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Executive Committee of
the Multilateral Fund for the
Implementation of the Montreal Protocol

Twelfth Meeting
Montreal, 28-30 March 1994

COUNTRY PROGRAMME: SRI LANKA

This document consists of:

- (a) Country Programme Evaluation Sheet (prepared by the Fund Secretariat)
- (b) Transmittal Letter from the Government of Sri Lanka
- (c) Country Programme Cover Sheet
- (d) Country Programme

SRI LANKA COUNTRY PROGRAMME EVALUATION SHEET

National Implementing Agency: Montreal Protocol Coordinating Committee, Ministry of Environment and Parliamentary Affairs

Status of ratification of the Vienna Convention and the Montreal Protocol

	Signature	Ratification	Entry Force
Vienna Convention (1985)		15/Dec/89	13/Mar/90
Montreal Protocol (1987)		15/Dec/89	15/Mar/90
London Amendment (1990)		16/Jun/93	14/Sep/93
Copenhagen Amendment (1992)			

Production of controlled substances: 0 metric tonnes (mt)

Consumption of controlled substances (1991): 227.6 metric tonnes
231.4 weighted tonnes (ODP)

Substance (ton)	CFC						Halon			Solvents			M-Br
	11	12	113	114	115	Total	1211	1301	Total	CTC	MCF	Total	
ODS	39.0	162.4	2.5			203.9	1.0		1.0	22.7		22.7	
ODP	39.0	162.4	2.0			203.4	3.0		3.0	25.0		25.0	

Source: Country Programme (1994)

Distribution of ODP by substance:

CFC: 87.9% Halon: 1.3% CTC, MCF: 10.8%

Distribution of ODP by sector:

Sector:	Aerosol	Foam	Halon	Other	Refrig.	Solvent
Consumption (tonnes):	3.0	10.0	3.0		188.0	27.0
Percent of total:	1.3%	4.3%	1.3%		81.3%	10.8%

Country Programme

Duration of country programme: 3 years (1994-1996)

ODS phase-out target:

Step-wise phase-out of ODS between 1995 and 2000, when all ODS will be phased-out

Phase-out priority area:

Foam and refrigeration sectors

Cost of activities in country programme: \$6,870,000

Strategy:

The Govt. proposes to phase-out consumption of ODS by the year 2005. The action plan includes, inter alia, development of procedures for importation of ODS, system to monitor consumption of ODS, institutional strengthening, enhancement of public awareness and development of investment projects in the foam and refrigeration sectors.

COMMENTS AND RECOMMENDATIONS OF THE FUND SECRETARIAT

COMMENTS

1. The Sri Lanka Country Programme has been prepared in accordance with the guidelines set out in the Procedure for Presentation of Country Programmes and Project Proposals. The Country Programme provides a clearly defined Action Plan supported by a number of identified projects for the achievement of the goal of phasing out the use of ODS by 2005. Two notices annexed to the Country Programme show the Government's efforts at reaching and mobilising the users of ODS in Sri Lanka in order to move the ODS phase-out in the country.

2. The total cost of phase-out estimated at US \$6.87 million includes "other indirect costs" roughly estimated at US \$5.0 million. Some of the items under these costs relate to issues that may need to be addressed at the policy level. These include:

- loss of revenue due to waiving of import duties
- additional cost payable for importing non-CFC substances
- interests payable on CFCs stocked for future use

3. Ten projects including institutional strengthening have been identified to be undertaken mainly in the refrigeration sector, in the period 1994-1998 for the phase-out of ODS. The World Bank has been identified as the implementing agency for all the investment projects, while UNDP will be responsible for training and other technical assistance activities.

4. The institutional strengthening project proposal has been prepared and is being submitted together with the Country Programme for approval and funding.

5. The following projects merit attention as they raise issues which have to be noted and/or addressed during their design.

Project No. 2: Establish 24 units for recovery and one centre for recycling CFC-12 refrigeration

6. The decision on establishment of a central recycling facility should be informed by the level of CFC consumption in the various refrigeration sub-sectors noting that the output from the recovery of CFC from domestic refrigerators may not be significant.

Project No. 3: Country Programme Implementation

7. This project provides for an incentive scheme and interest free loan scheme for voluntary change over to non-ODS equipment and awareness campaign directed at professionals, executives and technologists responsible for phase-out decision-making. While an incentive scheme may provide stimulus for a faster phase-out, the modalities for such a scheme should be fully worked out and approved by the Executive Committee due to the potential for double counting inherent in such approach, given that projects have been identified for all the major ODS consuming sectors.

8. With regard to the awareness campaign it may be noted that facilities, personnel and funding provided under the institutional strengthening project are aimed at such an activity. Hence, this aspect of the project would not be eligible for funding.

Project No. 7: Conversion of aerosol plant to phase out CFC-12

9. This project proposed HFC-134a as a possible substitute as cosmetic aerosol propellant. Such application of HFC-134a may not be cost-effective and would not be environmentally sound on account of its extremely higher price relative to aerosol grade hydrocarbon propellants and its global warming potential, which is significant because HFC-134a used in cosmetic aerosol will be emitted rather than contained.

10. The Country Programme identifies technical and commercial organizations which could cooperate with the implementing agencies to execute the phase-out projects

Institutional Strengthening

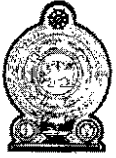
11. Amount requested: US \$154,682
Total consumption (1991): 231 tonnes ODP.

The structure of the ODS-using industry and the consumption patterns determine the potential scope of the proposed Montreal Protocol Unit. Based on the analysis of these factors, the level of manpower for the Unit was determined. Following exchanges with the Government of Sri Lanka, the amount of US \$154,680 was recommended for approval in accordance with the project proposal.

RECOMMENDATIONS

The Fund Secretariat recommends as follows:

1. To approve the Country Programme of Sri Lanka. Approval of the Country Programme does not denote approval of the projects therein or their funding levels.
2. To approve the amount of US \$154,680 and US \$20,110 support cost for institutional strengthening in Sri Lanka to be included in the UNDP 1994 Work Programme.



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Dr. Omar E El-Arini
Chief Officer, Secretariat
Multilateral Fund of the Montreal Protocol
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Sri Lanka Country Programme

I forward herewith the Country Programme for the phase out of ozone depleting substances (ODS) in Sri Lanka, prepared by a National Consultant engaged by UNDP, on behalf of the Ministry of Environment and Parliamentary Affairs, which is the lead Agency for the implementation of the Montreal Protocol in Sri Lanka.

Sri Lanka is a Party to the Montreal Protocol and the Vienna Convention and has ratified the London Amendment to the Montreal Protocol. Action is being taken to ratify the Copenhagen Amendment as well. Sri Lanka operates under paragraph 1 of Article 5 of the Protocol.

In August 1993, the Cabinet approved a phase out schedule for ODS with year 2000 as a target for new application and year 2005 for servicing existing equipment. The Cabinet also decided to bring all ODS imports under a licence scheme. These decisions were subsequently announced in national newspapers. (copy annexed).

The Ministry proposes to establish a separate unit within it to monitor compliance with the Protocol, advise the Government agencies and assist the industries in their ODS phase out programmes.

I would appreciate it if this programme is taken for consideration at your forthcoming meeting of the Executive Committee.

Yours faithfully,

D Nesiah
Secretary
Ministry of Environment & Parliamentary Affairs

cc. Resident Representative, UNDP
Secretary, Ministry of Industries Science & Technology
Secretary, Ministry of Foreign Affairs
Director General, External Resources Dept.

COUNTRY PROGRAMME COVER SHEET

Country : Sri Lanka

Date Received :

Period Covered : 1994 - 1996

Lead National Agency : Ministry of Environment and
Parliamentary Affairs

Lead Implementing Agency: Montreal Protocol Unit (Proposed)

1. Phase out schedule

Substance	Current Consumption in 1991 t ODP	Planned consumption till phase out t ODP (from 92)	Planned year of phased out
CFC-11	39	368	2005
CFC-12	162	1519	2005
CFC-113 CFC-115	2	11	2005
Halon 1211	3	19	2005
CCl ₄	25	153	2000
Total	231	2070	

2 Government Action Plan

Year	Description of Action	Sector	Intended Effect
1991 Sep.	Setting up a Coordinating Group on the Implementation of the Montreal Protocol	All	Creating Institutional Framework
1992 Jan.	Setting up a Network of ODS Importers and Users	All	Assistance in collection of data
1994 Jan.	Announcement of phase-out schedule	All	Plan for the changing over
1994 Apr.	Setting up Montreal Protocol Unit	All	Management and monitoring of phase out activities
1994 May	Gazette Customs new sub-headings	All	Easy monitoring of ODS imports
1994 June	Introduce import licence scheme for ODS (on reducing quota)	All	Easy monitoring of ODS imports -do-
1994 Sep.	Introduce User Permit Scheme	All	Easy monitoring of applications
1995	Introduce a Subsidy and a concessionary loan scheme	All	Promote investment on non-ODS technology
1995	Introduce import licence scheme for Equipment containing ODS	Ref	Easy monitoring of ODS imports
1995	Grant duty concession for the import of ODS substitutes	All	Incentive to early phase out
1995	Grant duty concessions for the import of equipment containing ODS substitutes	Ref	Incentive to early phase out

3. Project Summary

Year	Type of Project	Project Description	Project Cost US \$ m	Implementing Agency	Quantity Phased out t-ODP
1992	Country Study	to prepare Country Programme and Collect consumption data in sectors		UNDP	
1994-96	Institutional Strengthening	to set up a Montreal Protocol Unit within Ministry of Environment and Parliamentary affairs	0.172	UNDP	
1994-95	Investment	to set up centres to recover ODS from refrigerators and freezers and recycle them	0.20	IBRD	
1994-95	Country Programme Implementation	to provide subsidies and incentives and conduct workshops to professionals	0.10	IBRD	
1994-95	Training workshop	to educate Ref. Technicians on recovery and recycling of ODS and on new technologies change over	0.05	UNDP	
1996-98	Investment	to phase out CFC12 for refrigerator compressors and provide staff training in three refrigerator factories	0.40	IBRD	
1995-96	Investment	to phase out CFC 11 technology for foam blowing at 3 refrigerator factories	0.15	IBRD	
1995-96	Investment	phase out CFC 12 and introduce non CFC technology in the manufacture of aerosol	0.05	IBRD	
1995-96	Investment	replace halons in fire extinguishers and recover halon	0.10	IBRD	
1995-98	Investment	retrofit non CFC chillers in place of CFC 12 chillers in central AC system	0.40	IBRD	
1995-98	Investment	convert CFC 11 chillers with non-CFC chillers in central AC system	0.25	IBRD	

4. Costs

Cost of Activities and Projects in Country Programme	: US \$ 1.872 million
Other indirect Costs (rough estimate)	: US \$ 5.0 million
Total Cost of phase out	: US \$ 6.87 million
Total ODS saved up to 2010	: 8335 t ODP
Estimated Cost effectiveness	: US \$ 824 per t ODP

**SRI LANKA COUNTRY PROGRAMME
FOR PHASE OUT OF
OZONE DEPLETING SUBSTANCES**

Submitted to
**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL**

on
24th February 1994

by

**Ministry of Environment and
Parliamentary Affairs
Colombo 4, Sri Lanka**

Executive Summary

Sri Lanka ratified the Montreal Protocol on Substances that Deplete the Ozone Layer on 15th December 1989 and its London Amendment on 16th June 1993. The Ministry of Environment and Parliamentary Affairs, the lead agency responsible for implementing the Protocol has taken several steps towards implementing the Protocol.

The Ministry has set up a Coordinating Committee for Implementing the Montreal Protocol in 1991 and a Network of Importers and Users in 1992. On the recommendation of the Ministry, the Cabinet announced a phase out schedule for Ozone Depleting Substances (ODS) whereby these would be completely phased out by year 2000 for new applications and by year 2005 for servicing existing equipment.

In 1991, Sri Lanka has consumed 231 t ODP of ODS. The breakdown of this by substance and by user sector are given in Fig. 1 and Fig. 2 respectively. The major application of ODS is in refrigeration and airconditioner sector. Even in this, the manufacturing processes consume only a small fraction, the majority being spent on repairs and servicing.

In view of the Government's policy of rapid industrialization by providing Export Processing Zone concessions to all export oriented industries and with the expansion of country's electrification scheme into rural areas, there is high potential for the growth of ODS usage in Sri Lanka. In making the forecasts, a growth rate of 8% was assumed to be consistent with growth rates adopted for other sectors such as demand for electricity which is linked to industrialization and also to usage of ODS containing equipment such as refrigerators.

Total consumption 231 Tonnes ODP

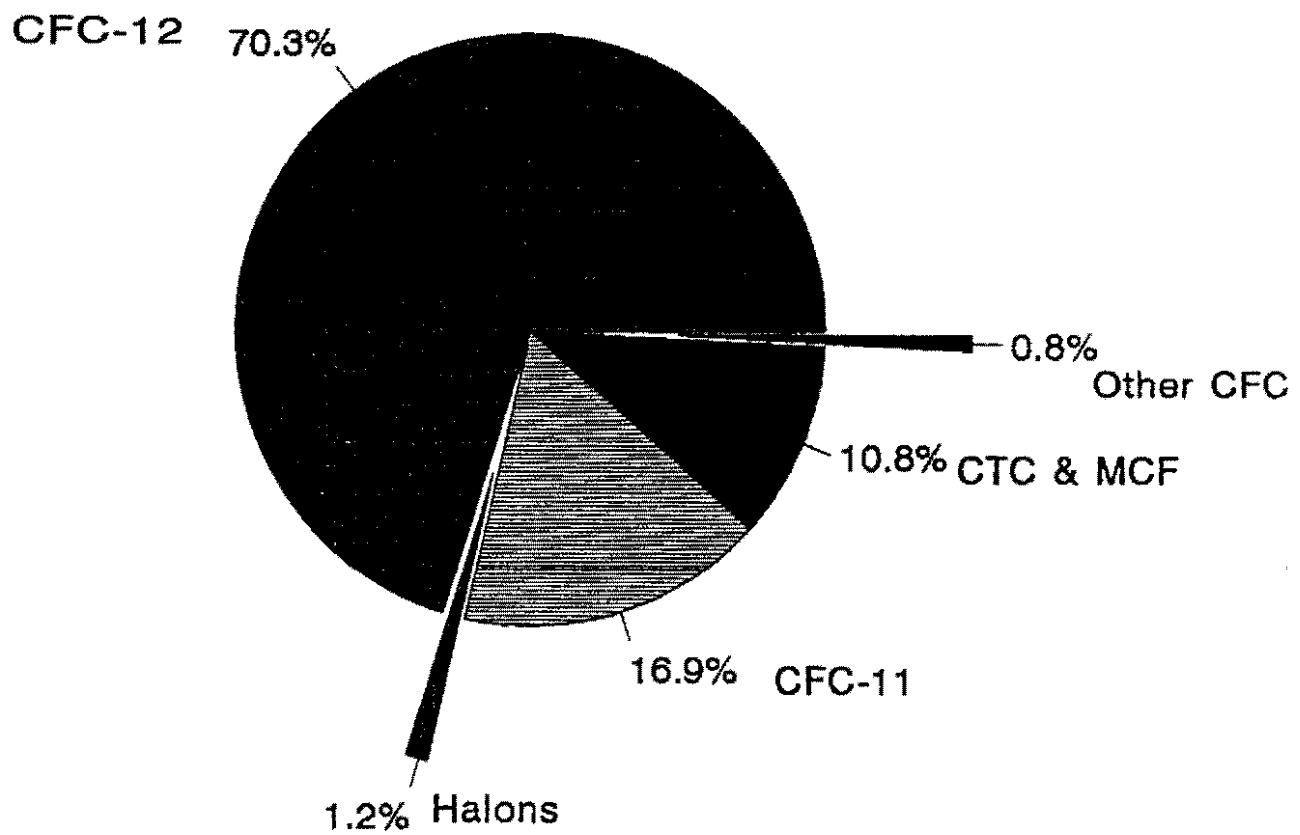


Fig :1 Consumption of ODS by substance in 1991

Total consumption 231 Tonnes ODP

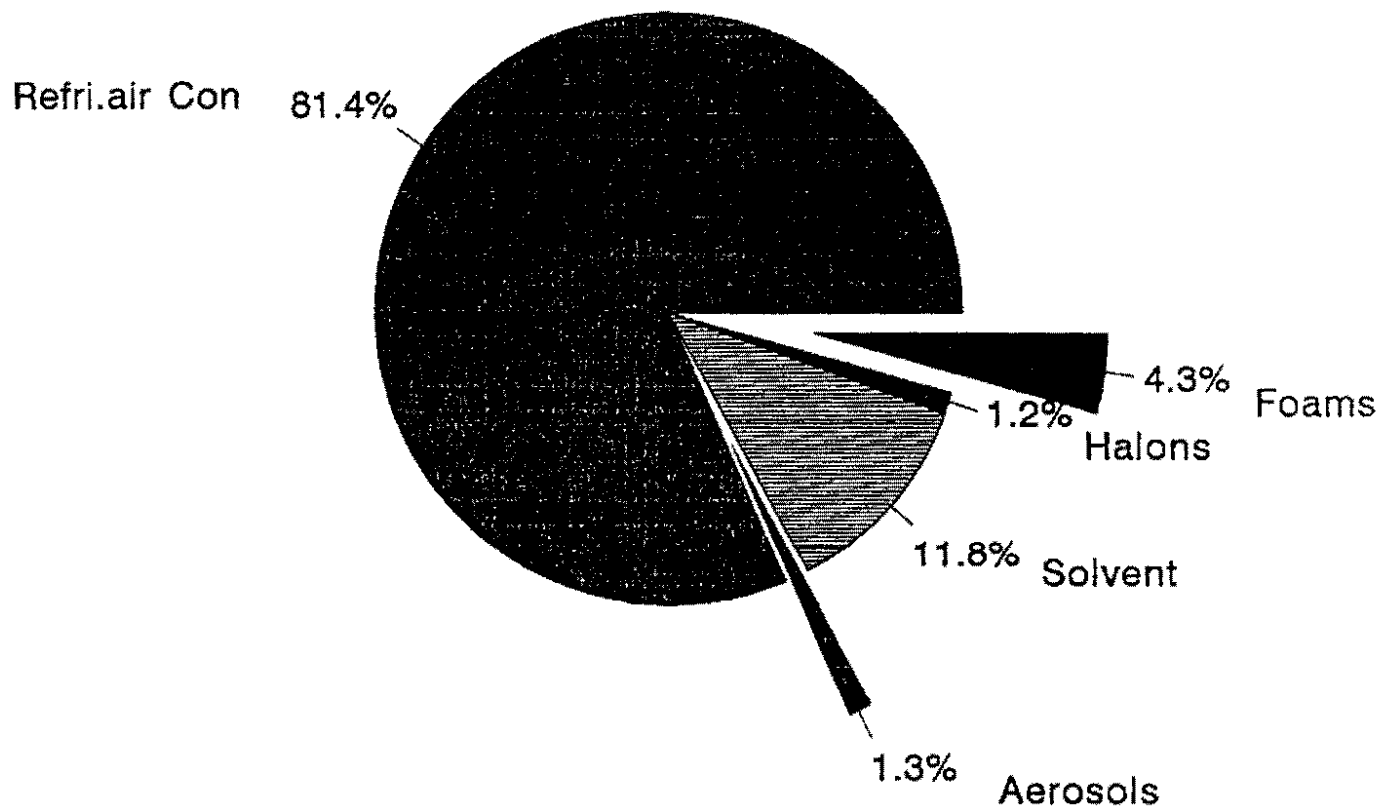


Fig : 2 Consumption of ODS by Sector in 1991

Unconstrained consumption of ODS of each category calculated on this basis is shown in Fig. 3 upto year 2010 according to which the total ODS consumption in 2010 will be 1000 t ODP. Considering a 1.4% growth in population during the same period, a growth of ODS consumption upto 0.045 kg/capita from the current value of 0.015 kg/capita is expected. This figure is still very small compared to the cut-off value for developing countries. The phased out consumption of these substances is shown in Fig. 4 whereby total phase out is achieved by year 2005 after commencing it in year 1995. The total amount of ODS thus saved, relative to the unconstrained consumption is 8335 t ODP.

The Government Action Plan includes in addition to announcing the above phase out schedule, setting up a separate unit-the Montreal Protocol Unit to monitor and coordinate the Country Programme, assist industries to get technology transferred, conduct training workshops and disseminate information.

Already a new Custom coding system has been approved for monitoring import of controlled substances, which will be brought under an import licence scheme very soon. The sale of ODS will be on a reducing quota basis to be consistent with the phase out plan, only to registered users.

However, to be consistent with the Government policy of free market economy and general de-regulations, it is proposed to introduce an incentive scheme with subsidies offered to encourage the private sector to voluntarily change over to non-CFC technology. To implement this scheme, a separate project under Country Programme Implementaiton has been proposed. The scheme of import licence will be extended subsequently to equipment containing ODS, and subsidies will be granted for users to change over to non-CFC type of equipment.

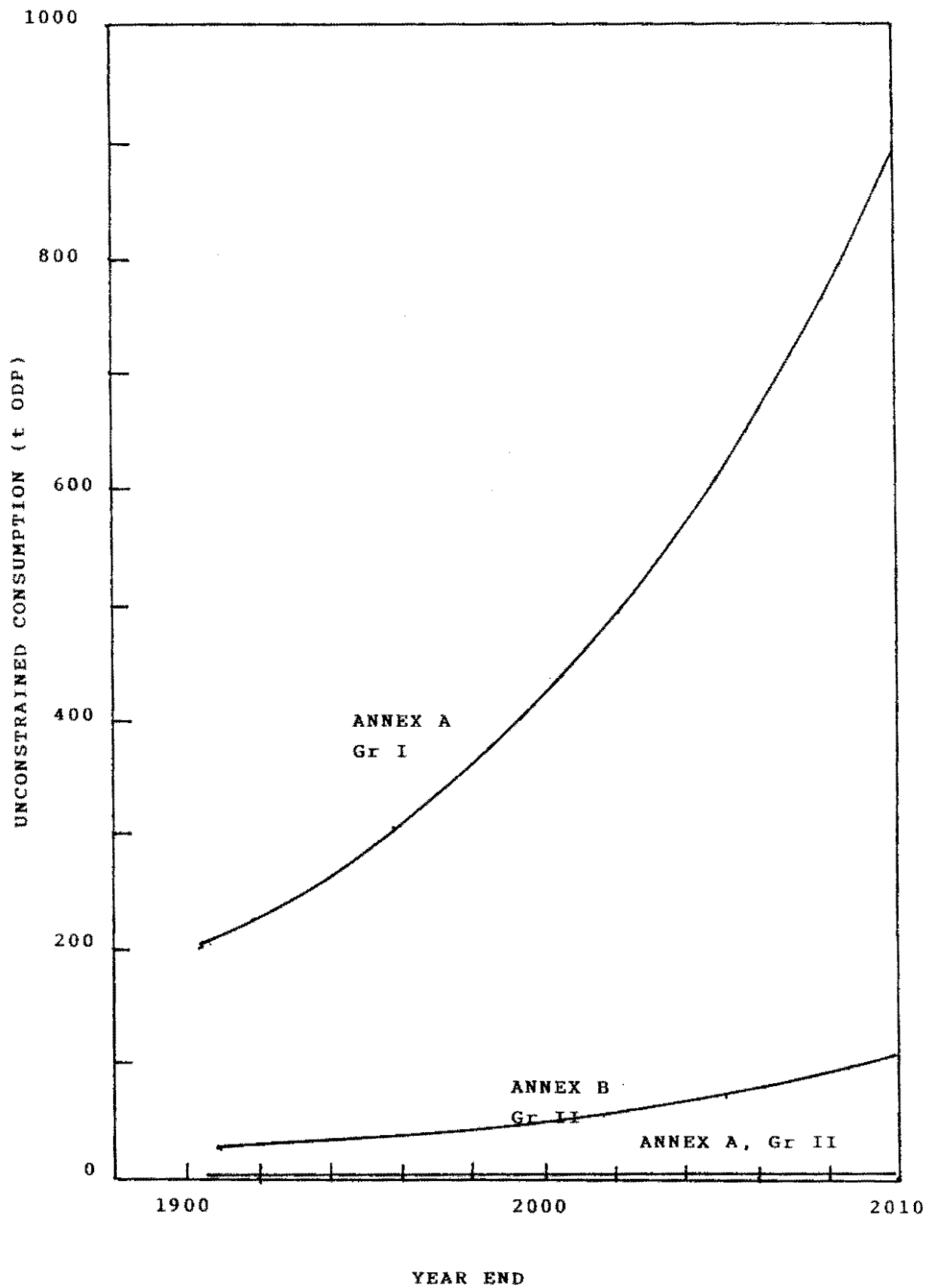


Fig : 3 Forecast consumption of different Groups of ODS

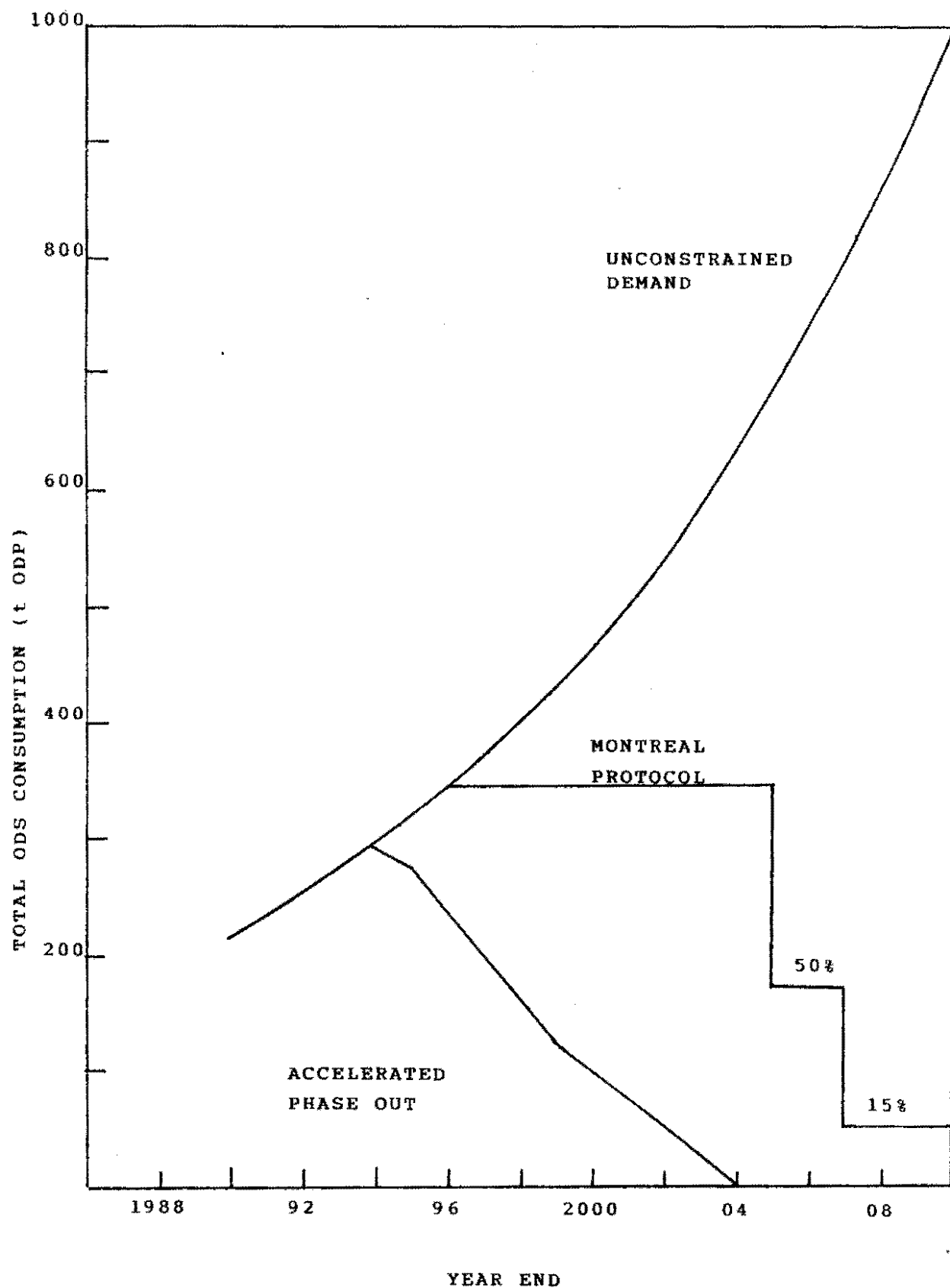


Fig : 4 Proposed phase out Schedule

The Government will also set up centres to recover ODS from service and repair shops and recycle them. Several training workshops are also proposed for technical and professional personnel.

In order to execute the Government Action Plan, it is proposed to get the services of several organizations. These include Ceylon Institute of Scientific and Industrial Research and Central Engineering Consultancy Bureau for technology transfer, National Apprenticeship and Industrial Training Authority for training of technicians, Development Finance Corporation of Ceylon for implementing the subsidy and loan scheme, Ministry of Trade and Commerce, Department of Controller of Imports and Exports, Department of Customs for implementing the import licence scheme, Department of Internal Trade for implementing the user permit scheme, Ministry of Industries, Science and Technology for registration and licencing industries consuming ODS, and the Sri Lanka Standard Institution for certifying products for conformity with any Standard Specification and inspection of imported products prior to release to the market.

In addition to the above projects to be undertaken by the Government, it is proposed that several projects be launched for the manufacturers of items containing ODS such as refrigerators and aerosole as well as central air conditioning facilities to be converted to non-CFC technologies. The projects would include feasibility studies to ensure adopting the most cost-effective technology. These projects are summarised in the attached Cover Sheet. The total assistance requested to implement these projects is US \$ 1,872,000 over a period of three years.

The Montreal Protocol Unit will be responsible for the monitoring of the Country Programme and regular reports will be submitted to the Executive Committee of the Multilateral Fund.

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1.0 INTRODUCTION

1. 1 Purpose

Sri Lanka had a population of 17.2 million in 1991, living on land area of approximately 65,600 sq km. Nearly 80% of the population live in rural areas. Its population growth has been 1.4% for 1990/1991. The per-capita GNP for 1991 has been US \$ 460. The rate of growth of both GDP and GNP during 1991 was 4.6%.

Estimates made by the Ceylon Electricity Board (CEB) for 1990 indicate that only about 28% of households have electricity, and they consume approximately 160 kwh per capita annually. According to forecasts made by CEB, the consumption of electricity is expected to have a growth rate of 8.0 - 8.5 % per annum during the period upto year 2010 or by a factor of 2 approximately each decade. The percentage households possessing refrigerators was estimated for the period 1986/87 as 28% for urban areas and 8% for the entire country, the total number in use being about 253,000 during that period.

The Government of Sri Lanka is committed to the protection of the Environment. It has established a Cabinet Ministry on Environment which deals with all policy matters on environment and liaises related international activities. The Government has also established a separate body, the Central Environmental Authority as its implementing arm. A National Environment Act has been approved by the Parliament and regulations have been gazetted under this Act making Environment Protection and Impact Assessment mandatory components for major developmental and industrial projects. Action is also being taken to control environmental pollution caused by industries and vehicles under this Act.

Sri Lanka Government is a Party to several International Conventions introduced for the protection of environment. Among these are the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer. It ratified both the Vienna Convention and the Montreal Protocol on 15th December 1989. The London Amendment to the Montreal Protocol was ratified on 16 June 1993. Action is being taken to ratify the Copenhagen Amendment as well.

In its commitment to the protection of the ozone layer, the Sri Lanka Government has decided to set a target for phasing out Ozone Depleting Substances (ODS) for new applications 10 years before the time period given to developing countries to do so, and 5 years before, for servicing existing equipment.

This Country Programme presents the status of the current consumption of ODS in the country, and forecasted consumption upto year 2010. A phase-out schedule has also been presented.

Several projects for reducing ODS consumption have been identified and cost estimates are given for implementing these. A separate project for Institutional Strengthening is also given. It is proposed to set up a separate Montreal Protocol Unit within the Ministry of Environment and Parliamentary Affairs to monitor ODS phase-out activities, assist Industries and Trade in implementing projects designed to reduce ODS consumption and disseminate information.

Sri Lanka's current consumption of ODS is about 0.015 kg per capita and hence is eligible for concessions under Paragraph 1 of Article 5 of the Protocol. It is also eligible for financial assistance from the Multilateral Fund of the Montreal Protocol (MFMP) to meet incremental costs incurred in implementing the above Projects. The total assistance requested for implementing the

Country Programme over its initial period of 3 years, is US \$ 1,872,000. It is estimated that the amount of ODS saved by this means upto year 2010 is 8335 tonne weighted for Ozone Depleting Potential (t ODP). This works out to a direct phase out cost of 22 US cts/kg, excluding any indirect costs to the Government.

1.2 Status

The National lead agency responsible for implementing the Montreal Protocol is the Ministry of Environment and Parliamentary Affairs (MEPA). In view of the relation of the Country Programme to industry, MEPA handed over the preparation of this programme to the Ministry of Industries, Science and Technology (MIST) who engaged the services of a National Consultant and a Sub-Contractor through UNDP to prepare the Programme.

The terms of reference for the study were given to them by UNDP. The Sub-Contractor, a Government-owned Business Undertaking, M/s Colombo Commercial Company (Engineering) Ltd., was mainly responsible for collection of data from the industry, trade and customs, and working out the anticipated consumption upto the year 2010.

The National Consultant was responsible for the overall study. The draft report on the Country Programme was discussed at several meetings convened by MIST and attended by representatives of several Government Organizations and Industry.

The draft report was reviewed by the Coordinating Committee on Montreal Protocol set up by MEPA and chaired by its Secretary. The final draft was forwarded to UNDP by MEPA with its own comments through its local Resident Representative. A copy was also transmitted to the Multilateral Fund Secretariat.

This revised report is prepared by a Consultant attached to MEPA after having considered the comments received from the Multilateral Fund (MF) Secretariat. Its contents were recast to fall in line with the format for Country Programmes approved by the MF Executive Committee.

The expenditure for carrying out the reconnaissance survey and preparing the draft Country Programme was met by the Multilateral Fund. The MFMP has allocated a sum of \$ 30,000 for this study. The expenditure was controlled by UNDP, and the actual amount spent is not known.

The Country Programme contains some of the data on ODS consumption independently collected by MEPA, in addition to what was collected by the Sub-Contractor. Most of the data relate to the year 1991.

1.3 Assistance Received

In preparing this report, financial assistance was received from the MFPM, channelled through UNDP. The Consultants benefitted from discussions they had with representations of the following Government Organizations and Private Sector.

- Ministry of Trade and Commerce
- Ministry of Policy Planning and Implementation
- Department of Agriculture
- Department of Customs
- Central Environmental Authority
- Importers of ODS
- Manufacturers of ODS containing equipment

The Coordinating Committee which finally reviewed the draft report comprised representatives from:

Ministry of Industries, Science & Technology
Department of Meteorology
Department of Customs
Department of Attorney General

The Importers of ODS, major end-users, workshops repairing Refrigerators and Airconditioners assisted in providing the necessary data.

2. CURRENT SITUATION

2.1 Consumption of ODS

2.1.1 Current Consumption

Sri Lanka does not manufacture any type of ODS nor does it export any of them. All ODS consumed in the country are imported from several countries. Of all the controlled substances, listed in Annex A and Annex B of the Protocol, Sri Lanka imports only a few - CFC 11, CFC 12, CFC 113, CFC 115, Halon 1211, Carbon tetrachloride (CCl_4) and methyl chloroform (MCF). Certain CFCs are also imported in the form of blends. eg. R 502 containing CFC 115 and HCFC 22. During the year 1991 the consumption of ODS has been 230.9 t-ODP. The quantities imported and consumed during 1991 are listed in Table 2.1. The percentages consumed by substance are shown in Fig. 2.1.

The controlled substances are used in Sri Lanka mainly in the Refrigeration Sector. Their use in Aerosol and Solvent sector is only a small fraction. In the Foam sector CFCs are used only in the manufacture of Refrigerators. The detailed breakdown of ODS usage in different sectors is given in Table 2.2 for the year 1991. The consumption of ODS for 1991 by sector is shown in Fig. 2.2.

Table 2.1

Consumption of ODS in 1991

Substance	Imports tonne	Consumption tonne	ODP	Consumption t-ODP
<u>Annex A, Gr I</u>				
CFC 11	39.13	39.13	1.0	39.13
CFC 12	162.40	162.40	1.0	162.40
CFC 113	1.92	1.92	0.8	1.54
CFC 115	0.55	0.55	0.6	0.33
Sub total	204.00	204.00		203.40
<u>Annex A, Gr II</u>				
Halon 1211	0.91	0.91	3.0	2.73
<u>Annex B, Gr I</u>				
CCl ₄	22.36	22.36	1.1	24.60
<u>Annex B, Gr II</u>				
MCF	2.00	2.00	0.1	0.20
Total	229.27	229.27	--	230.93

Total consumption 231 Tonnes ODP

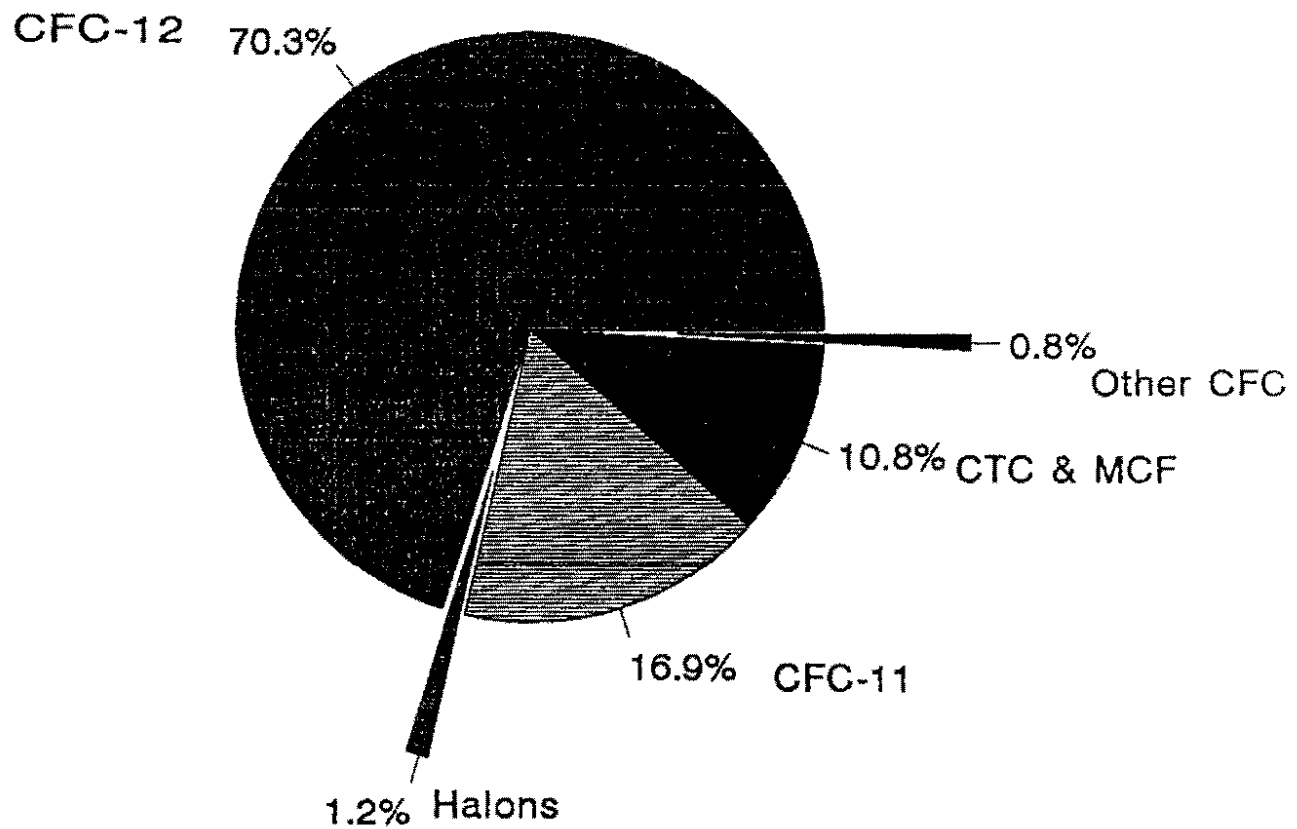


Fig : 2.1 Consumption of ODS by substance in 1991

Table 2.2

Consumption of ODS by Sectors, in 1991

User Sector	Substance	Application	Consumption t ODP
Refrigeration	CFC 11	Auto-air condition- ers, Chillers , Flushing	29
	CFC 12	Refrigerators, Freezers, Auto- Airconditioners	159
Foams	CFC 11	Insulation foam on Refrigerators	10
Aerosols	CFC 12	Propellant	03
Solvents	CFC 113	Dry Cleaning	1.5
	CCl ₄	General Solvent	25
	MCF	Industrial Solvent Industrial Cleaner	0.2
Halons	Halon 1211	Fire Extinguishing	2.7

There are factories manufacturing insulation foam material, but they already use non-CFC technologies. Even in the manufacture of aerosols, CFCs are used only in the production of cosmetics. In the manufacture of other products such as insecticides and paints, hydrocarbons are used as propellants. The use of CFC as solvent is mainly in the garment industry. As a cleaning agent, Carbon Tetrachloride is widely used.

Total consumption 231 Tonnes ODP

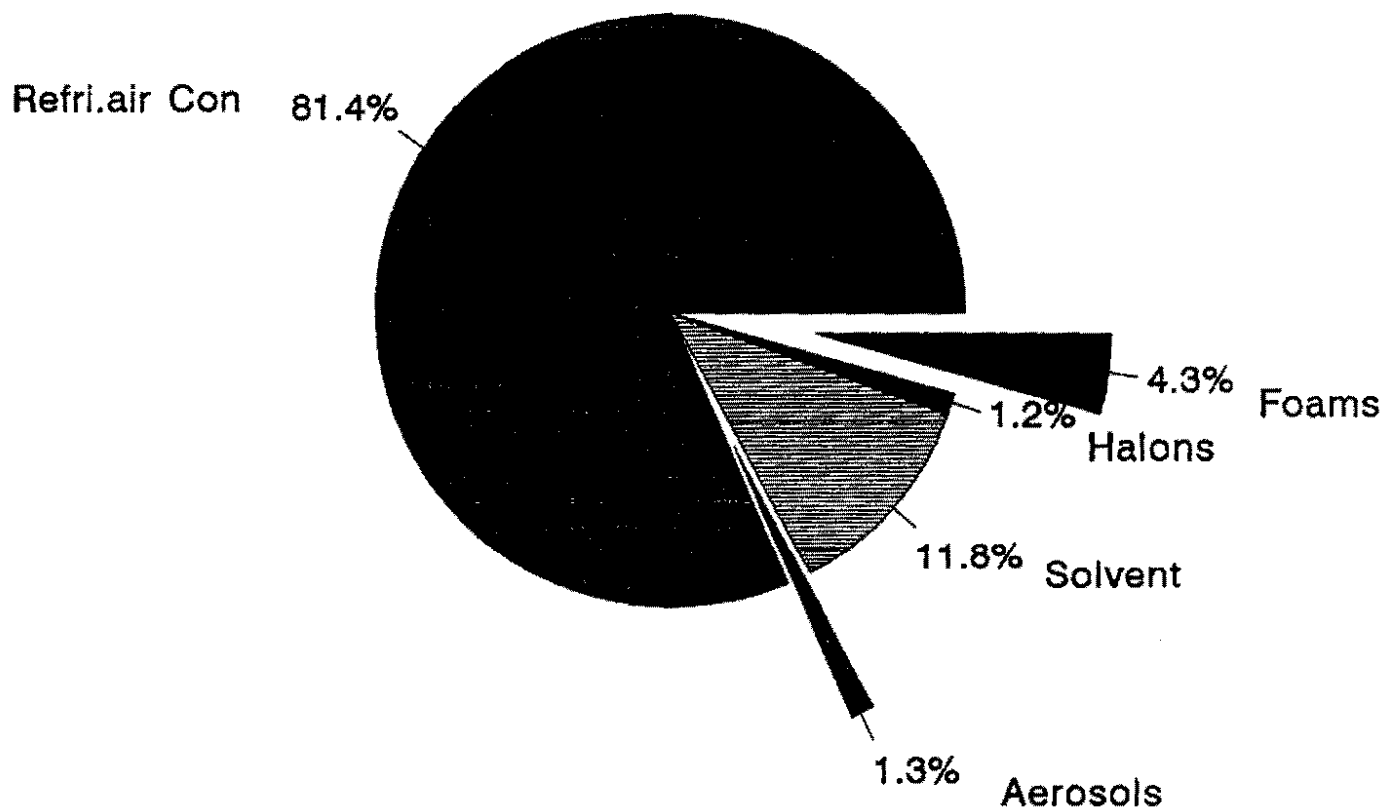


Fig : 2.2 Consumption of ODS by Sector in 1991

In Sri Lanka, there are three Refrigerator manufacturers with a combined production of 20,000-25,000 units per year. These manufacturers consume for each unit manufactured, approximately 0.5 kg of CFC 11 for blowing of insulation panels and 0.3 kg of CFC 12 for the compressor filling. According to Customs entries, approximately an equal number of Refrigerators is imported to the country each year.

The total imports of CFC 11 amounts to 39.1 t-ODP in 1991 while CFC 12 imports amounted to 162.4 t-ODP in 1991. CFC 11 contributed around 17% of all ODS imports in 1991 while CFC 12 contributed around 70%. CFC 113 remained as an insignificant component during this period. The only halon imported, Halon 1211 also remained at a low level around 2.4 t-ODP.

Servicing of refrigerator equipment, ie. industrial and domestic refrigerators, freezers, chillers, auto-airconditioners consumed the major portion of CFCs imported. There are over 300 repair shops within urban areas in the country. There is no practice of recovering or recycling of ODS when these equipment are serviced. There is an urgent need for training of technical persons involved in the repair of refrigeration/airconditioning equipment as they completely lack an understanding of the need for such precautionary measures.

2.1.2 Consumption Forecasts

The Survey has indicated an increasing demand for almost all chloro-fluoro-carbons. This can be attributed mainly to the free economy and accelerated development that took place in the country during the last 5 to 7 years. It is necessary to estimate future requirements in order to prepare the phase out programme. Projection of demand in each user sector and types of ODS are required upto the year 2010, which is the cut off date for CFC consumption for developing countries who are Party to the Montreal Protocol and acting under paragraph 1 of Article 5.

The future demand estimate have assumed:

- i that the Montreal Protocol does not exist
- ii that there are no supply constrains, and
- iii country's economy will have the same growth rate.

Generally forecasts are made on the basis of performance in the previous years. However, in this case no reliable data are available on the consumption of ODS in the past years, and also the industrial and economic conditions in the country have undergone major changes in recent times. From a stagnant and restrictive economy the country's economy has changed into a market economy with almost all restrictions on imports and foreign exchange removed. Under such a scenario, it was considered more appropriate to make forecasts based on other factors than on previous consumption data alone.

The consumption of ODS is directly related to industrial growth and this influences even the demand on electricity. According to long-term forecasts made by CEB, electricity sale was estimated to have a growth rate of over 8.0 % per annum upto year 2010. Therefore, in estimating ODS forecasts an annual growth rate of 8% was assumed, except in the case of Halon for which a growth rate of 4% was assumed. Furthermore, the Government is giving several incentives and tax concessions to set up industries on terms applicable to Export Processing Zones anywhere in the country with the goal of achieving Newly Industrial Country status. Under this situation it is expected that there would be a rapid development of industries particularly of the high technology type in this decade, and a corresponding increase in the ODS consumption.

The base year for the forecasting was taken as 1991. But it is possible that 1991 data available could have been influenced by the phase out process. The average of the values for 1990 and 1991 was therefore considered. The forecasts made on this basis are displayed in Table 2.3 for each group of substances. They are also shown in Fig. 2.3. The total unconstrained ODS consumption increases from 234 t ODP to 1000 t ODP between 1991 and 2010, a factor of 4.3. Assuming the population to increase at the current rate of 1.4% annually, the country's population in 2010 would be around 22.4 million. The forecasted consumption of ODS would then be 0.045 kg per capita, compared to the current rate of 0.015 kg per capita.

Table 2.3
Unconstrained Consumption of ODS

Year	Substance in t ODP			
	Annex A Gr. I	Annex A Gr. II	Annex B Gr III	Total
1991	206.1	2.7	24.6	233.4
1992	222.6	2.8	26.6	252.0
1993	240.4	2.9	28.7	272.0
1994	259.6	3.1	31.0	293.7
1995	279.4	3.2	33.5	316.1
1996	302.9	3.3	36.2	342.4
1997	327.1	3.5	39.0	369.6
1998	353.3	3.6	42.2	399.1
1999	381.5	3.7	45.5	430.7
2000	412.0	3.9	47.2	463.1
2001	445.0	4.0	53.1	502.1
2002	480.6	4.2	57.4	542.2
2003	518.1	4.4	62.0	584.5
2004	560.5	4.5	66.9	631.9
2005	605.4	4.7	72.2	682.3
2006	653.7	4.9	78.0	736.6
2007	706.6	5.1	84.2	795.4
2008	762.6	5.3	91.0	858.9
2009	823.6	5.5	98.3	927.4
2010	889.5	5.7	106.2	1001.4

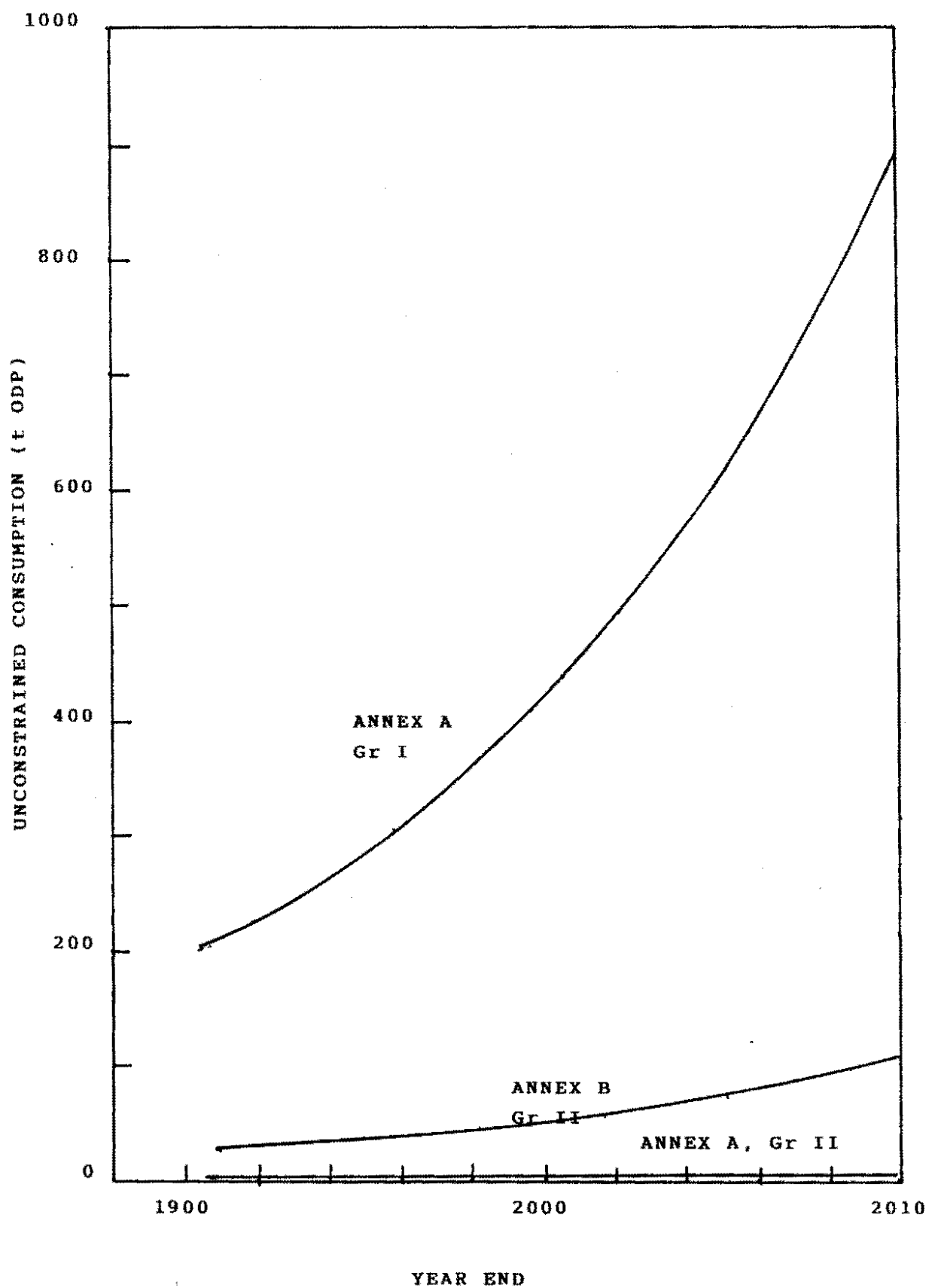


Fig : 2.3 Forecast consumption of different Groups of ODS

2.2 Industry Structure

2.2.1 Importers of ODS

There are six firms importing CFCs as chemicals to Sri Lanka. Their annual imports and country of origin are given in Table 2.4.

Table 2.4

Importers of CFCs and Halons during 1991

Importer	Country of Origin	Annual Imports (t)			
		CFC 11	CFC 12	CFC 115	Halon 1211
M/s CIC Ltd	UK	18.81	22.65	2.47	0.91
M/s Frostaire Ltd	UK Belgium	9.50	67.45	--	--
M/s Koolair Ltd	India	--	18.63	--	--
M/s Ajanee Ltd	France	6.55	42.00	--	--
M/s Alpha-beta Ltd	USA	1.82	8.27	--	--
M/s Union Ele. Ltd	USA	2.45	3.40	--	--
Total		39.13	162.40	2.47	0.91

All of them supply the requirements of refrigeration/air conditioner sector. Only one of them, M/s CIC Ltd supplies the requirements of other sectors.

The other two ODS, viz Carbon tetrachloride and Methyl chloroform are imported by several firms from various countries.

2.2.2 Users of ODS

The Service Workshops undertaking repairs to refrigerators, freezers, chillers and auto airconditioners are the main users of ODS in Sri Lanka. According to the Survey, they have consumed between 70% to 75% of CFC 11 in servicing of these equipment, during 1991. Servicing is undertaken mostly by small scale single-owner way-side repair shops who obtain their requirements of ODS directly from the importers. The local Agents of foreign refrigerators and airconditioner systems also obtain their requirements from the importers.

The other category of users are the manufacturers of refrigerators and aerosols. There are 3 refrigerator manufacturers and one aerosol manufacturer. Though window and split-type air-conditioners are manufactured locally, they all consume HCFC 22. Neither central airconditioner systems incorporating chillers nor auto-airconditioners, which consume ODS are manufactured locally. The total number of units of refrigerators manufactured during 1991 was 25,000 approximately. However, the compressor itself is imported.

The amount of CFC 11 and CFC 12 used in the refrigerator manufacture are estimated to be:

Insulation Panel Blowing	: 10 t of CFC 11
Compressor Charging	: 8 t of CFC 12

All these three factories are owned by local limited liability companies. One factory has been established over 30 years ago and their technology needs upgrading.

The Aerosol manufacturer has produced about 50,000 units in 1991, each with capacity of 100 ml. It is reported that 3.0 t - ODP of CFC 12 were consumed in their manufacture in 1991, and 3.3 t in 1992. The factory is owned by a limited liability local Company.

CFC 113 is consumed mainly by garment factories for dry cleaning apparels. These factories are located in the Export Processing Zone catering to overseas buyers. Their use in any electronics industry has not been reported.

The survey also showed that the awareness among the factory personnel on the restriction on the use of CFCs and the availability of alternatives is very poor, even at Executive level. In the country ODS are still available freely and users have not felt any constraints in their purchase.

2.3 Institutional Framework

The Ministry of Environment and Parliamentary Affairs is the lead agency responsible for implementing the Montreal Protocol in Sri Lanka. It is proposed to set up within the Ministry a separate unit under the title - Montreal Protocol Unit (MPU) to actually carry out the tasks necessary for phasing out ODS. A project proposal requesting funds for its establishment and maintenance for a period 3 years has already been forwarded to the MFMP Secretariat. The total amount requested from the Fund for this purpose is US \$ 171,300.

The MPU will enlist, where necessary, assistance of R & D and Engineering Consultancy Organizations such as Ceylon Institute of Scientific & Industrial Research (CISIR) and Central Engineering Consultancy Bureau (CECB) to get new technologies transferred to industry. They could serve as local counterparts when the services of foreign Consultants are engaged to implement various projects funded by the MFMP. Both these organizations have personnel competent to handle these activities.

Under a Regional Programme, South Asia Cooperative Environment Programme (SACEP), training of Technicians and Instructors teaching Refrigerator/Airconditioner curricula on new technologies is planned. It is expected that their services could be obtained, particularly in the training of technicians carrying out repairs and in public awareness programmes.

Where projects are to be funded through the World Bank (IBRD), the grants could be administered through one of the Developmental Banks such as Development Finance Corporation of Ceylon (DFCC) which is state-owned. Arrangements could also be made for the industries to be granted loans to supplement grants received from the MFMP.

There are several Chambers of Commerce and Industry who could assist the MPU in organizing programmes for the Industry, relevant to ODS phase out. So far no NGO or Consumer Group has come forward regarding the question of phasing out ODS and its implications to consumers. It is expected that once the MPU is set up, action could be taken to arrange public awareness programmes, both face-to-face type and via media, to educate the public and those in the industry and trade on these issues.

The necessary regulations for controlling the import of ODS will be gazetted soon by the Controller of Imports and Exports, for implementation by the Customs Department. The Presidential Tariff Commission has been advised on the need to introduce a new Harmonized Coding System as recommended by the Customs Cooperation Council to facilitate identification of ODS at the Customs point. This new Sub-heading system has been approved and it will be gazetted soon.

If the products made locally or imported have to be examined for any ODS Content, the Sri Lanka Standards Institution can undertake such work. They also certify imported products before releasing to the market.

The MEPA inserted a newspaper notice last August informing the public about the necessity to phase out ODS and requesting those affected to write to the Ministry so that their requirements for changing over to new technologies could be included in the Country Programme (see Annex 1). The response has been, however, very poor.

2.4 Policy Framework

The Government has adopted the National Environmental Act (Act. No 47 of 1980 and amended by Act No. 56 of 1988) to make provision for the protection, management and enhancement of the environment; for the regulation, maintenance and control of the quality of the environment; for the preparation, abatement and control of pollution and for matters connected therewith. The Government has also adopted a National Environmental Action Plan which is being implemented now with donor assistance. The National Environmental Act has provision to gazette regulations prohibiting the use of equipment and facilities that would cause pollution.

The Ministry of Trade and Commerce has the authority, with the concurrence of the Presidential Tariff Commission, to declare any item as coming under an import licence scheme. The licence to import such items will then be issued by the Controller of Imports and Exports on the recommendation of the MEPA. The MEPA will make such recommendations consistent with the phase out schedule.

During the previous Government in the 1970s import of many of the items were restricted and this was enforced by adopting an import licence scheme and customs control. Certain other items were completely banned from importing. The present Government removed all such restrictions adopting a policy of liberalized imports with a market economy. Even the protection given to local industries was removed altogether compelling them to compete with imported goods.

The current policy towards industrialization is also a liberalized one. Unlike in the past no permission is required now for anyone to start most industries except for obtaining clearance from the Environmental Authority. The policy on industrialization is laid down in the 'Industrial Promotion Act, No. 46 of 1990'. This Act provides for certain categories of industries to be registered and certain others to obtain a licence prior to operation. It is envisaged that regulations would be gazetted under this Act to license industries which consume ODS.

The operation of repair shops undertaking repair and servicing of refrigerators and airconditioners could be controlled through a licencing scheme whereby only those possessing a valid licence will be permitted to purchase ODS. The Government has already published a Newspaper notice informing the public in advance of this decision. (Annex II).

The question as to whether current laws are adequate to implement all provisions of the Protocol or not has been referred to a Legal Adviser. If the current laws are inadequate, a new Act will be introduced to handle those aspects required for the implementation of the Montreal Protocol.

Several ODS consuming products are manufactured locally. At the same time their import is also allowed. However, in the case of the latter heavy customs duties levied make them much more expensive than local products, costing nearly double.

2.5 Government and Industry Response

2.5.1 Government Response

Sri Lanka Government ratified the Montreal Protocol on 15th December 1989, and the London Amendment to the Montreal Protocol on 16th June 1993.

The Cabinet made the following decisions in November 1993 outlining a time schedule for phasing out ODS.

- (a) set a time target for phasing out the consumption of ODS completely by 01 January 2000 in respect of new equipment and applications, while allowing their use in servicing existing equipment till 01 January 2005.
- (b) implement the above phase-out plan
- (c) gazette all ODS and equipment containing them as items requiring import licences.

This decision was published in four national newspapers in January 1994 informing the public that regulations would be gazetted in the near future to give effect to the above decisions. It was further decided to restrict the sale of ODS only to registered users, and all users of ODS were requested to register themselves with the MEPA. In addition, all suppliers, contractors, consultants and training instructors of airconditioner systems were also requested to register themselves with the Ministry so that they could be provided with information on the latest alternative technologies available. (see Annex II). There has been a better response from the industry to this notice than for the previous one.

At the request of MEPA, the Presidential Tariff Commission has approved a set of new sub-headings for the Harmonized Coding System, as recommended by the Customs Cooperation Council to facilitate control of different types of ODS at the Customs entry point.

The MEPA has set up a Coordinating Committee on Montreal Protocol, chaired by the Secretary, MEPA. It meets once in about six weeks to discuss matters relating to implementation of the Montreal Protocol (see. p 4)

Sri Lanka was included in the UNDP technical assistance scheme for preparation of the Country Programme. A sum of \$ 30,000 was allocated by the MFMP for carrying out a Reconnaissance Survey and the Country Programme, and this was monitored by UNDP.

Several public seminars were held in association with Scientific Associations on the topic of Ozone Depletion and Montreal Protocol, as a part of Public awareness campaign. It is also planned to address members of Industrial Associations on this topic.

2.5.2 Industry response

Several industries, on their own are using non-CFC technologies for the manufacture of such items as rigifoam, polyurethane sheets, aerosol cans and for cleaning as well as in fire extinguishing. However, no request has been made by them so far for any financial assistance.

Work has already started on the installation of a central airconditioner systems incorporating HFC 134a chillers in a commercial building. Most of the new motor cars imported to the country now are fitted with airconditioners containing HFC 134a.

3 IMPLEMENTING PHASE OUT

3.1 Strategy Statement by Government

Sri Lanka Government has expressed its commitment to phase out ODS by year 2000 for new applications and year 2005 for servicing existing equipment. With the availability of alternatives to CFCs in the refrigeration and aerosol sectors commercially, it would be possible to commence the phase out programme from year 1995 so that a total phase out in new applications could be reached by year 2000. However, this phase out plan could be realized only if Sri Lanka receives financial assistance from the MFMP to meet the costs incurred by industry in changing over to new technologies.

It will be possible to accelerate the phase out, particularly for substances used in the refrigerator and air conditioner systems, by introducing recovery and recycling techniques.

The proposed Montreal Protocol Unit to be established at MEPA, will assist the Industries in identifying the sources of new technologies transferred. The MPU will plan maintain a fund to provide assistance to those who would take action to adopt ozone friendly technologies and ODS saving technologies such as recycling, under the proposed Country Programme Implementation Project.

A scheme of subsidies will be launched to provide incentives to those who:

- (a) retrofit their equipment with non-CFC Compressors
- (b) purchase equipment fitted with non-CFC compressors by trading in CFC equipment
- (c) recover ODS while servicing CFC equipment
- (d) recycle ODS served in servicing CFC equipment

It is envisaged that the sum will meet a part of the cost incurred in changing over to non-CFC equipment.

The Government will also encourage the public and industry/commercial sector to instal refrigerator and airconditioner systems charged with non-CFC refrigerants in all new applications. Such alternatives have already come into the market in Sri Lanka.

3.2 ODS Phase-out Plan

The Government's phase out plan is based on the time schedule already announced by the Cabinet, ie. to phase out completely by year 2000 for new applications and by year 2005 for servicing applications. It is intended to commence the phase out programme in 1995. The forecasts for 1995 are given in Table 2.3. These values are split into new application values and servicing application values using the same ratios worked out in Table 3.1 for the year 1991. To be consistent with the plan, the former set of values are subject to an annual reduction of 20%, while the latter are subject to a 10% reduction annually, thus achieving total phase out by year 2005.

The proposed accelerated phase out schedules for CFC 11, CFC 12 and total ODS are shown in Fig. 3.1-3.3 respectively, along with the unconstrained demand. The amount of ODS phased out annually upto year 2005 according to the above plan is given in Table 3.2. The total ODS saved each year from 1995 upto 2010 by adopting the Government strategy is given in Table 3.3. This is the difference between the unconstrained consumption and the phased out consumption. The cumulative ODS saved during this period is 8335 t ODP.

Table 3.1

Consumption of ODS in new applications/Servicing in 1991

Substance	Total Consumption t - ODP	Consumption in t ODP			
		New Applicaitons		Servicing Exis- ting Equipment	
		Amount	%	Amount	%
CFC 11	39	10	.25	29	.75
CFC 12	162	12	.075	150	.925
CFC 113	1.5	1.5	1.0	--	--
CFC 115	1.3	--	--	0.3	1.0
Halon 1211	2.7	--	--	2.7	1.0
CCl	25	2.5	1.0	--	--
MCF	0.2	0.2	1.0	--	--

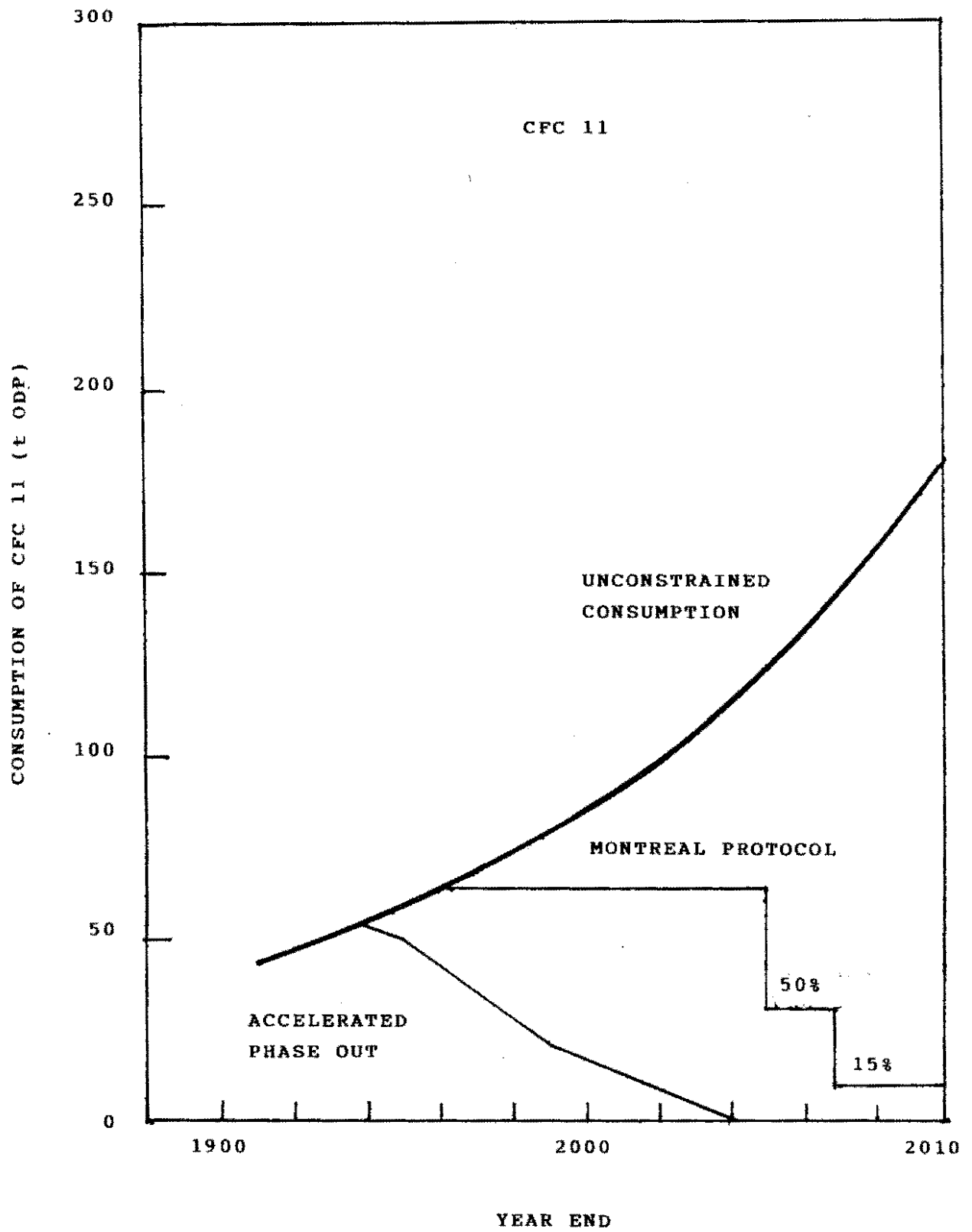


Fig : 3.1 Accelerated phase out of CFC 11

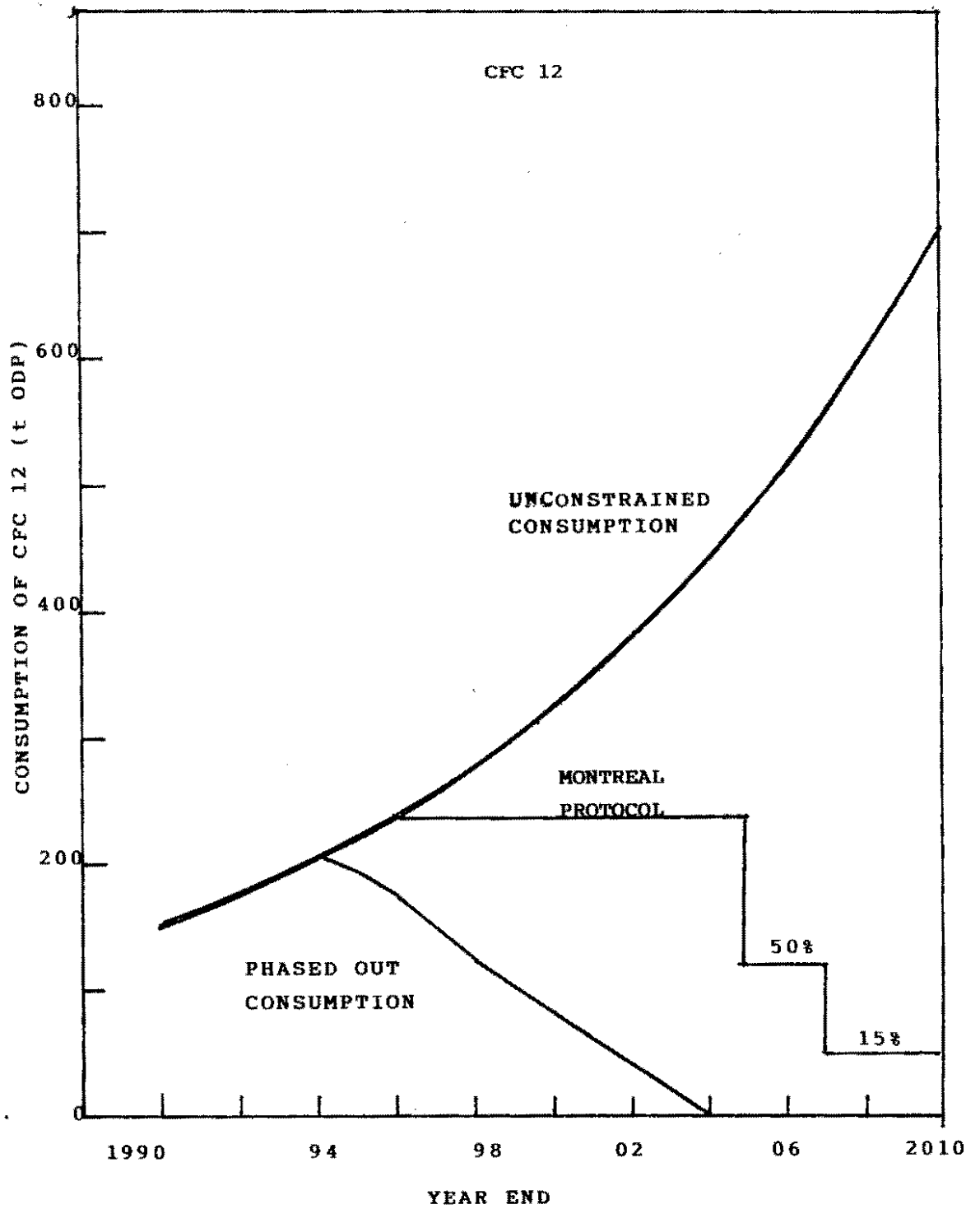


Fig 3.2 Accelerated phased out consumption of CFC 12

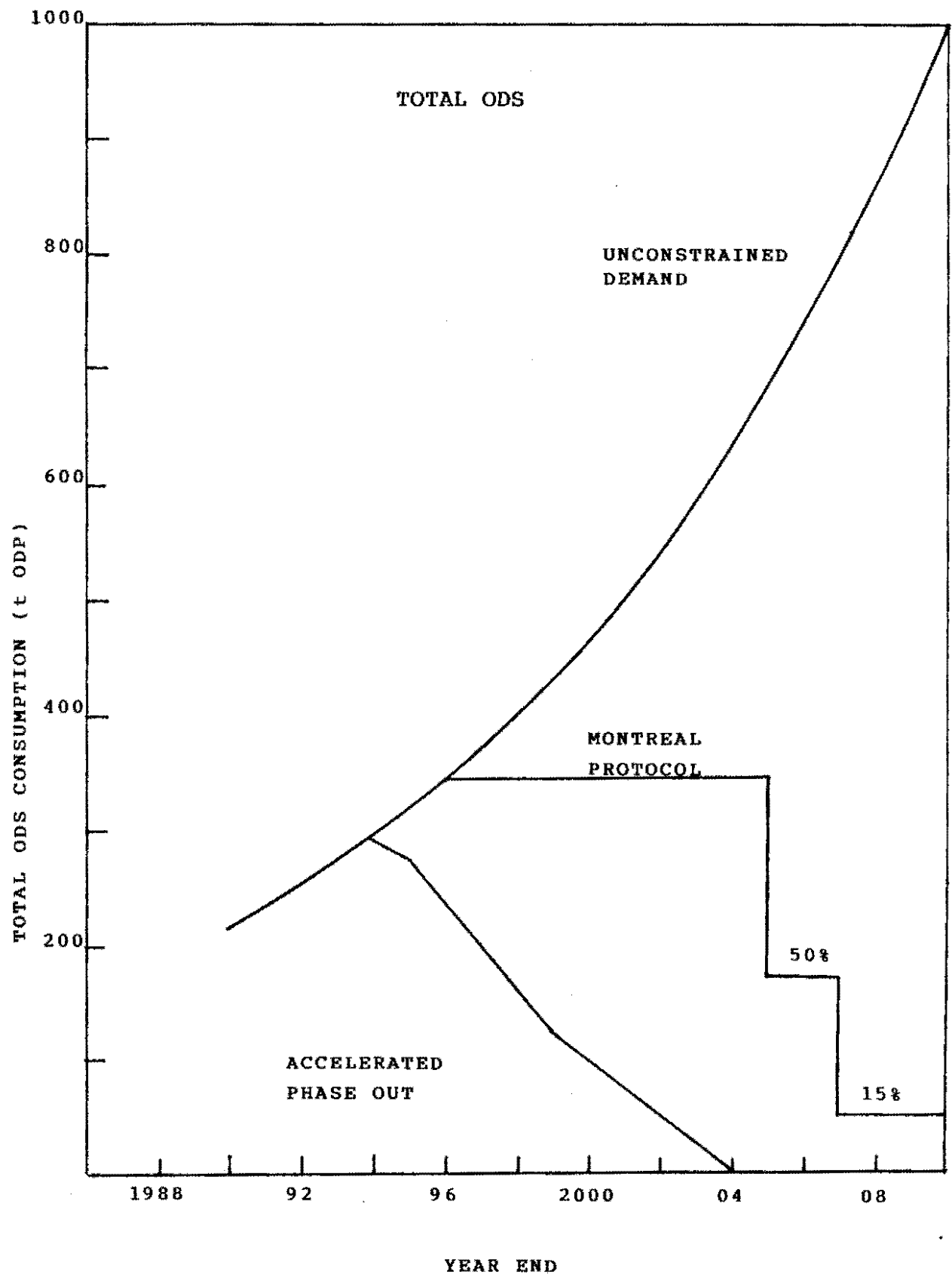


Fig : 3.3 Proposed phase out Schedule

Table 3.2

Phased out Consumption of ODS
relative to 1995 Unconstrained Consumption

Year (as at 31 Dec)	Phase out Consumption t ODP				
	New Application	% Phase out	Servicing Applicaition	% Phase out	Total
<u>Uncons- trained</u> 1995	67.7		248.4		316.1
<u>Phase out</u> 1995	54.2	20%	233.6	10%	277.8
1996	40.6	40%	198.7	20%	239.3
1997	27.1	60%	173.9	30%	201.0
1998	13.5	80%	149.0	40%	162.5
1999	0	100%	124.2	50%	124.2
2000	--	--	99.4	60%	99.4
2001	--	--	74.5	70%	74.5
2002	--	--	49.7	80%	49.7
2003	--	--	24.8	90%	24.8
2004	--	--	0	100%	0

Table 3.3

ODS Saved during 1995-2010

Year	Unconstrained Consumption t ODP	Phased out Consumption t ODP	ODS saved t ODP
1995	316.1	277.8	38.3
1996	342.4	239.3	103.1
1997	369.6	201.0	168.6
1998	399.1	162.5	236.6
1999	430.7	124.2	306.5
2000	463.1	99.4	368.7
2001	502.1	74.5	427.6
2002	542.2	49.7	492.5
2003	584.5	24.8	559.7
2004	631.9	--	631.9
2005	682.3	--	682.3
2006	736.6	--	736.6
2007	795.4	--	795.4
2008	858.9	--	858.9
2009	927.4	--	927.4
2010	1001.4	--	1001.4
Total	9588.7	1253.2	8335.5

It is envisaged that with the incentives given for purchasing equipment with ODS substitutes, and the availability of recycled ODS, the demand for virgin ODS for servicing equipment will decline after year 2000. It is also possible that service shops will maintain buffer stocks of ODS to meet any unforeseen demand.

3.3 Action Plan

The action plan consists of actions to be taken by the Government and actions to be taken by Private Sector in response to the Government Strategy.

3.3.1 Government Action

The details of the Government Action Plan with regard to administrative and regulatory matters are given in Table 3.4.

3.3.2 Government Projects

The Government will undertake the following four projects to assist in the implementation of the phase out plan.

- (a) Institutional Strengthening
- (b) Country Programme Implementation including public awareness campaigns
- (c) Conduct training programmes to Refrigerator/Aircondition technicians in the recovery and recycling of ODS.
- (d) Conduct seminars to contractors, Suppliers, Consultants and service Engineers and Technicians of refrigerator and airconditioner systems on the availability of alternative technologies.

Table 3.4
Government Action Plan

Year	Description of Action	Sector	Intended Effect
1991 Sep.	Setting up a Coordinating Group on the Implementation of the Montreal Protocol	All	Creating Institutional Framework
1992 Jan.	Setting up a Network of ODS Importers and Users	All	Assistance in collection of data
1994 Jan.	Announcement of phase-out schedule	All	Plan for the changing over
1994 Apr.	Setting up Montreal Protocol Unit	All	Management and monitoring of phase out activities
1994 May	Gazette Customs new sub-headings	All	Easy monitoring of ODS imports
1994 June	Introduce import licence scheme for ODS (on reducing quota)	All	Easy monitoring of ODS imports -do-
1994 Sep.	Introduce User Permit Scheme	All	Easy monitoring of applications
1995	Introduce a Subsidy and a concessionary loan scheme	All	Promote investment on non-ODS technology
1995	Introduce import licence scheme for Equipment containing ODS	Ref	Easy monitoring of ODS imports
1995	Grant duty concession for the import of ODS substitutes	All	Incentive to early phase out
1995	Grant duty concessions for the import of equipment containing ODS substitutes	Ref	Incentive to early phase out

3.3.3 Projects in Industry

The following projects are planned to be undertaken as a part of Industries' response to Government's ODS phase-out strategy. These are listed in order of priority. More details of these projects including cost estimates are given in Section 3.5.

- | | | | |
|-----|---|---|------------|
| (a) | Establish 25 ODS Recovery Units and one Recycling Centre in Refrigeration | - | \$200,000 |
| (b) | Refrigeration training programme | - | \$50,000 |
| (c) | Elimination of CFC - 12 compressors by changing to non-CFC compressors in 03 refrigerator factories | - | \$400,000 |
| (d) | Phase-out of CFC 11 in the manufacture of rigid insulation foam in refrigerators and freezers at 03 factories | - | \$150,00 |
| (e) | Conversion of aerosol propellant to non-CFC type in one cosmetics factory | - | \$50,000 |
| (f) | Replacement of Halon 1211 in fire extinguishers with non-CFC extinguishers and recover unused Halons | - | \$100,000 |
| (g) | Retrofitting CFC 12 chillers with HFC 134a chillers in Central A/C System | - | \$400,000 |
| (i) | Conversion of CFC 11 chillers in central airconditioners | - | \$ 250,000 |

3.4 Roles in Implementing the Strategy

The Ministry of Environment and Parliamentary Affairs will be the lead agency responsible for implementing the Country Programme. The Montreal Protocol Unit set up within it will carry out the actual tasks described in the Country Programme.

In conducting the training programme for technicians, the services of National Apprentice and Industrial Training Authority (NAITA) could be obtained. They are already engaged in conducting training courses for Refrigerator/AC technicians.

For implementing all regulatory functions including issuing of licences and user permits, the services of government agencies such as Department of the Controller of Imports and Exports, Department of Customs, Ministry of Trade and Commerce and the Central Environmental Authority would be mobilised.

The Ceylon Institute of Scientific & industrial Research and the Central Engineering Consultancy Bureau could assist the industries in getting non-CFC technologies transferred and implemented within their organizations.

If the funds are to be channelled through UNDP or IBRD their local Resident Representatives' offices could handle the disbursement of funds to the relevant parties. Otherwise, the services of one of the State-owned Development Banks, the Development Finance Corporation of Ceylon (DFCC) could be obtained for this purpose, provided a certain margin is paid as their service charges. They can also administer the subsidy and loan scheme if approved.

At this stage, it is difficult to work out quantitatively the total incremental cost to the country of the planned phase out. This should include loss of revenue due to waiving of import duties, additional costs payable for importing non-CFC substances, premature disposal of CFC containing equipment and interests payable on CFCs stocked for future use. However, an overall figure of US \$ 5.0 million has been taken as a very rough estimate.

3.5 Budget

The projects which need financial assistance from the MFMP are listed below in order of priority.

(1) Setting up the Montreal Protocol Unit as an Institutional Strengthening Project

Objective: Coordinate all activities for implementing the provisions of the Protocol, Assist Government organizations on enforcing regulatory measures, Assist industries and trade to get new technology transferred, Arrange training programmes, disseminate information, Maintain database, conduct Public awareness programme.

Sectors : All

Funds requested : US \$ 171,300

Time Frame : 3 years initially

(2) Establish 25 Units for Recovery and one Centre for Recycling CFC 12 in Refrigeration

Objective: Instal 25 recovery Units in different cities and one unit for recycling and reclaiming CFC 12 from domestic and commercial refrigerators and freezers,

Sector : Refrigeration
 Imp. Agency : IBRD
 Funds requested : US \$ 200,000
 Time Frame : 1 Year

(3). Country Programme Implementation

Objective: The CP proposes phasing out of ODS from year 1995 to achieve complete phase out by year 2005. Government Action Plan includes

(i) Provision of an incentive scheme and a interest free loan scheme for voluntarily changing over to non-ODS equipment.

(ii) Awareness campaigns directed to professionals, executives and technologists responsible-for decision making in phased out.

Sector : All
 Imp. Agency : IBRD
 Funds requested : US \$ 100,000
 Time Frame : 3 years

(4) Training programme for Refrigeration/AC Technicians on ODS Recovery and Recycling

Objective: Training of 200 Technicians in the recovery and recycling of ODS from refrigerators, freezers, auto air conditioners and chillers with foreign resource persons.

Sector : Refrigeration
 Imp. Agency : UNDP
 Funds requested : US \$ 50,000
 Time Frame : one year

(5) Elimination of CFC 12 compressors by changing over to non-CFC compressors in 03 Refrigeration factories

Objective: Modify charging system, trainig technicians, purchase test equipment for converting CFC 12 compressors to non-CFC compressors at three refrigerator factories owned by M/s Associated Electricals Ltd., M/s Regnis Ltd and M/s Glacio Ltd.,

Sector : Refrigeration
 Imp. Agency : IBRD
 Funds requested : US \$ 400,000
 Time frame : 2 years

(6) Phase out of CFC 11 in the manufacture of rigid insulation foam in Refrigeration and Freezer at 03 factories

Objective: To carry out modifications to plant and machinery and train technicians with a view to replace CFC 11 with suitable alternatives (HCFC 141 b) at 03 factories

Sector : Refrigeration

Imp. Agency : IBRD

Funds requested : US \$ 150,000

Time frame : 2 years

(7) Conversion of aerosol plant to phase out CFC 12

Objective: To change over to either de-odourised hydrocarbon or HFC 134a as a substitute for presently used propellant CFC 12 in a cosmetic plant, after carrying out a feasibility study

Sector : Aerosol

Imp. Agency : IBRD

Funds requested : US \$ 50,000

Time Frame : 1 year

(8) Replacement of Halon 1211 in fire extinguishers

Objective: To replace Halon 1211 presently used in portable fire extinguishers as well as in flooding systems with suitable alternatives and to recover halon

Sector : Halon

Imp. Agency : IBRD

Funds requested : US \$ 100,000

Time frame : 2 years

(9) Retrofit non-ODS chillers using CFC 12

Objective: To replace CFC 12 chillers in Central A/C Systems with HFC 134 a chillers on a optimum cost-effective basis

Sector : Refrigeration
Imp. Agency : IBRD
Funds requested : US \$ 400,00
Time frame : 3 years

(10) Conversion of CFC 11 chillers to non-ODS chillers in Central A/C System

Objective To replace CFC 11 Chillers in Central systems with suitable non-ODS chillers after carrying out a feasibility study

Sector : Refrigeration
Imp. Agency : IBRD
Funds requested : US \$ 250,000
Time frame : 3 years

3.6 Monitoring Arrangements

3.6.1 Consumption Monitoring

With the implementation of the following actions as proposed in this programme, it will be possible to quantify the amount of ODS actually consumed.

- (a) Introduction of the new Harmonized Coding System
- (b) Introduction of an import licence scheme for ODS and ODS containing equipment
- (c) Introduction of a User Permit Scheme to purchase ODS from an Importer
- (d) Independent reporting by the Importers and major users of ODS direct to MPU
- (e) Detailed reporting of current consumption and planned consumption to be a pre-requisite before granting financial assistance on projects

3.6.2. Action Plan Monitoring

The MPU will maintain records of all activities conducted under the Country Programme. It will also obtain information on assistance granted direct to consumers from Development Banks. The MPU will submit half-yearly and annual reports to the MFMP on the progress.

References

UNEP, 1991, Report of the 5th meeting of the Executive Committee of the Interim Multilateral Fund for the Implementaiton of the Montreal Protocol, Annex III Procedure for presentation of Country Programme and Project Proposals to the Executive Committee, 18-22 November 1991.

UNEP, 1993, United Nations Environment Programme, Multilateral Fund for the Implementation of the Montreal Protocol, Inventory of Approved Projects as at June 1993.

UNEP, 1993, United Nations Environemnt Programme, Multilateral Fund for the Implementation of the Montreal Protocol, Comments received from Fund Secretariat on Sri Lanka's Country Programme, 10th February 1993.

CEB, 1993, Long Term Generation Expansion Planning Studies 1994-2008, Ceylon Electricity Board, Colombo, August 1993

DAILY NEWS 10 AUGUST 1993

**MINISTRY OF ENVIRONMENT AND
PARLIAMENTARY AFFAIRS**

NOTICE

**IMPLEMENTATION OF THE MONTREAL
PROTOCOL**

The 1990 Amendments and 1992 Adjustments carried out to the Montreal Protocol on substances that deplete the Ozone Layer require complete phasing out of these substances by year 1996 in developed countries and by year 2010 in developing countries which are Parties to the Protocol. These substances are:

Chloro-fluoro-carbons (CFCs)
Halons
Halogenated CFCs
Carbon Tetrachloride
Methyl Chloroform

Sri Lanka being a Party to the Protocol and its 1990 Amendments will have to comply with these requirements. It is anticipated that with declining supplies, local users will be compelled to phase out these substances at an earlier date.

All Industries and other Organizations in Sri Lanka who make use of these substances are therefore advised to take necessary steps to change over to alternative substances in the near future. According to the Protocol the incremental costs incurred in changing over will be met by the Ozone Multilateral Fund. In order to seek assistance from this Fund, all affected industries and other users are requested to provide this Ministry with the following particulars, urgently:

1. Name and Address of the user
2. Substance used and the source
3. Annual Requirements
4. Application

Information may be sent to the Ministry on Fax No. 502566, Attention:
Chief Technical Adviser.

Devanesan Nesiah
Secretary

**MINISTRY OF ENVIRONMENT AND
PARLIAMENTARY AFFAIRS**

**6th Floor, Unity Plaza
Colombo 4.**

03.08.1993.

DAILY NEWS 10 JANUARY, 1994

MINISTRY OF ENVIRONMENT AND PARLIAMENTARY AFFAIRS

NOTICE

CONTROL OF IMPORT OF REFRIGERANTS AND OTHER OZONE DEPLETING SUBSTANCES

With the world-wide phasing out of the production of Ozone Depleting Substances under the Montreal Protocol, on a recommendation made by the Minister of Environment and Parliamentary Affairs, the Government has decided to adopt the following phase-out programme in Sri Lanka for these substances which are listed in Schedules A and B, and their blends.

- (a) Set a time target of 01.01.2000 for phasing out completely the use of controlled substances in the manufacture or assembly or installation of new appliances / systems such as refrigerators, freezers, auto air conditioners, central air conditioners, fire-extinguishers etc. or in applications such as manufacture of insulation foam, cleaning of fabric, garments and electronic assembly parts.
- (b) Allow the use of controlled substances in the servicing of existing appliances / systems described above, upto 01.01.2005.
- (c) Permit the import of any controlled substance only on an import licence.

Regulations will be introduced in the near future to give effect to above and to restrict the sale of these substances only to registered users. All industries, commercial establishments, Air Conditioner / Refrigerator repair shops and fire-extinguisher service shops who consume these substances are therefore advised to register themselves with the Ministry of Environment and Parliamentary Affairs, by providing the following information.

- i. Name and Address
- ii. Telephone and Fax Numbers
- iii. Type of business.

In order to provide information on alternative substances and new technologies available, all suppliers, contractors, consultants and training instructors of AC / Refrigerator systems are also advised to register themselves with the Ministry, by sending the above particulars to the attention of the Chief Technical Adviser of the Ministry.

**Secretary
MINISTRY OF ENVIRONMENT AND
PARLIAMENTARY AFFAIRS.**

6th Floor, Unity Plaza
COLOMBO 04.
05.01.1994.

SCHEDULE A

<u>Code</u>	<u>Symbol</u>	<u>Substance</u>
CFC - 11 (R 11)	CFCl ₃	Trichlorofluoromethane
CFC - 12 (R 12)	CF ₂ Cl ₂	Dichlorodifluoromethane
CFC - 113 (R 113)	C ₂ F ₃ Cl ₃	Trichlorotrifluoroethane
CFC - 114 (R 114)	C ₂ F ₄ Cl ₂	Dichlorotetrafluoroethane
CFC - 115 (R 115)	C ₂ F ₅ Cl	Chloropentafluoroethane
Halon - 1211	CF ₃ BrCl	Bromochlorodifluoromethane
Halon - 1301	CF ₃ Br	Bromotrifluoromethane
Halon - 2402	CF ₃ Br ₂	Dibromotetrafluoroethane

SCHEDULE B

<u>Code</u>	<u>Symbol</u>	<u>Substance</u>
CFC - 13	CF ₃ Cl	Chlorotrifluoromethane
CFC - 111	C ₂ FCl ₃	Pentachlorofluoroethane
CFC - 112	C ₂ F ₂ Cl ₄	Tetrachlorodifluoroethane
CFC - 211	C ₃ FCl ₃	Heptachlorofluoropropane
CFC - 212	C ₃ F ₂ Cl ₅	Hexachlorodifluoropropane
CFC - 213	C ₃ F ₃ Cl ₅	Pentachlorotrifluoropropane
CFC - 214	C ₃ F ₄ Cl ₄	Tetrachlorotetrafluoropropane
CFC - 215	C ₃ F ₅ Cl ₃	Trichloropentafluoropropane
CFC - 216	C ₃ F ₆ Cl ₂	Dichlorohexafluoropropane
CFC - 217	C ₃ F ₇ Cl	Chloroheptafluoropropane
	CCl ₄	Carbon Tetrachloride (tetrachloromethane)
	C ₂ H ₅ Cl ₃	Methyl Chloroform (1,1,1 - Trichloroethane)

**PROPOSAL FOR SETTING UP A MONTREAL PROTOCOL UNIT
WITHIN THE MINISTRY OF ENVIRONMENT &
PARLIAMENTARY AFFAIRS, SRI LANKA**

Submitted to

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL**

on

2nd March 1994

by

**MINISTRY OF ENVIRONMENT &
PARLIAMENTARY AFFAIRS
COLOMBO 4, SRI LANKA**

**PROPOSAL FOR SETTING UP A MONTREAL PROTOCOL UNIT
WITHIN THE MINISTRY OF ENVIRONMENT &
PARLIAMENTARY AFFAIRS, SRI LANKA**

Project Summary

Sri Lanka is a Party to the Montreal Protocol and has ratified the 1990 Amendments. The Ministry has decided to set a time target for phasing out ozone depleting substance (ODS) by year 2000 for new applications and year 2005 for servicing existing equipment. It has also decided to bring the import of ODS and equipment containing ODS under a licensing scheme beginning 1994. The total consumption level is about 260 tonnes for the year 1992.

The Ministry of Environment and Parliamentary Affairs has established a Montreal Protocol Coordinating Committee to oversee the implementation of the Protocol. A Country study funded by the UNDP has been undertaken to determine the present as well as future consumption levels of ODS.

In order to realise the time target set for the phase-out of ODS, it is necessary to strengthen the existing Institutional mechanism. The government will contribute US \$ 25,000 worth goods and services and a request is made for assistance worth US \$ 154,682 from the Multilateral Fund over a period of three years. The project is expected to commence in March 1994.

GENERAL

1	Request	:	Assistance for Institutional Strengthening for the speedy phase-out of ozone depleting substances by setting up a Montreal Protocol Unit	
2	Country	:	Sri Lanka	
3	Executing Agency	:	Ministry of Environment & Parliamentary Affairs	
4	Implementing Agency	:	UNDP	
5	Socio-economic Indicators	:	(a) GNP/Capita :\$ 500 (b) HDI :0.665 (c) Population :17 million	
6	Consumption of Controlled Substances	:	Year	Tonnes ODP
			1990	215.4
			1991	228.9
			1992	264.0
7	Consumption by Sector	:	Refrigeration 81% Foam 4% Aerosol 1% Solvent 12% Halon 1%	
8	Total Budget	:	Sri Lankan contribution	:US \$ 25,000
			Multilateral Fund Contribution	US \$ 154,682
			Total	US \$ 179,682

9 Objectives :

- (a) to strengthen the national institutional mechanism for implementing the provisions in the Montreal Protocol.
- (b) to coordinate activities among national institutions aimed at speedy phase-out of ozone depleting substances with international efforts..
- (c) to assist the end-users to change over to new technologies using alternative substances
- (d) to create public awareness of the need for ODS phase out.

10 Justification :

- (a) At present there is a total lack of awareness of the ozone depletion problem, both among the government sector and private sector managers in particular, and the public in general.
- (b) Those in the trade working with refrigeration and airconditioner installation and servicing are completely unaware of the need for phasing out of ODS and changing over to alternative substances.
- (c) The necessity to introduce control measures for importing and retailing of ODS, which is presently done without any restrictions.
- (d) The necessity to have a central location to collect statistics on ODS consumption and information from overseas for distribution among end-users and the public.
- (e) To serve as the coordinating body for conducting training programmes and demonstration projects on recovery and recycling of ODS.
- (f) To monitor the implementation of projects which are approved by the Multilateral Fund and executed through the implementing agencies, and to prepare reports of the same.

11 Beneficiaries :

- (a) The public in general, and the users of commercial/industrial refrigeration, air conditioner systems in particular,
- (b) Refrigerator manufacturing industries (there are 3 in the country, all private sector, small scale)
- (c) The large number of small-scale refrigerator and AC servicing and repair workshops scattered all over the country, (indigenous private)
- (d) The garment industry who use CFCs for dry cleaning their products, most of which are in the Free Trade Zone with joint ownership with foreign principals,
- (e) The fire extinguisher servicing organizations (indigenous private)
- (f) Aerosole manufacturing plant (indigenous private)
- (g) The insulation foam manufacturers (indigenous private)

12 Capabilities of Beneficiaries :

- (a) The technical staff in the organizations which stand to benefit from the proposed assistance scheme are generally trained and experienced in their particular trade. They have the capability to learn new technologies and acquire new skills from any training programme.
- (b) The ownership of the organizations are however not in a position to invest capital on new tools and fittings that are necessary to change over to new technologies.
- (c) The technical staff of refrigerator and airconditioner assembly plants lack experience in the handling of ODS and will have to be trained.

II STRUCTURE AND MANAGEMENT

(i) Type of Organization :

The Ministry of Environment & Parliamentary Affairs is a Cabinet level ministry of the Government of Sri Lanka, and serves as the focal point for all environmental matters.

(ii) Responsibilities of the Organization's Environmental Branch :

- (a)** to lay down policies on all environmental matters
- (b)** to formulate legislation to enforce environmental protection
- (c)** to liaise with international organizations concerning the environment
- (d)** to implement international treaties concerning the environment
- (e)** to monitor activities of different ministries and other organizations, having an impact on the environment

(iii) Responsibilities towards the implementation of the Montreal Protocol :

- (a)** to collect statistics on the imports and consumption of ODS.
- (b)** to formulate control measures for the import and retaling of ODS in association with the Customs Dept., Internal Trade Department, Imports Control Dept. and Banks.
- (c)** to introduce regulations through the Cabinet and Parliament for the phase out of ODS.
- (d)** to organize training programmes for the technical staff of industries and commercial sector for converting to new technologies.
- (e)** to launch public awareness programmes on the importance of phasing out of ODS.
- (f)** to serve as the clearing house for all information on new technologies.
- (g)** Promote cooperation with other ministries for the achievement of objectives of the Country Programme.

(b) Ministry to review reports of the Montreal Protocol Unit on project implementation.

(i) Prepare Half-yearly and Annual Statements of Accounts showing the true affairs of the finances spent on the Unit.

(iv) Nature of Assistance Sought :

Assistance is requested only for the setting up a separate unit for handling the above functions under the heading : Montreal Protocol Unit.

(v) Responsibilities of the Unit :

All of the functions described under Section (iii) above.

(vi) Whether solely responsible for the implementation of the Montreal Protocol:

No.

(vii) Other Responsibilities :

To attend to matters connected with the implementation of the Vienna Convention for the Protection of the Ozone Layer.

(viii) Staff Strength :

One Professional	)	
One Technical Assistant	)	Funded under the Project
One Secretarial Assistant	)	

One Administrative Assistant	)	Provided by Govt. Contribution
One Office Attendant	)	

(ix) Relationship of the Unit within the Organization :

The proposed Unit will function directly under the Secretary to the Ministry of Environment & Parliamentary Affairs.

(x) **Management of the Unit :**

The hired professional will be the Head of the Unit who will report directly to the Secretary to the Ministry of Environment & Parliamentary Affairs.

2 Organization responsible for the Unit :

Ministry of Environment & Parliamentary Affairs.

3 National body overseeing implementation of the Montreal Protocol :

Coordinating Committee for the implementation of the Montreal Protocol was set up in 1990, comprising, representatives of the following organizations :

Ministry of Environment & Parliamentary Affairs

Ministry of Foreign Affairs

Ministry of Industries, Science and Technology.

Central Environmental Authority

Meteorological Department

Attorney General's Department

Ceylon Institute of Scientific & Industrial Research

Colombo Commercial Company (A public - sector AC contracting firm)

Generally the Committee meets once in about three months to take decisions regarding actions to be taken on matters relating to implementation of the Protocol.

III ACTIVITIES

1 Activities intended to be carried out by the Unit :

- (a) Hold Seminars, Panel discussions on TV and Radio, and publish newspaper articles to disseminate information to the public.
- (b) Gather importers and major users regularly to the Unit to exchange news and discuss problems.
- (c) Use the facilities at Ozone Clearing House to get information from other parties.
- (d) Establish a user network for collecting information on ODS consumption.

- (e) Recommend fiscal incentives through government directives to promote early phase-out such as duty waivers and tax concessions.
- (f) Implement a licensing scheme for importing ODS and ODS containing products and regulate the retail sales of ODS for better control of ODS consumption.
- (g) Establish an Inter-Ministerial Committee to facilitate coordination of phase-out activities.
- (h) Consult the National Coordinating Committee for policy action on ozone related issues.
- (i) The Unit Leader will be directly responsible for liaising with International Organizations.

IV INPUTS

(a) **Infrastructure :**

Office space with basic furniture to be provided by the Ministry within its premises. Basic Utilities will be provided by the Ministry.

(b) **Personnel will consist of :**

One Professional	)	
One Technical Assistant	)	Funded under the Project
One Secretarial Assistant	)	
One Administrative Assistant	)	Provided by Govt. Contribution
One Office Attendant	)	

(c) **Non-Expendable Items :**

One Personal Computer with Printer
 One Electronic Typewriter
 One Photocopier
 One Facsimile Machine
 One Modem

(d) Consumables :

Stationery
Office Supplies
Fuel for vehicle operation

(e) Others :

Telephone charges
Cost of vehicle lease
Servicing of equipment
Printing

V BUDGET

1 Government in-kind Contribution :

(US \$ 1 = SL Rs 50 approx)

Item	Per Year		3 - year period	
	SL Rs	US \$	SL Rs	US \$
(i) Capital Expenditure				
Furniture			29,000	580
Air-conditioner			75,000	1,500
Sub total			104,000	2,080
(ii) Recurrent Expenditure				
(a) Infrastructure :				
Office rent	210,000	4,200	630,000	12,600
Electricity	16,000	320	48,000	960
Sub total	226,000	4,520	678,000	13,560
(b) Personnel :				
Administrative Asst.	120,000	2,400	360,000	7,200
Office Attendant	36,000	720	108,000	2,160
Sub total	156,000	3,120	468,000	9,360
Total of (a) & (b)	382,000	7,640	1,146,000	22,920
Contingencies (10% of (a) & (b))			1,250,000	25,000

*

Note : It is expected that the Government in-kind contribution for year 1995 onward may be higher than stipulated above

2. Multilateral Fund Contribution :

Item	Per Year		3- Year Period	
	SL Rs	US \$	SL Rs	US \$
1 Capital Expenditure (duty free rates) PC with monitor, Software & Printer Photo Copier Typewriter Facsimile Machine Power Conditioner/ Voltage Regulator				10,000
Sub total				10,000
2 Recurrent Expenditure a Personnel Costs (gross): Professional Officer Technical Assistant Secretarial Assistant Short-term Consultants	540,000 201,600 134,000 201,000	10,800 4,032 2,688 4,020	1,620,000 604,800 403,200 603,300	32,400 12,096 8,064 12,060
Sub total(personnel)	1,077,000	21,540	3,231,000	64,620
b Optional Costs : Database Generation and Maintenance Stationary Telecommunications Vehicle lease & fuel Maintenance of equipment Subscription to literature		22,000		66,000
Sub total (oprational)		22,000		66,000
Sub-total (Recurrent) a+b		43,540		130,620
Total (Rec + Capital) Contingencies 10%				140,620 14,062
Total				154,682

Please note that the Personnel Costs are based on the gross rates for UNDP National Professional Project Personnel, Rev. 4, dated 12.7.1991

3 Total Cost of the Project
(for the 3 years period)

Source	Capital US \$	Recurrent US \$	Total US \$
Sri Lankan Government	2,080	22,920	25,000
Multilateral Fund	11,000	143,620	154,620
Total Cost	13,080	166,540	179,620

Yearly Distribution:

i Sri Lanka Government Contribution :

Year	Capital US \$	Recurrent US \$	Total US \$
1994/95	2,080	7,640	9,720
1995/96	--	7,640	7,640
1996/97	--	7,640	7,640
Total	2,080	22,920	25,000

ii Multilateral Fund Contribution :

Year	Capital US \$	Recurrent US \$	Total US \$
1994/95	11,000	47,894	58,894
1995/96		47,894	47,894
1996/97		47,894	47,894
Total	11,000	143,682	154,682

5. Recruitment of Personnel :

(a) Professional Officer :

A science or engineering graduate with Post-graduate qualifications together with a minimum of fifteen years of experience in industrial research or in industry. Familiarity with the provisions in the Montreal Protocol is essential.

He is required to be in overall charge of the Unit, initiating and coordinating its activities designed to accelerate phasing out of controlled substances. Should be able to liaise with government institutions and private sector organizations to achieve this objective, and conduct training Workshops and Awareness Seminars.

(b) Technical Assistant (Ref & AC)

National Diploma in Technology or Equivalent in AC/Refrigerator systems. Knowledge of computer programming and maintenance of databases is preferred.

He is required to assist in the implementation of the training programmes and demonstration projects and assist the industries and commercial sector in supervising and monitoring the projects supported by the Multilateral Fund for phasing out controlled substances with specific responsibility for data base updating, maintenance and operation.

(c) Secretarial Assistant :

Knowledge of typing/shorthand and word processing together with a minimum three(03) years experience in secretarial duties. Preference will be given to those who have followed a formal course in secretariatship.

He/She is required to attend to normal secretarial duties, operate all office equipment including accessing to on-line computer databases and maintain expenses records.

VI OUT PUT

1 Direct Outputs :

- (a) Government organized public awareness programmes through Seminars, newspapers and electronic media to complement programmes excuted by implementing agencies.
- (b) Regular newsletters to users of controlled substances and other concerned
- (c) Regular meetings with the Ministreal and Departmental officers
- (d) Progress reports, half-yearly and annually

2 GOALS :

- (a) Phasing out of CFCs on a planned schedule, by year 2000 for new applications and by year 2005 for servicing existing equipment
- (b) Implementing projects for converting to alternative substances
- (c) Demonstrating recycling and recovering projects for concerning controlled substances