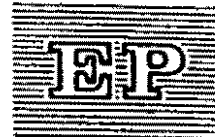




United Nations Environment Programme



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

Eleventh Meeting
Bangkok, 10-12 November 1993

COUNTRY PROGRAMME: SYRIA

This document consists of:

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

SYRIA COUNTRY PROGRAMME EVALUATION SHEET

The Syria Country Programme is submitted to the Eleventh Meeting of the Executive Committee as document UNEP/OzL.Pro/ExCom/11/22.

It consists of:

- Letter of Transmittal
- Country Programme Cover Sheet (Prepared by the Secretariat)
- The Country Programme document divided into
 - Executive Summary
 - Introduction
 - Consumption and use of controlled substances
 - Implementing Phase-out
 - Annex (Institutional Strengthening)

Syria imports all its requirements of ozone depleting substances. In 1991, the total consumption was 1,388 tonnes ODP made up mainly of CFC-12 (759 ODP tonnes) and CFC-11 (493 ODP tonnes). Relatively small quantities of CFC-113 (73 ODP tonnes) and CFC-111 (60 ODP tonnes) are imported for use as solvents. Analysis shows that Syria's total unconstrained demand for ODS by the year 2010 would be over 38,300 tonnes ODP.

The main ODS user sector in 1991 was refrigeration and air conditioning which accounted for 60 per cent of the ODS consumption. The other user sectors were aerosol (19 per cent), foam (12 per cent) and solvents (9 per cent).

The ODS user sectors are characterized by a preponderance of small scale enterprises. In the major ODS-user sector, namely refrigeration, there are two large producers of domestic refrigerators and several other small scale producers. The breakdown of ODS user enterprises is as follows.

Domestic refrigerator/freezer production	130
Industrial/Commercial refrigerator production	911
Air conditioner production	3
Foam production	14
Aerosol spray production	19

It is estimated that 2.3 million units of domestic refrigerators, 230,000 of freezers and 36,500 industrial and commercial refrigeration systems were in operation in 1991.

Two scenarios were considered in defining the phase-out strategy. These were accelerated phase-out by the year 2000 and phase-out in accordance with the provisions of the Montreal Protocol. The estimated costs of phase-out by the two scenarios were US \$75.4 million and US \$73.8 million while the estimated consumption in the phase-out periods were 10,000 tonnes and 22,000 tonnes respectively. The accelerated phase-out strategy was adopted.

The Action Plan for the ODS phase-out includes policy and legislative measures, customs control and monitoring, workshop and industrial projects. The projects are aerosol sector, foam sector and refrigeration sector projects and institutional strengthening. US \$235,180 has already been approved within UNIDO's Work Programme (10th Meeting of the Executive Committee, June 1993) for institutional strengthening. The institutional strengthening project document is included as Annex I to the country programme. The other projects are:

- Conversion of aerosol manufacturing industries from CFCs to liquified petroleum gas (LPG)
- Deodorization of LPG
- Converting the existing CFC-using flexible foam industry to use alternatives
- Phase-out of ODS in two factories manufacturing domestic refrigerators.

The incremental cost of the projects will be determined following feasibility studies/ project development of the aerosol and foam sector projects planned to be undertaken by local and international experts with the assistance of an implementing agency.

In the refrigeration sector UNIDO has been allocated US \$35,000 (9th Executive Committee Meeting, March 1993) for investment project preparation to phase-out CFCs in one refrigerator production plant. The Country Programme proposes that UNIDO urgently develops a similar project for the other refrigerator production plant which is the largest in the country.

US \$19,000 is being requested for the development of the aerosol projects in 1994, while US \$39,000 is requested for a workshop and development of the foam projects in 1995. However, no implementing agency has been identified for the activities.

Activities approved for Syria are indicated in the attached list.

RECOMMENDATIONS

1. To approve the Country Programme.
2. To invite the Government of Syria in collaboration with UNEP to identify an implementing agency/agencies for the purpose of developing the aerosol and foam sector projects.
3. To request UNIDO
 - a. to consider the request of the Government of Syria to include the other refrigerator producing enterprise in its ongoing refrigeration sector investment project preparation in the country, in order to ensure a more comprehensive approach to the phase-out of ODS in refrigeration production in the country; and
 - b. to prepare a refrigeration sector phase-out strategy for a cost-effective phase-out of ODS in the sector in the country.

PROJECTS APPROVED FOR SYRIA

Project		Date Approved	Implementing Agency	Funds Allocated US \$
1.	Country programme preparation	June 1991	UNEP	25,000
2.	Preparation of investment projects	March 1993	UNIDO	35,000
3.	Institutional strengthening	June 1993	UNIDO	235,180
TOTAL				295,180

COUNTRY PROGRAMME COVER SHEET

Country : Syria

Date Received : September 1993

Period Covered : 1994-2000

Lead National Agency : General Commission for Environmental Affairs

Lead Implementing Agency : Not indicated

1. Phase-out schedule

Substances	Current Consumption (Tonnes X ODP) in 1991	Planned Consumption till Phase-out ¹ Tonnes X ODP	Planned Year of Phase-out
CFC-11	494	10,700	2000
CFC-12	759		2000
CFC-113	73		2000
	61	540	2000
Carbon Tetrachloride	1	10	2000
TOTAL	1,388	11,250	

¹ Calculated from ODS phase-out profile according to the accelerated phase-out scenario.

2. Government Action Plan

The Action Plan consists of "government actions" and "industry actions" as set out in the table below.

Table 1 - Summary of the projects and elements under the Action Plan

Projects and elements	Brief Description	Commencement/ Duration	Use sector
GOVERNMENT ACTIONS			
Project G1	Policy and legislation for protecting the ozone layer		All
1. policy	Adoption of an overall policy for the protection of the ozone layer	Nov. 1993 (begin preparation) Mar. 1993 (adoption)	
2. legislation	Adoption of legislation to control the consumption of controlled substances	Nov. 1993 (begin preparation) Nov. 1994 (enforcement)	
Project G2	Institutional stren.	Aug. 1993	All
Project G3	ODS monitoring		All
1. Industry reports	Reporting by each industry on the import and use of controlled substances	1993 (preparation) Dec. 1993 (implementation)	
2. Customs data	Adoption of separate subheadings for each controlled substances and reporting to the ODS Sub-Unit	1993 (preparation) Dec. 1993 (implementation)	
INDUSTRY ACTIONS			
1. Project A1	Conversion of aerosol industries to use LPG	May 1994	Aerosols
Phase I	Pre-investment study	1994-1996	
Phase II	Project implementation		
2. Project A2	Deodorization of LPG	May 1994	Aerosols
Phase I	Project development	1994-1996	
Phase II	Project implementation	Nov. 1994	Foams
3. Project F1	Conversion of foam industries to use substitute blowing agents - workshop and feasibility study	1995-1996	Refrig.
	Project implementation		
4. Project R1	Project for conversion of two companies producing domestic refr. equipmt.	starting date: late 1994	
	Project implementation		
5. Study in ref. and a/c sector to develop phase out strategy and projects (UNIDO)		early 1994	Refrig.

3. Project Summary

This is indicated under Industry Action in Table 1 above.

4. Cost of Activities of Projects in Country Programme

Estimated cost of phase-out	US \$ 75.5 million
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Estimated cost effectiveness	US \$ 6.7/Kg
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To : The Secretary of the Multilateral Fund for the
Implementation of the Montreal Protocol.

From : The Minister of State for Environmental Affairs.

20 October 1993

Dear sir

With reference to the letter received from Mr. Rajendra M. Shenda, The Ozone Action Programme Coordinator at the Industry and Environment Programme Activity Centre, dated 3 October 1993 and contained a request for us to supply some information on the procedures related to the approval and authorization of the National Country Programme, we would like to inform you of the following points:

- Name of project : Syria Country Programme for the Phase-Out of Ozone Depleting Substances.
- Name of executing agency
or Government authority : G.C.E.A
- Cooperating parties : Implementing agencies and organizations.
- The position of the country regarding the Vienna Agreement for the Protection of the Ozone : Syria became a signatory of the Vienna Agreement on 22 March 1985, and of the Montreal Protocol on 16 September 1987. It also became a member of both the Agreement and the Protocol on 12 December 1989 and it entered into the phase of implementation on 12 March 1990.

We would also like to inform you that Syria is committed to the contents of section 1 of paragraph five of the Protocol and to the implementation of the activities referred to in the report of the Country Programme in accordance with the text of the Protocol.

In compliance with the activities of the Protocol, the

Government also intends to adopt the necessary measures and advice capable of developing the various sections of the Country Programme with the aim of gradually phasing-out the restricted materials under observation and providing alternative and safe chemical and technical materials.

With best regards,

Abed El-Hameed Munajed
Minister of State for Environmental
Affairs

نسوي

الرقم ١١١١/١٠/١٩٩٢

السيد مدير شكاياتية المتدوق متعدد الأطراف
لتتفيذ بروتوكول مونتريال.

ع/ط السيد اليه هـنونا نائب الممثل المقيم لبرنامج الامم المتحدة
الانفاضي

اشارة للرسالة الواردة من السيد منسق برنامج خطة عمل الأوزون ، السيد راجندرا شندى :
Rajendra H. shinde / ozone Action Programme coordinator

- في مركز برنامج البيئة والصناعة التابع لليونيب (UNEP-IE/APC) تاريخ ١٩٩٢/١٠/٠٢ والمتضمنة :
- تقديم بعض المعلومات والاجراءات المتعلقة بتوثيق واترار البرنامج القطري الوطني ، نعلمكم ما يلي :
 - اسم المشروع : البرنامج القطري الوطني لحصر المواد المستفذه لطبقة الأوزون
 - الوكالة أو الجهة الحكومية المنفذه : الهيئة العامة لشؤون البيئة
 - الجهات المتعاونه : الوكالات والمنظمات المنفذه للمشروع
 - وضع القطر بالنسبة لاتفاقية فيينا وبروتوكول مونتريال لحماية طبقة الأوزون :
- تم توقيع اتفاقية فيينا لحماية طبقة الأوزون بتاريخ ١٩٨٥/٣/٢٢
وتوقيع بروتوكول مونتريال المتيق عنها بتاريخ ١٩٨٧/٩/١٢
وقد اصبحت سورية عضوة في الاتفاقية والبروتوكول بتاريخ ١٩٨٩/١٢/١٢ ودخلت

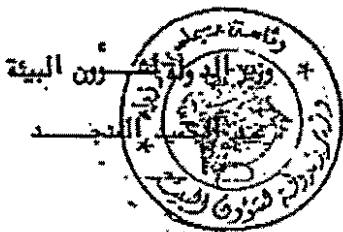
حيز التنفيذ بتاريخ ١٩٩٠/٣/١٢

كما نعلمكم :

- بأن سورية ملتزمة بما ورد تحت الفقرة (١) من البند الخامس للبروتوكول ، وكذلك بالالتزام بتنفيذ الاعمال المشار اليها في تقرير البرنامج القطري وما يتطلبه مع نص البروتوكول
- كما ان نية الحكومة واستجابة لاعمال البروتوكول في الأغذ بالاجراءات والارشادات الكفيلة والضرورية لتطوير بنود البرنامج القطري سعياً وراء "الانتها" التدريجي من المواد المحظرة العاضمة للرقابة وتأمين المواد الكيميائية الآمنة والتنقية البديلة الملائمة
- مع اطيب التحيات

دمشق في ١٩٩٢/١٠/٠٢

ن / ف



S Y R I A
C O U N T R Y P R O G R A M M E

FOR THE PHASE-OUT OF OZONE DEPLETING SUBSTANCES
CONTROLLED UNDER THE MONTREAL PROTOCOL

MAY 1993

(Amended in August 1993 to incorporate the comments of the
Fund Secretariat and the Institutional Strengthening Project
approved at the Tenth Meeting of the Executive Committee)

General Commission for Environmental Affairs
Syrian Arab Republic

United Nations Environment Programme
(Industry and Environment Programme Activity Centre)

MEMBERS OF THE NATIONAL COUNTRY PROGRAMME TEAM

Chairman:

H.E. Minister of State for Environmental Affairs

Members:

1. Mr. Abdul Razzak Safar Jalani
National Ozone Coordinator,
General Commission for Environmental Affairs
2. Mr. Marwan Dimashki
Environment Section/Air Pollution
Higher Institute for Applied Sciences and Technology
3. Mr. Maan El-Jabi
Director, Industrial Statistics
Central Bureau of Statistics
4. Dr. Ma'amoon El-Bahara
Chamber of Industry
5. Mr. Mahmood Ringo
Ministry of Finance
6. Mr. Walid El-Refaai
Directorate of Customs, Ministry of Finance
7. Mr. Nabieh Ghazawi
General Establishment of Standards and Specification
8. Mr. Ihsan Sandook
Ministry of Industry
9. Ms. Hannan Yosouf
Ministry of Industry
10. Mr. Marwan Sakal
Department of Meteorology
11. Mr. Mohamad El-Falah
Union of Chambers of Commerce
12. Mr. Abdul Razzak Abdul El-Majeed
Ministry of Economics and External Trade

UNEP Consultants: Megumi Seki
Hussein Shafa'amri

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EXECUTIVE SUMMARY

1. INTRODUCTION

This country programme reflects the commitment of the Government of Syria to comply with the obligations of the Montreal Protocol on Substances that Deplete the Ozone Layer, to which Syria is a Party. It provides the framework for activities to be undertaken by Syria to achieve the required phase out of controlled substances and forms the basis for requesting assistance from the Multilateral Fund for those activities.

The Country Programme was prepared between the period March 1992-May 1993 and it should be updated during 1996. The updated Country Programme should be implemented from 1997.

The Country Programme contains the following:

- (a) Data and information on the consumption and use pattern of ozone depleting substances (ODS) controlled under the Montreal Protocol and its Amendment (adopted in London in 1990). Data and information for the years 1986, 1989, 1990 and 1991 are included.
- (b) Analyses of possible future demands for the controlled substances (unconstrained demand) and an indication of the total incremental cost for the phase-out of the controlled substances.
- (c) Information on the existing institutional and policy framework that are relevant to the use of controlled substances and the implementation of the Montreal Protocol.
- (d) Government strategy statement with regard to the implementation of the Montreal Protocol and the phase-out of controlled substances.
- (e) Action Plan of Syria to phase out the consumption and use of controlled substances, based on the 1991 status of consumption and use of those substances. The Action Plan covers the period from 1993 to 1996 and it consists of various projects categorized under Government Actions and Industry Actions. The Institutional Strengthening Project which was approved at the Tenth Meeting of the Executive Committee has been included (see Annex II). The timetable for the implementation of the Action Plan clearly reflects the prioritization of the programme and projects. The Institutional Strengthening Project includes the necessary budget for the feasibility/pre-investment studies through which industrial projects will be developed. Plans for future monitoring of controlled substances are included in the Action Plan.

(ii)

The Country Programme was prepared under the responsibility of the General Commission for Environmental Affairs with technical assistance of Industry and Environment Programme Activity Centre (IE/PAC) of the United Nations Environment Programme (UNEP) and financial support from the Multilateral Fund through UNEP IE/PAC. A National Country Programme Team was established for the purpose of assisting and advising the General Commission in preparing the Country Programme.

The Country Programme was adopted by the General Commission for Environmental Affairs and approved by the Higher Board for the Protection of the Environment. It was decided that the Country Programme should be implemented under the responsibility of the General Commission for Environmental Affairs.

2. CONSUMPTION AND USE OF CONTROLLED SUBSTANCES

(a) The survey

The survey of the consumption of controlled substances was carried out by the Central Bureau of Statistics in cooperation with the National Country Programme Team.

A sample of industries using controlled substances were surveyed. The quantities of consumption of each controlled substance was determined from extrapolation of survey data.

(b) Past situation

Consumption of controlled substances as bulk chemicals:

The total consumption, calculated consumption and calculated per capita consumption for the years 1986, 1989, 1990 and 1991 of the controlled substances were as follows:

ANNEX A SUBSTANCES

Year	Consumption (Tonnes)	Calculated Consumption (Tonnes x ODP)	Calculated per capita consumption (kg)
1986	1,571	1,554	0.15
1989	1,217	1,195	0.10
1990	1,372	1,279	0.11
1991	1,344	1,326	0.11

ANNEX B SUBSTANCES

Year	Consumption (Tonnes)	Calculated Consumption (Tonnes x ODP)	Calculated per capita consumption (kg)
1986	91	95	0.008
1989	143	150	0.013
1990	0	0	0.003
1991	62	62	0.005

(iii)

Syria does not produce any controlled substances, but imports CFC-11, CFC-12, CFC-113, CFC-111 and carbon tetrachloride. CFC-115 is also used but the consumption is small. Halons are not imported as bulk chemicals. There are about 25 main importers of controlled substances. In 1991, the percentages of total consumption of controlled substances used under each ODS-use sector were:

Refrigeration and air-conditioning: 58%
Foams: 12%
Aerosols: 19%
Solvents: 11%

Refrigeration and air-conditioning sector:

- (a) Manufacture of domestic refrigeration equipment - approximately 75 Tonnes of CFC-12 refrigerant;
- (b) Manufacture of industrial/commercial refrigeration equipment - approximately 225 Tonnes of CFC-12 refrigerant;
- (c) Manufacture of domestic freezers - approximately 100 Tonnes CFC-12 refrigerant.
- (d) Maintenance of refrigeration and automotive air-conditioning equipment - approximately 100 Tonnes CFC-12 refrigerant
- (e) Manufacture of various refrigeration equipment - approximately 300 Tonnes CFC-11 for the insulation foam;

Foams sector:

Approximately 170 Tonnes of CFC-11 is used as foam blowing agent for production of flexible and rigid foams.

Aerosols sector:

Approximately 260 Tonnes of CFC-12 is used as propellants in aerosols. Both insecticide and cosmetic sprays are manufactured in the country. Some insecticide manufacturers are using LPG. There are two oil refineries that produce LPG.

Solvents sector:

All the CFC-111, CFC-113 and carbon tetrachloride imported were used as solvents. The solvent-using industries that were identified in the survey were the electronic equipment manufacturing industry, coatings manufacturers and adhesives manufacturing industries. Solvents are also being used by various industries and workshops for cleaning machinery and equipment.

Products Containing Controlled Substances:

Most of the refrigeration and air-conditioning equipment, aerosols and foam products are manufactured in Syria.

Refrigeration equipment:

There are about 81 firms that manufacture domestic refrigerators (most of these are small-scale and Al-Hafez and Barada are the two large producers); 49 firms that manufacture domestic freezers of various sizes (most of these are small-scale); 911 firms manufacturing industrial and commercial refrigeration equipment (most of these are small-scale). Compressors are not manufactured in Syria. Cold rooms use R-22 and R-12 as refrigerant and few use R-502. Consumption of R-502 is insignificant.

It was estimated that 2,300,000 units of domestic refrigerators; 230,000 freezers; and 36,532 industrial/commercial refrigeration systems were in operation in the country in 1991.

There are thousands of repair/maintenance workshops including workshops for refrigeration and air-conditioning equipment.

Air-conditioning equipment:

Almost all air-conditioning equipment are using R-22 as refrigerant. There are three major producers of central and room (split type and window type) air-conditioning equipment of various capacities. Automotive air-conditioners are imported. Some car dealers are already importing automotive air-conditioners that use HFC-134a as refrigerant.

Foams:

There are a total of 14 firms producing various types of foam using CFC-11 as blowing agent.

Aerosols:

There are a total of 19 aerosol spray manufacturing industries. Cosmetic sprays contain CFC-11.

Halon fire extinguishers:

Most portable fire extinguishers are manufactured in the country. Common fire extinguisher agents used in Syria are nitrogen, carbon dioxide, dry powder and foam. Small numbers of portable halon fire extinguishers were found to be used. The users include large hotels and in aircraft. The import of halon fire extinguishers is negligible.

(c) Analyses of Future Demand for the Controlled Substances**Unconstrained Demand:**

The projected unconstrained demand for each year (1992-2010) for each controlled substance is shown in Table A below. 3% growth rate was assumed for every use sector, following the population growth of 3.4%.

Table A Summary of the yearly predicted consumption of controlled substances following the unconstrained demand

Year	GDP Growth Rate (%)	CFC-11 Tonnes	CFC-12 Tonnes	CFC-113 Tonnes	CFC-111 Tonnes	CCl4 Tonnes	Total Consump. Tonnes
1991	11.5	493.8	759.1	91.0	60.7	26.8	1431.4
1992	6.0	508.6	781.9	93.7	62.5	27.6	1474.4
1993	"	523.8	805.3	96.6	64.4	28.4	1518.6
1994	"	539.6	829.5	99.4	66.3	29.3	1564.1
1995	"	555.7	854.4	102.4	68.3	30.2	1611.1
1996	"	572.4	880.0	105.5	70.4	31.1	1659.4
1997	"	589.6	906.4	108.7	72.5	32.0	1709.2
1998	"	507.3	933.6	111.9	74.7	33.0	1760.5
1999	"	625.5	961.6	115.3	76.9	34.0	1813.3
2000	4.0	644.3	990.5	118.7	79.2	35.0	1867.7
2001	"	663.6	1020.2	122.3	81.6	36.0	1923.7
2002	"	683.5	1050.8	126.0	84.0	37.1	1981.4
2003	"	704.0	1082.3	129.8	86.6	38.2	2040.8
2004	"	725.1	1114.8	133.7	89.2	39.4	2102.1
2005	"	746.9	1148.2	137.6	91.8	40.5	2165.1
2006	"	769.3	1182.7	141.8	94.6	41.8	2230.1
2007	"	792.3	1218.2	146.0	97.4	43.0	2297.0
2008	"	816.1	1254.7	150.4	100.3	44.3	2365.9
2009	"	840.6	1292.3	154.9	103.3	45.6	2436.9
2010	"	865.8	1331.1	159.6	106.4	47.0	2510.0
TOTAL		13167.8	20387.6	2445.3	1631.1	720.3	38352.1

Estimation of incremental cost:

Incremental costs are estimated for two phase out scenarios:

- (a) Accelerated phase-out through the implementation of this Country Programme which targets the phase-out at year 2000.
- (b) Phase-out in the year 2010 in accordance with the requirements of the Montreal Protocol for countries operating under para. 1 of Article 5.

The estimated incremental costs, though only an indicative figure, provides a basis for determining potential needs of determining potential needs of the country in phasing out the consumption of ODSs. The estimated incremental costs do not indicate the costs of the Action Plan.

(vi)

The incremental costs have been estimated for each use sector using 10% discount rate. The costs include capital investment costs, operational costs, early forced retirement of domestic refrigerators, retrofitting industrial/commercial refrigeration equipment and for institutional strengthening.

	ACCELERATED (million US \$)	MONTREAL PROTOCOL (million US \$)
Aerosols:	1.2	0.9
Foams:	0.04	0.02
Refrigeration:		
- manufacture of domestic refrigeration equipment	11.4	7.6
- manufacture of ind/comm refrigeration equipment	8.9	6.9
- forced early retirement of domestic refrigeration equipment	45.5	51.1
- retrofit of ind/comm equipment	8.1	7.0
Institutional strengthening	0.24	0.24
TOTAL	75.38	73.76

The incremental cost figures above indicate that there is no significant difference in the cost of phase out between the two scenarios. However, in selecting the phase out scenario to be implemented by Syria, i.e. the accelerated phase out, some important factors should be taken into consideration. Those factors that justify the implementation of accelerated phase out include the following:

- (a) In reality the controlled substances will soon become unavailable and the prices of the substances are already rising. The price rise has not been incorporated into the analyses. Prolonged use of the controlled substances will result in difficulties and considerable cost increase to the consuming countries, in particular the countries that do not produce controlled substances, to meet the demand for the substances. The delayed phase-out would impose additional burden to the developing countries.
- (b) Furthermore, and most importantly, the environmental benefits of less consumption, hence emission of controlled substances would outweigh the extra costs that may be incurred in accelerating the phase-out. The estimated cumulative consumption for the Montreal Protocol phase-out and

accelerated phase out were 22,000 Tonnes and 10,000 Tonnes, respectively.

3. IMPLEMENTING PHASE-OUT

Government of Syria is committed to comply with the Montreal Protocol and is prepared to go faster than the Protocol requires for phasing out the consumption of controlled substances for Article 5 countries. The Action Plan should enable Syria to phase out the consumption of all the controlled substances by the year 2000.

For the phase out schedules to be met, it is essential that the projects be carried out in an effective and timely manner, with the necessary financial and technical support from the Multilateral Fund and its Implementing Agencies under the Montreal Protocol.

The Action Plan consist of projects which are summarized in Table B below.

The total budget for the Action Plan consist of US \$ 235,180 for the Institutional Strengthening Project already approved by the Executive Committee and US \$ 58,000 for international and national consultants to undertake the various feasibility/pre-investment studies for developing phase-out projects. The costs for study requested to be undertaken by UNIDO for refrigeration and air-conditioning sector has not been included here. It is requested that UNIDO develops the plan and budget for the required study.

It is requested that the Executive Committee considers for approval the budget of US \$ 58,000 to enable development of phase-out projects. The phase out projects for industries will be submitted separately for approval by the Fund Secretariat/Executive Committee. Implementation of all the projects mentioned under this Country Programme is expected to commence during 1995-1996.

TOTAL BUDGET FOR THE ACTION PLAN:

Institutional Strengthening:	US \$ 235,180
Industry Projects Development:	US \$ 58,000
GRAND TOTAL:	US \$ 293,180

Table B Summary of the projects and elements under the Action Plan

Projects and elements	Brief Description	Commencement/ Duration	Use sector
GOVERNMENT ACTIONS			
Project G1	Policy and legislation for protecting the ozone layer		All
1. policy	Adoption of an overall policy for the protection of the ozone layer.	Nov. 1993 (begin preparation) Mar. 1993 (adoption)	
2. legislation	Adoption of legislation to control the consumption of controlled substances.	Nov. 1993 (begin preparation) Nov. 1994 (enforcement)	
Project G2	Institutional stren.	Aug. 1993	All
Project G3	ODS monitoring		All
1. Industry reports	Reporting by each industry on the import and use of controlled substances.	1993 (preparations) Dec. 1993 (implementation)	
2. Customs data	Adoption of separate subheadings for each controlled substances and reporting to the ODS Sub-Unit	1993 (preparations) 1994 (implementation)	
INDUSTRY ACTIONS			
1. Project A1	Conversion of aerosol industries to use LPG	May 1994	Aerosols
Phase I	Pre-investment study	1994-1996	
Phase II	Project implementation		
2. Project A2	Deodorization of LPG	May 1994	Aerosols
Phase I	Project development	1994-1996	
Phase II	Project implementation	Nov. 1994	
3. Project F1	Conversion of foam industries to use substitute blowing agents - workshop and feasibility study	1995-1996	Foams
	Project implementation		Refrig.
4. Project R1	Project for conversion of two companies producing domestic refr.equipmt.	starting date : late 1994	
	Project implementation	early 1994	Refrig.
5. Study in ref.and a/c sector to develop phase out strategy and projects (UNIDO)			

1. INTRODUCTION

1.1. Purposes

This country programme reflects the commitment of the Government of Syria to comply with the obligations of the Montreal Protocol on Substances that Deplete the Ozone Layer, to which Syria is a Party. It provides the framework for activities to be undertaken by Syria to achieve the required phase out of ozone depleting substances controlled under the Montreal Protocol and its London Amendment (controlled substances) and forms the basis for requesting assistance from the Multilateral Fund for those activities.

The objectives of this country programme are:

- (a) To survey, assess and analyze the situation with regard to consumption and use pattern of the controlled substances for the years 1986, 1989, 1990 and 1991;
- (b) To record the existing institutional framework in Syria, including Governmental bodies and industry associations and related organizations, as well as policy framework that are relevant to issues of ozone layer protection and ozone depleting substances (ODSs);
- (c) To analyze the possible future demands for controlled substances if no measures are taken to control the consumption (unconstrained demand) and to estimate the incremental cost for phasing out the controlled substances;
- (d) To spell out the Government strategy with regard to the phase-out of controlled substances;
- (e) To outline the Action Plan including strengthening of the institutional capacity and capability in Syria for phasing out the consumption of the controlled substances;
- (f) To provide a framework (including a budget) for the future projects for which financial and technical assistance from the Multilateral Fund is sought and to prioritize those activities through a time schedule for the activities;
- (g) To outline the scheme for implementing the Action Plan and for monitoring the consumption of the controlled substances to:
 - (i) ensure that the Country Programme is implemented;
 - (ii) enable observation/evaluation of effectiveness of the implementation of the Action Plan in reducing and phasing out the consumption and use of the controlled substances;
 - (iii) ensure compliance with the reporting requirements of the Protocol (Article 7).

1.2 Status of the Country Programme

The Country Programme was prepared between the period March 1992-May 1993, and contains data and information on the consumption and use of ozone depleting substances controlled under the Montreal Protocol and its London Amendment for the years 1986, 1989, 1990 and 1991. The Country Programme was prepared without recourse to any previously prepared country study by an international organization.

The survey of the consumption and use pattern of controlled substances was carried out by the Central Bureau of Statistics with assistance of the National Country Programme Team and the guidance of the Minister of State for

Environmental Affairs. Various Governmental bodies and individual industries were surveyed. The difficulties encountered in conducting the survey is explained under section 2.1. Plans for improving the record keeping by the Customs for the importation of controlled substances and recording of industries that import/use controlled substances are included in the Action Plan for future monitoring purposes.

The possible future demands for the controlled substances have been analyzed through which an indication of the total incremental cost for the phase-out of the controlled substances was derived.

The Action Plan of Syria to phase out the consumption and use of controlled substances is based on the 1991 status of consumption and use of those substances. The Action Plan covers the period from 1993 to 1996 and it consists of various projects categorized under Government Actions (three projects) and Industry Actions (six projects). Framework plan for the various projects have been developed for which financial and technical assistance will be requested from the Multilateral Fund for the implementation. The budget for feasibility/pre-investment studies have been included. Budgets for the industrial projects will be developed through those studies. Assistance of appropriate Implementing Agency would be required for developing the project proposals.

The timetable for the implementation of the Action Plan reflects the prioritization of the projects.

The existing institutional framework for dealing with the issues under the Montreal Protocol is recorded. The Action Plan includes plans for strengthening this framework in order to:

- (i) coordinate the implementation of the country programme;
- (ii) monitor the consumption of the controlled substances and the execution of the various projects for reduction and phase-out of the controlled substances; and
- (iii) evaluate the effectiveness of the projects in achieving the reduction and phase-out.

This Country Programme should be updated during 1996 and the updated Country Programme would be implemented from 1997.

1.2.1 Preparation and Adoption of the Country Programme

The country programme was prepared under the responsibility of the General Commission for Environmental Affairs with technical assistance of Industry and Environment Programme Activity Centre (IE/PAC) of the United Nations Environment Programme (UNEP) and financial support from the Multilateral Fund through IE/PAC.

The Country Programme was prepared in two phases:

- Phase I: A survey of the consumption and use of the controlled substances and gathering of information relevant to the consumption and use of controlled substances in Syria;
- Phase II: Analyses of data and information collected through the survey; development of strategy and action plan; and preparation, review and adoption of the country programme report.

A National Country Programme Team was established for the purpose of assisting the General Commission for Environmental Affairs in directing the survey, to facilitate the collection of data under the survey and to participate and advise on the Action Plan and to review the report. The Team consisted of representatives of the following bodies: General Commission for Environmental

Affairs; Higher Institute of Applied Sciences and Technology; Ministry of Industry; Customs; Ministry of Finance, Ministry of Economics and External Trade; General Directorate of Meteorology; Central Bureau of Statistics; Chambers of Commerce and Industry; and the Syrian Arab Organization for Standardization and Specification.

The survey was carried out by the Central Bureau of Statistics in Cooperation with the Ministry of Environment and the National Country Programme Team. The General Commission for Environmental Affairs and the National Country Programme Team decided upon the strategy and Action Plan and reviewed and adopted the Country Programme. The Country Programme was then presented by the Minister for Environmental Affairs to the Higher Board for the Protection of the Environment for consideration and final approval.

It was decided that Syria should implement the Country Programme under the responsibility of the General Commission for Environmental Affairs.

1.2.2 Participation in the Preparation of the Country Programme: Responsibilities and Roles

Short description of the bodies involved in the preparation of this Country Programme and their responsibilities and roles in the preparation are given below:

(a) General Commission for Environmental Affairs:

Took the leadership in the preparation of the Country Programme. Directed the process of developing the strategy and Action Plan and the process of review and adoption of the Country Programme. Developed and decided on the strategy and action plan with appropriate inputs from the National Country Programme Team and IE/PAC; reviewed and adopted the Country Programme; and presented it to the Higher Board for the Protection of the Environment for consideration and final approval.

(b) Central Bureau of Statistics

Carried out the survey of individual industries that use controlled substances with assistance of the National Country Programme Team and the general guidance of the Minister of State for Environmental Affairs.

(c) National Country Programme Team:

Advised on and assisted in the survey of the consumption, use, imports and exports of the controlled substances and the products that contain controlled substances; reviewed the results of the survey and the analyses of data; assisted in the development of the strategy and the Action Plan for phasing out the consumption of the controlled substances; and reviewed and approved the Country Programme.

(d) Industry and Environment Programme Activity Centre of UNEP (UNEP IE/PAC) - Implementing Agency:

Provided the financial support and technical assistance including assistance in: (i) drawing up the overall strategy and plans for the preparation of the country programme; (ii) conducting the survey; (iii) carrying out the necessary analyses of the data and information collected through the survey; (iv) developing the strategy and the Action Plan for phase-out of the controlled

substances; and (v) the preparation of the Country Programme report.

1.2.3 Sources of Data and Information

Both governmental bodies and private industries/companies cooperated and supported the survey by providing the necessary data and information for the survey. The bodies and data and information they provided are as follows:

Governmental bodies:

- (b) Ministry of Industry:
provided information on the industries that use controlled substances as well as on policies and regulations that affect industries;
- (c) Ministry of Transport:
provided information on vehicles, ships and aircraft with information on the mobile air-conditioners;
- (d) Ministry of Economics and External Trade:
provided information on the policies and regulations that affect trade;
- (e) Ministry of Agriculture:
provided information and data on the use of methyl bromide;
- (g) Customs:
provided information on bulk CFC imports and exports;
- (h) General Establishment for Civil Aviation:
provided information on the use of halon fire extinguishers;
- (f) General Establishment for Fire Fighting:
provided information on the use of halon fire extinguisher systems;

Industries:

- (a) Individual industries and companies:
provided data on the consumption and use of the controlled substances in their own companies, as well as information known about the general situations in Syria with regard to those uses. (A full list of the relevant industries and companies can be obtained from the Chamber of Industry.)

2. CONSUMPTION AND USE OF CONTROLLED SUBSTANCES

2.1 The Survey

The survey of the consumption of controlled substances was carried out by the Central Bureau of Statistics (under the responsibility of the Director of Industrial Statistics) in cooperation with the National Country Programme Team.

The survey was conducted as follows:

- (a) From the available list of establishments and industries, the companies that are likely to be importing/using controlled substances were identified;
- (b) A lecture was conducted at the Bureau of Statistics to explain about the depletion of the ozone layer and the use of ozone depleting substances. The lectures were given by the National Country Programme Team. The survey was advertized through TV, newspapers and magazines to alert the industries;
- (c) In each Governate a small sample of the establishments/industries were surveyed.

The task of conducting the survey of the consumption and use of the controlled substances in Syria was difficult. The primary reason for the difficulty was that the industries are diverse and spread out. There are thousands of small-scale industries that are likely to be importing/using controlled substances but are not registered by the Government. In particular, companies such as repair/service workshops, that do not import any materials for their operation are not required to be registered.

With regard to the data on imports of controlled substances, the present coding system used by the Customs does not have a separate code for each controlled substance. The Customs register the controlled substances under the categories of 'Freons', 'carbon tetrachloride' and 'others'. The names of the importers are not accessible.

In order to facilitate future collection of data on the consumption of controlled substances and for monitoring of the activities under the Action Plan, improvements in record keeping by the relevant Governmental bodies are included under the Action Plan.

2.2 The Consumption of the Controlled Substances in 1986, 1989, 1990 and 1991

Syria does not produce any controlled substances, but imports CFCs for manufacturing and servicing refrigerators and air-conditioners, as well as for production of aerosols and foams.

For the manufacturing of refrigeration equipment, CFC-11, CFC-12, as well as small quantities of CFC-115 (contained in refrigerant R-502) are imported. Air-conditioning equipment is also manufactured in Syria, but these equipment mostly use HCFC-22 as refrigerant. HCFC-22 is controlled under the Copenhagen Amendment to the Montreal Protocol, but this Country Programme does not include data on consumption and use of HCFC-22.

Carbon tetrachloride, CFC-113 and CFC-111 are imported and used as solvents. These solvents are used in various industries including manufacturers of adhesives and varnishes. No methyl chloroform was found through the survey.

Halons are not imported as bulk chemicals.

In addition, information on the use of methyl bromide was obtained. Methyl bromide is used in Syria for fumigation of stored cereals and grains and for treatment of infected agricultural consignments imported/exported. Only the

Ministry of Agriculture imports methyl bromide. In 1992, 120 Tonnes were imported.

2.2.1 The Consumption of Each Controlled Substance (as bulk chemicals)

The consumption, the calculated level of consumption and the per capita calculated level of consumption of the controlled substances in Annex A and Annex B for the years 1986, 1989, 1990 and 1991 are shown in Table 1.

Tables A.1 ~ A.4 in Annex I of this Country Programme report show the production, imports, exports and consumption of each of the controlled substances for the four years. The Tables are in the form that is ready for submission to the Ozone Secretariat to fulfill the reporting requirements of Article 7 of the Protocol.

Table 1.1 Consumption, calculated consumption and calculated per capita consumption of controlled substances in 1986, 1989, 1990 and 1991

Substances	1986		1989		1990		1991	
	Tonnes	ODP Tonnes	Tonnes	ODP Tonnes	Tonnes	ODP Tonnes	Tonnes	ODP Tonnes
ANNEX A								
<u>Group I</u>								
CFC 11	586.15	586.15	436.57	436.57	496.87	496.87	493.76	493.76
CFC 12	901.15	901.15	671.18	671.18	763.89	763.89	759.10	759.10
CFC 113	83.43	66.74	108.88	87.10	56.85	45.48	91.01	759.10
CFC 114	0	0	0	0	0	0	0	72.81
CFC 115	-	-	-	-	-	-	-	0
Sub-total	1570.73	1554.04	1216.63	1194.85	1371.61	1279.24	1343.87	1325.67
<u>Group II</u>								
Halon 1211	0	0	0	0	0	0	0	0
Halon 1301	0	0	0	0	0	0	0	0
Halon 2402	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0
TOTAL	1570.73	1554.04	1216.63	1194.85	1371.61	1279.24	1343.87	1325.67
ANNEX B								
<u>Group I</u>								
CFC 13	0	0	0	0	0	0	0	0
CFC 111	55.62	55.62	72.59	72.59	37.90	37.90	60.67	60.67
CFC 112	0	0	0	0	0	0	0	0
CFC 211	0	0	0	0	0	0	0	0
CFC 212	0	0	0	0	0	0	0	0
CFC 213	0	0	0	0	0	0	0	0
CFC 214	0	0	0	0	0	0	0	0
CFC 215	0	0	0	0	0	0	0	0
CFC 216	0	0	0	0	0	0	0	0
CFC 217	0	0	0	0	0	0	0	0
Sub-total	55.62	55.62	72.59	72.59	37.90	37.90	60.67	60.67
<u>Group II</u>								
Carbon tet	35.69	39.26	70.00	77.00	0	0	0.98	1.08
<u>Group III</u>								
Methyl chl	-	-	-	-	-	-	-	-
TOTAL	91.31	94.88	142.59	149.59	37.90	37.90	61.65	61.75
GRAND TOTAL (Annex A and B)	1662.04	1648.92	1359.22	1267.44	1409.51	1317.14	1344.85	1387.42
Population	10,612,000		11,719,000		12,116,000		12,529,000	
ODP kg. per capita consp.	Annex A: 0.15 Annex B: 0.008		Annex A: 0.10 Annex B: 0.013		Annex A: 0.11 Annex B: 0.003		Annex A: 0.11 Annex B: 0.005	

NOTE: Population data have been taken from the Statistical Abstract 1991, Syrian Arab Republic, Office of the Prime Minister, Central Bureau of Statistics.

2.2.2 Consumption of Each Controlled Substance by Use Sectors

Figures 1.1 - 1.4 below show, for the years 1986, 1989, 1990 and 1991, respectively, the percentages of total consumption of the controlled substances consumed under each use sector.

Figure 1.1: 1986 consumption of controlled substances by end-use

TOTAL CONSUMPTION = 1662.04 Tonnes

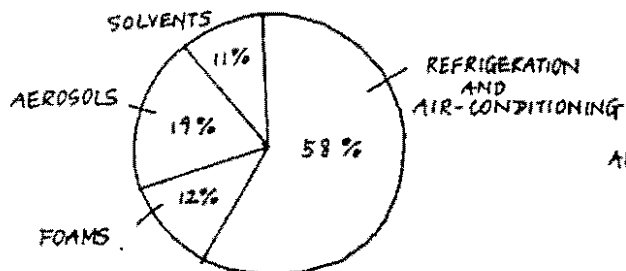


Figure 1.2: 1989 consumption of controlled substances by end-use

TOTAL CONSUMPTION = 1359.22 Tonnes

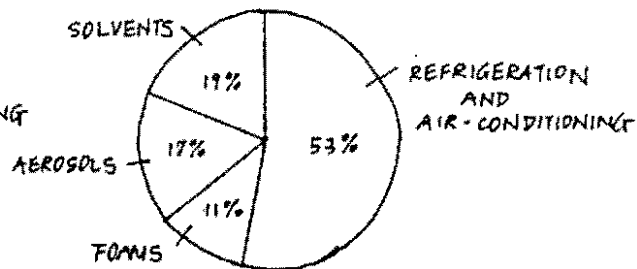


Figure 1.3: 1990 consumption of controlled substances by end-use

TOTAL CONSUMPTION = 1355.51 Tonnes

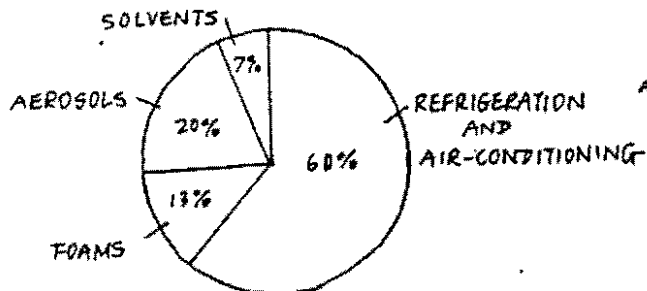
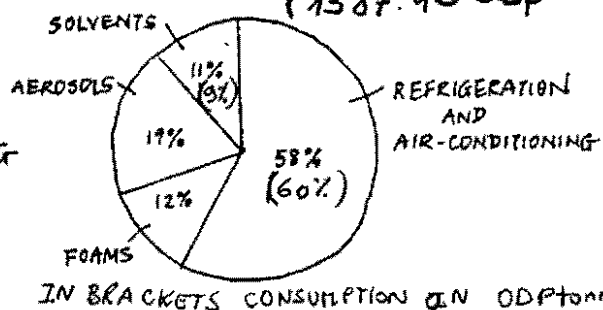


Figure 1.4: 1991 consumption of controlled substances by end use

TOTAL CONSUMPTION = 1405.52 Tonnes



The 1991 consumption of the controlled substances under each use sector are further explained below:

Refrigeration and air-conditioning sector:

The estimated percentage of CFC-12 used under the refrigeration and air-conditioning sector in 1991 is 66% (approximately 500 Tonnes). The estimated quantities of this CFC-12 used for the various sub-sectors are:

- (a) manufacture of domestic refrigeration equipment - 75 Tonnes
- (b) manufacture of industrial/commercial refrigeration equipment - 2 2 5
Tonnes
- (c) manufacture of domestic freezers - 100 Tonnes
- (d) maintenance of refrigeration and automotive air-conditioning equipment - 100
Tonnes

The estimated percentage of CFC-11 used in the manufacture of various refrigeration systems (as insulation in the casing) is 64% (approximately 300 Tonnes).

(See Table 2.1)

Foams sector:

The estimated percentage of CFC-11 used for the manufacture of foam products is 36% (170 Tonnes). (See Table 2.1 below.)

Aerosols sector:

The estimated percentage of CFC-12 used for the manufacture of aerosol sprays is 34% (approximately 260 Tonnes). Both insecticide and cosmetic sprays are manufactured in the country. Some insecticide manufacturers are using LPG. (See Table 2.1 below.) There are two oil refineries that produce LPG.

Solvents sector:

All the CFC-111, CFC-113 and carbon tetrachloride imported were used as solvents. The solvent-using industries that were identified in the survey were the electronic equipment manufacturing industry, coatings manufacturers, adhesives manufacturing industries. Solvents are also being used by various industries and workshops for cleaning machinery and equipment.

2.2.3 Products Containing Controlled Substances

Most of the refrigeration and air-conditioning equipment, aerosols and foam products are manufactured in Syria. Table 2.1 shows the estimated use of controlled substances in the manufacturing sector for 1991.

Estimates of the numbers of various equipment containing controlled substances that were in operation in Syria in 1991 have been made. These estimates are shown in Table 2.2, which also shows the type of controlled substances contained in each category of equipment and approximation of the average quantity of the controlled substances contained in each category of products.

The general situation with regard to each type of product containing controlled substances is further explained below.

Refrigeration equipment:

There are a total of 81 firms that manufacture domestic refrigerators (most of these are small-scale and Al-Hafez and Barada are the two large producers); 49 firms that manufacture domestic freezers of various sizes (most of these are small-scale); 911 firms manufacturing industrial and commercial refrigeration equipment (most of these are small-scale).

Compressors are not manufactured in Syria. The average life time of compressors for domestic refrigeration equipment is approximately 15 years, while the average life time of a domestic refrigeration equipment is 20-30 years. The average life time of industrial refrigeration systems (including cold rooms) are 30-40 years. Cold rooms use R-22 and R-12 as refrigerant and few use R-502. Consumption of R-502 is insignificant.

Most refrigerated trucks are imported. These use R-22 as refrigerant.

Air-conditioning equipment:

Almost all air-conditioning equipment are using R-22 as refrigerant. There are three major producers of central and room (split type and window type) air-conditioning equipment of various capacities.

Automotive air-conditioners are imported. Some car dealers are already importing automotive air-conditioners that use HFC-134a as refrigerant.

Foams:

There are a total of 14 firms producing various types of foam. Most use CFC-11 as blowing agent. Most of these firms seem to be aware of CFC-11 phase-out and the use of methylene chloride and water as alternative blowing agents. Some expressed that they had recently encountered difficulties in obtaining CFC-11.

Aerosols:

There are a total of 19 aerosol spray manufacturing industries. Cosmetic sprays contain CFC-11.

Halon fire extinguishers:

Most portable fire extinguishers are manufactured in the country. Common fire extinguisher agents used in Syria are nitrogen, carbon dioxide, dry powder and foam. Small numbers of portable halon fire extinguishers were found to be used. The users include large hotels and in aircraft. The import of halon fire extinguishers is negligible.

Table 2.1 Estimated quantities of controlled substances used in 1991 in the manufacturing sector

TYPE OF PRODUCT/ TYPE OF ACTIVITY	ESTIMATED NUMBER OF UNITS OF EQUIPMENT MANUFACTURED IN 1991	ESTIMATED QUANTITY OF CONTROLLED SUBSTANCE USED
--------------------------------------	---	--

(A) REFRIGERATION AND AIR-CONDITIONING

Manufacture of domestic refrigerators	250,000	CFC-12: 75 Tonnes
Manufacture of domestic freezers	131,128	CFC-12: 100 Tonnes
Manufacture of commercial & industrial refrigeration systems	36,532	CFC-12: 225 Tonnes
Maintenance of refrig. and automotive a/c equipment		CFC-12: 100 Tonnes

(B) AEROSOLS

Manufacture of cosmetic sprays		CFC-12: 260 Tonnes
--------------------------------	--	--------------------

(C) FOAMS

Manufacture of various refrigeration systems		CFC-11: 330 Tonnes
Manufacture of flexible and rigid foams		CFC-11: 170 Tonnes

Table 2.2 Estimation of the numbers of equipment containing controlled substances that were in operation in the country in 1991

TYPE OF EQUIPMENT	ESTIMATED QUANTITY IN OPERATION	CONTROLLED SUBSTANCE CONTAINED	ESTIMATED TOTAL CONTENT OF CONTROLLED SUBSTANCES
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(A) REFRIGERATION AND AIR-CONDITIONING

domestic refrigerators	2,300,000	CFC-12	414 Tonnes
domestic freezers	230,000	CFC-12	100 Tonnes
industrial and commercial refrigeration systems	300,000	CFC-12 (R-502 (?))	1,500 Tonnes
automotive a/c	7,400	CFC-12	7.4 Tonnes

2.3 Analyses of Future Demands for the Controlled Substances

2.3.1 The Economy

The annual GDP growth rates from 1984 to 1991 were as follows:

1991:	11.50 %
1990:	8.95
1989:	7.64
1988:	-8.96
1987:	13.27
1986:	1.91
1985:	-4.96
1984:	6.12

The average annual growth rate for these years is 4.43%

The main sectors of the national economy are mining and manufacturing; wholesale and retail trade; agriculture; Government services and transport and communication.

The population of Syria in 1991 was estimated at 12,529,000. This is projected from the last population census conducted in 1981 and taking the average growth rate of 3.4%.

2.3.2 Projection of Future Demand for Controlled Substances: Unconstrained Demand

Basic Assumptions:

The future demand for the controlled substances is estimated assuming that the Montreal Protocol did not exist. Almost all the demand for the various products containing controlled substances are manufactured in the country and the imports of controlled substances in the past 6 years have varied between 1220 and 1570 Tonnes without showing a steady growth. Hence, it is assumed that the market for these products will grow at a similar growth rate as for the population. From the GDP growth rate, population growth rate and the status of industry, it is assumed that the average growth rate for the period 1992-2010 is 3%.

Syria consumes CFC-11, CFC-12, CFC-113, CFC-111 and carbon tetrachloride.

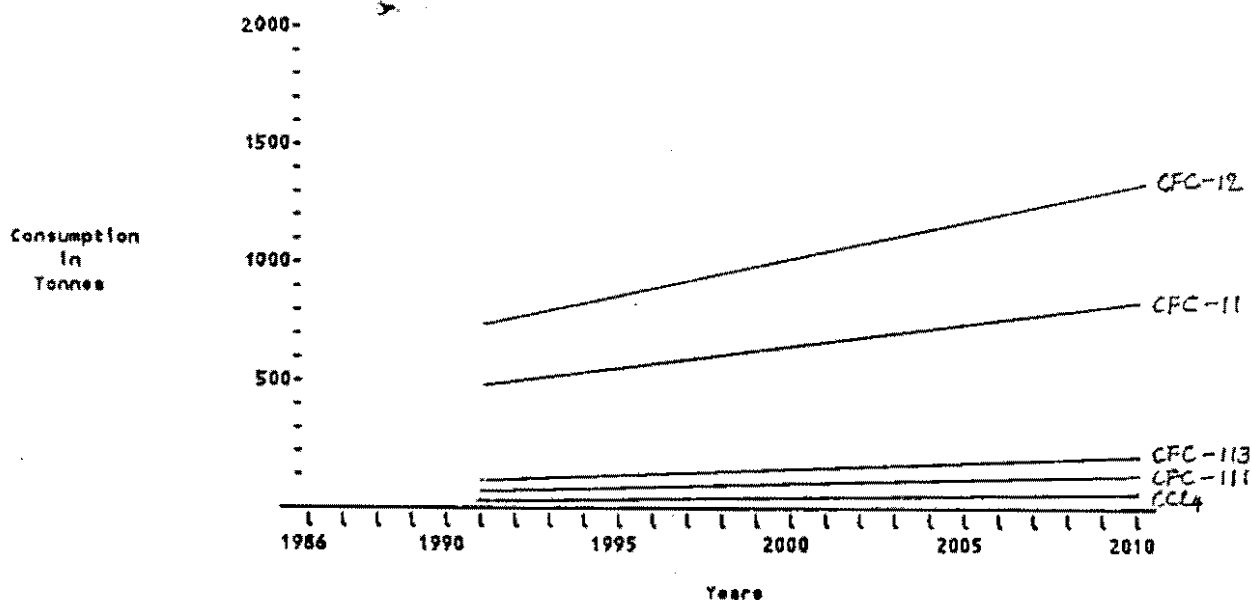
Projection of demand of each controlled substance:

The projected demand for each year (1992-2010) for each controlled substance is shown in Table 2.3 below:

Table 2.3 Summary of the yearly predicted consumption of controlled substances following the unconstrained demand

Year	GDP Growth Rate (%)	CFC-11 Tonnes	CFC-12 Tonnes	CFC-113 Tonnes	CFC-111 Tonnes	CCl4 Tonnes	Total Consump. Tonnes
1991	11.5	493.8	759.1	91.0	60.7	26.8	1431.4
1992	6.0	508.6	781.9	93.7	62.5	27.6	1474.4
1993	"	523.8	805.3	96.6	64.4	28.4	1518.6
1994	"	539.6	829.5	99.4	66.3	29.3	1564.1
1995	"	555.7	854.4	102.4	68.3	30.2	1611.1
1996	"	572.4	880.0	105.5	70.4	31.1	1659.4
1997	"	589.6	906.4	108.7	72.5	32.0	1709.2
1998	"	507.3	933.6	111.9	74.7	33.0	1760.5
1999	"	625.5	961.6	115.3	76.9	34.0	1813.3
2000	4.0	644.3	990.5	118.7	79.2	35.0	1867.7
2001	"	663.6	1020.2	122.3	81.6	36.0	1923.7
2002	"	683.5	1050.8	126.0	84.0	37.1	1981.4
2003	"	704.0	1082.3	129.8	86.6	38.2	2040.8
2004	"	725.1	1114.8	133.7	89.2	39.4	2102.1
2005	"	746.9	1148.2	137.6	91.8	40.5	2165.1
2006	"	769.3	1182.7	141.8	94.6	41.8	2230.1
2007	"	792.3	1218.2	146.0	97.4	43.0	2297.0
2008	"	816.1	1254.7	150.4	100.3	44.3	2365.9
2009	"	840.6	1292.3	154.9	103.3	45.6	2436.9
2010	"	865.8	1331.1	159.6	106.4	47.0	2510.0
TOTAL		13167.8	20387.6	2445.3	1631.1	720.3	38352.1

Figure 2.1 Graph showing the unconstrained demand for each controlled substance up to year 2010



Incremental costs are estimated for two different scenarios:

- Accelerated phase-out through the implementation of this Country Programme which targets the phase-out at year 2000. The incremental costs are estimated based on the planned activities under the Action Plan.
- Phase-out in the year 2010 in accordance with the requirements of the Montreal Protocol for countries operating under paragraph 1 of Article 5. (Freeze at 1995-1997 level by 1999; 50% reduction by 2005; 85% reduction by 2007; Complete phase-out by 2010). The consumption of the controlled substances is assumed to follow the maximum allowable consumption.

No standard method has yet been defined for estimating the incremental costs to be incurred by Article 5 countries in phasing-out the consumption of

controlled substances. Several simplified assumption have been made in estimating the incremental costs for Syria. The incremental costs have been estimated by use sector. The costs include capital investment costs, operational costs, early forced retriement of domestic refrigerators, retrofitting industrial/commercial refrigeration equipment and for institutional strengthening. The estimated incremental costs are only roughly indicative and would not be comparable to the estimates for other countries due to the wide differences in the assumptions made and the methodologies for the estimation. The estimated incremental costs do not indicate the costs of the Action Plan.

Basic assumptions in the analyses that apply to all the use sectors are as follows:

- The incremental cost is the difference in cost to the economy between 'business as usual' using controlled substances and phasing out the controlled substances because of the existence of the Montreal Protocol.
- The consumption of the controlled substances will increase according to the predicted unconstrained demand until control is effected according to the Action Plan or the Montreal Protocol control measures.
- The controlled substances will be available in sufficient quantities at constant prices.
- The estimates of the incremental costs are based on 1991-1992 prices.
- A real discount rate of 10% has been used to calculate the present 1992 value of the costs.
- Energy efficiency has not been considered under the analyses.

The expected consumption of the controlled substances under each of the scenarios is shown graphically below:

Figure 2.2

Graph showing the expected consumption of the controlled substances (Annex A, Group 1 substances only) under the accelerated phase out scenario (likely consumption under the Action Plan)

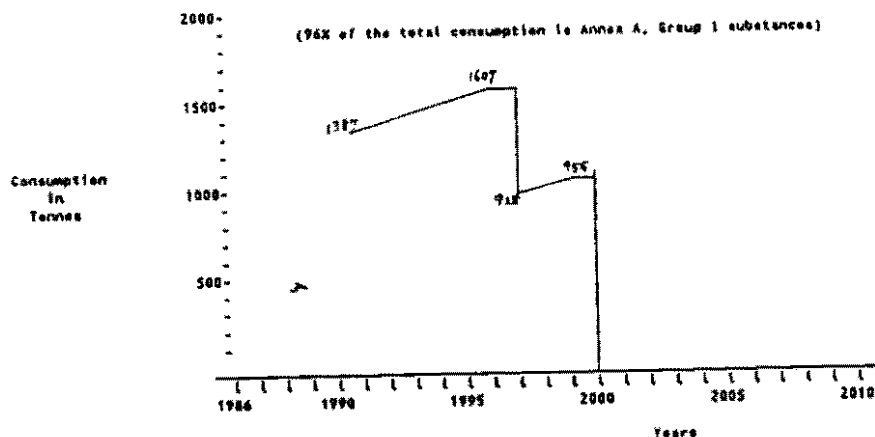
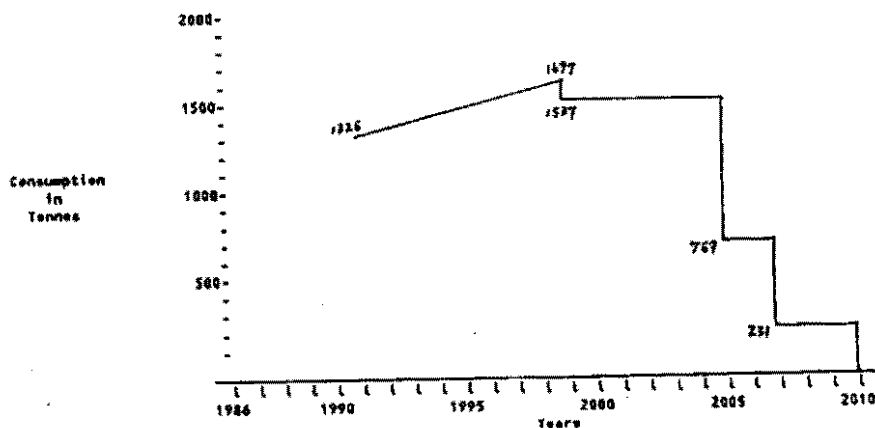


Figure 2.3

Graph showing the expected consumption of the controlled substances (Annex A substances) under the Montreal Protocol phase-out scenario (maximum allowable consumption)



The likely substitution and the assumptions for each sector are as below:

Foams sector:

Likely substitution:

For the production of flexible foam, the two conversion options that do not involve use of HCFCs and are relatively cheap and simple are substitution to methylene chloride and elimination of the blowing agent altogether. Using CFC-11 as auxiliary blowing agent enables production of low density foams of 21kg per cubic meter and below.

Methylene chloride is currently the commonly used substitute for CFC-11. It is substantially cheaper than CFC-11 and less of it is required as foam blowing agent as compared with CFC-11.

Methylene chloride also enables production of low density foams and it is basically a drop-in substitute for CFC-11. Experience from large flexible foam factories in developed countries indicate that conversion to methylene chloride has led to cost savings, though additional costs are required for safety due to toxicity of methylene chloride.

Assumptions:

- The 14 industries manufacturing various foam are all manufacturing flexible foam and all will convert to using methylene chloride.
- Capital cost of US \$ 5,000 is assumed for each factory to institute safety measures and relevant training.
- Under the country programme, the factories will change to methylene chloride in 1997 and under Montreal Protocol phase-out in 2007.

Solvent sector:

Likely substitution:

Currently in Syria, most of the use of solvents can easily be substituted. The use of solvents in coatings and adhesive manufacture, machinery and equipment cleaning and in manufacture of electronics (controlled substances are not being used for cleaning of circuit boards or for other purposes within the industry) could be substituted by various hydrocarbons and others which are not significantly more expensive than controlled substances.

Assumption:

- Incremental costs are assumed to be zero.

Aerosol Sector:

Likely substitution:

In cosmetic aerosols, there is no single alternative for CFCs as each type of cosmetic spray has its own specific requirements with regard to propellants. Deodorized LPG and dimethyl ether are used as substitute propellants but they are flammable. These propellants can also be flammable during use of the aerosol sprays. LPG propellant has been widely used in insecticide sprays and other household aerosols.

LPG are cheaper than CFCs, but since LPG are flammable safety measures are required. Conversion to LPG will result in cost savings in the aerosol industries in the long run. Deodorization of LPG will incur capital investment cost.

Assumptions:

- The existing aerosol industries will convert to LPG propellant.
- Incremental costs to the aerosol industries are the costs for ensuring safety (capital cost for equipment and training) which is assumed to be US \$ 50,000 per filling facilities. It is assumed that 15 firms will require investment for ensuring safety.
- The cost of capital investment for the LPG deodorization will be approximately US \$ 880,000.
- The investment for LPG deodorization and for each filling facility will occur in 1995 under the country programme and in 1998 under Montreal Protocol phase-out.

Refrigeration and air-conditioning sector:

Likely substitution:

HFC-134a refrigerant is currently about 5 times as expensive as CFC-12 (HFC-134a: approximately US \$ 20 per kg as compared with CFC-12: approximately US \$ 4 per kg), but approximately 10% less of it is necessary for the new equipment using HFC-134a. The price of the HFC-134a refrigerant should decrease gradually.

Domestic refrigerators with HFC-134a refrigerant have begun to appear in market (e.g. Denmark) at prices that are only slightly higher than those with CFC-12 refrigerant. In many cases, the energy efficiency of the HFC-134a equipment is at least as good as the CFC using equipment.

The costs of retrofitting industrial/commercial refrigeration equipment is dependant upon the substitute refrigerant, size, age and type of the equipment hence difficult to estimate. In new industrial refrigeration systems, CFCs can be replaced by HCFC-22, ammonia, hydrocarbons or HFCs. Many companies consider that conversion to ammonia and hydrocarbons are the best available options. Existing industrial refrigeration systems (including cold rooms) may be retrofitted to use ammonia or HCFC-22.

Assumptions:

- Capital cost for conversion of two major manufacturing industries is approximated at US \$ 6,000,000. This figure is based on estimation given by one major manufacturer of domestic refrigeration equipment in Syria.
- It is assumed that average incremental cost for manufacturing one domestic refrigeration equipment is US \$ 8 which takes into account the incremental costs for lubricant oil, new parts (desiccators, wiring, enamel insulation) and initial charge with HFC-134a refrigerant.
- The average cost of domestic refrigeration equipment

manufactured in Syria is currently approximately US \$ 800.

- Capital cost for the conversion of manufacturing facilities for industrial and commercial refrigeration systems are not included.
- An average incremental cost of US \$ 70 is assumed for per unit manufacture of industrial and commercial refrigeration systems.
- The average cost of early forced retirement of any domestic refrigeration equipment is assumed to be US \$ 200.
- The failure rate of domestic refrigeration equipment is assumed to be 3%.
- Average cost for retrofitting industrial or commercial refrigeration equipment is taken to be US \$ 1000.
- It is assumed that 3% of the stock of equipment (industrial and commercial equipment combined) will be retrofitted.
- It is assumed that the retrofit under the accelerated phase out will take place in the year 1997 and under the Montreal Protocol phase out in the year 2000.

Institutional strengthening

Assumptions:

- Cost of Institutional Strengthening is taken as US \$ 235,180 (already approved).
- For the accelerated phase out it is assumed that the costs will be incurred in 1993 and for the Montreal Protocol in 1995.

Conclusions:

The estimated incremental costs (in million US \$) for each sector as follows:

	ACCELERATED (million US \$)	MONTREAL PROTOCOL (million US \$)
Aerosols:	1.2	0.9
Foams:	0.04	0.02
Refrigeration:		
- manufacture of domestic refrigeration equipment	11.4	7.6
- manufacture of ind/comm refrigeration equipment	8.9	6.9
- forced early retirement of domestic refrigeration equipment	45.5	51.1
- retrofit of ind/comm equipment	8.1	7.0
Institutional strengthening	0.24	0.24
TOTAL	75.38	73.76

The estimated incremental costs are only indicative based on the particular assumptions made for the estimation.

The comparison of the discounted costs (10% discount rate) of phase-out under the two scenarios indicates that there is no significant difference in the cost of phase out between the two scenarios. In selecting the phase out scenario to be implemented by Syria, i.e. the accelerated phase out, some important factors should be taken into consideration.

In reality the controlled substances are becoming increasingly difficult to obtain and the prices of the substances are already rising. Prolonged use of the controlled substances is likely to result in difficulties and considerable cost increase to the

country, since Syria does not produce controlled substances, to meet the demand for the substances.

Furthermore, and most importantly, the environmental benefits of less consumption, hence emission of controlled substances would far outweigh the extra costs that may be incurred in accelerating the phase-out. The estimated cumulative consumption shows that approximately 10,500 Tonnes less of controlled substances will be consumed by Syria if accelerated phase out is followed as compared with the Montreal Protocol phase out schedule.

The Indicative List of Categories of Incremental Costs adopted by the Parties to the Montreal Protocol at their Second Meeting in London states that the most cost-effective and efficient options for phase-out projects should be chosen to be financed through the Multilateral Fund. It is important that the evaluation of the cost effectiveness takes into consideration all the benefits and the costs such as increased cost of controlled substances that the developing countries would have to pay for.

It should also be kept in mind that the discounted costs will change significantly with the discount rate chosen.

2.4 Industry Structure

The industries in Syria are diverse and widely spread. It is estimated that one-third of the industrial establishments as well as their production are concentrated in the capital, Damascus and one-third in Aleppo. The rest are spread throughout the country.

There are approximately 25 main importers of controlled substances. These importers include chemical distributors as well as some manufacturers of refrigeration and air-conditioning equipment, aerosols and foams.

Most of the refrigeration and air-conditioning equipment, aerosols and foam products are locally manufactured. Some retailers shops and end-users of such products (e.g. large-scale hotels) import the products directly. In the manufacturing sector there are:

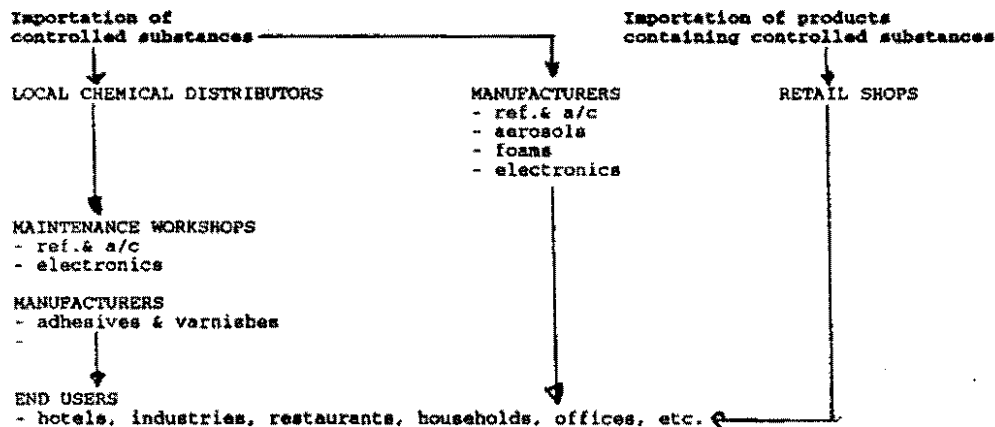
- (i) 81 industries manufacturing domestic refrigerators. Many are small-scale industries producing 100-1000 units per year.
- (ii) 49 industries manufacturing various freezers.
- (iii) 911 industries manufacturing industrial and commercial refrigeration equipment. Most of these are small-scale industries that also undertake repairs of refrigeration equipment.
- (iv) 14 industries manufacturing foam products (both flexible and rigid).

- (v) 19 industries manufacturing aerosol sprays (insecticides and cosmetics). Some of the producers of insecticide sprays have already converted to LPG propellant following the conversion in mother companies in the developed countries.
- (vi) 3 main industries and some small-scale industries manufacturing various air-conditioning equipment except automobile air-conditioners.
- (vii) One main industry manufacturing electronic equipment (television and telephone sets).
- (viii) A few industries manufacturing coatings and adhesives.

There are thousands of repair/maintenance of workshops including workshops for refrigeration and air-conditioning equipment.

The structure of the industries that deal with controlled substances are shown in the Figure 2.4 below:

Figure 2.4: Flow chart showing the structure of the industries that deal with controlled substances and products that contain controlled substances.



2.5 The Status of Response to the Montreal Protocol

2.5.1 The Government Response

Syria acceded to the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on 12 December 1989 and both the Convention and the Protocol entered into force for Syria on 12 March 1990.

The Government of Syria assigned the responsibility of implementation of the Vienna Convention and the Montreal Protocol to the Ministry of Environment. In 1992 the Ministry has been renamed as the General Commission for Environmental Affairs. The Commission is also the focal point to UNEP on the issues of ozone layer protection.

Syria has participated with interest in the various meetings convened under

the Vienna Convention and the Montreal Protocol. For example, both Government and industry representatives participated in the Regional Workshop on the Implementation of the Montreal Protocol held in Cairo, December 1991. For this purpose a limited survey of importation of controlled substances was attempted and the results were presented to the Workshop.

The General Commission organized several radio and television programmes as well as issued newspaper articles featuring various issues on the environment, sometimes focusing on the problem of ozone layer depletion and the international efforts being made to protect the ozone layer.

In March 1991 a national workshop on climate change, biological diversity and environmental education was convened where problems of ozone layer depletion was included. School curriculum also includes teaching of environmental sciences under which problems of ozone layer depletion is addressed. Furthermore, a National Workshop on the Protection of the Ozone Layer will be organized in order to increase public awareness about the ozone layer issue and to inform the industries as well as the public regarding the implementation of this Country Programme.

The Government of Syria is committed to phase out the consumption of controlled substances in Syria as soon as possible but not later than the year 2000. The Government has already taken actions to pursue this goal. Although Syria, as a developing country operating under paragraph 1 of Article 5, is entitled to delay the phase out by 10 years, it will not await the elapse of the grace period before embarking on action to phase out its consumption of the controlled substances. With timely and efficient provision of the necessary financial and technical support from the Multilateral Fund under the Montreal Protocol, and effective technology transfer and implementation of the Country Programme, Syria could meet its goal to phase out the consumption of the controlled substances in the year 2000, which is earlier than the Protocol requires for Article 5 countries.

2.5.2 The Industry Response

The industries' awareness on the problem of ozone layer depletion is generally low, apart from the chemical distributors.

However, one large manufacturer of domestic refrigeration equipment has already reduced the CFC-11 consumption by half. Some small service workshops are aware that some new refrigerant would be used in the future.

In the aerosol sector, several manufacturers are now using LPG as propellant due to the fact that the mother companies in developed countries have converted from using CFCs to LPG.

No actions have so far been taken by other industries to reduce the use of controlled substances.

2.6 Institutional Framework

General Commission for Environmental Affairs:

Under the existing institutional framework, all environmental issues, both national and international which include global environmental issues such as the protection of the ozone layer, fall under the responsibility of the General Commission for Environmental Affairs. The General Commission is the national and international focal point for environmental matters including UNEP matters.

Nationally, the General Commission plays a coordinating role with other Governmental bodies as well as private enterprises regarding environmental

matters. It has the following main responsibilities:

- (i) conducting Environmental Impact Assessment in cooperation with other Ministries, in particular, Ministry of Health;
- (ii) regulating and controlling use of pesticides and insecticides;
- (iii) controlling the recycling of plastic wastes;
- (iv) combatting and monitoring marine pollution;
- (v) organizing various public awareness programmes on environmental issues through mass media;
- (vi) teaching environmental issues through educational establishments;
- (vii) setting quality standards and monitoring water and air with assistance of Environmental Research Laboratory of Higher Institute of Applied Science and Technology (HIAST);
- (viii) establishing programmes for combatting desertification in cooperation with other national and regional bodies;
- (ix) selecting and nominating national experts to attend appropriate regional and international meetings and workshops;
- (x) establishing environmental engineering institute in cooperation with Ministries of Planning and Higher Education;
- (xi) participation in sewerage and other construction projects;
- (xii) at regional level, the Minister for Environmental Affairs participates in the Board of Environment Ministers in the Arab countries (the Board considers, inter alia, desertification, industrial pollution, environmental awareness and education, sustainable development, information exchange);
- (xiii) implementation of Barcelona Convention on Mediterranean Sea and its Protocols to which Syria is a Party; and
- (xiv) implementation of the Basel Convention, the Vienna Convention and the Montreal Protocol.

Under the General Commission, 12 specialized Committees on the following subjects have been established: environmental health; protection of the atmosphere; protection of fresh water and water ways and sanitary engineering; chemicals; nuclear safety; man and biosphere; environmental urbanization; general and international relationships; scientific research and standardization; soil safety and natural resources; marine environment; and environmental awareness. These Committees undertake necessary research and advise the Minister of State for Environmental Affairs. In addition to these, each province has a local committee for the protection of the environment which handles local environmental problems with the help of the General Commission for Environmental Affairs.

Higher Board for the Protection of the Environment:

This Board was established in 1991 and is Chaired by the Prime Minister. It has as its members, Ministers of Environment; Industry; Planning; Agriculture; Health; Electricity; Oil, Petrol and Mineral Resources; Irrigation; Education; Higher Education; Service Affairs; Transportation; Housing and Utilities; Mass Media and Information; and Local Administration.

The Board is responsible for drawing up the general policy of the country in order to protect the environment and to prevent and combat all aspects of pollution and its sources as well as to treat all consequences of pollution. In order to fulfill these responsibilities, the Board has the authority, in particular, to: (i) issue general policies and plans relating to the protection of the environment; (ii) adopt environmental quality standards; (iii) issue regulations and conditions for industrial and other activities to prevent harmful effects on the environment or the ecosystem; and (iv) take necessary decisions and actions to prevent, stop or limit operations of any establishment or any other activities which may harm the environment or the ecosystem.

Ministry of Industry:

This Ministry controls both public and private industrial activities through promoting industrial establishments, investments and at the same time monitoring and inspecting the qualities of the operation and production of the industries and ensuring operational safety. The Ministry of Industry is responsible for issuing licenses for establishment of industries.

Chamber of Industry:

Provides information and guidance to the industrialists on new technologies. It provides the forum for discussion of various issues of interest to the industrialists.

Training Institutes:

Institutions and organizations in Syria that offer various opportunities for training are as below. These institutions could play an important role in training and educating the technicians as well as the public in matters related to the ozone depleting substances, and their use.

- (a) **General Commission for Environmental Affairs:** The General Commission has organized workshops, meetings and seminars and public awareness programming through mass media for various subjects on the environment. It also conducts lectures in schools and other educational institution on environmental issues.
- (b) **Higher Institute of Applied Sciences and Technology (HIAST) and its Environmental Research Laboratory:** The Institute conducts consultancies on environmental issues and field monitoring surveys on the quality of water and air in the country. It also participates in various committees under the Government on environmental affairs.

HIAST has undertaken training of some government officials in the field of pollution monitoring. Short seminars on various aspects of science and technology have been organized by the Arab School of Science and Technology which is a part of the HIAST. Some international organizations such as UNESCO, and UNDP have contributed Funds towards these activities of the Arab School. For any training activities that are carried out within the facilities of HIAST prior approval is given by the Arab School.

HIAST is currently considering to implement a programme for cleaner production and to undertake the responsibility of being a focal point for transfer of technology.

- (c) **The Assad Library:** This is the largest library in Syria with responsibilities to ensure collection of various information and documentation of information. One of the important source of environmental information is through the Center of Environmental Health Activities (CEHA)/WHO regional office in Amman, Jordan. CEHA's computerized information system is accessed through the Assad Library which acts as a focal point of Syria for CEHA activities and network.

Annual book exhibition is organized by the Library to introduce publications in all fields. Local as well as regional publications are introduced and displayed.

- (d) **Institute for Industrial Engineering (under the Ministry of Industry):**

The Institute conducts two-year degree courses on the following subjects: mechanics (including courses on refrigeration and air-conditioning), electronics, electricity and computers. The Institute is equipped with necessary machinery and equipment for training and demonstration.

(e) Vocational Training Centre (under the Ministry of Higher Education):

Through courses conducted by the Centre, various technical skills could be learned. After having attended the courses one could run a repair or other technical workshops. No certificates are issued. There are over 120 centres throughout the country.

2.7 Existing Policy and Operational Framework in Syria that Govern Trade and Industries

There are no specific laws and regulations that have yet been enacted in Syria for the reduction and phase out of the consumption of controlled substances.

The general policy and operational framework and regulations relevant to trade and industries are explained below:

2.7.1 Trade

Trade licenses are issued by the Ministry of Economics and Trade. All commodities imported must be licensed. The imported commodities are checked by the Customs against the import licenses and invoices.

A special committee gives guidance on importation and exportation. The Committee plans the trade needs and policies on the basis of the economic and industrial situation in the country and according to existing laws and regulations that affect trade and industries.

The Committee is chaired by the Prime Minister and members include his deputies (in the field of economic affairs and utilities), representative of labour union, ruling Party representative, representative of Union of Chambers of Commerce and Industries and Ministers of Supply; Finance; Industry; Agriculture; General Commission for Planning; and Economics and Trade.

Decisions taken by the Committee are passed to the Ministry of Economics and Trade which will implement the decision through adoption and enactment of necessary laws and regulations.

A Committee consisting of representatives of Ministries of Industry; Supplies; Finance; and Commerce recommends duties and taxes for each item of import and export for approval by the Prime Minister. The Prime Minister then passes it to the President for final approval. Upon signature of the President the recommendation becomes a decree. (The most recent decree on duties and taxes is No.25 of 1989, having 99 items listed). If any modifications on the decree is required, it follows the above procedure for adoption of the duties and taxes.

In the mid 1960s, a ban was placed on importation of refrigerators in order to enhance the manufacturing of refrigerators in the country. For air-conditioners a ban was declared in 1983, but the ban was lifted in March 1992 due to high demand for the product.

2.7.2 Industries

The records on industries are kept by the Ministry of Industry on the basis of licenses issued for the establishment of the industries. Annual records of consumption of material and production of goods are not recorded.

The Central Bureau of Statistics carry out a survey of the industries annually to record in Statistical Abstract the quantities of various products manufactured in the country. The Bureau records the names of existing industries under computerized classification.

The procedure for establishing an industry involves the following steps:

- (a) The investor applies to the Directorate of the Ministry of Industry in the relevant municipality for a license. The application should include information on the types and qualities of raw materials, equipment needed, production capacity and the prices of the final products he will sell.
- (b) The application will then be considered by a special committee for issuing industrial licenses, and the final approval is given by the Minister of Industry. The license issued at this stage is considered as preliminary license which permits for construction of the industry to begin.
- (c) The investor is granted one year within which to complete the construction, importation of necessary materials and equipment as well as installation of equipment. Upon completion of the construction, the Directorate is informed.
- (d) Inspectors from the Directorate conducts an on-site inspection to ensure that operation is in accordance with preliminary license and with safety and environmental requirements. Upon certification of compliance, a final license is issued and the industry is recorded by the Ministry of Industry.
- (e) The import license for raw materials must be renewed annually through the Ministry of Industry for approval by the Ministry of Economics and Trade. The Customs is also informed.

Annual inspection of industries is carried out by well trained industrial inspectors of the Directorates.

3. IMPLEMENTING PHASE OUT

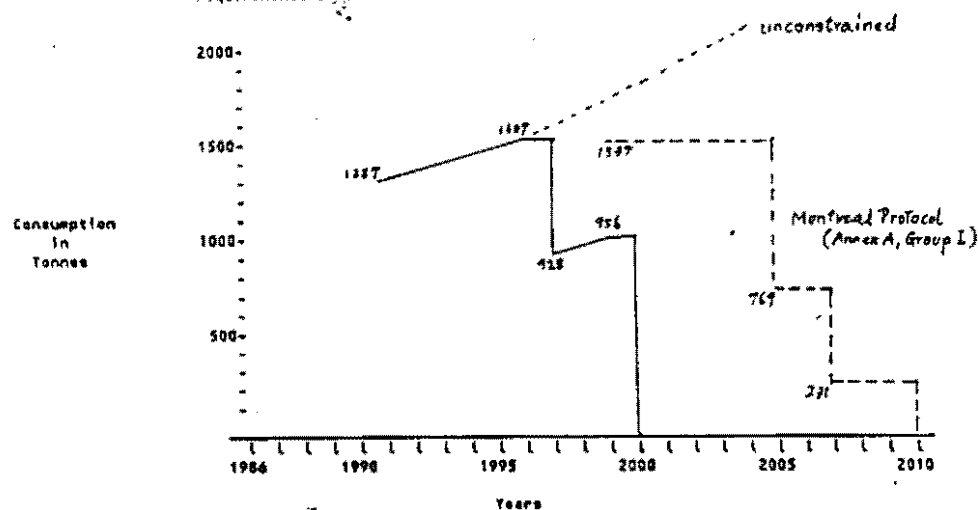
3.1 Strategy Statement by Government

Syria is a Party operating under paragraph 1 of Article 5, hence is required to phase out the consumption of CFCs, halons and carbon tetrachloride controlled under the Montreal Protocol by the year 2010 and methyl chloroform by the year 2015. The Government of Syria is committed to phase out the consumption of the controlled substances as soon as possible, even before the required phase out years.

The Action Plan outlined in section 3.2 should enable Syria to phase out the consumption of all the controlled substances by the year 2000. The steps for reduction up to complete phase out of consumption for each group of substances are presented graphically in Figure 3.1.

Figure 3.1

Graph showing the expected consumption of the controlled substances following the Government strategy for the phase-out as compared with the phase-out in accordance with the requirements of the Montreal Protocol for Article 5 countries



The actions to be taken by the Government will include development and adoption of appropriate policies and legislation to control the consumption of controlled substances; preparation, coordination and organization of phase-out projects under the Country Programme; ensuring the necessary dissemination and exchange of information both nationally and internationally; provision of necessary assistance to the industries and the public to successfully and smoothly phase-out the controlled substances.

In order for the Government to implement the Action Plan, Institutional Strengthening is required. This is included as a project under Government Actions. It is essential that the projects including feasibility and pre-investment studies are carried out in an effective and timely manner, with the necessary financial and technical support from the Multilateral Fund. Assistance of the Implementing Agencies are also requested in implementing this Country Programme.

3.2 Action Plan

The Action Plan for phasing out the controlled substances consists of two parts:

- (i) Government Actions comprising three projects; and
- (ii) Industry Actions comprising six phase out projects.

The projects and their elements that comprise the Government Actions and Industry Actions are described under sub-sections 3.2.1 and 3.2.2, respectively.

3.2.1 Government Actions

Four projects constitute the Government Actions for phase out of the controlled substances:

PROJECT G1: Policies and Legislation Project

Element 1: **Government Policies for the protection of the Ozone Layer**

Adoption by the Government of an overall policy strategy, 'Government Policies for the Protection of the Ozone Layer' that outlines the intentions of the Government with regard to the compliance with the Montreal Protocol and the implementation of the country programme.

The Policy Strategy will include:

- The target year for phasing out the consumption of controlled substances in Syria by the year 2000;
- Description of incentives to be given to the industries that import/use controlled substances and their products;
- The intention of the Government to introduce legislation to control the importation of the controlled substances and their products as well as descriptions of those legislation;
- The plans for organizing various public awareness activities for industries as well as for the public;
- The plans for organizing various training and educational activities in the field of use of controlled substances for technicians and for general public.

Element 2: **Legislation**

The Government will either formulate a 'Ozone Layer Protection Legislation' or amend the existing laws and regulations in order to protect the ozone layer. The necessary laws and regulations will include the following:

- A ban on the installation of halon fire extinguishers except for essential uses which will include uses in aircraft, and defence facilities. The licenses for importing the halon fire extinguishers for essential uses will only be issued directly to the users through the Ministry of Trade and Industry.
- Gradual adjustment of import duties on controlled substances to discourage importation and use of such substances.
- A ban on the importation of controlled substances from the year 2000.
- A ban on the importation of vehicles that incorporate automotive air-conditioners that contain controlled substances from the year 1995.
- Adjustments of the Customs Commodity Codes to allow for monitoring of each substance controlled under the Montreal Protocol, and requirement to submit a copy of the importation license and invoice to the General Commission of Environmental Affairs (ODS office).
- Duty exemption for the recycling and recovery units for refrigerants. The

equipment must be able to recycle CFC, HCFC as well as HFC refrigerants.

PROJECT G2: Institutional Strengthening

The existing institutional framework needs to be strengthened in order to ensure that the Country Programme is implemented effectively. The Institutional Strengthening Project approved at the Tenth Meeting of the Executive Committee is attached as Annex II to this Country Programme.

An additional element under Institutional strengthening is as below:

- **Establishment of a National Committee for Protection of the Ozone Layer under the General Commission for Environmental Affairs**

A National Committee for the Protection of the Ozone Layer will be established under the General Commission for Environmental Affairs to assist the Commission in implementing the Vienna Convention, the Montreal Protocol and the Country Programme. The Committee will assist the Commission in formulating policies and legislation for recommendation to the Higher Board for Protection of the Environment. The Committee will approve the project proposals prepared by the ODS Office before submission to the Fund Secretariat.

The Committee will be Chaired by the Minister of State for Environmental Affairs and members will include representatives of ODS office (see Annex II) Ministry of Industry, Ministry of Finance, Ministry of Commerce and External Trade, Central Bureau of Statistics, Chamber of Industry, Higher Institute for Applied Sciences and Technology, the Customs, State Planning Commission and General Directorate of Meteorology.

PROJECT G3: ODS Phase out Monitoring Project

ODS Office will monitor Syria's consumption and use of ODSs through industries and the Customs. The ODS Office will establish a database on the industries dealing with controlled substances and ODS imports to record all the relevant data. The following monitoring arrangements will be implemented:

Element 1: Monitoring of industries and their ODS consumption

Every industry/company dealing with controlled substances will be required to report data on the ODS annually to the ODS Office. A reporting format will be designed by the ODS Office.

Licenses to operate for the new industries that would deal with controlled substances and/or their products will not be issued by the Ministry of Industry without clearance of the General Commission for Environmental Affairs.

The Ministry of Economics and External Trade will submit a copy of import licenses for ODSs to the ODS Office.

Element 2: Customs data

The Customs code will be amended so that importation of individual controlled substance will be recorded by the Customs. Customs will report the relevant importation data to the ODS Office on quarterly basis.

ODS Office will recommend ways of modification according to its needs for monitoring. Training of Customs officers may be conducted as part of the

Institutional Strengthening Project.

3.2.2 Industry Actions

The Industry Actions will consist of a number of industrial projects which are categorized by use sectors. Assistance of the Implementing Agency for the Country Programme is requested for conducting the various feasibility/pre-investment studies, including, for example, in selecting appropriate international consultants.

SECTOR: AEROSOLS

Project A1: Conversion of aerosols manufacturing industries from using CFCs to LPG

Phase I: Pre-investment study

An international expert, together with a local consultant and the ODS Office with assistance of the Implementing Agency will carry out a pre-investment study for the aerosol industries for substitution of CFC propellants with LPG. The costs for ensuring safety in handling LPG and relevant training strategy will be determined through the study.

The pre-investment study should be carried out during a two week period between May and July 1994. Project proposal resulting from the pre-investment study for the conversion of aerosols manufacturing industries should be submitted for approval of the Fund Secretariat/Executive Committee during late 1994.

Budget:

International expert	fee	US \$ 7,000
	travel	US \$ 8,000

local experts (2)	fee	US \$ 4,000
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Total		US \$ 19,000
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Other costs (e.g. local travel) is expected to be covered under the budget for operational costs under the Institutional Strengthening Project.

Phase II: Project implementation

The project is expected to be implemented on 1994-1996.

Project A2: Deodorization of LPG

Phase I: Project development

The project will be located in one oil refinery.

As preparatory work, the ODS Office with assistance of the Implementing Agency will conduct a study with the oil refineries to determine the location of the LPG deodorization plant and its capacity. The study will be conducted during May-July 1994, in conjunction with the pre-investment study under Project A1 above.

The ODS Office will invite qualified international contracting firms to bid for building an LPG deodorization plant for supplying deodorized LPG to the

aerosol industries. Appropriate firm will be selected with assistance of the Implementing Agency and a project proposal will be drawn up for submission to the Fund Secretariat/Executive Committee for approval in early 1995.

Phase II Project Implementation

The project should be implemented upon approval of the project. It is expected that the project will commence during the second half of 1995.

SECTOR: FOAMS

Project F1: Converting the existing CFC-using flexible foam industry to use alternatives

During 1994, two international experts will be contracted for a three-week period:

- (a) as resource persons for a 2-3 days workshop (to be planned for November 1994) on substitutes and alternatives for production of various foam for all the foam industries in Syria;
- (b) to conduct a feasibility/pre-investment study together with a local expert and the ODS Office to determine the best, non-HCFC substitutes and alternatives for the foam industries in Syria and to develop appropriate projects for the conversion with the ODS Office.

As preparatory work for the workshop, the ODS Office will inform all the relevant firms of the workshop and request information on the products the industries are manufacturing. The information will be used to select appropriate experts with assistance of the Implementing Agency. The preparatory work should begin on 1994.

On 1994, appropriate international experts will be selected with assistance of the Implementing Agency. Programme for the workshop will be prepared in consultation with the international experts and with assistance of the Implementing Agency.

After the Workshop, feasibility study will be conducted. Projects for conversion of foam industries will be developed through the study and these proposals will be submitted to the Fund Secretariat/Executive Committee for approval in early 1995.

The projects are expected to be implemented on 1995-1996.

Budget:

International experts	fee	US \$ 10,500
	travel	US \$ 17,200
local expert (1)	fee	US \$ 3,000
National workshop		US \$ 8,000
Total		US \$ 38,700

Other costs (e.g. local travel) is expected to be covered under the budget for operational costs under the Institutional Strengthening Project.

SECTOR: REFRIGERATION AND AIR-CONDITIONING

Further detailed study of the industries in refrigeration and air-conditioning sector is required. UNIDO is requested to undertake the study during early 1994 to develop a phase-out strategy and projects for refrigeration and air-conditioning sector.

The study should be conducted with close involvement of the ODS office and local consultant(s).

The study to be undertaken by UNIDO should evolve strategies and projects for the following areas:

- Phase-out of ODSs from companies manufacturing domestic refrigeration equipment (excepting the two companies that will be converted under Project R1 below);
- Recovery and recycling of refrigerants in Syria including an assessment of whether or not business for manufacturing recycling equipment could be established in Syria;
- Conversion of industries manufacturing industrial and commercial refrigeration systems (including cold rooms and refrigerated trucks) and central air-conditioning systems (non-HCFC-22);
- Retrofitting existing industrial and commercial refrigeration systems;
- Existing domestic refrigeration equipment;
- Strategy for training of technicians in refrigeration and air-conditioning area, including service technicians.

Budget has not been included in this Country Programme. UNIDO is requested to develop a plan and budget for the study in consultation with the ODS office. The proposal for the study with budget will be submitted separately to the Fund Secretariat/Executive Committee for approval.

Project R1: Investment project to phase out ODSs in two factories manufacturing domestic refrigeration equipment

An investment project will be carried out for one public sector industry and one private industry that are manufacturing refrigerators to convert from using CFC refrigerant to HFC-134a refrigerant and to use alternative technology for the insulation foam.

UNIDO is developing a project for phase out of CFC-11 and CFC-12 in one private sector company. A project proposal is expected to be submitted for approval at the Eleventh Meeting of the Executive Committee. It is requested that UNIDO develops urgently a similar project for the largest public sector industry that manufacture domestic refrigeration equipment.

3.3 Timetable for the Implementation

The planned time schedule for the activities under the Action Plan is shown in the column for 'commencement/duration' in Table 3.2.

3.4 Summary and Budget for the Action Plan

3.4.1 Implications of the Action Plan on the Consumption of Controlled Substances

The projects and elements under the Action Plan are summarized under Table 3.2.

The activities under this Country Programme will lead to development of phase out projects. The quantities and timing of the controlled substances to be phased out will depend upon the projects to be developed after the feasibility/pre-investment studies.

The expected total cumulative consumption of the controlled substances under the Country Programme (until complete phase-out) is 10,118 Tonnes. The expected cumulative consumption under the Montreal Protocol phase-out schedule and unconstrained demand are compared below:

Cumulative consumption (Tonnes)

Country Programme (1993-1999, inclusive):	10,000 Tonnes
Montreal Protocol (1993-2009, inclusive):	22,000 Tonnes
Unconstrained demand (1993-2009, inclusive):	33,000 Tonnes

3.4.2 Budget for the Action Plan

The budget for the Action Plan, excluding the budget for the Government Actions, i.e., Institutional Strengthening Project (US \$ 235,180) which has already been approved by the Executive Committee is shown in Table 3.1 below.

The budget for the Industry Actions consist of costs for international and local consultants that are required for conducting feasibility/pre-investment studies that will result in development of phase-out projects. Project proposals will be submitted separately after feasibility/pre-investment studies have been conducted. It is requested that the Executive Committee considers for approval the budget for the Industry Actions as shown in Table 3.1.

Budget for the detailed study for developing phase-out strategy and projects in the refrigeration and air-conditioning sector, requested to be carried out by UNIDO has not been included under the budget. UNIDO will be requested to develop a plan and budget for the study in cooperation with the ODS office and this will be submitted separately to the Fund Secretariat/Executive Committee.

Table 3.1 Budget for the Action Plan (US \$)

Projects	1994	1995	1996
INDUSTRY ACTIONS			
1. Project A1 Phase I	19,000		
2. Project F1		19,000	
TOTAL	19,000	19,000	

GRAND TOTAL: US \$ 58,000

Table 3.2 Summary of the projects and elements under the Action Plan

Projects and elements	Brief Description	Commencement/ Duration	Use sector
GOVERNMENT ACTIONS			
Project G1	Policy and legislation for protecting the ozone layer		All
1. policy	Adoption of an overall policy for the protection of the ozone layer.	Nov. 1993 (begin preparation) Mar. 1993 (adoption)	
2. legislation	Adoption of legislation to control the consumption of controlled substances.	Nov. 1993 (begin preparation) Nov. 1994 (enforcement)	
Project G2	Institutional stren.	Aug. 1993	All
Project G3	ODS monitoring		All
1. Industry reports	Reporting by each industry on the import and use of controlled substances.	1993 (preparations) Dec. 1993 (implementation)	
2. Customs data	Adoption of separate subheadings for each controlled substances and reporting to the ODS Sub-Unit	1993 (preparations) 1994 (implementation)	
INDUSTRY ACTIONS			
1. Project A1	Conversion of aerosol industries to use LPG	May 1994	Aerosols
Phase I	Pre-investment study	1994-1996	
Phase II	Project implementation		
2. Project A2	Deodorization of LPG	May 1994	Aerosols
Phase I	Project development	1994-1996	
Phase II	Project implementation	Nov. 1994	
3. Project F1	Conversion of foam industries to use substitute blowing agents - workshop and feasibility study	1995-1996	Foams
	Project implementation		Refrig.
4. Project R1	Project for conversion of two companies producing domestic refr.equipmt.	starting date :late 1994	
	Project implementation	early 1994	Refrig.
5. Study in ref.and a/c sector to develop phase out strategy and projects (UNIDO)			

ANNEX I

Table A.1 Production, imports, exports and consumption of controlled substances in 1986

Tonnes Substances	Prod.	Imports	Exports	Consump.	ODP	Calcul. Consump.
ANNEX A						
<u>Group I</u>						
CFC 11	0	586.15	0	586.15	1.0	586.15
CFC 12	0	901.15	0	901.15	1.0	901.15
CFC 113	0	83.43	0	83.43	0.8	66.74
CFC 114	0	0	0	0	1.0	0
CFC 115	0	-	0	-	0.6	-
<u>Sub-total</u>	0	1570.73	0	1570.73		1554.04
<u>Group II</u>						
Halon 1211	0	0	0	0	3.0	0
Halon 1301	0	0	0	0	10.0	0
Halon 2402	0	0	0	0	6.0	0
<u>Sub-total</u>	0	0	0	0		0
TOTAL	0	1570.73	0	1570.73		1554.04
ANNEX B						
<u>Group I</u>						
CFC 13	0	0	0	0	1.0	0
CFC 111	0	55.62	0	55.62	1.0	55.62
CFC 112	0	0	0	0	1.0	0
CFC 211	0	0	0	0	1.0	0
CFC 212	0	0	0	0	1.0	0
CFC 213	0	0	0	0	1.0	0
CFC 214	0	0	0	0	1.0	0
CFC 215	0	0	0	0	1.0	0
CFC 216	0	0	0	0	1.0	0
CFC 217	0	0	0	0	1.0	0
<u>Sub-total</u>	0	55.62	0	55.62		55.62
<u>Group II</u>						
Carbon tet	0	35.69	0	35.69	1.1	39.26
<u>Group III</u>						
Methyl chl	0	-	0	-	1.0	-
TOTAL	0	91.31	0	91.31		94.88

Multilateral Fund for Implementation of the Montreal Protocol

PROJECT COVER SHEET

Country or Region:	Syrian Arab Republic
Sector(s) Covered:	Institutional Strengthening
ODS Consumption in Affected Sector(s):	
Project Title:	Support to Strengthening the General Commission for Environmental Affairs to implement Montreal Protocol related activities
Project Duration:	Three years
Project Impact:	ODSs Phase-Out _____ Ohters _____
Proposed Budget:	Fund Contribution: US\$ 235,180 Government Contribution In-Kind: Syrian £ 2,500,000
Implementing Agency:	UNIDO
National Coordinating Agency:	General Commission for Environmental Affairs

PROJECT SUMMARY

The project will strengthen the capabilities of the General Commission for Environmental Affairs in order to manage the implementation of the Country Program concerning the phase-out of ODS presently used in the different industrial and service areas. In this context, it is proposed that a competent unit would be established within the organization, whose primary concern is to plan, organize, manage and coordinate all necessary activities required for optimal implementation of the ODS phase-out program.

The Ozone Layer Protection unit (OLP unit) should also possess the capability to continue extending its services beyond the three years support period and endeavor to accelerate the ODS phase-out process.

III. GENERAL

1. BACKGROUND

The Syrian Arab Republic ratified the Vienna Convention and the Montreal Protocol on March 12th 1990. Already in 1979 Syria's resolve to deal with environmental issues was manifested by the appointment of a Minister of state for Environmental Affairs. This concern was further reinforced by the creation of the General commission for Environmental Affairs in 1991 headed by the Minister. This Commission has its own budget, administration and is entrusted with environmental protection and pollution control. The Minister has the power to issue directives, decrees, policies and regulations related to the environmental matters through the Supreme Environmental Safety Committee whose members include twelve Ministers and is chaired by the Prime Minister.

In response to the Montreal protocol concerning the phase-out of Ozone Depleting Substances (ODS) the General commission for Environmental Affairs is currently investigating the possibility of strengthening its organization structure to enable it supervise and manage the implementation of the ODS phase-out process. The Country Program for the Syrian Arab Republic is being developed with the assistance of UNEP and is expected to be finalized in June 1993.

2. GNP/CAPITA

The annual GNP/capita in the Syrian Arab Republic is 1680 US\$ and the HDI is 0.681.

3. CONSUMPTION OF CONTROLLED SUBSTANCES

Syria imports all the ODS required to satisfy the national industries and service operations that depend heavily on them. The average total consumption per annum is in the vicinity of 1409 M tons, distributed by industrial/service domain as follows:

Refrigeration manufacture (domestic, commercial, cold stores, etc.)	47%
Stationary Air conditioning units	10%
Mobile Air conditioning units (refrigerated trucks, public & private vehicles)	5%
Foam manufacture	23%
Aerosols	3%
Solvents (dry cleaning, etc.)	statistics are not available
Service and maintenance operations	12%

The level of consumption/annum (more than 1000 M ton), GNP/capita (below 4000 US\$ per annum) and HDI (between 0.5-0.799) places the Syrian Arab republic in category 2 (medium consumption of ODS, Human Development Index and GNP).of eligibility for institutional strengthening support by the Multilateral Fund.

4. OBJECTIVES

Short Term Objectives

The principal objective of the project is to strengthen the capabilities of the General Commission for Environmental Affairs in order to manage the implementation of the Country Program concerning the phase out of ODS presently used in the different industrial and service areas. In this context, it is proposed that a competent unit would be established within the organization, whose primary concern is to plan, organize, manage and coordinate all necessary activities required for optimal implementation of the ODS phase-out program.

The Ozone Layer Protection unit (OLP unit) should also possess the capability to continue extending its services beyond the three years support period and endeavor to accelerate the ODS phase-out process.

Long Term Objective

Effectively complete the ODS phase-out program and totally eliminate its use in the Syrian Arab Republic, through the introduction of clean technology and alternative chemicals.

5. SCOPE OF THE PROJECT

The OLP unit will extend its operations and activities to cover industries and services using ODS in all Governorates of the Syrian Arab Republic. This will be facilitated through liaising with the branches of the General Commission for Environmental Affairs and the relevant government authorities, institutions and NGOs in Syria.

6. PROJECT JUSTIFICATION

The General Commission for Environmental Affairs is charged with the responsibility of environmental conservation and protection, including implementation of ODS phase-out program in Syria.

In the process of ODS phase-out an effective institutional mechanism will be required to facilitate the achievement of commitments made by the Syrian Government to meet the targets set by the Montreal Protocol.

The provision of technical advisory services to industrial enterprises (in particular small scale industries) on clean and alternative technologies is of paramount importance during the phase-out process.

Similarly the creation of a focal point for collection and dissemination of pertinent information (both at the national and international levels) is essential during the transitional period of phase-out.

Awareness related to ODS and its far-reaching harmful effects particularly among the small scale industrial enterprises and the general public is a primary component of a successful implementation of the Government commitments to Montreal Protocol.

At present the Commission for Environmental Affairs lacks the adequate organizational ability to undertake activities and duties related to ODS phase out program and would require institutional strengthening support to manage and supervise the implementation of the program.

7. BENEFICIARIES

The primary direct beneficiary of the project is the Commission for Environmental Affairs, since it would receive support to enable it to perform its role of managing an effective phase-out for ODS in the Syrian Arab Republic in accordance with the time frame stipulated by the Montreal Protocol.

The secondary direct beneficiary is the indigenous public and private sector industries in the relevant sub-sectors presently using ODS in their processing facilities.

The Syrian economy will derive indirect benefits from increased efficiency in the implementation of the phase-out program.

8. CAPABILITIES OF BENEFICIARIES

The Commission for Environmental Affairs has the basic infrastructure in its central offices as well as branches covering all Governorates of the Syrian Arab Republic. Furthermore the Commission enjoys strong support and commitment of the government at highest levels. However it lacks the necessary capability to provide adequate support and services to the relevant industrial enterprises during the transitional period of ODS phase-out.

The industries using ODS in their production processes lack access to information and technical advisory services concerning alternative ODS free technologies, its sources of procurement and the comparative cost-benefit of various options.

The general public lack awareness of the hazards and effects of ozone depletion.

II. STRUCTURE AND MANAGEMENT

The General Commission for Environmental Affairs is a governmental body established in 1991 and is headed by the Minister of State for Environmental Affairs. The Commission has the capacity to deal with all matters related to environmental conservation and protection in the Syrian Arab Republic. Furthermore the Commission is responsible for carrying out all the Government's commitments and obligations towards international organizations.

At present the Commission is staffed with a total of 28 employees; it is expected according to the Presidential decree currently being considered for approval to staff it with 100 employees according to the organogram attached in Annex 2.

The organizational structure of the Commission has no specialized unit to deal with matters and coordinate activities related to ODS phase-out. Such a unit when established, would be attached to the directorate for environmental protection (see Annex 2 the organogram of the Commission). The unit will be solely responsible for the implementation of the phase-out process of ODS in the Syrian Arab Republic.

One senior professional with experience in environmental management and background in ozone layer protection issues would be appointed to head the Ozone Layer Protection unit (OLP unit). Two more professional staff would be appointed. One industrial engineer preferably with experience from one of the main ODS consuming industries, and one chemical engineer with a background on ODS substitution processes and technologies. The support staff will consist of one bilingual secretary (Arabic and English) capable of operating the necessary computer software

applications (word processor, desk top publishing, etc.); and one computer technician for maintaining the information and installed computer systems.

III. ACTIVITIES

The OLP unit would be responsible for the management of the ODS phase-out action plan in the Syrian Arab Republic.

Establish a data base to store collected information and attributes concerning ODS users in the Syrian Arab Republic. Regularly update the information. This data base enables monitoring analysis and evaluation of the current state of ODS phase-out projects.

Collect and store available information concerning techniques associated recycling, reduction and substitution of ODS. Regularly update the information. This information will facilitate the selection of appropriate methods and techniques to be adopted during the phase-out process.

Supervise and monitor the phase-out process in industries and services using ODS and ensure that implementation is carried out according to the country program.

Disseminate information related to the use of clean technology to ODS users by publishing regular newsletters and arranging information sessions, seminars and workshops.

Create public awareness about ozone layer depletion and its consequences through the national mass media such as television and radio programs as well as newspaper articles.

Coordinate and liaise with other government bodies, industries and international organizations on issues related to ODS phase-out.

Issue periodical reports on achievements and relevant milestones concerning phase-out projects carried out in ODS consuming industries and services. Circulate these reports to policy makers and other concerned parties.

Identify and define training needs for implementation of ODS phase-out program. Extend the necessary assistance to ODS users to develop training activities for their staff related to the adoption of different process required for phasing-out ODS.

Recommend suitable incentive schemes intended to offset financial losses incurred by the phase-out.

Supply ODS importers with adequate information on substitutes and the time frame of the phase-out program to enable them to synchronize their operations with the needs of ODS users implementing the phase-out.

Extend assistance and encouragement to potential ODS substitutes producers, by supplying them with information about alternative clean technologies and the chemicals required and the available sources for project funding. The unit will also assist in the technical and economic evaluation of the project.

IV. INPUTS

The required inputs to establish the Ozone Layer Protection unit would be provided through in kind contribution by the Syrian Government and cash contribution by the Multilateral Fund.

The government will provide the following inputs:

a) Infrastructure:

- i) The required office space to accommodate the unit, the necessary office furniture and the utilities (electricity, water, etc.).
- ii) The government will provide a vehicle for official transportation necessary for expediting the daily duties of the unit.

b) Personnel:

- i) One senior professional with experience in environmental management and background in ozone layer protection issues.
- ii) One industrial engineer preferably with experience from one of the main ODS consuming industries.
- iii) One chemical engineer with a background on ODS substitution processes and technologies.
- iv) Two support staff: one bilingual secretary (Arabic and English) capable of operating the necessary computer software applications (word processor, desk top publishing, etc.); and one computer technician for maintaining the installed computer and information system.

The Multilateral Fund will provide the following inputs:

a) Personnel:

- i) National and international short term consultants will be required to assist the project staff in specific issues (i.e. design of information and data base system, advise on development of incentive system for ODS consumers design of national awareness strategy and campaign etc.).
- ii) Incentive for the unit staff calculated; at the rate of 150% of the basic salary.

b) Equipment:

The initial outlay of funds to equip the unit with necessary two computers, mass storage media, printer, and software (word-processing, desk top publishing, data base, statistical analysis, etc.) will enable the unit staff to efficiently perform the required analysis and storage of the collected information. The equipment will also permit dissemination of the information early in the project.

c) Travel

Cost of internal travel of staff associated with the work program of the unit. A limited budget for international travel for participation in conferences, workshops and visits to technical fairs pertinent to the work of the unit.

d) National Seminars and Workshops:

The unit will organize three awareness seminars/workshops per year for participants from relevant industrial enterprises (public and private sectors)

and the concerned governmental authorities. The number of participants in each seminar/workshop would be about 25 participants.

e) Consumables and other Miscellaneous:

This includes the costs for office supplies telecommunication, dissemination and collection of information, subscription to periodicals and other sundries.

V. BUDGET

a) Government contribution

The Government of the Syrian Arab Republic will contribute in kind during the three year project a total of 2.5 million S £ . This covers the provision of adequate office space for the unit staff, the necessary office furniture, vehicle and associated operation costs, and the basic salary of professional and support staff.

b) Multilateral fund contribution

The funding expected from the Multilateral Fund during the three years period covers mainly the cost of equipment, staff incentives, travel expenses, operation and maintenance expenditures and awareness seminars/workshops. The details of the Fund contribution and the estimated annual distribution are detailed in (Annex I).

ANNEX 1

Budget

Item	Per year	3 Year Period
1. Capital Expenditure		14,000
Office Equipment		
Personal Computer		
Monitor, Printer & Software		
Uninterrupted Power Supply*		
Modem		
Photocopier		
Typewriter		
Fax Machines		
<i>Sub-Total</i>		<i>14,000</i>
2. Recurrent Expenditure		
2.1 Personnel, Incentives for:		
Senior Professional Staff		9,000
(US\$ 3,000/year)		
Professional staff (4)		24,000
(US\$ 2,000/year)		
Support staff (3)		10,800
(US\$ 3,600/year)		
Short-term national consultants		6,000
(US\$ 2,000/year)		
<i>Sub-Total</i>		<i>49,800</i>
2.2 Operational Costs including:	50,000	150,000
Collation/dissemination of info		
Official travel		
Telecommunication charges		
Miscellaneous service charges		
Office supplies		
Maintenance of Equipment		
<i>Sub-Total</i>	<i>50,000</i>	<i>150,000</i>
<i>Total</i>	<i>50,000</i>	<i>213,800</i>
Contingencies (10%)		21,380
TOTAL		235,180

* Due to frequent power failure in Damascus it will be indispensable to purchase an uninterrupted power supply to ensure efficient and proper use of the installed computer equipment. this will cost about US\$ 1,500.

Commission for Environmental Affairs Organogram

