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COUNTRY PROGRAMME: LEBANON

This document consists of:

- Transmittal Letter from the Government of Lebanon
- Country Programme Cover Sheet
- Country Programme Executive Summary

THE GOVERNMENT OF LEBANON
MINISTRY OF ENVIRONMENT

National Working Committee on Ozone Depleting Substances

COUNTRY PROGRAMME

Phasing out the Ozone Depleting Substances in LEBANON

JUNE 1995

EXECUTIVE SUMMARY:

Background

LEBANON has an area of 10452 sq km with a population of 3.85 million in 1993. The population density is approx. 368 persons per sq km. The urban population represents some 80 % of the total. GNP is approx. USD 1900 per capita in 1993 (USD 2250 in 1975 before the war). Agriculture accounts for 14% of GNP, industry 26 % and service sector 60 %.

LEBANON depends entirely on imports for its ODS consumption.

LEBANON ratified the VIENNA Convention on March 30, 1993 (entered into force on June 28, 1993), MONTREAL Protocol on March 31, 1993 (entered into force on June 29, 1993), and LONDON amendments on March 31, 1993 (entered into force on June 29, 1993). The ratification of the COPENHAGEN amendments is still in process.

A National Working Committee on Ozone Depleting Substances was established in 1994. This committee has overviewed the preparation of the Country Programme.

Current Situation

In 1992, LEBANON used 886.6 ODP tons of ODS, 0.230 kg per capita. In 1993, LEBANON imported and used 1056.6 ODP tons. From the year 1992 to the year 1993 the consumption increased by 19% to 1056.6 ODP tons, 0.274 Kg per capita. The rate of growth of 19% was due to the economic boost after the end of the civil war (the positive effect) and to the awareness of the Ozone issue by industrials (the negative effect). The main substances used are CFC 11, CFC 12, CFC 114, CFC 115, and halon 1211

Table 1 and 2 show that in 1993, substance-wise, CFC 12 accounts for approx. 80 % of the total use, CFC 11 for 17 % and other substances for the remaining 3%.

User-wise, the refrigeration sector accounts for 48% of the total use, the air conditioning sector 6%, the aerosol sector 31% , the foam industry 13.5% , the fire fighting and the solvent sectors for the remaining 1.5%.

77% of the CFCs used in the refrigeration & air conditioning sectors are to recharge the existing equipment.

In Lebanon there are 15 manufacturers of industrial refrigeration equipment, one manufacturer of domestic refrigerators, and 12 major manufacturers of domestic and industrial air-conditioning equipment, three major aerosol and perfume manufacturers and 12 major foam manufacturers. All other industries use neither CFCs nor Halons.

It is forecasted that consumption will increase from its current level of 1056.6 ODP tons to approx. 1148 ODP tons in 1995, the growth thereafter being 5% since the economical situation is more stable now that the war has ended and the country must be reconstructed rapidly. The total consumption may increase up to 2383 ODP tons in the year 2010.

Implementing Phase-Out

This Country Programme relies mainly on economic means, prices and other indirect measures for phasing-out. Raising awareness and information dissemination will be the primary ways for the government to promote phase-out. The government is prepared to impose bans, duties and licences to counter possible adverse developments. The government expects to phase-out ODSs by the year 2005.

The following programme will be developed within the framework of the strategy:

Phase I: 1996-1998

- total ODS phase out in aerosol industries;
- total ODS phase out in foam industries;
- total ODS phase out in production of commercial and industrial refrigeration industries;
- Implementation of reduction, recovery and recycling programme during refrigeration and commercial units maintenance

Phase II: 1999-2001:

- Retrofitting of all commercial and industrial refrigeration units,
- Continuation of the reduction, recovery and recycling programme

Phase III: 2002-2005:

- The need for ODS will decline progressively due to the reduction in the number of mobile air conditioners and household refrigerators using CFCs (20% less per year)
- Total phase out of ODS

Action plan:

The table on the following page summarizes the action plan:

An Ozone Office will be established to promote the phase-out . The Institutional Strengthening project (Annex 1) is being submitted for approval and funding to the 17th Executive Committee meeting. Lebanon is requesting US \$ 255,000 from the Multilateral Fund to implement the Institutional Strengthening project.

For the other projects identified and listed in the Country Programme, the government will approach the Fund and/or other funding agencies at a later stage.

When applying the phase-out measures it is assumed that the total consumption of CFCs will begin decreasing after the year 1996. All ODS are expected to be phased out by the year 2005.

Project Summary Table

see the following page

ACTION PLAN

DURATION	SECTOR	DESCRIPTION OF ACTION	INTENDED EFFECT	IMPLEMENTING AGENCY	ESTIMATED COST (US \$)
I. INSTITUTIONAL STRENGTHENING					
1995-1997	ALL	OZONE SECRETARIAT	INSTITUTIONAL SUPPORT TO THE MINISTRY OF ENVIRONMENT	UNEP	255,000
FROM 1996	ALL	BAN ON IMPORTS OF ODS CONTAINING EQUIPMENT	TO REDUCE THE FUTURE CONSUMPTION OF ODS	MINISTRY OF ENVIRONMENT	
FROM 1996	ALL	BAN ON IMPORTS OF ALL ODS EXCEPT THOSE CURRENTLY USED	TO PREVENT IMPORT OF NEW ODS	MINISTRY OF ENVIRONMENT	
FROM 1996	ALL	CREATION OF A SYSTEM OF INCENTIVES FOR REDUCTION, RECOVERY AND RECYCLING	TO REDUCE THE NEEDS OF IMPORTS	MINISTRY OF ENVIRONMENT	
FROM 1998	ALL	BAN ON CFC IN ALL INDUSTRIES PRODUCTION	PHASE OUT ODS IN INDUSTRIES	MINISTRY OF ENVIRONMENT,	
FROM 1996	REFRIGERATION AND AIR CONDITIONING	REVIEW THE TRAINING PROGRAMMES OF THE INSTITUTES SPECIALISED IN REFRIGERATION AND AIR CONDITIONING	SET UP OF LICENSING SYSTEM OF TECHNICIANS	UNEP	
II. INDUSTRIAL SECTOR ACTIVITIES (ONLY INDICATIVE)					
1996-1997	REFRIGERATION	CONVERSION OF FACTORY PRODUCING HOUSEHOLD REFRIGERATORS	PHASE OUT OF 55 ODP TONNES OF CFC 11 AND CFC 12	UNIDO	908,160
1996-1997	REFRIGERATION	CONVERSION OF SEVERAL FACTORIES PRODUCING COMMERCIAL AND INDUSTRIAL REFRIGERATORS	PHASE OUT OF 111 ODP TONNES OF CFC 11, CFC 12 AND CFC 115	TO BE APPROACHED	1688,310
1996-1997	AEROSOL	CONVERSION TO LPG OF 2 AEROSOL FACTORIES	PHASE OUT 109 ODP TONNES OF CFC 11 AND CFC 12	UNIDO	479,600
1996-1997	AEROSOL	RETROACTIVE FINANCIAL ASSISTANCE TO A FACTORY FILLING AEROSOL ALREADY CONVERTED	PHASE OUT OF 212 ODP TONNES OF CFC 12 AND 114	UNIDO	932,800
1996-1997	REFRIGERATION AND AIR CONDITIONING	TRAINING OF TECHNICIANS SERVICING DOMESTIC AND COMMERCIAL REFRIGERATORS AND AIR CONDITIONED CARS	REDUCTION OF ODS USED DURING MAINTENANCE: PHASE OUT OF 155 ODP TONNES OF ODS	UNEP	200,000
1996-1997	FOAM	CONVERSION OF FOUR FACTORIES PRODUCING FLEXIBLE AND RIGID FOAM	PHASE OUT OF 92 ODP TONNES OF CFC 11	UNIDO FOR TWO FACTORIES	592,360
1997-1998	REFRIGERATION	RETROFITTING OF LARGE INSTALLATION OF COMMERCIAL AND INDUSTRIAL REFRIGERATION	PHASE OUT OF 105 ODP TONNES	MINISTRY OF ENVIRONMENT	2,940,000
TOTAL					7,996,230

PROJECT SUMMARY

PROJECT NUMBER BY ORDER OF PRIORITY	NAME OF THE PROJECT	SECTOR	STARTING YEAR	IMPLEMENTIN G AGENCY	REDUCTION OF ODS (T ODP)	INCREMENTAL COST (\$ US)
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3	CONVERSION OF SEVERAL FACTORIES PRODUCING COMMERCIAL AND INDUSTRIAL REFRIGERATORS	COMMERCIAL AND INDUSTRIAL REFRIGERATION	1996		111	1,688,310
4	COSMALINE	AEROSOL	1996	UNIDO	89	391,600
5	ZEENI	AEROSOL	1994		212	932,800
6	AMATOURY	AEROSOL	1996		20	88,000
7	TRAINING OF TECHNICIANS	REFRIGERATION AND AIR CONDITIONING	1996	UNEP	155	200,000
12	RETROFITTING OF INDUSTRIAL AND COMMERCIAL REFRIGERATION UNITS	REFRIGERATION	1997		105	2,940,000
8	HENRI ABDALLAH	FLEXIBLE FOAM	1996	UNIDO	15	93,450
9	NASRI KARAM	FLEXIBLE FOAM	1996	UNIDO	30	186,900
10	FAP	FLEXIBLE FOAM	1996		35	218,050
11	KILZI	RIGID FOAM	1996		12	93,960
TOTAL					839	7,996,230

ANNEX 1: PROJECT PROPOSAL: No.1

COUNTRY:	LEBANON
PROJECT TITLE:	CREATION OF AN OZONE UNIT
NATIONAL EXECUTING AGENCY:	THE MINISTRY OF ENVIRONMENT
IMPLEMENTING AGENCY:	UNEP
SECTORS COVERED:	ALL
ODS CONSUMPTION BY SECTORS COVERED:	949,6 ODP TONS IN 1993
PROJECT DURATION:	THREE YEARS
PROJECT IMPACT:	1-PREPARATION IMPLEMENTATION, AND MONITORING (DATA AND INFORMATION COLLECTION) OF PHASE-OUT ACTIVITIES ACCORDING TO THE ACTION PLAN INCLUDED IN THE COUNTRY PROGRAMME. 2-IMPROVING THE CAPACITY OF THE PUBLIC ADMINISTRATION RESPONSIBLE FOR ODS USE AND CONTROL. 3-CONTRIBUTION BY THE COUNTRY TO THE PROTECTION OF THE OZONE LAYER.

INTRODUCTION

The Action Plan included in the Country Programme will be implemented in co-operation with governmental and semi-governmental institutions as well as with bodies presenting private businesses and NGOs like ALME. It is necessary to create interim structures for the preparation and implementation of specific phase-out projects. The Ozone Unit is one of such structures.

ORGANISATION OF THE OZONE UNIT

The Ozone Unit comes under the Ministry Of Environment.

The Ozone Unit will be supported by the National Working Committee on Ozone Depleting Substances by way of expediting supporting actions needed from other Government or industry bodies. Industry associations will be incorporated in the implementation and phase-out measures, especially in proposed projects.

THE OZONE OFFICE TEAM

Technical and administrative support will be provided by the Ozone Unit Team, which is made up of two professionals, and one secretary.

ACTIVITIES AND SCOPE OF THE PROJECT

If the Ozone Unit is to reach the objectives as described in the Country Programme, it will have to undertake several activities, such as follows:

- 1-Take part in defining criteria for setting import bans and/or taxes and duties for substances and products possibly entering into the market, in addition to the substances and products currently used.
- 2-Establish an effective co-operation with customs authorities to follow-up and monitor the imports of ODSs, and ODS containing products, according to the international harmonised system. Enhance the follow-up of the imports of the transitional substances.
- 3-Prepare an annual report to the Ozone Secretariat, as required, and set up a data bank, covering the imports and use of ODSs and related substances as well as possible substitutes.
- 4-Be responsible for the preparation and implementation of the training project, and responsible for the preparation of the proposed retrofitting (refrigeration) project.
- 5-Initiate co-operation with the concerned authorities and institutes to introduce substitutes/alternatives for halon.

6-Contact representatives of the public media to distribute information regarding the harmful effects of ODS use, and how to reduce and refrain the use of ODSs.

7-Contact international agencies and other NGOs operating in Lebanon to seek co-operation and support in the implementation of the phase-out.

8-Promote and coordinate all phase-out activities being undertaken in the country (by Government and Industry),

9- Provide assistance to Industry and Government bodies which are undertaking phase-out activities. The assistance could be in the way of direct response to queries providing required background material or facilitating contact with international experts or implementing agencies,

10-Receive, collect, analyse and disseminate information on the issues involved in ozone layer protection.

11-Submit to the Executive Committee a progress report on the implementation of the country programme on a yearly basis, following the format approved by the Committee (UNEP/OzL.Pro/ExCom/13/47 Annex II).

The Ozone Unit will be responsible for developing an effective system to monitor and evaluate the implementation of the projects and other phase-out measures included in the action Plan. The monitoring and evaluation function will have the following components, such as:

1-Gathering information available from the customs, the authorities and the industrial users regarding imports and use of ODSs and check these figures against the planned consumption figures.

2-Gathering data and information from end users of ODS containing products and evaluating the field impacts of the measures implemented.

3-Organise work shops with the industrial operators and businesses involved to assess the feasibility of phase-out measures.

4-Assess the effectiveness and impacts of the projects to be implemented. Check impacts against the planned consumption figures.

5-Review and assess in detail the supply situation and prices of refrigerants for household and commercial refrigeration equipment to check the possible actions needed, and its market impact. Design a refrigerant management plan to minimize the impact.

PROJECT BUDGET

The budget to be provided by the Government of LEBANON amounts to USD 255,000 over a period of three years. The budget covers the following costs:

- *Office space and furniture, electricity, maintenance
- *Vehicles and drivers, fuel and maintenance
- *Other local transportation costs
- *Basic salaries for the support staff of the office
- *Honorariums and expenses for specialised Lebanese consultants

BUDGET REQUESTED FROM THE MULTILATERAL FUND

This budget which amounts to USD 255.000 is intended to cover a period of three years.

	Year 1	Year 2	Year 3	Total
Capital Expenditure				
Personal Computer	4000			
Modem & Stabiliser	1000			
Printer	3000			
Software	1000			
Fax-machine	1500			
Typewriter	500			
Subtotal	11000	-	-	11000
Recurring Expenses				
Personnel Incentives	36000	36000	36000	
2 Professional Staff				
Support Staff	6000	6000	6000	
Subtotal	42000	42000	42000	126000
Operating costs				
Paper, Printing etc.	6000	6000	6000	
Official Travel	3000	3000	3000	
Telecommunications	4000	4000	4000	
Servicing for Equipment	--			
Awareness and Sensibilization of professional and general public	14000	13500	13500	
Subtotal	27000	26500	26500	80000
GRAND TOTAL	80000	68500	68500	217000

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MINISTRY OF ENVIRONMENT

National Working Committee on Ozone Depleting Substances

COUNTRY PROGRAMME

Phasing out the Ozone Depleting Substances in LEBANON

JUNE 1995

The National Programme Team

Dr. Cesar Nasr - Ministry of Environment

Mrs. Nancy Khoury - Ministry of Environment

Mr. Selim Zeeni - Ministry of Industry

Mrs. Vicky Ghosn - Ministry of Education

Dr. Anwar Berberi - Association of Lebanese Industrialists

Mr. Raphael Dabbany - Chamber of Industry & Commerce

Mr. Michael Rached - Customs

Prof. Said Chehab - Research Institutions & NGO (ALME)

Mr. Tony Matar - NGO (ALME)

SUMMARY

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11	KILZI	RIGID FOAM	1996		12	93,960
TOTAL					839	7,996,230

1. INTRODUCTION

1.1. Purpose

This Country Programme reflects the commitment of the government of Lebanon to comply with the obligations as a party of the Montreal Protocol and its amendments. The government is supported in its efforts by the industries of Lebanon, other private sector companies, research institutions, and NGO (ALME) which have been involved in the compilation of the programme through close co-operation, negotiations and consultations.

This Country Programme includes data, information and analysis of the ODSs and their use, on which the Action Plan to phase-out the ODSs is based.

This Country Programme also describes the administrative and institutional framework within which implementation of the Montreal Protocol in Lebanon will take place, as well as the requested financial assistance from the Fund. Regarding the support and assistance for specific projects and actions the frame work will be adapted and refined according to specific needs.

This Country Programme also specifies the procedure to follow-up and monitor the effectiveness of the actions taken when implementing this programme.

1.2. Status

LEBANON ratified the VIENNA Convention on March 30th 1993 (entered in force June 28th 1993), MONTREAL Protocol on March 31st 1993 (entered in force June 29th 1993), and LONDON amendments on March 31st 1993 (entered in force June 29th 1993). The ratification of COPENHAGEN amendments is still in process.

Lebanon is operating under the article 5, paragraph 1, of the Protocol since its consumption of ODS is less than 0.3 kg per capita

This Country Programme has been prepared with the authority and guidance of the Ministry of Environment, and supported by the National Working Committee on Ozone Depleting Substances.

The Ministry of Environment along with the Ministries of Finance, Industry, Education, have given its consent to implement this Country Programme.

The Government of Lebanon with the assistance of ALME has conducted a survey on the ozone depleting substances, their import and use. The results and original data of the survey as well as other support material are retained at the Ministry of Environment & ALME, and provide a solid base for the forthcoming follow-up and monitoring arrangements.

1.3. Assistance Received

The government of Lebanon has received financial and technical assistance from the Multilateral Fund for the Implementation of the Montreal Protocol through UNEP IE to compile this Country Programme. Other direct assistance has not been received, but the in-kind support of the organisations participating in the National Committee which are the Ministry of Industry, the Ministry of Education, the Customs, the Research Institutions, the Chamber of Industry & Commerce, the NGOs has been most useful. UNEP IE has assisted in the programme compilation by sending a consultant to work in Lebanon for two weeks. Also the representatives of Lebanon have participated in UNEP IE supported seminars and workshops.

2 CURRENT SITUATION

2.1 Current and Forecast Consumption of ODSs

2.1.1. Current Consumption:

A field survey was undertaken by a team of consultant engineers and was supported by the National Committee in order to establish a solid base for the Country Programme. Regarding the substance wise consumption, both years 1992 and 1993 were analysed.

The survey was actually initiated in a large national meeting in January 1994. Most of the governmental organisations and some private businesses, relevant to the ODS issue in LEBANON, were represented in this meeting. The purpose of the forthcoming country programme was explained to the participants to enhance good co-operation.

The working team paid several visits to the different parts of the country focusing on the few primary importers and their distribution network. The Ministry of Environment has an agent in the customs department who is in charge of collecting information about all the chemicals imported in Lebanon. This arrangement started in June 1993. The Department of Customs provided the working team with the imported volumes of ODS substances for the year 1992-93. It was found that the results of the field surveys were very much consistent with the Department of Customs volumes. It was not possible to identify the imports of the ODS consuming equipment from the customs statistics. The working team collected data covering equipment using ODSs. Therefore the import and consumption figures are a combination of import data and data from the ODS consumers.

There is no production of the controlled substances in LEBANON.

Also, according to the survey there was no indication of exports of ODS as bulk chemicals from LEBANON but there is a positive export of products as industrial and domestic refrigerators, furniture, insulation, aerosols and some other products containing or using ODS but all in small quantities.

Some users and importers have recently faced some difficulties with their supply because of the 1993 embargo as at that time Lebanon had not yet signed the Montreal Protocol. This caused thus some stockpiling in LEBANON.

The past consumption is very difficult to estimate because of the war during that time (1991 and earlier).

In 1992, LEBANON used 886.6 ODP tons of ODSs, 0.230 kg per capita. In 1993, LEBANON imported and used 1056.6 ODP tons. From the year 1992 to the year 1993 the consumption increased 19% to become 1056.6 ODP tons, 0.274 Kg per capita (these 19% are due to the economic boost after the end of the civil war. The main substances used are CFC 11, CFC 12, CFC 114, CFC 115 and halon 1211

Table 1 and 2 show that in 1993, substance wise, the CFC 12 accounts for approx. 80 % of the total use, CFC 11 for 17 % and the other substances for the remaining 3%.

User wise, the refrigeration sector accounts for 48% of the total use, the air conditioning sector 6%, the aerosol sector 31% , the foam industry 13.5% , the fire fighting and the solvent sectors for the remaining 1.5%.

77% of the CFCs used in refrigeration & air conditioning sectors are to recharge the existing equipment.

Tables 1 and 2 below indicate the distribution of consumption by substance for 1992-93.

All CFC 115 imported was as a component of R 502.

Carbon tetrachloride was imported in such small amounts that the import and consumption is considered as zero (less than 100 Kg in 1993). 1,1,1-Trichloroethane was not imported at all.

In 1993, in addition to the controlled substances, 346 tons of the transitional substance HCFC 22 were imported , and 2 tons of the substitute HFC 134a.

Table 1- Consumption of the Ozone Depleting Substances in 1992-93

Substance	Imports (Metric Tons)		ODP	Imports (ODP Tons)	
	1992	1993		1992	1993
Annex A Group 1					
CFC 11	145	179	1.0	145	179
CFC 12	717	843.5	1.0	717	843.5
CFC 113	0	0	0.8	0	0
CFC 114	10.5	12.5	1.0	10.5	12.5
CFC 115*	8.5	10.9	0.6	5.1	6.5
Subtotal	881	1045.9		877.6	1041.5
Annex A Group 2					
halon 1211	3	5	3.0	9	15
halon 1301	0	0	6.0	0	0
halon 2402	0	0	10.0	0	0
Subtotal	3	5		9	15
Annex B Group 1					
CFC 13	0	0	1.0	0	0
CFC 111	0	0	1.0	0	0
CFC 112	0	0	1.0	0	0
CFC 211	0	0	1.0	0	0
CFC 212	0	0	1.0	0	0
CFC 213	0	0	1.0	0	0
CFC 214	0	0	1.0	0	0
CFC 215	0	0	1.0	0	0
CFC 216	0	0	1.0	0	0
CFC 217	0	0	1.0	0	0
Subtotal	0	0		0	0
Annex B Group 2					
Carbon Tetrachloride	0	0.1	1.1	0	0.1
Annex B Group 3					
1,1,1- Trichloroethane	0	0	0.1	0	0
Total	884	1051		886.6	1056.6

* CFC 115 is used as a blend (51.2%) with R22 (48.8%) in R502.

Table 2- Consumption in 1992/93 Broken down by Use and Application

Sector/Use	Substance	Application	1992 (ODP tons)	93 (ODP tons)
Domestic refriger.	CFC 12	Used in production	13	18
Domestic refriger.	CFC 12	Used in recharging	240	264
Cold Stores	CFC 12	Used in recharging	40	55
Cold stores	CFC 12	Used in production	23	35.5
Industrial refriger.*	CFC 12	Used in recharging	40	50
Industrial refriger.	CFC 12	Used in production	60	75
Cold stores	CFC 115	Used in recharging	4.5	6
Cold stores	CFC 115	Used in production	0.6	0.5
Refrigeration total			421.1	504
Centrifug. Air Cond.	CFC 11	Used in recharging	15	20
Airplanes Air cond.	CFC 114	Used in recharging	1	1
Mobile Air Cond.	CFC 12	Used in recharging	33	45
Air Conditioning total**			49	66
Rigid Polyurethane	CFC 11	Blowing agent	32	47
Flexi. Polyurethane	CFC 11	Blowing agent	80	92
Phenolic+Polyoleof.	CFC 114	Blowing agent	3.5	4
Foam total			115.5	143
Can Aerosols	CFC 11	Cosmetics	18	20
Can Aerosols	CFC 12	Cosmetics	106	114
Can Aerosols	CFC 12	Insecticides	80	105
Can Aerosols	CFC 12	Air refresher	7	6
Can Aerosols	CFC 12	Deodorant	25	76
Can Aerosols	CFC 114	Cosmetics	5	6.5
Bottle Aerosols	CFC 114	Cosmetics	1	1
Aerosols total			242	328.5
Solvents	CTC	Pharmaceutical	0	0.1
Fire fighting	Halon 1211	Portable & fixed Units	9	15
Fire fighting	CFC 12	Portable Units	50	0
Fire fighting total			59	15
TOTAL CONSUMPTION			886.6	1056.6

*Water coolers, bottle & walk in coolers, and ice candy machines are all included in the Industrial refrigerators item because their quantity is negligible relatively.

**All locally produced Air conditioning units use HCFC 22.

2.1.2. Forecast Consumption 1995 - 2010

In Lebanon the consumption of CFCs & Halons have been increasing since the end of the civil war. Halons were naturally used in fire fighting. The country is developing quickly after the war and there could be a large increase in the future use of ODSs if no restrictions are applied. Should the income per capita increase, it is very likely that the demand for refrigeration and air conditioning equipment would steeply increase. The manufacturing sector is in need to replace and upgrade ODS related equipment.

However, the consumption forecast assumes that drastic changes in the industrial structure and economic development will take place as soon as the real reconstruction of the country begins.

The forecast covers the substances currently used, i.e. assuming that no new controlled substances are entering into the market. This assumption is based on the fact that public awareness and possible sanctions will make new entries unlikely.

Regarding the use of the substances already on the market the forecast assumes that no attempts are made to comply with the Protocol and that unconstrained quantities of the controlled substances will be available.

It may be noted that the current situation of Lebanon doesn't give any solid economic or statistical base for forecasts. However, the consumption forecast is based on consultations with the representatives of the ministries, organisations, major industries & all major suppliers, and the following factors:

- The UN yearly report assumes that the population increase will be approx. 2.9 % per year by the year 2010;
- GNP per capita was 1650 USD for 1992, and increased 15% to become 1900 USD for 1993 (2250 USD in 1975 before the war), and is expected to keep increasing rapidly (13% by the year 1997) since the country is being reconstructed which means more ODS equipment users;
- In 1992, ODS consumption was 886.6 ODP tons, and increased 19% to become 1056.6 ODP tons for 1993;
- Car imports in 1992 was 35000 units, and increased 20% to become 42000 units for 1993 with an average total of 1.2 million vehicles mostly privately owned.
- In 1991, 6 millions m² of construction were built in Lebanon and kept increasing yearly by a rate of 30% to become 13 million M2 in 1994.

These factors combined helped making the forecast consumption of ODSs up to the year 2010 which is indicated in table 3 by substances and in table 4 by uses: it is estimated, according to the professionals surveyed, that the growth rate would be about an average of 5% for all the sectors, except for halons which is banned for importation since July 1994, and CTC, since the only company using it started phasing it out by 1994.

Table 3- Forecast Consumption 1995-2010 by substance, ODP tons:

Substance	1992	1993	1995	1997	2000	2005	2010
CFC 11	145	179	197	218	252	322	411
CFC 12	717	843.5	930	1025	1186	1513	1930
CFC 114	10.5	12.5	14	15	17	22	28
CFC 115	5.1	6.5	7	8	9	11	14
CFCs total	877.6	1041.5	1148	1266	1464	1868	2383
CTC	0	0.1	0	0	0	0	0
halon 1211	9	15	0	0	0	0	0
Total	886.6	1056.6	1148	1266	1464	1868	2383

Table 4- Forecast consumption 1995-2010 by use, ODP tons

Use	1992	1993	1995	1997	2000	2005	2010
Refrigeration	421.1	504	556	613	709	905	1155
Air Conditioning	49	66	73	80	93	118	150
Foams	115.5	143	157	174	201	257	328
Aerosols	242	328.5	362	399	461	588	750
Solvents	0	0.1	0	0	0	0	0
Fire fighting	59	15	0	0	0	0	0
Stockpiling	0	58	0	0	0	0	0
Total	886.6	1056.6	1148	1266	1464	1868	2383

2.2. Industry Structure

There is no production of the controlled substances in Lebanon

2.2.1 Importers:

The survey showed that some manufacturers import for their own use.

Table 5 shows the major CFC importers and their market share.

Table 5- Major companies importing ODS in 1993 by ODP tons

Company	Frigigaz (Mont- edison)	FPME (Dupont)	Frigo- Liban	others	Rassi	Farjala- Emaco	Gamma gaz	TOTAL
Quantity imported (ODP tons)	318	236	129	144	61	70	25	983
Percentage	32	24	13	15	6	7	3	100

Current annual imports by substances were shown previously in table 1, and by application in table 2.

The imports are nowadays from many countries: Italy, the United Kingdom, USA, India, Taiwan, East Europe and others.

There is NO IMPORT DUTY on CFCs and other ODS substances, but a small municipality tax at a rate of 4% (Act # 29-02-13).

Domestic and industrial refrigeration, freezing and cooling equipment have an import duty of 32.5% (Act # 84-15). Commercial equipment such as display counters and cooling/freezing cabinets have the same duty 32.5%. Air-conditioning equipment have an import duty of 28.5% (Act # 84-12)

Spare parts as compressors and others have an import duty of 8.5 % (Act # 84-11).

Regarding the HALON the same rate of 4% goes for import duty but it was forbidden to import this product through a law starting July 1994.

2.2.2 Users

Refrigeration and Air conditioning sector:

In 1993 This sector consumed 504 ODP Tons or 53% of the total ODS consumption.

Approx. 369 ODP tons of CFC 12 and 6 ODP tons of CFC 115 were used in 1993 by a few hundred small companies and private technicians in servicing existing household and commercial equipment.

Domestic refrigerators

A-Production

Until 1995 the only producer of domestic refrigerators or freezers in Lebanon was OPACO -(Lematic/Concorde) an old factory which used to produce these products before the war. In 1993, this factory produced 30800 units with a total consumption of 18 tons of CFC 12 for initial charging and 35 tons of CFC 11 for blowing foam. It is forecasted that this factory will produce 48000 units in the year 1994 using 84 tons of CFC 11 and CFC 12.

B-Recharging

In 1993, according to a survey made by the students of ESIB University, the amount of household refrigeration equipment in Lebanon estimated in approx. 1.200.000 units. Since there is a lot of electricity problems in Lebanon, the average life time of a compressor does not exceed 4 years with an average of 900 grams of CFC 12 service/unit making a total consumption of 264 Tons of CFC 12 in servicing the domestic refrigeration sector. It is impossible to find the yearly amount of domestic refrigerators import, but it is sure that every house owns at least one refrigerator.

Commercial and industrial refrigerators:

A-Production

110.5 tons of CFC 12 and 0.5 tons of CFC 115 were used in 1993 to produce these refrigerators and cold stores

There are in Lebanon now 15 major manufacturers of industrial refrigerators and they are: Cold refrigerator co., Frigo Liban, Georgina refrigeration Est., IPEC, Kilzi & Co., Megafair, Merhi Abdallah Est. for refrigeration Industry, Sfeir Industry for refrigeration, Solifair, Unikitchen, Farjallah Trading, Tecmo Industry, Leon Industry, Alinjo, Takal, & Vestfrost.

B-Recharging

The survey mentioned above made by the students of ESIB university showed that there are in Lebanon 1000 cold stores/rooms, and 100000 industrial and commercial refrigerator. There are approx. 3000 trucks equipped with Cooling /Freezing equipment.

Since there is a lot of electricity problems in Lebanon, the average life time of a compressor does not exceed 4 years. According to the survey led in the sector the total consumption of CFC 12 in servicing Cold Stores is 55 ODP tons and 50 ODP tons in servicing Industrial refrigerators; add to this 6 ODP tons of CFC 115 in servicing other cold stores.

Air Conditioning

A-Production

Due to the climatic conditions in Lebanon the need for air-conditioning equipment is continuous and most of the newly installed units are HEAT-PUMP. As noted before, all locally manufactured units use HCFC 22. It is impossible to find the yearly amount of Air Conditioners sales but almost 20% of these units are locally made and some are excellent products. It is sure that most of the offices and about 20% of the houses own an Air Conditioning system and they almost all use HCFC 22.

In Lebanon there are 12 major manufacturers of domestic and industrial air-conditioning equipment and they are: Abi Yaghi group, Baroud Mrad Alfred Ets., United industrial Corp., Delta Engineering-Deltron, Condensed Air, Coolrite, IM3, Megafair Corp., Ranwell, Tecmo Froid, Weathermate, American Cold Industry, and some other small workshops.

B-Recharging

Approx. 45 tons of CFC 12 and 20 tons of CFC 11 were used in 1993 in the recharging of household, central, and car air-conditioning units. For the Air Conditioning sector (households) most of the consumption is HCFC 22 for a total of 191 Tons in 1993.

A CFC air-conditioning unit is still quite uncommon in Lebanon (few centrifugal CFC 11 units). It can be estimated from the survey and from statistical information that there are some 200000 air-conditioning units in individual houses, offices, large and governmental buildings. The sale and maintenance of the air-conditioning units is usually done by special companies.

The percentage of cars equipped with air-conditioning units is approx. 20 % of the total 1.2 million cars. Almost 35% of the brand-new cars sold are fitted with air-conditioners.

Due to the climatic conditions in Lebanon the need for air-conditioning equipment is continuous. Since most of the newly installed units are HEAT-PUMP which makes the amount of maintenance required larger.

The national airlines MEA are the only users of CFC 114 for their airplanes air conditioners.

Approx. 1 ton of CFC 114 was used in 1993 by MEA.

100% of the CFC used in this sector is for recharging and that is 66 ODP Tons in 1993 (see table 2). There are a few hundred of small companies and private technicians in servicing existing household and commercial air conditioners. There are approximately two thousands technicians, many have no licence and no professional training even though there are in the country about 50 privately owned technical schools recognised by the government and one government owned

technical institute with several branches. All these schools give a refrigeration diploma like BT(Brevet de Technicien) and TS (Technicien Supérieur). Some of the technicians are electricians too. Since there are lot of electricity problems in Lebanon, the average life time of an Air Conditioner compressor does not exceed 5 years. Most of the car Air Conditioners CFC 12 consumption is due to gas leakage. The same goes for the Centrifugal and Airplane units

Foams:

In 1993, 139 ODP tons of CFC 11 and 4 ODP tons of CFC 114 were consumed by almost a dozen of major companies and they are: Abdallah Henry Polyurethane Foam & spring mattresses, Deco Matar, Confortium, FAP, Interdesign, Sleep Comfort, Sweet Dreams, Kilzi, Leon Industry, Building Chemicals Corp., Primaflex, Nasri Karam, Ara Yerevanian, Hallawi Rida, OPACO.

In 1993:

- 35 ODP tons of CFC 11 were consumed by OPACO for producing rigid foam for insulation of household refrigerators and freezers. The average consumption is more or less 1 kg of CFC 11 per unit,
- ETS HENRI ABDALLAH consumed 15 ODP tons of CFC 11, producing 315 tons of flexible foam,
- NASRI KARAM consumed 30 ODP tons of CFC 11, producing 900 tons of flexible foam,
- FAP consumed about 35 ODP tons of CFC 11, producing 1500 tons of flexible foam.
- KILZI consumed 12 ODP tons of CFC 11, producing rigid foam for building insulation,

The remaining is consumed by the other companies:

for rigid foam: Leon Industry for insulation of commercial and industrial refrigerators,

for flexible foam: the other main companies are: YEREVANIAN, SLEEP COMFORT, INTERDESIGN.

Aerosols

In 1993, 20 ODP tons of CFC 11, 301 ODP Tons of CFC 12, and 7.5 tons of CFC 114 were consumed by 3 main aerosol companies, and 3 smaller ones. Before 1993 many companies like Abou Adal, Adonis and Fattal used to produce aerosols under foreign licence, but since the mother companies stopped producing these items with CFC and they are located in the heart of the city (which makes it difficult to shift to LPG), they started filling with LPG at another plant called Zeeni. Zeeni shifted to LPG at the end of 1993 almost 9 months after Lebanon had ratified the Montreal Protocol. Now 3 major companies are still on the market: Zeeni, Cosmaline which produced 200000 cans in 1993 and consumed almost 89 tons of CFC 11 and CFC 12 and Amatoury which produced 100,000 cans of deodorant and cosmetics in 1993 consuming 20 tons

ODP of CFC 12. Fattal (SNCI), Abou Adal, Adonis, and Societe Philippe Njeim Pour le Moyen Orient still have some minor CFC activities. Zeeni, that fills cosmetics and insecticides filled 1.3 million cans in 1992 and 3,289,000 million cans in 1993 consuming 212 tons ODP of CFC 12 and is now facing a lot of technical and financial problems. Some of these companies are filling with LPG in Jordan or in Cyprus because they are well involved with the CFC issue and they feel that they should contribute in saving the Environment even though they are facing technical and financial problems too. Presently the external filling has been discontinued. These 98% can aerosols and 2% bottle aerosols are hair spray, perfume, deodorant, and insecticides.

Solvent

The survey showed that in the Pharmaceutical industry only one company uses CTC (Algorithm: only 100 kg in 1993) and stopped using it by 1994

Other

Our survey showed also that in the Electronics industry they use cleaning agents that come from abroad in aerosols which are CFC free.

Fire extinguishing

Approx. 5 tons of halon 1211 were used in 1993 for refilling portable fire extinguishers for automobiles, garages, computer rooms and governmental telecommunication rooms.

Til 1992, Zeeni was filling bottles for fire-fighting using CFC 12: Zeeni filled 100,000 units only in 1992 with CFC 12. These bottles were mainly used as vehicle portable fire-fighting. Zeeni stopped filling this product because there was no more demand: the vehicle portable fire-fighting bottles using CO2 are cheaper.

As noted earlier, the import of Halon was forbidden starting July 1994 which makes us believe that there is no need to further develop this sector. We should note here that there are now on the market different substitutes like FM200 and others.

2.3 Institutional Framework:

The state Ministry of Environment was first created in May 1991, with the objective of controlling all forms of pollution. However in the absence of laws, this Ministry has very few responsibilities concerning environmental management.

In 1992 the government reinstated this ministry, and in April 1993, the LAW 216 created the Ministry of Environment with specific tasks of setting up laws and regulations.

By establishing the ministry, a service for the protection from the harmful effects of technology and natural dangers has been created.

The aim of this service is to control and monitor the local industries which produce chemical products and to manage their industrial wastes in order to protect the citizen, the nature, and the environment.

Implementation of the Montreal Protocol on substances that deplete the Ozone layer is also an objective of this Ministry.

In early 1994 a specific body, National Working Committee on Ozone Depleting Substances was formed to support the Ministry of Environment in the ODS issue. This committee has representatives from the following governmental organisations:

Ministry of Finance
Ministry of Industry & Petrol
Ministry of Education
Department of Customs
Chamber Of Industry & Commerce

The non-governmental organisations are represented as follows:

ALME (Association Libanaise Pour La Maitrise de L'Energie)
Lebanese University (Research Institutions)
Industry Association

The role of the National Working Committee is to be the main consultative body in all ODS and Montreal Protocol related issues in Lebanon and is responsible for the preparation of governmental/publicly supported measures to phase-out the ODSs in Lebanon. The committee has overviewed the preparation of this Country Programme.

During the Country Programme formulation, the National Working Committee created good working relationships with businesses and organisations involved in the ODS phase-out in Lebanon.

In Lebanon several UN related organisations are operational, like UNDP, World Bank and UNIDO. These organisations have been consulted and have been made fully aware of the Country Programme details.

2.4. Policy Framework

The economic and industrial policy of Lebanon has relied largely on command and control measures. Since Lebanon has no raw materials, there is no import duty on all chemicals but the municipality tax of 4%. However, the government is prepared to impose licenses, quotas, bans and higher/lower import duties to prevent non-appropriate imports, if needed.

Industry protection in Lebanon is very important, thus the possible administrative and related measures regarding ODSs concerned industry should be assessed against this background. Not to forget that all the key players regarding the ODSs are in the private sector.

2.5. Government and Industry Responses to the Protocol

LEBANON ratified the VIENNA Convention on March 30th 1993 (entered in force June 28th 1993), MONTREAL Protocol on March 31st 1993 (entered in force June 29th 1993), and LONDON amendments on March 31st 1993 (entered in force June 29th 1993). The ratification of COPENHAGEN amendments is still in process.

As a response to the protocol, a national working committee was established in 1994, and Halons were forbidden to be imported starting July 1994.

The government has approached UNEP regarding the possible initial assistance and this has been provided by the said implementing agency. The representatives of several ministries, semi-governmental and non-governmental organisations have been participating, since the beginning of 1990s, in the seminars and workshops arranged by UNEP and the other implementing agencies. ALME, an NGO edited a bulletin in September 1992 related to the ODSs issue and arranged a seminar in 1993 regarding the Montreal Protocol and its subsequent implications.

It is very important to note that during our survey, that almost all the importers and concerned industrials were very much aware of the ODSs issue and some of them had started already to substitute to non ODS substances.

It is evident that in the industry sector, the international development is closely followed by the ODS and equipment suppliers as well as through other channels since many users (refrigeration, aerosol, and foam manufacturers) have started to introduce the non-ODSs substitutes.

It should be noted too that 2 tons of HFC-134a were imported in 1993.

Some refrigeration and air-conditioning maintenance companies have already introduced some reduced ODP substances like HCFC 22 as refrigerants. Some foam producers in Lebanon have been starting to use water as a blowing agent.

The active participation of industry in the work of the National Working Committee may also be noted. It is not possible to estimate the monetary value of the costs incurred by the private industry, but they certainly have not been negligible.

3. IMPLEMENTING PHASE-OUT

3.1. Strategy Statement by the Government

It is clearly understood that the phase-out of the ozone depleting substances is a necessity and that Lebanon has to follow all the protocols and amendments.

Lebanon doesn't contribute very much to the depletion of the ozone layer, and depends largely on materials and technologies developed in the industrialised countries. Thus the social and economic burden caused by the phase-out should be shared by the countries which have been instrumental in creating the ozone depletion problem.

Despite the reservations mentioned above, the government of Lebanon firmly believes that a quick phase-out programme will best serve the interests of the society, economy, industry, and business and thus prevent the country from continuing with outdated equipment and operations in the future.

Lebanon will largely rely on the existing legal framework (with the necessary amendments and modifications) to enhance the phase-out but it is also prepared to introduce stricter laws if the scheduled phase-out programme is endangered by adverse developments and the first step taken was to forbid importing Halons starting mid 1994.

Despite the aforementioned accelerated phase-out, it is understood that the demand for products using ODSs must be fulfilled until affordable substitutes are available.

The planned phase-out will be also checked against the developmental needs of local industries.

PHASE-OUT CALENDAR AND CONSUMPTION IMPLICATIONS:

The following programme will be developed within the framework of the strategy:

Phase I: 1996-1998

- Error! Bookmark not defined.** total ODS phase out in aerosol industries;
- Error! Bookmark not defined.** total ODS phase out in foam industries;
- Error! Bookmark not defined.** total ODS phase out in production of commercial and industrial refrigeration industries;
- Error! Bookmark not defined.** Implementation of reduction, recovery and recycling programme during refrigeration and commercial units maintenance

Phase II: 1999-2001:

Error! Bookmark not defined. • Retrofitting of all commercial and industrial refrigeration units,

Error! Bookmark not defined. • Continuation of the reduction, recovery and recycling programme

Phase III: 2002-2005:

Error! Bookmark not defined. • The needs of ODS will decline progressively due to the reduction of the number of mobile air conditioners and household refrigerators (20% less per year)

Error! Bookmark not defined. • Total phase out of ODS

3.2. Action Plan

The plan comprises the provision of institutional support from the Government and other agencies, technical assistance, development of new technologies, advertising and promotion, industrial processes retrofitting projects, reduction, recovery and recycling of ODS.

A preliminary list of projects, in their order of priority, which must be implemented for the achievement of the national phase-out strategy is given below as well as the planned ODS reduction in tons ODP.

The implementation of these projects at the institutional and industrial levels and the achievement of the expected results are essential for the success of the national phase-out strategy.

3.2.1. Government Actions

In order to fulfil the objectives aimed at ODS phase-out, a specific strategy for this problem will be developed along three lines:

- Creation of an Ozone Office,
- Error! Bookmark not defined.** • Control of the market,
- Error! Bookmark not defined.** • Training and technical assistance,

OZONE OFFICE:

The Action Plan will be implemented with the participation of institutional agencies, ministries and NGO's, involved in the phase out of ODS. It will be also necessary to create a special structure in order to carry out and follow up the actions.

An Ozone Office will be created under the Authority of the Ministry of Environment. The Ozone Office, which will be staffed by two professionals and a secretary will provide the financial, administrative and technical assistance to the Government.

The Ozone Office will be active in identification of ODS users, in order to help them develop projects aimed at the use of alternative technologies. It will also help the Government in the determination of taxation levels and will prepare the banning criteria according to the Action Plan.

The Ozone Office will establish a large campaign to raise public awareness on ODS related problems. The campaign will publicise the alternative technologies that concern the different sectors and NGO's.

The project proposal for the Ozone Office is developed in Annex 1.

The budget sought for the Ozone Office is submitted for approval to the Executive Committee of the Multilateral Fund.

MARKET CONTROL

In order to minimise the costs of technological change, the Government will introduce the adequate regulations during the transition period.

The following measures will be proposed:

Error! Bookmark not defined. • By January 1996, ban on imports of ODS containing equipment,

Error! Bookmark not defined. • By January 1996, ban on imports of all ODS except those currently used,

Error! Bookmark not defined. • When the industries are converted, ban on CFC in the aerosol, foam and refrigeration units production industries,

Error! Bookmark not defined. • Creation of a system of incentives for reduction, recovery and recycling,

TRAINING AND TECHNICAL ASSISTANCE:

Training, technical assistance for the conversion and use of the alternate substances, introduction of alternative technologies as well as reduction, recovery and recycling of ODS are essential for the action plan to succeed.

The following measures are proposed:

Error! Bookmark not defined. • Review the training programmes of the institutes specialised in refrigeration, taking into account the objectives of Montreal Protocol,

Error! Bookmark not defined. • Design specific refrigeration courses in reduction, recovery and recycling for technicians working in the refrigeration and air conditioning maintenance,

- Setting up of licensing system of technicians.

3.2.2. Industrial Projects:

Planned projects are categorised according to three sectors: Refrigeration sector, aerosol sector and foam sector.

The projects are described below by order of priority. The costs, based on the cost effectiveness thresholds adopted at the 16th Executive Committee meeting (given below), are only indicative:

- Substitution of CFC by LPG in aerosol sector: US \$ 4,40/kg of CFC saved,
- Flexible foam: US \$ 6,23/kg of CFC saved,
- Rigid foam: US \$ 7,83/kg of CFC saved,
- Commercial refrigeration: US \$ 15,21/kg of CFC saved,
- Domestic refrigeration: US \$ 13,76/kg of CFC saved.

REFRIGERATION SECTOR:

Conversion of the domestic refrigerators and freezers manufacture:

This project will introduce new technologies to the OPACO company, which is the only company producing domestic refrigerators and freezers in Lebanon.

The table below gives the production capacity in number of units since 1990:

1990	1991	1992	1993	1994
15300	17600	21760	30800	48000

The objective of the project is to replace CFC 12 by HFC 134a.

The company needs also to replace the CFC 11 used to blow rigid foam by pentane.

A project is under formulation by UNIDO:

The incremental cost for this project for substitution of CFC 11 and CFC 12 is US \$ 908,160.

Conversion of several manufacturers producing commercial and industrial refrigerators:

The incremental cost for all the companies consuming 111 ODP tons of CFC 12 and CFC 115 is US \$ 1,688,310.

Conversion and retrofitting of large industrial and commercial facilities:

A study at the national level will be conducted in order to identify the main industrial and commercial facilities using CFC. The study will direct the planning of the relevant conversions that are required to accelerate the decrease in the use of CFC and avoid the premature retirement of these units.

The implementation of the project is planned to start by June 1996 with a duration of one year.

Incremental cost for retrofitting:

55 Tons are used in servicing Cold Stores, and 50 Tons in servicing Industrial refrigerators. It is assumed that the amount used in servicing represents 5% of the total ODS contained in the units. Since it is difficult to define the Investment Incremental cost for all the units, the costs given below are only indicative operational incremental costs.

Incremental operational cost:

Price of HCFC 22 (US \$/kg)	3.6
Amount of HCFC 22 needed	2,100 tons

Total incremental operational cost	US \$ 7,560,000
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Offsetting benefits

Price of CFC 12 (US \$/kg)	2.2
Amount of CFC 12 saved	2,100 tons

Total (US \$)	4,620,000
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Incremental cost (US \$)	2,940,000
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Domestic refrigeration maintenance:

The aim of this project is the implementation of new and efficient methods for the maintenance of domestic refrigerators for the purpose of reduction, recovery and recycling of ODS as well as the use of new alternate products;

There are more than 250 technicians in this sector. Since the participants are numerous, the training is planned for the trainers that will be specialised in ODS maintenance,

To enhance the use of trained technicians in maintenance a certification scheme is needed making the use of those non-trained less attractive.

In the first stage, the governmental technology institute, l'Ecole Technique National, will play the role of pilot centre, before generalising the action to the other institutes (over 50 centres over the country).

The second course of action to be taken will concern the commercial strategy designed to favour recovery and recycle through taxes on ODS chemicals, whilst making the required equipment available to refrigeration technicians in sufficient quantities.

This project is planned to be implemented by March 1996 and will lead to a reduction of about 50% of consumption in the maintenance of domestic appliances and mobile air conditioners.

The total incremental cost of the project in 1995-1997 will be approximately USD 200,000.

The break-down of the costs are assumed as follows (in US \$):

-preparation of the project	10000
-equipment	120000
-instructors, fees, expenses	10000
-teaching materials, publicity expenses	60000

AEROSOL SECTOR:

This sector is characterised by the presence of three big companies, COSMALINE, ZEENI and AMATOURY.

ZEENI has shifted to LPG technology since October 1993 (after the ratification of the Montreal Protocol by Lebanon).

In 1993, ZEENI company produced about 3,829,000 cans, using almost 212 tonnes of CFC 12.

The incremental cost is US \$ 932,800.

The Government of Lebanon will approach an Implementing Agency for the submission of this project.

COSMALINE is specialised in cosmetics aerosols, producing about 200,000 hair spray cans per year.

UNIDO is in process of formulation of a project for COSMALINE.

The Incremental cost is US \$ 391,600.

AMATOURY is specialized in cosmetics and deodorant aerosols. In 1993, AMATOURY produced about 100,000 cans, using 20 tons ODP of CFC 12.

The incremental cost is US \$ 88,000.

FOAM SECTOR:

There are about 12 companies producing foams with CFCs in Lebanon, included OPACO which produces refrigerators and freezers.

KILZI company produces rigid polyurethane foam. The incremental cost is US \$ 93,960

The others produce flexible polyurethane foams.

The total incremental cost for the companies producing flexible foam is US \$ 498,400

The others have not chosen the substitution technology.

A technical study should be carried out in order to identify the right technologies for these companies.

PROJECTS COSTS:

Preliminary estimates of the incremental costs, for setting up the institutional support as well as the above mentioned projects are presented in the following table.

PROJECT NUMBER BY ORDER OF PRIORITY	NAME OF THE PROJECT	SECTOR	STARTING YEAR	REDUCTION OF ODS (T ODP)	INCREMENTAL COST (\$ US)
1	OZONE OFFICE	ALL	1995		255,000
2	OPACO	REFRIGERATION AND RIGID FOAM	1996	55	908,160
3	CONVERSION OF SEVERAL MANUFACTURES PRODUCING COMMERCIAL AND INDUSTRIAL REFRIGERATORS	COMMERCIAL AND INDUSTRIAL REFRIGERATION	1996	111	1,688,310
4	COSMALINE	AEROSOL	1996	89	391,600
5	ZEENI	AEROSOL	1994	212	932,800
6	AMATOURY	AEROSOL	1996	20	88,000
7	TRAINING OF TECHNICIANS	REFRIGERATION AND AIR CONDITIONING	1996	155	200,000
12	RETROFITTING OF INDUSTRIAL AND COMMERCIAL REFRIGERATION UNITS	REFRIGERATION	1997	105	2,940,000
8	HENRI ABDALLAH	FLEXIBLE FOAM	1996	15	93,450
9	NASRI KARAM	FLEXIBLE FOAM	1996	30	186,900
10	FAP	FLEXIBLE FOAM	1996	35	218,050
11	KILZI	RIGID FOAM	1996	12	93,960
TOTAL				839	7,996,230

3.3. Roles in Implementing the Strategy:

The Ministry of Environment will be the national leading agency responsible for the implementation of the Country Programme. Within this ministry, a specific Ozone Unit will be established which will be in full co-ordination with ALME. The Ozone Unit will work for an initial period of three years, and will be the operational unit used to execute all implementation and administrative tasks.

It is planned that the Ozone Unit will draw its staff from the group of professionals from ALME who have participated in the preparation and compilation of this Country Programme.

This Ministry and the Ozone Unit will closely co-operate with the National Working Committee on ODSs. The governmental agencies and departments involved will continue their input in the National Committee. These are:

Ministry of Finance
Ministry of Industry & Petrol
Ministry of Education
Department of Customs
Chamber Of Industry & Commerce

The non-governmental organisations are represented as follows:

ALME (Association Libanaise Pour La Maitrise De L'Energie)
Lebanese University (Research Institutions)

Separate discussions will be carried out regarding the role of the Fund's Implementing Agencies, but taking into account the relationship already established with UNEP IE, it is reasonable that UNEP IE will act as the Implementing Agency regarding the institutional strengthening and training programmes.

3.4 Timetable and Consumption Implications:

Figure 3.4.1. illustrates the unconstrained consumption, the protocol phase out profile and planned consumption of Annex A Group 1 ODS

The complete phase-out is targeted at the year 2005

Since there is a law now that forbids importing Halons starting June 1994, there is no need to plan the phase-out of Halons.

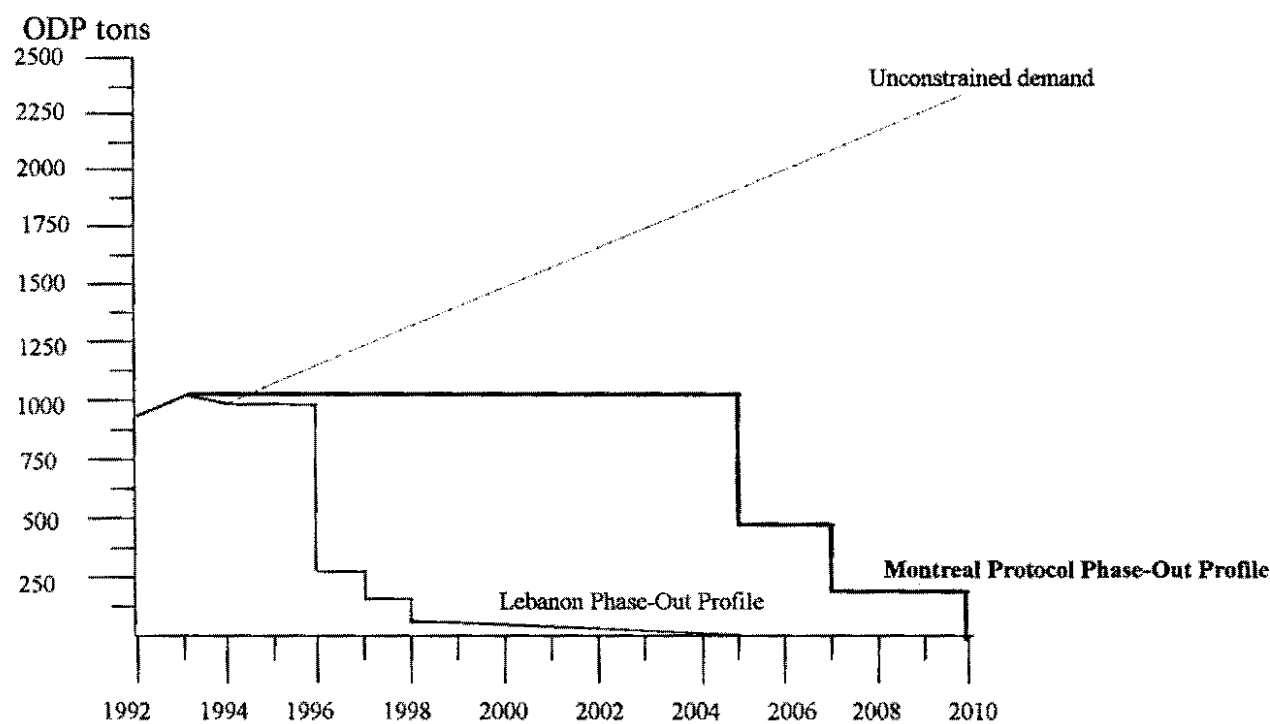


Figure 3.4.1

3.5 Budget and Financing Programme:

It is assumed that existing tax and duty structure will remain and that the substitutes will be taxed at the same rate as ODSs and ODS containing equipment. Thus the total incremental cost to the government will consist so far of the proposed projects.

The Government 's contribution will be in the form of office space, travel and administration costs and local consultancies.

It is assumed that all the assistance received by the government will be in the form of grants from the Fund.

Finance and technical support may be sought from other sources.

3.6. Monitoring Arrangements

The Ozone Office will be in charge of developing and setting up an operational system for the effective control of ODS phase out as per the Action Plan. The planned control system will include:

Error! Bookmark not defined.• Collection of information, available from the Lebanese customs, relative to ODS imports and to products containing them,

Error! Bookmark not defined.• Regular reports on consumption of ODS by type, quantity supplied, by user sectors as well as report on the progress made in implementing specific transformation processes and the other projects identified during the formulation of the Country Programme,

Error! Bookmark not defined.• Identification of new projects,

The Ozone Office will regularly report to the Ministry of Environment,
The Government of Lebanon will report to the Ozone Secretariat the data of imports of ODS on a yearly basis. It will also report the progress being made in the implementation to the Executive Committee on a yearly basis.

ANNEX 1: PROJECT PROPOSAL: No.1

COUNTRY:	LEBANON
PROJECT TITLE:	CREATION OF AN OZONE UNIT
NATIONAL EXECUTING AGENCY:	THE MINISTRY OF ENVIRONMENT
IMPLEMENTING AGENCY:	UNEP
SECTORS COVERED:	ALL
ODS CONSUMPTION BY SECTORS COVERED:	949,6 ODP TONS IN 1993
PROJECT DURATION:	THREE YEARS
PROJECT IMPACT:	1-PREPARATION IMPLEMENTATION, AND MONITORING (DATA AND INFORMATION COLLECTION) OF PHASE-OUT ACTIVITIES ACCORDING TO THE ACTION PLAN INCLUDED IN THE COUNTRY PROGRAMME. 2-IMPROVING THE CAPACITY OF THE PUBLIC ADMINISTRATION RESPONSIBLE FOR ODS USE AND CONTROL. 3-CONTRIBUTION BY THE COUNTRY TO THE PROTECTION OF THE OZONE LAYER.

INTRODUCTION

The Action Plan included in the Country Programme will be implemented in co-operation with governmental and semi-governmental institutions as well as with bodies presenting private businesses and NGOs like ALME. It is necessary to create interim structures for the preparation and implementation of specific phase-out projects. The Ozone Unit is one of such structures.

ORGANISATION OF THE OZONE UNIT

The Ozone Unit comes under the Ministry Of Environment.

The Ozone Unit will be supported by the National Working Committee on Ozone Depleting Substances by way of expediting supporting actions needed from other Government or industry bodies. Industry associations will be incorporated in the implementation and phase-out measures, especially in proposed projects.

THE OZONE OFFICE TEAM

Technical and administrative support will be provided by the Ozone Unit Team, which is made up of two professionals, and one secretary.

ACTIVITIES AND SCOPE OF THE PROJECT

If the Ozone Unit is to reach the objectives as described in the Country Programme, it will have to undertake several activities, such as follows:

- 1-Take part in defining criteria for setting import bans and/or taxes and duties for substances and products possibly entering into the market, in addition to the substances and products currently used.
- 2-Establish an effective co-operation with customs authorities to follow-up and monitor the imports of ODSs, and ODS containing products, according to the international harmonised system. Enhance the follow-up of the imports of the transitional substances.
- 3-Prepare an annual report to the Ozone Secretariat, as required, and set up a data bank, covering the imports and use of ODSs and related substances as well as possible substitutes.
- 4-Be responsible for the preparation and implementation of the training project, and responsible for the preparation of the proposed retrofitting (refrigeration) project.
- 5-Initiate co-operation with the concerned authorities and institutes to introduce substitutes/alternatives for halon.

- 6-Contact representatives of the public media to distribute information regarding the harmful effects of ODS use, and how to reduce and refrain the use of ODSs.
- 7-Contact international agencies and other NGOs operating in Lebanon to seek co-operation and support in the implementation of the phase-out.
- 8-Promote and coordinate all phase-out activities being undertaken in the country (by Government and Industry),
- 9- Provide assistance to Industry and Government bodies which are undertaking phase-out activities. The assistance could be in the way of direct response to queries providing required background material or facilitating contact with international experts or implementing agencies,
- 10-Receive, collect, analyse and disseminate information on the issues involved in ozone layer protection.
- 11-Submit to the Executive Committee a progress report on the implementation of the country programme on a yearly basis, following the format approved by the Committee (UNEP/OzL.Pro/ExCom/13/47 Annex II).

The Ozone Unit will be responsible for developing an effective system to monitor and evaluate the implementation of the projects and other phase-out measures included in the action Plan. The monitoring and evaluation function will have the following components, such as:

- 1-Gathering information available from the customs, the authorities and the industrial users regarding imports and use of ODSs and check these figures against the planned consumption figures.
- 2-Gathering data and information from end users of ODS containing products and evaluating the field impacts of the measures implemented.
- 3-Organise work shops with the industrial operators and businesses involved to assess the feasibility of phase-out measures.
- 4-Assess the effectiveness and impacts of the projects to be implemented. Check impacts against the planned consumption figures.
- 5-Review and assess in detail the supply situation and prices of refrigerants for household and commercial refrigeration equipment to check the possible actions needed, and its market impact. Design a refrigerant management plan to minimize the impact.

PROJECT BUDGET

The budget to be provided by the Government of LEBANON amounts to USD 255,000 over a period of three years. The budget covers the following costs:

- *Office space and furniture, electricity, maintenance
- *Vehicles and drivers, fuel and maintenance
- *Other local transportation costs
- *Basic salaries for the support staff of the office
- *Honorariums and expenses for specialised Lebanese consultants

BUDGET REQUESTED FROM THE MULTILATERAL FUND

This budget which amounts to USD 255.000 is intended to cover a period of three years.

	Year 1	Year 2	Year 3	Total
Capital Expenditure				
Personal Computer	4000			
Modem & Stabiliser	1000			
Printer	3000			
Software	1000			
Fax-machine	1500			
Typewriter	500			
Subtotal	11000	-	-	11000
Recurring Expenses				
Personnel Incentives	36000	36000	36000	
2 Professional Staff				
Support Staff	6000	6000	6000	
Subtotal	42000	42000	42000	126000
Operating costs				
Paper, Printing etc.	6000	6000	6000	
Official Travel.	3000	3000	3000	
Telecommunications	4000	4000	4000	
Servicing for Equipment	--			
Awareness and Sensibilization of professional and general public	14000	13500	13500	
Subtotal	27000	26500	26500	80000
GRAND TOTAL	80000	68500	68500	217000



REPUBLIQUE LIBANAISE
MINISTERE DE L'ENVIRONNEMENT

LE MINISTRE

565/B

Docteur El Arini
Chef du secrétariat
Secrétariat du fonds
Multilatéral aux fins
D'application du
protocole de Montréal
Fax n : 151 42 82 00 68

Beyrouth, le 22 Mars 1995

Cher Docteur El Arini,

Le Liban a ratifié le protocole de Montréal le 31 mars 1993.

Sa consommation étant inférieure à 0.3 kg /hab; il est donc visé par les dispositions du paragraphe 1 article 5 du protocole .

Nous avons l'honneur de vous transmettre pour approbation et financement le programme de pays .Celui-ci , réalisé sous la direction du Ministère de l'Environnement , et avec L'assistance du PNUE IE, a permis l'élaboration d'une stratégie qui prévoit un plan d'action et par suite des projets.

Ces projets vont permettre l'élimination totale des substances appauvrissant la couche d'ozone en l'an 2005 .

Le gouvernant a approuvé l'ensemble des actions contenues dans le présent programme de pays , et s'assurera que leur mise en oeuvre se fera en accord avec les dispositions du protocole de Montréal .Ainsi il pourra être modifié et soumis une nouvelle fois à l'approbation du comité exécutif du fonds Multilatéral si d'autres actions s'avéraient nécessaires au bon respect du protocole .



REPUBLIQUE LIBANAISE
MINISTERE DE L'ENVIRONNEMENT

En attendant , nous espérons que lors de sa 17ème Réunion , le Comité Exécutif du Fonds Multilatéral approuvera le présent programme de pays et financera les projets qui y sont contenus .

Veillez agréer , cher Docteur El Arini , ma haute Considération.

Ministre de l'Environnement

Samir Mokbel

COUNTRY PROGRAMME COVER SHEET

COUNTRY: LEBANON

IMPLEMENTING NATIONAL AGENCY: MINISTRY OF ENVIRONMENT

IMPLEMENTING AGENCY: UNEP

PHASE OUT SCHEDULE:

SUBSTANCE	CURRENT CONSUMPTION (Tons ODP) in 1993	CUMULATIVE CONSUMPTION UNTIL PHASE OUT (TONS ODP)		PROPOSED YEAR FOR COMPLETE PHASE OUT
		ARTICLE 5 SCHEDULE	ACCELERATE D SCHEDULE	
ANNEX A GROUP I				
CFC 11	179	5036		2005
CFC 12	843.5	23730		2005
CFC 114	12.5	352		2005
CFC 115	6.5	183		2005
SUBTOTAL	1041.5	29301	3740	
ANNEX A GROUP II				
HALON 1211	15	15	15	1994
ANNEX B GROUP 2				
CCL4	0.1	0.1	0.1	1994
TOTAL	1056.6	29316.1	3753.1	

ACTION PLAN

DURATION	SECTOR	DESCRIPTION OF ACTION	INTENDED EFFECT	IMPLEMENTING AGENCY	ESTIMATED COST (US \$)
I. INSTITUTIONAL STRENGTHENING					
1995-1997	ALL	OZONE SECRETARIAT	INSTITUTIONAL SUPPORT TO THE MINISTRY OF ENVIRONMENT	UNEP	255,000
FROM 1996	ALL	BAN ON IMPORTS OF ODS CONTAINING EQUIPMENT	TO REDUCE THE FUTURE CONSUMPTION OF ODS	MINISTRY OF ENVIRONMENT	
FROM 1996	ALL	BAN ON IMPORTS OF ALL ODS EXCEPT THOSE CURRENTLY USED	TO PREVENT IMPORT OF NEW ODS	MINISTRY OF ENVIRONMENT	
FROM 1996	ALL	CREATION OF A SYSTEM OF INCENTIVES FOR REDUCTION, RECOVERY AND RECYCLING	TO REDUCE THE NEEDS OF IMPORTS	MINISTRY OF ENVIRONMENT	
FROM 1998	ALL	BAN ON CFC IN ALL INDUSTRIES PRODUCTION	PHASE OUT ODS IN INDUSTRIES	MINISTRY OF ENVIRONMENT	
FROM 1996	REFRIGERATION AND AIR CONDITIONING	REVIEW THE TRAINING PROGRAMMES OF THE INSTITUTES SPECIALISED IN REFRIGERATION AND AIR CONDITIONING	SET UP OF LICENSING SYSTEM OF TECHNICIANS	UNEP	
II. INDUSTRIAL SECTOR ACTIVITIES (ONLY INDICATIVE)					
1996-1997	REFRIGERATION	CONVERSION OF FACTORY PRODUCING HOUSEHOLD REFRIGERATORS	PHASE OUT OF 55 ODP TONNES OF CFC 11 AND CFC 12	UNIDO	908,160
1996-1997	REFRIGERATION	CONVERSION OF SEVERAL FACTORIES PRODUCING COMMERCIAL AND INDUSTRIAL REFRIGERATORS	PHASE OUT OF 111 ODP TONNES OF CFC 11, CFC 12 AND CFC 115	TO BE APPROACHED	1688,310
1996-1997	AEROSOL	CONVERSION TO LPG OF 2 AEROSOL FACTORIES	PHASE OUT 109 ODP TONNES OF CFC 11 AND CFC 12	UNIDO	479,600
1996-1997	AEROSOL	RETROACTIVE FINANCIAL ASSISTANCE TO A FACTORY FILLING AEROSOL ALREADY CONVERTED	PHASE OUT OF 212 ODP TONNES OF CFC 12 AND 114	UNIDO	932,800
1996-1997	REFRIGERATION AND AIR CONDITIONING	TRAINING OF TECHNICIANS SERVICING DOMESTIC AND COMMERCIAL REFRIGERATORS AND AIR CONDITIONED CARS	REDUCTION OF ODS USED DURING MAINTENANCE: PHASE OUT OF 155 ODP TONNES OF ODS	UNEP	200,000
1996-1997	FOAM	CONVERSION OF FOUR FACTORIES PRODUCING FLEXIBLE AND RIGID FOAM	PHASE OUT OF 92 ODP TONNES OF CFC 11	UNIDO FOR TWO FACTORIES	592,360
1997-1998	REFRIGERATION	RETROFITTING OF LARGE INSTALLATION OF COMMERCIAL AND INDUSTRIAL REFRIGERATION	PHASE OUT OF 105 ODP TONNES	MINISTRY OF ENVIRONMENT	2,940,000
TOTAL					7,996,230

PROJECT SUMMARY

PROJECT NUMBER BY ORDER OF PRIORITY	NAME OF THE PROJECT	SECTOR	STARTING YEAR	IMPLEMENTING AGENCY	REDUCTION OF ODS (T ODP)	INCREMENTAL COST (\$ US)
1	OZONE OFFICE	ALL	1995	UNEP		255,000
2	OPACO	REFRIGERATION AND RIGID FOAM	1996	UNIDO	55	908,160
3	CONVERSION OF SEVERAL FACTORIES PRODUCING COMMERCIAL AND INDUSTRIAL REFRIGERATORS	COMMERCIAL AND INDUSTRIAL REFRIGERATION	1996		111	1,688,310
4	COSMALINE	AEROSOL	1996	UNIDO	89	391,600
5	ZEENI	AEROSOL	1994		212	932,800
6	AMATOURY	AEROSOL	1996		20	88,000
7	TRAINING OF TECHNICIANS	REFRIGERATION AND AIR CONDITIONING	1996	UNEP	155	200,000
12	RETROFITTING OF INDUSTRIAL AND COMMERCIAL REFRIGERATION UNITS	REFRIGERATION	1997		105	2,940,000
8	HENRI ABDALLAH	FLEXIBLE FOAM	1996	UNIDO	15	93,450
9	NASRI KARAM	FLEXIBLE FOAM	1996	UNIDO	30	186,900
10	FAP	FLEXIBLE FOAM	1996		35	218,050
11	KILZI	RIGID FOAM	1996		12	93,960
TOTAL					839	7,996,230