PATTERNS OF ACHIEVEMENT
Africa and the Montreal Protocol
“Africa is an ancient continent. Its lands are rich and fertile enough to provide a solid foundation for prosperity. Its people are proud and industrious enough to seize the opportunities that may be presented. I am confident that Africans will not be found wanting — in stamina, in determination, or in political will.”

(Kofi Annan, 1998 address to the Security Council on the Secretary General’s Report on Africa)
FOREWORD

On the occasion of the 12th Meeting of the Parties in Burkina Faso, it is my great pleasure to congratulate the many nations of Africa on the successes they have achieved in contributing so commendably to the global campaign for preserving our earth’s precious and threatened ozone layer.

African countries have made a significant contribution to the Montreal Protocol despite having to face numerous other urgent challenges. Africa’s ozone layer protection activities are therefore a testament to their collective recognition of the issue’s urgency, their willingness to promote responsible environmental management and their desire to play a full part in global environmental protection.

Africa’s ozone story is special because the nations of Africa, with the exception of South Africa, have never produced any ozone-depleting substances (ODS) or much ODS-using equipment. Further, African consumption of these substances is very low relative to other regions of the world. Yet ODS play a critical role in refrigeration and air conditioning systems, on which health and livelihoods can depend. The challenge African countries are successfully facing is to reduce reliance on ODS without damaging their economies, health or security.

The African Montreal Protocol experience is not one story but six related stories, each with its specific theme contributing to the wider picture. We present these achievements here in recognition of Africa’s valuable contribution to the Montreal Protocol and in the hope that they will provide inspiration for other regions in their efforts to protect the ozone layer.

This brochure also recognises those international organisations and other nations that have assisted Africa in achieving its success through fruitful international environmental and technological co-operation.

The world should acknowledge that in spite of other pressing issues, Africa has joined the global movement to protect the ozone layer and should continue to work closely with African countries until ozone recovery is finally achieved.

Klaus Töpfer
United Nations Under-Secretary-General and Executive Director of UNEP
AFRICA AND THE OZONE LAYER

The Montreal Protocol on Substances that Deplete the Ozone Layer was the first international treaty geared towards protecting the global atmosphere. First signed in 1987, it is now considered to be the most successful international environmental convention ever — largely a result of the commitment of countries and regions throughout the world, including the continent of Africa.

From the beginning, Africa proved itself to be a world leader in the struggle to protect the ozone layer. Many African countries were among the Protocol’s first signatories and over 80 percent have now signed on. Further, African countries have, proportionally, one of the best records in ratifying the subsequent amendments to the Protocol.

In terms of compliance with the Protocol’s targets and obligations, Africa has significantly reduced its consumption of ozone-depleting substances (ODS) throughout the industrial and commercial sectors. The majority of African signatories have also managed to meet a key target — the July 1999 freeze on CFCs.

Suitable national and regional institutions had to be created to implement all of the activities required to meet the Protocol’s targets. Some 13 years later, these institutions, especially National Ozone Units (NOUs) and regional networks, have matured successfully to become more capable in implementing country programmes, refrigerant management plans and other key projects.

With assistance from international and bilateral institutions, numerous technologies have been transferred to Africa to replace earlier ODS and ODS-using equipment. African nations have also been highly successful in sending key messages out to the public and industry — raising awareness of the ozone problem, telling people about potential solutions and alternatives and showing how even the actions of individuals can count in the global campaign.

Finally, co-operation between various stakeholders over vast geographic areas, facilitated by regional networks, has helped in creating and implementing projects and sharing experiences, ideas, successes and challenges.

Six Patterns of Achievement, each as brilliant and unique as the indigenous patterns found on fabrics throughout the great continent, are presented in this brochure. This document also credits those international organisations and bilateral partners without which Africa could not have succeeded, including UNEP, the Multilateral Fund, UNDP, UNIDO, the World Bank and countries such as Canada, France, Germany and Switzerland.

The ozone layer crisis is one of many global environmental problems primarily caused by developed countries. Developing regions such as Africa could choose to ask those responsible for the problem to clean up the situation themselves. But knowing that a global environmental threat can only be solved through the commitment and participation of all regions and nations, Africa has contributed beyond all expectations. “Though our contribution to the destruction of ozone is minimal, Uganda is committed to reduce and eventually phase out the use of chemicals which destroy the ozone layer,” said Ugandan Minister of Waters, Land and Environment, Mr. Henry Kajura.

The contribution is all the more commendable, given the fragile nature of Africa’s economies and political stability. African decision-makers have had at their disposal only limited natural and financial resources and infrastructural capacity with which to bring about change. Yet, despite these significant challenges, Africa was still able to muster the political will and leverage the financial resources needed for progress. “For developing countries like Ghana,” said Minister of Environment Science and Technology Mr. J.E. Afutu, “the major challenge is to contribute meaningfully to the global efforts to protect the ozone layer while keeping the pace of their economic development.”

This document records and celebrates the courageous response of Africa to this challenge.
“Future historians may well view [the Vienna Convention and Montreal Protocol] … as moments when the international community summoned the political courage to alter the course of a potentially catastrophic aspect of its economic growth.”
Kofi Annan, United Nations Secretary General

“The UNEP Regional Office for Africa (ROA) is closely involved in the implementation of the OzonAction Programme in Africa through the co-ordination of two ODS Officer Networks (ODSONET). AMCEN, the African Ministerial Conference, also serves as a forum for African decision-makers on ODS phase out activities under the Montreal Protocol. We are pleased to see the progress made by African countries for the protection of the Ozone Layer and efforts are also underway to assist African countries not yet Parties to ratify the Vienna Convention and Montreal Protocol. ROA will intensify its role as a facilitator to ensure that countries in the region are able to fulfil their Montreal Protocol obligations.”
Bakary Kanté, Director of Division of Policy Development and Law at UNEP, Acting Director of UNEP Regional Office for Africa

“The ODSONET framework has been ideal for the exchange of experiences among African Ozone Officers in the implementation of their country programmes and has played an important part in the building of national capacities. The status of data and progress reporting as well as the status of compliance with the 1999 freeze on CFC consumption are indicators of the improvement in the performance of most Ozone Offices in the region.”
Jeremy Bazyé, Regional Network Coordinator for ODSONET/Africa, UNEP/ROA
Implementing Agencies: International organisations designated to implement the Montreal Protocol through the Multilateral Fund have been key partners in providing capacity-building activities in Africa. They include the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) and the World Bank.

- **UNEP**: To date, UNEP’s OzonAction programme has assisted 36 of 53 African countries in developing and implementing their action plans and projects through the preparation of Country Programmes. OzonAction has also been a key player in guiding 34 countries with their institutional strengthening projects that help in monitoring and controlling their use of ODS. Far more concentrated in Africa than other implementing agencies, OzonAction is an enabling programme that strengthens the capacity and expertise of governments and industry in developing countries — focusing mainly on non-investment activities, such as capacity building, training and information exchange programmes, that are most needed in regions such as Africa.

- **UNIDO**: Projects provide African countries with free market access to the most modern and cost-effective non-ODS technologies, along with related expertise and training and technology upgrades to maintain international competitiveness. UNIDO projects also introduce new safety controls, eco-labelling schemes and compliance requirements with international standards. To date, UNIDO is implementing 108 investment projects in Africa worth $44 million with a phase out target of over 4,500 ODP tonnes, of which 3,500 have already been phased out.

- **UNDP**: As of October 2000, UNDP activities in Africa included a total of 163 projects worth over $28 million in 22 African countries. Key components of the projects include the provision of technical assistance and training, institutional strengthening and the development and implementation of 100 ODS investment projects with a targeted phase out of 4,234 ODP tonnes in the aerosol, foam, fumigant and refrigeration sectors and in the replacement of methyl bromide as a fumigant in the agricultural sector.

- **World Bank**: As countries in Africa are vulnerable to becoming an outlet for outdated ODS technology, thus hampering industrial and economic development, the World Bank is helping the region develop a long-term strategic plan to pre-empt the potentially increasing influx of ODS-dependent products. The World Bank has thus far contributed over $7
Africa’s achievements could not have been made possible without the valuable resources and assistance of a number of international partners.

The financial capacity of many African nations to meet these obligations has been especially limited. In response, the Multilateral Fund under the Protocol has been highly effective in providing much-needed resources.

Since the Fund was established, Africa has received some 11 percent of total global funding, equivalent to about 90 million US dollars.

In terms of financing for enabling activities such as institutional strengthening projects and training, Africa received 17 percent of the global financing from the Fund.

Projects Funded by Multilateral Fund — Africa

<table>
<thead>
<tr>
<th>Sector/Activity</th>
<th>Total Funds $US</th>
<th>Number Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment Projects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigeration</td>
<td>36,764,219</td>
<td>55</td>
</tr>
<tr>
<td>Foam</td>
<td>27,261,955</td>
<td>103</td>
</tr>
<tr>
<td>Aerosol</td>
<td>4,032,735</td>
<td>26</td>
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<tr>
<td>Fumigant</td>
<td>1,973,797</td>
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<tr>
<td>Solvent</td>
<td>1,466,122</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>71,489,828</td>
<td>197</td>
</tr>
<tr>
<td><strong>Non-Investment Projects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional Strengthening</td>
<td>6,452,774</td>
<td>68</td>
</tr>
<tr>
<td>Country Programmes</td>
<td>1,990,690</td>
<td>47</td>
</tr>
<tr>
<td>Refrigerant Management Plans</td>
<td>6,116,350</td>
<td>102</td>
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<tr>
<td>Training</td>
<td>2,846,202</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17,406,016</td>
<td>268</td>
</tr>
</tbody>
</table>

Bilateral Assistance: A number of bilateral donor countries have also assisted Africa, especially through supplementing the resources made available to UNEP’s OzonAction programme. Special thanks go to Canada, Denmark, France, Germany, The Netherlands and Switzerland.

Germany’s GTZ-Proklima,* a bilateral partner, is currently assisting 14 African countries with the implementation of their Refrigerant Management Plans (RMPs), as well as a number of recovery and recycling projects in East Africa. Assistance in the use of natural refrigerants has been the major element of Switzerland’s contribution.

Finland’s Trust Fund has also been invaluable in assisting African countries such as Algeria, the Congo, Mauritius and Morocco in facilitating their joining the Montreal Protocol.

*GTZ-Proklima, located in Windhoek, Namibia, is a division of GTZ working specifically on ozone issues. 

Million in investment projects to ensure regional co-operation and co-ordination and will continue to promote phase out efforts in an effective and sustainable manner.
ONE  
A Committed Continent

African nations have proven themselves to be world leaders in the fight to preserve the ozone layer — in signing and ratifying the Montreal Protocol and its Amendments and in their commitment to comply with its obligations. With over 80 percent of its countries having signed the Protocol, the continent is also home to nearly half of the world’s nations that have signed the London and Copenhagen Amendments.

TWO  
Hitting the Targets — Compliance

The first of many critical phase out targets for Africa — freezing the national consumption of CFCs — started in July 1999. As of today, most African countries have met this first crucial target and one third are well beyond compliance — a bright indicator for the future. Most countries are also now well on the way toward meeting 2002 targets for halons and methyl bromide.

THREE  
National Actions

Complying with the Protocol’s targets required the creation of an almost completely new set of national laws, policies and plans, as well as new institutions to create and guide their implementation. Firm foundations, based on new Country Programmes, Refrigerant Management Plans and functioning National Ozone Units, are now fully established and active at the national level.
FOUR
Empowering and Enabling

Africa’s story in helping to protect the ozone layer could never have been such a success if all countries involved had acted alone. Co-operation and dialogue, both locally and over extensive geographical areas, is essential to ensure that partners, suppliers and recipients all share the common goal of complying with the Montreal Protocol.

FIVE
Technologies Transferred

Thanks to effective and well-planned transfers of technologies and international assistance, facilitated by the Multilateral Fund, efficient replacements and alternatives have been found for ozone-depleting substances and ODS-using equipment used in Africa. From foams to fumigants, the new technologies are quickly becoming the products of choice for African industries looking to the future.

SIX
Awareness Raising

African organisations and citizens, from elementary schools to technicians in the field, have become ever more motivated and confident that their actions, even at the individual level, can do much to help protect the earth’s precious ozone layer. Why? Because of non-stop local and national awareness raising efforts — including mass-media campaigns, attractive and informative publications and poster competitions for children.
Africa’s success story begins with the rapid commitment by its countries in officially joining the global campaign to preserve the ozone layer — namely, signing up to and ratifying the Montreal Protocol and its amendments.

The continent’s commitment to support began on September 16, 1987 — the date when the Montreal Protocol itself was founded. On that date, Africa’s first signatory countries included Egypt, Ghana, Kenya, Senegal and Togo.

Since then, African nations have continued to be world leaders in the fight to preserve the ozone layer, in ratifying the Protocol and taking seriously their commitment to comply with its obligations.


Africa’s world leadership in ratifying the various amendments to the Protocol has also been exemplary. By November 2000, African countries represented 45 of the world’s 97 countries that had ratified the 1990 London Amendment — or 46 percent! With respect to 1992’s Copenhagen Amendment, African countries represented 41 percent of the global share. UNEP is now working with the remaining non-party countries in Africa (see table opposite page) and hopes to welcome them as Parties during 2001.

Finally, some 70 percent of African Parties to the Protocol have fully complied with their reporting requirements from the period 1986 to 1998.

Progressive Ratification of the Montreal Protocol
175 countries representing 99% of the global population
## African Ratifications — Montreal Protocol and London Amendment

<table>
<thead>
<tr>
<th>Country</th>
<th>Montreal Protocol Date</th>
<th>London Amendment Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>20.10.1992</td>
<td>20.10.1992</td>
</tr>
<tr>
<td>Angola</td>
<td>17.5.2000</td>
<td></td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>20.7.1989</td>
<td>10.6.1994</td>
</tr>
<tr>
<td>Burundi</td>
<td>6.1.1997</td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>30.8.1992</td>
<td>8.6.1992</td>
</tr>
<tr>
<td>Central African Rep.</td>
<td>29.3.1993</td>
<td></td>
</tr>
<tr>
<td>Chad</td>
<td>7.6.1994</td>
<td></td>
</tr>
<tr>
<td>Comoros</td>
<td>31.10.1994</td>
<td>31.10.1994</td>
</tr>
<tr>
<td>Congo</td>
<td>16.11.1994</td>
<td>16.11.1994</td>
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<tr>
<td>Cote d’Ivoire</td>
<td>5.4.1993</td>
<td>18.5.1994</td>
</tr>
<tr>
<td>Djibouti</td>
<td>30.7.1999</td>
<td>30.7.1999</td>
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<tr>
<td>Ethiopia</td>
<td>11.10.1994</td>
<td></td>
</tr>
<tr>
<td>Gabon</td>
<td>3.2.1994</td>
<td></td>
</tr>
<tr>
<td>Gambia</td>
<td>29.7.1990</td>
<td>13.3.1995</td>
</tr>
<tr>
<td>Lesotho</td>
<td>25.3.1994</td>
<td></td>
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<tr>
<td>Liberia</td>
<td>15.1.1996</td>
<td>15.1.1996</td>
</tr>
<tr>
<td>Libyan Arab Jamahiriya</td>
<td>11.7.1990</td>
<td></td>
</tr>
<tr>
<td>Madagascar</td>
<td>7.11.1996</td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>9.1.1993</td>
<td>8.2.1994</td>
</tr>
<tr>
<td>Mauritania</td>
<td>26.5.1994</td>
<td></td>
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<tr>
<td>Nigeria</td>
<td>31.10.1995</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>5.5.1993</td>
<td>6.5.1993</td>
</tr>
<tr>
<td>Seychelles</td>
<td>6.1.1993</td>
<td>6.1.1993</td>
</tr>
<tr>
<td>South Africa</td>
<td>15.1.1990</td>
<td>12.5.1992</td>
</tr>
<tr>
<td>Sudan</td>
<td>29.1.1993</td>
<td></td>
</tr>
<tr>
<td>Swaziland</td>
<td>10.11.1992</td>
<td></td>
</tr>
<tr>
<td>Tanzania, United Rep.</td>
<td>16.4.1993</td>
<td>16.4.1993</td>
</tr>
<tr>
<td>Togo</td>
<td>25.2.1991</td>
<td>6.7.1998</td>
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<tr>
<td>Tunisia</td>
<td>23.6.1999</td>
<td>15.7.1999</td>
</tr>
<tr>
<td>Uganda</td>
<td>15.9.1993</td>
<td>20.1.1994</td>
</tr>
<tr>
<td>Zambia</td>
<td>24.1.1990</td>
<td>15.4.1990</td>
</tr>
</tbody>
</table>

### African Parties — full compliance with reporting requirements

- 41 countries fully reporting on compliance
- 4 countries partially reporting on compliance

Every Party to the Montreal Protocol is required to report their annual production and consumption of ODS. Developing country baseline production and consumption of ODS is determined by the average reported by the country from 1995-97.

### Non-Party Countries
- Cape Verde
- Equatorial Guinea
- Eritrea
- Guinea Bissau
- Rwanda
- Sao Tome and Principe
- Sierra Leone
- Somalia
The Montreal Protocol obliges signatory Parties to meet specific reduction targets.

The most critical reduction targets for African countries under the Protocol, during the next few years, are chlorofluorocarbons (CFCs), halons, methyl bromide (MBr) and hydrochlorofluorocarbons (HCFC).

The phase out schedule for these substances is shown in the timeline on the opposite page.

Some countries have already made rapid progress. For example, between 1991 and 1996, Ghana decreased domestic ODS consumption by 85 percent. Between 1991 and 1998, Mauritius reduced its ODS consumption by 60 percent.

By December 2000, as a positive indicator of Africa’s commitment to the Protocol, many African countries are expected to successfully meet the first target under the Protocol — the July 1999 CFC freeze.

Based on 1999 reports received to date, analysis shows that 33 countries will be able to meet the 1999 freeze and a further 4 countries should meet the freeze with continued monitoring and assistance. Only two countries will require special assistance to meet the target.

The next major step will be for African countries to maintain the positive momentum and start rapidly reducing CFC consumption in order to achieve the required 50 percent cut by the year 2005 and complete phase out by 2010.

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**Aggregate Consumption of CFCs — Africa moving beyond compliance**

*Note: Figures show data from 39 countries that have reported for 1999.
Source: UNEP Ozone Secretariat*
**COMPLIANCE TIMELINE**

- **July 1, 1999**: Freeze of CFCs
- **2002**: Freeze of halons
- **2003**: Freeze of MBR
- **2005**: Freeze in MC
- **2007**: Annex A CFCs reduced by 50%
- **2007**: Halons reduced by 50%
- **2010**: MCF reduced by 30%
- **2015**: CTC reduced by 85%
- **2016**: Annex A CFCs reduced by 85%
- **2040**: 100% phase out of CFCs, halons and CTC
- **2019**: MCF reduced by 70%
- **2010**: 100% phase out of MCF
- **2015**: Freeze of HCFCs at baseline figure of year 2015
- **2040**: HCFCs phased out

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**Mauritius Terminal Phase Out Plan**

The government of Mauritius intends to complete a terminal phase out by 2005 — five years ahead of the 2010 target required by the Protocol. Measures taken have included regulations already in force under the Consumer Protection Act for banning imported aerosols containing CFCs as propellants and appliances containing CFCs as refrigerant. Quotas have been levied on importers under the Act, with annual linear reductions of 20 percent until 2005. Other measures include the mandatory labelling of products and equipment using ODS, the participation of industry in the CFC ban and reduced tariffs on ODS substitutes. By 2000, Mauritius had successfully met the 1999 freeze. Importers are collaborating with the National Ozone Unit and the quota system is being fully respected with the Consumer Protection Act as its legal base. With an intensive ongoing public awareness campaign, the country is confident that it will attain its goal before 2010.

**Meeting the 2010 Phase Out — Ghana**

Ghana envisions no major difficulties in phasing out ODS use by the target date of 2010. Since the creation of its Country Programme in 1992, the country has implemented a number of high priority enforcement, regulatory and legislative measures. The Environmental Protection Agency Act of 1994 and the Pesticide Control and Management Act of 1996 require all importers of industrial chemicals and pesticides, including all ODS defined under the Protocol, to obtain an import permit from the EPA. Applications are screened by the Ozone Office to ensure that no banned chemicals are allowed into the country. The Ozone Office also conducts surveys on ODS imports and distribution outlets throughout the country, verified through on-site visits, and estimations of illegal trade in ODS. “Ghana is now committed to further sharing its experiences with other developing countries in order to support their efforts for phasing out ODS,” said Ghana’s Minister for Environment, Science and Technology, Mr. J.E. Afful.

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**Trends in Consumption — CFCs**

**Mauritius**

- 1992: 60
- 1993: 60
- 1994: 60
- 1995: 60
- 1996: 60
- 1997: 60
- 1998: 60
- 1999: 60
- 2000: 60
- 2001: 60
- 2002: 60
- 2003: 60
- 2004: 60
- 2005: 60
- 2006: 60
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- 2011: 60
- 2012: 60
- 2013: 60
- 2014: 60
- 2015: 60
- 2016: 60
- 2017: 60
- 2018: 60
- 2019: 60
- 2020: 60
- 2021: 60
- 2022: 60
- 2023: 60
- 2024: 60
- 2025: 60
- 2026: 60
- 2027: 60
- 2028: 60
- 2029: 60
- 2030: 60

**Ghana**

- 1992: 60
- 1993: 60
- 1994: 60
- 1995: 60
- 1996: 60
- 1997: 60
- 1998: 60
- 1999: 60
- 2000: 60
- 2001: 60
- 2002: 60
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- 2014: 60
- 2015: 60
- 2016: 60
- 2017: 60
- 2018: 60
- 2019: 60
- 2020: 60
- 2021: 60
- 2022: 60
- 2023: 60
- 2024: 60
- 2025: 60
- 2026: 60
- 2027: 60
- 2028: 60
- 2029: 60
- 2030: 60
National Ozone Units (NOUs)
The NOU is the government unit responsible for managing the national ODS strategy as defined in the Country Programme. Implementing the plan by which a nation’s ODS commitments are met, the NOU is also responsible for fulfilling a country’s data reporting obligations under the Montreal Protocol and monitoring progress.

Typical NOU officer activities include: the daily administration of the national effort to phase out ODS; co-ordination of overall implementation of the institutional strengthening (IS) project; preparation of policies and legislation for implementation of the Protocol; promotion of co-operation between industry and government; monitoring the consumption of ODS; and conducting public awareness campaigns on ODS.

For example, the Gambian NOU, established in 1997, created a National Technical Working Group to control, monitor and eliminate ODS. The Group consists of representatives from ministries and the major ODS-using industries, from breweries to fisheries to refrigeration service companies.

Country Programmes
The Country Programme is the blueprint for Article 5 countries. It contains the national strategy for the phase out of ODS and is the mechanism for obtaining further Multilateral Fund support.

Usually prepared with the assistance of one of the implementing agencies, it provides details on the use of controlled substances, the institutional framework for controlling them, relevant industry and government involvement, an action plan with time frames and budgets and a listing of specific projects requiring funding.

The first Country Programmes in Africa were completed and approved by Zambia and Ghana in 1992. Country Programmes and refrigerant management plans for recently joined parties such as Liberia are currently being prepared.

Policies and Laws
One of the main requirements for successful ODS phase out is the creation, implementation and enforcement of new laws, policies and regulations.

Most African countries now have legislation in force or in draft form to control ODS consumption and imports. For example:

- **Malawi**: Regulations, put into force in 1998, contain several control measures on ODS consumption including a ban on imports of second-hand refrigerators designed to use ODS – also backed by strong customs enforcement.

- **Kenya**: The government created the necessary legal instruments for promoting ODS phase out through the Environmental Management and Co-ordination Act of 1999 and a waiver on import duties and taxes on equipment donated to help implement the Protocol.

- **Burkina Faso**: In 1999, the government created an ODS-specific importation list with the names and codes for all controlled ODS products and materials.
• **Gabon:** The government approved a Ministerial Order which controls the consumption of ODS in the country.

• **Niger:** The government approved a Ministerial Order controlling the imports of halons, CFCs and methyl bromide.

**Refrigerant Management Plans (RMPs)**

One of the most challenging ODS reduction actions is to phase out CFC consumption in the refrigeration servicing sector. A Refrigerant Management Plan (RMP) is an integrated cost-effective strategy for ODS phase out in the refrigeration and air conditioning sectors that evaluates all alternative technical and policy options, and provides a framework for CFC phase out.

RMPs typically seek to:

• Reduce the consumption of CFC-11 and CFC-12 refrigerants and R-502 blend and attain zero consumption of these by 2010 or earlier;

• Train refrigeration technicians on good management practices (especially in refrigerant recovery and recycling) and train customs officers;

• Develop and enforce related legislation, regulations and ODS licensing systems; and

• Organise workshops for policy-makers/decision-makers.

Most African Parties are currently implementing RMPs, while four others — Angola, Djibouti, Democratic Republic of Congo and Togo — have them under preparation.
Co-operation and the sharing of experiences through regional networks, training and partnerships — within Africa and between the continent and abroad — is invaluable in improving and facilitating Africa’s achievements with the Protocol.

UNEP’s OzonAction Programme created a main networking forum of national ODS offices (ODSONET). Conducted at the regional level and supported by UNEP’s Regional Office for Africa (ROA), Africa’s two sub-networks — for French-speaking and English-speaking Africa — each have 22 member countries. With a total of 17 meetings, each conducted in different countries throughout the region since 1995, ODSONETs have been key tools for reviewing the status of the implementation of the Protocol in each country, sub-region and region. They have also facilitated the development of NOU skills and technology transfer.

Co-operation has also been highly visible through training and workshops — all the more so as most international assistance to African countries has been for non-investment activities such as institutional strengthening and capacity building.

Since 1991, a total of 29 training-related workshops have been conducted throughout the region — the first in Egypt in 1991 regarding practical implementation of the Protocol. Meetings under the same theme were held in Kenya in 1992 and Swaziland in 1994.

Training related to good practices in refrigeration, Refrigerant Management Plan (RMP) implementation and recovery and recycling have been particularly widespread. A total of 12 workshops have been conducted, beginning with Kenya in 1992 and Ethiopia and Gabon in 2000. Additionally, four workshops were held to improve customs training for RMP implementation.

Four workshops — in Cameroon, Burkina Faso, Senegal and Uganda — were held to discuss critical issues related to the control and monitoring of ODS consumption at the sub-regional and regional level. Four additional workshops were held to increase awareness of problems and solutions related to methyl bromide phase out in Zimbabwe, Niger and Malawi, with the latest in Senegal in December 1999.

Finally, a regional look at ODS phase out in SMEs was convened in South Africa in 1997 and a workshop of technology transfer for French-speaking countries was held in Cameroon in 1996.

South-south assistance between African countries is also growing in importance, from Mali and Chad co-operating in NOU training to Senegal and Congo working together on Country Programme completion. Further, Zimbabwe assisting Zambia and Mozambique in data reporting.
The Kenyan government has long recognised that the main responsibility for replacing ODS with suitable alternatives lies squarely with the business and industry sectors. As a result, the Kenyan government, in collaboration with UNEP, identified one of the largest private companies in the country, Twiga Chemical Industries Limited, to host Kenya’s World Environment Day celebrations. The company accepted the challenge, branding the experience as a showcase for desirable partnership between the public and private sector that is essential in solving environmental problems as enshrined in Agenda 21.

Dr. David M. Okioga, Co-ordinator, Kenya Ozone Office, Ministry of Environment and Natural Resources, Kenya
Industries in African countries have been very successful in reducing ODS through the transfer of technologies, particularly in the aerosol, foam, fire extinguishing, refrigeration and metal cleaning sectors.

Numerous technology transfers have been facilitated through investment projects that have been approved by the Multilateral Fund. For example, projects that assisted in eliminating CFCs in refrigeration and air-conditioning applications include the manufacture of commercial refrigeration equipment in engineering and metal work companies in Egypt and the phasing out of CFCs in domestic refrigeration systems in Algeria, Cameroon, Mozambique, Nigeria and Zimbabwe. Other examples include:

- **Gambia**: Conversion of a block foaming machine to eliminate consumption of CFCs at the Karan Foam Manufacturing Ltd. plant outside Banjul in 1998 — phasing out the entire foam sector consumption of CFCs in the country (11 tonnes of CFC-11).

- **Cote D’Ivoire**: Projects geared to phasing out ODS at a foam producing plant and at two aerosol filling plants, completed in 1996, resulted in the phase out of 139 ODP tonnes.

- **Morocco**: Phase out of 13 ODP tonnes of CFCs in the manufacture of integral skin foam and moulded PUF at Maghreb Elastoplast. The project was completed in Sept. 1998.

- **Senegal**: Establishment of a nationwide network for recovery and recycling of refrigerants has phased out 36 tonnes of CFC-12.

- **Sudan**: Project to phase out CFCs at Sudanese Cosmetics and Household Products Ltd., begun in Nov. 1995, resulted in the phase out of 281 ODP tonnes.
**Zimbabwe demonstration project identifies promising methyl bromide alternatives**

Zimbabwe’s tobacco industry has been a major user of methyl bromide (an ODS) in Africa, having consumed approximately 579 ozone depletion potential (ODP) tonnes in 1997.

Thanks to new recent research developments coming from Zimbabwe’s Tobacco Research Board, however, an alternative to methyl bromide was discovered.

The new approach relies mainly on producing seedlings using a “floating tray” system where tobacco seedlings are cultivated in soil-less substrates in polystyrene trays placed over water. With the trays, farmers are able to reduce the cost of inputs, including expenditures on labour, by two-thirds. Seedlings grown in the floating tray system are also far more uniform than those produced in traditional seedbeds, facilitating all operations from transplanting through to harvest of the crop.

The floating tray system is expected to move onto farms in Zimbabwe starting with the 2001 growing season.

A.D. Turner, PhD., Horticultural Research Centre, Zambia

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**“The transition from ODS to ozone-friendly substances is basically a technological change. Technology transfer is therefore a crucial step in the ODS phase out process.”**

Dr. Omar El-Arini, Chief Officer, Multilateral Fund Secretariat

**“As one of the Egyptian manufacturers, I was greatly honoured to be part of the Montreal Protocol to phase out ODS. Technopol was indeed surprised about the remarkable success of the replacement to a new technology and machinery. It is a unique collaboration between developed and developing countries to solve a problem without any negative impacts on economic, social and environmental life.”**

Mr. Essam El-Sayad, Chairman, Technopol Egypt

**“We urge the international community and the implementing agencies of the Multilateral Fund to consolidate their activities to strengthen the capacities of our low CFC-consuming countries and to provide effective solutions to the problems of maintaining and repairing ODS-using equipment. Further, technology transfer should be adapted to our level of economic development.”**

His Excellency, El Hadj Issoufou Assoumane, Minister of Environment and Against the Desertification of Niger
Many citizens throughout the African continent were aware that there was a serious problem in the sky — that there were increasing dangers of too much exposure to the sun’s radiation. Many even knew that one protective layer of the sky, our precious ozone layer, now had a “hole” in it. But many didn’t know why, or what they as individuals could do about it. How could one person help save the sky?

One day in Ethiopia, however, a refrigeration technician received a 1999 calendar about the ozone layer in his local language, published by the Ethiopian NOU. One day in Burkina Faso, a video about the problems with the ozone layer and the Montreal Protocol entitled Every Action Counts was shown to students and teachers at the national university and Centre of Primary Teacher Training. And one day in Burundi, local industrialists learnt more about their government’s efforts to cut CFCs through a local news Bulletin.

These activities were only three of the many carried out throughout the African continent. Each one successfully increased awareness about issues and projects related to the ozone layer among local citizens and stakeholders. Perhaps even more than that, they helped people to become more motivated and confident that individual and local actions, no matter how small, did count.

From publications and newsletters, to directories and promotional T-shirts, all helped to increase awareness among populations, often in a creative way tailored to the specific needs of individuals and cultures.

“Awareness activities are working. In the refrigeration sector, all new equipment being imported is ozone-friendly. Also, all new projects have to undergo Environmental Impact Assessments and developers have begun to take ODS into consideration when planning investments.”

Malawi Country Report April 1996
Celebrations and events also served as ideal opportunities to spread the message to citizens and stakeholders. For example, in Algeria on June 6 1999, World Environment Day, the local NOU organised an open house attended by representatives from ministries, industry, NGOs and universities — giving each a chance to discuss in person how they and others see the issues and possible solutions.

Knowing that the next generation will lead the struggle to save the precious ozone layer, numerous African countries also began educating their children through enjoyable and creative approaches. Again in Algeria, children contributed to a poster exhibition on Protecting the Ozone Layer, presided by the Secretary of State for the Environment. And in Zimbabwe, school competitions included ozone cartoon drawing and ozone essay writing.

From Algeria to Zimbabwe, awareness raising activities have helped each person believe that they can help save the sky, no matter who and where they may be, for the sake of everyone and the planet.
The countries of Africa have together exceeded all expectations in their commitment to help preserve and protect the ozone layer. They have ratified the Montreal Protocol and many of its amendments, and most are complying with the first of the Protocol’s targets. They have created new laws, policies, plans and institutions to guide implementation, and they have brought together groups from far and wide to exchange and use new ideas and to co-operate in their joint actions. They have effectively used internationally available resources to transfer non-ODS technologies to their industrial practices. And they have made their populations more aware of the issues, and more confident to support change.

Along with these patterns of achievement, however, are new unexpected challenges requiring immediate attention. The most crucial challenges for the future are:

- **Phasing out methyl bromide** — Methyl bromide use in the agricultural sector is increasing in some African countries. Further assistance should be provided for awareness raising and promoting effective alternatives.
- **Imports of old equipment** — Developed countries had earlier phase out dates under the Protocol and many are exporting surplus ODS-using equipment to developing regions such as Africa. This increases the consumption and reliance of African countries on ODS, making compliance more difficult and more expensive.
- **Phase out in the informal sector** — Enterprises in Africa’s large informal sector are significant consumers of ODS but are often unaware of the ozone problem — getting the message to them and getting them to phase out are major challenges.
- **Illegal trade of ODS** — Smuggling and other illegal acts could undermine global efforts to phase out ODS. The problem is all the more difficult to solve with the limited resources available. Further, ODS are often colourless gases with different names, and the use of illegal codes, false permits and incorrectly marked cylinders is on the rise.
- **CFC disposal** — The safe disposal of surplus and contaminated CFCs is an increasing problem with the success of recovery and recycling schemes. African countries have urgent need of an environmentally safe and affordable means to deal with surplus ODS recovered from equipment.

Nonetheless, by continuing to strengthen and improve internal networks and co-operation within the region, the achievements of the more progressive African countries can be used to leverage more achievements among the weaker.

Given the commitment made by Africa to date, we can be confident that, with continued assistance and understanding, these challenges facing the continent today will become more patterns of achievement tomorrow.

“For Senegal, as for a lot of African countries, effective implementation of the Montreal Protocol includes banning the importation of obsolete ODS-using equipment such as refrigerators and freezers. However, to achieve this, we will need continued support from the Montreal Protocol’s financial mechanisms for training, awareness raising and capacity building.”

His Excellency Mr. Moustapha Niiasse, Prime Minister of Senegal, 2nd African Minister’s Conference on the Environment, Senegal, October 2000
Why should we deplete the ozone layer that protects us from the effects of harmful ultraviolet radiation?
Do you want our DNA material damaged?
Or do you want accelerated skin cancer?
And our small sea creatures harmed?
Tell me, tell me my friends.

Do you know that this exposure suppresses
The body’s immune system
Making it easier for tumours to take hold and spread?
Do you know that ozone depletion
Makes people more vulnerable to infectious diseases?
Yes, this exposure causes herpes, cataracts and blindness
And reduces the quality of our food crops.

Why then should we burn oil, wood and coal
Which emit gases that create the greenhouse effects?
My friends, are we environmentally friendly
When we deplete its most important components?
Why, why my friends should we use
Machines that emit ozone-depleting substances
And contribute to global warming?
Tell me, tell me my friends.

We say to you developed and developing countries alike,
We are one world, one earth.
Let us not sit back and watch.
Let us comply with control measures.
Let us move away from ozone-depleting substances.
Let us join hands to solve the problem
To solve the problem once and for all.

Poem by Mr. Charles M. Magoma
Recited by children from the
Thika Road Academy Primary School, Kenya
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