning to buy their first refrigerators.

### Linking to the Millennium Development Goals

The ozone layer prevents skin cancer and cataracts, but more than that, it contributes to poverty alleviation by protecting the marine food chain, crop development and forest growth. Mainstreaming the ozone layer protection activities in your country's policies on health, food security and poverty alleviation will be an important step in engaging key Ministries.

## Thinking outside the box

When updating or expanding national strategies and activities on ozone protection, try to think 'outside of the box'. The task of protecting the ozone layer is closely linked to other multilateral environmental agreements such as the treaties on climate change and hazardous waste. ODS reductions achieved to date have made a large contribution to climate protection, and we need to find ways to maintain this benefit when phasing out HCFCs.

You are not alone. If you need assistance please contact your UNEP Regional Network Coordinator or talk to others in the UNEP OzonAction team ⇨(Annex 5 contacts).

*A list of Acronyms and Glossary is available a page 124.*

**Key to symbols used in Guide:**

⇨ - Green arrow indicates a hotlink to another section of the Guide. When viewing the Guide on a computer, press *ctrl* + *click* to jump to the relevant section.

*Italic blue text* - Indicates a hotlink to an internet website address. When your computer is connected to the internet, press *ctrl* + *click* to jump to the hotlinked items.

The full addresses of all links are given on page 137.

# CHECK LIST

## Key steps and activities for new National Ozone Officers（NOOs）

## Step 1: DEVELOP YOUR PEOPLE NETWORK

- Your computer, tablet and or mobile phone are major communication tools. Make sure you are fully trained to send/receive emails, find documents on the Internet, and use office software (such as Word, Excel, PowerPoint, PDF) and communications and social networking tools such as Skype. Facebook, Linkedin and so on.

- Get to know supervisors and government colleagues connected with your job, such as the Minister and officials in your own department, customs, commerce, trade, industry, health and agriculture.

- Get to know the non-governmental specialists and organisations who work on ozone depleting substances (ODS) and alternatives in your area.

- Familiarise yourself with websites of the Ozone Secretariat, Multilateral Fund (MLF), UNEP OzonAction, implementing agencies and bilateral agencies.
  ⇨(Annex 4 websites)

- Know the names of officers in these organisations and in UNEP's Compliance Assistance Programme (CAP) team in your region. Introduce yourself to them.
  ⇨(Annex 5 contacts)

- Participate in the CAP Regional Network of Ozone Officers and share your experiences.

- Check out the membership of the Assessment Panels and introduce yourself to the co-chairs and members from your region. ⇨(section 3.3)

## Step 2: BUILD YOUR KNOWLEDGE

- Read documents about your country's current MLF projects, starting with your Country Programme.

- Read the latest ODS data reports sent by your country to the Ozone Secretariat and MLF Secretariat. ⇨(section 5, section 9)

- Read the following:
  - *Handbook on Data Reporting under the Montreal Protocol*
  - *Handbook on Methyl Bromide Data Reporting*
  - *HCFC Policy and Legislative Options: A Guide for Developing Countries*
  - *Planning, Designing and Implementing Policies to Control ODS under the Montreal Protocol*

- *Regulations to Control ODS: A Guide Book*
- *UNEP HCFC Help Centre* website

☑ Learn where to find the lists of controlled substances, key Articles and Decisions in the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer*. (Lists of MP *Articles* and *Decisions* are also available online).

☑ Read UNEP OzonAction's Guides and Factsheets on topics such as ODS alternatives, ODS licensing, certification system for technicians handling ODS refrigerants, illegal trade, and the use of HS codes and refrigerant identifiers (*OzonAction homepage*).

☑ Subscribe to *OzoNews* by sending your email address to: *samira.degobert@unep.org* at UNEP OzonAction.

## Step 3: PARTICIPATE IN NEGOTIATIONS

☑ Read the last two reports of the Meeting of the Parties (MOP), Open-Ended Working Group (OEWG), Implementation Committee (ImpCom) and MLF Executive Committee (ExCom). ⇨(section 3.1)

☑ Monitor the Ozone Secretariat's *Highlights webpage* for new documents relating to OEWG and MOP.

☑ Prepare for the next meeting of the OEWG (mid-year) and the MOP (end of year) ⇨(section 3.1 & 3.4). Go through the *annotated agenda* and *issues for discussion* papers, and prepare your government's position on the issues after consulting stakeholders and relevant government officials. Rules of procedure for these meetings are found in the *Handbook for the Montreal Protocol*.

☑ If your country is a member of the Bureau, Implementation Committee or Executive Committee, prepare for the next meeting ⇨(section 3.1). Go through the agenda and prepare your government's position on the issues after consulting relevant stakeholders and government officials.

☑ Develop your negotiating skills. Speak out when needed (and only when needed) during meetings, and help the meetings to consider the key issues. Check that your statements have been reflected accurately in the draft report of the meeting.

## Step 4: COLLECT DATA FOR GOOD MANAGEMENT

- Become familiar with the reporting forms for the Ozone Secretariat and MLF Secretariat ⇨(section 5). Practice filling-in data reporting forms using the data available in past submissions.
- The timely reporting of ODS data is one of your most important duties. Ensure that data reports are submitted on time. ⇨(section 5)
- Check the status of data collection; address any gaps or issues. Identify ODS use in each sector in your country, and locate producers, importers, exporters and users.
- Collect data from different sources, and use it for cross-checking. Double-check your data before submitting reports.
- Study your HPMPs and other phase-out programmes to understand your country's ODS data and strategy. For further information you may wish to contact your regional UNEP CAP office or the relevant implementing agency. ⇨(section 9.2)
- ODS used as feedstock, methyl bromide used for quarantine and pre-shipment applications, and recovered, reclaimed and recycled ODS are exempt from the phase-out schedules. However, they must be included in ODS data reports. Study definitions of these terms and apply them accurately. ⇨(section 4.4)

## Step 5: FOCUS ON IMPORTANT IMPLEMENTATION ACTIONS

- As a matter of priority, review and update legislation and regulations so that they will support the ODS phase-out, including quotas for users and importers, use bans, mandatory ODS recovery, etc. Carry out a periodic review of the licensing system to ensure it functions well. ⇨ (section 6.2 & 6.3)
- If your country has not ratified all of the Amendments to the Protocol ⇨(section 4.1), expedite the ratification process.
- Establish policies that will encourage ODS phase-out and the use of alternatives, such as voluntary agreements with industry, taxes or levies on ODS, tax concessions on ODS-free and climate-friendly technologies. ⇨(section 6.3)
- Ensure that activities of relevant government departments are coordinated. ⇨(section 6.1)

- ☑ Participate in the informal Prior Informed Consent (iPIC) system. ⇨(section 7.2)

- ☑ Prevent ODS dumping by banning imports and exports of used ODS equipment, and report such bans to the Ozone Secretariat so that other Parties can respect your country's import ban. ⇨(section 7.3)

- ☑ With the help of the CAP team, create awareness about ozone issues and the Protocol among relevant ministries, enforcement officials, industry associations, servicing workshops and other targeted groups. ⇨(section 8.2)

- ☑ Make plans for national celebrations on International Ozone Day on 16 September each year. Use the publicity materials provided by the Ozone Secretariat and UNEP OzonAction

- ☑ Ensure your country has a National Steering Committee to advise the government on ODS issues and Montreal Protocol implementation. Fully involve stakeholders. ⇨(section 8.1)

## Step 6: SEEK ASSISTANCE WHEN NECESSARY

- ☑ If your country needs further assistance from the MLF, contact the CAP team or Implementing Agencies for guidance on the procedures. ⇨(section 9)

- ☑ Make a regular review of progress in your MLF projects to ensure your HCFC Phase-out Management Plan (HPMP) and other projects will enable compliance with the relevant reduction steps. Discuss problems with the implementing or bilateral agency so that solutions can be identified as soon as possible.

- ☑ Be aware of the scheduled finishing date for your country's Institutional Strengthening (IS) project; submit your request for IS project renewal in a timely manner. ⇨(section 9.2)

- ☑ Keep refrigeration technicians, enforcement officers and others up-to-date through training programmes with MLF support where necessary. Use the UNEP training materials, regional CAP assistance and Green Customs Initiative. ⇨(section 8.3, Box 10)

- ☑ Inform the users of ODS about ODS-free and climate-friendly alternatives, through workshops and demonstrations. Enlist the help of specialists who have in-depth experience of using successful alternatives. Seek MLF assistance for implementing alternatives. ⇨(section 9.2, section 10)

- ☑ Use the many resources at your disposal, including publications, media resources, the CAP team, experts of implementing agencies, other NOUs, and MLF resources. ⇨(use the links in this Guide)

# Step 7: REMEMBER COMPLIANCE IS THE GOAL

- ☑ Ensure that national production and consumption of ODS is reduced in time to meet the Protocol schedules. ⇨(Table 3)

- ☑ Analyse your ODS data carefully to check compliance with the Protocol's ODS reduction schedules. If your country is not compliant, write to ImpCom with reasons and a realistic Plan of Action for returning to compliance. ⇨(Annex 2.1)

- ☑ If there is a delay in reporting your ODS data, write to ImpCom through the Ozone Secretariat, explaining the reasons. ⇨(Annex 2.1)

- ☑ If your country is not in compliance because of delays in taking decisions in your country, communicate with key officials in your country to try to eliminate the delays. Ask relevant UN officials to talk to higher officials of your country to expedite the process. ⇨(Annex 5)

- ☑ Adopt binding measures so that the industries that have phased out ODS cannot go back to using these harmful chemicals. ⇨(section 6.3)

- ☑ Adopt binding measures that will prevent new uses of methyl bromide (MB) and other ODS starting in your country. The suppliers of ODS are always looking for new markets. ⇨(section 6.3)

- ☑ Maintain a successful ODS phase-out by building a national infrastructure of locally-based companies who can supply suitable and affordable alternatives (both products and services), so that users will no longer need ODS.

# SETTING THE SCENE

## Key steps and activities for new National Ozone Officers （NOOs）

# 2.1 Why is the ozone layer important?

Ozone is a gas made up of three oxygen atoms ($O_3$). Almost all (~ 90%) of the Earth's ozone is found in a layer of the atmosphere called the stratosphere, which extends between 10 and 50 km above the Earth's surface. Ozone gas is relatively rare in the atmosphere; ozone comprises only 3 in every 10,000,000 molecules in the atmosphere (i.e. 0.00003%). If all of the ozone molecules were compressed to sea level pressure, they would form a layer only three millimetres thick (similar to the thickness of orange peel).

Despite this, the ozone layer is the Earth's primary protection from the sun's harmful ultraviolet (UV) rays. While the sun's UV-A rays (the longest wavelength) do reach the Earth's surface, the medium-wavelength UV-B rays are largely absorbed by the ozone layer, and the deadly UV-C rays (short wavelength) are almost completely absorbed by the ozone layer. In this way, the ozone layer filters out the majority of harmful UV radiation emitted by the sun.

At least 100 chemicals can damage the ozone layer, making it thinner. A thinner (depleted) ozone layer allows additional harmful UV-B rays to reach the Earth's surface. Additional UV-B has many adverse effects: it increases the risk of skin cancer, eye cataracts and blindness; suppresses human immune systems; disrupts the growth of sensitive crops and forests; reduces fish stocks; increases ground-level smog; changes the climate; and has an adverse effect on plastics, rubber, paint and other materials used outdoors (*Environmental Effects Panel reports*).

Without the Montreal Protocol (MP), ODS would have increased greatly, followed by large-scale ozone depletion ⇨(Figure 3). The USA has estimated that, by the year 2065, actions to protect the ozone layer will have prevented 6.3 million skin cancer deaths, bringing social benefits worth US$ 4.2 trillion in the USA alone!

Figure 1: Chart showing process by which CFCs attack ozone

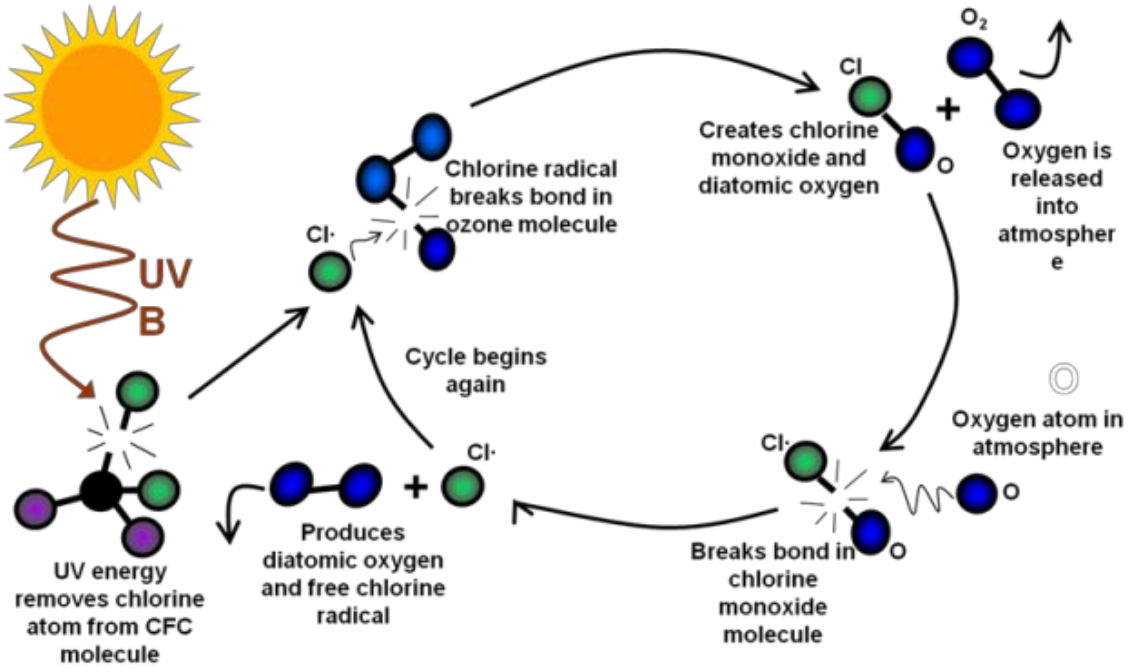
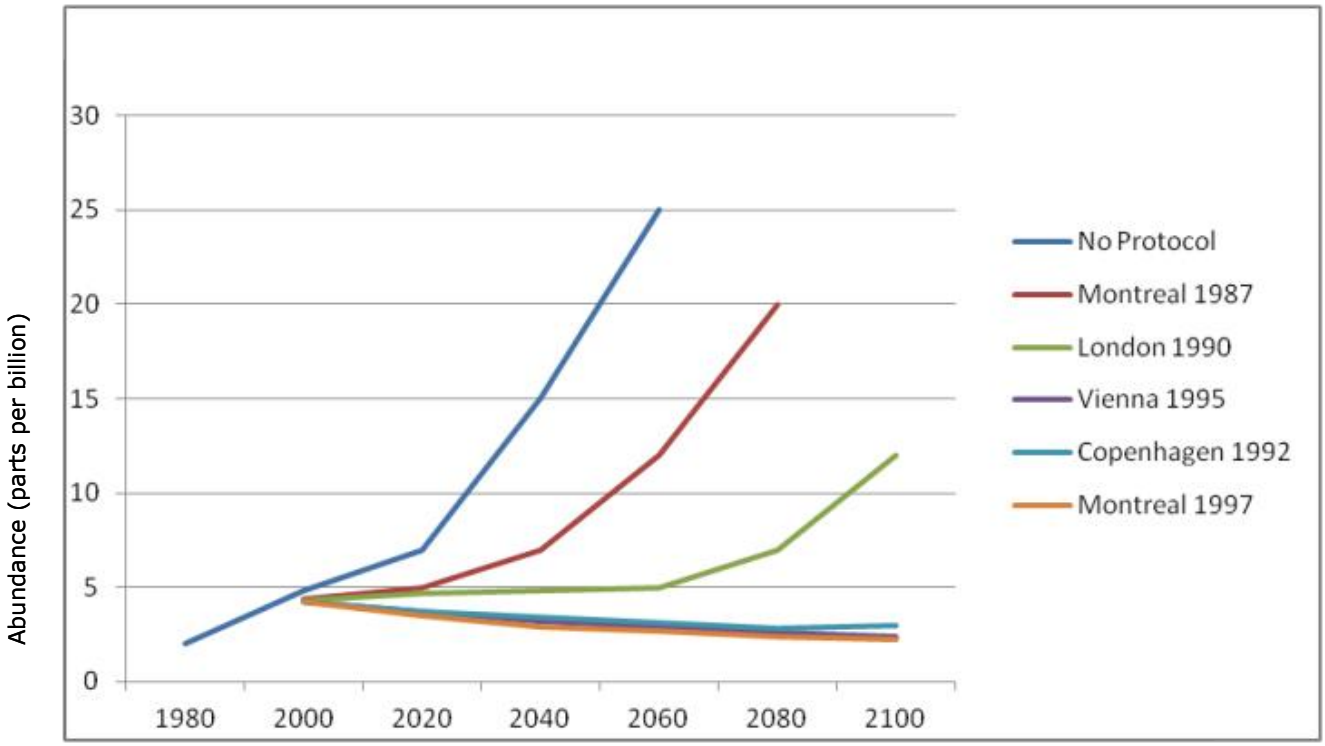



Figure 2: Impact of ozone depletion (increased UV-B) on human health: skin melanoma

©Cancer Council Victoria, Australia
Thick nodular melanoma

Figure 3: Ozone loss that would have ocurred without the Montreal Protocol




Source: Modified from WMO 2007

Many types of ODS have now been phased-out, the quantity of ODS in the atmosphere has started to decrease, and the ozone layer is starting its very slow process of recovery. However, the ozone layer remains significantly depleted compared to the 1970s, and the work of the Protocol is not finished.

Because of the long lifetime of ODS, and the time lag between their emission and the destruction of ozone, the ozone layer remains fragile and under threat. As recently as April 2011, the amount of ozone above the Arctic fell to record low levels. And the ozone hole that forms in the southern hemisphere continues to be very large each spring. In September 2011, for example, the Antarctic ozone hole covered 26 million $km^2$, which is almost as large as the combined area of China, Brazil and the USA. Failure to comply with the MP schedules would delay, or could even prevent, the eventual recovery of the ozone layer.

Further reading:
*OzonAction website;*
*UNEP Vital Ozone Graphics 2.0: UNEP Resource kit for journalists;*
*OS Montreal Protocol Information Kit;*
*WMO Scientific Assessment Panel report;*
*World Meteorological Organization ozone website;*
*NASA Ozone Hole Watch;*
⇨Annex 4—Other websites

## 'Good' and 'bad' ozone

**Ozone can be good or bad for people's health and the environment, depending on its location in the atmosphere.**

©shutterstock

### GOOD UP HIGH

**Good ozone** is produced naturally in the stratosphere, high above the Earth. It's good because it blocks many harmful UV rays from the sun, so they don't reach people, animals and plants.

©shutterstock

### BAD NEARBY

**Bad ozone** is an air pollutant close to ground level. It is bad because it harms human health and damages crops and trees. Ground-level ozone is a major component of urban smog. It is not covered by the Montreal Protocol.

# 2.2 Links between ozone and climate change

## There are several important links between ozone and climate:

1. Ozone affects climate, and climate affects ozone. Scientific studies continue to uncover more linkages. Strong summer thunderstorms, for example, can send water vapour miles up into the stratosphere (which is normally as dry as a desert), triggering the ozone-destroying action of ODS above populated areas. Ozone depletion and UV levels would intensify over populated regions if climate change brings more of these storms.

2. Most ODS are potent greenhouse gases with high Global Warming Potentials (GWPs). The ODS reductions achieved by the MP between 1988 and 2010 therefore reduced greenhouse gas emissions by about 8 billion tonnes $CO_2$eq per year. This enormous reduction has made the MP a key contributor to the global fight against climate change (*OS Montreal Protocol Information Kit; UNEP OzonAction Newsletter Special Issues*).

3. Some important ODS alternatives – called hydrofluorocarbons (HFCs) – are potent greenhouse gases. HFCs are increasing rapidly in the atmosphere due to their growing use as ODS-free alternatives. The concentration of HFC-134a (a major refrigerant) increased by about 10% per year in the atmosphere during 2006-2010. If HFC growth continues unabated it would cancel out most of the climate benefits achieved by the MP to date (*UNEP HFCs: A Critical Link in Protecting Climate and the Ozone Layer*). Many countries are therefore investigating options for energy efficient low-GWP alternatives, wherever possible. ⇨(section 10.2)

**TIPS**

**The public may ask you how destruction of the ozone layer affects them directly or why and what action they should take. Prepare answers to such questions as part of your awareness strategy.**

**Information about the linkages between ozone and climate change will assist you in mainstreaming the ozone issue into public debates and national environmental policies**

## 2.3 Development of the Montreal Protocol

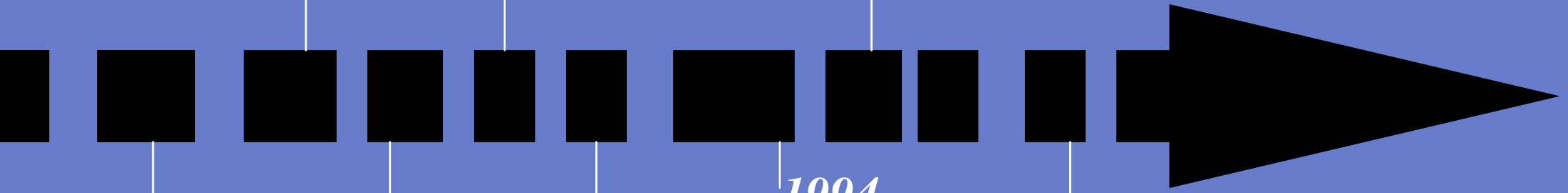
The seeds of the Montreal Protocol were sown in 1985 when the Parties to the Vienna Convention for the Protection of the Ozone Layer agreed to '*take appropriate measures...to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer*'.

The initial Montreal Protocol text of 1987 controlled only 8 ODS, and established modest reductions in production and consumption. However, the Protocol provided for *adjustments* and *amendments* based on periodic assessments of ODS by panels of experts and Parties.

The Protocol has been adjusted six times during the period 1990-2007. There have also been four amendments: the 1990 London Amendment, 1992 Copenhagen Amendment, 1997 Montreal Amendment and 1999 Beijing Amendment. These revisions increased the number of controlled ODS to 96 substances (which have Ozone Depletion Potentials (ODPs) ranging from 0.001 to 10) and established timetables for phasing-out specific groups of ODS. ⇨(Box 1 below; *OS Montreal Protocol Information Kit*)

The MP was initially signed by 24 countries, and has now been ratified by all 197 countries of the world, making the MP the first environmental treaty to be ratified universally. Most Parties have also ratified all of the Amendments, taking on the relevant obligations (current *ratification status* of each country).

# Box 1. A brief history of the Montreal Protocol



## 1928

Scientists synthesised the first CFC, leading to mass marketing of CFCs in subsequent decades

## 1970s

Scientists discovered that ODS deplete the ozone layer

## 1977

UNEP established a Coordinating Committee on the Ozone Layer, comprising the world's leading experts, to study the problem and suggest solutions. International diplomatic discussions started

## 1985

The Vienna Convention *for the Protection of the Ozone Layer* drew up a framework for studying ozone depletion in more detail. Because of lingering doubts, especially on the part of industrial sectors, it did not attempt to control ODS consumption. It did, however, provide for the development of protocols

British and Japanese scientists discovered a hole in the ozone layer over the Antarctic

## 1987

The Montreal Protocol was signed on 16 September 1987. It was strengthened progressively by a number of amendments and adjustments

## 1994

In recognition of the Protocol's unique accomplishments, the UN General Assembly named 16 September as the *International Day for the Preservation of the Ozone Layer*. Parties celebrate the international Ozone Day

## 1995

Scientists Paul Crutzen, Mario Molina and Sherwood Rowland received the Nobel Prize for chemistry for their work on the ozone layer

## 2007

The Montreal Protocol Parties accelerated the phase-out schedule for HCFCs (adjustment of 2007) and encouraged Parties to *'promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations'* (Decision XIX/6)

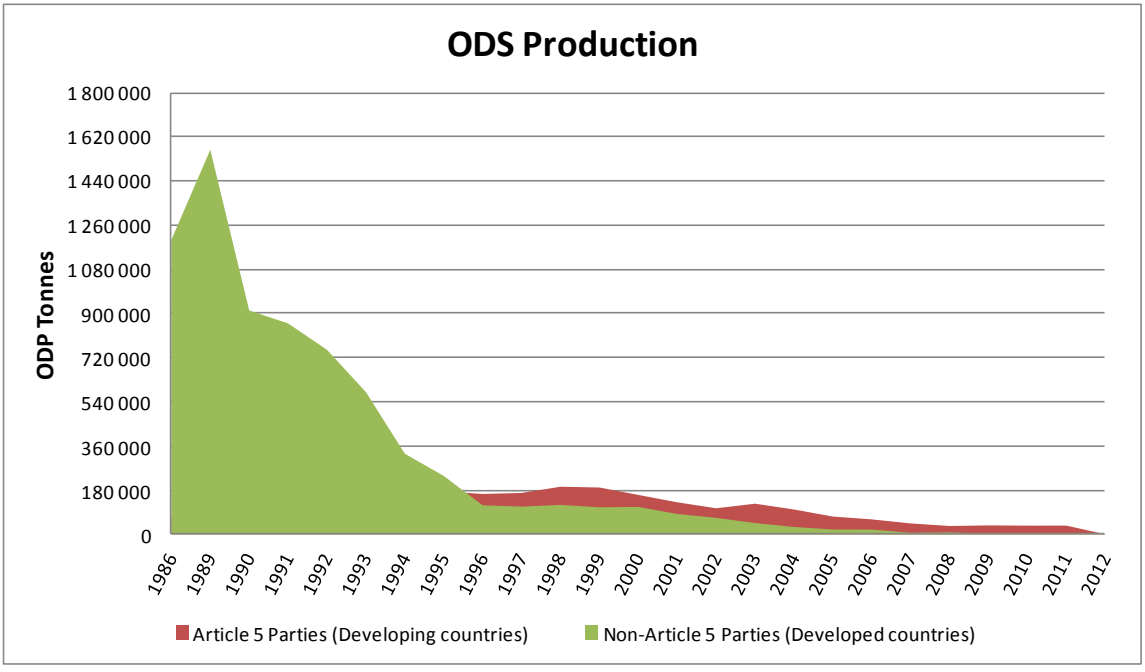
# 2.4 Achievements of the Montreal Protocol

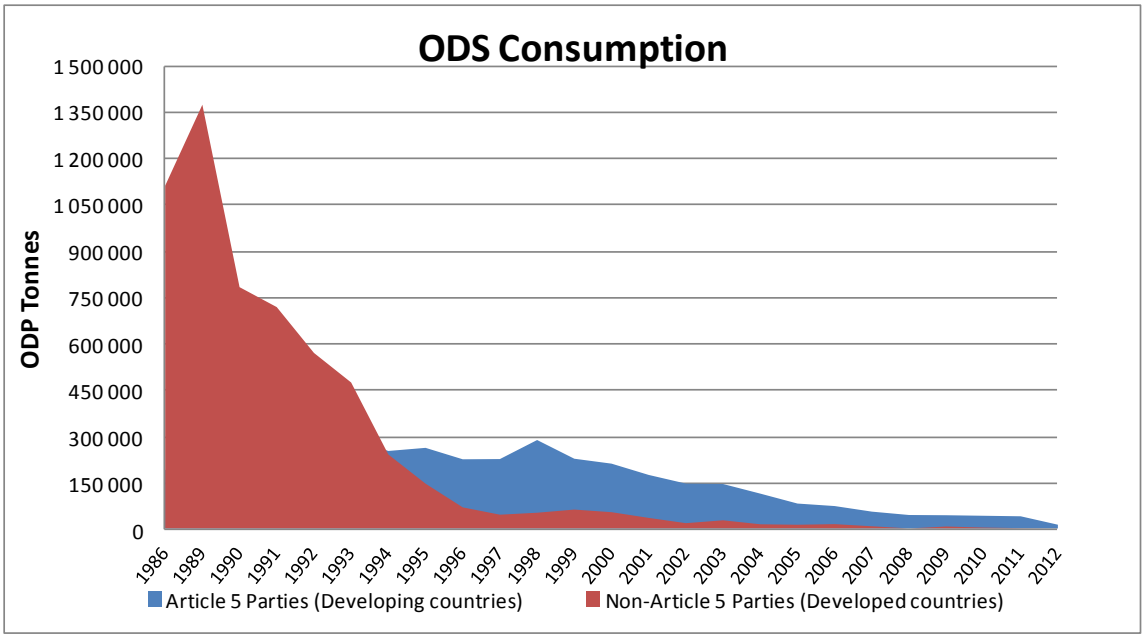
The Parties to the MP have accomplished much to date, phasing-out 98% of the past ODS consumption and production. ODS production fell from >1,800,000 to about 38,500 ODP-tonnes in 1987-2011[1], as illustrated in *Figure 4* (*OS Montreal Protocol Information Kit*).

Projects funded by the MP's Multilateral Fund have assisted developing countries in phasing out more than 447,000 ODP-tonnes of ODS production and consumption from 1991 to 2012 (*ExCom report to MOP-24*).

During the last 20 years, industry has implemented major transitions from CFCs (with high ODPs) to HCFCs (low ODPs) or alternatives that do not deplete the ozone layer at all, and further transitions are underway.

Figure 4: Reduction in controlled ODS achieved by the Montreal Protocol, 1986-2012 (ODP-tonnes)






Despite the considerable achievements to date, some 38,000 ODP-tonnes of ODS were produced in 2011 (excluding exempted uses) and the ODS in existing products and equipment continue to be emitted in large volumes. The work of the Montreal Protocol has not yet been completed, and much remains to be done before the ozone layer is fully protected for future generations.

ODS have been used in all areas of society. Table 1 provides an overview of ODS that have been largely phased-out (CFCs, halons, HBFCs, methyl chloroform), and current uses of ODS that are scheduled to be phased out in the coming years (primarily HCFCs and methyl bromide). Although CFCs and halons have been eliminated from new equipment, older equipment still contain phased-out ODS which are often re-used until they are finally emitted to the atmosphere ⇨(section 10.1 & 10.5).

Table 1: Former and current uses of ODS

| Function (sector) | Typical uses of ODS | Phased-out ODS | Currently consumed ODS (due to be phased out) |
|---|---|---|---|
| Refrigerant | Manufacture/servicing of commercial, domestic & transport refrigerators; air-conditioning & heat pump systems; motor vehicle air-conditioners | CFCs, mixtures containing CFCs.<br>(often re-used) | HCFC, mixtures containing HCFCs |
| Blowing agent | Production of polyurethane, phenolic, polystyrene & polyolefin foam plastics | CFCs, mixtures containing CFCs | HCFCs, mixtures containing HCFCs |

| Function (sector) | Typical uses of ODS | Phased-out ODS | Currently consumed ODS (due to be phased out) |
|---|---|---|---|
| Cleaning solvent | Electronic assembly production processes, precision cleaning, general metal degreasing, dry cleaning & spot cleaning in textile industry | CFCs, carbon tetrachloride | HCFCs, methyl chloroform |
| Propellant | Aerosol products such as deodorants, shaving foam, perfume, window cleaners, lubricants & oils | CFCs | HCFCs |
| Medical aerosol | Pharmaceutical drugs for asthma and heart conditions | CFCs [(a)] | |
| Sterilant | Sterilisation of medical equipment | CFCs | |
| Fire protection | Fire extinguishers, fire protection systems | Halons (often re-used) | HCFCs |
| Pest control (fumigation) | Pesticide used on soil, stored products, buildings, import/export products | - | Methyl bromide |

| Exempted uses: | | Currently consumed ODS (not subject to phase-out schedules) | |
|---|---|---|---|
| Feedstock | Raw materials used for making other chemicals | CFCs, carbon tetrachloride, etc. | HCFCs, methyl bromide, methyl chloroform |
| Process agent [(b)] | Chemicals that assist chemical industry processes | CFCs, carbon tetrachloride | HCFCs, methyl chloroform |
| Laboratory agent | Chemicals used in laboratory procedures | CFCs, carbon tetrachloride, etc. | HCFC, methyl bromide, methyl chloroform |
| QPS fumigation | Quarantine and official pre-shipment treatments on import/export products | - | Methyl bromide |

(a) CFCs have been largely phased out in medical aerosols, and exemptions remained in only 2 Parties in 2013.

(b) Process agents are exempted in specified Parties only. See ⇨section 4.4 for information about exempted uses.

# DEVELOP YOUR PEOPLE NETWORK

This section provides a brief description of the key bodies of the Montreal Protocol, with links to further information

A number of institutions and procedures have been established to assist the smooth working of the Montreal Protocol and Vienna Convention. ⇨Figure 5 provides an organisational chart showing the main bodies involved. Key meetings of the MP occur on an annual cycle, which is important for NOUs to take into account when drawing up annual work plans.

## 3.1 Committees composed of Parties

Several bodies are responsible for developing policies and overall direction. Their members are Parties, represented by delegations of government officers which are often led by NOOs ⇨(Box 2). Other organisations and experts are allowed to attend many of these meetings as observers.

**The Meeting of the Parties (MOP)** is the highest decision-making body of the Montreal Protocol, composed of all Parties to the Protocol. The MOP meets every year, typically around November. Parties are encouraged to send high-level delegates to MOP.

By adopting Decisions, MOP can strengthen, revise or clarify the existing provisions of the Protocol, as well as creating new control measures (*Reports of MOP meetings; MOP Decisions; MOP rules of procedure*).

**Open-ended Working Group (OEWG)** is open to all Parties as a preparatory meeting for the MOP. The OEWG meets every year, typically in June/July. Party representatives discuss topics for the MOP agenda, consider reports by TEAP and other panels, and prepare draft decisions for MOP (*Reports of OEWG meetings*).

As of January 2013, there have been 32 OEWGs, 24 MOPs and 9 COPs. The reports of these meetings contain summaries of the discussions as well as the text of Decisions. The text of Decisions can also be found on the *OS website, Handbook of the Montreal Protocol,* and the *Handbook of the Vienna Convention*.

**Conference of the Parties (COP)** is the highest decision-making body of the Parties to the Vienna Convention. It takes place every three years, at the same time as the MOP. COP typically takes decisions relating to the international coordination of scientific research on ozone depletion (Reports of COP meetings).

**TIPS**

**Any Party, including your country, can submit proposals for decisions to be considered by the Parties at OEWG, MOP or COP. If you would like to raise an issue, contact other ozone officers in your region through the Regional Networks to discuss and gain support for drafting and tabling a draft decision. Ensure that your country is represented at the highest level in MOP meetings. This will also help to raise the profile of ozone issues in your government's environmental agenda**

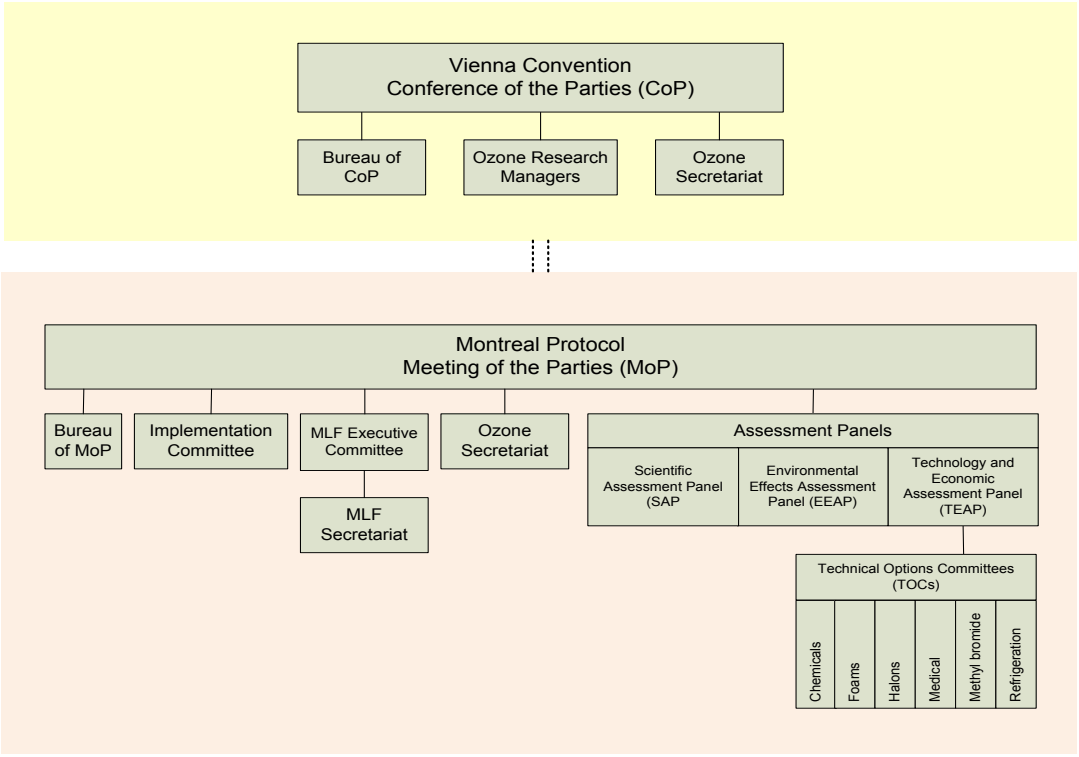
**Implementation Committee (ImpCom)** reviews the status of all Parties' compliance with the provisions of the Protocol (e.g. data reporting, ODS consumption levels, licensing systems, trade with non-Parties).

ImpCom makes recommendations to MOP in cases where Parties do not comply with their obligations. ImpCom comprises 10 Parties appointed by MOP for terms of 2 years from the five regional groups (*MOP Decisions on the Non-Compliance Procedure; OS Primer for ImpCom Members).*

**Executive Committee (ExCom)** oversees the MLF and develops operational policies and project guidelines. It usually meets three times a year to review/approve policies, plans, budgets, project proposals and other aspects. ExCom comprises seven A5 Parties and seven non-A5 Parties appointed by a MOP Decision each year. ⇨(section 9.1)

**Bureau of MOP** guides the OEWG and MOP meetings and the Ozone Secretariat's preparations. The Bureau comprises five Parties appointed by MOP. The position of *President* is rotated annually among five regional groups (Africa, Asia & Pacific, Eastern Europe, Latin America & Caribbean, Western Europe & other states).
The COP has a similar Bureau.

Figure 5: Organisational chart of bodies established under the Vienna Convention and Montreal Protocol



## Box 2. Terms relating to Parties

**Parties to the Protocol**
Countries that have ratified the Montreal Protocol.

**Parties to an Amendment**
These are countries that have ratified that specific Amendment, for example, *Parties to the Beijing Amendment* are countries that have ratified the Beijing Amendment. ⇨(section 4.1)

**Article 5 Parties**
(also called *A5 Parties*, or *Parties operating under paragraph 1 of Article 5*)
Developing country Parties who meet specific criteria in Article 5 of the MP, i.e. their annual consumption of Annex A ODS is less than 0.3kg per capita and less than 0.2kg per capita of Annex B ODS. A5 Parties are subject to the provisions and phase-out schedules in Article 5 of the MP (*List of Article 5 Parties*; ⇨section 4.2 ).

**Non-Article 5 Parties** (also called *non-A5* or *Article 2 Parties*)
Subject to the phase-out schedules in Article 2 of the MP. Most of the non-A5 Parties are industrialised countries and countries with economies in transition (CEITs).

**Party delegations**
Composed of government officials who represent their country during the meetings of MOP, COP, OEWG, etc. The delegation is expected to include the NOO, and is often led by the NOO.

**National Ozone Unit (NOU)**
The government department responsible for implementing the MP at national level. National Ozone Officers (NOOs) and their assistants are officials who work in the NOUs.

**Focal Point**
Each Party is required to designate an official who submits and receives information from the OS in relation to ODS data reporting (*Decision IX/8*). This Focal Point is often the NOO. At the national level, the focal point is often responsible for the coordination of activities under the VC and MP. The Ozone Secretariat publishes a *list of focal points of all Parties*.

# 3.2 Secretariat

**Ozone Secretariat (OS) is the secretariat for the Convention and Protocol, based at UNEP** in Nairobi, Kenya. The OS **supports the work of** the VC/MP, organises meetings such as OEWG, MOP & COP, and receives/processes ODS data reports from Parties (*About the Secretariat*). The OS hosts a website, and publishes a *Handbook for the Montreal Protocol and Handbook for the Vienna Convention* which contain the legal text and Decisions of MOP/COP, organised by subject. The Ozone Secretariat provides information on many aspects of the Protocol (*OS website*).

Funds for Secretariat (managed by the *Trust Fund*) are contributed by non-A5 Parties and about 20 A5 Parties that have a UN contribution ratio greater than 0.1% (other A5 Parties are exempt).

**Multilateral Fund Secretariat (MFS or MLFS)** supports the work of ExCom, and is based in Montreal, Canada. Its functions include: preparing documents, budgets and draft plans for ExCom, reviewing project proposals, overseeing expenditure, monitoring projects, and liaising with other bodies. The MLF website provides information on all aspects of the MLF and ExCom ⇨(section 9).

## 3.3 Technical Panels

**Assessment Panels**, established under Article 6, compile technical and scientific reports and present information to MOP/OEWG. They provide an important source of technical information for the Parties. The Panel co-chairs are appointed by MOP Decisions. Hundreds of specialists from around the world, including experts from Article 5 countries, contribute information to the Panels' reports (*UNEP Assessment Panels; Terms of Reference; Guidelines for disclosure of interests*).

There are three Panels:

⇒ Technology and Economic Assessment Panel (TEAP)

⇒ Scientific Assessment Panel (SAP)

⇒ Environmental Effects Panel (EEAP)

Technology and Economic Assessment Panel (TEAP) compiles reports on technical issues associated with ODS and alternatives. TEAP produces an annual *Progress Report* (typically published in May) covering the status of ODS alternatives, evaluations of any exemption requests, and specific topics requested by MOP Decisions. TEAP also prepares a major assessment report every four years (*TEAP progress reports; TEAP assessment reports; TEAP Terms of Reference; Members of TEAP and TOCs*).

**SUBSIDIARY BODIES :**

**Technical Options Committees (TOCs)** carry out much of TEAP's work. At present there are six TOCs: Chemicals (CTOC), Foams (FTOC), Halons (HTOC), Medical (MTOC), Methyl Bromide (MBTOC), and Refrigeration and air-conditioning (RTOC).

**TEAP Task Forces.**
TEAP sometimes convenes temporary Task Forces or other subsidiary bodies to prepare reports on specific topics requested by MOP Decisions.

**Scientific Assessment Panel (SAP)** assesses information on the status of ozone depletion, the abundance of ODS in the atmosphere, and options for improving the state of the ozone layer through reductions in the production and consumption of ODS. (*Scientific Assessment reports and members; Terms of Reference*).

**Environmental Effects Panel (EEAP)** assesses information on the impacts of ozone depletion on human health and the environment (*EEAP reports and members; Terms of Reference*).

Every four years, each panel compiles a major *Assessment Report* for the Parties, because Article 6 requires Parties to assess its control measures on the basis of scientific, environmental, technical and economic information. Together the Panels compile one *Synthesis Report* summarising the key findings from their assessments.

**TIPS**

**The OS website publishes a list of *experts* required as new members of TEAP and TOCs. TEAP/TOCs aim to achieve 50% membership from developing countries. Be proactive in recommending qualified experts from your country. Experience has shown this is helpful to countries in the longer-term.**

## 3.4 Annual cycle of MP events

Key meetings of the MP occur on an annual cycle ⇨(Figure 6). It is important for NOOs to make an annual work plan that takes full account of this annual calendar of meetings and related events.

**OEWG/MOP** The annual TEAP progress report is normally published in May, along with reports on specific topics requested by previous MOP Decisions. The OEWG meeting generally takes place in June/July, in preparation for taking decisions at the MOP in November/December. ImpCom meetings occur twice a year, normally shortly before or after OEWG, and before MOP, so that ImpCom's recommendations can be fed into MOP Decisions.

**ExCom and other MLF bodies** operate on an annual cycle. ExCom meets traditionally three times a year, around March/April, June/July, and November/December and, since 2002, has examined the issue of the organization of its work and the possibility of holding only two meetings per year, this approach will be trialled in 2014.

Submissions for new project proposals, and reports on approved projects, must be submitted by implementing agencies (to MLF Secretariat) a fixed number of weeks before the relevant ExCom meeting, depending on the type and stage of project.

Project proposals submitted must figure in the Agencies' business plan for that year, otherwise, these will not be considered by the Secretariat. IS renewals, HPMP tranches and projects under US$ 5 million have to be submitted 8 weeks before, while new multi-year multi-year phase out plans or HPMP projects generally have to be submitted 14 weeks before the relevant ExCom meeting. Project proposals in the consumption sector, including HCFC projects, with a funding level of more than US$ 5 million must be submitted 12 weeks prior to the ExCom meeting.

Reporting of ODS data by Parties also occurs on an annual cycle. By 1 May each year, Parties that have Country Programmes with the MLF must submit their CP progress report and ODS data for the previous year to the MLF Secretariat. All Parties are requested to submit their Article 7 ODS data to the Ozone Secretariat each year by 30 June if possible, and must submit this report by 30 September at the latest.

## TIPS

List the main people, organizations and associations with whom you will be working at the national, regional, sub-regional and international level, and introduce yourself and your work. Let them know you are ready to do your job!

Other NOOs are the best teachers. When you start working as a new ozone officer, ask your Regional Network Coordinator to organise orientation training for you by an experienced ozone officer in the Region.

Pin a copy of Figure 6 near your desk and use it when drawing up the annual work plans for your NOU:

- Add the dates of UNEP Regional Network Meetings
- Ask the implementing or bilateral agencies who work on projects in your country to provide a list of deadlines for submitting reports to the MLF
- Add other dates that will be important for planning your work, such as national MLF project workshops and meetings

Figure 6: Annual calendar of Montreal Protocol activities

| MP meetings and other key events | Month | Submission dates for key reports |
|---|---|---|
| | January | |
| | February | |
| MLF Executive Committee meeting | March | |
| | April | |
| Publication of TEAP's Progress Report<br>Bureau of the COP<br>Ozone Research Managers meeting[1] | May | 1 May deadline: submit Country Programme progress report and ODS data to MLF Secretariat ⇨(section 5.2) |
| **Open-Ended Working Group (OEWG) meeting**<br>Implementation Committee meeting<br>MLF Executive Committee meeting | June | 30 June (guideline date): submit Article 7 ODS data to Ozone Secretariat ⇨(section 5.1) |
| | July | |
| | August | |
| 16 September: international Ozone Day | September | 30 September deadline: submit Article 7 ODS data to Ozone Secretariat ⇨(section 5.1) |
| Publication of TEAP's supplementary report | October | |
| Implementation Committee meeting<br>Bureau of the MOP / COP | November | |
| **Meeting of the Parties (MOP)**<br>Conference of the Parties (COP)[2]<br>MLF Executive Committee meeting | December | |
| **Other meetings:**<br>UNEP Regional Ozone Network meetings<br>National MLF project workshops and meetings | | **Other reports:**<br>Reports related to MLF projects<br>Reports requested by MP Decisions<br>Reports related to exempted uses (if any) |

[1] The Ozone Research Managers meet every 3 years, 6 months before the COP (Decision VC III/8).

[2] The COP is held every 3 years, concurrent with the MOP

# KNOW THE KEY OBLIGATIONS

## Key legal components of the Montreal Protocol's Articles and Amendments

This section outlines the key legal components of the Montreal Protocol's Articles and Amendments. These establish obligations and provide the framework for the institutions and procedures of the MP. The Articles of the Protocol have been expanded and clarified by many MOP Decisions. The control measures of the Montreal Protocol and its Amendments are legally binding on countries that have ratified them.

## Box 3. Amendments, Adjustments and Decisions

The original Articles of the Montreal Protocol were adopted in 1987. The Parties have revised the Articles ten times to date, by adopting *Adjustments* or *Amendments*. *Decisions* have also augmented or clarified a number of Articles.

***Adjustments*** revise an existing control measure, such as setting earlier reduction steps for specific ODS that were already controlled by the MP (e.g. the acceleration of the HCFC phase-out schedule in 2007). Adjustments are automatically binding on all Parties that have ratified the MP. The MP has been adjusted six times (*Adjustments*).

***Amendments*** usually address more substantive changes, such as measures to control new substances. Amendments apply to the countries that have ratified them at national level. There have been four Amendments to date:

- *London Amendment* (1990) adopted a phase-out schedule for CFCs, halons, carbon tetrachloride (CTC) and methyl chloroform;
- *Copenhagen Amendment* (1992) accelerated the phase-out of CFCs, halons, CTC and methyl chloroform. A phase-out date was adopted for HCFCs and a freeze for MB in A2 Parties;
- *Montreal Amendment* (1997) adopted phase-out schedules for HCFCs in A5 Parties and for MB in all Parties;
- *Beijing Amendment* (1999) tightened the controls on the production and trade in HCFCs, and adopted a phase-out schedule for bromochloromethane.

***Decisions***: The annual MOPs have adopted more than 770 Decisions to date, aiming to clarify and expand on many aspects of the MP. *Decisions* do not normally amend the MP Articles[2] and are not legally binding; however Parties are expected to abide by them. Decisions that use phrases such as 'Parties shall, must' or 'will' are generally regarded as mandatory. In cases where Decisions use phrases such as encourage, 'recommend' or 'urge', Parties are encouraged to implement the provisions if feasible or appropriate (*MOP Decisions*).

# 4.1 Commitments applying to Parties

The control measures of the Montreal Protocol and its four existing Amendments (London, Copenhagen, Montreal and Beijing) apply to the countries which have ratified the relevant legal texts.

- *Parties to the Montreal Protocol* are countries that have ratified the Protocol text of 1987, thereby agreeing to implement and legally enforce its provisions, including any Adjustments. All countries of the world are now Parties to the Protocol (197 Parties in total).
- *Parties to an Amendment* are countries that have ratified that specific amendment, thereby agreeing to implement and legally enforce the relevant control measures. As of February 2013, 188 countries had ratified all four of the Amendments.
- *Non-Parties* are countries that have not yet ratified specific Amendments[3], so they are not bound by those commitments. However, non-parties may face difficulties due to the Protocol's restrictions on trade in ODS.

All countries are strongly encouraged to become Parties to all of the Amendments. The OS website provides a table showing the current Parties and non-Parties.
(*OS Status of ratification*).

# 4.2 Articles of the Montreal Protocol

The *Articles* that impact NOOs most are summarised below (as adjusted and amended). Legally speaking only the Parties (MOP) can provide a definitive interpretation of the Articles and Decisions of the Montreal Protocol.

***Article 1*** contains various definitions:

- *Consumption* is defined as production of controlled substances plus imports minus exports. ⇨(section 5.1 and Box 4)
- *Production* means total production of controlled substances for all uses, minus the amount used as feedstock for manufacture of other chemicals and minus the amount destroyed by approved technologies. Feedstock uses are exempt from the phase-out schedules. ⇨(section 4.4)

***Article 2*** sets out the procedures for revising the Protocol's control measures by *Adjustments*, and creating new control measures (typically by adopting *Amendments*). Article 2(11) allows Parties at national level to take more stringent measures than the Protocol.

***Articles 2A to 2I*** set out the control measures for nine groups of ODS. For each ODS group there is a base year (baseline) for calculations, and a schedule (timetable) for reducing and phasing-out the production and consumption ⇨(Table 2).
Four Annexes to the Protocol *(Annex A, B, C and E)* specify the nine groups of ODS as shown in Table 2. The Annexes contain a total of 96 controlled substances. Each ODS has been allocated an estimated Ozone Depletion Potential (ODP), a number that indicates its ability to destroy ozone (compared to CFC-11 which has an ODP of 1.0). Substances with higher ODPs (e.g. CFCs) have greater impact on ozone (molecule for molecule) than substances with lower ODPs (e.g. HCFCs).

***Article 3*** describes how a Party's annual levels of ODS production and consumption are calculated. For each substance, the data in metric tonnes is multiplied by its ODP. MOP Decisions have provided further details on the procedure for calculating a Party's consumption. ⇨(section 5.1)

***Article 4*** bans imports/exports of ODS between Parties and non-Parties (i.e. countries that have not ratified the Protocol or relevant Amendments). The Article also provides for bans on imports from non-Parties of products made with or containing ODS, as decided by MOP. *Annex D* specifies a list of products containing CFCs and halons which cannot be imported from non-Parties.

***Article 4A*** controls trade between Parties, under certain specific circumstances.

***Article 4B*** makes it mandatory for all Parties to implement a system for licensing the import and export of ODS, for both new and used ODS. ⇨(section 5.1)

***Article 5*** sets out special provisions for developing countries whose annual consumption is less than 0.3 kg per capita of Annex A substances and less than 0.2 kg per capita of Annex B substances (Article 5(1) & (2)). About 148 Parties meet these criteria and are called *Article 5 Parties*, while all others are called *non-Article 5 Parties*. (*List of Article 5 Parties*).
Article 5 status allows more time for a country to achieve ODS phase-out, and access to MLF funds:

- Article 5(1) allows Article 5 Parties to delay by 10 years their compliance with the ODS phase-out schedules of Article 2, in order to meet basic domestic needs. This delay is commonly called a *grace period*.
- Article 5(5) recognises that the capacity of Article 5 Parties to implement the control measures will depend on the effective implementation of Articles 10 (on financial cooperation) and 10A (on transfer of technology).
- Article 5(6) permits an Article 5 Party to notify that, having taken all practicable steps, it is unable to implement its obligations due to inadequate implementation of Articles 10 (financial mechanism) and 10A (technology transfer). The next MOP decides on appropriate action to be taken.
- Article 5(8) sets out the ODS phase-out schedules that apply to Article 5 Parties. ⇨(Table 3)

***Article 6*** requires Parties to assess (every 4 years or more frequently) the Protocol's control measures, on the basis of available scientific, environmental, technical and economic information. Panels of experts (commonly called *assessment panels*) provide information to the Parties. ⇨(section 3.3)

***Article 7*** requires all Parties to report ODS data to the Secretariat on an annual basis. ⇨(section 5.1)

***Article 8*** provides for non-compliance procedures in the event that a Party fails to comply with the provisions set out in the Montreal Protocol. ⇨(Annex 2 non-compliance procedure)

***Article 9*** requires Parties to cooperate in promoting public awareness of the environmental effects of ODS, conduct research and development (R&D) and information exchange on technologies to reduce emissions and destroy ODS, ODS alternatives, and control strategies. Every two years, each Party must submit a summary of its activities under Article 9. ⇨(section 5.1)

***Article 10*** provides for a Financial Mechanism to enable Article 5 Parties to comply with the control measures. The mechanism includes the Multilateral Fund (MLF) and other means of co-operation:

- An Executive Committee (ExCom) develops and monitors the implementation of MLF operational policies, guidelines and administrative arrangements. ⇨(section 9.1)
- The MLF provides funds for the incremental costs of implementing the control measures in Article 5 Parties ⇨(section 9.1). *Incremental* refers to the additional costs beyond business-as-usual or normal technology upgrades. An *Indicative List of Incremental Costs* was adopted by MOP (*Decision IV/18 and Annex VIII of MoP-4 report*).
- The MLF is financed by contributions from non-Article 5 Parties in the same ratio as their contributions to the United Nations. MOP decides the total amount to be contributed for each fiscal period (a three-year period or *triennium*).

***Article 10A*** specifies that the best available, environmentally-safe technologies should be transferred to Article 5 Parties, under fair and favourable conditions.

***Article 12*** established an Ozone Secretariat to arrange meetings and undertake other functions to support the work of the Protocol.

***Other MP Articles*** address topics such as the Meetings of the Parties, relationship of the Protocol to the Convention, and entry into force.

# 4.3 ODS phase-out schedules

The MP's control measures require Parties to reduce their level of ODS consumption[4] according to agreed timetables, until ODS consumption is phased out (Articles 2 and 5). The word *consumption* has a special definition in the Protocol. In countries that do not produce ODS, consumption primarily means ODS imports. Note that *consumption* does not mean *use.* ⇨(Box 4)

## Box 4. Calculation of a Party's annual Consumption

Using the data that Parties submit in their Article 7 data reports ⇨(section 5.1), the Ozone Secretariat calculates each Party's ODS consumption levels and monitors their compliance with the phase-out schedules. This is called the *calculated consumption*, and in most countries it is primarily based on ODS imports. Consumption does not mean *use*[5].

In cases where a Party only imports ODS (i.e. does not produce, export or destroy ODS), the Party's annual Consumption is calculated as follows:

**ODS Consumption = ODS imports**

In cases where a Party produces or exports ODS, or has exempted uses, the Party's annual Consumption is calculated as follows (simplified version):

**ODS Consumption = ODS production (defined below) + ODS imports – ODS exports – exempted uses** (if any).

**ODS Production = ODS production for all uses – ODS production used as feed-stock – feedstock exports – production for quarantine – amount of ODS destroyed**

(*Ozone Secretariat FAQ: How is Production and Consumption Calculated?*)

Table 2[6] summarises the deadlines for completing the phase-out of ODS consumption (and production) in non-A5 and A5 Parties. For six of the nine groups of ODS, phase-out has now been completed by all Parties.

Table 3 shows the detailed phase-out schedules for the main ODS that remain to be phased-out in A5 Parties, namely HCFCs and methyl bromide.[7] The Montreal Protocol allows Parties to adopt more stringent measures at national level than the control measures specified in the Protocol *(Article 2(11))*. A number of MOP Decisions have also urged Parties to take additional steps to eliminate ODS use or emissions. In fact many Parties have chosen to protect human health by phasing out ODS earlier than required by the MP, and adopting additional controls such as banning the use of ODS in sectors where alternatives are available.

Table 2. Deadlines for completing the phase-out of ODS consumption and production

| ODS | ODS Annex and Group in Montreal Protocol | Phase-out date (a) in non-A5 Parties | Phase-out date (a) in A5 Parties |
|---|---|---|---|
| Major CFCs, CFC-11, CFC-12 | Annex A, Group I | By 1996 | By 2010 |
| Halons | Annex A, Group II | By 1994 | By 2010 |
| Other CFCs | Annex B, Group I | By 1996 | By 2010 |
| Carbon tetrachloride | Annex B, Group II | By 1996 | By 2010 |
| Methyl chloroform | Annex B, Group III | By 1996 | By 2015 |
| HCFCs | Annex C, Group I | By 2020 (b) | By 2030 (b) |
| HBFCs | Annex C, Group II | By 1996 | By 1996 (c) |
| Bromochloromethane | Annex C, Group III | By 2002 | By 2002 (c) |
| Methyl bromide | Annex E | By 2005 | By 2015 |

a. Excluding any exempted uses of ODS
b. Consumption is allowed for servicing existing RAC equipment until 2030 and 2040 respectively.
c. For these ODS, the schedules are the same in Article 5 and non-Article 5 Parties because the substances were little used an immediate phase-out was agreed.

Table 3. Phase-out schedules for HCFCs and methyl bromide in Article 5 Parties

| **HCFCs (Annex C, Group I)** | **Deadlines for reductions in national consumption** |
|---|---|
| Base level (baseline) | Average national consumption in 2009 and 2010 |
| Freeze at base level | By 1 January 2013 |
| 10% reduction | By 1 January 2015 |
| 35% reduction | By 1 January 2020 |
| 67.5% reduction | By 1 January 2025 |
| 100% reduction | By 1 January 2030 |
| **Servicing tail** | From 1 January 2030 to 1 January 2040, consumption is allowed for servicing existing refrigeration and air conditioning equipment. Total consumption in this 10-year period must not exceed 10 x 2.5% of the baseline |
| **Methyl bromide (Annex E)** | |
| Base level (baseline) | Average national consumption in 1995 - 1998 |
| Freeze | By 1 January 2002 |
| 20% reduction | By 1 January 2005 |
| 100% reduction | By 1 January 2015 (with potential exemptions for critical uses) |

Sources: Article 2 and Article 5 of the Montreal Protocol

**TIPS** Reproduce the parts of Table 3 that are relevant to your country, and other key requirements of the MP. Put the information in a prominent place in your desk or office, so you can refer to this on a regular basis.

# 4.4 Exemptions from the phase-out schedules

Although all of the ODS chemicals listed in Annexes A to E of the Protocol are (legally speaking) *controlled substances*, several uses of ODS are exempted from the phase-out schedules. Exempted ODS uses are not included in the calculation of a Party's annual ODS *consumption* ⇨(Box 4). However, Parties must report data on exempted ODS uses ⇨(section 5.1).

## 4.4.1 General exemptions

The following exemptions apply to all Parties, and Parties do not need to request authorisation:

### ODS feedstock

Used as raw materials for manufacturing other chemicals. Parties must report the amount of ODS that is entirely used as feedstock, and the Ozone Secretariat will deduct this when calculating a Party's annual ODS consumption/production. ⇨(section 5.1)

### Used or recycled ODS

Imports and exports of used or recycled ODS must also be reported, but they will not be included in a Party's calculated consumption (*OS FAQ: How are used ODS treated by the Protocol?*). *Decision IV/24* provides relevant definitions. However, *Decision XX/7* encourages Parties to ensure proper recovery of used ODS, apply best practices to prevent emissions of used ODS, and destroy unwanted ODS if possible. ⇨(section 10.5)

### Laboratory and analytical (L&A) uses

Several ODS (mainly carbon tetrachloride and CFCs) are used in some standard test methods in laboratories. There is a general exemption (often called a *global* exemption) for many L&A uses. However a list of specific L&A uses has been deleted from the general exemption because alternatives exist. The current list of L&A uses can be found on the OS website (*OS Exemption information: Laboratory and analytical uses*).

### Quarantine and pre-shipment uses of methyl bromide

Quarantine and pre-shipment uses of methyl bromide are exempt from the phase-out schedule (Articles 2 and 5), but the amount of MB imported/exported for QPS must be reported to the OS. ⇨(section 5.1) *Quarantine* refers to MB treatments for controlling officially-recognised quarantine pests, while *pre-shipment* refers to MB treatments carried out within 21 days before export to meet official requirements for non-quarantine pests (*Decision VII/5 and Decision XI/12*). Distinguishing between QPS and non-QPS uses can be difficult, so TEAP has provided a decision tree (also called *QPS Logic Diagram*) to assist parties ⇨(Annex 3). Although QPS is exempt, Parties are urged to refrain from using MB, use alternatives wherever possible, and minimize emissions (*Decision VII/5*).

## 4.4.2 Exemptions requiring authorisation

The following exemptions have to be authorised by MOP Decisions for specifically named Parties. The Decisions place quantitative limits on the exempted ODS uses, along with other conditions and reporting requirements. These exemptions are regarded as temporary, until alternatives can be used:

**Process agents** are ODS that assist processes in the chemical industry. MOP Decisions have exempted a list of process agent uses in specified Parties, on the provision that these Parties keep emissions below specified limits and report annually to OS (*OS Proposed form for reporting process agents*). Process agents are regarded as temporary exemptions so the list is reviewed regularly by TEAP/CTOC and updated by MOP Decisions as needed (*Decision XVII/6(5)*). The list of process agents exemptions adopted in 2011 can be found in *Decision XXIII/7*.

**Essential use exemptions** may be permitted in specific cases *where the use of an ODS complies with the essential use criteria set out in* Decision IV/25 and other Decisions. From the scheduled phase-out date, such exemptions can apply to all groups of ODS, except HCFCs[8] and methyl bromide (Articles 2 and 5). In recent years essential-use exemptions have been authorised only for CFCs for medical aerosols (metered-dose inhalers) and aerospace. Any requests (*nominations*) for exemptions are assessed annually by TEAP[9], and the MOP takes a decision on any authorisation and conditions ⇨(Box 5 and TEAP *Handbook on Essential Use Nominations*).

**Critical use exemptions** may be permitted in specific cases where the use of methyl bromide (MB) complies with the critical-use criteria set out in Decision IX/6 and other Decisions. In A5 Parties this type of exemption would apply only from the scheduled phase-out date of 1 January 2015. In recent years, critical-use exemptions have been authorised only for specific locations where alternatives were not registered or not available to end-users. Any requests (*nominations*) for exemptions are assessed annually by TEAP / MBTOC, and the MOP then takes a decision on any authorisations and conditions (Box 5 and TEAP *Handbook on Critical Use Nominations*).

A list of Parties that have received authorisation for essential/critical uses, and the amounts of ODS authorised and consumed, is available in the *Data Access Centre on OS website.*

**TIPS**

If you need information relating to exemptions, ask implementing/ bilateral agencies or Regional Networks for relevant information. If you require legal clarification, contact the Ozone Secretariat.

It is wise to focus ODS users' efforts towards adopting alternatives rather than applying for essential/critical-use exemptions. The process of requesting this type of exemption is arduous because submissions require a lot of paperwork, and the outcome is uncertain. If the NOU makes sure that companies and users have access to suitable alternatives, there will be no need to request exemptions.

## Box 5. Are Article 5 Parties eligible for essential or critical use exemptions?

All Parties, including A5 Parties, may request an essential or critical-use exemption from the scheduled phase-out. Exemptions apply only from the phase-out date, and are normally authorised one year at a time. The possibility of an essential/critical exemption exists for almost all groups of ODS under Articles 2 and 5 (e.g. CFCs, halons, carbon tetrachloride, methyl bromide). However, there is no such exemption pathway for HCFCs, even after phase-out.

To be eligible for an exemption, the specific ODS use must satisfy strict criteria (found in *Decision IV/25, Decision IX/6* and other decisions). ODS uses do not qualify for an exemption if an alternative is technically and economically feasible, available, and suitable for users. A number of other criteria also apply. Onerous reporting requirements and conditions have been put in place by MOP Decisions

(TEAP *Handbook on Essential Use Nominations* and TEAP *Handbook on Critical Use Nominations*).
Critical-use exemptions for methyl bromide are regarded as temporary exemptions that apply only until feasible alternatives are available (para. *32 of Annex I of MOP-16*).

Since the ODS phase-out date in A5 Parties is usually 10 years after the phase-out in non-A5s, feasible alternatives have often been on the market for a long time. Moreover, MLF projects have assisted ODS users to adopt alternatives, so exemptions are not generally expected in A5 Parties. In the case of CFCs, essential use exemptions for medical aerosols (called *metered-dose inhalers*, *MDIs*) were authorised for several A5 Parties following the 2010 CFC phase-out date. However from the 3rd year following CFC phase-out, only 1 A5 Party still requested an exemption.

# COLLECT DATA FOR GOOD MANAGEMENT

Major ODS data reports

This section outlines the major ODS data reports that Parties must submit annually. Collecting data on ODS is necessary for Parties to fulfil their reporting obligations under the Protocol, as well as reporting related to MLF projects. Good data management also assists NOUs in targeting national phase-out activities, helps prevent illegal trade, and helps to ensure that exempted ODS will be used as intended. ODS data collection should therefore be viewed as a useful evaluation tool, not simply as a requirement.

NOUs need to compile and submit ODS data annually for two major reports:

- Article 7 data reports to the Ozone Secretariat ⇨(section 5.1)
- Country Programme reports to the MLF ⇨(section 5.2)

For these reports, the following types of ODS data need to be collected nationally:

- Quantities of ODS imported, exported and produced - for OS and MLF reports
- Quantities of ODS for exempted uses, if any - for OS and MLF reports
- Quantities of ODS used in each sector – for MLF reports only

# 5.1 Article 7 data reports to the Ozone Secretariat

Reducing the consumption[10] of ODS, as required by the phase-out schedules, is the most important part of the Montreal Protocol. Article 7 of the Protocol requires all Parties to submit a detailed ODS data report to the Ozone Secretariat (OS) each year. The OS uses the data to calculate each Party's *calculated consumption* level ⇨(Box 4). The calculated consumption is compared with a Party's baseline to determine whether its consumption lies within the limit specified by the phase-out schedule. Each Party must submit its Article 7 data report to the OS by 30 September each year, at the very latest, and preferably by 30 June. Failure to submit an Article 7 report is regarded as non-compliance.

**Article 7 data reporting forms**, instructions and definitions can be downloaded from the OS website (*Data reporting form in Excel; Instructions/Guidelines*). The Excel form contains the following six sheets for reporting national ODS data for the previous year (1 January to 31 December):

- The questionnaire is also available in PDF on page 1 of *Instructions/Guidelines* document.
- Data form 1: ODS imports
- Data form 2: ODS exports
- Data form 3: ODS production
- Data form 4: Amount of ODS destroyed
- Data form 5: ODS imports from non-Parties and exports to non-Parties.

NOUs should submit all of this data in metric tonnes. The OS will convert the data to ODP-tonnes, and will calculate national consumption.
The Article 7 reports also address other information required by several MOP Decisions.

For further details and information on reporting requirements see:
*OS data reporting tools;*
*UNEP Handbook on Data Reporting under the Montreal Protocol;*
*HCFC Policy and Legislative Options: A Guide for Developing Countries.*

## Box 6. Examples of data reporting issues

**ODS in containers vs. ODS in products/equipment**

ODS (or mixtures) in containers that are used primarily for transport or storage are treated differently from ODS in products/equipment such as refrigerators or foam panels. Article 7 data reports must address the ODS imported/exported in containers (*bulk substances*), but not the ODS inside imported/exported products or equipment (Decision I/12A; Decision XIV/7; p.VII in UNEP *HCFC Policy and Legislative Options: A Guide for Developing Countries*).

The following photos show examples of containers vs. products/equipment:

1. Containers for ODS transport/storage


ISO tank
Disposable 340g canister,
Non-refillable 13.6 kg cylinder,

2. Products/equipment containing ODS:



Wall-mounted A/C unit,
Refrigerator,
Fire extinguisher

(...continued)

(continued...)

**Refrigerant blends and foam polyols**

ODS refrigerants are sometimes mixed (blended) with other substances and the quantity of ODS imported/exported in refrigerant blends must be reported. However, imported pre-blended polyols for foam are treated differently, as ODS in *products*, not as controlled substances (Decision I/12A(e)(iii)). Polyol imports need to be reported in CP reports to the MLF, but they are exempt from Article 7 reports to OS[11] (UNEP *Fact Sheet 34 Collecting data on pre-blended polyol*; OS *Issues for discussion at OEWG-30*; ExCom decision 61/47; MOP Decision XXII/9).

**Methyl bromide exemptions:**

Data collection on methyl bromide (MB) can be complex ⇨(section 4.4 and Annex 3). Article 7 data forms require Parties to report total imports of MB for all uses, as well as the quantity of MB imported for exempted uses (QPS, feedstock, critical uses). This means all uses of MB need to be included in national licensing and reporting systems (*UNEP Handbook on Methyl Bromide Data Reporting*; UNEP *Fact Sheet 20: Monitoring Supply and Use of Methyl Bromide for Article 7 Data Reporting*).

**Incorrect baseline data**

If a Party finds that an error was made when calculating its official baseline data for ODS consumption/production, the Party may present a case for revising its baseline to ImpCom (via the OS). ImpCom will assess the case with input from the OS and ExCom. If recommended, a MOP Decision may revise the baseline (*Decision XV/19; Decision XIII/15(5)*).

**Illegal trade**

If illegally-traded ODS are placed on the market in your country, these ODS should be counted as part of your country's ODS consumption, and must be reported in your Article 7 data report to the Ozone Secretariat. On the other hand, if illegally traded ODS are not placed on the market, they will not count as part of your country's ODS consumption, and should not be reported in your Article 7 data report (Ozone Secretariat FAQ*: How are illegally traded ODS treated by the Protocol?)*. When cases of illegal trade are detected, Parties are invited to report cases by letter to the Ozone Secretariat (*Decision XIV/7*).

**Other issues**

The Ozone Secretariat has published instructions for Article 7 data reports (OS Data reporting and tools). If you need further information on a reporting issue, contact the OS directly. ⇨( Annex 5)

**TIPS**

If you need official government approval before your data can be submitted to OS or MLF, make sure you allow enough time for this in your planning process.

HOLD MEETINGS with customs, trade ministry and other key stakeholders regularly to collect and verify data.

CHECK NEW DATA against previous reports. Check and double-check the data for accuracy! Mistakes in data reporting can put your country in non-compliance.

CROSS CHECK THE DATA in OS and MLF reports, and resolve any inconsistencies. To reduce the possibility of discrepancies, compile data for both the OS and MLF at the same time.

ENSURE that you collect data on the source countries and destination countries for ODS imports/exports. This information will be useful for managing your national demand and supply situation, which affects your country's compliance status.

## 5.2 Country Programme and other reports to the MLF Secretariat

All countries that have a Country Programme (CP) approved by MLF ExCom have to provide a CP progress report, by 1 May each year, covering ODS data and activities from the previous year (1 January to 31 December). These reports are submitted to the MLF Secretariat. Instructions and guidance for completing CP reports are provided on the MLF website (*MLF reporting Country Programme data (overview); MLF Practical Manual for Reporting of Data on Progress in Implementation of Country Programmes*).

**The CP reporting form** is normally completed online (*MLF web-based data entry system*[12]) - a user name and password can be obtained from MLF Secretariat. In cases where it's not possible to use the web-based form, an Excel form can be downloaded (*MLF Excel form*).

The CP form contains the following five sections:

- Section A: Data on ODS, covering amount used, ODS use by sector, and Article 7 data
- Section B: Regulatory, Administrative and supportive actions
- Section C: Quantitative Assessment of the Phase out programme
- Section D: Qualitative Assessment of the implementation of the Refrigerant Management Plan (RMP)
- Section E: Comments of the bilateral or implementing agencies.

Sections A and C require detailed data, while sections B and D ask for yes/no answers or Q&A. Section A requires the same import, export and production data as in Article 7 reports to OS. But in addition, it covers data on the amount *used* for each ODS, and ODS use in each sector. The NOU should carefully identify all of the sectors that use new (virgin) ODS, as well as sectors that recycle old ODS. ⇨(section 5.3)

**Institutional Strengthening (IS) reports**. A format is also available for Parties to submit their *IS terminal report* to the MLF, as well as requests for renewals. IS renewal requests are usually submitted every two years, at least 8 weeks before the ExCom meeting in which they will be reviewed.

**Reports** are also required for HPMPs and other MLF projects at various dates.
*HPMP tranche requests* typically have to be submitted 8 weeks before a relevant ExCom meeting, while new projects generally have to be submitted at least 14 weeks before an ExCom meeting. Project reports are normally submitted to MLF Secretariat by the IAs, after they have been approved by the relevant NOU.
ExCom decisions relating to reports for MLF projects can be found in *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund* and in the government/ ExCom Agreements on *HCFC Phase-out Management Plans.*

**TIPS**

**Ask the implementing/bilateral agencies that work with you on MLF projects to provide a list of key dates for submitting reports on your projects, and the expected contents of reports, so that you can plan accordingly.**

**Before submitting a Country Programme report to the MLF, many NOUs request assistance in checking the data from UNEP's CAP Programme or the IA responsible for the IS project.**

**It is important to submit reports to the MLF on time; otherwise your country's project funds may be delayed or temporarily suspended.**

## 5.3 Sources of data

Detailed guidance on how to collect data for ODS reporting can be found in the following: UNEP *Handbook on Data Reporting*; UNEP *Handbook on Methyl Bromide Data Reporting*; UNEP *Fact Sheet 20: Monitoring supply and use of methyl bromide for Article 7 data reporting*.

The following sources of data have proven useful:

### National ODS licensing systems

National ODS licensing systems ⇨(section 6.2) can provide much of the necessary ODS data if they require licence holders to submit reports as a condition for licensing. Some countries require ODS importers/distributors to report on the quantities and intended uses of ODS they have sold; including signed declarations by purchasers (stating contact details, quantity of ODS purchased, and purpose/use).

### Customs Department

Customs departments can provide useful data on imports/exports if they keep track accurately and compile promptly (Some ODS may come in to harbours or airports and leave without entering national territory (OS *FAQ: Which Parties must report transhipment of ODS?*).

### Users of ODS

To obtain use data for each sector, NOUs can survey users of ODS (if there are not too many users). Getting data from industry associations and supplier chains is another useful method. For an overview of the sectors that use ODS, see ⇨section 10.1 and UNEP *Fact Sheet 25: Applications of HCFCs and blends containing HCFCs*.

### Companies

All of the data provided by companies (e.g. importers, exporters, users) has to be treated with caution because ODS might be double counted, or traders might provide inaccurate data in order to avoid taxes, etc. However, some of these problems can be prevented if reporting systems are designed to avoid double-counting, and if penalties are established for inaccurate reporting.

### Refrigeration and Air-conditioning Sector

NOUs can make a rough cross-check on the amount of ODS used in the refrigeration and air conditioning sectors by estimating the quantity of each type of equipment, the amount of ODS it contains, annual leakage, and amount used for servicing. Experts and trade associations can help in compiling such information and making calculations.

The NOU also needs to put in place systems to ensure that confidential (commercially sensitive) company data will be respected.

**TIPS**

**Data reporting does not just involve the NOU. Familiarise trade associations, major ODS users, ODS importers, etc. with the reporting formats and the reasons why they are being asked to report data. Consider putting together succinct guidelines in local languages, or hold workshops to explain the data reporting requirements. Organise a meeting in your office to disseminate the forms to all authorities who help you in data collection so they understand the end point.**

# BUILD A ROBUST LEGAL FRAMEWORK

## Elements of a national framework for controlling ODS

## Articles and Amendments

This section outlines key elements of a national framework for controlling ODS. Effective legal frameworks and policies will be essential for ensuring that your country is able to comply with the Protocol's requirements. Expanding the current ODS licensing and quota system to cover HCFCs will be an important step.

## 6.1 Role of government and NOU

It is your government that ratifies the Protocol and is responsible for its national implementation. To help achieve this, the government needs to:

- Maintain and update a national system for licensing, monitoring and reporting on ODS consumption and use
- Update and enforce legislation and policy measures to ensure ODS phase-out
- Update the national Country Programme (CP), setting out a strategy and plan of action
- Consult with industry and other stakeholders on the steps to be taken to achieve ODS phase-out
- Coordinate technical and financial support of the MLF, working in partnership with implementing agencies or bilateral agencies
- Organise awareness and training programmes for targeted industry sectors and the public
- Coordinate other activities to achieve ODS phase-out
- Participate in the MOP, OEWG and other international or regional groups.

**The NOU** is the focal point in the government for implementation of the Protocol. The NOU is responsible for initiating and sustaining all the roles of the government mentioned above. Where possible, the NOU should be given a clear responsibility to carry out the day-to-day work in order to implement such activities. The NOU's responsibilities require that:

- The NOU coordinates with the decision-makers and enforcement agencies of the government
- The NOU is allocated sufficient resources and authority, including continuity of staff
- Financial resources and equipment provided by the MLF should be fully allocated to the NOU
- The NOU should be supported by steering committees or advisory groups involving stakeholders
- Annual work plans for the NOU are prepared and integrated in the government authorities' internal planning processes
- The NOOs needs to persuade their government to fulfil the above requirements, using the existing support mechanisms of the MP as necessary.

**TIPS**

Whenever you have a new supervisor or Minister, request time as soon as possible to give a short overview of the Montreal Protocol activities in your country, economic implications of the phase-out, benefits (e.g. health benefits of avoiding ozone depletion; opportunities for technology transfer and improving skills of technicians), existing and forthcoming MLF projects, and the operation of your NOU. Keep the briefing short and focussed. Repeat this each time your supervisor or Minister changes.

## 6.2 ODS licensing and quota systems

Licensing systems for ODS imports and exports bring important benefits – they enable NOUs to monitor and collect data on ODS imports/exports, restrict the quantity of ODS trade (to limit ODS consumption to required levels), and reduce the risk of illegal trade. Figure 7 provides an example of a licensing system.

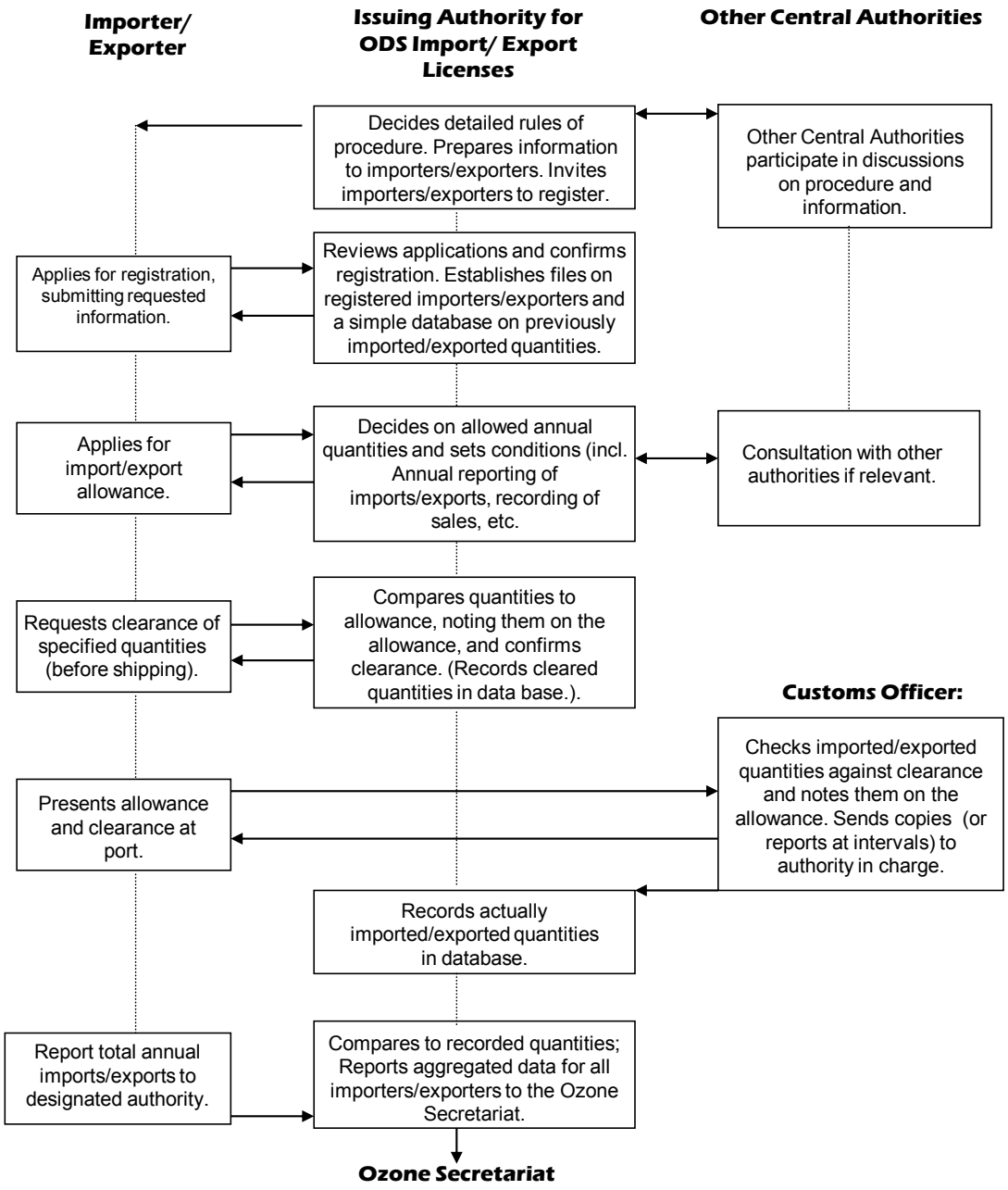
Parties to the Montreal Amendment are required to operate a national licensing system for imports and exports of all ODS[13], including HCFCs and methyl bromide (*Article 4B*). If a Party's licensing system does not meet the requirements specified in the Amendments it has ratified, the Party can be subject to the non-compliance procedure. ⇨(Annex 2)

Decision IX/8 requires the licensing system to be able to:

- Assist the collection of sufficient information to allow a Party to comply with the reporting requirements of Article 7 and MOP Decisions
- Assist Parties in preventing illegal trade in ODS, including notification and/or allowing cross-checking between exporting and importing countries

Each Party is required to designate an officer as the national Focal Point for ODS trade/ licensing, and should provide the Ozone Secretariat with up-to-date contact details (*Decision IX/8(2); Official list of ozone focal points*).

Figure 7. A typical ODS licensing system




Source: UNEP ODS Import/Export Licensing Systems Resource Module

It is important that NOUs review their licensing system to check that it covers all components necessary for complying with MP Amendments and Decisions. It is also useful to adopt additional components that will assist the country to achieve and maintain ODS phase-out successfully. ⇨(section 6.3)

To provide NOUs with an effective tool, the licensing system should cover the following areas, at minimum:

- Import and export of all ODS including HCFCs
- Trade with non-Parties: a ban on imports from and exports to non-Parties, and imports of listed products containing ODS from non-Parties (*Article 4*; *Annex D*)
- Imports and exports of used, recycled and reclaimed ODS ⇨*(Annex 6)*. This applies to all groups of ODS: CFCs, halons, methyl chloroform, carbon tetrachloride, HCFCs, HBFCs, bromochloromethane, and methyl bromide. (*Article 4B(3)* adopted by the Montreal Amendment)
- Import and export of new and used ODS-using equipment (*Decision IX/9 and Decision X/9; Official list of Parties who do not wish to receive ODS-using equipment*)
- Trans-shipments of ODS and imports for re-export (*Decision IX/34*[14])
- Information on types, quantities and destinations of all ODS exports (*Decision XVII/16(4)*).
- ODS production and exempted ODS uses (e.g. feedstock, process agents, quarantine and pre-shipment uses), in order to comply with reporting requirements. ⇨(section 5.1)
- Other information needed for complying with reporting requirements of Article 7 and MOP Decisions, and to prevent illegal trade in ODS (*Decision IX/8*).

## Box 7. Key steps for establishing an HCFC quota system

Step 1: Conduct a survey to obtain data on HCFC imports and exports
Step 2: Decide on the total national HCFC import quota to be allowed in each year
Step 3: Decide on a suitable way to allocate quotas (e.g. based on historical market share of companies or users, or allocation by tendering); establish a list of eligible HCFC importers; and set up a mechanism for quota allocation
Step 4: Include a provision for the HCFC import quota system in national ODS legislation, including additional measures which will help you to enforce the HCFC quota system
Step 5: Review and adjust the quota system as necessary

Useful standard forms and further information on establishing ODS licensing and quota systems *Establishing an HCFC Import Quota System; HCFC Policy and Legislative Options: A Guide for Developing Countries*; UNEP *Fact Sheet 6: Model Forms for Licensing*; UNEP *Planning, Designing and Implementing Policies to Control ODS under the Montreal Protocol*.

TIPS

Review your country's licensing system and make sure it covers all ODS. Ban any ODS that have never been used in your country, to avoid any possible introduction.

If you need assistance, contact the implementing agency responsible for your Institutional Strengthening project.

## 6.3 Updating policies and legislation to support ODS phase-out

National policies and legislation should actively support your country's phase-out efforts. Your country will already have various policy documents that set out the national ODS-related policies adopted to date. This includes MLF-related documents such as the Country Programme, policy documents relating to past MLF projects, and an HCFC Phase-out Management Plan (HPMP) ⇨(section 9.2). NOOs are urged to review the existing policies and legislation at regular intervals. Consider whether they contain the elements necessary to achieve and maintain the phase-out of each ODS group. If not, identify how to address the gaps.

National ODS policies often include the following elements, although the details will vary greatly from country to country:

- **Legislative measures** to improve or expand the existing legislative framework on ODS, to improve enforcement or address new ODS-related issues as they arise.
- **Economic instruments** to discourage the use of ODS by placing taxes, levies or marketable permits on ODS or products made with ODS; and encouraging the use of environmentally-friendly alternatives by incentives or waivers on the taxes or excise duties. ⇨(Box 9)
- **Awareness and voluntary approaches** to encourage industries and consumers to reduce ODS consumption through education programmes, agreements with industry sectors, and other initiatives.

For ideas and useful concepts, examine policies and legislation adopted in other countries. Contact your Regional Network office for information about legislation adopted in other countries (UNEP *Planning, Designing and Implementing Policies to Control ODS*; UNEP *Regulations to Control ODS: A Guide Book*; UNEP *HCFC Help Centre weblinks for legislation and policies to control HCFCs*).

## 6.3.1 Policy instruments for HCFCs

A number of Parties need to carry out additional legal and policy development in order to implement HCFC reductions and phase-out. Diverse policy instruments have been developed for CFCs and other ODS in the past, and many of them remain relevant to HCFCs, as illustrated in ⇨Table 4.

Suggested steps:

- Read UNEP *HCFC Policy and Legislative Options: A Guide for Developing Countries,* and consider the benefits and disadvantages of the policy options that are relevant to your country.
- Review the existing ODS policies and legislation in your country; identify areas where you can best adapt them to cover HCFCs.
- Identify any areas where novel approaches will be needed for controlling HCFCs.
- Talk with other NOOs about their experiences of ODS policies to date, to identify the policy instruments that have been most effective for achieving ODS phase-out in a timely manner.
- Examine relevant legislation adopted by other countries to gain useful concepts.
- Using the information above, identify the mix of policy instruments that will be most effective for your country. Each country has different needs – there is no 'one-size-fits-all' approach.

(*UNEP HCFC Policy and Legislative Options: A Guide for Developing Countries; UNEP HCFC Help Centre; SEI Interlinked ODS Phase-out Activities: A Handbook for Improved Effectiveness of ODS Phase-out in the Refrigeration Servicing Sector*).

Table 4. Menu of policy instruments for HCFCs

| Instruments | Examples relevant to HCFCs |
|---|---|
| Licensing and permit systems | Extending existing ODS licensing system to cover imports/ exports of HCFCs. Permit for each HCFC shipment, including transit shipments.<br>Proof of origin for HCFC shipments.<br>Monitoring the use of HFCs through licensing (as for ODS) |
| Quotas | Annual quotas or limits on the quantity of HCFC imports, exports or production, including procedures for allocating quotas ⇨(section 6.2) |
| Phase-out schedules | Limits on the quantity of HCFCs that can be consumed or produced each year, with gradual reductions leading to phase-out |
| Bans on imports or use | Bans on the use of HCFCs in specific sectors, products or types of equipment, by a certain deadline.<br>Bans on imports of new or used equipment relying on HCFCs.<br>Ban on new HCFC installations. |
| Restrictions on containers | Ban on the sale of HCFCs in non-refillable containers (disposable cylinders) or containers less than a specified weight |
| Registration of companies and others | Registration or permit system for companies that produce, import, export, supply, use or handle HCFCs.<br>Registration of all technicians who handle ODS and other refrigerants |
| Mandatory reporting | Requirements for HCFC importers, exporters, producers, distributors to submit data and other information.<br>End-users to sign declarations about quantities and intended uses of ODS.<br>Mandatory logbooks for companies to record data on HCFCs and HCFC equipment. |
| Marketing restrictions | Only registered companies are allowed to sell HCFCs.<br>Ban on advertising and promotional materials for HCFCs |
| Restrictions on ODS emissions | Ban on deliberate venting (release) of HCFCs from equipment.<br>Mandatory checks for leaks in equipment or automatic leak detection systems. |

| Instruments | Examples relevant to HCFCs |
|---|---|
| Technical standards | Legal recognition of technical standards or codes of practice on safe handling of alternative refrigerants.<br>Energy efficiency standards for refrigeration and air-conditioning equipment that uses HCFCs and alternatives. Green building codes |
| ODS recovery and destruction | Mandatory recovery of HCFCs from containers and equipment.<br>Code of practice on recovering, reclaiming and re-using HCFCs.<br>Approved list of destruction technologies and procedures for dealing with unwanted HCFCs |
| Fees, taxes or levies | Fees for HCFC import licenses or sales.<br>Other economic disincentives for selling or using HCFCs ⇨(Box 8) |
| Subsidies or incentives for alternatives | Incentives to promote the uptake of climate-friendly HCFC alternatives.<br>Waiver of excise duties on climate-friendly alternatives.<br>Incentives for HCFC recovery |
| Government procurement | Policies for government procurement of only ODS-free equipment and products |
| Labelling and warnings | Require labelling of ODS containers and equipment with chemical name, refrigerant number & weight, producers' address, etc.<br>Mandatory warning labels about ozone depletion impacts on ODS containers and products |
| Training and certification of technicians | Mandatory training and certification of technicians who handle ODS, to ensure competency.<br>Training of customs and environmental enforcement officers |

For details and additional options *HCFC Policy and Legislative Options: A Guide for Developing Countries*.

## Box 8. Creative use of ODS taxes

Fees placed on ODS imports/supply, and on ODS-containing products, can provide a useful disincentive for using ODS and make the price of alternatives more attractive. The revenue generated from fees can be placed in a national fund for subsidising the adoption of environmentally-friendly alternatives (*p.17-18 in HCFC Policy and Legislative Options: A Guide for Developing Countries*).

- Ozone protection laws in the Czech Republic have placed taxes on imports of ODS substances and products since the 1990s. Fees are applied to each kilogram of ODS substance, and have been increased when necessary. The revenue is allocated to a State Environmental Fund and used for ozone protection activities.
- The Republic of Korea set up a revolving fund by imposing a compulsory tax of 1.5 - 30 cents per kg on Annex A and B substances produced or imported. This fund amassed US$ 30 million by the end of 2002. The fund provided loans to companies that produced or used ODS, enabling them to carry out R&D to develop new alternatives, or build new facilities using alternatives.

# 6.3.2 Policy instruments for methyl bromide


Many of the policy instruments that can be applied to HCFCs and ODS in general are also relevant to MB. The examples provided in ⇨Table 4 above can be applied to MB in most cases.

Because MB is a pesticide and toxic substance, additional policy options often exist under the national legislation relating to agriculture, pesticides, or hazardous substances. Such regulations may already provide a mechanism for imports of MB to be restricted or banned as a toxic substance. Many countries' laws and regulations on pesticides allow diverse types of controls and conditions to be placed on the sale and use of pesticides. Examples are provided in ⇨Table 5 below.

Resources on MB policy development: | *UNEP Towards Methyl Bromide Phase out: A Handbook for National Ozone Units;* | *UNEP Methyl Bromide Phase-out Strategies: A Global Compilation of Laws and Strategies;* | *UNEP Inventory of Technical and Institutional Resources for Promoting MB Alternatives;* | *EC Management Strategy for the Phase-out of Critical Uses of Methyl Bromide;* | *Canadian national management strategy for the phase-out of methyl bromide critical use exemptions*.

Table 5. Menu of policy instruments for methyl bromide

| Instruments | Examples relevant to methyl bromide regulation as a pesticide |
|---|---|
| All instruments listed in Table 4 above | Many of the HCFC examples shown in Table 4 can also be applied to MB.<br>This table focuses on additional instruments relating to pesticides regulation |
| Pesticide 'registration' system | Withdrawal of MB's registration as a pesticide, or withdrawal of registration of specific uses of MB for which alternatives are available. (Most countries prohibit the use of any pesticide unless it is 'registered', i.e. included in the current list of permitted pesticides) |
| Licences for pesticide handlers | Requirements for pesticide handlers (applicators) to hold a valid licence for purchasing and applying toxic pesticides such as MB |
| Ban on specific types of pesticide containers | Ban on sale and use of disposable containers of MB |
| Bans on specific uses of pesticides | Ban (de-registration) of MB as a pesticide for the pests/crops/uses for which alternatives are available. Ban on all new uses of MB. |
| Safety restrictions on pesticides | Large mandatory safety zones (buffer zones) around each fumigation site where MB is used.<br>Mandatory training and certification of fumigators who handle MB. |
| Permits for use of pesticides | Mandatory permit for each occasion that MB is used, issued on a case-by-case basis |
| Pest monitoring | Mandatory monitoring and identification of pest species before any MB fumigation is allowed.<br>MB fumigation only permitted in cases where the identified pests cannot be treated with an alternative |
| Emission reduction | Requirement for fumigation sheets to be left in place for 10 days following soil fumigation.<br>Mandatory use of high-barrier fumigation sheets. |
| Labels and warning signs for pesticides | Pesticide containers carry labels that specify the approved crops, pests and application rates.<br>Mandatory warning signs posted around each fumigation site to warn members of the public to stay away |
| Economic instruments | *Polluter-pays* tax on MB imports or use.<br>Subsidies for investment in environmentally-sound alternatives using reduced rates for agricultural loans or rural development programmes |
| Substitution policy for toxic pesticides | Policy to phase-out highly toxic pesticides by identifying and substituting them with least-toxic alternatives |
| Other conditions on pesticide use | Restricting the frequency of MB soil fumigation to one treatment in two years, so encouraging farmers to use alternatives in the interim year. |
| Agricultural training | Adding information on MB alternatives into existing farmer training (extension) programmes and curricula of agricultural colleges |

# COORDINATE EFFECTIVE ENFORCEMENT

Outlines key steps for effective enforcement

Enforcement activities are necessary for ensuring compliance with the ODS legislation described in section 6, as well as reducing the risk of illegal ODS trade. UNEP has developed a toolbox of useful information and training tools for enforcement officers, supports a voluntary informal Prior Informed Consent (iPIC) system for ODS exports/ imports, and supports regional coordination between NOUs and enforcement bodies.

## 7.1 Problems with illegal trade phase-out

Illegal trade in ODS is widespread throughout the world, particularly for CFCs and HCFCs. We can expect increasing problems with HCFCs in the future as greater restrictions come into force.

**Negative impacts**: Illegal trade deprives governments and companies of revenue for legitimate products and alternatives. It undermines the ability of governments to phase out the use of harmful ODS, reduces the incentive for industry to introduce alternatives, and undermines the efforts made in MLF projects. It retards the recovery of the ozone layer and thereby contributes to human ill-health, as well as harming ecosystems, fisheries and agriculture.

The Environmental Investigation Agency has estimated that 7,000 to 14,000 tonnes of CFCs are smuggled illegally into developing countries each year. A study in 2005 by UNEP Regional Officer for Asia and the Pacific (ROAP CAP) found large discrepancies in ODS trade data between countries in the region (*UNEP Illegal Trade in ODS: Asia and Pacific Region*). A worrying new problem arises from trade in fake or contaminated refrigerants, leading to safety risks.


©Environmental Investigation Agency

**Reasons for illegal trade**: Equipment containing ODS often has a long lifetime, creating an on-going demand for ODS for servicing. The problem is compounded by imports of used equipment (including vehicles) that use ODS as refrigerants. While the demand for ODS continues, there will be a likelihood of illegal markets with profiteers.

**Common methods of smuggling ODS include**:

- Mislabelling or mis-declaration as other non-controlled substances
- Mislabelling or mis-declaration as used (recycled, reclaimed) ODS
- Declaration as 'products' or 'equipment'
- Concealment and double layering
- Diverting goods from transhipment points
- Under-invoicing
- Transit through free trade zones.

UNEP publications provide further details about illegal trade. ⇨(Box 9 below)

# 7.2 Enforcement activities

**MOP Decisions**: Several MOP Decisions have encouraged Parties to take effective actions to prevent and minimize illegal trade in ODS, such as making better use of existing systems under other multilateral agreements for tracking trade in chemicals (*Decision XVIII/18*).

*Decision IX/8* requires that national licensing systems should assist Parties in the prevention of illegal ODS trade, including activities such as notification and/or regular reporting by exporting countries to importing countries and/or allowing cross-checking of information between exporting and importing countries.

The Ozone Secretariat assists the cross-checking process by sending each NOU the aggregated data on all ODS exported to their country in the previous year, compiled from the data in exporting Parties' Article 7 data reports (⇨section 5.1; *Decision XVII/16(4)*). For example, if country A exported 5 ODP-tonnes of CFC-11 and 2 ODP-tonnes of CFC-12 to your country, the Secretariat will inform you that country A exported 7 ODP-tonnes of CFCs. This may help NOUs to identify discrepancies (*OS FAQ: What is the process for getting information on ODS exported to my country by other Parties?*)

Ideally, effective enforcement of ODS legislation needs:

- Efficient systems for recording ODS data, tracking ODS imports/exports and uses, and verifying data.
- Coordination and cooperation between relevant enforcement officers
- Sufficient human and financial resources, including necessary equipment (e.g. for ODS identification)
- Training of customs officers and other enforcement personnel ⇨(Box 9 training tools)
- Clear written procedures for risk assessment and inspection, as well as investigation and handling of suspicious cases
- Networking on cross-border and regional enforcement.

**Punishment of offences**: Make sure that national ODS legislation has 'teeth', by recognising illegal activities (e.g. unauthorised production or import of ODS) as an offence punishable under law, with penalties for violations. Without proper penalties, enforcement will be difficult. Guidelines are needed for seizure procedures, storage and handling of intercepted goods and certified laboratory tests, so that key evidence will stand up to scrutiny in court.

**Training**: Ensure that all relevant enforcement officers receive training, including prosecutors and judges. Address topics such as: components of an effective enforcement system, model chart for cooperation between government departments, smuggling methods, tools and procedures for inspections, etc. ⇨(Box 9)

**Identification tools**: Provide customs officers with up-to-date identification codes for ODS and refrigerants, as well as trade names. Specific customs code numbers have been allocated to ODS as part of an international system for all import/export commodities, called the Harmonised System (HS) of customs codes. UNEP website provides details of HS codes, ODS trade names and refrigerant codes ⇨(Box 9). Also furnish customs officers with ODS detection equipment, as part of an MLF project.

**Register arrivals and traders**: Establish registers of traders in ODS and ODS-related equipment, to facilitate the work of enforcement officers. Combine real-time data on imports with automatic alerts when ODS goods cross the border.

**Risk assessment**: NOUs and enforcement agencies can use the following indicators to assess the risk of illegal trade, and target limited resources more effectively:

- The level of local ODS market prices
- Areas that use alternatives relatively little compared to others
- Trade in similar chemicals, especially HFCs.

**Multi-agency enforcement**: Coordinate the relevant enforcement and environment agencies/departments. Define responsibilities for key activities such as training, detection, prosecution, etc. Enhance communication channels via regular meetings or task forces. Allocate special responsibility for ODS to selected officials at key ports and entry points.

**Regional coordination**: Promote coordination between enforcement officers and NOUs of countries within your geographical region, especially between countries with common borders (*UNEP Networking Counts: Combating Illegal Trade in ODS*). It can provide:

- Coordinated approach to licensing and monitoring ODS production and trade at the national and regional levels
- Standardised practices and procedures
- Uniform data to facilitate exchange and coordination.

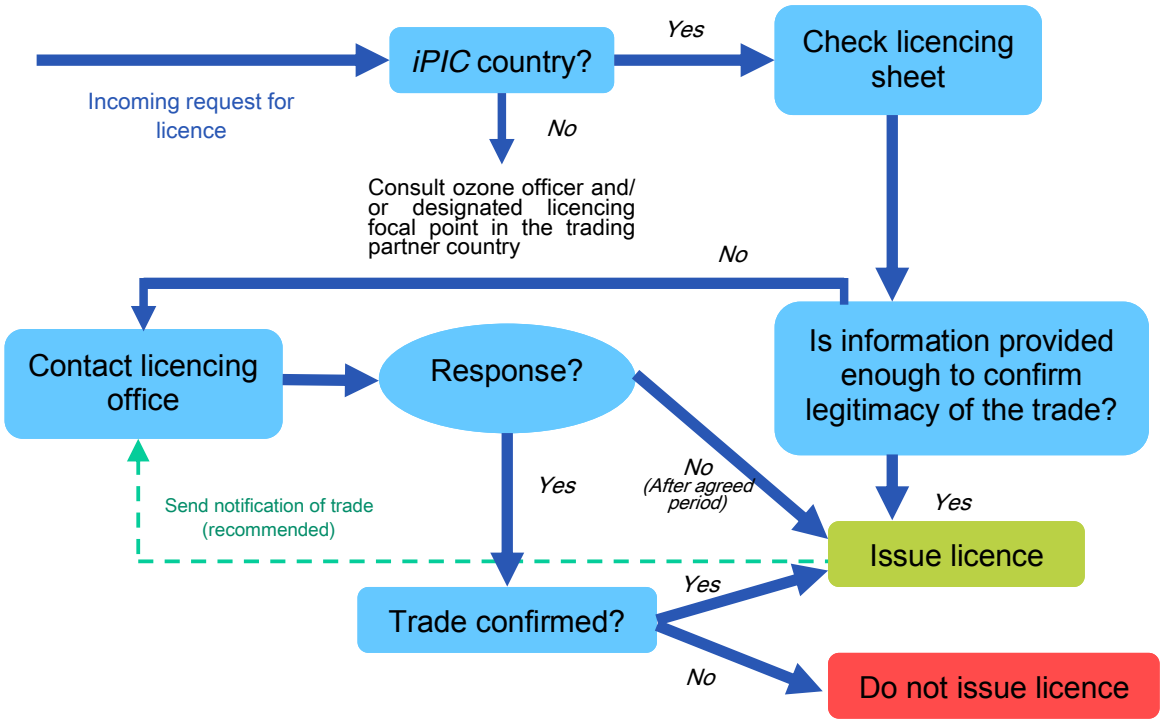
**Informal prior informed consent (iPIC).** The informal prior-informed consent mechanism (*iPIC*) is a voluntary and informal mechanism of information exchange on intended trade between countries in ODS, ODS-containing mixtures, products and equipment. Essentially the countries participating in *iPIC* are requested to share details of eligible importers and exporters with other *iPIC* members and to exchange information prior to shipments of ODS. In practice, applying the *iPIC* procedure means that before issuing a trade licence (import or export), the relevant authorities request the *iPIC* focal points of their trade partner to confirm that they agree to the intended trade and that they will issue an import/export licence accordingly.

The necessary information exchange and cross-checking is carried out between the designated *iPIC* focal points of the trade partners through a secure online platform — *iPIC* online — or via a simple exchange of emails or by phone. *iPIC* data are only

shared among the designated *iPIC* focal points of the member countries. This informal system has proved to be valuable in facilitating and expediting information exchange and can assist in forging links between responsible staff in importing and exporting countries.

Figure 8 (below) illustrates the iPIC procedure (*UNEP Formal Compliance through Informal Consent; UNEP Compliance through Informal Prior Informed Consent on Trade of ODS – iPIC; iPIC Online User Guide: Steps to Access iPIC-online; OzonAction iPIC webpage; iPIC – Supporting Compliance through prevention of illegal and unwanted trade in ODS*).

Figure 8. iPIC procedure for ODS




*Simple schematic indicating the main steps involved*
*In the iPIC procedure*
*(After: A.Kiriazis, European Commission)*

## Box 9. Training tools for enforcement personnel

**UNEP training tools:** | *OzonAction customs webpage;* | *UNEP/WCO e-learning module for enforcement personnel;* | *UNEP Training Manual for Customs Officers; Customs poster Protect the Ozone Layer;* | *Customs Officers Quick Tool for Screening ODS; Customs Training overhead slides;* | *Generic Customs Training Elements;* | *UNEP Customs and Enforcement officers Information Note: Monitoring Trade in HCFCs;* | *UNEP video Nothing to Declare*

**ODS identification codes**: HS codes | *Customs Officers Quick Tool for Screening ODS;* | *UNEP Fact Sheet 31: HS 2012 Amendments and ODS*
Identifiers for ODS refrigerants: | *UNEP Factsheet 15: Limitation of Application of Refrigerant Identifier;* | *ASHRAE Refrigerant Designations*
ODS trade names: | *UNEP database of Trade Names of Chemicals Containing ODS and their Alternatives*

**Publications on illegal trade:** | UNEP *Illegal Trade in Ozone Depleting Substances: Asia and Pacific Region*; | UNEP *Factsheet 2: Steps in Preventing Illegal Trade of ODS*; UNEP *Factsheet 11: Necessary steps and issues to address during conviction trials of illegal ODS trade*; | *Ulaan Baatar Declaration of Public-Private Partnership on Addressing Environmental Crime;* | OzonAction website; | *EIA Preventing illegal trade in ODS*; EIA *ODS Tracking: Feasibility Study on Developing a System for Monitoring the Transboundary Movement of Controlled ODS*.

**Green Customs**: The Green Customs initiative is a partnership of international organisations. It aims to strengthen the enforcement of MEAs by increasing the capacity of customs officers. Green Customs carries out awareness activities and provides information materials and training workshops for enforcement personnel. | *UNEP flyer: Green Customs Initiative: Customs Protecting the Environment;* | *UNEP Green Customs Guide to Multilateral Environmental Agreements;* | *Green Customs website* |.

# 7.3 Preventive action

In addition to working with enforcement bodies, other steps can be taken to make illegal trade more difficult or less attractive to profiteers.

**Prevent dumping**: A5 countries phase out ODS on a later schedule than industrialised countries, and this creates a strong risk that used or obsolete ODS equipment could be dumped in A5 countries. Where possible, it is desirable to ban imports of equipment that contain ODS or rely on ODS. MOP Decisions have recommended the following action by Parties:

- Parties that export previously used ODS are encouraged to ensure that they are labelled correctly and are of the nature claimed (*Decision VI/19(5) & (6)*).
- Each Party should adopt measures to regulate the import and export of equipment/products that contain ODS or rely on ODS,[15] including labelling of equipment/products (*Decision VII/32(1); Decision IX/9(1)*)
- Non-A5 Parties should adopt measures to control, in cooperation with A5 countries, the export of such products (*Decision IX/9(2)*)
- A5 countries who do not manufacture specific types of ODS-dependent equipment/ products for domestic use, and do not permit the import of such equipment/ products from any source, are invited to inform the Secretariat that they do not consent to the importation of such products (*Decision X/9*)
- The Ozone Secretariat publishes a list of Parties that do not want to receive such products (*Decision X/9(5)*), and exporting Parties are expected to respect this list (*OS List of Parties not wishing to receive products and equipment relying on Annex A and B substances*).

**Industry culture**: Try to generate a culture of compliance and norms of expected behaviour in industry which will encourage the majority of stakeholders to comply with ODS legislation. Set up mechanisms for companies to alert authorities about suspected infringements via an illegal trade hotline or web-based system. Adverse publicity following successful cases of prosecution can bolster deterrence.

## Box 10. Examples of countries addressing illegal trade

**National strategy**. Some countries have chosen to develop national action plans for combating illegal trade. For example, China's national plan adopted in 2006 included stricter punishments for illegal trade, the use of separate WCO Harmonised System (HS) codes for eight mixtures of CFCs, limiting the number of CFC exporters, and the adoption of a total CFC export quota. China also formed a joint mission with China Customs, Ministry of Commerce, SEPA and the WCO Regional Intelligence Liaison Office (RILO A/P) to investigate suspicious exporters.

**Neighbourhood watch**. Some countries have made cooperation agreements on ODS trade with neighbouring countries that share borders. In 2003, for example, Nepal, China and India adopted an agreement which contains the main elements of the informal Prior Informed Consent (iPIC) procedure. ⇨(section 7.2 on iPIC)

**Bringing smugglers to justice**. To combat illegal ODS trade effectively, it is important to bring ODS smugglers to court. In January 2005, for example, the government of Fiji won its first indictment against illegal ODS possession, demonstrating that vigilance in detection can eventually result in conviction. The case highlighted the need for evidence related to a seizure to be collected and safeguarded carefully (UNEP *Factsheet 11: Necessary steps and issues to address during conviction trials of illegal ODS trade*).

# FURNISH KEY PLAYERS WITH KNOW-HOW

This section outlines key actions to build stakeholder support for ODS phase-out, as well as furnishing users with the necessary skills and knowledge to adopt alternatives. Achieving ODS phase-out at national level cannot be accomplished by an NOU on its own. The NOU must work with a network of other people who have a vested interest in ODS and alternatives. Key activities include working with stakeholder groups, raising awareness among targeted groups, and training programmes to provide ODS users with the necessary skills. Many of these actions can be addressed by MLF projects.

## 8.1 Working with stakeholders

In order to phase-out their use of ODS, users need to adopt suitable alternative substances or methods. The process of transforming industry and the community to alternatives requires the involvement of a number of stakeholders such as:

- Government departments e.g. trade, industry, customs, police, bureau of standards, agriculture, quarantine, and others
- ODS traders and suppliers e.g. ODS importers, distributors.
- Companies that use ODS e.g. manufacturers of refrigeration equipment, air-conditioning systems and foam products; pest control companies and farms that use methyl bromide.
- Servicing technicians who install, service and decommission refrigeration and air conditioning systems and other equipment that rely on ODS.
- End-users e.g. the general public, buildings that use large air-conditioning systems
- Companies that make or supply ODS-free alternative products and services, as well as end-users of effective alternatives
- Specialists and experts who have substantial experience in using or working with ODS alternatives
- Environmental organisations

Stakeholders need to know that ODS cannot be used in the future, the types of alternatives available, how to implement alternatives, cost implications, and how to access the necessary financial and technical support. Technicians and consumers need to learn how to maintain or retrofit their ODS-based equipment once the ODS are no longer available. Wherever possible, it is desirable to persuade users to buy only ODS-free and climate-friendly equipment, services and products.

**TIPS**

It is the responsibility of the NOO to convene meetings regularly in order to develop strategies, identify projects, and review implementation.
Involve existing end-users of alternatives in stakeholder meetings and workshops. End-users who are satisfied with alternatives are very important because they can help you to demonstrate that alternatives are feasible and that companies can continue to function even when they stop using ODS.
Whenever possible, involve end-users and suppliers of climate-friendly alternatives, as well as relevant specialists.

NOUs should establish a **National Steering Committee (NSC)** of stakeholders for the implementation of the Protocol. The Secretary of your Ministry could be the Chair of this Committee and you should be the Coordinator. This framework will make ozone issues an important component of the line Ministries and also help to mainstream ozone protection in the national environmental agenda. The following members can be included:

- Relevant Government Ministries (UNEP *Fact Sheet No. 7: Model Chart for Coordination Among National Agencies for the Implementation of the Montreal Protocol*)
    - Attorney General's Offices and legal departments: key to vetting any new legislation
    - Ministry of Finance/Economics: key for getting any tax incentives or tariffs put in place to encourage use of alternatives, or taxes placed on imported ODS and equipment containing ODS
    - Ministry of Foreign Affairs: to assist in the ratification process and deposition of diplomatic instruments on behalf of the country. In some countries they are the official Focal Points for the Montreal Protocol
    - Ministry of Agriculture: to work with you on methyl bromide, such as farmer training programmes on alternatives, approval for alternative pest control products, quarantine issues
    - Customs Department: for control of ODS trade and data collection
    - Defence: for any military uses of halon or HCFCs
    - Department of Statistics: for assisting with accuracy and checking of data and baselines.
- Industry associations of sectors that use/ supply ODS and alternatives, such as refrigeration, air conditioning, foam, fire-fighting and pest control. Ensure that representatives of alternatives suppliers are fully involved
- Technical experts on ODS alternatives, training, education
- Non-governmental organisations: experts in alternatives, awareness-raising, education and training, as well as specialists active in the field, such as farmer extension services
- Implementing and bilateral agencies could attend meetings as observers

**TIPS**

Request your Minister to convene inter-ministerial meetings at least once a year to highlight and coordinate ODS work at a high level, including the government ministries responsible for the licensing system, illegal trade, customs, education and training, agriculture, quarantine and health. This will help to ensure their 'buy-in' in the national phase-out process.

## 8.2 Raising awareness

Awareness about the negative consequences of ozone depletion — and the available alternatives — is important for motivating the public, politicians and industry to play an active role in addressing ODS. Awareness includes Information, Education and Communication (IEC). Without it, there will be no public pressure to pass and enforce regulations and undertake other necessary changes.

Most countries have already carried out awareness programmes in relation to CFCs and ODS in general, and the current work is focussing on HCFCs. *UNEP's report Five Steps for Raising Awareness on Ozone Depletion: A Handbook for NOUs* provides useful guidance. It identified 5 key steps in raising awareness on ODS:

⇒ Step 1: Define your objectives clearly

⇒ Step 2: Identify your target audience — key group(s) that can take effective action

⇒ Step 3: Develop key messages to motivate the target group

⇒ Step 4: Choose the most effective delivery methods, and timing

⇒ Step 5: Set performance criteria, evaluate the results, and apply the lessons learned

### 8.2.1 Identifying key messages and audiences

It is not possible to tell everybody everything. So it is necessary to identify the key messages and target them to the audiences that can make a difference.

Define key messages for targeted sub-groups. Identify two or three clear points you want the audience to understand and remember, so that they can react accordingly. Consider working with intermediate groups, such as teachers or trade associations, so that they can reach your target audience.

- **Government**. In order to support policy measures or legislative changes, officials, politicians and parliamentarians need to understand national commitments under the Protocol, why they are important (including benefits to society), and what needs to be done.

- **ODS users**. ODS-consumers, small- and medium-sized enterprises, end-users and informal servicing sectors need to be informed about the implications of ODS phase-out to their operations and to take the required steps to convert to alternatives, so that their business can continue to function normally.

- **Public**. The public will need help in understanding the health effects of ozone depletion and how to protect their health, why ODS are being phased out, and how their country is working with all other countries to achieve global phase-out under the Protocol. They need to be aware of the benefits of buying ozone-safe products and servicing ODS-based equipment with substitutes.

Relevant messages might address topics such as: the negative health impacts of ozone depletion, the timetable for phasing-out a specific type of ODS, available alternatives in a specific sector, benefits of adopting alternatives, sources of technical and financial assistance, and organisations that provide advice.

## 8.2.2 Delivering the messages

Consider the appropriate time for delivering messages. If you goal is to educate school children about sun-safe behaviour, your message is likely to have more impact during the sunniest months of the year.

There are many delivery methods for disseminating messages, as illustrated by the examples in ⇨Box 11. Identify the most effective routes(s) for reaching your target audience, making the best use of available time and resources. NOUs can improve their awareness-raising activities by setting clear performance indicators, evaluating the results, and acting on the lessons learned.

NOOs are urged to consult the OzonAction website for awareness-raising ideas and a wide array of materials, such as posters, videos, case studies, and newsletters. Any NOO is welcome to adapt, translate or reproduce the materials developed by the OzonAction Programme (*UNEP Five Steps for Raising Awareness on Ozone Depletion; UNEP Global Communication Strategy for Compliance with the Montreal Protocol; OzonAction website information materials*).

## Box 11. How to spread key messages

The following tried and tested techniques have worked well for many NOOs:

- Conducting awareness programmes for school children, youth, teachers, women
- Running workshops and seminars for government officials
- Publicising cases of ozone-friendly offices or companies
- Holding workshops and seminars for targeted industry groups or trade associations
- Holding well-publicised award ceremonies for companies that excel in phasing out ODS
- Organising exhibitions or trade fairs to showcase alternative technologies in key sectors, e.g. refrigeration, air-conditioning, foam products, methyl bromide
- Encouraging industries to distribute useful small souvenirs (e.g. pens, key chains, stationery, stickers or bags) with ozone-protection messages
- Involving children in competitions for posters, banners, essays or quizzes, and in field activities such as checking the level of ozone safety in shops
- Providing printed information e.g. booklets, brochures, technical reports about alternatives
- Using websites, videos on YouTube, social media such as Facebook
- Broadcasting messages from well-known people (e.g. athletes, film stars, ministers, reputed scientists) about the importance of protecting the ozone layer
- Using TV and radio; encouraging journalists to cover newsworthy activities
- Celebrating *International Ozone Day* on September 16 each year.

**"Extraordinary challenges require extraordinary responses. A generation ago, the world's nations agreed to act definitively to protect the ozone layer, initiating an inter-governmental process that blazed new trails."**

*Ban Ki Moon, UN Secretary-General's Message*
*on the International Day for the Preservation of the Ozone Layer*
*16 September 2013*

# 8.3 Training and certification

Training is an essential part of ensuring that partners in the ODS phase-out are fully equipped with the technical knowledge to implement changes on the ground. It's desirable to set up a system for certifying technicians, supported by technical institutes and trade associations. MLF projects can provide funds for training target groups such as the following:

- Refrigeration technicians who install, service and decommission refrigeration and air-conditioning equipment
- Customs officers and environmental officers who enforce the ODS licensing system and help to prevent illegal trade ⇨(Box 9 in section 7.2)
- Fumigation companies, pest control companies and farmers who use methyl bromide.

NOUs have found the following concepts useful:

- A 'train the trainers' approach is able to reach large numbers of people, such as customs officers. Key staff are trained, and they in turn act as trainers for other officers
- National training handbooks should be produced as part of the training materials, building on existing training materials and experiences
- NOUs may be able to benefit from regional and sub-regional training organised by UNEP or others, such as regional customs training facilities/programmes
- National certification systems help to ensure that technicians will achieve a specified level of competence during their training. Certification needs to be supported by regulations, codes of practice, and technical performance standards
- It's necessary to set up mechanisms for technical training to continue after MLF projects have finished. The responsibility for training technicians can be allocated to technical institutes and trade associations, with regulatory backing
- Evaluation systems should be used to judge the results of activities and make improvements.

Further information on training | *UNEP HCFC Help Centre website*; | p.37-40 in UNEP *HCFC Policy and Legislative Options: A Guide for Developing Countries;* | UNEP *Training Resource Kit*: *Preparing Small Businesses for the Transition away from CFCs* | ;

⇨Box 10 in section 7.2

**TIPS**

Technical changes in refrigerants (and related practices) will continue to occur in the coming years because of international pressure to shift to low-GWP substances. Technicians who handle refrigerants will need a much higher level of knowledge, and annual re-training to keep up with technological developments. A one-time training session will fail to keep technicians up-to-date in future years. NOUs could work with technical institutes and industry groups to create a national system that requires technicians to take a training update course each year and pass a practical competence test, as part of a certification programme.

# BENEFIT FROM MLF ASSISTANCE

This section provides an overview of the Multilateral Fund (MLF), the financial mechanism of the Montreal Protocol. Many of the activities described in previous sections can be funded though MLF projects. A5 Parties have implemented MLF projects on CFCs and other ODS in the past, and now focus mainly on HCFC Phase-out Management Plans (HPMPs) and any related investment projects. MLF Institutional Strengthening projects continue to provide essential support for NOU offices.

The Parties set up the Multilateral Fund (MLF) as part of the Financial Mechanism of the Protocol *(Article 10)*. The MLF provides funding to assist Article 5 Parties to comply with the Protocol's control measures. Article 10(3) states that the MLF shall '*meet, on a grant or concessional basis as appropriate, and according to criteria to be decided upon by the Parties, the agreed incremental costs ...*'. The Parties have adopted an *Indicative List of Categories of Incremental Costs* which outlines the elements that are eligible for MLF funding (*Decision IV/18* and Annex VIII of *MoP-4 report*, as amended).

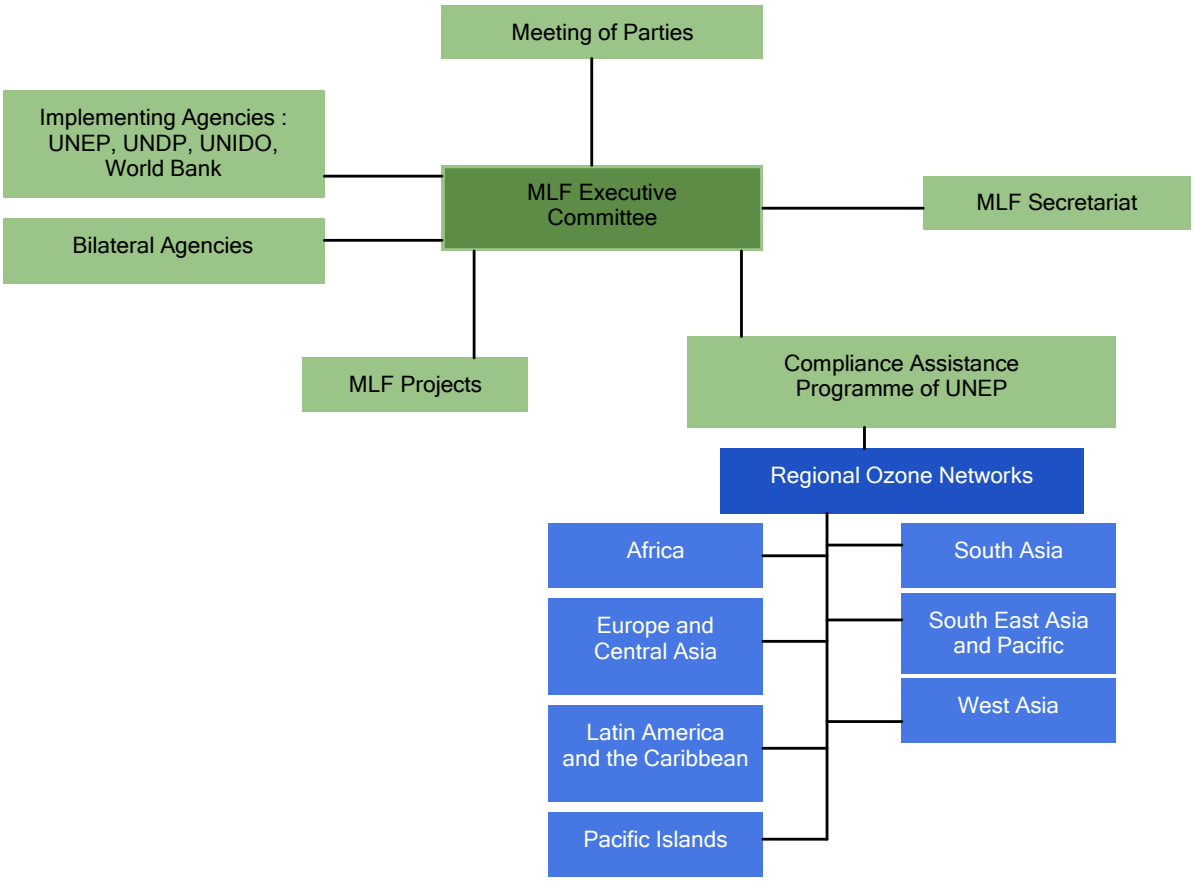
In the period 1991-2012, ExCom approved about 6,680 projects in more than 145 countries for the elimination of more than 458,500 ODP-tonnes of ODS production and consumption (*MLF ExCom report to MOP-24*).

## 9.1 MLF organisations

The MOP decides the overall direction of the MLF, while ExCom develops operational policies and project guidelines.

⇨Figure 9 shows the organisational structure of the MLF and organisations that work with the MLF, described in turn below. ⇨Figure 10 outlines the main operating procedures of the MLF, comprising financial planning, project review, project monitoring and project evaluation.

Figure 9. Structure of the MLF and associated organisations




The **Executive Committee (ExCom)** oversees the MLF and develops operational policies and project guidelines. It meets three times a year to review/approve policies, plans, budgets, project proposals and other aspects. ExCom comprises seven Article 5 and seven non-Article 5 members, nominated by regional groups and appointed by a MOP Decision each year. Representatives of other Parties also attend as co-opted members. The Chair and Vice-Chair alternate annually between Article 5 and non-Article 5 members. Implementing agencies and others attend ExCom meetings as observers (About ExCom; *Executive Committee Primer* including Appendix 3 Terms of Reference; ExCom meeting reports).

**TIPS**

**Participation in ExCom rotates on a regional basis, so keep your regional representative informed about your country's priority issues. If you are a member of ExCom, proactively contact the ozone officers from your region directly or through your regional networks to ask if there are any issues they would like to raise.**

The Multilateral Fund Secretariat (MFS) supports the work of ExCom, and is based in Montreal, Canada. The Secretariat's functions include: preparing documents, budgets and draft plans for ExCom, reviewing project proposals, overseeing expenditure, monitoring and evaluating projects, and liaising with other bodies. The MLF website provides information on all aspects of the MLF and ExCom.
(*MLF website; About MLF Secretariat; Policies, Procedures, Guidelines and Criteria of the Multilateral Fund, Chapter III, Annex I*).

Implementing Agencies (IA) are international organisations that implement MLF projects in partnership with the national governments of A5 Parties. ExCom has made agreements with the following four IAs:

- **United Nations Development Programme (UNDP), United Nations Industrial Development Organisation (UNIDO)** and the **World Bank.** These IAs work with national governments in preparing project proposals and implementing ODS projects, including institutional strengthening projects, HPMPs, and investment projects (*MLF implementing agencies overview; Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter 5: Implementing Agencies];* ⇨Annex 5 contacts).
- **UNEP's Division of Technology, Industry and Economics (UNEP DTIE OzonAction Branch)** focuses on providing infrastructural support, training and information. This includes institutional strengthening activities (such as supporting National Ozone Units), supporting regional networks of NOUs, and helping to prepare country programmes, especially for low-volume-consuming countries. UNEP DTIE also provides clearing-house functions, and produces a range of training materials (*MLF implementing agencies overview; OzonAction website;* ⇨Annex 5 contacts). This is currently carried out through the **Compliance Assistance Programme (CAP)** implemented by a team of professionals who provide advice and assistance to Article 5 Parties on a regional basis. **Regional Networks** provide support to NOUs in nine regions comprising 148 developing and 12 industrialised countries. The National Ozone Officers (NOOs) in each network meet about twice a year to exchange experiences and learn from each other. (*List of Regional Networks and member countries*; ⇨Annex 5 contacts; *Webpages of regional networks* — select specific networks from pull-down menu under *Regional Networks* in Main Menu on left side of webpage).

**TIPS**

As the national focal point on ozone, it is important that you attend Regional Network meetings to exchange information with your peers. You will benefit from the experiences of others and stay up-to-date on developments in the MP, MLF and current issues.

**Bilateral Agencies.** Non-Article 5 Parties are allowed to spend up to 20% of their MLF contributions directly with partner A5 countries (and regions) through bilateral projects. A number of non-Article 5 countries[16] implement ODS projects with Article 5 country partners through their bilateral aid agencies. Activities include training, technical assistance and technology transfer/investment projects. These projects have to be approved by ExCom as well. (*MLF information on bilateral agencies*; *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter IV]*; ⇨Annex 5 contacts). GIZ Proklima and other bilateral agencies provide useful resource materials for projects and NOUs. ⇨(Annex 4)

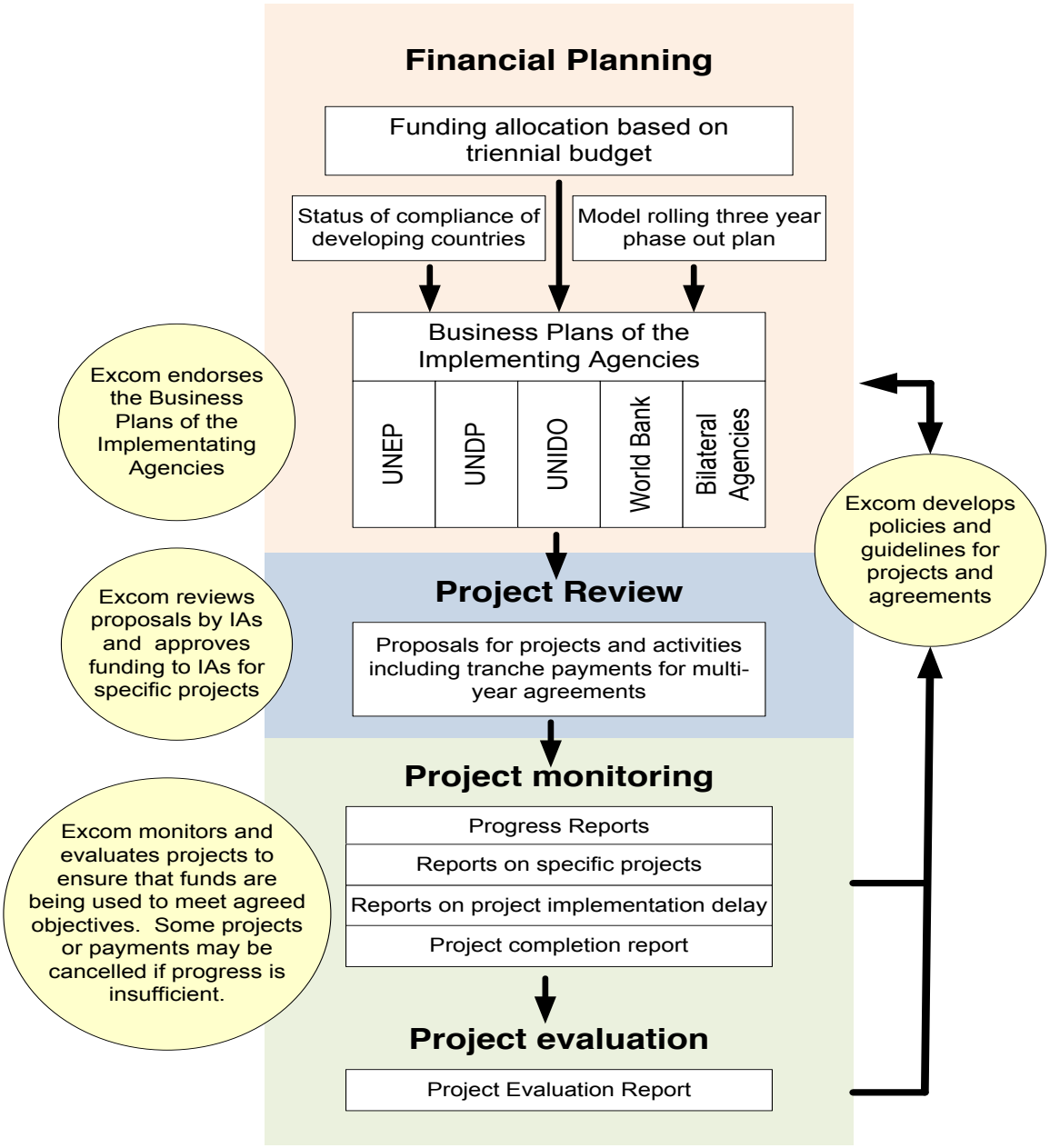
ExCom requires all of the Implementing agencies and bilateral agencies to:

- Coordinate among themselves when planning new MLF projects and activities
- Report to the Fund Secretariat on the status of activities related to country programmes
- Submit periodic progress reports on projects, working with the NOU
- Prepare annual reports on income and expenditure, and
- Submit a final report when each project is completed.

**Role of national governments in MLF projects**. Implementing the MP is ultimately the responsibility of national governments. Recognizing this, ExCom adopted a *country-driven approach* which placed countries in the 'driving seat'. Each country, with assistance from the Implementing Agency, has overall responsibility for the implementation and management of MLF projects and plans, including its HCFC Phase-out Management Plan (HPMP). MLF assistance to a Party occurs only with the approval of that country's government.

In cases where the government decides to enlist the services of more than one implementing agency or bilateral agency, the government should decide the lead agency and the co-operating executing agency(ies), with clearly defined roles and responsibilities for each of the agencies involved. The lead agency will be responsible for facilitating a Consolidated Report of all active ODS consumption phase-out plans and projects based on reports by the cooperating agencies and the government. *(Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter 6]).*

Figure 10. Operating procedures of the MLF




**TIPS**

Do not hesitate to contact implementing or bilateral agencies for information or assistance ⇨(Annex 5). When in doubt, pick up the phone and talk to relevant people. Remember that the agencies and their consultants are there to support your projects - ExCom has put your government in the 'driving seat'.
You can request CAP missions with other implementing agencies to help you address specific problems your country is facing.

# 9.2 MLF projects (Institutional Strengthening and HPMPs)

Most A5 Parties are implementing MLF projects which include many of the activities described in sections 5-8 above. NOOs can discuss with implementing or bilateral agencies how to target existing MLF project funds most effectively, and how to address activities that may need further MLF assistance (*ExCom Document 68/47: Procedures currently in force for the submission of project proposals from bilateral and implementing agencies on behalf of governments of Article 5 countries*).

About 100 Article 5 Parties that consume less than 360 tonnes annually are classified as low-volume consuming countries (LVCs). In some areas LVCs, former LVCs[17], and non-LVCs are eligible for different types of projects.

## 9.2.1 Institutional Strengthening (IS) projects

Since national governments are ultimately responsible for implementing the MP, Institutional Strengthening (IS) projects provide training and technical assistance in management, financial systems, policy reform, governance, and/or programme design, implementation, and assessment. The IS provides some funds for the operation of NOUs. Funds are intended to enable the provision of at least one full-time staff member and to cover basic office and communication costs (MLF Institutional strengthening overview; *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter X]*).

ExCom usually approves IS funds for two-year periods. NOOs should use the MLF standard form for requesting IS funding renewal (*MLF IS revised format*). The form asks for information on the role and position of the NOU in the national administration, NOU staffing, implementation of previous IS activities, financial report, and evaluation of IS performance.

## 9.2.2 Country Programme

The Country Programme is the first activity that the MLF finances in new Parties. The CP maps out the strategy and the action plan that the country intends to follow to eliminate ODS consumption (and production) according to MP schedules. The CP (as updated) is the basis for the MLF to finance projects and activities in each country (*MLF Country Programmes overview*).

The CP includes current and forecast consumption of ODS, including the structure and ownership of the industries that produce/import and use ODS, a national action plan, and an indication of the projects for which the government is likely to seek MLF assistance. Details of the expected CP content and updates are found in: *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter VIII]* especially Annex VIII.1 and VIII.2.

NOUs must submit a CP progress report to the MLF by 1 May each year. When analysing a country's ODS status, the MLF Secretariat uses data from CP reports. ⇨(section 5.2)

## 9.2.3 Methyl bromide projects (fumigant sector)

*Technical assistance* for MB projects may focus on training, information dissemination, evaluation, and/or the development of a package of policy measures to ensure that the MB phase-out will be maintained. *Investment* projects in addition include funds for the transfer and installation of alternative technologies. ExCom's *Revised Strategy and Guidelines for Projects in the Methyl Bromide Sector* can be found in *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund* [Chapter IX - Annex IX.15] (ExCom decision 32/80).

During the past decade the MLF has funded a large number of MB phase-out projects. Most A5 countries have already completed these MB projects, and have completed MB phase-out well in advance of the scheduled deadline. The remaining countries are due to complete[18] their MB projects before 2015. New or additional MB projects are not anticipated, unless a country has some MB consumption that was not already covered by a MLF project.

## 9.2.4 HCFC phase-out projects

ExCom has adopted a number of decisions relating to HCFC phase-out projects, such as *decision 60/44* on criteria for funding HCFC consumption phase-out, *decision 53/37* on defining eligible incremental costs for HCFC consumption and production phase-out activities and *decision 57/15* on funding of tranches of MYAs with low rates of implementation. ExCom guidelines and policies for HCFC projects will continue to be developed and refined in future. NOOs are therefore advised to talk with IAs, bilateral agencies or the MLF Secretariat to gain up-to-date information about current policies and guidelines. A compilation of all ExCom decisions and guidance relating to HCFC project proposals can be found in Policies, Procedures, Guidelines and Criteria of the Multilateral Fund *[Chapter IX : Project Proposals*, pp 187-218].

***Stage I HCFC Phase-out Management Plans (HPMP***): Almost all countries are currently implementing Stage I HPMP projects. Parties must ratify the Copenhagen Amendment in order to qualify for MLF funds for phasing out HCFC consumption *(decision 53/37)*[19]. ExCom Guidelines for the preparation of HPMPs (*decision 54/39*) require Stage 1 HPMPs to address how a country will meet the HCFC freeze in 2013 and 10% reduction in 2015 ⇨(Guide for the Preparation of HCFC Phase-out Management Plans [available from MLF Secretariat IAs]).

- For countries with HCFC consumption in the servicing sector only: HPMPs should (a) include a performance-based system for annual release of funds, and (b) be consistent with the guidelines for preparing RMPs/updates and TPMPs if relevant (*Guidelines for the Preparation of RMPs* in Annex IX.22 of *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter IX: Project Proposals]*; *decision 45/54*).
- For countries with manufacturing sectors using HCFCs: HPMPs should contain a national performance-based phase-out plan (NPP) with one or more sector-based phase-out plans (SPP) (*decision 54/39*).

ExCom has provided guidance on the contents of HPMPs in *Indicative outline and contents of the HPMPs* in Annex XIX of *UNEP/OzL.Pro/ExCom/54/59*. HPMPs can adopt diverse approaches to HCFC phase-out, based on the specific conditions in individual countries. However, HPMPs should contain the following elements:

- Background information on country situation, ratification status, previous MLF projects
- Description of policy and legislation on ODS and HCFCs
- Data collection, survey and analysis of HCFC use
- Overall strategy for HCFC phase-out by 2040. Detailed action plan for the freeze and 10% reduction step (akin to a Terminal Phase-out Management Plan (TPMP) or a refrigeration service sector plan)
- Cost calculations
- Project coordination, management, monitoring and evaluation.

When HPMPs are approved by ExCom, the national government endorses an agreement specifying the HCFC reductions to be achieved, the funding level in principle, reporting requirements, performance verification and monitoring, as well as penalties for non-conformance. Copies of existing HPMP agreements, listed by country, are available *in Policies, Procedures, Guidelines and Criteria of the Multilateral Fund (HCFC Phase-out Management Plans)*.

***HCFC investment projects***: Countries that use HCFCs in manufacturing can submit phase-out investment projects which provide funds for companies to convert to alternative technologies, covering the incremental costs of new or adapted equipment, training and other changes that companies need to make. Projects may focus on one or more of the following manufacturing sectors: refrigeration, polyurethane foam, extruded polystyrene (XPS) foam, air-to-air air-conditioning systems, and solvents used in manufacturing.

***Stage II HCFC Phase-out Management Plans (HPMP)***: At the time of publication, the guidelines for the preparation of Stage II HPMP projects have not yet been finalised by ExCom.

## 9.2.5 Other sectors

Since the year 2000, ExCom has emphasised a strategic approach with a focus on compliance. Terminal Phase-out Management Plans (TPMPs) were approved for phasing out the remaining CFC consumption in LVCs by 2010, while National Performance-based Phase-out Plans (NPPs) were intended to phase out the remaining consumption of ODS (CFCs, halons, etc.) for the 2010 deadline in non-LVCs. In these plans, the responsibility was placed on the Party to agree to a suitable phase-out schedule that would ensure compliance with the Protocol. Payments from the Fund have depended on adherence to this agreement. The Parties and their implementing agency partners may have considerable flexibility in the methods used to execute these plans, depending on the situation in each country.

**TIPS**

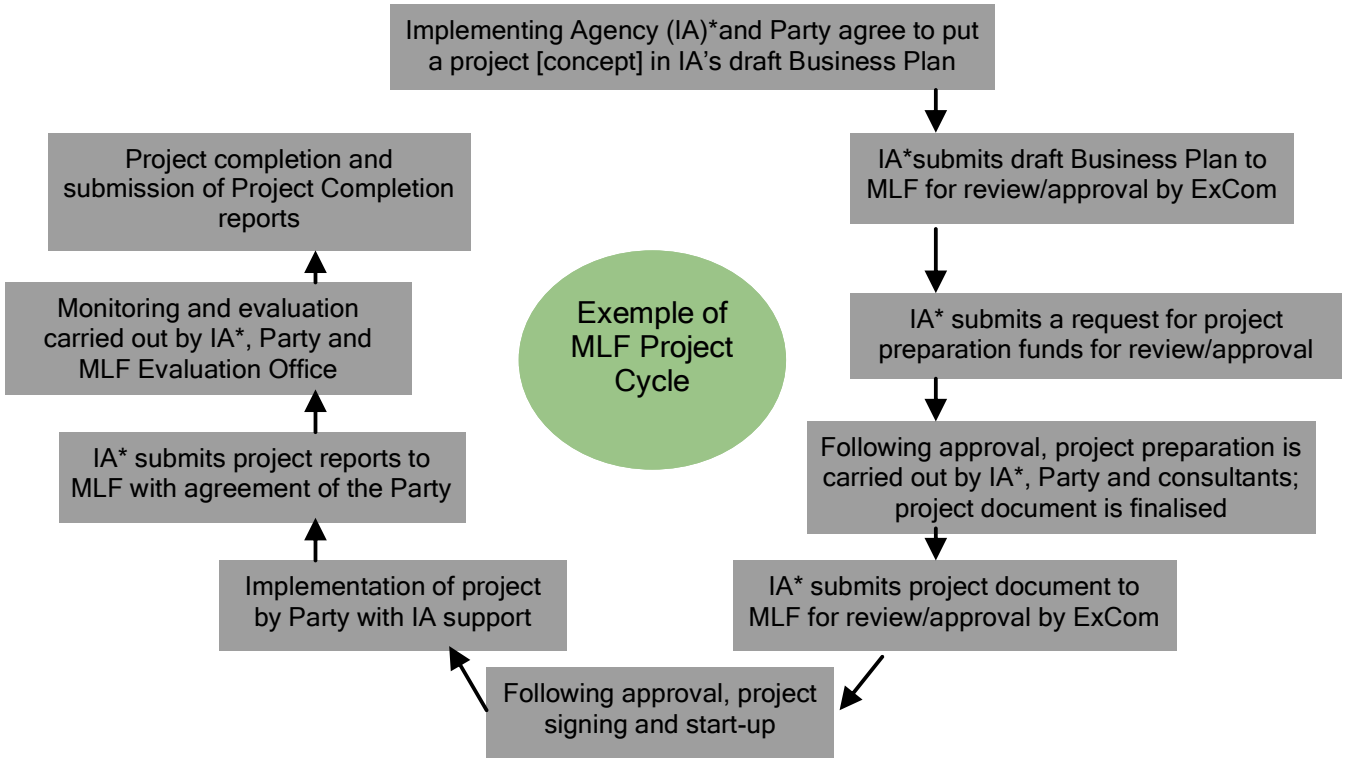
ExCom decisions on MLF project guidelines and procedures continue to evolve over time, so it is essential to get the latest information when developing new project proposals. Implementing agencies and bilateral agencies should be able to provide you with up-to-date information and assistance.

The online searchable format of *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund* provides a useful reference source for all ExCom decisions, listed by number or by topic. To find a specific ExCom decision, click on the Index tab, then scroll down the alphabetical list to view the decisions listed by number. To find ExCom decisions on a specific topic, click on the search tab or the Index tab.

### Box 12. Resources on MLF projects

- ExCom reports: *ExCom meeting documents and final reports of meetings*
- ExCom decisions and guidelines: *Policies, Procedures, Guidelines and Criteria of the Multilateral Fund; MLF online index and search function of ExCom decisions and topics*
- Compilation of all HPMP agreements endorsed by national governments: MLF *HCFC Phase-out Management Plans*
- Compilation of national phase-out plans, TPMPs and other ODS project agreements endorsed by national governments: *MLF Phase-out Plans and Projects*
- Library of documents on MLF evaluations: *MLF evaluation activities.*

Figure 11: Example of MLF project cycle




*This may be an Implementing Agency or Bilateral agency

# 9.3 Mobilising finances from other sources

Ozone protection activities have many practical links with other environmental activities, such as avoiding the use of HFCs (greenhouse gases), energy efficiency, destruction of persistent organic pollutants (POPs), and chemicals management. These synergies provide opportunities for linking projects and funding from various sources, a process called leveraging.

**Global Environment Facility (GEF)**: The GEF provides funding for projects in developing countries to mitigate climate change and address POPs. A5 countries may request GEF funds to complement their MLF projects. For example, an MLF project may fund HCFC recovery activities, while GEF may fund a parallel project for recovering HFCs, or helping ODS users to replace their old equipment with energy-efficient, ODS-free and climate-friendly equipment. MLF projects for ODS destruction can also be linked with GEF projects for the destruction of POPs or HFCs (GEF *Focal Area Strategy Documents*).

The GEF also funds ODS phase-out projects in Countries with Economies in Transition (CEITs) because these countries are not eligible for MLF funds.

**Other funding sources** include:

- Funds from bilateral donors
- Industry contributions in specific sectors
- Levies or taxes on ODS imports/production and new equipment containing ODS
- Carbon finance under the CDM or voluntary carbon market for identified 'additional' reductions in carbon emissions

NOOs are advised to discuss options and sources of financing with implementing/ bilateral agencies. Further information on funding sources OS *Funding Opportunities for the Management and Destruction of banks of ODS*; UNDP *Environmental financing for ODS life-cycle management*; World Bank *Study on Financing the Destruction of Unwanted ODS through the Voluntary Carbon Market*)

## Box 13. Benefits from synergies

Your government has appointed official Focal Points for various other international environmental agreements. The NOO could foster joint action with these officers where possible, for activities such as customs training, information dissemination, data reporting and enforcement, in order to save money and resources and increase effectiveness. Look for opportunities to exchange information and ideas, and areas where you can support each other's work. Relevant agreements include:

- *The United Nations Framework Convention on Climate Change* (UNFCCC)
- *The Stockholm Convention on Persistent Organic Pollutants* (POPS)
- *The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* (PIC)
- *The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal*
- *The Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES)

# GET TO KNOW
# THE TECHNICAL ISSUES

This section outlines some of the important technical issues that NOOs have to address. ODS-free alternative products and methods exist for many uses of ODS, however climate-friendly alternatives are not yet available for all sectors and situations. The NOU will need to provide ODS users with information about the types of alternatives available, and guidance on selecting the most appropriate alternatives in each subsector.

## 10.1 Sectors that use ODS

ODS are still used in many products that we use in our homes and offices, in industrial processes and in agriculture. Table 6 provides an overview of sectors where NOUs might find companies using the currently-consumed ODS (HCFCs, methyl bromide, methyl chloroform), exempted uses, and phased-out ODS. However, in many Article 5 countries, refrigeration servicing is the most significant sector that consumes ODS. In fact, in LVCs, almost 80% of ODS consumption stems from refrigeration servicing.

**Phased-out ODS**: Although the consumption (production/import) of CFCs and halons has been phased out, they are often found in older equipment. Old CFCs and halons are often re-used for servicing existing equipment. Virgin (newly produced/imported) CFCs, halons and carbon tetrachloride may be used only for exempted uses, such as feedstock in chemical manufacture.

**Currently-consumed ODS**: HCFCs are used for many of the former CFC uses, especially in refrigeration and air conditioning equipment (UNEP *Fact Sheet 25: Applications of HCFCs and blends containing HCFCs*). Methyl bromide is used as a pesticide in some countries for high-value crops and specialised import/export goods. Methyl chloroform, a solvent, is rarely used now.

Table 6. Sectors that use ODS

Key: C = Current consumption of virgin ODS, R = Re-use of ODS after the phase-out date

| Sectors | HCFCs | Methyl bromide | Methyl chloro-form | Halons | CFCs | Carbon tetrachloride |
|---|---|---|---|---|---|---|
| Refrigeration & air-conditioning manufacture & installation | C | - | - | - | - | - |
| Refrigeration & air-conditioning servicing | C | - | - | - | R [1] | - |
| Foam | C | - | - | - | - | - |
| Fire protection | C | - | - | R [1] | - | - |
| Aerosol | C | - | - | - | - | - |
| Solvent | C | - | C [2] | - | - | - |
| Fumigation non-QPS | - | C | - | - | - | - |
| **Exempted uses:** | | | | | | |
| Feedstock | C | C | C | C | C | C |
| Fumigation QPS | - | C | - | - | - | - |
| Laboratory | C | C | C | C | C | C |
| Process agent [3] | C | - | - | - | C | C |
| Essential & critical use[3] | - | C | - | - | C | - |

1. Recycled or reclaimed ODS are often used in this sector
2. Rarely used
3. Used only in cases where a MOP Decision has authorised an exemption for specified Parties & uses

# 10.2 HCFC uses and alternatives

The MP controls 40 different HCFCs, with ODPs ranging from 0.001 to 0.52 *(Annex C, Group I)*. HCFCs were always considered as interim (transitional) substitutes for CFC/ halon because (molecule-for-molecule) HCFCs have only 5-10% of the ozone impact of CFCs. *Article 2F(7)* aimed to restrict the use of HCFCs to applications where environmentally-friendly alternatives were not available. However, the use of HCFCs grew far more than expected, so in 2007 the MOP accelerated the phase-out schedule.

**Climate issues**: As well as being ODS, HCFCs are greenhouse gases with GWPs ranging from 77 (HCFC-123) to 2310 (HCFC-142b), so HCFC emissions contribute directly to climate change (IPCC *Fourth Assessment Report Climate Change 2007: The Physical Science Basis*, Technical Summary Table TS.2). Equipment using HCFCs consumes energy from fossil fuels, contributing indirectly to climate change.

Unfortunately some major alternatives – HFCs – are greenhouse gases ⇨(Box 14). Depending on the type of alternative selected, the phase-out of HCFCs could either significantly contribute to climate mitigation or nullify a country's efforts to reduce its climate impact. This makes the process of selecting appropriate alternatives for HCFCs more complex than for other ODS. Nevertheless, the HCFC phase-out presents an opportunity to adopt ozone-free and climate-friendly technologies, to improve energy efficiency, enhance employment, and thereby contribute to the Green Economy. Aligning HCFC phase-out policies to maximise climate benefits will be helpful to your industry and consumers in the longer term. (⇨Box 15; UNEP *OzonAction Protecting our atmosphere for generations to come*; UNDP *What countries can do to maximize climate benefits of HCFC phase-out*; UNDP *Protecting the ozone layer and safeguarding global climate*; UNDP *Integrated Plan for Energy Efficiency, Climate Mitigation, and ODS Reduction for Refrigeration Sector in Ghana*).

**Energy efficiency**: Refrigeration and air-conditioning (RAC) equipment accounts for about 40 - 50% of total electricity consumption in developing countries. This means substantial energy costs for end-users, as well as climate impacts. To reduce these costs, many countries are setting energy efficiency standards for RAC equipment.

**Steps that would reduce climate impacts:**

- Reduce emissions of ODS and HFC refrigerants: Require good practices for ODS/ HFC recovery during installation, maintenance and servicing of RAC equipment.
- Use low-GWP refrigerants where suitable: Try to leapfrog the high-GWP substances and technologies by promoting the use of low-GWP refrigerants in sub-sectors where feasible. ⇨(Figure12)
- Improve energy efficiency: Set minimum energy performance standards for RAC equipment. Adopt a voluntary or mandatory energy efficiency labelling programme.

**Main HCFC uses**: Although many HCFCs are controlled under the MP, only *HCFC-22, HCFC-123, HCFC-124, HCFC-141b, HCFC-142b and HCFC-225ca/cb* are consumed in significant quantities. HCFCs are mainly used in refrigeration and air conditioning (AC) equipment, with some use in foams, fire protection equipment and solvents. As refrigerants, HCFCs are used in many sub-sectors: commercial refrigeration (e.g. supermarkets, chilled vending machines), industrial refrigeration (e.g. food processing and storage), refrigerated transport (e.g. trucks, shipping containers), air conditioners and chillers.

For pictures and descriptions of the types of equipment/products that use HCFCs UNEP *Factsheet 25: Applications of HCFCs and blends containing HCFCs*; *HCFC Help Centre* Where HCFCs are used; p.14-20 in UNEP *Alternatives to HCFCs in the Refrigeration and Air Conditioning Sector*; p.25-28 in UNEP *Guidance on the Process for Selecting Alternatives to HCFCs in Foams*.

## Box 14. Projected climate impact of HFCs

Hydrofluorocarbons (HFCs) are fluorinated gases (F-gases) which are used as ODS-free refrigerants, foam blowing agents, fire extinguishers, solvents and aerosols. HFCs tend to have high *GWPs*. For example HFC-134a, a common refrigerant, has a GWP of 1430. Scientists have reported that the concentration of HFC-134a in the atmosphere increased at the rapid rate of 10% per year in 2006-2010.

If HFC growth continues on its current track, annual emissions of HFCs are expected to rise to 3.5 to 8.8 billion tonnes $CO_2$eq in 2050. This would be equivalent to 7 - 19% of total $CO_2$ emissions in 2050 (based on IPCC's 450ppm $CO_2$ emissions scenario). Emissions of HFCs are included in the basket of gases of the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC). Recent MOP Decisions have encouraged the use of climate-friendly alternatives to ODS ⇨(Box 16).

Governments worldwide have recognised the problem posed by HFC growth. The UN General Assembly has endorsed the Rio+20 outcome document, *The Future We Want*, which states, *inter alia*: '*We recognize that the phase-out of ozone-depleting substances is resulting in a rapid increase in the use and release of high global-warming potential hydrofluorocarbons to the environment. We support a gradual phase-down in the consumption and production of hydrofluorocarbons.*' (para. 222 in *UN General Assembly The Future We Want*)

UNEP | *HFCs: A critical Link in Protecting Climate and the Ozone Layer*;| WMO/UNEP *Scientific Assessment of Ozone Depletion: 2010* (Chapter 5, section 5.4.3.1);| Velders *Preserving Montreal Protocol climate benefits by limiting HFC, Science* 2012; |Velders *Large contribution of projected HFC emissions to future climate forcing, PNAS* 2009;| Molina *Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions*, *PNAS* 2009 |.

## Box 15. MOP Decisions encouraging the use of climate-friendly alternatives

*Decision X/16* noted '*the need to implement multilateral environmental agreements in a coherent way for the benefit of the global environment.*'

*Decision XIX/6(9)* encourages Parties '*to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations*.'

*Decision XIX/6(11)* agreed that ExCom will '*give priority to cost-effective projects and programmes which focus on, inter alia, ... substitutes and alternatives that minimise other impacts on the environment, including on the climate, taking into account global-warming potential, energy use and other relevant factors.*'

*Decision XXI/9(4)* encourages Parties '*to promote policies and measures aimed at avoiding the selection of high-GWP alternatives to HCFCs ... in those applications where other market-available, proven and sustainable alternatives exist that minimise impacts on the environment, including on climate, as well as meeting other health, safety and economic considerations in accordance with decision XIX/6*.'

*Decision XXI/9(8)* encourages Parties '*to consider reviewing and amending as appropriate, policies and standards which constitute barriers to or limit the use and application of products with low- or zero-GWP alternatives to ozone-depleting substances, particularly when phasing out HCFCs.*'

*Decision XXI/9(7)* requested ExCom, when applying criteria for projects, to:

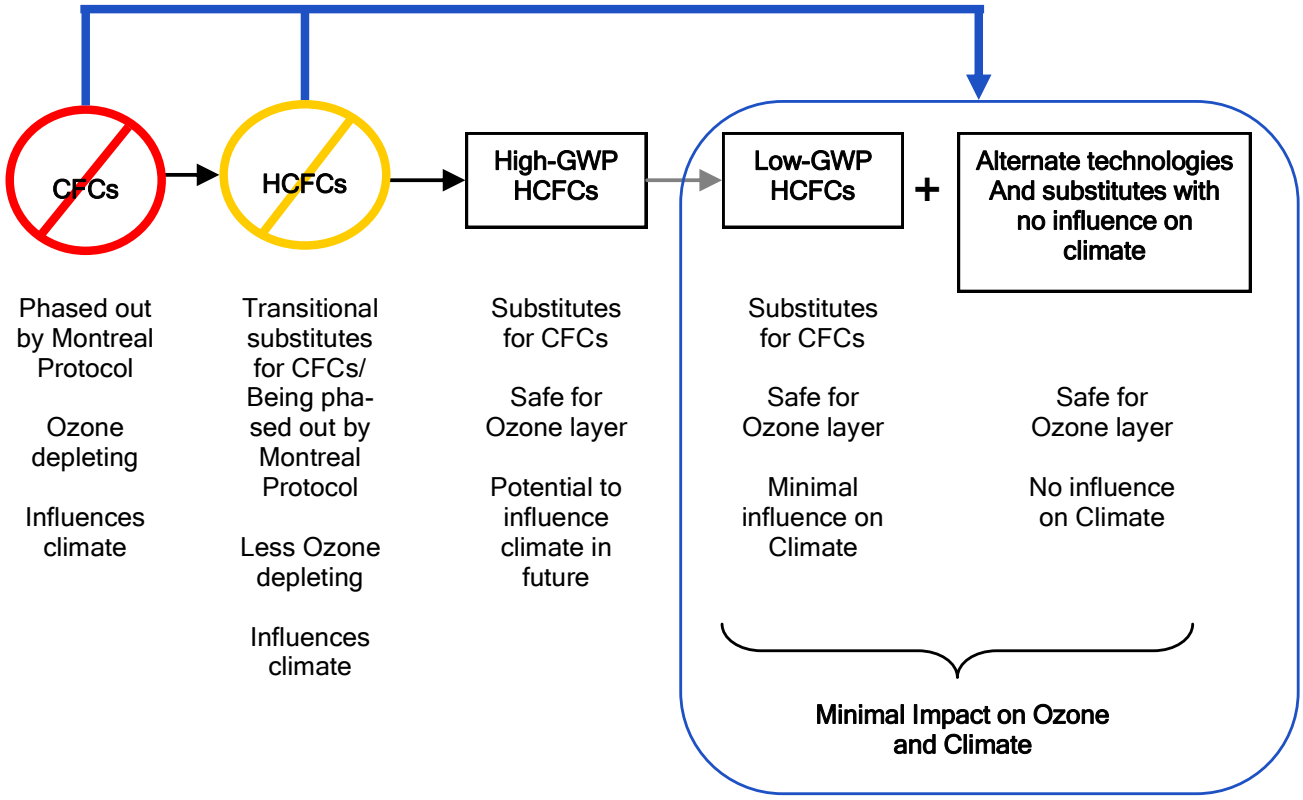
a. take into consideration decision XIX/6(11),
b. consider providing additional funding and/or incentives for additional climate benefits where appropriate,
c. take into account, when considering the cost-effectiveness of projects and programmes, the need for climate benefits.

The ***Doha Declaration***, agreed by all Parties at MOP-20, recognised that progress in phasing-out ODS was achieved through, *inter alia 'A firm commitment to maximising and exploring the broad-reaching benefits of the Protocol, in particular to deterring climate change in addition to ozone layer protection*.'
(Decision XX/26 and Annex VI of *MOP-20 report*).

The **Bangkok Declaration** (MOP 22), signed by 108 Parties at MOP-22, recognised that the projected increase in HFC use '*is a major challenge for the world's climate system that must be addressed through concerted international action*'. They encouraged '*all Parties to promote policies and measures aimed at selecting low-GWP alternatives*' to HCFCs and other ODS, and declared their intent '*to pursue further action under the Montreal Protocol aimed at transitioning the world to environmentally sound alternatives to HCFCs and CFCs.*' (Annex III of MOP-22 report )
(...continued)

(continued...)
The **Bali Declaration** (MOP 23), signed by more than 110 Parties at MOP-23, recalled the Bangkok declaration; noted with appreciation the efforts of A5 Parties who selected low-GWP alternatives in their HPMPs; invited parties to provide technical and financial assistance for transitioning to low-GWP ODS alternatives; rand called on Parties '*to explore further and pursue under the Montreal Protocol the most effective means of achieving the transition to'* low-GWP alternatives to ODS (Annex IX of *MOP-23 report)(MP Workshop for a Dialogue on High-GWP Alternatives for ODS)*

Figure 12. Leapfrogging high-GWP substances and technologies




**Selecting alternatives**: HCFC alternatives are widely used in some specific sectors, such as foam and domestic refrigeration. ⇨Table 8 provides examples of alternatives that are used commercially in specific applications.

For most HCFC applications more than one substitute is available, but none of them are perfect. Like HCFCs, each alternative has some problems or issues to be addressed. Some alternative substances have high GWPs while others are flammable, toxic, or more difficult to handle, or more expensive. As a result, some difficult decisions need to be made. Users often have to make changes in both equipment and practices. However, on the positive side, alternatives can also bring new technical benefits.

Table 7. Sectors using HCFCs

| Sector | Sub-sectors |
|---|---|
| **Refrigeration** | • Domestic refrigeration (usually foam only): household refrigerators & freezers<br>• Commercial refrigeration: chest coolers & freezers, beverage coolers, display cabinets, supermarket cabinets, water coolers/ dispensers, ice cream & ice dispensers<br>• Industrial refrigeration: liquid chilling systems, ice plants, cold stores, blast freezers<br>• Transport refrigeration: refrigerated trucks, trainers and shipping containers |
| **Air conditioning** | • Residential AC: window air conditioners, split air conditioners<br>• Commercial AC: mid-sized split AC systems, air-cooled & water-cooled packaged AC units<br>• Industrial AC: central plants with centrifugal, rotary or reciprocating chillers<br>• Vehicle air conditioning: bus and coach AC, truck-cab AC, rail coach AC |
| **Foam** | • Rigid foam: continuous, discontinuous<br>• Integral skin foam<br>• Spray foam<br>• Single component foam and others: thermo ware, insulation of water heaters, etc.<br>• Extruded polystyrene (XPS) foams |
| **Solvents** | • Solvents |
| **Fire** | • Fire extinguishers |
| **Aerosols** | • Industrial aerosols |

From a users' perspective, considerations include the type, age and condition of their existing equipment, the amount of money available, and whether the user is willing to replace equipment or just make minimal changes. The following aspects need to be considered when selecting alternative technologies for specific applications:

- Technical aspects — performance in the local conditions (temperature, humidity); size and weight; type and condition of existing equipment
- Environmental aspects — GWP of refrigerant or foam blowing agent, energy efficiency of equipment, life-cycle carbon emissions of systems
- Economic aspects — annual energy consumption, maintenance cost, initial investment cost
- Safety aspects — flammability, toxicity, available safety standards.

In applications where climate-friendly alternatives cannot be used, it is important to follow good servicing practices to avoid emissions. Some industrialised countries, particularly in Europe, have adopted regulations to restrict the use of HFCs. It is desirable to assess the alternative technologies carefully in terms of all environmental health/safety, energy and cost factors when advising industries (| *HCFC Help Center HCFC alternatives;* | *GIZ Natural Foam Blowing Agents; UNEP Guidance on the Process for Selecting Alternatives to HCFCs in Foams;* | *GIZ Opportunities for the application of natural refrigerants;* | *GIZ Applications for low-GWP replacement for HCFC-22;* | *GIZ Natural Refrigerants;* | *GIZ Production Conversion of Domestic Refrigerators from Halogenated to Hydrocarbon Refrigerants;* | *GIZ Guidelines for the safe use of hydrocarbon refrigerants;* | *UNEP/Swedish EPA Alternatives to HCFCs in the Refrigeration and Air conditioning Sector;* | *US EPA Fact Sheets on Transitioning to Low-GWP Alternatives (series);* | *US EPA Significant New Alternatives Policy (SNAP) Program;* | *Danish Technical Institute Low GWP Alternatives to HFCs in Refrigeration* |).

**Refrigeration standards and safe practices**: Regulations, standards, building codes and industry guidelines affect the use of refrigerants, during the stages of equipment design, manufacture, installation and servicing. For example, international IEC standards (IEC 60335-2-24, IEC 60335-2-40, and IEC 60335-2-89) exist for domestic refrigeration, air-conditioners and heat pumps, and commercial refrigeration, respectively. Standards are technical interpretations of what is considered to be 'safe' by industry or government. Some standards support the safe use of low-GWP alternatives, while others would need to be updated to take account of technological developments in safety (especially in the case of hydrocarbons and ammonia). Barriers may be overcome by revising existing regulations, standards and codes of practice, to support the safe use of alternatives (UNEP *Barriers to the Use of Low-GWP Refrigerants in Developing Countries and Opportunities to Overcome These*; GIZ *Guidelines for the Safe Use of Hydrocarbon Refrigerants*).

**Refrigeration servicing:** As noted above, the refrigeration servicing sector often uses large amounts of HCFCs, and phasing out this use will pose many challenges. NOOs can consider a mix of options:

- Switching to alternatives in the manufacture of new equipment
- Procedures for servicing existing equipment with as little ODS as possible
- Recovering CFCs and HCFCs from equipment destined for disposal
- Where feasible, using drop-in substitutes, or retrofitting (converting) equipment so it can use alternatives.

Further information: | UNEP *Manual for Refrigeration Servicing Technicians*;| UNEP *Interlinked ODS Phase-out Activities: A Handbook for Improved Effectiveness of ODS Phase-out Activities in the Refrigeration Servicing Sector;* | GIZ *Good Practices in Refrigeration*;| GIZ *Operation of Split Air-conditioning Systems with Hydrocarbon Refrigerant: A Conversion Guide* |.

Table 8. Examples of HCFC alternatives used commercially in specific applications

| Sectors using HCFCs & blends | Alternatives | |
|---|---|---|
| | ODS-free, high GWP | ODS-free, low GWP (< 20) |
| **Refrigeration** HCFC-22, HCFC blends | HFC-23, HFC-32, HFC-134a, HFC-413a, R-404A, R-407C, R-410A, R-417A, R-422B, R-507A | Ammonia, carbon dioxide, hydrocarbons, water, adsorption/absorption, indirect or cascade systems, cryogenic (open loop) systems using nitrogen or carbon dioxide, eutectic plates based on frozen salt solution, solar cooling, Stirling and transcritical $CO_2$ technology |
| **Air-conditioning** HCFC-22, HCFC-123 | HFC-32, HFC-134a, HFC-143a, HFC-245fa, R-404A, R-407C, R-410A, R-417A, R-419A, R-422B | Ammonia, carbon dioxide, dimethyl ether/ ammonia, HFC-1234yf, hydrocarbons, water, zeolite/water absorption, desiccant and evaporative cooling, architectural designs that avoid the need for AC systems |
| **Foam blowing** HCFC-22, HCFC-141b, HCFC-142b | HFC-245fa, HFC-365mfc, HFC-227ea | Carbon dioxide/water, dimethyl ether, HFC-1234ze, hydrocarbons, inert gases, liquid $CO_2$, methylene chloride, methyl formate, insulation materials that do not need foam blowing agents (not-in-kind) |
| **Solvents** HCFC-123, HCFC-141b, HCFC-225ca/cb | HFC-365mfc, HFC-43-10mee | Alcohols, aqueous systems, hydrocarbons (e.g. iso-paraffin), ketones, semi-aqueous mixtures, solvent-free cleaning methods |
| **Aerosols (non-medical)** HCFC-141b, HCFC-142b | HFC-134a, HFC-152a | Pumps, dry powder inhalers, hydrocarbons, inert gases |
| **Fire protection** HCFC-123, HCFC-124 | HFC-236fa, HFC-227ea | Argon, carbon dioxide, dry chemicals, fluoroketones, foams, nitrogen, water mist, improved monitoring and alarm systems |

## Box 16. Encouraging HCFC users to consider alternatives

The following points may encourage HCFC users to consider alternatives.

**Reasons why your company should get involved in HCFC phase-out:**

- Avoid being faced with limited HCFC supply and HCFC use restrictions in the future, and likely price increases
- Keep up-to-date with the latest technologies in your industry
- Protect your company's future profitability, and maintain your export markets
- Publicise your company as an example of a green business (ODS-free, low carbon emissions)
- Use the financial and/or technical assistance available from national MLF projects

**What steps should your company consider?**

- If your HCFC equipment is old or inefficient, consider replacing it with new technology based on ozone-free and climate-friendly alternatives that use less electricity and save power costs
- Where available, select ODS-free and low-GWP technologies when purchasing new equipment or products
- Establish controls to prevent HCFC emissions: use leak detectors, make regular checks for leaks, carry out repairs immediately, keep logbooks, recover refrigerants
- Train/certify your personnel in safe management of alternative systems

(UNEP flyer *HCFCs in the Foam Sector: How to prepare for the phase down*; UNEP flyer *HCFCs in the refrigeration and air conditioning sector: How to prepare for the phase down*)

# 10.3 Methyl Bromide

Methyl Bromide (MB) is not just harmful to the ozone layer; it is a highly toxic, broad-spectrum pesticide which is poisonous to almost all living organisms, including humans. MB also contributes to volatile organic compound (VOC) air pollution and can contaminate water in localities where the water table is high. Due to these health and environmental problems, a number of countries banned major uses of MB even before its ozone depleting effect was discovered.

**MB uses** are classified into the following groups:

- *Non-QPS uses* that are scheduled to be phased out by 2015 in A5 Parties:
    - ♦ Soil fumigation: MB treatments applied to soil (in fields or greenhouses) for reducing pests in soil before high-value fruit and vegetable crops are planted, e.g. strawberries, tomatoes, melons, flowers, tobacco seedlings.
    - ♦ Storage and structural fumigation: MB treatments for reducing pests in stored products (e.g. some types of grains, nuts, dried fruit), grain stores, flour mills or other buildings.

- *QPS uses* that are exempted from the phase-out schedule:
    - ♦ Quarantine and pre-shipment fumigation: Officially-required MB treatments applied to wooden pallets, certain types of import/export products (e.g. fresh fruit, some grains) and transport vessels.
      ⇨(Annex 3 definitions of QPS)

The precise uses of MB vary greatly from one country to the next, depending on the marketing practices of MB suppliers and local prices of MB (Overview of MB uses p.16-17 in UNEP *Handbook on Methyl Bromide Data Reporting under the Montreal Protocol*).

**Selecting MB alternatives**: MBTOC has identified alternatives for almost all non-QPS uses, and ⇨Table 9 provides examples. There is no one-size-fits-all alternative; different types of alternatives are suitable for different circumstances. The following aspects need to be considered when selecting alternative technologies for specific applications:

- Technical aspects – ability to control specific types of pests, performance at relevant temperatures, amount of time available for carrying out a treatment, effect on treated goods
- Safety restrictions – restrictions on the use of pesticides, availability of alternatives that do not require registration or special safety restrictions (non-chemical methods), feasibility of registering new pesticides
- Environmental aspects – life-cycle energy consumption, chemical residues in water, soil, air, food
- Economic aspects – initial investment cost, annual operating cost, profitability over 5 years.

**Tracking QPS and non-QPS uses**: Article 7 data reporting requires countries to track their MB imports/exports for QPS uses. It can be very difficult to distinguish between QPS and non-QPS uses of MB, but some guidance is available (⇨Annex 3; UNEP *Handbook on Methyl Bromide Data Reporting under the Montreal Protocol*).

**Progress in phasing-out non-QPS MB**: The majority of A5 Parties have already completed their phase-out of MB (aside from QPS uses). By 2010, A5 Parties had phased-out 75% of total A5 MB consumption, well in advance of the required 20% reduction. As of December 2012, only about 23 A5 Parties still consume MB, and their MLF projects are scheduled to achieve phase-out by 2015. ⇨(section 4.4)

Futher information on MB and alternatives: ⇨section 6.3.2;| *MBTOC Assessment Report;*| *UNEP Case Studies on Alternatives to MB vol.1; UNEP Case Studies on Alternatives to MB vol.2;*| *UNEP Sourcebook of Technologies: Alternatives to Methyl Bromide;*| *UNEP Floriculture and the Environment: Growing Flowers without MB;* | *FAO UNEP Manual of alternatives to replace MB for soil-borne pest control in East and Central Europe;*| *UNEP Leveraging Expertise of Civil Society in Developing Countries: Communication Programme on MB* |; and other publications on *OzonAction methyl bromide webpage.*

Table 9. Methyl bromide alternatives in commercial use

| MB uses | Chemical alternatives | Non-chemical alternatives |
|---|---|---|
| **Soil fumigation (non-QPS)**<br>Strawberries, melons, tomatoes, peppers, cut flowers, tobacco seedlings, nursery plants | Chloropicrin, 1,3-dichloropropene, dazomet, fungicides, herbicides, metham sodium, metham potassium, methyl iodide, nematicides, combinations of treatments | Biofumigation, crop rotation, floating tray systems, grafted plants, integrated pest management, resistant varieties, solarisation, steam treatments, substrates, combinations of treatments |
| **Storage & structural fumigation (non-QPS)**<br>Stored grains, nuts, dried fruit, flour mills, empty stores, storage vessels | Carbon dioxide, insecticides, phosphine, sulfuryl fluoride | Cold, heat, hermetic systems, integrated pest management, low oxygen, nitrogen, high pressure, prevention & cleaning, vacuum, combinations of treat-ments |
| **Quarantine & pre-shipment fumigation (QPS)**<br>Import/export goods, wood pallets, logs & tim-ber | Carbon dioxide, insecticides, methyl iodide, miticides, phosphine, sulfuryl fluoride, combinations of treatments | Cold treatments, heat treatments, high pressure, inspection, irradiation, very low oxygen, pest-free areas, pre-clearance programmes, processing, removal of pests, systems approach, vacuum, water immersion, water sprays, combinations of treatments |

## 10.4 Halons

Older fire equipment may often contain halons. Halon alternatives are available world-wide for most fire protection applications. For a few critical applications for which technologically or economically-viable options are not yet available (e.g. in occupied spaces of airplanes), Article 5 and non-Article 5 Parties have followed a strategy of *halon bank management*, to avoid using virgin (new) halons. Under this approach, used halons are recovered from decommissioned or non-critical fire protection systems, then recycled and stored in virtual or physical *halon banks*. Banked halons are later used when needed in critical applications.
Halon banks can provide useful information about a country's national halon management strategy and halon alternatives. Anyone needing to buy or sell used halons should be directed to national halon banks.

## 10.5 ODS banks and emissions

**ODS banks**: Vast quantities of ODS (mainly CFCs, halons, HCFCs) remain installed or *banked* in existing refrigeration and air-conditioning equipment as well as foam products. Most of these ODS will eventually be emitted to the atmosphere, causing damage to the ozone layer and global climate. Unless preventive action is taken, ODS banks are expected to emit about 2,570,000 ODP-tonnes during 2011-2050. This is equivalent to 13.2 billion tonnes $CO_2$eq. For comparison, the accelerated HCFC phase-out is expected to reduce ODS emissions by 600,000 - 800,000 ODP-tonnes in 2011-2050 (chapter 5 in WMO/UNEP *Scientific Assessment of Ozone Depletion: 2010*); so the emissions from ODS banks will be about 3 - 4 times greater.
MOP Decisions have encouraged Parties to prevent the leakage or emissions of ODS, and to develop or improve national strategies for managing ODS banks (*Decision IV/12 (2); Decision XX/7(3); Decision XX/7(4) & (5)*). The ODS banks strategies of several Parties have been published (*ODS banks strategies*).

**ODS recycling**: Thousands of refrigerant technicians have now been trained to recover or collect ODS instead of emitting them to the atmosphere. In some countries it is obligatory to recover ODS from equipment at end-of-life. Recovered ODS are often re-used after *recycling* or *reclamation* ⇨(Annex 6 glossary). Reusing ODS does not address the problem of emissions from banks, because re-used ODS are likely to be emitted at a future date. However, re-use does reduce the demand for new ODS production.

**Destruction of unwanted ODS**: To prevent emissions of ODS banks, MOP decisions have encouraged the destruction of unwanted ODS. Industry stewardship measures adopted by several countries (such as Japan) have resulted in the destruction of large amounts of ODS banks. The MLF is funding a limited number of demonstration (pilot) projects for the destruction of unwanted ODS in A5 countries. The projects aim

to generate practical data and experiences, including information on financing modalities (Decision XX/7; UNDP *Early Retirement of Refrigerators and ODS Banks Management/ Destruction in Brazil*).

The MP has adopted an approved list of technologies for ODS destruction. The list is updated from time to time by MOP Decisions, following a technical review by TEAP. *(Decision XXIII/12* list of approved destruction technologies)

## 10.6 Use the available resources

There is a wealth of reference materials that NOOs can turn to for information, especially the publications and websites mentioned in this Guide. In addition, NOOs can seek information and assistance from national specialists, international specialists and regional networks. Other sources include implementing agencies, bilateral agencies, Secretariats, and other organisations that work on ODS alternatives. South-to-South cooperation can be particularly useful.

# ANNEXES

# Annex 1: Ratification status and reporting obligations

The following table summarises the main data-reporting obligations (under Article 7) that come into force for a specific country (Party) when it ratifies specific Amendments of the Protocol.

Table 10. Submitting annual reports on Article 7 data (Article 7(3) and (4))

| Controlled substances | Year when reporting commences for each Party | Date by which Party must submit data |
|---|---|---|
| Annex A (major CFCs, halons) | The year that falls three months after the Party's ratification of the Montreal Protocol | No later than 30 September of the year following the year to which the data relate. However, Decision XVIII/34 encourages Parties to submit data by 30 June |
| Annex B (other CFCs, carbon tetrachloride, methyl chloroform)<br>Annex C, group I (HCFCs) | The year that falls three months after the Party's ratification* of the London Amendment | |
| Annex C, group II (HBFCs)<br>Annex E (methyl bromide) | The year that falls three months after the Party's ratification* of the Copenhagen Amendment | |
| Annex C, group III (bromochloromethane) | The year that falls three months after the Party's ratification* of the Beijing Amendment | |

Source: section 6.1.1 in OS *Implementation Committee Primer for Members*.

* This includes ratification or acceptance or approval or accession or succession to the relevant Amendment.

**Licensing system**: Within six months of ratifying the Montreal Amendment to the Montreal Protocol, Parties must establish and implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances in Annexes A, B, C and E of the Protocol. Once established, the Party should send written notification to the Ozone Secretariat.

**Ban on ODS trade with non-Parties**: Each Amendment to the MP requires the Parties to that Amendment to impose bans on import from and export to States that are not Party to the relevant Amendment. The ban applies to specific groups of ODS that are controlled by the Amendment. For a detailed list of obligations associated with each Amendment, refer to section 6.1.3 in *OS Implementation Committee Primer for Members.*

# Annex 2: Non-Compliance procedure of the Montreal Protocol

Article 8 of the Protocol specified that the Parties should approve '*procedures and institutional mechanisms for determining non-compliance with the provisions of this Protocol and for treatment of Parties found to be in noncompliance*'.
A *Non-compliance Procedure* was adopted by MOP in 1990-92 and revised in 1998. (*Decision IV/5* as amended by *Decision X/10*).

## Annex 2.1 What is non-compliance?

The procedure does not specify what constitutes non-compliance with the Protocol; this has to be inferred from the provisions of the Protocol. Non-compliance is a situation where a Party fails to fulfil its commitments under the Montreal Protocol. Examples of non-compliance include:

- National consumption and/or production of controlled substances exceeds the level allowed by the control schedules of the Protocol
- A country has not submitted its Article 7 data report to the OS
- A country has imported/exported ODS with non-Parties
- A country has not established and implemented an ODS licensing system

**Who evaluates the compliance status of a Party?**
Cases of suspected non-compliance are examined by the Implementation Committee (ImpCom), which is the MP body authorised to evaluate the compliance status of individual Parties ⇨(section 3.1). The OS analyses each Party's Article 7 data, and reports cases of suspected non-compliance to ImpCom. The Party involved in a case may be invited to attend the ImpCom meeting, but is not allowed to take part in the elaboration and adoption of recommendations by ImpCom. ImpCom forwards draft decisions on cases of non-compliance to the MOP each year, for final decision. Only the MOP can decide the compliance or non-compliance status of a Party.

**What are the consequences of non-compliance?**

Recent MOP Decisions on cases of non-compliance typically require the Party to implement a plan of action to restore compliance. The Party must report regularly to ImpCom on its implementation of the action plan and all commitments in the Decision. ImpCom will continue to monitor the Party's progress each year until the ODS mentioned in the action plan have been phased out.

In principle MOP may adopt any of the following measures in response to non-compliance (*Indicative list of measures that might be taken by the meeting of the Parties in respect of non-compliance with the Protocol in Annex V of MOP-4 report*):

- **Item A**: Appropriate assistance, including assistance for the collection and reporting of data, technical assistance, technology transfer and financial assistance, information transfer and training
- **Item B**: Issuing cautions
- **Item C**: Suspension, in accordance with the applicable rules of international law concerning the suspension of the operation of a treaty, of specific rights and privileges under the Protocol, whether or not subject to time limits, including those concerned with industrial rationalisation, production, consumption, trade, transfer of technology, financial mechanism and institutional arrangements.

Suspension of rights (item C) has not been implemented to date, but some MOP decisions on non-compliance have mentioned it in cautionary warnings to a Party. If a Party's rights under Article 4 were to be suspended, other Parties would not be able to export ODS to the non-compliant Party, with the result that ODS users would not be able to obtain supplies. Potentially, Article 5 Parties can also be denied transfer of technology and financial assistance.

For detailed information on the Non-compliance Procedure and ImpCom procedures *OS Implementation Committee Primer for Members*.

**How can a Party avoid non-compliance?**

A Party can avoid non-compliance by ensuring it fulfils all of its obligations under the Montreal Protocol and the Amendments it has ratified. NOUs can undertake the following activities to assist:

- Establish a warning system to monitor and verify your country's compliance status by comparing the baseline ODS consumption with the current year data and the data expected for next year.
- Review existing national ODS policies and regulations to make sure that they will keep your country in compliance; amend the regulations as necessary. ⇨(section 6)
- Set up a system for regularly checking the implementation of MLF projects; identify any problems at an early stage and take prompt measures to address them. Ask IAs for help when issues are first noticed.
- Make sure that necessary training and enforcement takes place. ⇨(section 7.2 and 8.3)

# Annex 2.2: Steps in the non-compliance procedure

**How is a non-compliance case triggered?**
A non-compliance case may be initiated by one of several routes.
The first route is the most common:

1. The OS analyses the annual Article 7 data reports received from Parties, identifies potential non-compliance cases, seeks clarification, and prepares a report for ImpCom. The report identifies cases where a Party appears to have deviated from its commitments under the Protocol
2. A Party may make a written submission to the OS if it has reservations regarding another Party's implementation of its obligations
3. The Party itself can notify the OS in writing that it is unable to comply with the Protocol despite its best *bona fide* efforts, detailing the specific cause(s).

**What are the key steps when a non-compliance case is suspected?**
The diagram in Figure 13 shows the main steps in the non-compliance procedure.

**Clarification**: The OS will write to the Party whose compliance is in question, inviting the Party to submit a written explanation. The OS provides the Party's response to ImpCom, along with any other relevant information, such as recent ratification of an Amendment, MLF projects, any previous MOP decisions, regulatory measures that the Party has under development, etc.

**ImpCom consideration**: The Party in question is invited to send a representative to the relevant ImpCom meeting. During 1 or 2 meetings, ImpCom consults with the Party, may request additional information from MLF and implementing agencies, and discusses the information provided.

**ImpCom recommendation**: The affected Party cannot take part in ImpCom's preparation of recommendations. ImpCom adopts recommendations on the non-compliance cases, and may forwards draft decisions to the MOP.

**MOP decision**: Each MOP meeting considers the draft decisions prepared by ImpCom, and typically adopts the decisions. The MOP decision spells out any action required, such as a Party's plan of action for returning to compliance with the control measures. After the meeting, the OS sends the adopted Decision to the Party concerned, with a cc to the MLF and relevant implementing agencies.

**Monitoring**: The OS maintains a list of compliance-related decisions that require action by specific Parties, and for each ImpCom meeting prepares a report on the status of actions. ImpCom considers appropriate actions, including a further draft decision for MOP.

**Closure**: A specific case of non-compliance is considered to be closed when an ImpCom meeting report records that the Party has returned to compliance and has implemented all of the required actions.

**What action should a Party take when suspected of non-compliance?**

A Party whose compliance with the Protocol is in question will be contacted by the OS for clarification. The Party is usually requested to undertake one or more of the following actions:

i. To submit to ImpCom (via the OS) written information regarding its possible non-compliance;
ii. To send a representative to an ImpCom meeting to discuss its situation, usually in cases where the compliance matter is complex or requires the development of a plan of action to return the Party to compliance. During the ImpCom meeting, time will be allocated to filling gaps in ImpCom members' understanding of the Party's situation. So it is critical that the Party's representative is fully aware of all aspects of the Party's efforts to implement the Protocol.
iii. To submit to ImpCom (via the OS) a plan of action containing measures to ensure its prompt return to compliance.
iv. To fulfil all requirements in any Decision taken by MOP on this non-compliance case, including submission of reports on the implementation of the plan of action to ImpCom (via the OS).

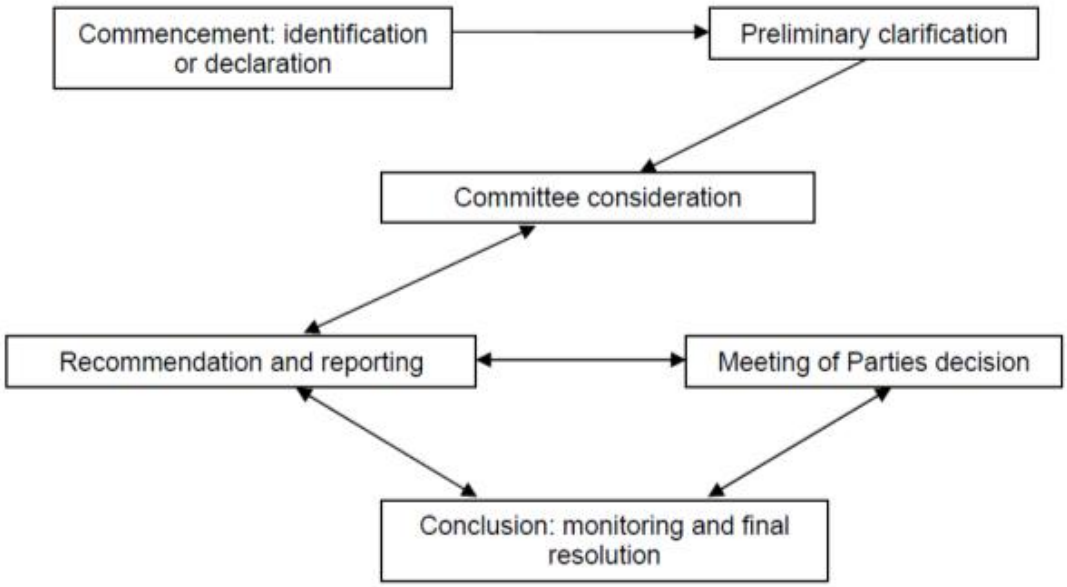
For detailed information on non-compliance and ImpCom procedures *OS Implementation Committee Primer for Members.*

## Box 17. Action plan to restore compliance

If your country has to draft a Plan of Action for consideration by ImpCom, discuss and seek advice during Network meetings from countries that have already made such plans. Your colleagues from the Regional Networks can assist you with practical advice.

An action plan must contain measures to ensure a Party will return to compliance promptly. If a Party's ODS consumption is higher than the permitted level, for example, the Party will need to adopt measures to reduce ODS consumption quickly. If the excess consumption occurs in the refrigeration servicing sector, the Party could ban imports of second-hand ODS equipment, speed up the replacement of old equipment with ODS-free models (e.g. using GEF funds for improving energy efficiency), and increase the recovery/recycling of existing ODS. If the excess consumption occurs because new factories start to use ODS, the Party needs to ban the establishment of new ODS based manufacturing, and speed up the implementation of relevant MLF investment projects.

Figure 13. Steps in the Non-compliance Procedure




Source: OS Implementation Committee Primer for Members

**TIPS**

NOOs should check the compliance status of their country when submitting Article 7 data reports to the OS, as well as checking that the data has been correctly recorded by the OS. If you find your country is in non-compliance, analyse the reasons and draw up an action plan and timetable with the help of the IA. Immediately inform ImpCom (through the OS) and request approval of your action plan and benchmarks for return to compliance. It is much better to alert ImpCom and the OS to the problem, instead of waiting for them to find that your country is in non-compliance. They will be sympathetic, provided that your country displays eagerness to return to compliance.

# Annex 3: Quarantine and pre-shipment (QPS) uses of methyl bromide

## Annex 3.1: QPS uses and Montreal Protocol definitions

The methyl bromide (MB) used for quarantine and pre-shipment (QPS) applications is exempted from the MP's phase-out schedule, but the amount of MB imported/exported for QPS must be reported to the OS each year ⇨(section 5.1). Although QPS is exempt, Parties are urged to refrain from using QPS MB, use alternatives wherever possible, and minimise emissions (*Decision VII/5*).

**QPS uses**

Import/export commodities can carry unwanted pests, including insects, mites and fungi, which in some cases pose a threat to agriculture, health or the environment. MB fumigation is one of the methods currently used to treat commodities when necessary. There is a wide variety of alternative methods that can be used to manage these pests, provided that the treatment is approved or recognised by the quarantine (phytosanitary) authority of the importing country.

Some countries export perishable commodities (fruits, vegetables, flowers, etc.) which are typically kept cool after harvest in order to minimise decay. They have to be sold quickly, because their shelf life is often only a few days to several weeks, therefore rapid-acting treatments such as MB are very useful. Durable (dry) commodities such as grain and rice may be stored for long periods and can in some cases be treated while in storage to avoid the need for rapid treatments. Examples of QPS uses include:

- Fumigation of fruit or vegetables before export to meet the official phytosanitary requirements of the importing country for controlling an officially-listed quarantine pest (quarantine treatment)
- Fumigation of grain before export to meet the regulations of an importing country that requires fumigation of all imported grain consignments (pre-shipment treatment)

**MP Definitions of quarantine and pre-shipment**

***Quarantine*** refers to MB treatments that are required by a national government authority for the control of officially-listed quarantine pests. The treatment is officially authorised by a competent authority (e.g. the phytosanitary or quarantine authority of the importing or exporting country). Any MB treatments required by a commercial company (e.g. importing company or private fumigator) are **not** classified as quarantine treatments.

*'Quarantine applications', with respect to methyl bromide, are treatments to prevent the introduction, establishment and/or spread of quarantine pests (including diseases), or to ensure their official control, where:*

*i. Official control is that performed by, or authorized by, a national plant, animal or environmental protection or health authority;*

*ii. Quarantine pests are pests of potential importance to the areas endangered thereby and not yet present there, or present but not widely distributed and being officially controlled.* (*Decision VII/5*)

***Pre-shipment*** refers to MB treatments that are carried out before export to meet official requirements of the importing or exporting country, under the following circumstances only:

- The treatment is required by the official authorities of the importing or exporting country
- The pests are not classified as quarantine pests
- The MB treatment must be carried out within 21 days before export
- In cases where the exporting country requires an MB treatment, the requirement must have been in force prior to 7 December 1995 in the case of Article 5 countries (the date on which Decision VII/5 was adopted).

*Pre-shipment applications are those non-quarantine applications applied within 21 days prior to export to meet the official requirements of the importing country or existing official requirements of the exporting country. Official requirements are those which are performed by, or authorized by, a national plant, animal, environmental, health or stored product authority* (*Decision XI/12*).

MB treatments required by a commercial company (e.g. importing company or private fumigator) are **not** classified as quarantine treatments. Such treatments are classified as non-QPS and subject to the MP's phase-out schedule. Further information: OS *Methyl Bromide: Quarantine and Preshipment Uses*; TEAP 1999 Progress Report, vol. 2.

**Definition of official requirements for QPS treatments**

Official requirements under the Protocol refer to a national governmental authority that controls plant, animal, environmental or health standards. In most countries, these are the plant quarantine or phytosanitary offices within the ministry of agriculture. Official requirements are different from contractual requirements. Contractual requirements are requested by the contracts of importing or exporting companies in order to ensure a shipment free of pests.

**QPS Logic Diagram**

Distinguishing between QPS and non-QPS uses can be difficult, so TEAP has provided a decision tree, also called a *QPS Logic Diagram* ⇨(Figure 14). The QPS Logic Diagram can assist an NOU in deciding whether an MB treatment should be categorized as a 'quarantine' treatment or 'pre-shipment' treatment, or neither of these. If it is not a quarantine or pre-shipment use, the MB is classified as non-QPS and is due to be phased out by 1 January 2015.

**Reporting data on QPS**

All Parties are required to report the volume of MB imported (and produced) for QPS applications in their annual Article 7 ODS data report to the Ozone Secretariat ⇨(section 5.1). The Ozone Secretariat will deduct the QPS amount from the total MB imports reported (minus any MB exported) to calculate a country's MB consumption that needs to be phased out.

Submission of inaccurate data for QPS could result in incorrect calculations for a country's MB consumption, and could eventually put a country in non-compliance. So it is important that the national ODS licensing and reporting system covers all uses of MB including QPS.

# Annex 3.2: IPPC standards and recommendation

The International Plant Protection Convention (IPPC) is a multilateral treaty for co-operation on plant protection and plant health, to prevent the spread of quarantine pests. It meets under the auspices of the UN Food and Agriculture Organisation (FAO).

The IPPC has adopted an International Standard for Phytosanitary Measures no. 15 (ISPM 15) which aims to prevent the transfer of quarantine pests on wooden pallets and other wood packaging materials moving in international trade (IPPC *ISPM 15 Regulation of Wood Packaging Material in International Trade 2009*). This standard requires either MB treatment, or a heat treatment, or the use of processed wood, or the use of non-wood materials such as plastic pallets. ISPM 15 recognises that MB depletes the ozone layer (*p.5 of ISPM 15*) and encourages national quarantine authorities (national plant protection organisations, NPPOs) to promote the use of approved alternatives: *'NPPOs are encouraged to promote the use of alternative treatments approved in this standard' (p.12 of ISPM 15*).

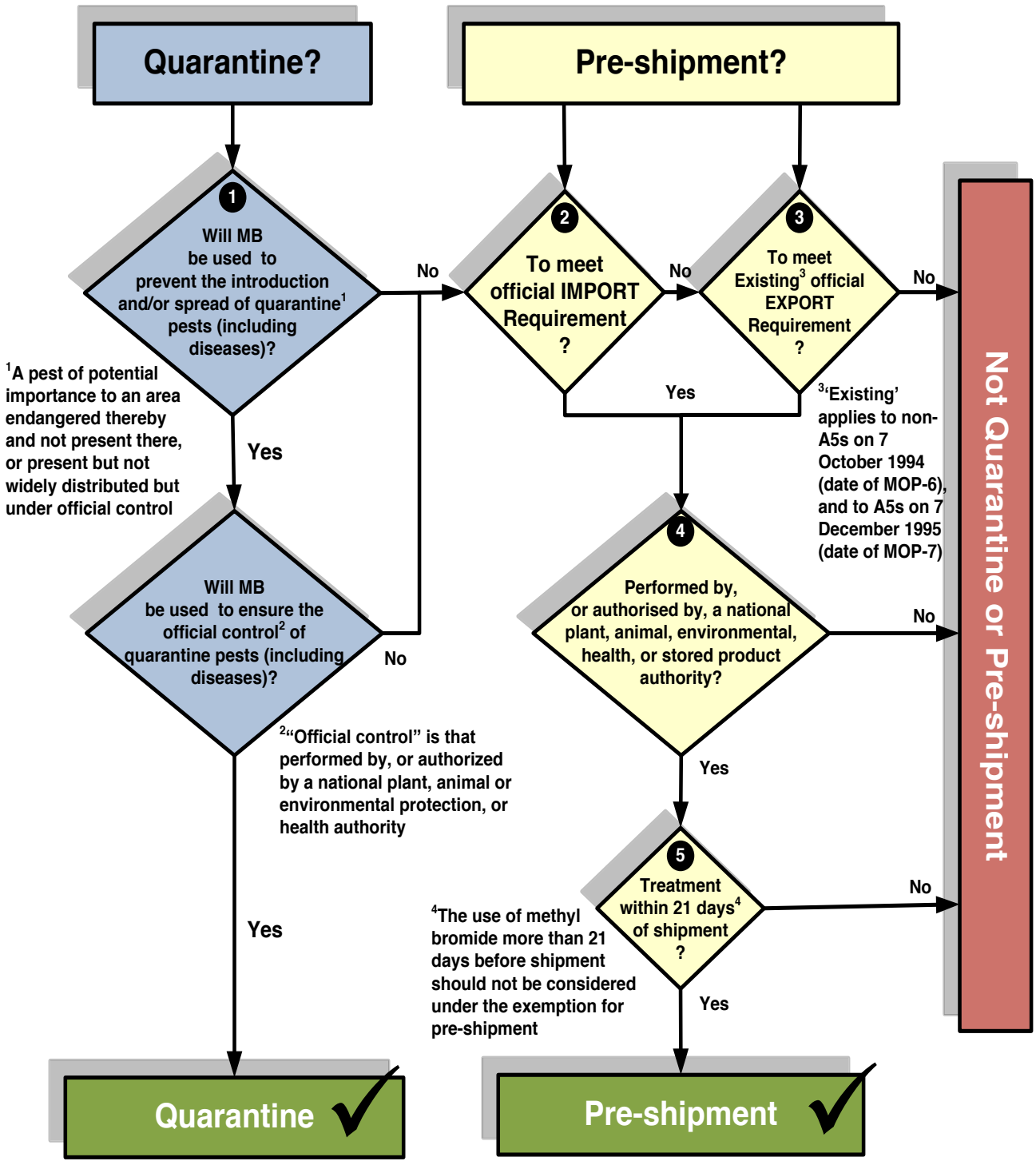
The IPPC has also adopted a *Recommendation* on methyl bromide (IPPC *Recommendation* on *Replacement or Reduction of the Use of MB as a Phytosanitary Measure*). The Recommendation notes that, to reduce the risk of introduction of some quarantine pests, the need for MB remains until a range of equivalent alternatives has been developed. *Inter alia*, it encourages Parties '*to put in place a strategy that will help them to reduce the use of MB for phytosanitary measures and/or reduce emissions of MB*'. The strategy may include the following areas for action: replacing MB use, reducing use, physically reducing emissions, accurately recording MB use (p.4-5). The IPPC Recommendation includes guidelines which encourage NPPOs to coordinate actions such as: considering how to change quarantine requirements to replace and/or reduce MB where alternatives exist; develop and use viable alternatives; communicate with other NPPOs about viable alternatives. Notably, the IPPC Guidelines also encourage the NPPO to coordinate with the NOU to:

- Facilitate the annual collection and reporting of MB usage data
- Implement a strategy to replace and reduce MB use, and
- Exchange information on MB alternatives for quarantine uses

(IPPC Guidelines for Appropriate Use of Methyl Bromide as a Phytosanitary Measure in p.6-7 of IPPC *Recommendation on MB*).
*Decision XX/6* of the Montreal Protocol refers to the IPPC Recommendation, also encouraging Parties to put in place a QPS strategy. The EU's QPS strategy document is available on the OS website (*EU strategy on QPS submitted under Decision XX/6*).

**QPS alternatives**
TEAP, the European Union, and others have published information about available alternatives for QPS for specific commodities and situations. The pesticide authorities of all EU member countries banned the use of MB for all QPS and non-QPS uses from 2010, because of concerns about safety aspects of this pesticide (Tables 4 and 5 in *EU strategy on QPS submitted under Decision XX/6; TEAP Quarantine and Preshipment Taskforce Report 2009; EPA Methyl Bromide Alternatives for applicators, commodity owners, shippers, and their agents*).

Figure 14 : QPS logic diagram (decision tree)
Start at question ❶



# Annex 4: Useful websites

The websites of the OzonAction Programme and of the implementing and bilateral agencies and the Ozone and Fund Secretariats have a wealth of data about their publications, programmes and events, and links to many useful websites of governments, industrial organisations and NGOs.

The *OzonAction website* provides links to the websites of all other implementing agencies, many industry associations, National Ozone Units, NGOs, equipment suppliers, secretariats and other international organisations and websites relating to government and policy, methyl bromide, science, research, UV monitoring, standards and meetings and conferences. The OzonAction website, in addition, has information about technologies, halon banks, trade names and many other issues.

**Ozone depletion and UV monitoring**

⇒ British Antarctic Survey: Antarctic ozone data
http://www.antarctica.ac.uk/met/jds/ozone/

⇒ Environment Canada: Ozone and Ultraviolet Research and Monitoring
http://es-ee.tor.ec.gc.ca/e/ozone/ozone.htm

⇒ Environment Canada: Ozone maps
http://exp-studies.tor.ec.gc.ca/cgi-bin/selectMap

⇒ European Ozone Research Coordinating Unit http://www.ozone-sec.ch.cam.ac.uk/

⇒ International Council for Science (ICSU) & WMO: World Data Center for Remote Sensing of the Atmosphere http://wdc.dlr.de/

⇒ National Aeronautics and Space Administration (NASA) Ozone Hole Watch
http://ozonewatch.gsfc.nasa.gov/

⇒ NASA: Ozone and air quality http://ozoneaq.gsfc.nasa.gov/

⇒ NASA: Simulation of consequences of widespread ozone loss
http://www.nasa.gov/topics/earth/features/world_avoided.html#

⇒ National Oceanic & Atmospheric Administration (NOAA): Global Monitoring Division http://www.esrl.noaa.gov/gmd/ and http://www.esrl.noaa.gov/gmd/odgi/

⇒ NOAA: Earth System Research Laboratory
http://www.esrl.noaa.gov/research/themes/o3/

⇒ NOAA: National Weather Service, Meteorological Conditions & Ozone in the Polar Stratosphere
http://www.cpc.ncep.noaa.gov/products/stratosphere/polar/polar.shtml

⇒ Switzerland: MeteoSwiss Ozone Monitoring
http://www.meteosuisse.admin.ch/web/en/weather/ozone_layer.html

⇒ World Meteorological Organization (WMO): Research on Stratospheric Ozone http://www.wmo.int/pages/prog/arep/gaw/ozone/index.html

⇒ WMO: Ozone Mapping Centre http://lap.physics.auth.gr/ozonemaps2/index.php

⇒ WMO & Environment Canada: World Ozone and UV Data Centre
http://www.woudc.org/index_e.html

⇒ UK: Stratospheric ozone and UV measurements
http://ozone-uv.defra.gov.uk/index.php

⇒ University of Cambridge: Ozone Hole Tour http://www.atm.ch.cam.ac.uk/tour/

**Government policies and legislation**

⇒ Australia: Department of Sustainability, Environment, Water, Population and Communities http://www.environment.gov.au/atmosphere/ozone/index.html
⇒ Austria: Umweltbundesamt (UBA) http://www.umweltbundesamt.at/en/
⇒ Canada: Environment Canada http://www.ec.gc.ca/ozone/default.asp?lang=En&n=9090CC46-1
⇒ China: Ministry of Environmental Protection http://english.mep.gov.cn/
⇒ Denmark: Environmental Protection Agency, Miljøstyrelsen http://www.mst.dk/English/
⇒ Germany: Umweltbundesamt (UBA) http://www.umweltbundesamt.de/
⇒ European Commission: Directorate-General for Climate Action http://ec.europa.eu/clima/policies/ozone/
⇒ India: Ministry of Environment and Forests Ozone Cell http://www.ozonecell.com/
⇒ Japan: Ministry of the Environment: http://www.env.go.jp/en/earth/
⇒ Korea: Institute of Environmental Science and Technology http://www.keiti.re.kr/eng/action.do
⇒ Netherlands: http://www.government.nl/issues/environment
⇒ Poland: Ministry of the Environment http://www.mos.gov.pl/?j=en
⇒ Sweden: Stockholm Environment Institute http://sei-international.org/
⇒ UK: Department for Environment, Food and Rural Affairs https://www.gov.uk/managing-fluorinated-gases-and-ozone-depleting-substances
⇒ USA: Department of Defense Environment, Safety and Occupational Health Network & Information Exchange http://www.denix.osd.mil/
⇒ USA: Environmental Protection Agency (EPA) Stratospheric Ozone Layer Protection http://www.epa.gov/ozone/strathome.html

**Ozone Secretariat, MLF, implementing agencies, bilateral agencies**

⇒ Ozone Secretariat http://ozone.unep.org/new_site/en/index.php
⇒ Multilateral Fund Secretariat www.multilateralfund.org
⇒ UNDP Montreal protocol Unit http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/
⇒ UNEP DTIE OzonAction Branch http://www.unep.org/ozonaction/
⇒ UNIDO Montreal Protocol Branch http://www.unido.org/montreal-protocol.html
⇒ World Bank's Montreal Protocol Operations Unit www.worldbank.org
⇒ GIZ Proklima www.giz.de/proklima
⇒ Swedish International Development Cooperation Agency (Sida) http://www.sida.se/English/

**Other organisations**

⇒ Alliance for Responsible Atmospheric Policy http://www.alliancepolicy.org/
⇒ American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) www.ashrae.org
⇒ Ammonia21.com www.ammonia21.com
⇒ Environmental Investigation Agency (EIA) http://www.eia-international.org/tag/montreal-protocol
⇒ Greenpeace International www.greenpeace.org
⇒ Hydrocarbons21.com www.hydrocarbons21.com
⇒ Institute for Governance and Sustainable Development (IGSD) www.igsd.org
⇒ NaturalRefrigerants.com www.naturalrefrigerants.com
⇒ R744.com carbon dioxide refrigeration www.r744.com
⇒ Shecco www.shecco.com

# Annex 5: Contacts

Seek assistance from contacts when you need information or advice. There are many experienced people around the world to help the NOO. Look around your own country first: present or past members of the NOU will have institutional memory about previous dealings. The national committee they established will include all stakeholders who will know a lot about their own sectors.

CAP is facilitating south-south cooperation for ozone layer protection. Please contact your regional CAP team for such initiatives.

International organisations like the Ozone and Fund Secretariats, the Implementing Agencies, the bilateral agencies active in the field, the OzonAction programme in Paris and the CAP team of your region are at the service of the NOO. Contact them for information or help.

**Ozone Secretariat**
United Nations Environment Programme
P.O. Box 30552, Nairobi 00100, Kenya
Tel: +254 20 762 3851/3611, Fax: +254 20 762 0335
Email: ozoneinfo@unep.org
Web: http://ozone.unep.org/new_site/en/index.php

**Multilateral Fund Secretariat**
Secretariat of the Multilateral Fund for the Implementation of the Montreal Protocol
Suite 4100
1000 de la Gauchetière Street West
Montreal H3B 4W5, Quebec, Canada
Tel: +1 514 282 1122, Fax: +1 514 282 0068
Email: secretariat@unmfs.org
Web: www.multilateralfund.org

**IMPLEMENTING AGENCIES OF MLF**

**United Nations Development Programme (UNDP)**
Montreal Protocol Unit, Environment & Energy Group
United Nations Development Programme
304 East 45th Street, Room FF-970, New York 10017
United States of America
Tel: +1 212 906 6687, Fax: +1 212 906 6947
Email: mpu.registry@undp.org
Web: http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/

**United Nations Environment Programme (UNEP)**
OzonAction Branch, United Nations Environment Programme
Division of Technology, Industry and Economics
15 rue de Milan, 75441 Paris CEDEX 09, France,
Tel: +331 4437 1450, Fax: +331 4437 1474
Email: ozonaction@unep.org
Web: http://www.unep.org/ozonaction/

**United Nations Industrial Development Organisation (UNIDO)**
Montreal Protocol Branch, United Nations Industrial Development Organization,
Vienna International Centre
Wagramerstr. 5
P.O. Box 300, Vienna A-1400, Austria
Tel: +43 126 026 3782, Fax: +43 126 026 6804
Email: s.si-ahmed@unido.org
Web: http://www.unido.org/montreal-protocol.html

**World Bank**
Montreal Protocol Operations Unit, World Bank
1818 H Street N.W. Washington, D.C. 20433, United States of America,
Tel: +1 202 473 5865 Fax: +1 202 522 3258
Email: kshepardson@worldbank.org
Web: http://www.worldbank.org/

**BILATERAL AGENCIES**

**GIZ Proklima**
Bernhard Siegele, Programme Manager
Environment and Climate Change, GIZ
Dag-Hammarskjold-Weg 1-5, Eschborn 65760, Germany
Tel: +49 6196 79 1968, Fax: +49 6196 7980 1968
Email: bernhard.siegele@giz.de
Web: www.giz.de/proklima

**Japan Ministry of Foreign Affairs**
Global Environment Division, International Cooperation Bureau,
Ministry of Foreign Affairs
2-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8901, Japan
Tel: +81 35501 8245, Fax: +81 35501 8244
Web: http://www.mofa.go.jp/policy/oda/

**Swedish International Development Cooperation Agency**
Swedish Environmental Protection Agency
Valhallavägen 195, Stockholm SE 106 48, Sweden, Tel: +46 10 698 1145, Fax: +46 10 698 1602
Email: husamuddin.ahmadzai@swedishepa.se
Web: http://www.sida.se and http://www.swedishepa.se/

**REGIONAL CONTACTS FOR UNEP COMPLIANCE ASSISTANCE PROGRAMME and REGIONAL NETWORKS**
Web: http://www.unep.org/ozonaction/RegionalNetworks/tabid/6203/Default.aspx

**UNEP Regional Office for Africa (ROA)**
Patrick Salifu, Regional Network Coordinator (French-Speaking Africa),
Yamar Guissé, Regional Network Coordinator (English-Speaking Africa)
UNEP Regional Office for Africa (UNEP ROA), PO Box 30552, Nairobi, Kenya,
Tel: +254 20 762 4281, Fax: +254 20 762 3165
Email: Patrick.Salifu@unep.org ; Yamar.Guisse@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/AfricaFrenchSpeaking/tabid/6205/Default.aspx; http://www.unep.org/ozonaction/RegionalNetworks/AfricaEnglishSpeaking/tabid/6204/Default.aspx

**UNEP Regional Office for Asia and the Pacific (ROAP)**
Atul Bagai, Regional Officer (Networking) for South Asia, UNEP Regional Office for Asia and the Pacific (ROAP), United Nations Building, 2B, Rajdamnern Nok Avenue, Bangkok 10200, Thailand, Tel: +66 2288 1662, Fax: +66 2280 3829
Email: atul.bagai@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/SouthAsia/tabid/6211/Default.aspx

Shaofeng Hu, Regional Network Coordinator (South East Asia and the Pacific, SEAP), UNEP Regional Office for Asia and the Pacific (ROAP), UN Building, 2B, Rajdamnern Nok Avenue, Bangkok 10200, Thailand, Tel: +662 288 2128, Fax: +662 280 3041
Email: shaofeng.hu@unep.org
Web:http://www.unep.org/ozonaction/RegionalNetworks/SouthEastAsiaPacific/tabid/6210/Default.aspx

Artie Dubrie, Regional Network Coordinator (Pacific Island Countries), UNEP Regional Office for Asia and Pacific (ROAP), UN Building, 2B, Rajadamnern Nok Avenue, Bangkok 10200, Thailand, Tel: +66 2288 1126, Fax: +66 2280 3041
Email: artie.dubrie@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/PacificIslandCountries/tabid/6209/Default.aspx

**UNEP Regional Office for Latin America and the Caribbean (ROLAC)**
Mirian Vega, Regional Network Coordinator (Latin America), OzonAction, UNEP Regional Office for Latin America and the Caribbean (ROLAC), Avenida Morse, Ciudad del Saber. Clayton, Edificio 132 Ciudad de Panamá, República de Panamá
Tel +507 305 3158, Fax: +507 305 3105
Email: mirian.vega@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/LatinAmericaCaribbean/tabid/6208/Default.aspx; http://www.pnuma.org/ozono/index.php

Marco A. Pinzon, Regional Network Coordinator (Caribbean), OzonAction, UNEP Regional Office for Latin America and the Caribbean (ROLAC), Avenida Morse, Ciudad del Saber. Clayton, Edificio 132 Ciudad de Panamá, República de Panamá
Tel. +507 305 3154, Fax: +507 305 3105
Email: marco.pinzon@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/LatinAmericaCaribbean/tabid/6208/Default.aspx; http://www.pnuma.org/ozono/index.php

**UNEP Regional Office for West Asia (ROWA)**
Abdulelah Alwadaee, Regional Network Coordinator (West Asia), UNEP Regional Office for West Asia (ROWA), P.O. Box 10880, Manama, Bahrain Tel: + 973 178 12760, Fax: +973 178 25110 / 1
Email: abdulelah.alwadaee@unep.org.bh
Web: http://www.unep.org/ozonaction/RegionalNetworks/WestAsia/tabid/6212/Default.aspx

**Eastern Europe & Central Asia Network**
Halvart Koeppen, Regional Officer for Europe and Central Asia, UNEP DTIE, OzonAction Programme, 15 rue Milan, Paris 75441, France, Tel +33 144 371 432, Fax: +33 144 371 474
Email: halvart.koppen@unep.org
Web: http://www.unep.org/ozonaction/RegionalNetworks/EuropeCentralAsia/tabid/6207/Default.aspx

# Annex 6: Glossary and acronyms

## Annex 6.1 List of acronyms

Many of the terms in this list are explained in the Glossary of terms ⇨(Annex 12.2)

| | |
|---|---|
| A2: | Article 2 Party, non-Article 5 Party |
| A5: | Article 5 Party |
| ASHRAE: | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| CAP: | Compliance Assistance Programme of UNEP |
| CDM: | Clean Development Mechanism of United Nations Framework Convention on Climate Change |
| CFC: | Chlorofluorocarbon |
| $CO_2$: | Carbon dioxide |
| $CO_2$eq: | Carbon dioxide equivalent |
| CP: | Country Programme |
| CTOC: | Chemicals Technical Options Committee of TEAP |
| DTIE: | Division of Trade, Industry and Economics of UNEP |
| EEAP: | Environmental Effects Assessment Panel |
| EU: | European Union |
| ExCom: | Executive Committee |
| F-gas: | Fluorinated greenhouse gas |
| GHG: | Greenhouse gas |
| GHS: | Globally Harmonized System of Classification and Labelling of Chemicals. |
| GIZ: | Deutsche Gesellschaft für Internationale Zusammenarbeit (formerly GTZ) |
| GTZ: | Deutsche Gesellschaft für Technische Zusammenarbeit (now called GIZ ) |
| GWP: | Global Warming Potential |
| HC: | Hydrocarbon |
| HCFC: | Hydrochlorofluorocarbon |
| HFC: | Hydrofluorocarbon |
| HPMP: | HCFC Phase-out Management Plan |
| HPPMP: | HCFC Production Phase-out Management Plan |
| HS codes: | Harmonized System of Customs Codes |
| HTOC: | Halon Technical Options Committee of TEAP |
| IA: | Implementing Agency |
| IPCC: | Intergovernmental Panel on Climate Change |
| IPPC: | International Plant Protection Convention |
| LCCP: | Life-cycle Climate Performance |
| LVC: | Low-Volume Consuming Country |
| MAC: | Mobile air-conditioning |
| MBTOC: | Methyl Bromide Technical Options Committee of TEAP |

| | |
|---|---|
| MDI: | Metered-dose inhaler |
| MOP: | Meeting of the Parties |
| MLF: | Multilateral Fund |
| MFS or MLFS: | Multilateral Fund Secretariat |
| MP: | Montreal Protocol on Substances that Deplete the Ozone Layer |
| MTOC: | Medical Technical Options Committee of TEAP |
| NIKA: | Not-in-kind alternatives |
| Non-A5: | Non-Article 5 Party |
| Non-LVC: | Non-Low-Volume Consuming Country |
| NOO: | National Ozone Officer |
| NOU: | National Ozone Unit |
| NPP: | National Phase out Plan |
| $O_3$: | Ozone |
| ODP: | Ozone Depletion Potential |
| ODS: | Ozone depleting substance |
| OEWG: | Open-ended Working Group |
| OS: | Ozone Secretariat |
| QPS: | Quarantine and pre-shipment uses of methyl bromide |
| RMP: | Refrigerant Management Plan |
| RTOC: | Refrigeration, Air-Conditioning and Heat Pumps Technical Options Committee of TEAP |
| SAP: | Scientific Assessment Panel |
| TEAP: | Technology and Economic Assessment Panel |
| TOC: | Technical Options Committee of TEAP |
| TPMP: | Terminal Phase out Management Plan |
| UNDP: | United Nations Development Programme |
| UNEP: | United Nations Environment Programme |
| UNFCCC: | United Nations Framework Convention on Climate Change |
| UNIDO: | United Nations Industrial Development Organisation |
| VC: | Vienna Convention for the Protection of the Ozone Layer |

# Annex 6.2 Glossary of terms

**Annex A substances:** Controlled ozone-depleting substances listed in Annex A of the Montreal Protocol, comprising five CFCs (Group I) and three halons (Group II).

**Annex B substances:** Controlled ozone-depleting substances listed in Annex B of the Montreal Protocol, comprising 10 other CFCs (Group I), carbon tetrachloride (Group II) and methyl chloroform (Group III).

**Annex C substances:** Controlled ozone-depleting substances listed in Annex C of the Montreal Protocol, comprising 34 HCFCs (Group I), 34 HBFCs (Group II) and Bromochloromethane (Group III).

**Annex E substance:** Controlled ozone-depleting substance listed in Annex E of the Montreal Protocol, comprising methyl bromide only (Group I).

**Article 2 Party (A2):** Refer to Non-Article 5 Party below.

**Article 5 Party (A5):** A developing country which has ratified the Montreal Protocol and has consumed less than 0.3 kg/capita of Annex A ODS and less than 0.2 kg/capita of Annex B ODS, per annum. Such countries fall under the provisions of Article 5(1) of the Protocol, and are subject to the ODS phase-out schedules stated in Article 5. A5 Parties are eligible for MLF assistance.

**Atmospheric lifetime:** The time it takes for 67% of the molecules of a substance to be removed from the atmosphere.

**Atmospheric mixing ratio:** The fractional composition of a chemical in the atmosphere relative to the sum of all air molecules in the atmosphere. The mixing ratio of a chemical is the number of molecules of X in a unit volume divided by the number of air molecules in a unit volume. Mixing ratios are usually expressed as parts-per-million (ppm), parts-per-billion (ppb), or parts-per-trillion (ppt).

**Baseline or base level:** The amount of controlled substances consumed by a Party in specified year(s), used as the benchmark for calculating ODS reductions to meet the phase-out schedule.

**Bilateral agency:** Non-Article 5 Parties are allowed to spend up to 20% of their contributions to the MLF bilaterally or directly with partner Article 5 Parties, provided the projects are approved by the Executive Committee of the MLF. Australia, France, Germany, Sweden, UK and USA are some of the countries that have operated bilateral ozone programmes with Article 5 Parties.

**Carbon dioxide ($CO_2$):** A greenhouse gas which has a Global Warming Potential (GWP) of 1.0.

**Carbon dioxide equivalent ($CO_2$eq):** A means of comparing the emissions of various climate change agents, using common units. A quantity that describes, for a given mixture and amount of greenhouse gas, the amount of carbon dioxide that would have the same global warming ability, when measured over a specified timescale.

**Chlorofluorocarbons (CFCs):** ODS used commonly as refrigerants, blowing agents, solvents and aerosol propellants. Already phased out worldwide according to the Montreal Protocol phase-out schedules and replaced with HCFCs, HFCs and other alternatives, with few exempted uses still remaining. CFCs are also potent green-house gases.

**Chemicals Technical Options Committee (CTOC):** One of the sub-committees of TEAP (see below).

**Clean Development Mechanism (CDM):** A funding mechanism of the UN Framework Convention on Climate Change (UNFCCC).

**Compliance Assistance Programme of UNEP (CAP):** A MLF-funded programme to assist Article 5 parties in achieving compliance with the provisions of the Montreal Protocol, managed by UNEP DTIE OzonAction Programme. A team of professionals is located in each regional office of UNEP.

**Conference of the Parties (COP):** The highest decision-making body of the Parties to the Vienna Convention.

**Consumption:** The annual quantity of controlled substances consumed in a Party, defined as ODS production plus imports minus exports minus exempted uses.

**Controlled substances:** All chemicals listed in Annexes A, B, C, and E to the Montreal Protocol, whether existing as pure substances or in mixtures.

**Country Programme (CP)**: Article 5 Parties received assistance from the MLF to elaborate a Country Programme containing data on current and forecast ODS production and consumption, phase-out projects and strategy, institutional framework and more. The Fund provided guidelines for and offered assistance in preparing the Country Programme. The most recent Party, South Sudan, will prepare its CP as part of its HPMP.

**Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ, formerly GTZ)**: An international technical cooperation organisation funded by the German government and bilateral agency of the MLF. GIZ's Proklima programme provides bilateral policy, technical and financial assistance for Article 5 Parties to phase-out ODS and adopt climate-friendly solutions.

**Drop-in alternatives:** ODS-free substances that can be used in existing equipment with some or no modification to the equipment.

**European Union (EU):** An economic and political union composed of 27 sovereign countries (member states) located primarily in Europe.

**Executive Committee (ExCom):** The Executive Committee of the Multilateral Fund (MLF), which decides on the operational policies of the MLF.

**Exempted uses:** Some specific uses of ODS that are exempted from the Montreal Protocol's phase-out schedules, although they need to be reported by Parties each year. They include feedstock, amount of ODS destroyed, used ODS, QPS uses of methyl bromide, laboratory and analytical uses, essential uses, critical uses, and process agents.

**Feedstock:** ODS that are used as raw materials for the manufacture of other chemicals and are completely transformed in the process. For example, carbon tetrachloride is commonly used in the production of CFCs. ODS entirely used as feedstock are exempt from the phase-out schedules, but they have to be reported annually by Parties.

**Fluorinated gases (F-gases):** Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride(SF6) are collectively called fluorinated gases. They are synthetic, powerful greenhouse gases.

**Fund Secretariat:** Refers to Multilateral Fund Secretariat below.

**Greenhouse gas (GHG):** A gas that causes the Earth's atmosphere to become warmer.

**Global warming (climate change):** A phenomenon caused by emissions of green—house gases that trap the outgoing heat from the earth, causing the atmosphere to become warmer. Major greenhouse gases include carbon dioxide, nitrous oxide, methane, CFCs, HFCs, and HCFCs.

**Global Warming Potential (GWP):** A relative index number that enables comparison of the climate effect of the emissions of various greenhouse gases. Carbon dioxide (GWP 1.0) is used as the benchmark gas. The 20-year GWP of a substance is calculated for a time horizon of 20 years, while a 100-year GWP is calculated for a time horizon of 100 years.

**GWP-weighted:** GWP weighting is used to express the relative climate impact of a substance, compared to $CO_2$. GWP-tonnes, for example, are calculated by multiplying the tonnage of a substance by its GWP.

**Halon Technical Options Committee (HTOC):** One of the sub-committees of TEAP (see below).

**Harmonized Commodity Description and Coding System (HS codes):** A multi-purpose international nomenclature developed by the World Customs Organization (WCO) for the classification of import/export goods. It comprises about 5,000 commodity groups; each identified by a six-digit code, and is arranged in a legal and logical structure, supported by defined rules. The system is used by more than 200 countries as a basis for their Customs tariffs and for the collection of international trade statistics.

**Harmonized System (HS) of Customs Codes:** In most countries imports and exports are registered using the internationally Harmonized System (HS) of custom codes maintained by the World Customs Organization. The HS has been adjusted to include separate codes for some of the controlled substances when traded as pure chemicals. Knowledge about the relevant customs codes can be helpful for collecting import and export data of controlled substances.

**Hydrocarbons (HC):** Substances containing carbon and hydrogen; used as alternatives to CFCs, HCFCs and HFCs.

**Hydrochlorofluorocarbons (HCFCs):** ODS of relatively low ODP which replaced many applications of CFCs. Now being phased-out following an accelerated schedule established under the Montreal Protocol. HCFCs are potent greenhouse gases.

**HCFC Phase-out Management Plan (HPMP):** A type of MLF project; a national plan for phasing out HCFCs in Article 5 countries.

**HCFC Production Phase-out Management Plan (HPPMP):** A type of MLF project; a national plan for phasing out HCFC production. Currently this project is being implemented in China.

**Hydrofluorocarbons (HFCs):** Substances which do not deplete ozone layer, but are potent greenhouse gases included in the Kyoto Protocol under the UN Framework Convention on Climate Change (UNFCCC). Commonly used as replacements for CFCs and HCFCs.

**Intergovernmental Panel on Climate Change (IPCC):** An international panel that analyses and reports on information related to climate change science, mitigation, and other aspects.

**Implementation Committee (ImpCom):** The Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol makes recommendations to the Meeting of the Parties to improve the implementation of the Protocol and on actions in case of non-compliance.

**Implementing Agencies (IAs):** Programmes of the Multilateral Fund are implemented through the Implementing Agencies UNDP, UNEP, UNIDO and the World Bank.

**Incremental costs:** The additional cost that the Multilateral Fund finances. These are the additional costs incurred in converting to ozone-friendly technologies. An indicative list of the categories of incremental costs has been decided by the Meeting of the Parties.

**Indirect climate effects:** Climate impacts caused by the use of a product, such as its energy consumption, and the energy used during its manufacture or entire life-cycle. In the case of foam insulation, this may include the energy saved during the product lifetime, as well as the energy used to manufacture the product.

**Licensing system:** Each Party that has ratified the Montreal Amendment of 1997 of the Montreal Protocol, has to adopt an import/export licensing system for monitoring the trade in controlled substances by 1 January 2000.

**Life-cycle Climate Performance (LCCP):** An analysis of the total potential direct and indirect climate impacts of specific product or system, such as an air-conditioning system used in a specific location, or a foam product used in a specific application. There are many different methods for calculating LCCPs, and some are considered to be more robust than others.

**Low-Volume Consuming Countries (LVC):** These are Article 5 Parties that consume less than 360 tonnes of Annex A and B ODS annually. The Executive Committee made special provisions for facilitating phase-out in these countries.

**Mobile air-conditioning (MAC):** Systems for cooling the air inside transport vehicles.

**Methyl Bromide Technical Options Committee (MBTOC):** One of the sub-committees of TEAP (see below).

**Metered-Dose Inhaler (MDI):** Medical pharmaceutical products that contain an active drug dissolved or suspended in CFC or an alternative gas, for patients with respiratory problems.

**Meeting of the Parties (MOP):** All the Parties to the Protocol meet once in a year at a ministerial/high level and take decisions on many issues including non-compliance, replenishment of the Fund, etc.

**Mixtures of ODS:** Chemicals which contain two or more controlled substances or one or more controlled substances mixed with other non-ozone depleting chemicals are defined as mixtures of ODS. For an illustrative list of mixtures used as refrigerants and fumigants, see UNEP DTIE's Inventory of Trade Names of Chemical Products Containing ODS and Their Alternatives.

**Multilateral Fund (MLF):** The Multilateral Fund for the Implementation of the Montreal Protocol was established in 1991 to assist Article 5 Parties to implement the control measures.

**Multilateral Fund Secretariat (MFS or MLFS), also known as the Fund Secretariat:** A Secretariat which supports the work of the Executive Committee of the Multilateral Fund (MLF), located in Montreal, Canada.

**Montreal Protocol (MP):** The Montreal Protocol for Substances that Deplete the Ozone Layer is an international treaty established in 1987 in the framework of Vienna Convention for the Protection of the Ozone Layer.

**Medical Technical Options Committee (MTOC):** One of the sub-committees of TEAP (see below).

**Not-in-kind alternative (NIKA):** Products or technologies not that do not use ODS or other halocarbons. Not-in-kind alternative technologies achieve the same function without using ODS, typically by using an alternative approach or unconventional technique. Examples include the use of stick or spray pump deodorants to replace CFC-12 aerosol deodorants; the use of insulation fibres to replace CFC, HFC or HCFC insulating foam; and the use of dry powder inhalers (DPIs) to replace CFC or HFC metered-dose inhalers (MDIs).

**Non-Article 5 Party (Non-A5, A2 Party):** An industrialised country which has ratified the Montreal Protocol and has consumed more than 0.3 kg/capita of Annex A ODS, or more than 0.2 kg/capita of Annex B ODS per annum. These countries are subject to the ODS phase-out schedules in Article 2 of the Montreal Protocol, and are not eligible for MLF assistance. Also called Article 2 Party.

**Non-Low Volume Consuming Country (non-LVC):** Article 5 Party that consumes more than 360 tonnes of Annex A and B ODS annually.

**Non-Party:** A country whose government has not ratified the Montreal Protocol, or one of its specific Amendments, is a Non-Party to the Protocol or to that particular amendment.

**National Ozone Unit (NOU):** The government unit or agency that is responsible for the national ODS phase out strategy and implementation.

**National Phase out Plan (NPP):** A type of MLF project for total phase-out of ODS in Article 5 Parties that consume larger quantities of ODS (non-Low-Volume Consuming Countries, non-LVCs).

**Ozone Depletion Potential (ODP):** A value indicating the impact of an ozone-depleting substance on the stratospheric ozone layer (per unit mass of gas) compared to the same mass of CFC-11 (ODP = 1.0). The Annexes of the Montreal Protocol list the estimated ODP values for all controlled substances.

**ODP-tonnes, ODP-weighted tonnes:** ODP-weighted data are generated when the quantity of a controlled ozone-depleting substance in tonnes or kilograms is multiplied by its ODP value. By this procedure, metric tonnes are converted into ODP tonnes. This indicates the relative environmental damage compared to CFC-11.

**Ozone depleting substance (ODS):** A substance that depletes the Earth's protective ozone layer. The ODS controlled under the Montreal Protocol include: CFCs, halons, carbon tetrachloriode, methyl chloroform, HCFCs, HBFCs, methyl bromide, bromochloromethane.

**Open-ended Working Group (OEWG):** All the Parties to the Protocol meet once in a year at official level to discuss all the issues to be considered by the MOP and make recommendations.

**Ozone depletion:** A process by which stratospheric ozone molecules are destroyed by man-made chemicals, leading to a reduction in the total concentration of ozone.

**Ozone Secretariat (OS):** The Ozone Secretariat is the Secretariat for the Vienna Convention and the Montreal Protocol. It is based at UNEP headquarters in Nairobi, Kenya.

**Party or Parties:** A country (or regional economic integration organisation, such as the EU) which has ratified the Montreal Protocol or relevant Amendments. A Party is legally committed to fulfil the obligations of the Protocol and Amendments that it has ratified.

**Pre-shipment applications:** Methyl bromide (MB) applied within 21 days before the export of a commodity to meet the official phytosanitary or sanitary requirements of the exporting or importing country. Pre-shipment uses of MB are exempted from the phase-out schedules (Articles 2 and 5), however Parties must report the data.

**Process agent:** ODS used in the production of other chemicals (such as a catalyst or an inhibitor of a chemical reaction) without being consumed as feedstock. Some uses of process agents are exempted.

**Production:** Under the Montreal Protocol, production is defined as total ODS production minus amounts destroyed minus amounts used as feedstock.

**Quarantine uses:** Methyl bromide (MB) used to prevent the introduction, establishment and/or spread of officially-listed quarantine pests (including diseases) and/or to ensure their official control. Quarantine uses of MB are exempted from the phase-out schedule (Articles 2 and 5), however Parties have to report the data.

**Radiative Forcing:** A measure of how a greenhouse gas influences the energy balance of Earth, with a positive value indicating a net heat gain in the lower atmosphere, which leads to a globally average surface temperature increase, and a negative value indicating a net heat loss.

**Reclaimed substances:** Recovered ozone-depleting substances that have been cleaned to a specified quality. Imports and exports of reclaimed substances need to be reported but are not included in the calculation of a Party's annual ODS consumption. Reclamation is defined as 'The re-processing and upgrading of a recovered controlled substance through such mechanisms as filtering, drying, distillation and chemical treatment in order to restore the substance to a specified standard of performance. It often involves processing "off-site" at a central facility' (Decision IV/24).

**Recovered substances:** Ozone-depleting substances that have been collected from equipment, during servicing or prior to disposal, are exempted from controls but need to be reported. Recovery is defined as 'The collection and storage of controlled substances from machinery, equipment, containment vessels, etc., during servicing or prior to disposal' (Decision IV/24).

**Recycled substances:** The re-use of a recovered controlled substance following a basic cleaning process such as filtering and drying. For refrigerants, recycling normally involves recharge back into equipment and it often occurs "on-site" (Decision IV/24).

**Refrigerant Management Plan (RMP):** A type of MLF project; a national plan for phasing-out CFCs in Article 5 Parties that consume low volumes of ODS (Low-Volume Consuming Countries, LVC).

**Refrigeration, Air-Conditioning and Heat Pumps Technical Options Committee (RTOC):** One of the sub-committees of TEAP (see below).

**Scientific Assessment Panel (SAP):** An international expert panel of atmospheric scientists which compiles reports on the scientific aspects of ozone depletion for the Montreal Protocol parties.

**Short-lived climate forcers:** Substances that influence climate but whose influence is quickly reduced once their emissions cease, because these molecules are quickly removed from the atmosphere.

**Stratosphere:** A layer of the Earth's atmosphere located roughly 15 to 45 km above Earth's surface.

**Stratospheric ozone:** Ozone ($O_3$) gas that is present in the stratosphere (see above).

**Technology and Economic Assessment Panel (TEAP):** An international technical panel that provides technical information about ODS and alternatives to the Montreal Protocol Parties. TEAP reports are available on the Ozone Secretariat website.

**Technical Options Committee (TOC):** Technical Options Committees are sub-committees of TEAP. The current TOCs are: Chemicals Technical Options Committee (CTOC), Flexible and Rigid Foams Technical Options Committee (FTOC), Halons Technical Options Committee (HTOC), Medical Technical Options Committee (MTOC), Methyl Bromide Technical Options Committee (MBTOC), and the Refrigeration, Air-conditioning and Heat Pumps Technical Options Committee (RTOC). These committees have hundreds of members from all over the world including A5 Parties. Their reports are available on the Ozone Secretariat website.

**Terminal Phase out Management Plan (TPMP):** A type of MLF project; a national plan for phasing-out ODS in Article 5 Parties that consume lower quantities of ODS (LVCs), primarily for managing the phase out of CFCs in the refrigeration sector.

**Trade names:** Trade names indicated on product packaging. Pure ODS and mixtures of ODS are often sold by companies under commercial trade names, rather than the name of the ODS. Knowledge about trade names helps customs and NOUs to identify ODS. An inventory of trade names is available on UNEP DTIE OzonAction Programme's website

**Transitional substance:** Interim or temporary ODS substitutes that were introduced on the basis that that their use would cease after more environmentally acceptable alternatives were developed. The term normally refers to HCFCs.

**United Nations Development Programme (UNDP):** A UN agency; one of the Implementing Agencies of the MLF.

**United Nations Environment Programme, Division of Trade, Industry and Economics (UNEP DTIE):** A UN agency; one of the implementing agencies of the MLF, managing the OzonAction Programme, CAP and Regional ozone networks.

**United Nations Framework Convention on Climate Change (UNFCCC):** Multilateral environmental agreement on climate change.

**United Nations Industrial Development Organisation (UNIDO):** A UN agency; one of the Implementing Agencies of the MLF.

**Used substances:** ODS that have been used in equipment, or as part of a product, or manufacturing process. They are recovered, reclaimed or recycled prior to re-use.

**World Bank:** An international development institution and one of the Implementing Agencies of the MLF.

# Notes

**1.** ODS groups that are exempted from the phase-out schedules are typically not counted in such figures, because they are not counted when ODS production and consumption are calculated.

**2.** Decisions that adopt Adjustments do amend the Articles.

**3.** By January 2013, a small number of countries had not ratified the Montreal and Beijing Amendments

**4.** The control measures also apply to production in the case of countries that produce ODS.

**5.** Note that A5 Parties report ODS use data to the MLF Secretariat but not to the Ozone Secretariat. ⇨(section 5.2)

**6.** Except for exempted uses.

**7.** Methyl chloroform's schedule is not shown in Table 3 because almost all Parties have phased it out.

**8.** Articles 2 and 5 do not contain an exemption mechanism for HCFCs after phase-out. However, *Decision XIX/6(12)* agreed to address the possibilities or need for essential use exemptions for HCFCs in future (by 2015 in the case of A2 Parties, and by 2020 in the case of A5 Parties).

**9.** The assessment is carried out by the relevant TOC, e.g. MTOC for medical uses, CTOC for aerospace uses.

**10.** In countries that produce ODS, similar reporting requirements apply to ODS production.

**11.** However some Parties have chosen to include them in Article 7 reports.

**12.** Pursuant to decision 63/4(b)(ii), the Secretariat updated the reporting system to remove CFC, CTC and halon for the 2012 reporting year and beyond. For reporting data using the web-based system for the year 2011 and earlier the following link should be used: *http://www.multilateralfund.org/cp* while for reporting data for 2012 and beyond the following link should be used: *http://www.multilateralfund.org/cpnew*. Data reporting forms in Microsoft Excel format for the appropriate years are also available for download from *http://www.multilateralfund.org/Our%20Work/countries/default.aspx.*

**13.** Covering new, used, recycled and reclaimed controlled substances in Annexes A, B, C and E.

**14.** Refer to Ozone Secretariat FAQ: Which Parties must report transhipment of ODS and import for re-export of ODS?

**15.** Annex A and B substances.

**16.** Countries involved with bilateral projects have included Australia, Austria, Canada, Czech Republic, Finland, France, Germany, Japan, Poland, Sweden, United Kingdom of Great Britain and Northern Ireland, United States of America and others.

**17.** ExCom Decision 62/11 allows the submission of stage I of the HPMPs to assist former LVC countries with HCFC consumption in the refrigeration servicing sector only, that was above 360 metric tonnes, to meet control measures up to 2020 on the understanding that the level of funding provided would be considered on a case-by-case basis until otherwise decided.

**18.** Except for QPS uses, which are currently exempted from phase-out.

**19.** HPMP preparation funds can be provided if the government makes a commitment to ratify. Ratification of the Beijing Amendment is necessary for obtaining MLF funds for phasing out HCFC production.

# NOO Guide web links list

## Page 12

Handbook on Data Reporting under the Montreal Protocol:
http://ozone.unep.org/Data_Reporting/Data_Reporting_Tools/data-reporting-handbook.e.pdf

Handbook on Methyl Bromide Data Reporting:
http://www.unep.fr/ozonaction/information/mmcfiles/1671-e.pdf

HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

Planning, Designing and Implementing Policies to Control ODS under the Montreal Protocol:
http://www.unep.fr/ozonaction/information/mmcfiles/3972-e-policyhandbook.pdf

## Page 13

*Regulations to Control ODS: A Guide Book:*
http://www.unep.fr/ozonaction/information/mmcfiles/3946-e-fulldocument.pdf

UNEP HCFC Help Centre: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/tabid/6426/Default.aspx#policy

Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer:
http://ozone.unep.org/Publications/MP_Handbook/MP-Handbook-2012.pdf

MP Articles: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=5

MP Decisions: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=25

OzonAction homepage: http://new.unep.org/ozonaction/Home/tabid/5467/Default.aspx

OzoNews: http://www.unep.org/ozonaction/News/tabid/6235/Default.aspx

Ozone Secretariat's Highlights webpage: http://ozone.unep.org/new_site/en/ozone_highlights.php?year=2013

*Annotated agenda*: http://ozone.unep.org/new_site/en/ozone_highlights.php?year=2013

*Issues for discussion*: http://ozone.unep.org/new_site/en/ozone_highlights.php?year=2013

Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer:
http://ozone.unep.org/Publications/MP_Handbook/MP-Handbook-2012.pdf

Link to Source of Figure 3:
http://www.ehp.qld.gov.au/state-of-the-environment/report-2007/contents/atmosphere_stratospheric_ozone_depletion.html
http://ozone.unep.org/Publications/MP_A_Success_in_the_making-E.pdf

## Page 18

Environmental Effects Panel reports: http://ozone.unep.org/new_site/en/assessment_panels_bodies.php?committee_id=8

## Page 20

OzonAction website: http://www.unep.org/ozonaction/Topics/OzoneHoleScience/tabid/6222/Default.aspx

UNEP *Vital Ozone Graphics 2.0:* UNEP *Resource kit for journalists*:
http://www.unep.fr/ozonaction/information/mmcfiles/6348-e-VOG2.pdf

OS Montreal Protocol Information Kit: http://ozone.unep.org/new_site/en/Information/25th_anniversary_info_kit.php

WMO Scientific Assessment Panel report:
http://ozone.unep.org/new_site/en/assessment_panels_bodies.php?committee_id=7

World Meteorological Organization ozone website: http://www.wmo.int/pages/prog/arep/gaw/ozone/index.html

NASA Ozone Hole Watch: http://ozonewatch.gsfc.nasa.gov/

## Page 21

OS Montreal Protocol Information Kit: http://ozone.unep.org/new_site/en/Information/25th_anniversary_info_kit.php

UNEP OzonAction Newsletter Special Issues:
http://www.unep.org/ozonaction/News/OzonActionNewsletter/tabid/6238/Default.aspx

## Page 22

UNEP HFCs: A Critical Link in Protecting Climate and the Ozone Layer:
http://www.unep.org/dewa/Portals/67/pdf/HFC_report.pdf

Adjustments: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=343

Amendments: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=344

OS Montreal Protocol Information Kit: http://ozone.unep.org/new_site/en/Information/25th_anniversary_info_kit.php

Ratification status: http://ozone.unep.org/new_site/en/treaty_ratification_status.php

## Page 23

Vienna Convention: http://ozone.unep.org/new_site/en/vienna_convention.php

Montreal Protocol: http://ozone.unep.org/new_site/en/montreal_protocol.php

Amendments: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=344

Adjustments: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=343

Ozone Day: http://ozone.unep.org/new_site/en/ozone_day_details.php?year=2012

Adjustment of 2007: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=2130

Decision XIX/6: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=614

## Page 24

OS Montreal Protocol Information Kit: http://ozone.unep.org/new_site/en/Information/25th_anniversary_info_kit.php

ExCom report to MOP-24:
http://conf.montreal-protocol.org/meeting/mop/mop-24/presession/PreSession%20Documents/MOP24-9E.pdf

## Page 28

Reports of MOP meetings: http://ozone.unep.org/new_site/en/committee_documents.php?committee_id=1

MOP Decisions: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=25

MOP rules of procedure: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=149

Reports of OEWG meetings: http://ozone.unep.org/new_site/en/committee_documents.php?committee_id=3

OS website: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=25

Handbook of the Montreal Protocol: http://ozone.unep.org/Publications/MP_Handbook/MP-Handbook-2012.pdf

Handbook of the Vienna Convention: http://ozone.unep.org/Publications/VC_Handbook/VC-Handbook-2012.pdf

Reports of COP meetings: http://ozone.unep.org/new_site/en/committee_documents.php?committee_id=2

## Page 29

MOP Decisions on the Non-Compliance Procedure:
http://ozone.unep.org/Meeting_Documents/impcom/MOP_decisions_on_NCP.pdf

OS Primer for ImpCom Members: http://ozone.unep.org/Publications/ImpCom_Primer_for_parties.pdf

## Page 30

List of Article 5 Parties: http://ozone.unep.org/new_site/en/parties_under_article5_para1.php

Decision IX/8: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=224

List of focal points of all Parties:
http://ozone.unep.org/new_site/en/ozone_data_tools_focal_points_licensing_systems.php

About the Secretariat: http://ozone.unep.org/new_site/en/about_the_secretariat.php

Handbook for the Montreal Protocol: http://ozone.unep.org/Publications/MP_Handbook/MP-Handbook-2012.pdf

Handbook for the Vienna Convention: http://ozone.unep.org/Publications/VC_Handbook/VC-Handbook-2012.pdf

OS website: http://ozone.unep.org/new_site/en/index.php

## Page 31

UNEP Assessment Panels: http://ozone.unep.org/new_site/en/assessment_panels_main.php

Terms of Reference: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=826

Guidelines for disclosure of interests: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=590

TEAP progress reports:
http://ozone.unep.org/new_site/en/assessment_docs.php?committee_id=6&committee=Technology%20and%20Economic%20Assessment%20Panel&committee_acronym=TEAP&body_id=

TEAP assessment reports:
http://ozone.unep.org/new_site/en/assessment_docs.php?committee_id=6&committee=Technology%20and%20Economic%20Assessment%20Panel&committee_acronym=TEAP&body_id=

TEAP Terms of Reference: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=886

Members of TEAP and TOCs: http://ozone.unep.org/new_site/en/assessment_panels_bodies.php?committee_id=6

## Page 32

Scientific Assessment reports and members:
http://ozone.unep.org/new_site/en/assessment_panels_bodies.php?committee_id=7

Terms of Reference: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=826

EEAP reports and members: http://ozone.unep.org/new_site/en/assessment_panels_bodies.php?committee_id=8

Synthesis Report: http://ozone.unep.org/Meeting_Documents/oewg/31oewg/OEWG-31-3E.pdf

List of experts: http://ozone.unep.org/new_site/en/teap_experts_required.php

## Page 35

Adjustments: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=343

London Amendment: http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=3&secID=92

Copenhagen Amendment: http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=3&secID=93

Montreal Amendment: http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=3&secID=94

Beijing Amendment: http://ozone.unep.org/new_site/en/Treaties/treaty_text.php?treatyID=3&secID=95

MOP Decisions: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=25

## Page 37

OS Status of ratification: http://ozone.unep.org/new_site/en/treaty_ratification_status.php

Articles: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=5

Article 1: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=7

Article 2: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=8

## Page 38

Articles 2A to 2I: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=5

Annex A: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=39

B: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=40

C: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=41

E: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=43

Article 3: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=18

Article 4: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=19

Article 4A: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=20

Article 4B: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=21

Article 5: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=22

List of Article 5 Parties: http://ozone.unep.org/new_site/en/parties_under_article5_para1.php

## Page 39

Article 6: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=23

Article 7: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=24

Article 8: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=25

Article 9: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=26

Article 10: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=27

Decision IV/18: http://ozone.unep.org/Meeting_Documents/mop/04mop/4mop-15.e.pdf

MoP-4 report: http://ozone.unep.org/Meeting_Documents/mop/04mop/4mop-15.e.pdf

Article 10A: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=28

Article 12: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=30

## Page 40

Other MP Articles: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?sec_id=5

Ozone Secretariat FAQ: How is Production and Consumption Calculated?:
http://ozone.unep.org/Frequently_Asked_Questions/FAQs-Compliance/Question%201.pdf

Article 2(11): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=8

## Page 43

OS FAQ: How are used ODS treated by the Protocol?:
http://ozone.unep.org/Frequently_Asked_Questions/FAQs-Compliance/Question%208.pdf

Decision IV/24: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=935

Decision XX/7: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?meet_type_id=1&m_id=8&dec_order=7

OS Exemption information: Laboratory and analytical uses:
http://ozone.unep.org/new_site/en/laboratory_analytical_uses.php

Decision VII/5: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=571

Decision XI/12: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=573

Decision VII/5: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=571

## Page 44

OS Proposed form for reporting process agents: http://ozone.unep.org/new_site/en/ozone_data_tools.php

Decision XVII/6(5): http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=342

Decision XXIII/7: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=1079

Decision IV/25: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=508

TEAP Handbook on Essential Use Nominations:
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/TEAP_Reports/EUN-Handbook2009.pdf

Data Access Centre: http://ozone.unep.org/new_site/en/ozone_data_tools_access.php

Decision IX/6: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=222

TEAP Handbook on Critical use Nominations:
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/MBTOC/MBTOC_Handbook_ver_6_Dec_07_final.pdf

Decision IV/25: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=508

Decision IX/6: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=222

## Page 45

TEAP Handbook on Essential Use Nominations: http://ozone.unep.org/Assessment_Panels/TEAP/Reports/TEAP_Reports/EUN-Handbook2009.pdf

TEAP Handbook on Critical Use Nominations: http://ozone.unep.org/Assessment_Panels/TEAP/Reports/MBTOC/MBTOC_Handbook_ver_6_Dec_07_final.pdf

Annex I of MOP-16: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=962

## Page 47

Data reporting form in Excel: http://ozone.unep.org/new_site/en/ozone_data_tools.php

Instructions/Guidelines: http://ozone.unep.org/new_site/en/ozone_data_tools.php

## Page 48

OS data reporting tools: http://ozone.unep.org/new_site/en/ozone_data_tools.php

UNEP *Handbook on Data Reporting under the Montreal Protocol*:
http://ozone.unep.org/Data_Reporting/Data_Reporting_Tools/data-reporting-handbook.e.pdf

HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

Decision I/12A: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=12

Decision XIV/7: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=377

Decision I/12A(e)(iii): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=12

UNEP *Fact Sheet 34 Collecting data on pre-blended polyol*:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-34PreBlendedPolyol.pdf

OS *Issues for discussion at OEWG-30*: http://ozone.unep.org/Meeting_Documents/oewg/30oewg/OEWG-30-2-Add-2E.pdf

ExCom decision 61/47:
http://www.multilateralfund.org/sites/61/Document%20Library2/1/6158.pdf

MOP Decision XXII/9): http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=1042

## Page 49

UNEP *Handbook on Methyl Bromide Data Reporting*: http://www.unep.fr/ozonaction/information/mmcfiles/1671-e.pdf

UNEP *Fact Sheet 20: Monitoring Supply and Use of Methyl Bromide for Article 7 Data Reporting*:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-20MonitoringSupplyUseMBr.pdf

Decision XV/19: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=432

Decision XIII/15(5): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=352

Ozone Secretariat FAQ: How are illegally traded ODS treated by the Protocol?:
http://ozone.unep.org/Frequently_Asked_Questions/FAQs-Compliance/Question%207.pdf

Decision XIV/7: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=377

OS Data reporting and tools: http://ozone.unep.org/new_site/en/ozone_data_tools.php

## Page 50

MLF reporting Country Programme data (overview): http://www.multilateralfund.org/Our%20Work/countries/default.aspx

MLF Practical Manual for Reporting of Data on Progress in Implementation of Country Programmes:
http://www.multilateralfund.org/Our%20Work/countries/Shared%20Documents/manual.pdf

MLF web-based data entry system: http://www.multilateralfund.org/Our%20Work/countries/default.aspx

MLF Excel form: http://www.multilateralfund.org/Our%20Work/countries/default.aspx

## Page 51

IS terminal report: http://www.multilateralfund.org/Our%20Work/countries/default.aspx

HPMP tranche requests:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

HCFC Phase-out Management Plans:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

UNEP Handbook on Data Reporting:
http://ozone.unep.org/Data_Reporting/Data_Reporting_Tools/data-reporting-handbook.e.pdf

UNEP Fact Sheet 20: Monitoring supply and use of methyl bromide for Article 7 data reporting:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-20MonitoringSupplyUseMBr.pdf

## Page 52

OS FAQ: Which Parties must report transhipment of ODS?:
http://ozone.unep.org/Frequently_Asked_Questions/FAQs-Compliance/Question%209.pdf

UNEP Fact Sheet 25: Applications of HCFCs and blends containing HCFCs:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-25ApplicationsBlendsHCFCs.pdf

## Page 55

Article 4B: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?art_id=41

Decision IX/8(2): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=224

Official list of ozone focal points:
http://ozone.unep.org/new_site/en/ozone_data_tools_focal_points_licensing_systems.php

## Page 57

Article 4: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=19

Annex D: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=42

Article 4B(3): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=21

Decision IX/9: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=265

Official list of Parties who do not wish to receive ODS-using equipment:
http://ozone.unep.org/new_site/en/ozone_data_tools_parties_not_wishing_to_receive_products.php

Decision IX/34: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=738

Decision XVII/16(4): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=539

Decision IX/8: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=224

Establishing an HCFC Import Quota System:
http://www.unep.fr/ozonaction/information/mmcfiles/7531-e-HCFC_Quota_system.pdf

HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

UNEP Fact Sheet 6: Model Forms for Licensing:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-06licensing.pdf

UNEP Planning, Designing and Implementing Policies to Control ODS under the Montreal Protocol:
http://www.unep.fr/ozonaction/information/mmcfiles/3972-e-policyhandbook.pdf

## Page 58

UNEP Planning, Designing and Implementing Policies to Control ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/3972-e-policyhandbook.pdf

UNEP Regulations to Control ODS: A Guide Book:
http://www.unep.fr/ozonaction/information/mmcfiles/3946-e-fulldocument.pdf

UNEP HCFC Help Centre weblinks for legislation and policies to control HCFCs:
http://www.unep.fr/ozonaction/topics/hcfc_legislation.htm

## Page 59

UNEP HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

UNEP HCFC Help Centre: http://www.unep.fr/ozonaction/topics/hcfc.asp

SEI Interlinked ODS Phase-out Activities: A Handbook for Improved Effectiveness of ODS Phase-out in the Refrigeration Servicing Sector: http://www.unep.fr/ozonaction/information/mmcfiles/4589-e-interlinked.pdf

## Page 61

(Table 4 footnote) - HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

## Page 62

(Box 8) HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

UNEP Towards Methyl Bromide Phaseout: A Handbook for National Ozone Units:
http://www.unep.fr/ozonaction/information/mmcfiles/2832-e.pdf

UNEP Methyl Bromide Phase-out Strategies: A Global Compilation of Laws and Strategies:
http://www.unep.fr/ozonaction/information/mmcfiles/3020-e.pdf

UNEP Inventory of Technical and Institutional Resources for Promoting MB Alternatives:
http://www.unep.fr/ozonaction/information/mmcfiles/2605-e.pdf

EC Management Strategy for the Phase-out of Critical Uses of Methyl Bromide:
http://ozone.unep.org/Exemption_Information/Critical_use_nominations_for_methyl_bromide/MeBr_Submissions/EC%20Management%20Strategy%20for%20Methyl%20Bromide.pdf

Canadian national management strategy for the phase-out of methyl bromide critical use exemptions:
http://ozone.unep.org/Exemption_Information/Critical_use_nominations_for_methyl_bromide/MeBr_Submissions/canada.e.pdf

## Page 65

UNEP Illegal Trade in ODS: Asia and Pacific Region:
http://www.unep.fr/ozonaction/information/mmcfiles/6075-e-illegal-trade-asia.pdf

## Page 66

Decision XVIII/18:
http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?meet_type_id=1&m_id=12&dec_order=18

Decision IX/8: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=224

Decision XVII/16(4): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=539

OS FAQ: What is the process for getting information on ODS exported to my country by other Parties?:
http://ozone.unep.org/Frequently_Asked_Questions/FAQs-Compliance/Question%204.pdf

## Page 67

UNEP Networking Counts: Combating Illegal Trade in ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/6076-e-networkingcounts.pdf

## Page 68

UNEP Formal Compliance through Informal Consent:
http://www.unep.fr/ozonaction/information/mmcfiles/7458-e-IPIC.pdf

UNEP Compliance through Informal Prior Informed Consent on Trade of ODS – iPIC:
http://www.unep.fr/ozonaction/information/mmcfiles/7655-Compliance_through_IPIC_on_Trade_of_ODS.pdf

iPIC Online User Guide: Steps to Access iPIC-online:
http://www.unep.org/ozonaction/Portals/105/documents/publications/ipic-online-user-guide-access.pdf

OzonAction iPIC webpage: http://www.unep.org/ozonaction/InformationResources/iPIConline/tabid/79051/Default.aspx

iPIC – Supporting Compliance through prevention of illegal and unwanted trade in ODS: http://www.unep.fr/ozonaction/information/mmcfiles/7628-e-iPIC_Supporting_compliance_through_prevention_of_illegal_and_unwanted_trade.pdf

## Page 69

UNEP flyer: Green Customs Initiative: Customs Protecting the Environment:
http://www.greencustoms.org/docs/guides/FLYER.pdf

UNEP Green Customs Guide to Multilateral Environmental Agreements:
http://www.greencustoms.org/reports/guide/Green_Customs_Guide_new.pdf

Green Customs website: http://www.greencustoms.org/

OzonAction customs webpage: http://www.unep.org/ozonaction/Topics/Customs/tabid/6402/Default.aspx#uneptraining

UNEP/WCO e-learning module for enforcement personnel:
http://e-learning.wcoomd.org/hosting/Learning/Coordinators.pdf

UNEP Training Manual for Customs Officers:
http://www.unep.fr/ozonaction/information/mmcfiles/6226-e-CTM_Second_Edition.pdf?r=3164

Customs poster Protect the Ozone Layer:
http://www.unep.fr/ozonaction/information/mmcfiles/6227-e-Customs_poster.pdf?r=3164

Customs Officers Quick Tool for Screening ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/6228-e-Customs_Quick_Tool.pdf?r=3164

Customs Training overhead slides:
http://www.unep.fr/ozonaction/information/mmcfiles/6229-e-Customs_training_overhead_slides.ppt?r=3164

Generic Customs Training Elements:
http://www.unep.org/ozonaction/Topics/Customs/tabid/6402/Default.aspx#uneptraining

UNEP Customs and Enforcement officers Information Note: Monitoring Trade in HCFCs:
http://www.unep.fr/ozonaction/information/mmcfiles/7559-e-Monitoring_trade_in_HCFCs.pdf

UNEP video Nothing to Declare: http://www.unep.fr/ozonaction/information/video/customs.htm?r=4147

Customs Officers Quick Tool for Screening ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/6228-e-Customs_Quick_Tool.pdf?r=3164

UNEP Fact Sheet 31: HS 2012 Amendments and ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-31HS2012.pdf

UNEP Factsheet 15: Limitation of Application of Refrigerant Identifier:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-15identifiers.pdf

ASHRAE Refrigerant Designations:
http://www.ashrae.org/standards-research--technology/standards--guidelines/standards-activities/ashrae-refrigerant-designations

UNEP database of Trade Names of Chemicals Containing ODS and their Alternatives:
http://www.unep.fr/ozonaction/information/tradenames/main.asp

UNEP Illegal Trade in Ozone Depleting Substances: Asia and Pacific Region:
http://www.unep.fr/ozonaction/information/mmcfiles/6075-e-illegal-trade-asia.pdf

UNEP Factsheet 2: Steps in Preventing Illegal Trade of ODS:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-02illegaltrade.pdf

UNEP Factsheet 11: Necessary steps and issues to address during conviction trials of illegal:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-11illegaltrade.pdf

Ulaan Baatar Declaration of Public-Private Partnership on Addressing Environmental Crime:
http://www.unep.fr/ozonaction/information/mmcfiles/4865-e-ulaan_baatar_declaration.pdf

OzonAction website: http://www.unep.fr/ozonaction/information/mmcfiles/4865-e-ulaan_baatar_declaration.pdf

EIA Preventing illegal trade in ODS:
http://eia-global.org/news-media/preventing-illegal-trade-in-ods-strengthening-the-montreal-protocol-licensi

EIA ODS Tracking: Feasibility Study on Developing a System for Monitoring the Transboundary Movement of Controlled ODS: http://ozone.unep.org/Meeting_Documents/mop/18mop/ODS-Tracking-September-2006-1.pdf

## Page 70

Decision VI/19(5) & (6): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=147

Decision VII/32(1): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=180

Decision IX/9(1): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=225

Decision IX/9(2): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=225

Decision X/9: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=265

Decision X/9(5): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=265

OS List of Parties not wishing to receive products and equipment relying on Annex A and B substances:
http://ozone.unep.org/new_site/en/ozone_data_tools_parties_not_wishing_to_receive_products.php

UNEP Factsheet 11: Necessary steps and issues to address during conviction trials of illegal ODS trade:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-11illegaltrade.pdf

## Page 73

UNEP Fact Sheet No. 7: Model Chart for Coordination Among National Agencies for the Implementation of the Montreal Protocol: http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-07coordination.pdf

## Page 74

UNEP's report Five Steps for Raising Awareness on Ozone Depletion: A Handbook for NOUs:
http://www.unep.fr/ozonaction/information/mmcfiles/1915-e.pdf

## Page 75

UNEP Five Steps for Raising Awareness on Ozone Depletion:
http://www.unep.fr/ozonaction/information/mmcfiles/1915-e.pdf

UNEP Global Communication Strategy for Compliance with the Montreal Protocol:
http://www.uneptie.org/ozonAction/information/mmcfiles/7440-e-Communication_Strategy.pdf

OzonAction website information materials:
http://www.unep.org/ozonaction/InformationResources/tabid/6234/Default.aspx

## Page 76

International Ozone Day: http://www.unep.org/ozonaction/Events/OzoneDay/tabid/6257/Default.aspx

UN SG Message for 2013: http://www.un.org/en/events/ozoneday/2013/sgmessage.shtml

## Page 77

UNEP HCFC Help Centre website: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/tabid/6426/Default.aspx

UNEP HCFC Policy and Legislative Options: A Guide for Developing Countries:
http://www.unep.fr/ozonaction/information/mmcfiles/7434-e-hcfc-policy.pdf

UNEP Training Resource Kit: Preparing Small Businesses for the Transition away from CFCs:
http://www.unep.fr/ozonaction/information/mmcfiles/4482-e-smekit.pdf

## Page 80

Article 10: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=27

Decision IV/18: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=929

MoP-4 report: http://ozone.unep.org/Meeting_Documents/mop/04mop/4mop-15.e.pdf

MLF ExCom report to MOP-24:
http://conf.montreal-protocol.org/meeting/mop/mop-24/presession/PreSession%20Documents/MOP24-9E.pdf

## Page 81

About ExCom: http://www.multilateralfund.org/aboutMLF/executivecommittee/default.aspx

Executive Committee Primer including Appendix 3 Terms of Reference:
http://www.multilateralfund.org/MeetingsandDocuments/executive-committee-resources/default.aspx

ExCom meeting reports: http://www.multilateralfund.org/MeetingsandDocuments/meetingsarchive/default.aspx

## Page 82

MLF website: http://www.multilateralfund.org/default.aspx

About MLF Secretariat: http://www.multilateralfund.org/aboutMLF/fundsecretariat/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

MLF implementing agencies overview: http://www.multilateralfund.org/aboutMLF/Implementingagencies/default.aspx

OzonAction website: http://www.unep.org/ozonaction/

List of Regional Networks and member countries:
http://www.unep.org/ozonaction/Portals/105/documents/network/Table%20of%20Network%20countries-%2031%20Oct%202011.pdf

Webpages of regional networks: http://www.unep.org/ozonaction/RegionalNetworks/tabid/6203/Default.aspx

## Page 83

MLF information on bilateral agencies: http://www.multilateralfund.org/aboutMLF/Implementingagencies/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

## Page 85

ExCom Document 68/47: http://www.multilateralfund.org/68/pages/English.aspx

MLF Institutional strengthening overview: http://www.multilateralfund.org/Our%20Work/countries/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

MLF IS revised format:
http://www.multilateralfund.org/Our%20Work/countries/Shared%20Documents/E-%20IS%20format61.docx

MLF Country Programmes overview: http://www.multilateralfund.org/Our%20Work/countries/default.aspx

## Page 86

Revised Strategy and Guidelines for Projects in the Methyl Bromide Sector:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund [Chapter IX - Annex IX.15]:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

Decision 60/44: http://www.multilateralfund.org/sites/60/Document%20Library2/1/6054.pdf

Decision 53/37: http://www.multilateralfund.org/sites/53rd/Document%20Library2/1/5367.pdf

Decision 57/15: http://www.multilateralfund.org/sites/57th/Document%20Library2/1/5769.pdf

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

Decision 53/37: http://www.multilateralfund.org/sites/53rd/Document%20Library2/1/5367.pdf

Decision 54/39: http://www.multilateralfund.org/sites/54th/Document%20Library2/1/5459.pdf

## Page 87

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

Decision 45/54: http://www.multilateralfund.org/sites/45/Document%20Library2/1/4555.pdf

Decision 54/39: http://www.multilateralfund.org/sites/54th/Document%20Library2/1/5459.pdf

UNEP/OzL.Pro/ExCom/54/59: http://www.multilateralfund.org/sites/54th/Document%20Library2/1/5459.pdf

## Page 88

Online searchable format: http://www.multilateralfund.org/Our%20Work/Policy-search/index.html

ExCom meeting documents and final reports of meetings:
http://www.multilateralfund.org/MeetingsandDocuments/meetingsarchive/default.aspx

Policies, Procedures, Guidelines and Criteria of the Multilateral Fund:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

MLF online index and search function:
http://www.multilateralfund.org/Our%20Work/Policy-search/index.html

MLF HCFC Phase-out Management Plans:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

MLF Phase-out Plans and Projects:
http://www.multilateralfund.org/Our%20Work/policy/default.aspx

MLF evaluation activities: http://www.multilateralfund.org/Evaluation/evaluationlibrary/default.aspx

## Page 89

GEF Focal Area Strategy Documents: http://www.thegef.org/gef/strategies

## Page 90

OS Funding Opportunities for the Management and Destruction of banks of ODS:
http://ozone.unep.org/Meeting_Documents/workshop_on_ODS_banks/WORKSHOP-3-2-Add1E.pdf

UNDP Environmental financing for ODS life-cycle management:
http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/env-fin-ods-life-cycle/

World Bank Study on Financing the Destruction of Unwanted ODS through the Voluntary Carbon Market:
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTTMP/0,,contentMDK:22587937~menuPK:1247163~pagePK:148956~piPK:216618~theSitePK:408230~isCURL:Y,00.html

The United Nations Framework Convention on Climate Change: http://unfccc.int/2860.php

The Stockholm Convention on Persistent Organic Pollutants: http://chm.pops.int/

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade: http://www.pic.int/

The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal:
http://www.basel.int/Home/tabid/2202/mctl/ViewDetails/EventModID/8927/EventID/409/xmid/8052/Default.aspx

The Convention on International Trade in Endangered Species of Wild Fauna and Flora: http://www.cites.org/

## Page 92

UNEP Fact Sheet 25: Applications of HCFCs and blends containing HCFCs:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-25ApplicationsBlendsHCFCs.pdf

## Page 94

Annex C, Group I: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=41

Article 2F(7): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=14

IPCC Fourth Assessment Report Climate Change 2007: The Physical Science Basis:
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html

UNEP OzonAction Protecting our atmosphere for generations to come:
http://www.unep.fr/ozonaction/information/mmcfiles/3139-e-OASI2012_protecting_our_atmosphere.pdf

UNDP What countries can do to maximize climate benefits of HCFC phase-out:
http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/hcfc_phase-out_managementplans/

UNDP Protecting the ozone layer and safeguarding global climate:
http://www.undp.org/content/dam/undp/library/corporate/fast-facts/english/FF-Ozone-and_climate-change.pdf

UNDP Integrated Plan for Energy Efficiency, Climate Mitigation, and ODS Reduction for Refrigeration Sector in Ghana:
http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Ozone%20and%20Climate/Integrated_plan_for_energy_efficiency_Ghana.pdf

## Page 95

GWPs: http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ts.html

UN General Assembly The Future We Want: http://sustainabledevelopment.un.org/futurewewant.html

## Page 96

UNEP HFCs: A critical Link in Protecting Climate and the Ozone Layer:
http://www.unep.org/dewa/Portals/67/pdf/HFC_report.pdf

WMO/UNEP Scientific Assessment of Ozone Depletion: 2010:
http://www.wmo.int/pages/prog/arep/gaw/ozone_2010/ozone_asst_report.html

Velders Preserving Montreal Protocol climate benefits by limiting HFC, Science 2012:
http://www.sciencemag.org/content/335/6071/922

Velders Large contribution of projected HFC emissions to future climate forcing, PNAS 2009:
http://www.pnas.org/content/106/27/10949.full

Molina Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions, PNAS 2009:
http://www.unep.fr/ozonaction/information/mmcfiles/6314-e-PNAS_oct2009.pdf

Decision X/16: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=680

Decision XIX/6(9): http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=924

Decision XIX/6(11): http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=924

Decision XXI/9(4)
Decision XXI/9(8)
Decision XXI/9(7)
} http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?meet_type_id=1&m_id=9&dec_order=9

Doha Declaration: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=983

## Page 97

MOP-20 report: http://ozone.unep.org/Meeting_Documents/mop/20mop/MOP-20-9E.pdf

MOP-22 report: http://ozone.unep.org/Meeting_Documents/mop/22mop/MOP-22-9E.pdf

MOP-23 report:
http://conf.montreal-protocol.org/meeting/mop23-cop9/draft-reports/Draft%20Reports/MOP-23-11-COP-9-7E.pdf

MP Workshop for a Dialogue on High-GWP Alternatives for ODS:
http://ozone.unep.org/Meeting_Documents/dialogue_on_high_GWP/

HCFC-22: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#22

HCFC-123: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#123

HCFC-124: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#124

HCFC-141b: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#141b

HCFC-142b:
http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#142b

HCFC-225ca / cb:
http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx#225cacb

UNEP Factsheet 25: Applications of HCFCs and blends containing HCFCs:
http://www.unep.fr/ozonaction/information/mmcfiles/4766-e-25ApplicationsBlendsHCFCs.pdf

HCFC Help Centre Where HCFCs are used:
http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCApplications/tabid/52068/Default.aspx

UNEP Alternatives to HCFCs in the Refrigeration and Air Conditioning Sector:
http://www.unep.fr/ozonaction/information/mmcfiles/7436-e-hcfc-alternatives__.pdf

UNEP Guidance on the Process for Selecting Alternatives to HCFCs in Foams:
http://www.unep.fr/ozonaction/information/mmcfiles/7435-e-foam__.pdf

## Page 99

HCFC Help Center HCFC alternatives: http://www.unep.org/ozonaction/Topics/HCFCHelpCentre/HCFCAlternatives.aspx

GIZ Natural Foam Blowing Agents: http://www.giz.de/Themen/en/dokumente/gtz2009-en-proklima-nat-blow-agents.pdf

UNEP Guidance on the Process for Selecting Alternatives to HCFCs in Foams:
http://www.unep.fr/ozonaction/information/mmcfiles/7435-e-foam__.pdf

GIZ Opportunities for the application of natural refrigerants:
http://www.giz.de/Themen/en/dokumente/en-oewg-side-event-app-of-nrs-rev.pdf

GIZ Applications for low-GWP replacement for HCFC-22:
http://www.giz.de/Themen/en/dokumente/giz2011-en-proklima-lowgwp-alternatives.pdf

GIZ Natural Refrigerants: http://www.giz.de/Themen/en/dokumente/en-gtz-proklima-natural-refrigerants.pdf

GIZ Production Conversion of Domestic Refrigerators from Halogenated to Hydrocarbon Refrigerants:
http://www.giz.de/Themen/en/dokumente/2011-Production_conversion_of_domestic_refrigerators-giz.pdf

GIZ Guidelines for the safe use of hydrocarbon refrigerants:
http://www.giz.de/Themen/en/dokumente/giz2010-en-guidelines-safe-use-of-hydrocarbon.pdf

UNEP/Swedish EPA Alternatives to HCFCs in the Refrigeration and Air conditioning Sector:
http://www.unep.fr/ozonaction/information/mmcfiles/7436-e-hcfc-alternatives__.pdf

US EPA Fact Sheets on Transitioning to Low-GWP Alternatives (series):
http://www.epa.gov/ozone/intpol/mpagreement.html

US EPA Significant New Alternatives Policy (SNAP) Program: http://www.epa.gov/ozone/snap/index.html

Danish Technical Institute Low GWP Alternatives to HFCs in Refrigeration:
http://www.unep.org/ozonaction/ecanetwork/Portals/138/ECA%202012/Announcements/Low%20GWP%20Alternatives%20to%20HFCs%20in%20Refrigeration.pdf

UNEP Barriers to the Use of Low-GWP Refrigerants in Developing Countries and Opportunities to Overcome These:
http://www.unep.fr/ozonaction/information/mmcfiles/7476-e-Report-low-GWPbarriers.pdf

GIZ Guidelines for the Safe Use of Hydrocarbon Refrigerants: http://www.giz.de/Themen/en/dokumente/giz2010-en-guidelines-safe-use-of-hydrocarbon.pdf

UNEP Manual for Refrigeration Servicing Technicians:
http://www.unep.fr/ozonaction/information/mmcfiles/7443-e-Ref_manual_servicing_technicians.pdf

UNEP Interlinked ODS Phase-out Activities: A Handbook for Improved Effectiveness of ODS Phase-out Activities in the Refrigeration Servicing Sector: http://www.unep.fr/ozonaction/information/mmcfiles/4589-e-interlinked.pdf

GIZ Good Practices in Refrigeration:
http://www.giz.de/Themen/en/dokumente/giz2010-en-good-practices-in-refrigeration.pdf

GIZ Operation of Split Air-conditioning Systems with Hydrocarbon Refrigerant: A Conversion Guide:
http://www.giz.de/Themen/en/dokumente/2011-Operation_of_split_air_conditioning-giz.pdf

## Page 101

UNEP flyer HCFCs in the Foam Sector: How to prepare for the phase down:
http://www.unep.fr/ozonaction/information/mmcfiles/7638-e-Flyer_HCFC_foam.pdf

UNEP flyer HCFCs in the refrigeration and air conditioning sector: How to prepare for the phase down:
http://www.unep.fr/ozonaction/information/mmcfiles/7639-e-Flyer_HCFC_RAC.pdf

## Page 102

UNEP Handbook on Methyl Bromide Data Reporting under the Montreal Protocol:
http://www.unep.fr/ozonaction/information/mmcfiles/1671-e.pdf

## Page 103

MBTOC Assessment Report:
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/MBTOC/MBTOC-Assesment-Report-2010.pdf

UNEP Case Studies on Alternatives to MB vol.1: http://www.unep.fr/ozonaction/information/mmcfiles/2660-e.pdf

UNEP Case Studies on Alternatives to MB vol.2: http://www.unep.fr/ozonaction/information/mmcfiles/3970-e.pdf

UNEP Sourcebook of Technologies: Alternatives to Methyl Bromide:
http://www.unep.fr/ozonaction/information/mmcfiles/3072-e-mbsourcebook.pdf

UNEP Floriculture and the Environment: Growing Flowers without MB:
http://www.unep.fr/ozonaction/information/mmcfiles/3546-e.pdf

FAO UNEP Manual of alternatives to replace MB for soil-borne pest control in East and Central Europe:
http://www.fao.org/fileadmin/templates/agphome/documents/Methyl_Bromide/Methyl_bromide07.pdf

UNEP Leveraging Expertise of Civil Society in Developing Countries: Communication Programme on MB:
http://www.unep.fr/ozonaction/information/mmcfiles/4051-e.pdf

OzonAction methyl bromide webpage: http://www.unep.org/ozonaction/Topics/MethylBromide/tabid/6221/Default.aspx

## Page 104

WMO/UNEP Scientific Assessment of Ozone Depletion: 2010:
http://ozone.unep.org/new_site/en/scientific_assessment_2010.php

Decision IV/12(2): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=78

Decision XX/7(3): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=646

Decision XX/7(4) & (5): http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=646

ODS banks strategies:
http://ozone.unep.org/new_site/en/ozone_data_tools_environmentally_sound_mgt_ods_banks.php

## Page 105

Decision XX/7:http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=646

UNDP Early Retirement of Refrigerators and ODS Banks Management/ Destruction in Brazil:
http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Ozone%20and%20Climate/Early_retirement_of_refrigerators_Brazil.pdf

Decision XXIII/12: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=974

# Annexes

## Page 107

OS Implementation Committee Primer for Members: http://ozone.unep.org/Publications/ImpCom_Primer_for_parties.pdf

## Page 108

OS Implementation Committee Primer for Members: http://ozone.unep.org/Publications/ImpCom_Primer_for_parties.pdf

Decision IV/5: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=914

Decision X/10: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?nav_id=674

## Page 109

MOP-4 report: http://ozone.unep.org/Meeting_Documents/mop/04mop/4mop-15.e.pdf

OS Implementation Committee Primer for Members: http://ozone.unep.org/Publications/ImpCom_Primer_for_parties.pdf

## Page 111

OS Implementation Committee Primer for Members: http://ozone.unep.org/Publications/ImpCom_Primer_for_parties.pdf

## Page 113

Decision VII/5: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=571

## Page 114

Decision VII/5: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=571

Decision XI/12: http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=573

OS Methyl Bromide: Quarantine and Preshipment Uses:
http://ozone.unep.org/Publications/UNEP-Ozone-Secretariat-MP-Brochure.pdf

TEAP 1999 Progress Report, vol. 2:
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/TEAP_Reports/TEAP0499.pdf

# Page 115

IPPC ISPM 15 Regulation of Wood Packaging Material in International Trade 2009:
https://www.ippc.int/publications/ispm-15-2009-regulation-wood-packaging-materials-international-trade

p.5 of ISPM 15:
https://www.ippc.int/publications/ispm-15-2009-regulation-wood-packaging-materials-international-trade

p.12 of ISPM 15:
https://www.ippc.int/publications/ispm-15-2009-regulation-wood-packaging-materials-international-trade

IPPC Recommendation on Replacement or Reduction of the Use of MB as a Phytosanitary Measure:
https://www.ippc.int/core-activities/governance/cpm-recommendations/replacement-or-reduction-of-the-use-of-methyl-bromide-as-a-phytosanitary-measure

# Page 116

IPPC Recommendation on MB:
https://www.ippc.int/core-activities/governance/cpm-recommendations/replacement-or-reduction-of-the-use-of-methyl-bromide-as-a-phytosanitary-measure

Decision XX/6: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=645

EU strategy on QPS submitted under Decision XX/6:
http://ozone.unep.org/new_site/en/quarantine_and_preshipment_uses.php

TEAP Quarantine and Pre-shipment Taskforce Report 2009:
http://ozone.unep.org/Assessment_Panels/TEAP/Reports/TEAP_Reports/teap-qpstf-october2009.pdf

EPA Methyl Bromide Alternatives for applicators, commodity owners, shippers, and their agents:
http://www.epa.gov/ozone/mbr/downloads/QPSTF_report.pdf

# Page 118

OzonAction website: http://www.unep.org/ozonaction/Home/tabid/5467/Default.aspx

**Ozone depletion and UV monitoring**

British Antarctic Survey: http://www.antarctica.ac.uk/met/jds/ozone/

Environment Canada: Ozone and Ultraviolet Research and Monitoring: http://es-ee.tor.ec.gc.ca/e/ozone/ozone.htm

Environment Canada: Ozone maps: http://exp-studies.tor.ec.gc.ca/cgi-bin/selectMap

European Ozone Research Coordinating Unit: http://www.ozone-sec.ch.cam.ac.uk/

International Council for Science (ICSU) & WMO: World Data Center for Remote Sensing of the Atmosphere:
http://wdc.dlr.de/

National Aeronautics and Space Administration (NASA) Ozone Hole Watch: http://ozonewatch.gsfc.nasa.gov/

NASA: Ozone and air quality: http://ozoneaq.gsfc.nasa.gov/

NASA: Simulation of consequences of widespread ozone loss:
http://www.nasa.gov/topics/earth/features/world_avoided.html#

National Oceanic & Atmospheric Administration (NOAA): Global Monitoring Division: http://www.esrl.noaa.gov/gmd/ and http://www.esrl.noaa.gov/gmd/odgi/

NOAA: Earth System Research Laboratory: http://www.esrl.noaa.gov/research/themes/o3/

NOAA: National Weather Service, Meteorological Conditions & Ozone in the Polar Stratosphere: http://www.cpc.ncep.noaa.gov/products/stratosphere/polar/polar.shtml

Switzerland: MeteoSwiss Ozone Monitoring: http://www.meteosuisse.admin.ch/web/en/weather/ozone_layer.html

World Meteorological Organization (WMO): Research on Stratospheric Ozone: http://www.wmo.int/pages/prog/arep/gaw/ozone/index.html

British Antarctic SurveyWMO: Ozone Mapping Centre: http://lap.physics.auth.gr/ozonemaps2/index.php

WMO & Environment Canada: World Ozone and UV Data Centre: http://www.woudc.org/index_e.html

UK: Stratospheric ozone and UV measurements: http://ozone-uv.defra.gov.uk/index.php

University of Cambridge: Ozone Hole Tour: http://www.atm.ch.cam.ac.uk/tour/

# Page 119

**Government policies and legislation**

Australia: Department of Sustainability, Environment, Water, Population and Communities: http://www.environment.gov.au/atmosphere/ozone/index.html

Austria: Umweltbundesamt (UBA): http://www.umweltbundesamt.at/en/

Canada: Environment Canada: http://www.ec.gc.ca/ozone/default.asp?lang=En&n=9090CC46-1

China: Ministry of Environmental Protection: http://english.mep.gov.cn/

Denmark: Environmental Protection Agency, Miljøstyrelsen: http://www.mst.dk/English/

Germany: Umweltbundesamt (UBA): http://www.umweltbundesamt.de/index-e.htm

European Commission: Directorate-General for Climate Action: http://ec.europa.eu/clima/policies/ozone/

India: Ministry of Environment and Forests Ozone Cell: http://www.ozonecell.com/

Japan: Ministry of the Environment: http://www.env.go.jp/en/earth/

Korea: Institute of Environmental Science and Technology: http://www.keiti.re.kr/eng/action.do

Netherlands: http://www.government.nl/issues/environment

Poland: Ministry of the Environment: http://www.mos.gov.pl/?j=en

Sweden: Stockholm Environment Institute: http://sei-international.org/

UK: Department for Environment, Food and Rural Affairs: https://www.gov.uk/managing-fluorinated-gases-and-ozone-depleting-substances

USA: Department of Defense Environment, Safety and Occupational Health Network & Information Exchange: http://www.denix.osd.mil/

USA: Environmental Protection Agency (EPA) Stratospheric Ozone Layer Protection: http://www.epa.gov/ozone/strathome.html

**Ozone Secretariat, MLF, implementing agencies, bilateral agencies**

Ozone Secretariat: http://ozone.unep.org/new_site/en/index.php

Multilateral Fund Secretariat: http://www.multilateralfund.org

UNDP Montreal protocol Unit:
http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/

UNEP DTIE OzonAction Branch: http://www.unep.org/ozonaction/

UNIDO Montreal Protocol Branch: http://www.unido.org/montreal-protocol.htm

World Bank's Montreal Protocol Operations Unit: www.worldbank.org

GIZ Proklima: www.giz.de/proklima

Swedish International Development Cooperation Agency (Sida): http://www.sida.se/English/

# Page 120

**Other organisations**

Alliance for Responsible Atmospheric Policy: http://www.alliancepolicy.org/

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): www.ashrae.org

Ammonia21.com: www.ammonia21.com

Environmental Investigation Agency (EIA): http://www.eia-international.org/tag/montreal-protocol

Greenpeace International: www.greenpeace.org

Hydrocarbons21.com: www.hydrocarbons21.com

Institute for Governance and Sustainable Development (IGSD): www.igsd.org

NaturalRefrigerants.com: www.naturalrefrigerants.com

R744.com carbon dioxide refrigeration: www.r744.com

Shecco: www.shecco.com

**Contacts**

Ozone Secretariat: http://ozone.unep.org/new_site/en/index.php

# Page 121

Multilateral Fund Secretariat: www.multilateralfund.org

United Nations Development Programme (UNDP):
http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/ozone_and_climate/

United Nations Environment Programme (UNEP): http://www.unep.org/ozonaction/

United Nations Industrial Development Organisation (UNIDO): http://www.unido.org/montreal-protocol.html

World Bank: http://go.worldbank.org/KXM814CLA0

# Page 122

**Bilateral Agencies**

GIZ Proklima: www.giz.de/proklima

Japan Ministry of Foreign Affairs: http://www.mofa.go.jp/policy/oda/

Swedish International Development Cooperation Agency: http://www.sida.se and http://www.swedishepa.se/

**Regional Contacts for UNEP Compliance Assistance Programme and Regional Networks**
http://www.unep.org/ozonaction/RegionalNetworks/tabid/6203/Default.aspx

UNEP Regional Office for Africa (ROA):

- English-Speaking Africa:
  http://www.unep.org/ozonaction/RegionalNetworks/AfricaEnglishSpeaking/tabid/6204/Default.aspx
- French-Speaking Africa:
  http://www.unep.org/ozonaction/RegionalNetworks/AfricaFrenchSpeaking/tabid/6205/Default.aspx

UNEP Regional Office for Asia and the Pacific (ROAP)

- South Asia ：http://www.unep.org/ozonaction/RegionalNetworks/SouthAsia/tabid/6211/Default.aspx

# Page 123

UNEP Regional Office for Asia and the Pacific (ROAP)

- South East Asia Pacific:
  http://www.unep.org/ozonaction/RegionalNetworks/SouthEastAsiaPacific/tabid/6210/Default.aspx
- Pacific Island Countries:
  http://www.unep.org/ozonaction/RegionalNetworks/PacificIslandCountries/tabid/6209/Default.aspx

UNEP Regional Office for Latin America and the Caribbean (ROLAC):
http://www.unep.org/ozonaction/RegionalNetworks/LatinAmericaCaribbean/tabid/6208/Default.aspx and
http://www.pnuma.org/ozono/index.php

UNEP Regional Office for West Asia (ROWA):
http://www.unep.org/ozonaction/RegionalNetworks/WestAsia/tabid/6212/Default.aspx

Eastern Europe & Central Asia Network:
http://www.unep.org/ozonaction/RegionalNetworks/EuropeCentralAsia/tabid/6207/Default.aspx

# About the UNEP DTIE OzonAction Programme

Under the Montreal Protocol on Substances that Deplete the Ozone Layer, countries worldwide are taking specific, time-targeted actions to reduce and eliminate the production and consumption of man-made chemicals that destroy the stratospheric ozone layer, Earth's protective shield.

The objective of the Montreal Protocol is to phase out ozone depleting substances (ODS), which include CFCs, halons, methyl bromide, carbon tetrachloride, methyl chloroform, and HCFCs. One hundred ninety seven governments have joined this multilateral environmental agreement and are taking action.

The UNEP DTIE OzonAction Branch assists developing countries and countries with economies in transition (CEITs) to enable them to achieve and sustain compliance with the Montreal Protocol. With our programme's assistance, countries are able to make informed decisions about alternative technologies, ozone-friendly policies and enforcement activities.

OzonAction has two main areas of work:

- Assisting developing countries in UNEP's capacity as an Implementing Agency of the Multilateral Fund for the Implementation of the Montreal Protocol, through a Compliance Assistance Programme (CAP).
- Specific partnerships with bilateral agencies and Governments.

UNEP's partnerships under the Montreal Protocol contribute to the realisation of the Millennium Development Goals and implementation of the Bali Strategic Plan.

**For more information**

Ms. Shamila Nair-Bedouelle, Head, OzonAction Branch,
United Nations Environment Programme, Division of Technology, Industry and Economics
15 rue de Milan, 75441 Paris CEDEX 09
Tel: +331 4437 1455, Fax: +331 4437 1474
Email: *shamila.nair-bedouelle@unep.org*
Web: *http://www.unep.org/ozonaction/*

## About the UNEP Division of Technology, Industry and Economics

The UNEP Division of Technology, Industry and Economics (DTIE) helps governments, local authorities and decision-makers in business and industry to develop and implement policies and practices focusing on sustainable development.

The Division works to promote:

> sustainable consumption and production,
> the efficient use of renewable energy,
> adequate management of chemicals,
> the integration of environmental costs in development policies.

### The Office of the Director, located in Paris, coordinates activities through:

**> The International Environmental Technology Centre** - IETC (Osaka, Shiga), which implements integrated waste, water and disaster management programmes, focusing in particular on Asia.

**> Sustainable Consumption and Production** (Paris), which promotes sustainable consumption and production patterns to contribute to human development through global markets.

**> Chemicals** (Geneva), which promotes sustainable development by catalysing global actions and building national capacities for the sound management of chemicals and the improvement of chemicals safety worldwide.

**> Energy** (Paris), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.

**> OzonAction** (Paris), which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition to ensure implementation of the Montreal Protocol.

**> Economics and Trade** (Geneva), which helps countries to integrate environmental considerations into economic and trade policies, and works with the finance sector to incorporate sustainable development policies.

***UNEP DTIE activities focus on raising awareness, improving the transfer of knowledge and information, fostering technological cooperation and partnerships, and implementing international conventions and agreements.***

For more information
see **www.unep.org**

**www.unep.org**

United Nations Environment Programme
P.O. Box 30552 Nairobi, Kenya
Tel.: ++254-(0)20-762 1234
Fax: ++254-(0)20-762 3927
E-mail: uneppub@unep.org

UNEP

For more information, contact:
UNEP DTIE
OzonAction branch
15 rue de Milan, 75441 Paris CEDEX 09, France
Tel: +331 4437 1450
Fax: +331 4437 1474
ozonaction@unep.org
www.unep.org/ozonaction

**E-mail: ozonaction@unep.org**

Multilateral Fund
for the Implementation of the Montreal Protocol

This guide introduces and summarises the many important issues about the Montreal Protocol on Substances that Deplete the Ozone Layer that National Ozone Officers (NOOs) need to know to perform their job effectively. Presented in an easy to understand format, the guide is designed to provide new NOOs and their assistants with the critical knowledge needed to quickly understand the Montreal Protocol system and the country's obligations under the Montreal Protocol.

DTI/1676/PA