



GEF

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Dear Council Member,

UNDP and UNEP, as Implementing Agencies for the project, *Kazakhstan: Programme for Phasing Out Ozone Depleting Substances*, have submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP and UNEP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the Council in March 2000 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP and UNEP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.gefweb.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

cc: Alternate, Implementing Agencies, STAP

THE REPUBLIC OF KAZAKHSTAN

**Country Programme
for
Phasing out Ozone Depleting Substances**

**National Environmental Centre for Sustainable Development
Ministry of Nature Resources and Environmental Protection**

December 1999

Country Programme Cover Sheet

Country: The Republic of Kazakhstan **Date Receive**

Lead National Agency The Ministry of Nature Resources and Environmental Protection

Lead Implementation Agency: UNDP, UNEP

Period Covered by Country Programme: 2001-2004

1. Phase Out Schedule

<i>Substances</i>	<i>Current Consumption in 1998, ODP tons</i>	<i>Planned total consumption till Phase-Out, ODP tons</i>	<i>Planned year of phase out</i>
Annex A, Group I	1079.9	2915.6	2004
CFC-12	657.8	1776	2004
CFC-11	150	405	2004
CFC-13	0.02	0.1	2000
CFC-113	27.21	805.7	2004
Annex A, Group II	169.5	403.3	2003
Halon 1211	37.1	88.3	2003
Halon 2402	132.4	315	2003
Annex B, Group II and Group III	19.5	31.2	2001
CTC	19.0	30.4	2001
TCE	0.47	0.8	2001
TOTAL FOR ANNEX A AND ANNEX B	1268.9	3350.1.8	2001
Annex C, Group I	5.99	15.2	
HCFC-22	5.99	15.2	As per MP
Annex E, Group II	30	76	2004
Methyl bromide	30	76	As per MP
Total	1304.9	3441.4	

2. Government Action Plan

<i>Years</i>	<i>Description of Action</i>	<i>Sector</i>	<i>Intended effect</i>
2001	Institutional Strengthening & Specific Training on Monitoring and Control, promotion access to alternative technologies	All	Improved monitoring, project implementation, enhancement of Phase-Out of CFCs, CTC, halons, methyl chloroform, public awareness

2001-2004	Development of legal acts	All	Reduction in use and imports
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2001-2002	Excise on ODS	All	Reduction of imports
2001-2002	Training	Refrigeration	Reduction of CFCs use in maintenance, introduction and encouraging recycling
2001-2003	Licensing and Quota	Refrigeration, all	Reduction in of use in refrigeration service sector; later use of all ODS
2001-2003	Monitoring of the implementation of sector specific projects	All	Elimination of consumption of ODS used in the specific sectors
2001-2003	Banning on imports of ODS using equipment	Refrigeration, all	Reduction of use of CFCs, later use of all ODS
2001-2003	Support scientific research	Refrigeration, all	Development of new, alternative refrigerants

3. Projects Submitted for Funding

<i>Year</i>	<i>Project</i>	<i>Implementing Agency</i>	<i>Phased-out ODP tons</i>	<i>Total Project Cost USD</i>	<i>Government or Enterprise Contribution</i>	<i>Funds Requested from GEF USD</i>
2001-2004	1. Institutional Strengthening and Capacity Building	UNEP	N/A	703,967	90,000	613,967
2001-2004	1.1. Monitoring of the RMP implementation	UNEP				
2001	1.2 Development of National Monitoring System and Strengthening National Customs Authorities	UNEP				
	2. Refrigeration Management Plan					
2001	2.1. Programme of Training the Trainers of Refrigeration Technicians in Good Practices	UNEP	53	456,663	15,000	441,663
	2.2. Training of the Trainers of MAC Technicians in Good Practices	UNEP	8.8	127,958	5,000	122,958
2001-2003	2.3. Refrigerant Recovery & Recycling Programme	UNDP	359.6	2,545,219		2,545,219
	3. Foam Sector					
2001-2003	3.1. Elimination of CFC-11 in the Manufacture of Rigid Foams	UNDP	105	1,793,213	638,839	1,154,374
2001-2003	3.2. Elimination of CFC-11 in the Manufacture of Flexible Foams	UNDP	45	285,120		285,120
2001-2003	4. Elimination of CFC-113 as a Solvents in Pavlodar Chemical Production Facility	UNDP	6	106,920		106,920
2001-2003	5. National Halon Management Scheme Programme	UNDP	101.91	163,231		163,231

TOTAL	679.31	6,182,291	748,839	5,433,452
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4. Costs

Cost of Activities and Projects in the Country Programme to GEF in USD	5,433,452
Estimated Cost of Complete ODS Phase Out in USD	9,461,971
Estimate Cost Effectiveness for GEF Projects USD/kg	7.7
Estimated Cost Effectiveness for Complete Phaseout USD/kg	2.7

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EXECUTIVE SUMMARY

Background

Kazakhstan acceded to Vienna Convention and Montreal Protocol on 26 August 1998. The procedure of becoming a Party to the London and Copenhagen Amendments of the Montreal Protocol has also been initiated at the end of November 1999.

Kazakhstan is a Central Asian Republic, located almost in the center of the Eurasian continent with the territory of 2,756 million square kilometers.

Kazakhstan became independent on 25 October 1991.

It borders the Russian Federation in the north (6,846 km), China in the east (1,533 km), Kyrgyzstan (1,051 km), Uzbekistan (2,203 km) and Turkmenistan in the south (379 km), and the Caspian Sea (1,894 km) in the west.

The climate of Kazakhstan is continental and dry. The average annual temperatures in Kazakhstan are mild, with the exception of the high mountainous regions. In January the temperatures are around minus 18-19 °C in the north and minus 1-2 °C and in the south. The average temperatures of the hottest month July are 18 °C and 29 °C in the north and south respectively.

The country is divided into 15 administrative regions (one of them the former capital Almaty). The present capital is Astana (Akmola) situated in the north the country

The population of Kazakhstan is about 16,846,808 (July 1998). The country is thus sparsely populated with a density of only 5,8 persons per square kilometer. 29% of the population is aged under 14 years, 64% under 64 years and 7% above 65 years.

Ratio urban/village population is 55,2%/44,8%.

Kazakhstan, the second largest of the former Soviet republics in territory, possesses enormous untapped fossil fuel reserves as well as plentiful supplies of other minerals and metals. It also has considerable agricultural potential with its vast steppe lands accommodating both livestock and grain production. Kazakhstan's industrial sector rests on the extraction and processing of these natural resources and also on a relatively large machine building sector specialising in construction equipment, tractors, agricultural machinery, and some military items.

The break-up of the USSR and the collapse of demand for Kazakhstan's traditional heavy industry products have resulted in a rapidly shrinking economy since 1991, with the steepest annual decline occurring in 1994. In 1995-97 the pace of the government program of economic reform and privatisation quickened, resulting in a substantial shifting of assets into the private sector. The December 1996 signing of the Caspian Pipeline Consortium agreement to build a new pipeline from western Kazakhstan's Tengiz oil field to the Black Sea increases future prospects for oil exports.

The GDP showed considerable growth in 1996 (1.3) and 1997 (3.1), while 1998 was characterised with some decline (-1.3).

Current Situation

Currently Kazakhstan consumes approximately 1304.9 ODP tons of ozone depleting substances, out of which Annex A, Group I substances (CFCs) constitute 1079.9 ODP tons (83%), Annex A, Group II substances

(Halons) constitute 169.5 ODP tons (13%), Annex B substances (CTC, TCE) constitute 19.5 ODP tons (1%), Annex C substances (HCFCs) constitute 5.99 ODP tons (0.5%) and Annex E substances (Methyl Bromide) constitute 30 ODP tons (2.5%).

The consumption of all Annex A and B substances is 0.077 kg per capita. The ODS consumption has decreased by about 52% since 1993, when the total consumption was 2,490 ODP tons. In 1998, the consumption of controlled substances decreased by 11% compared to 1986, including Group I Annex A substances, and by 17% compared to the total consumption in 1990. In comparison to 1993 (the year with the highest ODS consumption for the last twelve-year period), 1998 ODS consumption of substances from Annex A Group I, from Annex A Group II, Annex B Group II and III, and from Annex C Group I shows a considerable decrease of 52%, 17%, 51% and 8% respectively. However, the consumption of ODS in Annex E Group I increased four fold.

The refrigeration servicing sector with consumption of 663.7 ODP tons is the largest user of ODS in 1998.

Implementing Phaseout

The Government of Kazakhstan is determined to follow the international development line, complying with the Montreal Protocol Phase-out schedule. The refrigeration servicing sector is currently looking for and willing to use recycling equipment to eliminate the need of imports, meanwhile the enterprise manufacturing refrigeration equipment is willing to apply ODS-free production technologies.

Administrative measures are being introduced to impose import restrictions and to collect accurate information on ODSs. Introduction of import bans for equipment using CFCs are in preparation.

Import/export monitoring and licensing system is in preparation. Import quotas are to be imposed on ODS importers in order to freeze the imports at the current level and to support the phase-out schedule. An incentive and disincentive policy to encourage the use and import of ODS-free technologies is being considered. A fund is going to be established in order to support the use of alternative substances.

This Country Programme proposes the implementation of five specific projects which include an institutional strengthening project, implementation of a recovery and recycling programme for the refrigeration sector, assistance for wider use of ODS-free technologies, monitoring of the Refrigeration Management Plan, and training in refrigeration and air-conditioning.

<i>Project Name</i>		<i>Project Cost USD</i>	<i>Funds Requested from GEF USD*****</i>
1. Institutional Strengthening and Capacity Building*		703,967	613,967
	1.a. Monitoring of the RMP implementation		
	1.b Development of National Monitoring System and Strengthening National Customs Authorities		
2. Refrigeration Management Plan			
2.1. Programme of Training the Trainers of Refrigeration Technicians in Good Practices **		456,663	441,663
2.2. Training of MAC Technicians in Good Practice***		127,958	122,958
2.3. Refrigerant Recovery & Recycling Programme		2,545,219	2,545,219
3.1 Elimination of CFC 11 in the Manufacture of Rigid Foams*****		1,793,213	1,154,374
3.2 Elimination of CFC 11 in the Manufacture of Flexible Foams		285,120	285,120
4. Elimination of CFC-113 as a Solvent in Chemical Production Facility		106,920	106,920
5. Creation of a Halon Scheme		163,231	163,231
TOTAL		6 182 201	5 133 152

*Requested funding from GEF includes the cost for all sub-components for RMP monitoring and Customs Committee strengthening;

Government contribution will be US\$ 90,000; **Governmental Contribution will be US\$ 15,000; *** Governmental Contribution will be US\$ 5,000
****Contribution of the Enterprises will be US\$683,839; ***** Including Executing Agency Support Cost

A Refrigeration Management Plan has been prepared under the framework of the preparation of this Country Programme, without any additional funding.

The direct phase-out effect of the proposed projects is estimated at 612.91 ODP tons, approximately 47% of the total ODS consumption at the 1998 level. The rest of the ODS in use, amounting to 691.94 ODP tons, will be eliminated through introduction of a ban on imports of equipment using and containing ODS, through import quotas, technological improvements and economic incentives alongside the support of various public awareness campaigns.

The government expects all substances from Annex A and B to be phased out by January 2004 as a result of active cooperation between industry and the Government, as well as through the implementation of the measures specified in the Action Plan and the above mentioned projects. HCFCs and methyl bromide phase-out will follow the target dates set in the Montreal Protocol and its Amendments for Non-Article 5(1) countries.

1. INTRODUCTION

1.1. PURPOSE

The Country Programme was prepared to ensure the fulfilment of obligations of the Republic of Kazakhstan to protect the ozone layer as a Party to the Vienna Convention and to the Montreal Protocol, and in conformity with the eligibility requirements for technical assistance and funding from the Global Environmental Facility.

Kazakhstan acceded to Vienna Convention and Montreal Protocol on 26 August 1998. The procedure of becoming a Party to the London and Copenhagen Amendments of the Montreal Protocol has also been initiated at the end of November 1999.

The Republic of Kazakhstan is located almost in the center of the Eurasian continent with the territory of 2,756 million square kilometers.

Kazakhstan gained its independence on 25 October 1991.

It borders the Russian Federation in the north (6,846 km), China in the east (1,533 km), Kyrgyzstan (1,051 km), Uzbekistan (2,203 km) and Turkmenistan in the south (379 km), and the Caspian Sea (1,894 km) in the west.

Most of Kazakhstan is covered by low mountainous plains with extensive flat lowland with some areas below sea level. The Kazakh Melcosopochnic is a vast low mountainous area and covers the central part of the country, with an average height of up to 500-600 m above sea level. The western part of Melcosopochnic is low lying while the eastern part has high mountain ranges in the east and the south-east (Altay, Saur-Tarbagatai, Jungariya and Tien-Shan). The forest-steppe zone covers a small part of Northern Kazakhstan. The steppe zone is south of the forest-steppe and has a continental climate. Semi-desert is a transitive zone and is located between the steppe and the desert. It has an arid climate. A desert zone covers 47 % of the country.

The climate of Kazakhstan is continental and dry. The average annual temperatures in Kazakhstan are mild, with the exception of the high mountainous regions. In January the temperatures are around minus 18-19 °C in the north and minus 1-2 °C and in the south. The average temperatures of the hottest month July are 18 °C and 29 °C in the north and south respectively.

The dry climate has created specific hydro-graphical conditions, expressed in a sparse river network with constant runoff and a large density of temporary water streams. Most of the rivers belong to the internal closed basin of the Caspian and the Aral Seas, Lakes Balhash, Alakole and Tengiz. The rivers running from the Tien-Shan and Jungarski Alatau are used for irrigation and as a source of power generation. The majority of the lakes and rivers dry up in summer. The country is divided into 15 administrative regions (one of them the former capital Almaty). The present capital is Astana (Akmola) situated in the north of the country.

The population of Kazakhstan is about 16,846,808 (July 1998). The country is thus sparsely populated with a density of only 5,8 persons per square kilometer. 29% of the population is aged under 14 years, 64% under 64 years and 7% above 65 years.

The ratio of urban/village population is 55,2%/44,8%.

Kazakhstan, the second largest of the former Soviet republics in territory, possesses enormous untapped fossil fuel reserves as well as plentiful supplies of other minerals and metals. It also has considerable agricultural

potential with its vast steppe lands accommodating both livestock and grain production. Kazakhstan's industrial sector rests on the extraction and processing of these natural resources and also on a relatively large machine building sector specialising in construction equipment, tractors, agricultural machinery, and some military items. The break-up of the USSR and the collapse of demand for Kazakhstan's traditional heavy industry products have resulted in a rapidly shrinking economy since 1991, with the steepest annual decline occurring in 1994. In 1995-97 the pace of the government program of economic reform and privatisation quickened, resulting in a substantial shifting of assets into the private sector. The December 1996 signing of the Caspian Pipeline Consortium agreement to build a new pipeline from western Kazakhstan's Tengiz oil field to the Black Sea increases future prospects for oil exports.

The GDP showed considerable growth in 1996 (1.3) and 1997 (3.1), while 1998 was characterised with some decline (-1.3).

The Country Programme has been compiled to assess the options the Government of Kazakhstan has available to adopt the forthcoming restrictions and bans on ODSs as a party to the Montreal Protocol. The survey of the consumption of ozone depleting substances in the various sectors of national economy was carried out by members of the Working Group under the supervision of the Ministry of Nature Resources and Environmental Protection of Kazakhstan for, and in accordance with the methodology recommended by the Executive Committee of the Montreal Protocol, and includes the following components:

- Evaluation of the current situation in Kazakhstan regarding imports, exports and consumption of ODSs. The Country Programme report is based on the data and information gathered by the Working Group under the supervision of the Ministry of Nature Resources and Environmental Protection of Kazakhstan and UNEP;
- Outlining the policy for further elimination of ODSs as an Action Plan, including the necessary monitoring and reporting measures;
- Identification of potential projects, where the Government and local industries need international support in order to facilitate the phase-out process.

The Country Programme also describes the administrative and institutional framework within which the ODS phaseout will progress. The programme specifies the follow up and monitoring system regarding both the substances and the projects.

The Governmental Strategy and Action Plan were approved by the Working Group during the National Workshop in September 1999.

1.2. STATUS

The Country Programme was compiled by the National Environmental Centre for Sustainable Development and with the assistance of Working Group approved by the Minister of Nature Resources and Environmental Protection of Kazakhstan with cooperation of the United Nations Environment Programme, Division of Technology, Industry and Economics (UNEP DTIE). Financial and expert assistance was provided by the Global Environment Facility (GEF).

This Country Programme has been discussed and approved by the Working Group and will be submitted to the Cabinet of Ministers of Kazakhstan for its approval.

1.3. ASSISTANCE RECEIVED

Following the request of the Government of Kazakhstan, UNEP DTIE provided technical and financial support to the National Environmental Centre for Sustainable Development to the Ministry of Nature Resources and Environmental Protection to assist the Working Group and the National Ozone Focal Point in the data collection and preparation of the Country Programme, while UNDP provided expert assistance for identification and detailed analysis of different ODS sectors and for specific project preparation. In addition, the international community's support contributed to the Ministry of Nature Resources and Environmental Protection ability to achieve high political and institutional support for the phaseout in Kazakhstan.

Among the various Governmental institutions, which offered their services and cooperation to the officials of the Ministry of Nature Resources and Environmental Protection were the: Ministry of Energy; Industry and Trade, Ministry of Transport, Communications and Tourism; Agency for Emergency Situations; Agency of Statistics; Ministry of Defence; Ministry of Health and Sport; Customs Committee to the Ministry of Energy; Industry and Trade; Ministry of Agriculture; Ministry of Science and High Education as well as representatives of various agencies and enterprises, including Kaztorgtechnica and the National Industrial Association which represent the main users of ozone depleting substances.

2. CURRENT SITUATION

2.1. CURRENT AND FORECAST CONSUMPTION OF ODSs

2.1.1. Current Consumption

Kazakhstan does not produce any substances controlled by the Montreal Protocol. Total consumption of all ODS in 1998 in Kazakhstan was 1356.12 metric tons, or 1304.86 ODP tons, including Methyl Bromide and HCFCs. Of this amount, CFC in Annex A, Group I (CFC-12, CFC-11, CFC-13, CFC-113) account for 1079.87 ODP tons, or approximately 83% of the total consumption. Substances from Annex A, Group II (Halons 1211 & Halons 2402) account for 169.5 ODP tons, or 13% and substances from Annex B, Group II & Group III (CTC & TCE) account to 19.5 ODP tons, or 1%. HCFC-22 and methyl bromide from Annex C and Annex E, correspond to 15.9 and 30 ODP tons, or 0.5% and 2.5% respectively.

Table 2.1. and Table 2.2. below indicate consumption figures by substance and user in 1998.

Table 2.1. Import, and Consumption of ODS in 1998

Substance	Import metric tons	Consumption metric tons	ODP	Consumption in ODP tons	%	Use in ODP tons
Annex A Group I						
CFC-12	657.78	657.78	1.0	657.78	50	857.93 ¹
CFC-11	150.00	150.00	1.0	150.00	12	150.00
CFC-13	0.015	0.015	1.0	0.02		0.02
CFC-113	340.10	340.10	0.8	272.08	21	272.08
Sub-total Annex A Group I	1147.89	1147.89		1079.87	83	1280.03
Annex A Group II						
Halons 1211	12.37	12.37	3.0	37.11	3	37.11
Halons 2402	22.06	22.06	6.0	132.36	10	132.36
Sub-total Annex A Group II	34.43	34.43		169.47	13	169.47
Annex B Group II						
Carbon Tetrachloride	17.30	17.30	1.1	19.03		19.03
Annex B Group III						
1,1,1 trichlorethan	4.70	4.70	0.1	0.47		0.47
Total Annex B (Group II&III)	22.00	22.00		19.50	1.5	19.50
Total Annex A & B	1204.32	1204.32		1268.84	97	1469.00
Annex C Group I						
HCFC-22	108.90	108.90	0.055	5.99		5.99
Total Annex C	108.90	108.90		5.99	0.5	5.99
Annex E Group I						
MBr	42.90	42.90	0.7	30.03		30.03
Total Annex E	42.90	42.90		30.03	2.5	30.03
TOTAL	1356.12	1356.12		1304.86	100	1505.02

The refrigeration sector consumed 663.76ODP tons (51%) out of the total, including 657.78 ODP tons of CFC-12 and 5.99 ODP tons of HCFC-22 in domestic equipment (11%), commercial and trade appliances (20%), industrial cooling (10%), transport refrigeration (1%) and air-conditioning (9%). About 22 % of total ODS consumed are applied as solvents, of which CFC-113 accounted to 272.1 ODP tons, CTC to 19 ODP tons, methyl chloroform to 0.47 ODP tons and CFC-13 to 0.015 ODP tons. Fire-fighting sector consumed 101.91 ODP tons, or 13%. The agriculture sector consumed 30 ODP tons (2.5%) for fumigation.

¹ The amounts of CFC-12 used are higher, since about 200 ODP tons were recovered from non-operational railway refrigeration wagons and used for repair works in the Railway system (see also section 2.2.2.1)

Table 2.2. Consumption of Ozone Depleting Substances in 1998 in Kazakhstan. by Use and Application

Area of Use	Substance	Application	Consumption in ODP tons	%
Refrigeration equipment				
Production	CFC-12	Charge		
Servicing domestic refrigerators	CFC-12	Servicing	140.91	
Sub-total domestic refrigerators			140.91	11
Industrial refrigerators	CFC-12	Servicing	134.01	
	HCFC-22	Servicing	1.46	
Sub-total industrial refrigerators			135.47	10
Commercial refrigerators	CFC-12	Servicing	260.58	
	HCFC-22	Servicing	3.41	
Sub-total commercial refrigerators			263.99	20
Railway refrigeration wagons	CFC-12	Servicing	-	
Automobile refrigeration wagons	CFC-12	Servicing	9.00	
Sub-total transport refrigeration			9.00	1
TOTAL REFRIGERATION EQUIPMENT			549.37	42
Air-conditioning				
Air-conditioning systems	CFC-12	Servicing	2.68	
Air-conditioning in rooms	HCFC-22	Servicing	1.12	
Air-conditioning in vehicles (MAC & Railway carriages)	CFC-12	Servicing	110.60	
TOTAL AIR-CONDITIONING			114.39	9
TOTAL REFRIGERATION SECTOR			663.76	51
Foams	CFC-11	Foam blowing		
TOTAL FOAMS			150.0	11.5
Solvents				
Metal cleaning	CFC-113		272.10	
	CFC-13		0.015	
Laboratory use	CTC		19.00	
	TCE		0.47	
TOTAL SOLVENTS			291.59	22
Fire-fighting	Halon 1211		37.11	
	Halon 2402		132.36	
TOTAL FIRE-FIGHTING			169.47	13
Fumigation	MBr	fumigation		
TOTAL FUMIGATION			30.03	2.5
TOTAL			1.304.85	100

For the period of 1986 to 1998, ODS consumption in Kazakhstan has registered ups and downs with a pick every two-three years, following the growth of the GDP. There was economic upheaval the first years after the independence (1991-1993) and the highest GDP growth was registered in 1993, which brought fast development of foam industry (completely private sector at the moment) and resulted in an increase of use of

solvents like CFC 113 and of refrigerants in industry. However, since 1990 consumption of CTC and Methyl Chloroform shows considerable decrease.

The consumption of CFC 11 has increased during the last years due to the production of rigid foam polyurethane (see section 2.2.2.3. Foams). During the last few years, the refrigeration equipment based on Russian technology is getting already old and obsolete, and the demand for repair and maintenance has been more or less constant over the last three years. The trends in consumption of Methyl Bromide registered stable decrease since 1986, however in 1998 larger quantities were used for field treatment of grain.

The National Ozone Team encountered several problems when the 1986-1998 trend analysis of the consumption was prepared. The correlation with the GDP growth in the data analysis was often asymmetric, especially for the 1996-1998 three-year period. The country is going through a complete economic reform and private sector is growing rapidly. However, a strict tax reform was introduced in late 1995 and is still being enforced. This has created problems during the data survey and the officially declared, but incomplete consumption for the refrigeration servicing sector was corrected and estimated based on the economic trends.

Table 2.3. Trends of Changes in the Consumption of Controlled ODS in 1986 and 1990-1998 in ODP tons

Chemical	1986	1989	1990	1991	1993	1996	1997 ²	1998
<i>Annex A Group I</i>								
CFC-11	11.1	4.1	4.6	4.1	4.1	23.4	47.6	150.0
CFC-12	1148.5	1343.6	1162.5	1154.1	2167.1	766.8	790.6	657.8
CFC-13						0.02	0.02	0.02
CFC-113	58.2	58.6	59.0	59.3	58.8	44.3	47.8	272.1
<i>Annex A Group II</i>								
Halons 1211	96.6	96.6	96.6	70.8	71.6	26.6	26.6	37.1
Halons 2402	133.1	133.1	133.1	133.1	133.1	133.1	133.1	132.4
<i>Annex B Group II & III</i>								
CTC	49.6	49.6	47.6	47.4	37.5	30.0	29.7	19.0
TCE	2.8	3.0	2.9	2.9	2.8	3.2	3.8	0.5
<i>Annex C Group I</i>								
HCFC-22	9.0	9.0	8.4	6.7	6.5	3.9	6.3	5.99
<i>Annex E Group I</i>								
MBr	39.0	40.0	50.0	26.0	8.4	3.5	2.0	30.0
Total	1548.0	1737.7	1564.7	1504.5	2490.0	1034.9	1087.6	1304.9

2.1.2. Consumption Forecast

According to a preliminary assessment made by the Ministry of Energy; Industry and Trade and the Agency of Statistics for the period of 1999-2005, a stable tendency of growth will be maintained in all economic sectors of Kazakhstan and the average annual growth rates of the gross domestic product (GDP) will reach over

² Consumption of CFC12 in 1997 has been estimated based on the economic drivers that affect end users sectors (see paragraph 3 above).

1.09%.

Priorities for industrial production will remain to be machine-building, chemical, petrochemical industries, oil extraction and production and electric power production, ferrous and non-ferrous metallurgy and food industry. It is scheduled to establish both new facilities and to renovate the existing manufacturing capacities in order to expand the range of products and to enlarge import-substitution in compliance with the international standards.

Population growth rates are unlikely to increase.

On assumption that nothing will be undertaken for implementation of the Montreal Protocol and ODS will be purchased at current prices from existing suppliers. An assessment was made by experts for ODS consumption for the period up to the January 2005 and in all the sectors consuming the controlled substances with a proposal for a phaseout scenario. According to the forecast, ODS will be utilised for repair and maintenance of commercial, industrial and domestic refrigerators, and railway transport as well as in light and chemical industries and in machine-building. The forecast outcomes are shown in Annex I.

2.2. INDUSTRY STRUCTURE

2.2.1. ODS Importers

Currently, the Customs agency of the Republic of Kazakhstan is applying the basic principles of the Harmonised System. However, the Customs Committee is introducing import and export customs declaration to be filled for substances and goods according to the codes of the range of foreign economic activity goods. A detailed code system for ODS substances is in preparation and will be introduced before the end of 1999. There is no ODS import and export monitoring system in Kazakhstan.

According to the data from the users during the data survey, practically all ODS of Annexes A, Annex B, Annex C, Annex E are imported from the Russian Federation, with the exception of insignificant amounts imported from other countries with economy in transition (Kyrgyzstan, Ukraine, Latvia) and Western Europe, India and the United Arab Emirates.

The largest ODS importers currently are the Association of Chemical and Oil Refining Industry, the Association of Metallurgical Works, the system of Rembittechnica and Kaztorgtechnica, the Air Companies of Kazakhstan, the Quarantine Committee of the Ministry of Agriculture, the State Railway Company and various intermediary firms among which representatives of Russian and other NIS firms. A list of the largest ones are different open joint-stock or limited liability companies is provided in Table 2.5.

Sharp ups and downs in the amount of ODS imported by all the branches and enterprises of the Republic are explained by the fact that these substances are being imported in amounts that exceed several times the demand of enterprises in such substances. ODS are being stocked and then used for a number of years (for up to 10 years) by enterprises of chemical, machine-building and electromechanical industries, construction, railway and aviation.

Analysis of ODS consumption and import showed that the existing system of ODS monitoring is far from being perfect:

- the controlled substances are being declared under different codes of goods nomenclature;
- ODS mixtures are practically beyond control;

- there is no control of products containing ODS;
- there is no checking of ODS chemical composition;
- there are also some sources of ODS supply that are not duly registered.

Table 2.4. ODS Imports for 1998 in metric tons

Enterprises-Importers	Substance	Amount in metric tons	Amount in ODP tons
National System of "Rembyttechnica"	CFC-12	102.24	102.24
	HCFC-22	0.35	0.02
National System of "Kaztorgmontazh" and "Kaztorgtechnika"	CFC-12	136.66	136.66
	HCFC-22	1.73	0.09
Private undertaker Seitov	CFC-12	70	70
	HCFC-22	0.49	0.03
Private undertaker «Shatalov»	CFC-12	10	10
	HCFC-22	0.19	0.01
«SerSO». Ltd	CFC-12	1.5	1.5
	HCFC-22	0.25	0.01
Automobile Maintenance Station «Volvo»	CFC-12	0.1	0.1
OJSC «Mangistau-turmys».	CFC-12	5	5
	HCFC-22	0.3	0.02
«Holod-service" Ltd	CFC-12	3.5	3.5
	HCFC-22	2.5	0.14
1. Metallurgical Industry Enterprises:			
Ulbinsk metallurgical works	CFC-12	1.5	1.5
	CFC-113	1	0.8
	HCFC-22	1	0.055
OJSC «Kazzink»;	CFC-113	5	4
	CFC-12	6	6
JSC «Kazakhstan Aluminium»;	CCl4	0.002	0.002
	CFC-12	3	3
	HCFC-22	0.2	0.01
JSC «Ferrohrom»;	CCl4	0.18	0.198
JSC «Kaz Hrom»;	CFC-113	0.05	0.04
	CCl4	0.03	0.03
OJSC «Aktyubinsk works of chromium compounds »	CFC-12	0.13	0.13
	CFC-11	0.09	0.09
JSC «Yuzhprommetal»	CFC-12	2.5	2.5
	HCFC-22	0.48	0.03
«Ispat Karmet».	CFC-12	12.64	12.64
	CFC-113	1	0.8
	CCl4	1.2	1.32
Corporation «Kazakhmys».	CFC-12	3.5	3.5
	HCFC-22	2.3	0.13
	CCl4	0.05	0.06
2. Enterprises of chemical and oil refining industry:			
Pavlodar «Himprom» .	CFC-12	2.9	2.9
Pavlodar oil refining works.	CFC-12	0.5	0.5
	CCl4	1.18	1.3

Enterprises-Importers	Substance	Amount in metric tons	Amount in ODP tons
Atyrau oil refining works.	CFC-12	2.8	2.8
	HCFC-22	1.4	0.07
JSC «Shimkentnefteorgsintez».	HCFC-22	0.09	0.005
	CFC-12	1	1
JSC «Himfarm».	CFC-12	0.12	0.12
JSC «Shimkentshina»	CFC-12	0.69	0.69
	HCFC-22	0.05	0.003
3. Machine building industry enterprises:			
JSC «Mashzavod»	CFC-113	0.15	0.12
	CFC-12	0.02	0.02
4. Regional State Enterprise Kazakhstan «??mir zholy” and other private companies. rail way transport	CFC-12	31.2	31.2
5. Quarantine Committee of the Ministry of Agriculture	MBr	42.9	30.03
6. Air companies:			
«Air Kazakhstan».	Halon 1211	0.72	2.16
	Halon 2402	2.1	12.6
7. Building companies:			
JSC «Almatyinzhstroy».	CFC-11	8.05	8.05
JSC «Intermodul».	CFC-11	6.3	6.3
JSC «Silikat».	CFC-12	0.01	0.01
OJSC «Buhtarma cement company».	CFC-12	0.18	0.18
«Spetsremont». Ltd	CFC-11	9.2	9.2
«Sim». Ltd	CFC-11	17.25	17.25
«Olimp». Ltd	CFC-11	5.75	5.75
«Trademarket». Ltd	CFC-11	8.6	8.6
	CFC-12	0.008	0.008
Manufacturing company «Montazhnik».	CFC-11	6.9	6.9
«Poliol» Ltd.	CFC-11	9.2	9.2
8. Other enterprises:			
Regional State Enterprise «MAEK»	CFC-12	3	3
	HCFC-22	0.5	0.03
	Halon 2402	19.96	119.76
	Halon 1211	11.65	34.95
	CCL4	14.66	16.12
	1.1.1 trichlorethan	4.7	0.47
	CFC-13	0.02	0.02
	CFC-113	332.9	266.32
	HCFC-22	97.07	5.37
	CFC-11	78.66	78.66
	CFC-12	257.09	257.09
TOTAL		1356.12	1304.87

2.2.2. Users

In largest amounts of ODS are consumed for maintenance of the refrigeration equipment in the RK, contributing to 51% of the total consumption in the country. Of these, the domestic refrigeration equipment

account to 11%, industrial cooling systems to 10%, commercial refrigeration to 20%, and transport refrigeration to 1% of the total ODS. Additionally, stationary and mobile appliances for air-conditioning contribute to rest of 9%.

Another important ODS user is the foam production sector accounting to 12% of the annual ODS consumption. 22% of the annual ODS consumption in 1998 are used as solvents for degreasing of details and assembled units, and in laboratories. 13% are used in the fire-fighting sector and 2% for fumigation in the agriculture.

2.2.2.1. Refrigeration Sector

Refrigerating equipment in different refrigeration sectors consumes 663.76 ODP tons, including 657.78 ODP tons of CFC-12 and 5.99 ODP tons of HCFC-22. Breakdown of the ODS used in the refrigeration sector in 1998 was:

- industrial refrigerators- 20.4 %
- domestic refrigerators – 21.2 %
- commercial refrigerators- 39.8 %
- mobile refrigeration (trucks and railway) – 1.4 %

The tables below give more details description of the consumption in this sector.

Table 2.5. Estimated 1998 Use of Ozone depleting Substances in the Refrigeration Sector

Substance	Tonnes	ODP Tonnes
CFC-11		
CFC-12	857,93	857,93
CFC-113		
CFC-115		
HCFC-22	108,90	5,99
HFC-134a		
TOTAL	966,83	863,92

Table 2.6. CFC-12 Use by Sub-sector in 1998

SUB-SECTOR	Number of units	Number of units charged per year	Total ODS use in Tonnes
<u>DOMESTIC REFRIGERATORS</u>	4.900.000	469.700	140,91
<u>COMMERCIAL REFRIGERATORS OR EQUIPMENT USED FOR COMMERCIAL ACTIVITIES</u>	78.000	23.400	258,05
<u>WATER COOLERS (small, water fountains for commercial use)</u>	N/A	10.000	2,68
<u>INDUSTRIAL REFRIGERATION</u>	371	278	134,01
<u>TRANSPORTATION</u>			
REFRIGERATED RAILWAY TRANSPORTATION	3.120	1.120	112
REFRIGERATED TRUCKS	2.282	2.282	9
MOBILE AIR CONDITIONING - BUSSES	2003	180	0,61
MOBILE AIR CONDITIONING - VEHICLES	133.300	26.600	26,6
MOBILE AIR CONDITIONING - RAILWAY	5.500	4.125	171,39

WAGONS			
CFC-12 CHILLERS	434	20	2,68
TOTAL			857,93

Production of Refrigerators

«Tehol» Enterprise located in Karaganda, which is a branch of a Russian production facility, manufactures industrial refrigerators in RK. This factory was commissioned in 1996 and its production is for the needs of the domestic market in Kazakhstan. HCFC 141b is used for insulation and HCFC-22 as a refrigerant.

The production facility «LIK» in Ust-Kamenigorsk makes commercial display cabinets on a very small scale. The CFC-11 for the related insulation foam amounts to less than 1 ODP tons per year and the CFC-12 used as a refrigerant is about 0.300 tons per year. The company is participating in the foam conversion project, but is not interested in a conversion project of the refrigeration part. The management of the company considers it financially not profitable, since the enterprise has certain amount of stockpiled CFC-12 and would have problems to finding a market for the more expensive equipment using HFC-134a or even HCFC-22.

Domestic refrigerators, based on CFC-12 were produced from 1993 till 1995 by branch of "Samsung", South Korean firm. This production facility was closed at the end of 1995 in accordance with the compliance with the Montreal Protocol. For this period the factory produced 64.705 units and used about 11 ODP tons of CFC-12.

Currently, Kazakhstan imports about 85 thousand domestic refrigerators yearly, made in Russia, Latvia, Japan, South Korea, Asia and Europe (using both HFC-134a and CFC-12).

Repair of Refrigeration Equipment and MAC

Industrial refrigeration equipment is repaired by the Mechanical Workshops in the industrial enterprises.

There are approximately 340 repair workshops for domestic and commercial refrigeration equipment. which was based on the existing structures of the regional repair companies of "Kaztorgtechnica". The biggest ones of these service centres employ about 100 refrigeration technicians, and the total number of technicians in this system is about 2,760 technicians. For general service and repair of domestic refrigeration in 1998, this network used 140.91 ODP tons of CFC-12. The informal sector amounts to about 2000 independent technicians, providing maintenance and servicing of the domestic and commercial refrigerators.

Maintenance and repair of the refrigeration appliances and air-conditioning systems in the railway transport is provided by the State Railway Company and in the automobile transport by Centres for Technical Automobile Service. The MAC repair workshops amount to 60 and there are about 1,000 technicians working in the system, 296 of which are formally employed and the rest are working on independent basis.

In the process of formulation of the Country Programme and the data survey in the refrigeration sector, it was concluded that the phaseout of ODS in the sector will largely benefit from training in good practices for refrigeration and MAC technicians. Two projects reflected the needs of these sector are presented to the GEF Council with the National CP in addition to an extensive National Recovery and Recycling Programme;

Table 2.7. below presents a breakdown of servicing and maintenance workshops, and technicians in the country.

Table 2.7. Repair Workshops and Technicians in the Refrigeration and MAC Servicing Sector

Sub-sector	Comment Number	Estimated Number of large Refrigeration Workshops or Centers	Estimated Number of Small Refrigeration Workshops or Centers	Estimated Total Number of Refrigeration Workshops or Centers	Estimated Number of Refrigeration Technicians working in Registered Workshops or Centers	Estimated Number of Independent Refrigeration Technicians	Estimated Total Number of Refrigeration Technicians
Domestic Refrigeration	1	85	150	235	1260	900	2,160
Commercial Refrigeration	1	50	55	105	1500	100	1,600
Total of Domestic and Commercial Refrigeration	1	135	205	340	2760	1000	3760
Industrial Refrigeration	1,2	371		371	1,000		1,000
Transport	2,3	35	10	45	225		225
MAC	2,3	60		60	125	804	929
Wagons	1,2	20		20	600		600
Chillers	2,3	434		434	900		900
Totals		1055	215	1,270	5,610	1,804	7,414

Notes: 1. Some of the workshops employ over 100 technicians; 2. Company's own workshop and technicians; 3. Some employ over 25 technicians

Industrial Refrigeration

Industrial refrigerating systems in 1998 used 134.01 ODP tons of CFC-12 and 1.5 tons of HCFC-22 for the renewal of refrigerants during operation and maintenance.

Main consumers are the metallurgical and chemical industries where controlled substances are applied for industrial purposes, to cool machines, equipment, during production of chemical and pharmaceutical products and to obtain liquid refrigerants. Total number of industrial refrigeration appliances in the country amounts to 371 units. There are 47 industrial enterprises from which the main users are chemical enterprise "ACPO" with 5 ODP tons yearly consumption in 1998. Pavlodarskii Chemical Works (city of Pavlodar) used more than 2.8 ODP tons. Uljbinski Metallurgic Works (city of Uljbinsk) used more than 1.5 ODP tons and the Oil Prospecting and Extracting Company "Hurricane Kumkol Munai JSC" (city of Kyzylorda) more than 1.3 ODP tons.

In previous years food industry refrigeration used equipment which was ammonia based, but the last three-four years many enterprises were renovated and new appliances based on CFC-12 and HCFC-22 were installed. More than 16 ODP tons of CFC-12 are used for servicing existing refrigeration systems in milk and bread production industry.

There is also one Olympic size skating ring "Medeo" in Almaty, which was used even during the summer

months and was using yearly about 4 ODP tons of CFC-12. Since 1996 the ring does not work in the summer months and in the winter the ice is naturally produced. There are 1.5 ODP tons stored in sealed volumes at the enterprise. At present, the management of the enterprise is studying the options of non-ODS based refrigeration installation.

Commercial Refrigeration

The Republic of Kazakhstan applies extensively refrigeration systems in commercial sector. More than 260.73 ODP tons of CFC-12 and 3.4 ODP tons of HCFC-22 were used in 1998. There are more than 78,000 CFC-12 based commercial units in total in Kazakhstan. 14,000 of these appliances are for long storage of food and required about 10 ODP of CFC-12 for maintenance. There are more than 64,000 units of commercial refrigerators and refrigeration systems in the country used in shops and restaurants, of which 23,400 units require annually to be repaired, and about 248 ODP tons of CFC-12 are used for their maintenance. Some 2.68 ODP tons of CFC-12 of the total in the commercial refrigeration sector are also used for maintenance and repair of water fountains.

For the last several years, equipment is practically not supplied from Russia. About 80% of the existing refrigeration systems are becoming outdated and obsolete. Recently, and mostly in Almaty, there is an increased import of modern commercial refrigeration equipment, which is HCFC-22 and HFC 134a based. To maintain the functioning of the existing equipment "Kaztorgtechnica" Joint-Stock Company, "Kramds Akmola", "Uraljsktorgtechnica". "Vozstoktorgmontag" and various small repairshops provide for its installation, repair and maintenance. They import CFC-12 and HCFC-22 from the "Halogen" Joint-Stock Company and Chimprom Association.

Since 1990, most of these enterprises operate systems of recovery, recycling and reclamation of CFC-12 of their own production with total capacity of about 80 ODP tons a year. However, the equipment is obsolete and not efficient. Therefore it requires to be replaced by equipment which can be used for a range of refrigerants. This is reflected thoroughly in the Recovery and Recycling Programme presented with the Country Programme for funding.

Domestic Refrigeration Equipment

Practically all enterprises, institutions, organisations and 4.8 million families in Kazakhstan run one or several refrigerators. That makes about 5 million operational domestic refrigerators in the country, which were either assembled in Kazakhstan, or imported from Russia, Byelorussia and Latvia. No production or assembly facilities for domestic refrigeration equipment exist at present in Kazakhstan.

For general service and repair of domestic refrigeration appliances in 1998, some 140.91 ODP tons of CFC-12 were used.

Transport Refrigeration Equipment

In Republic of Kazakhstan today there are about 5,402 transport refrigeration units, of which about 3,120 are railway refrigeration wagons and 2,282 are automobile refrigeration units. 2000 of the refrigeration wagons were dismantled and the CFC-12 recovered (about 200 ODP tons) and reused for the repair of the rest of 1,120 refrigeration wagons, as well as for the maintenance of the air-conditioning systems of some 2000 passenger carriages. However, the recovery facility is extremely primitive and lacks the capabilities to recycle the refrigerant. The Railway Repair Workshops are included in the National Recovery and Recycling Programme, which will improve the repair practices in these enterprises.

For the period 1996-1998, a considerable development of private automobile refrigeration transport sector

was observed and the services provided increased about 1.5 times, while railway refrigeration services show a trend of decrease for the last 5 years.

In 1998, for maintenance and service of the refrigeration units of trucks and middle sized automobiles 9.0 ODP tons of CFC-12 were used, and for the maintenance of railway refrigeration wagons some 112 ODP tons of CFC-12 were used.

Air-Conditioning

Air Conditioning in Vehicles

Consumption of CFC-12 for air-conditioning in vehicles accounts for 99 % of all consumption in the sector of air-conditioning. About 98 % (171.39 ODP tons) of CFC-12 is used for maintenance of the air-conditioning systems in the railway transport. The rest, 26.6 ODP tons are used for MAC servicing and 0.61 ODP tons for MAC systems of busses. There are about 1,3 million cars in the country of which about 133,300 units have air-conditioning systems of which some 26,600 need repair each year. The air-conditioning systems of the 2,003 air-conditioned busses are all yearly repaired.

There are about 5,500 air-conditioned railway wagons and passenger carriages. The repair and maintenance of their air-conditioning systems is provided by the Repairshop of the State Railway Company. In 1998, for the repair of about 4,125 passenger wagons some 171.39 ODP tons of CFC-12 were used, from which only 83.39 ODP tons were imported. The rest were supplied by the recovered CFC-12 from the disassembled railway refrigeration wagons.

Air Conditioning

Geographic situation and territory of Kazakhstan, which define four climate zones require air-conditioning only in southern Kazakhstan and mainly in administrative buildings, hospitals, schools, shops, industrial enterprises and in some transportation facilities.

More than 20% of the urban families and mostly in southern Kazakhstan, as well as administrative organisations and institutions use individual air-conditioners filled with HCFC-22.

To create comfortable conditions, a small number of organisations, hotels, administrative buildings, airports, museums and industrial enterprises use centralised air-conditioning systems filled with CFC-12 or HCFC-22. There are about 434 chillers and some 20 are repaired each year. For servicing of such systems, in 1998, 2.68 ODP tons of CFC-12. 1.12 ODP tons of HCFC-22 were also used for servicing of small room air-conditioning units.

The main consumers are the Telecommunication Companies in Almaty, Taraz and Shymkent, the House of Parliament, cinemas, main Electric Power Stations. Main supplier of CFC-12 and HCFC-22 for servicing of these appliances are "Kazkontrakt" and "Sinteko".

2.2.2.2. Solvents

Solvents account for 291.6 ODP tons. or 23.8 % of the total consumption of ODS. In 1998, 19 ODP tons of carbon tetrachloride 272.1 ODP tons of CFC-113 and 0.47 ODP tons of methyl chloroform were used. For last 13 years (1986-1998) the consumption of methyl chloroform and carbon tetrachloride went down by some 63 %.

Main users of CFC-113 are the Oil Processing Factory (city of Pavlodar), Metallurgical Company (city of Uljbinsk), the Metallurgical Company (city of Aksus), Kazakhstan Aluminium Works, Machine Building

Factory, KazZink Enterprise, Ispat-karmet, Corporation Kazakhmjs for metal degreasing in machine-building electrical engineering, chemical analysis of running waters for contents of oil and dioxins.

In 1998, these enterprises imported extra amounts of CFC-113, in total 272.1 ODP tons which could be considered partly as stockpiles. There was fear about the eventual measures, which the Government of Kazakhstan will undertake in line of its obligations as a Party to the MP. This fear was well grounded, since CTC, which was usually used as a solvent by the main industries, was almost impossible to find on the market and the last year CFC-113 was used instead.

The main users of methyl chloroform are three print houses and the Ministry of Health. Main suppliers of solvents are the Russian companies «Halogen» Joint-Stock Company, «Carbon» Joint-Stock Company (City of Kaluga), Kirovochepetsk, Chemical Works, Azerbaijan Bjutmash and small intermediary firms.

The Government is fully committed to the phaseout of ODS use in this sector and supports a project for elimination of the use of CFC-113, which is presented with the National CP.

2.2.2.3. Foams

In 1998, the consumption of CFC-11 amounts to 150 ODP tons and constitutes 11.5 % of the total ODS use in RK.

Rigid Foam Polyurethane

There is a production of rigid polyurethane foams for building insulation in RK. This sector has been started its development in 1993. In 1998 there were already 8 small and medium enterprises on the territory of Almaty. Technology used is mainly spray rigid foam production. Total volume of foams produced by 620 tons of rigid foams in 1998. The biggest of these enterprises "SIM", "Trademark" and "Poliol" produced about 320 tons of rigid foams in 1998 and used about 36 ODP tons of CFC-11.

There is a commitment of the Government to convert the production cycle of these firms into non-ODS technology for which investment projects were developed and are submitted with this National Country Programme to the GEF Council for funding.

Main supplier of CFC-11 it is the Russian Joint-Stock Company «Halogen».

2.2.2.4. Fire Fighting

In RK there are about 20 automatic fire-extinguishing systems in 1998, and 0.17 metric tons (0.51 ODP tons) of Halon 1211 and 16.9 metric tons (101.4 ODP tons) of Halon 2402 were used for their maintenance. All automatic systems are on the record of the fire-fighting services of the Interior Ministry of the Republic of Kazakhstan.

There is factory in Kokchetau, "Tynys" which is filling portable fire-extinguishers. In 1998 they have produced 2.500 units of and used 34.44 ODP tons of Halon 1211. The management of the factory is studying the options of conversion to production of non-ODS using fire-extinguishers.

Halon 2402 and Halon 1211 are used by the Kazakhstan Airways. There are about 53 air companies in the country. In 1998, for maintenance and servicing of the existing mobile fire-extinguishers and automatic fire-extinguishing systems in the aircraft's, about 30.96 ODP tons (5.16 metric tons) were used.

The Government is committed to phaseout of Halons and a project for a National Halon Management Programme is prepared and submitted with the CP to the GEF Council.

2.2.2.5. Other Uses

In 1998, the consumption of methyl bromide in the RK was 30 ODP kg. or 2.5 % of the total consumption of ODS in the country. This shows decrease compared with 1990, when it amounted to 50 ODP tons, or 2% of the total ODS consumption. However, Kazakhstan is an important grain exporter of to a number of Middle Eastern countries and one of the requirements is the treatment of the stocks with methyl bromide.

Main user is Committee for Plant Protection and the Ministry of Agriculture. Main suppliers are "Bromine Compains" Ltd. from Israel and "Eurobrom" B.V. from Russia.

The Government is willing to participate in a Regional Project for alternatives of Methyl Bromide, including a demonstration sub-project component.

2.3. INSTITUTIONAL FRAMEWORK

The Government of Republic of Kazakhstan (RK) considers all matters with environmental protection character and aspects of high priority since they concern the quality of life of the people. In this respect the Government of RK responsible:

- for development of main directives for governmental policies, strategies and measures for their implementation;
- for development of national (governmental) environmental programmes and programmes in all areas of nature and environmental protection and presents these for the approval of the President of Republic Kazakhstan;
- supervision of the activities of all Ministries and Governmental Committees, regional and local authorities and monitors the implementation of legal acts and regulations issued by the President and the Government of Kazakhstan.

Ministry of Nature Resources and Environmental Protection and its the regional and local representative offices are responsible for the overall coordination, monitoring and control of all environmental and nature protection activities of the other implementation agencies.

The Ministry of Nature Resources and Environmental Protection and its Departments are empowered to provide the necessary and sufficient supervision of the implementation of the Country Programme and Action Plan for the ODS phaseout.

In order to organise and coordinate that, an Interdepartmental Commission is going to be established, with high ranking officials and representatives of the Ministry of Nature Resources and Environmental Protection, Ministry of Energy; Industry and Trade, Ministry of Transport, Communications and Tourism; Agency for Emergency Situations; Agency of Statistics; Ministry of Defence, Ministry of Health and Sport; Customs Committee to the Ministry of State Revenues; Ministry of Agriculture and Ministry Science and High Education.

An Ozone Unit will be established in the National Environmental Centre for Sustainable Development to Ministry of Nature Resources and Environmental Protection, which would be responsible for the overall implementation of the Country Programme and the projects included in the Action Plan, as well as for any further data collection, project management, preparation of public awareness materials, information materials for the members of the Interdepartmental Commission and reports to the Implementing Agencies, the UNEP Ozone Secretariat and the Global Environmental Facility.

Local technical advisers will participate in the activities related to ODS phaseout in the country. Role and responsibilities of every specific participant are defined by the National Ozone Coordinator and the Director of the NES/CD.

2.4. POLICY FRAMEWORK

The Republic of Kazakhstan declared its independence on 25 October 1991.

Kazakhstan is a full-fledged member of the international community and of international organisations like the UN and OSCE.

Serious attention is drawn to the environment protection measures in the existing national legislation. The

Constitution of the Republic of Kazakhstan guarantees citizens right on favourable and healthy environment. In addition, the Law On Nature Protection which regulates the relations and establishes the legal procedures in the field of environment protection was adopted in 1997.

The Law on Nature Protection provides the legal, economic and social framework for the protection of environment and for the interest of present and future generations, and guarantees: the environment safety; the prevention of domestic and international activities with harmful effect on natural ecosystems; the protection of the biological diversity and insures sustainable use of nature resources. This Law sets the priority of international agreements ratified by the Republic of Kazakhstan over the provisions of the aforesaid Law, provided that the conditions described above are fully respected. Additionally, the Law provides that international cooperation in the field of environment protection should be developed with respect to global environment safety.

Article 4 of the Law on Nature Protection is the first to discuss the issues of the ozone layer protection in Kazakhstan. Later on, Article 62 provides that the “Protection of the climate and the ozone layer in Republic Kazakhstan is transcribed in the existing legal framework of the country following national commitments to the ratified international agreements.” Article 20 of the Law also stipulates that all users of natural resources need to respect the established environmental requirements for domestic and international activities, as well as the existing standards, technical regulations and normative documents defining the quality of the environment in Republic of Kazakhstan.

In the preparation of the Country Programme of Kazakhstan the aims and goals of Montreal Protocol have been taken into consideration as well as the climate change repercussions in order to implement the best and most effective environmental alternatives to phase out ODS.

2.5. GOVERNMENT AND INDUSTRY RESPONSES TO THE PROTOCOL

Steps to phase out ozone depleting substances have been taken in the country after acceding to the Vienna Convention and the Montreal Protocol on 26 August 1998. The Government is studying the most suitable options for becoming a Party to the London and Copenhagen Amendments. Proposal to enable the implementation of the National Strategy and Action Plan on Phaseout of ODS in Kazakhstan is in preparation and it is expected to pass the necessary procedures before the end of 1999.

At present, a system of laws and regulations to monitor and control the ODS the NES/CD, proposals and initiatives for follow up activities is being developed, in view of the commitment of the Government to phaseout of ODS and to encourage the introduction and use of ODS substitutes:

- Establishment of an Interdepartmental Commission and an efficient ODS Import/Export Monitoring and Licensing System in Kazakhstan – 2001;
- Establishment of a strict and accelerated phaseout timetable and as a first measure fixing an annual quota system for ODS imports – 2001;
- Efficient policy and legal measures to enforce the licensing and quota system. Development of a system to ban imports of ODS using and containing equipment – 2001 - 2002;.
- Development of an incentive and disincentive policy to encourage use of substitutes and re-use of ODS combined with specific taxation policy;
- Strengthening of the Customs Committee with specific policy training and detection equipment to established efficient control of ODS imports and to prevent illegal ODS entry into the country. Supportive legal measures and regulations are also envisaged – 2001 – 2003;

- Develop demonstration project for the use of alternatives of Methyl Bromide in agriculture as a sub-project component to a Regional Project – 2001;
- Public awareness on the importance of the ozone layer protection will be raised through extensive use of the public media – four years programme, started in 1999;
- Development and implementation of technical training courses to increase the skills of technicians and managers involved in the consumption and use of ODS and their substitutes – ongoing, starting in 2001.

Since 1994, the Government of Kazakhstan was an active participant in the most meetings under the Montreal Protocol and UNEP. The Representatives from Kazakhstan have participated the Regional Meeting of the Montreal Protocol: Implementation in the Countries of the Commonwealth of Independent States, the Baltic States and Mongolia, which was held in Minsk, Belarus on 15-17 August 1994.

Kazakhstan participated in the Intergovernmental Consultative Meeting of High-Ranking Officials of CEITs on the Montreal Protocol, which was held in Tashkent on 15-16 May 1997. Representatives of Kazakhstan participated in the Open-Ended Working Group Meetings of the Parties of the Montreal Protocol in July 1998 and June 1999 in Geneva, and in the first December 1998 Regional Workshop in Kiev, Ukraine in the framework of the GEF funded Regional Project to assist CEIT countries in Compliance with the Trade Requirements of the Montreal Protocol.

In the main enterprises in the refrigeration, foam, solvents and fire-fighting sectors are interested in conversion of the production cycles that are dependant on ODSs. This would be accomplished, with the support of the Government of Kazakhstan through investment projects, which would be either supported by the international community or by local investors.

3. IMPLEMENTING THE PHASE - OUT

3.1. STRATEGY STATEMENT BY THE GOVERNMENT

The Government of the Republic of Kazakhstan is concerned with the status of the ozone layer of the Earth at present and is taking adequate measures to substitute ozone depleting substances and technologies with ozone and environment friendly ones.

The Government of Kazakhstan will comply with the requirements and the time-schedule for ODS phaseout as a Party to the Montreal Protocol. In this respect the technical and financial support that would be provided from international organisation. and in particular from the Global Environmental Facility (GEF) would assist the Government to achieve the goals set up in its Strategy.

The Government Strategy includes the following:

- to stop the consumption of Annex A, Group I ozone depleting substances by the January 2004, of Annex A, Group II by January 2003, of Annex B, Group II and III by January 2001 (for more details see also Annex I to the CP);
- to comply with the phaseout schedule for Annexes C and E ozone depleting substances for the countries operating under Article 2 of the Protocol;
- to accelerate, if practicable, ODS phase out against the timetable, stipulated by international agreements;
- to design and introduce with the support of the Global Environmental Facility and other international

organisations appropriate regulation scheme aimed at facilitating phase out process, to render support to enterprises, organisations, entities, companies and individuals that design and implement alternative technologies;

- to carry out the substitution of ozone depleting substances with ozone friendly ones minimising risks for producers and consumers;
- to develop the legal measures and regulations to strengthen the control on ODS phaseout;
- to ensure public awareness on ODS phasing out processes;
- to encourage scientific investigations and research in the area of refrigeration equipment and ODS-free products manufacturing based on non-ODS technologies by using the local resources.

3.2. ACTION PLAN

3.2.1. Government Actions

Government Action Plan to implement the proposed ODS Phase-Out Strategy is based on the Government Strategy as specified in Section 3.1 of this Country Programme. The Action Plan includes the administrative arrangements for the implementation of the ODS Phase-Out process which are described in Table 3.1 below.

Table 3.1. Action Plan of the Republic of Kazakhstan

Item	2001	2002	2003
<p>1. Becoming a Party to the London Amendment – started in 1999</p>	<p><i>Preparation of the basic documentation, submission to various Ministries for consultation and agreement, and issuing of State Agreement of Approval/Acceptance of LA and CA</i></p> <p><i>Preparation of a Regional Declaration to the 11th MOP, 29 Nov – 3 Dec in Beijing, China in cooperation with the NOUs of Azerbaijan, Tajikistan, Turkmenistan and Uzbekistan</i></p> <p><i>Preparation of a Declaration/request for Halons exemption of Kazakhstan for essential uses.</i></p>		
<p>2. Establishment of an Interdepartmental Commission on ozone issues</p>	<p>General management of ODS phase out process, Coordination of implementation of the Country Programme, the action Plan and the projects</p>	<p>Continuation.</p> <p>Checking of execution of the action Plan and projects</p>	<p>Continuation.</p> <p>Assessment of ODS phase out effectiveness in the country</p>
<p>3. Establishment of an Ozone Unit in the NEC\SD of the Ministry of Natural Resources and Environmental Protection</p>	<p>Cooperation with the UNEP Ozone Secretariat.</p> <p>Monitor the ODS consumption, the implementation of the Action Plan and the Projects.</p> <p>Project management.</p> <p>Preparation of materials for the Interdepartmental Commission consideration</p> <p>Preparation of reports to the UNEP Secretariat and the Global Environmental Facility</p>	<p>Continuation.</p> <p>Assistance and checking of execution of the Action Plan and Projects</p>	<p>Continuation.</p> <p>Support for the Interdepartmental Commission in the analysis of effectiveness of the adopted measures</p>
<p>4. Legal and regulatory framework in support of the ODS phase out scheme</p>	<p>Preparation of a regulation defining the ODS monitoring and control responsibilities of the Ministry of Nature Resources and Environmental Protection.</p> <p>Preparation of a detailed list of all substances included in the MP for the use of the Customs Committee.</p> <p>Preparation of subsequent ODS use legal and regulatory system. its coordination and approval</p>	<p>Continuation.</p> <p>Introduction of the system and changes and control of their observation</p>	<p>Assessment of effectiveness of the taken measures and introduction of necessary modifications</p>
<p>5. Licensing and Quotas</p>	<p>Preparation of system for registration of all ODS users in the</p>	<p>Continuation.</p> <p>To start licensing activities at</p>	<p>Continuation.</p> <p>Supervision of the licensing</p>

Item	2001	2002	2003
	<p>country</p> <p>Design and introduce a quota mechanism for ODS and ODS containing products import and export together with the Ministry of State Revenues (Customs Committee) and the Ministry of Energy. Industry and Trade</p>	<p>Refrigeration sector using ODS</p>	<p>system and introduction of necessary modifications</p>
<p>6. Bans on imports of ODS and equipment. using and containing ODS</p>	<p>Preparation of legislative acts of the Government banning imports ODS and ODS containing products from neighboring non-Parties. Extension of the legal act to second hand ODS containing equipment and subsequent total ban before the end of 2000.</p> <p>Preparation and introduction from 2001 of ban to imports of halons and Halons using/containing equipment. except for essential uses. Training in halons management</p> <p>Preparation of a Declaration/ request for Halons exemption for essential uses.</p>	<p>Control of implementation</p> <p>Bans on construction. expansion and rehabilitation of ODS using production lines.</p> <p>Establishment of Halons Banks</p>	<p>Control of implementation</p>
<p>7. Establishment of economic mechanism</p>	<p>To design regulatory acts enhancing accelerated phasing out (tax privileges, regulation of prices. etc.)</p>	<p>Introduction of economic mechanism</p>	<p>Continuation.</p> <p>Assessment of effectiveness of the taken encouragement measures and introduction of necessary modifications</p>
<p>8. Creation of ODS monitoring system</p>	<p>To design together with the Customs Committee a monitoring system for ODS and ODS containing products import/export. To design and implement together with the State Agency of Statistics statistical reporting on ODS</p>	<p>Monitoring of ODS and ODS containing products consumption, project implementation of Action Plan, economic mechanism</p>	<p>Continuation.</p> <p>Assessment of effectiveness of the monitoring system</p>
<p>9. Training and Certification</p>	<p>To organize sub-regional and national training on monitoring and licensing</p>	<p>Training in the Refrigeration and Air Conditioning sector with granting certificate</p>	<p>Continuation.</p>
<p>10. Recovery. recycling and reclamation of ODS</p>	<p>Preparation of a ODS recycling project in Refrigeration sector.</p> <p>Recycling of refrigerants from commercial refrigeration equipment using existing devices</p>	<p>Refrigerants recycling by areas of the Refrigeration sector.</p> <p>Establishment of a bank on CFCs</p>	<p>Continuation.</p> <p>Assessment of effectiveness of the taken measures</p>
<p>11. Assistance to enterprises. research centers and private companies in the their phase out efforts</p>	<p>Conclusion of bilateral agreements with foreign partners.</p> <p>Support and assistance for the</p>	<p>Continuation. Encouragement of scientific investigations and research in the area of</p>	<p>Continuation</p>

Item	2001	2002	2003
	<p>implementation of innovative alternative technologies.</p> <p>Monitoring of the implementation of the phaseout projects in the foam sector.</p>	<p>refrigeration equipment and ODS-free products manufacturing based on non-ODS technologies by using the local resources.</p>	
12. Public awareness	<p>Organisation of the Ozone day in Kazakhstan.</p> <p>Preparation and dissemination of press releases informing the public about the specific sector uses. about future measures to control ODS use and importance of the legal acts to be introduced (import licensing and bans).</p> <p>To ensure permanent dissemination of information about the objectives and current situation in ODS phase out through the mass media.</p>	<p>Continuation.</p> <p>Realization of a Programme for environmental training</p>	Continuation

3.2.2. Projects

To ensure the phaseout of ozone depleting substances and introduction of ozone-friendly technologies the Government is proposing and supporting the implementation of five projects. Application sector studies, elaboration of project documents and their cost evaluation have been made by UNEP and UNDP experts. The projects priority list is given as follows:

- Institutional Strengthening and Capacity Building project will provide resources to the Ministry of Nature Resources and Environmental Protection to establish the ODS Phase-Out Management Office which would be responsible for the coordination and the implementation of the Action Plan and the projects. The project will ensure proper monitoring of the implementation of the Refrigeration Management Plan. Additionally, this project will also provide the Customs Department with ODS detection equipment to enable identification of imported ODS.
- Implementation of a Refrigeration Management Plan which includes the following sub-project elements
 - Project on Training the Trainers in Refrigeration which will provide technical information and training to service, maintenance and installation technicians of refrigerant equipment which use both CFCs and substitutes.
 - Project on Training the Trainers MAC Servicing which will provide technical information and training to service, maintenance and installation technicians of air-conditioning equipment which use both CFCs and substitutes.
 - Project on Implementation of the National Programme for Recovery and Recycling of Refrigerants includes short training for the technicians on the recovery and recycling machines. It would also provide recovery equipment to be distributed to the larger users.

- Framework projects for the foam sector:
 - Project for elimination of the use of CFC-11 in rigid foam production;
 - Project for elimination of CFC-11 for manufacture of flexible foams
- Project for elimination of use of solvents in Chemical Production Facility;
- A National Halon Management Scheme Programme .

Information concerning the aforesaid projects is given in Table 3.2 below.

Table 3.2. Projects Summary

No	Sector	Start date	Project name/Beneficiary	Total Cost USD	ODP Reduced tons
1.	All	2001	Institutional Strengthening and Capacity Building*	703,967	N/A
	All Refrig.	2001	1a. Monitoring of Refrigeration Management Plan		
		2001	1b. Development of National Monitoring System and Strengthening National Customs Authorities		N/A
2.	Refrig.	2001	Refrigeration Management Plan		412.4
2.1.	Refrig.	2001	Training the Trainers of Technicians in Refrigeration**	456,663	53
2.2.	Refrig.	2001	Training of MAC Technicians in Good Practices***	127,958	8.8
2.3.	Refrig.	2001	Refrigerant recovery & recycling programme	2,545,219	359.6
3.	Foam	2001	Foam Sector		150
3.1.	Foam	2001	Elimination of CFC-11 in the Manufacture of Rigid Foams****	1,793,213	105
3.2.	Foam	2001	Elimination of CFC-11 in the Manufacture of Flexible Foams	285,120	45
4.	Solvents	2001	Elimination of use of Solvents in Chemical Production Facility	106,920	6
5.	Fire-fight	2001	National Halon Management Scheme Programme	163,231	101.91
Total				6,182,291	679.31

*Requested funding from the GEF is US\$568,488; Government contribution will be US\$90,000

**Requested funding from the GEF is US\$408,947; Government contribution will be US\$15,000

*** Requested funding from the GEF is US\$113,850; Government contribution will be US\$5,000

****Requested funding from the GEF is US\$1,068,865,508; Contribution of the Enterprises will be US\$638,839

3.3. ROLES IN IMPLEMENTING THE STRATEGY

The Cabinet of Ministers of the Republic of Kazakhstan will be carrying out a permanent supervision for the observance of the Montreal Protocol requirements supporting at the same time the enterprises in building up their international links and search for financing sources.

The leading agency in the Phase-Out process will be the NEC/SD to the Ministry of Nature Resources and Environmental Protection, supported by the Interdepartmental Commission.

The NEC/SD to the Ministry of Nature Resources and Environmental Protection will assume the management of the ODS phaseout process, supervising the execution of the Action Plan by all enterprises, organisations and entities, as well as by individuals and granting licences for ODS and ODS containing products import and export. It is planned to set up an ODS Phase-Out Management Office in the NEC/SD under the Ministry of Nature Resources and Environmental Protection which will assume responsibility for collection and analysis of data concerning ODS consumption, application, phasing out and monitoring, for project management, preparation of materials for the Interdepartmental Commission and reports for the UNEP Ozone Secretariat and the GEF.

Control on import and export of ODS and ODS containing products. as well as their accounting is the responsibility of the State Customs Committee. The State Agency of Statistics will assume statistical accounting on consumption and use of ODS both as pure chemicals and in products. The Ministry for Foreign

Relations will be responsible to secure the compliance with the Montreal Protocol requirements in the area of conclusion and registration of contracts with foreign partners.

The Ministry of Nature Resources and Environmental Protection together with experts from interested organisations will be in charge of technical assessment for projects for civil works, reconstruction, technological transfer, alternative options and technologies in ODS or their substitute application.

3.4. TIMETABLE AND CONSUMPTION IMPLICATIONS

The Republic of Kazakhstan aims to Phase-Out all the imports and consumption of ODS controlled in Annex a and Annex B by January 2004. and to comply with the phase out schedule for Annexes C (Group I) and E ozone depleting substances for the countries operating under Article 2 of the Protocol.

However the Government of the Republic of Kazakhstan would like to underline that the consumption levels are high and are following the positive economic in the country. It is envisaged that the improvement of the economic situation would lead to continuous use of ODS even after the year 2004 unless necessary efforts to meet the Montreal Protocol requirements are taken. In this context, the Government commits to applying control measures to prevent that process.

Figures 1-5 describe the ODS Phase-Out scenario in Kazakhstan by ODS groups.

Total estimated costs of the agreed expenses for the planned phaseout accordingly to the phase out schedule are evaluated in 8,788,392 US\$ and given below:

Project and Phaseout Components	Cost in US dollars
Project costs to be supported by the GEF	5,433,452
Cost for premature scrapping of commercial refrigerators; 370,000 x 10 USD	3,700,000
Phaseout of CTC and TCE (31.2 ODP tons x 5,000 USD)	156,000
Government and/or Enterprise Contribution	748,839
Total	10,038,291

3.5. BUDGET AND FINANCING PROGRAMME

Table 3.5.1 shows estimated costs of the projects to be undertaken in the Republic of Kazakhstan and covered by Action Plan. The above figures have been obtained from the project documents designed by UNEP and UNDP experts and the National Ozone Team members.

Table 3.5. Budget and Financing Programme

Project	Starting year	Execution period	Implementing Agency	ODP phaseout	Cost to the GEF in USD
1. Institutional Strengthening and Capacity Building	2001	3 years	UNEP	N/A	613,967
1.1. Monitoring RMP	2001	3 years			
1.2. Development of National Monitoring System and Strengthening National Customs Authorities	2001	18 months		N/A	
2. Refrigeration Management Plan					
2.1. Training the Trainers in Good Practices	2001	3 years	UNEP	53	441,663
2.2. Training of MAC Technicians in Good Practices	2001	18 months	UNEP	8.8	122,958
2.2 Refrigeration Recovery and Recycling	2001	3 years	UNDP	298	2,545,219
3. Foam Sector	2001		UNDP		
3.1. Elimination of CFC-11 in the Manufacture of Rigid Foams	2001	3 years	UNDP	105	1,154,374
3.2. Elimination of CFC-11 in the Manufacture of Flexible Foams	2001	3 years	UNDP	45	285,120
4. Elimination of use of solvents in Chemical Production Facility	2001	3 years	UNDP	6	106,920
5. National Halon Management Scheme Programme	2001	3 years	UNDP	101.91	163,231
Total				679.31	5,433,452

The actual amounts of ODS (and /or ODS consumption potentials) to be phased out are defined in the detailed project documents being developed by UNEP and UNDP and the national consultants.

The Government of Kazakhstan expects that the financing of the proposed projects will be available through the Global Environmental Facility.

3.6. MONITORING ARRANGEMENTS

The Government will provide the monitoring on ODS annual consumption, as well as the monitoring of effectiveness of the Action Plan set by the Country Programme, and project implementation monitoring. The Government will report on the Country Programme and the investment projects implementation process to the Global Environmental Facility and the Implementing Agencies.

The monitoring of the ODS consumption will be based on ODS import/export data being provided by the State Customs Committee, data of the State Agency of Statistics and the official statistical reports of the

enterprises that use ODS.

Data analysis and submission of reports to the UNEP Ozone Secretariat and the Global Environmental Facility will be carried out by the ODS Phase out Management Office under the Ministry of Nature Resources and Environmental Protection.

ANNEX I - ODS PHASEOUT SCENARIOS

Table on Development of ODS Unconstrained Demand in Kazakhstan

Chemical	1986	1989	1990	1991	1993	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2009	2010
Annex A Gr I	1217.8		1226.1		2230.1		886.0	1079.9									
CFC-11	11.1	4.1	4.6	4.1	4.1	23.4	47.6	150.0	145.50	148.41	157.31	163.61	170.15	180.36	191.18	251.72	269.34
CFC-12	1148.5	1343.6	1162.5	1154.1	2167.1	766.8	790.6	657.8	638.05	650.81	689.86	717.45	746.15	790.92	838.37	1103.83	1181.10
CFC-13						0.015	0.015	0.015									
CFC-113	58.2	58.6	59.0	59.3	58.8	44.3	47.8	272.1	263.92	269.20	285.35	296.76	308.63	327.15	346.78	456.58	488.54
Annex A Gr II	229.8		229.8		204.7		168.0	169.5									
Halons 1211	96.6	96.6	96.6	70.80	71.6	26.6	26.6	37.1	36.00	36.72	38.92	40.48	42.10	44.62	47.30	62.27	66.63
Halons 2402	133.1	133.1	133.1	133.13	133.1	133.1	133.1	132.4	128.39	130.96	138.81	144.37	150.14	159.15	168.70	222.12	237.66
Annex B Gr II&III	52.4		50.5		40.3		33.5	19.5									
CTC	49.6	49.6	47.6	47.4	37.5	30.0	29.7	19.0	18.43	18.80	19.93	20.72	21.55	22.85	24.22	31.88	34.12
TCE	2.8	3.0	2.9	2.9	2.8	3.2	3.8	0.5	0.46	0.47	0.49	0.51	0.53	0.57	0.60	0.79	0.84
Annex C Gr I	9.0		8.4		6.5		8.3	5.9									
HCFC-22	9.0	9.0	8.4	6.7	6.5	3.9	8.3	5.9	5.72	5.84	6.19	6.44	6.69	7.09	7.52	9.90	10.59
Annex E Gr I	39.0		50.0		8.4		2.6	30.0									
MBr	39.0	40.0	50.0	26.0	8.4	3.5	2.6	30.0	29.13	29.71	31.49	32.75	34.06	36.11	38.27	50.39	53.92
Total	1548.0	1737.7	1564.7	1504.5	2490.0	1034.9	1087.6	1304.7	1265.59	1290.90	1368.35	1423.09	1480.01	1568.81	1662.94	2189.49	2342.75

Figure 1. Total ODS Phaseout Scenario

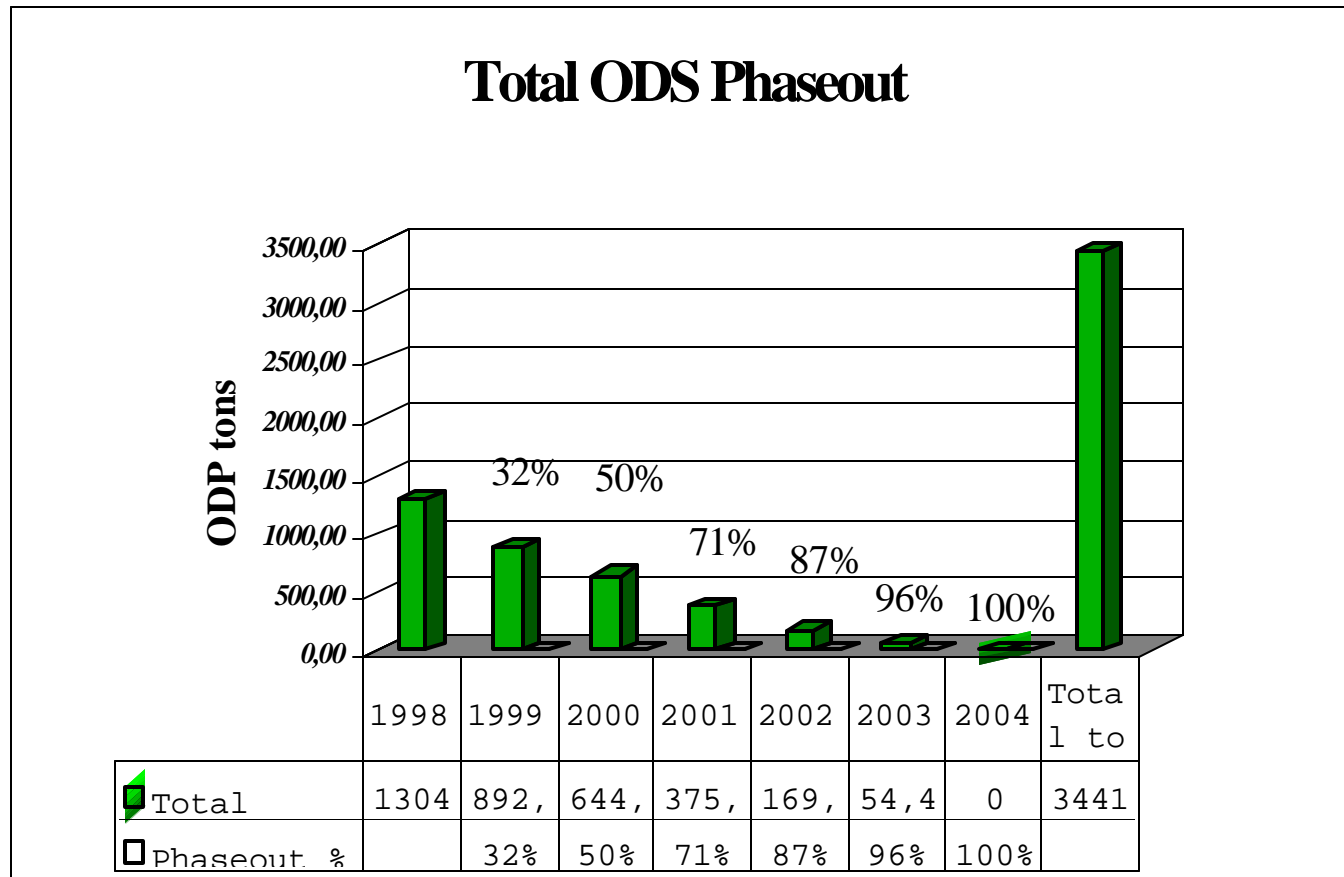


Figure 2. Phaseout Scenario for Annex A Group I ODS

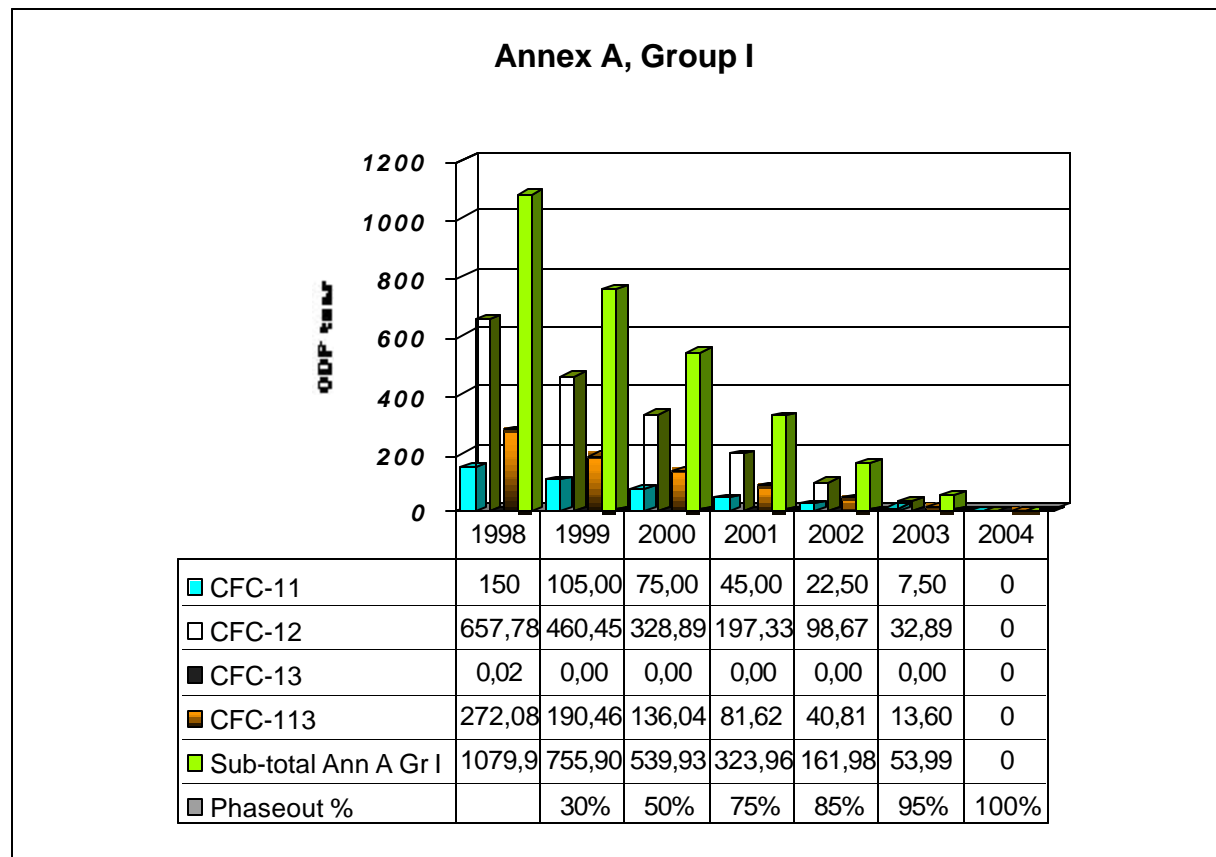


Figure 3. Phaseout Scenario of Annex A Group II ODS

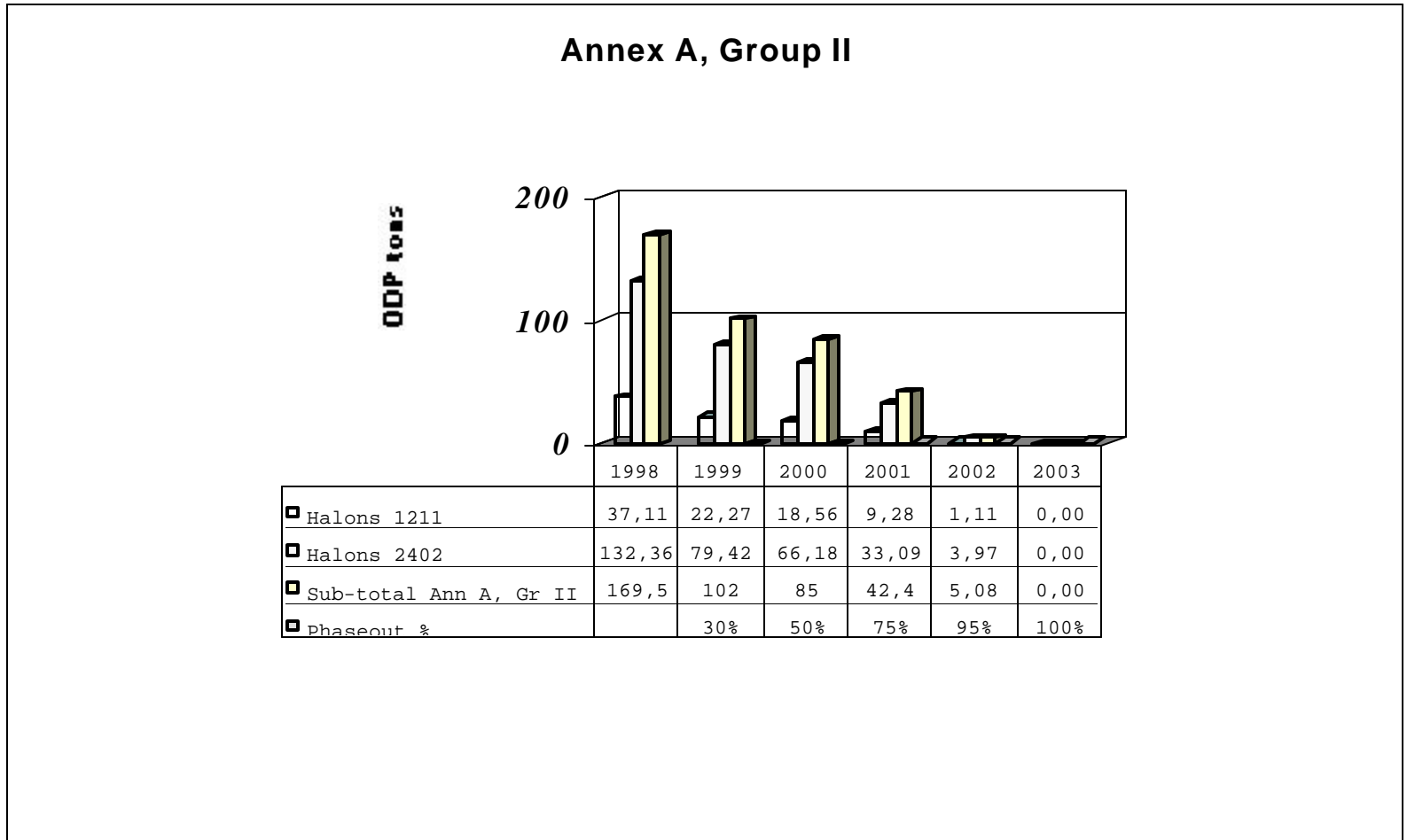


Figure 4. Phaseout Scenario of Annex B, Group II and III ODS

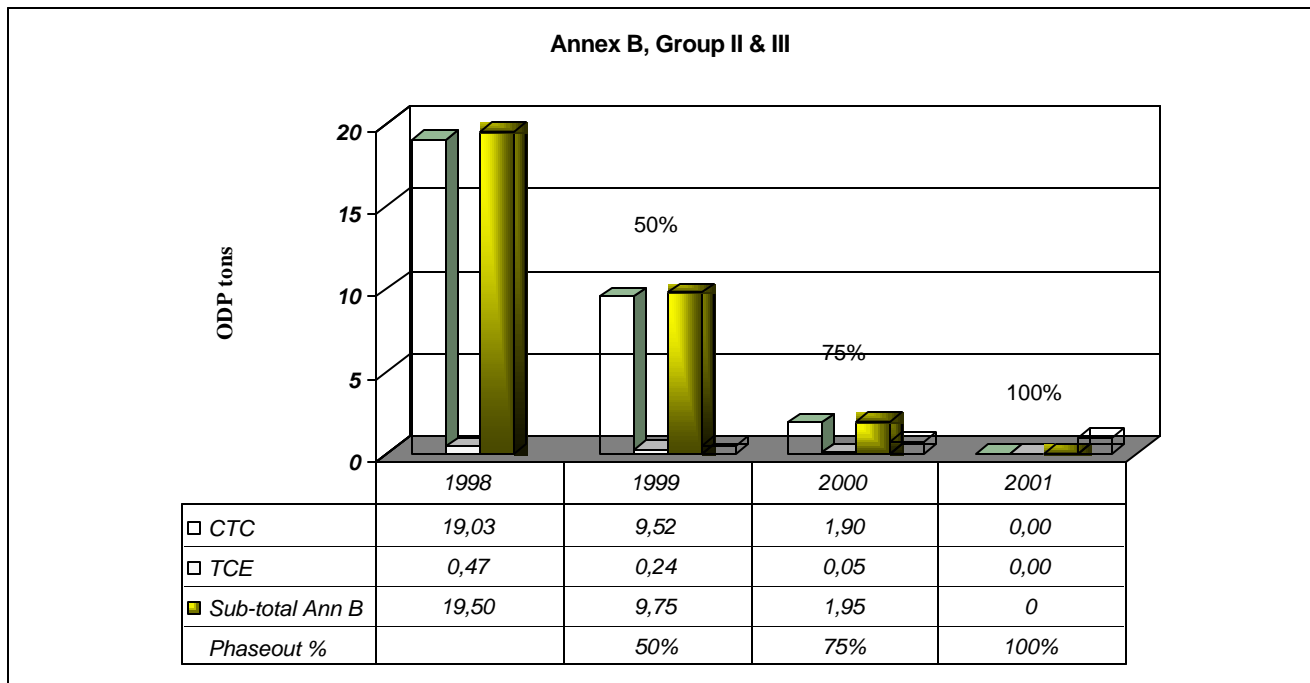
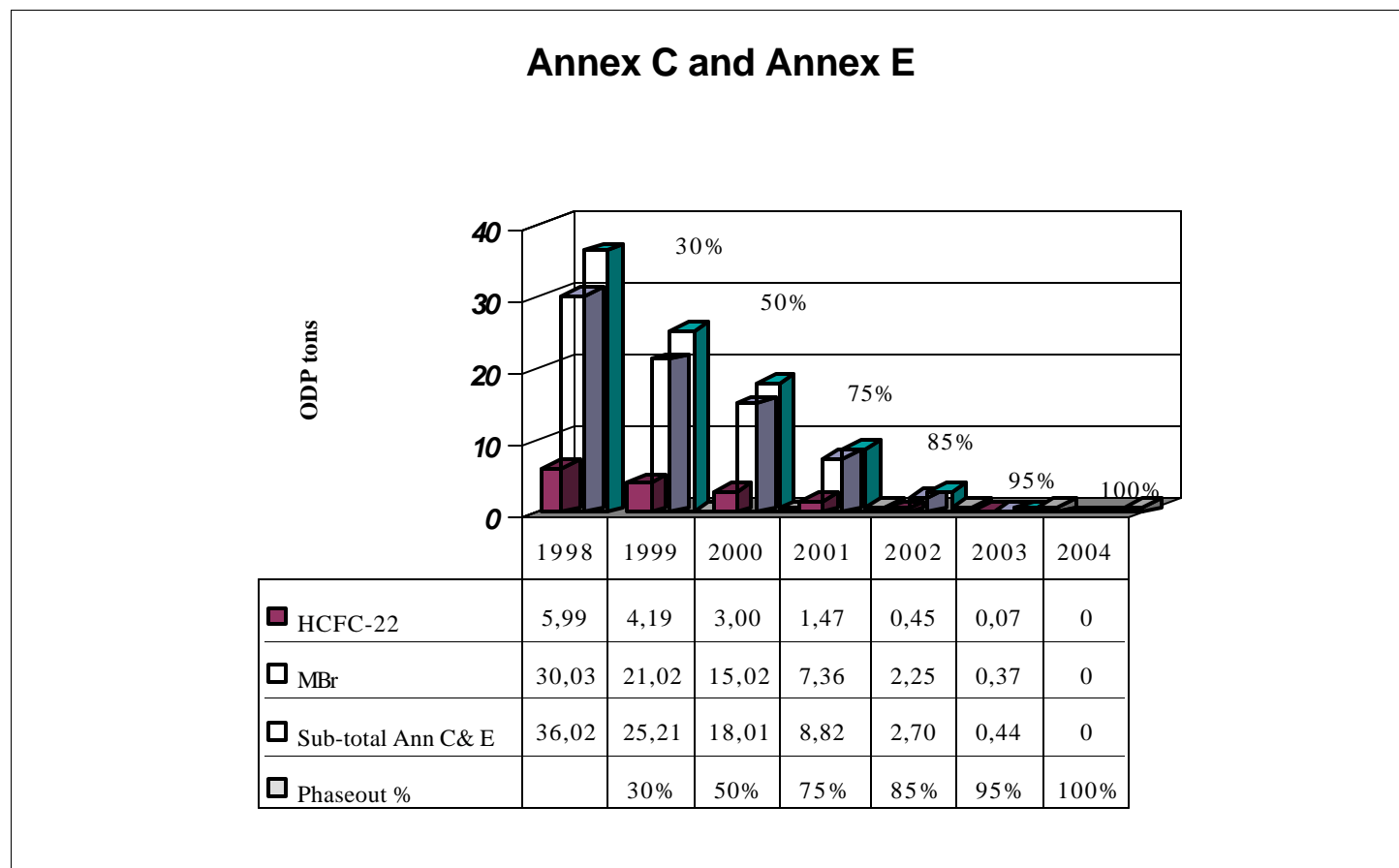


Figure 5. Phaseout Scenario of Annex C Group I and Annex E Group I ODS



ANNEX II

REFRIGERANT MANAGEMENT PLAN

REPUBLIC OF KAZAKHSTAN

DECEMBER 1999

1. COUNTRY SITUATION

1.1. Status of the country

The Republic of Kazakhstan acceded to the Vienna Convention and the Montreal Protocol on 26 August 1998. The country is in the process of ratifying the London and Copenhagen Amendments.

1.2. Status of Country Programme

In 1999 the National Ozone Team compiled the Country Programme for Phasing Out Ozone Depleting Substances (ODS). Comments were given by National and International experts followed the comments of the relevant Ministries of the Republic of Kazakhstan. The document was then updated and was approved by the Government of Kazakhstan.

The Government of the Republic of Kazakhstan is committed to phasing out the use of CFC in the shortest possible time taking into account the following:

- Technical and financial assistance from the Global Environment Facility (GEF);
- Availability of substitute substances to the CFC that are in use in the country;
- Residual life of the existing equipment that use CFC.

The Government has started the process to enact legislation that will monitor and control the entrance and use of CFC without creating a black market for these substances.

1.3. Institutional Strengthening

The Institutional Strengthening Project has not started. Once financial and technical assistance are received from the GEF, the establishment of the Institutional Strengthening Project shall be undertaken.

1.4. Current Situation

The main use of CFC substances in Kazakhstan is in the refrigeration sector.

The tables below show the use pattern of CFC refrigerants in the different sub-sectors.

Estimated 1998 Use of Ozone depleting Substances in the Refrigeration Sector		
Substance	Tonnes	ODP Tonnes
CFC-12	857.93	857.93
HCFC-22	108.90	5.99
TOTAL	966.83	863.92

The use pattern of ODS chemicals by sub-sector is given in the table below:

SUB-SECTOR	Number of units	Number of units charged per year	Total CFC-12 use in ODP Tonnes
DOMESTIC REFRIGERATORS	4,900,000	469,700	140.91
COMMERCIAL REFRIGERATORS OR EQUIPMENT USED FOR COMMERCIAL ACTIVITIES	78,000	23,400	258.05
WATER COOLERS	60,000	10,000	2.68
INDUSTRIAL REFRIGERATION	371	278	134.01
REFRIGERATED RAILWAY TRANSPORTATION	3,120	1,120	112
REFRIGERATED TRUCKS ⁽¹⁾	3,000	2,282	9 ⁽¹⁾
MOBILE AIR CONDITIONING - BUSES ⁽¹⁾	2003	180	0.61 ⁽¹⁾
MOBILE AIR CONDITIONING – VEHICLES ⁽²⁾	133,300	26,660	26.6 ⁽²⁾
MOBILE AIR CONDITIONING - RAILWAY WAGONS	5,500	4,125	171.39
CFC-12 CHILLERS	434	20	2.68

Notes.

- (1) The air-conditioning systems in busses are seldom repaired in Kazakhstan while the refrigeration systems in trucks have to be repaired to conserve the foods during their transport
- (2) Not all cars that are equipped with air-conditioning systems are repaired due to economic reasons

The estimates of production and servicing of refrigeration equipment by sub-sector in Kazakhstan is given in the table below:

Production and Servicing in 1998	
DOMESTIC REFRIGERATORS	
Population (July 1998)	16,846,808
Number of units in the country	4,900,000
Number of refrigerators produced using CFC-11 and FC-12	-
Amount of CFC-11 used in the production of refrigerators in Tonnes	-
Amount of CFC-12 used in the production of refrigerators in Tonnes	-
Number repaired a year	469,700
Estimated amount of CFC-12 used for their repair in Tonnes	140.91

COMMERCIAL REFRIGERATORS OR EQUIPMENT USED FOR COMMERCIAL ACTIVITIES	
Number of units	78,000
Number of units repaired a year	23,400

Estimated amount of CFC-12 used to repair the units in Tonnes	258
WATER COOLERS	
Number of units	60,000
Number repaired a year	10,000
Estimated amount of CFC-12 used to repair the units in Tonnes	2.68
INDUSTRIAL REFRIGERATION	
Number of units	371
Number repaired a year	278
Estimated amount of CFC-12 used to repair the units in Tonnes	134.01
TRANSPORTATION	
REFRIGERATED RAILWAY TRANSPORTATION	
Number of units	3,120
Number repaired a year	1,120
Estimated amount of CFC-12 used to repair the units in Tonnes	112
REFRIGERATED TRUCKS (1)	
Number of units	3,000
Number repaired a year	2,282
Estimated amount of CFC-12 used to repair the units in Tonnes	9
MOBILE AIR CONDITIONING - BUSSES (1)	
Number of units	2,003
Number repaired a year	180
Estimated amount of CFC-12 used to repair the units in Tonnes	0.61
MOBILE AIR CONDITIONING - VEHICLES	
Number of units	133,300
Number repaired a year	26,660
Estimated amount of CFC-12 used to repair the units in Tonnes	27

MOBILE AIR CONDITIONING - RAILWAY WAGONS	
Number of units	5,500
Number repaired a year	4,125
Estimated amount of CFC-12 used to repair the units in Tonnes	171
CFC-12 CHILLERS	
Number of units	434
Number repaired a year	20
Estimated amount of CFC-12 used to repair the units in Tonnes	2.68

Workshops and Number of Technicians

The table below gives a summary of the breakdown of the numbers of workshops and technicians in the refrigeration sub-sectors based on the survey that was conducted in the country:

Sub-sector	Comment Number	Estimated Number of large Refrigeration Workshops or Centers	Estimated Number of Small Refrigeration Workshops or Centers	Estimated Total Number of Refrigeration Workshops or Centers	Estimated Number of Refrigeration Technicians working in Registered Workshops or Centers	Estimated Number of Independent Refrigeration Technicians	Estimated Total Number of Refrigeration Technicians
Domestic Refrigeration	1	85	150	235	1260	900	2,160
Commercial Refrigeration	1	50	55	105	1500	100	1,600
Total of Domestic and Commercial Refrigeration	1	135	205	340	2760	1000	3760
Industrial Refrigeration	1,2	371		371	1,000		1,000
Transport	2,3	35	10	45	225		225
MAC	2,3	60		60	125	804	929
Wagons	1,2	20		20	600		600
Chillers	2,3	434		434	900		900
Totals		1055	215	1,270	5,610	1,804	7,414

Note:

1. Some workshops employ over 100 technicians
2. In house – Company’s own workshop and technicians
3. Some employ over 25 Technicians

The current practice of maintenance does not include containment. Little, if any work is done, to prevent leaks in larger systems, with topping up at regular intervals and venting during servicing as is the normal practice. The State Railway Company has managed to recover CFC-12 from their unused wagons and reused the recovered chemical in an untreated state.

The current (1999) price of CFC-12 is 400 Tenge ~ US \$ 3.08. As this price will increase and its availability becomes restricted, increasingly commercial and industrial users are expected to retrofit or scrap their old systems. This will lead to large scale venting of CFC-12.

Engineering refrigeration technology courses are given, however, modern technology and equipment is lacking. Some training facilities need modern refrigeration servicing equipment to be able to provide the necessary expertise to technicians.

The representatives of the refrigeration-servicing sector in Kazakhstan consider the development and implementation of an effective system for recovery and recycling of refrigerants as a key issue for reducing the need for virgin refrigerant for recharging purposes. Additionally the establishment of a licensing system for the refrigeration technicians would regulate the conditions for their professional occupation.

2. JUSTIFICATION FOR RMP

This RMP was formulated in compliance with Decision 22/25 taken at the 22nd Executive Committee Meeting of the Multilateral Fund for the Implementation of the Montreal Protocol.

The refrigeration sector plays a vital role in the nation's economy. Kazakhstan is an extremely large country in which winters, especially in the northern part can be extremely cold and summers are extremely hot. Thus refrigeration in all its forms is essential for the survival of the population.

As the consumption of ODS in this very large country is about 1305 Tonnes and that in the refrigeration sector alone is about 858 Tonnes, it is essential for the ODS users to be able to reduce and subsequently phase out their consumption and use in a coordinated, planned and cost effective manner.

Appropriate and adequate training in containment of refrigerants, retrofitting, new technologies, recovery and recycling are considered vital for implementing a planned phase out of ODS. These activities have been identified in the CP and are reiterated in this Refrigerant Management Plan.

In view of the above, this Refrigerant Management Plan would provide a powerful policy and strategy tool for the phase out of ODS in the refrigeration sector that is the main user of CFC substances in the country.

3. ASSISTANCE RECEIVED

This Refrigerant Management Plan was prepared at the same time as the Country Programme for Phasing Out ODS. It is the National Environmental Center for Sustainable Development, Ministry of Nature Resources and Environmental Protection (NES/CD) of Kazakhstan with financial and technical assistance from the Global Environment Facility (GEF) through UNDP and UNEP that formulated this document.

4. COMPONENTS OF PHASE OUT STRATEGY

The key components of the Phase out strategy are as following:

- Policy Framework
- Establishment of regulations for imports
- Establishment of certification system for refrigeration technicians (to regulate consumption, distribution and use of CFC)
- Establishment of regulations for import quotas
- Establishment of regulations for licenses and permits for trade connected with CFC
- Creation of levies (taxes) on imports
- Creation of taxes on consumption and use of CFC and preferential treatments for those using alternatives
- Emission Reduction
- Implementation of the Recovery and Recycling Programme including training in recovery and recycling
- Training of Refrigeration Technicians in good practice in installation, servicing, maintenance and retrofitting of refrigeration equipment and in recovery and recycling practices
- Training of Mobile Air Conditioning (MAC) Refrigeration Technicians in good practice in installation, servicing, maintenance and retrofitting of MAC equipment
- Training of the Ozone Unit, Customs and other Government agencies in Monitoring and Control of Refrigerants
- Institutional Framework

- Start up of the Institutional Strengthening Project
- Guidance and assistance on formulation and implementation of legislative measures
- Monitoring of the activities in the present RMP and other phase out activities

The Government is studying a system of laws and regulations to monitor and control the consumption and use of ODS. Proposals have been made by the NES/CD. Planning to follow up the activities proposed in the Country Programme are presently being developed, in view of the commitment of the Government to phase out ODS and to encourage the use of ODS substitutes. These include the following:

- Establishment of an Interdepartmental Commission and an efficient ODS Import/Export Monitoring and Licensing System in Kazakhstan – 2001;
- Establishment of a strict and accelerated phase out timetable. As a first measure fixing an annual quota system for ODS imports – 2001;
- Efficient policy and legal measures to enforce the licensing and quota system. Development of a system to ban imports of ODS using and containing equipment – 2001 - 2002;
- Development of an incentive and disincentive policy to encourage the use of substitutes and re-use of ODS. This will be combined with specific taxation policies;
- Strengthening of the Customs Committee with specific policy training and detection equipment to established efficient control of ODS imports and to prevent the illegal entry of ODS. Supportive legal measures and regulations are also envisaged – 2001 - 2003;
- Development of a demonstration project for the use of alternatives to Methyl Bromide in agriculture. This will be a sub-project component of a Regional Project –2001;
- Raising the Public Awareness on the importance of the ozone layer protection. This will be through extensive use of the public media – a four years programme, started in 1999;
- Development and implementation of technical training courses to increase the skills of technicians and managers involved in the consumption and use of ODS and their substitutes – ongoing, starting in 2001.

4.1. Policy Framework

The Government of Kazakhstan expects all regulatory and legislative requirements as well as the economic instruments to be in place for the period 2001-2002.

4.2. Emission reduction

The Government believes that training of refrigeration technicians and the national recovery and recycling project are essential for the smooth transition to non-CFC technology.

Although the present market price of CFC-12 is 400 Tenge ~ 3.08 US \$, the Government has decided to take appropriate fiscal steps to make recovery and recycling even more economically successful.

4.3. Training

The proposed Refrigerant Management Plan is a mix of various training programmes to be implemented at the earliest, and a national recovery and recycling project to be implemented after necessary legislation, regulation and fiscal instruments are in place. The training components are a vital part of the RMP and have to be implemented at the earliest.

4.3.1. *Train-the-trainers of refrigeration technicians in good practices* will help the instructors to develop and implement curriculum incorporating this information for the technicians they would further train. Adapted training courses and examinations would be developed.

Train-the-technicians. In a second phase, the trained trainers will provide technical information, training to service, maintain, and repair technicians in the refrigeration sector in order to reduce CFC consumption during the servicing of refrigeration units. In order to reach the objectives as identified in the Country Programme Action Plan and Refrigerant Management Plan, training for servicing, maintenance and repair technicians is essential.

4.3.2. *Train-the-trainers of MAC refrigeration technicians in good practices* will help the instructors to develop and implement curriculum incorporating this information for the technicians they would further train. Adapted training courses and examinations would be developed.

Train-the-technicians. In a second phase, the trained trainers will provide technical information, training to service, maintain, and repair technicians in the MAC refrigeration sector in order to reduce CFC consumption during the servicing of MAC refrigeration units. In order to reach the objectives as identified in the Country Programme Action Plan and Refrigerant Management Plan, training for servicing, maintenance and repair technicians is essential.

4.3.3. *Training the Officers of the Kazakhstan Authorities* in the required design and establish an import / export licensing and monitoring systems. They also require training in recognizing CFC, and CFC mixtures, recycled or recovered CFC that may be imported, CFC using equipment etc. to control and ensure that acceptable products are entering the country. This would be done under the Institutional Strengthening Project.

In addition, refrigerant detector kits would be supplied to the Kazakhstan National Customs Authorities and training in the use of these kits will be given in order for the personnel to recognize and detect CFC and CFC-containing equipment.

This training is critical when the import policies that are planned by the Government will to be implemented.

5. ACTION PLAN

The Action plan outlined by the Government recognizes the fact that most of the refrigeration equipment in the country is CFC based. A ban on the import of CFC-12 based refrigerators, freezers, and commercial units will ensure that all new equipment will be non-CFC refrigerant based. As a result, imports of CFC will only be required to meet the service needs of equipment in use prior to the ban. Training in conservation, followed by an economically viable recovery and recycling program will reduce the demand for imported CFC.

Additionally, a major component of the awareness programme included in the Institutional Strengthening project aims at disseminating information on non-CFC refrigerants and equipment.

The following is the Action Plan proposed by the Government of Kazakhstan:

Item	2001	2002	2003
1. Becoming a Party to the London Amendment – started in 1999	Preparation of the basic documentation, submission to various Ministries for consultation and agreement, and issuing of State Agreement of Approval/Acceptance of LA and CA Preparation of a Regional Declaration to the 11 th MOP, 29		

Item	2001	2002	2003
	Nov – 3 Dec in Beijing, China in cooperation with the NOUs of Azerbaijan, Tajikistan, Turkmenistan and Uzbekistan Preparation of a Declaration/ request for Halons exemption of Kazakhstan for essential uses.		
2. Establishment of an Interdepartmental Commission on ozone issues	General management of ODS phase out process, Coordination of implementation of the Country Programme, the action Plan and the projects	Continuation. Checking of execution of the action Plan and projects	Continuation. Assessment of ODS phase out effectiveness in the country
3. Establishment of an Ozone Unit in the NEC\SD of the Ministry of Natural Resources and Environmental Protection	Cooperation with the UNEP Ozone Secretariat. Monitor the ODS consumption, the implementation of the Action Plan and the Projects. Project management. Preparation of materials for the Interdepartmental Commission consideration Preparation of reports to the UNEP Secretariat and the Global Environmental Facility	Continuation. Assistance and checking of execution of the Action Plan and Projects	Continuation. Support for the Interdepartmental Commission in the analysis of effectiveness of the adopted measures
4. Legal and regulatory framework in support of the ODS phase out scheme	Preparation of a regulation defining the ODS monitoring and control responsibilities of the Ministry of Nature Resources and Environmental Protection. Preparation of a detailed list of all substances included in the MP for the use of the Customs Committee. Preparation of subsequent ODS use legal and regulatory system. Its coordination and approval	Continuation. Introduction of the system and changes and control of their observation	Assessment of effectiveness of the taken measures and introduction of necessary modifications
5. Licensing and Quotas	Preparation of system for registration of all ODS users in the country Design and introduce a quota mechanism for ODS and ODS containing products import and export together with the Ministry of State Revenues (Customs Committee) and the Ministry of Energy. Industry and Trade	Continuation. To start licensing activities at Refrigeration sector using ODS	Continuation. Supervision of the licensing system and introduction of necessary modifications
6. Bans on imports of ODS and equipment, using and containing ODS	Preparation of legislative acts of the Government banning imports ODS and ODS containing products from neighboring non-Parties. Extension of the legal act to	Control of implementation Bans on construction. Expansion and rehabilitation of ODS using production lines. Establishment of Halons	Control of implementation

Item	2001	2002	2003
	<p>second hand ODS containing equipment and subsequent total ban before the end of 2000.</p> <p>Preparation and introduction from 2001 of ban to imports of Halons and Halons using/containing equipment. Except for essential uses.</p> <p>Training in Halons management</p> <p>Preparation of a Declaration/ request for Halons exemption for essential uses.</p>	Banks	
7. Establishment of economic mechanism	To design regulatory acts enhancing accelerated phasing out (tax privileges, regulation of prices. etc.)	Introduction of economic mechanism	Continuation. Assessment of effectiveness of the taken encouragement measures and introduction of necessary modifications
8. Creation of ODS monitoring system	To design together with the Customs Committee a monitoring system for ODS and ODS containing products import/export. To design and implement together with the State Agency of Statistics statistical reporting on ODS	Monitoring of ODS and ODS containing products consumption, project implementation of Action Plan, economic mechanism	Continuation. Assessment of effectiveness of the monitoring system
9. Training and Certification	To organize sub-regional and national training on monitoring and licensing	Training in the Refrigeration and Air Conditioning sector with granting certificate	Continuation.
10. Recovery and recycling of ODS	Preparation of a ODS recycling project in Refrigeration sector. Recycling of refrigerants from commercial refrigeration equipment using existing devices	Refrigerants recycling by areas of the Refrigeration sector. Establishment of a bank on CFCs	Continuation. Assessment of effectiveness of the taken measures
11. Assistance to enterprises. Research centers and private companies in the their phase out efforts	<p>Conclusion of bilateral agreements with foreign partners.</p> <p>Support and assistance for the implementation of innovative alternative technologies.</p> <p>Monitoring of the implementation of the phase out projects in the foam sector.</p>	Continuation. Encouragement of scientific investigations and research in the area of refrigeration equipment and ODS-free products manufacturing based on non-ODS technologies by using the local resources.	Continuation
12. Public awareness	<p>Organization of the Ozone day in Kazakhstan.</p> <p>Preparation and dissemination of press releases informing the public about the specific sector uses. About future measures to control ODS use and importance of the legal acts to be introduced (import licensing</p>	<p>Continuation.</p> <p>Realization of a Programme for environmental training</p>	Continuation

Item	2001	2002	2003
	and bans). To ensure permanent dissemination of information about the objectives and current situation in ODS phase out through the mass media.		

The following table gives more details of the specific actions proposed by the Government, the impact of these actions and the cost to the GEF:

ACTION OR EVENT NUMBER	ACTION / EVENT	COST TO GEF in US \$	IMPACT OR SITUATION	DATE OF ACTION	ODS REDUCED IN ODP TONNES	DATE AT WHICH FIRST EFFECT OR ACTION WILL BE FELT	REMAINING ODS IN ODP TONNES
0	ODS Consumption in the Refrigeration Sector	-	857.92	1998		1998	857.92
1	<u>Institutional Strengthening and Capacity Building</u>	613,967	Coordinating body for all MP activities	Aug-01		Nov-01	857.92
	Regulations through legislative actions, decrees and resolutions		Decrease use of ODS	Dec-01		Jun-02	857.92
	Establishment of Import regulations		Discourage use of ODS	Dec-01		Jun-02	857.92
	Establishment of regulations on consumption		Discourage use of ODS	Dec-01		Jun-02	857.92
	Establish regulations on distribution of ODS		Discourage use of ODS	Dec-01		Jun-02	857.92
	Establish regulations on import quotas		Discourage use of ODS	Dec-01		Jun-02	857.92
	Establish regulations for licenses and for trade of ODS		Discourage use of ODS	Dec-01		Jun-02	857.92
	Creation of levies (taxes) on imports		Discourage use of ODS	Dec-01		Jun-02	857.92
	Create taxes on consumption with preferential treatments for users of alternatives		Discourage use of ODS	Dec-01		Jun-02	857.92
	Public awareness		Discourage use of ODS	Jan-99		Dec-03	857.92
1.a	<u>Monitoring of the RMP</u>						857.92

ACTION OR EVENT NUMBER	ACTION / EVENT	COST TO GEF in US \$	IMPACT OR SITUATION	DATE OF ACTION	ODS REDUCED IN ODP TONNES	DATE AT WHICH FIRST EFFECT OR ACTION WILL BE FELT	REMAINING ODS IN ODP TONNES
1.b	<u>Monitoring and Control of ODS (Customs training)</u>		Decrease use of ODS	Dec-01		Dec-04	857.92
2.1	<u>Training of trainers of refrigeration technicians in good practices</u>	441,663	Decrease use of ODS	Dec-01	53	Dec-03	804.92
2.2	<u>Training of trainers of MAC refrigeration technicians in good practices</u>	122,958	Decrease use of ODS	Dec-01	8.8	Dec-02	796.12
2.3	<u>Recovery and Recycling (R&R) Programme and training</u>	2,545,219	Decrease use of ODS	Oct-01	359.6	2003	436.52
	Training of refrigeration technicians in R&R		Decrease use of ODS	Abr-02	0	Jul-02	436.52
	R&R equipment		Decrease use of ODS	Mar-02		Mar-02	436.52
	Certification of trained technicians		Decrease use of ODS	Abr-02		Dec-04	436.52
	TOTAL IN US \$	3,723,807					436.52

5.2. Timetable

Activity	Quarter											
	2001				2002				2003			
	1	2	3	4	5	6	7	8	9	10	11	12
Ban on import of CFC-12 based refrigerators				X	x	x	x	x	X	x	x	x
Restriction on import of CFC based commercial/industrial equipment				X	x	x	x	x	X	x	x	x
Quotas for refrigerant import				X	X	x	x	x	X	x	x	x
Import licenses for CFC and CFC using equipment				X	X	x	x					
Implementation of Revised Customs harmonized code				X	X	x						
Economic measures to encourage recovery and recycling				X	x	x	x	x				
Public awareness activities	x	x	x	X	x	x	x	x	X	x	x	
Training of Trainers for good refrigerant management practices				X	X	x	X					
Training of MAC Refrigeration technicians in good refrigerant management practices				X	x	x	X	x	x	x	x	x
Training on selection and establishment of economic and policy instruments				X	x	x	X					

Training on establishment of monitoring and control of CFC and CFC using equipment				X	x	x						
Equipment Supply to the customs (CFC Detector Kits)				X	x	x	X					
Training of Customs Officers				X	X	X	X	x	x	x	x	x
National recovery and recycling, including training seminars				X	X	x	X	x	x	x	x	x

5.3. Projects, costs and financial assistance needed

The following projects are required to effectively implement the action plan. These are being submitted to the Global Environment Facility for approval and financing:

<i>Year</i>	<i>Project</i>	<i>Implementing Agency</i>	<i>Phased-out ODP tons</i>	<i>Total Project Cost USD</i>	<i>Government or Enterprise Contribution</i>	<i>Funds Requested from GEF USD</i>
2001-2004	1. Institutional Strengthening and Capacity Building	UNEP	N/A	703,967	90,000	613,967
2001-2004	1.1. Monitoring of the RMP implementation	UNEP				
2001	1.2 Development of National Monitoring System and Strengthening National Customs Authorities	UNEP				
	2. Refrigeration Management Plan					
2001	2.1. Training the Trainers of Technicians in Good Practices in Refrigeration	UNEP	53	456,663	15,000	441,663
	2.2. Training of the Trainers of MAC Technicians in Good Practices	UNEP	8.8	127,958	5,000	122,958
2001-2003	2.3. Refrigerant Recovery & Recycling Programme	UNDP	359.6	2,545,219		2,545,219
	TOTALS		421.4	3,833,807	110,000	3,723,807

More details on each project are provided in Appendix I and Appendix II of this Refrigerant Management Plan. It is to be noted that financial support is not being requested for the awareness programmes. The costs of the monitoring of the implementation of the Refrigerant Management Plan and for the strengthening activities for the Customs Officers are included in the funding request for the Institutional Strengthening and Capacity Building Project.

6. INSTITUTIONAL FRAMEWORK

The Government and national stakeholders of Kazakhstan are committed to the action items that have been presented in the Refrigerant Management Plan. The National Ozone Unit will be responsible for monitoring, coordinating and successful implementation of the phase-out activities proposed in the RMP. The Ministry of Nature Resources and Environmental Protection, the Ministry of Energy; Industry and Trade, the Ministry of Transport, Communications and Tourism; the Agency of Statistics; the Ministry of Defense; the Ministry of Health and Sport; the Customs Committee to the Ministry of Energy; Industry and Trade; Ministry of Agriculture; the Ministry of Science and High Education as well the National Industrial Association that are representing the main users of ozone depleting substances will be responsible for the implementation of the training programmes.

7. IMPACT

The successful implementation of the various components of the RMP (training, and implementation of legislation, regulations and economic instruments) will lead to the effective phase out of CFC in the refrigeration sector, approximately 421 ODP Tonnes will be saved.

Component	Expected Impact
Institutional Strengthening	Effective monitoring and coordination of all phase-out activities
Training of Trainers of Refrigeration Technicians and those specializing in MACs in Good Refrigerant Management Practices and subsequent training of technicians	By 2002: Reduction (Technicians) of 53 ODP Tonnes of CFC-12 Reduction (MAC) of 8.8 ODP Tonnes CFC-12 Further: Containment of refrigerant during service and retrofitting.
Development and application of economic and policy instruments	Reduction of imports Consumption controlled to the freeze level requirements
Training on selection and establishment of instruments of economic and policy.	Effective development and implementation of proposed legislation/regulations/economic instruments
Training in Monitoring and Control of CFC and CFC Equipment	Appropriate implementation of revised harmonized customs code for better record keeping Accurate data for reporting purposes
National Recovery and Recycling Project, including training seminars	Termination of imports of refrigerants by 2002 or earlier, through use of recovered and recycled refrigerants, particularly for domestic equipment until end of their economic life. Saving of 359.6 ODP Tonnes of CFC-12 to be reused

ANNEX III

SUBPROJECTS

1. Institutional Strengthening and Capacity Building
2. Programme of Training the Trainers of Refrigeration Technicians in Good Practices
3. Programme of Training the Trainers of MAC Technicians in Good Practices

The subprojects are being submitted in individual files along with the Country Programme.

Subproject 1: Institutional Strengthening and Capacity Building

COUNTRY: Republic of Kazakhstan **IMPLEMENTING AGENCY:** UNEP

PROJECT TITLE: INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING

PROJECT IN CURRENT BUSINESS PLAN: Yes

SECTOR/ SUBSECTOR: ALL

ODS USE IN SECTOR: (1998) N/A

PROJECT IMPACT: N/A

PROJECT DURATION: 36 **Months**

PROJECT COSTS:	Incremental Capital Cost	US\$	564,288
	Contingencies	US\$	4,200
	Incremental Operating Cost	US\$	N/A
	Total Project Costs	US\$	568,488

LOCAL OWNERSHIP: 100%

EXPORT COMPONENT: 0%

REQUESTED GRANT: **US\$** 568,488

COST-EFFECTIVENESS: **US\$/kg/y** (not applicable)

EXECUTING AGENCY FEE (8%): **US\$** 45,479

TOTAL COST OF PROJECT TO GEF: **US\$** 613,967

STATUS OF COUNTERPART FUNDING: **US\$** 90,000

PROJECT MONITORING MILESTONES INCLUDED: Included (see Wok Plan)

NATIONAL COORDINATING BODY: NEC/SD to the Ministry of Nature Resources and Environmental Protection

PROJECT SUMMARY

This project has the objective to strengthen the national institutional structure for coordination and monitoring of the ODS phaseout in accordance with the National Action Plan of the Country Programme, for monitoring of the RMP and for strengthening of the Customs Committee. The effective monitoring of the Action Plan and of the implementation of the National Country Programme, in addition to development and implementation legal, policy, regulatory and control measures for ODS Import/Export will assist the Government to comply with a strict phaseout schedule and achieve complete ODS phaseout in Kazakhstan in January 2004.

STAP REVIEW: Not applicable

1. Project Description

The National Environmental Centre for Sustainable Development (NEC/SD) to the Ministry of Nature Resources and Environmental Protection is responsible for matters relating to the Vienna Convention, the Montreal Protocol and the London and Copenhagen Amendments. Currently, the human and technological resources available to address ozone issues are very limited, which is a significant handicap in terms of the implementation of projects and strategies identified in the Country Programme and the Refrigerant Management Plan. Furthermore, the current staff of the Centre is unable to adequately monitor and report on ODS consumption in the Country. The limited institutional capacity therefore inhibits the Ministry's ability to meet obligations of the Montreal Protocol.

This project will also strengthen the national institutional capacity to effectively coordinate and administer the actions outlined in the Country Programme and in the Refrigeration Management Plan of Kazakhstan.

Additionally, the second third project sub-component will establish a National Monitoring and Licensing System for ODS substances in Kazakhstan and will strengthen the Customs Department with equipment (ODS detector KITS) and methodology to identify the ODS substances in bulk and equipment when imported, and would provide short training on hands-on-equipment for selected Customs Officers from all check points of the country. This would result with improved monitoring and control of imported ODSs.

2. Project Objectives

The main objective of the project is to strengthen the national capacity in order to facilitate the efficient and effective coordination and administration of ozone matters. More specifically, the project seeks to:

- Establish an Ozone Unit within the NEC/SD to the Ministry of Nature Resources and Environmental Protection which will be responsible of administering matters relating to the Montreal Protocol, the Country Programme;
- Undertake all actions identified in the Country Programme and monitor their implementation;
- Establish a legal and regulatory system (including a licensing system) for ODS management, especially concerning the consumption of halons;
- Develop and implement project on of training of trainers in improved servicing and maintenance practices for refrigeration and elaborate a licensing system for refrigerator service personnel;
- Develop a system to monitor and to report consumption (on six-monthly basis) in the refrigeration maintenance and servicing sector;
- Develop public awareness campaigns through the mass media and NGOs to increase consciousness of the general public. and demonstrate and promote the strategy for accelerated phaseout. Develop an effective and efficient documentation centre and information Focal Point to disseminate information on ozone matters. both on request and via public awareness programmes;
- Develop a system of incentives and disincentives on the use of ODS;

- Introduce a ban on the import of ODS using or containing equipment;
- Develop a monitoring system for ODS imports in order to comply with reporting requirements of the Montreal Protocol, track progress of ODS phaseout, and support the licensing and the incentive and disincentive systems;
- Participate in the regional training for the Custom Officials of Countries with Economies in Transition to facilitate the implementation of regionally unified procedures for using tariff classifications and monitoring. control and reporting of data on trading with ODS;
- Coordinate and implement recovery and recycling project to establish and operate recovery & recycling systems for the service of refrigerators;
- Monitor total implementation of RMP;
- Support and encourage local industry and technical institutes to adopt ODS-free substitute technologies. Identify opportunities for bilateral international cooperation;
- Report annually to both the GEF and the Ozone Secretariat on the ODS consumption in the country according to Article 7 of the Montreal Protocol; and
- Report annually to the GEF on the progress of implementation of the Country Programme. Assist in the preparation of budgets and advise on the release of funds from the GEF;
- Establish and enforce an import/export licensing system;
- Provide short training to Customs officers in Kazakhstan, as follows: inspectors, controllers and customs policemen to enable them to identify:
 - Controlled substances under the Montreal Protocol; and
 - Imported equipment and products using ozone depleting substances (CFCs).
- Provide CFCs-detection equipment for the main customs entry points.

3. Project Organisation and Management

An Ozone Unit will be established in the NEC/SD to the Ministry of Nature Resources and Environmental Protection with the responsibilities listed above. One full time professional officer and an assistant will run the office with the assistance of local consultants and experts on legal and refrigeration technology matters. In addition, a refrigeration expert will be professional selected and appointed as a coordinator of the RMP implementation. The Ozone Unit will receive support from other divisions of NEC/SD and will have access to expertise and all the facilities of the Centre.

The professional officer will be the coordinator of the National Action Plan activities and will report to the Director of the NEC/SD. She will continue chairing the National Ozone Phaseout Team and will prepare biannual reports on the progress of implementation. The organisation of the activities of the office and the reporting procedures will follow the requirements for UNEP DTIE sponsored activities.

Following the Decision IX/8 of the Parties to the Montreal Protocol Republic of Kazakhstan has embarked in the establishment of an ODS import/export system. It is proposed that, in the framework of this project a Monitoring and Licensing System will be established. For this

purpose a National Interdepartmental Commission will be created including representatives of all governmental officials, representatives of the main institutions involved in the monitoring and control of ODS imports in Kazakhstan (Ministry of Energy; Industry and Trade, Ministry of Transport, Communications and Tourism; Agency for Emergency Situations; Agency of Statistics; Ministry of Defence; Ministry of Health and Sport; Customs Committee to the Ministry of Energy; Industry and Trade; Ministry of Agriculture; Ministry of Science and High Education as well as representatives of various agencies and enterprises, including Kaztorgtechnica and the National Industrial Association which are representing the main users of ozone depleting substances). Additionally, a set of ODS detectors (150 Detector Kits) will be supplied Customs Committee to the Ministry of Energy; Industry and Trade, which will strengthen the customs check points to identify the ODS substances in bulk and equipment when imported and short training on hands-on-equipment for selected Customs Officers (about 500) from all check points of the country will be provided. This would result with improved monitoring and control of the imported ODS. The National Ozone Unit would be responsible for the overall monitoring and coordination of the activities described in this project, as well as for the final reporting. It would be assisted by the Customs Committee to the Ministry of Energy; Industry and Trade.

The time frame below is describing the activities under this sub-project component.

3.1. Time Frame

Activity	Quarter											
	2001				2002				2003			
	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of ozone office and implementation of IS project				X	X	X	X	X	X	X	X	X
Establishment of import/export licensing system			X	X								
Equipment supply with hand-on training					X	X						
Training of Customs Officers						X						

3.2. Target Audience

The training will be directed to customs officers (inspectors, controllers and customs policemen) with at least 5 years experience and if possible with some supervisory functions, coming from different customs entry points of the country, Republic of Kazakhstan has more than 13.906 km of borders as follows:

- with the Russian Federation in the north (6.846 km).
- with China in the east (1.533 km).
- with Kyrgyzstan (1.051 km).
- with Uzbekistan (2.203 km)
- with Turkmenistan in the south (379 km).

- and the Caspian Sea (1.894 km)

The most critical is the boundary with Russia where there are more than 60 check points with strategic position, which need to be enforced to be able to implement efficient import control of ODS and equipment using and containing ODS in Kazakhstan.

Additionally, the meeting on design and implementation of import/export licensing system would be organised for policy and decision makers from the Customs Committee to the Ministry of Energy; Industry and Trade.

4. Project Budget

The total budget for this project is US\$ 658,488. Funding requested from the Global Environment Facility equals US\$ 568,488 including equipment, staffing, printing costs and public awareness materials.

It is proposed that in the framework of this project a Monitoring and Licensing System for ODS Imports will be established. Additionally, the Customs Department would be supplied with a set of ODS detectors (150 Detector Kits) to be able perform efficient control of ODS substances in bulk and equipment when imported and would provide short training on hands-on-equipment for selected Customs Officers from all check points of the country (min. 60). This would result with improved monitoring and control of the imported ODS. Funding is requested for the establishment of the ODS Imports Monitoring and Licensing System, for purchase of ODS Identification Kits and to deliver short training on-how-to-use the equipment.

The equipment would be distributed to all border check points, selected according to the national Customs Department priorities under the monitoring and coordination of the National Ozone Unit.

The Government contribution to the project will include office space, office furniture and maintenance, and local telephone. The estimated value of this contribution is US\$90.000.

The project budget is detailed below:

COST ITEM	2000	2001	2002	TOTAL US\$
1. Institutional Strengthening				
EQUIPMENT: Purchase and use of equipment; including microprocessor, printer, modem, software, power regulator, photocopying machine, telephone, fax.	31,000			31,000
STAFFING: Project Coordinator, project assistants, coordinator of RMP implementation and accountant, including local travel	69,200	69,200	69,200	207,000
OPERATING COSTS: Telecommunications charges (including e-mail/Internet), service charges, office supplies, equipment maintenance	27,726	27,726	27,726	83,178
PUBLIC AWARENESS: Broadcasting, printed media campaigns	26,000	20,000	16,000	62,000
Sub-total	153,926	116,926	112,926	383,778
2 Strengthening of the Customs Committee				
CFC Detector KITS (150 x 640US\$)	96,000			96,000
International Consultant; including fees, travel and DSA	10,000			10,000
Local consultant	11,000			11,000
Workshop Services, including paper, pens, photocopying, etc.	23,000			23,000
Contingencies (3%)	4,200			4,200
Substantive assessment and coordination of technical and policy related issues	7,210			7,210
Sub-total	151,410			15,410,736
Project Support Services	12,800	10,250	10,250	33,300
TOTAL GEF	318,136	127,176	123,176	568,488
Government Contribution	30,000	30,000	30,000	90,000
LOCAL OFFICE: Office space, office furniture and maintenance, local telephone. etc.				
Total Project Cost	348,136	157,176	153,176	658,488

Subproject 2.1: Training of Trainers of Refrigeration Technicians in Good Practices

COUNTRY: Republic of Kazakhstan **IMPLEMENTING AGENCY:** UNEP

PROJECT TITLE: PROGRAMME OF TRAINING THE TRAINERS OF REFRIGERATION
TECHNICIANS IN GOOD PRACTICES

PROJECT IN CURRENT BUSINESS PLAN: Yes

SECTOR/ SUBSECTOR: Refrigeration

ODS USE IN SECTOR: (1998) 663.76 MT ODP

PROJECT IMPACT: 53 MT ODP

PROJECT DURATION: 36 Months

PROJECT COSTS:	Incremental Capital Cost	US\$	376,047
	Contingencies	US\$	32,900
	Incremental Operating Cost	US\$	N/A
	Total Project Costs	US\$	408,947

LOCAL OWNERSHIP: 100%

EXPORT COMPONENT: 0%

REQUESTED GRANT: US\$ 408,947

COST-EFFECTIVENESS: US\$/kg/y (not applicable)

EXECUTING AGENCY FEE (8%): US\$ 32,716

TOTAL COST OF PROJECT TO GEF: US\$ 441,663

STATUS OF COUNTERPART FUNDING: US\$ 15,000

PROJECT MONITORING MILESTONES INCLUDED: Included (see Work Plan)

NATIONAL COORDINATING BODY: NEC/SD to the Ministry of Nature
Resources and Environmental
Protection

PROJECT SUMMARY

This project uses the train-the-trainers approach to provide technical information and training on good servicing practices to technicians in the refrigeration sector in order to reduce CFC consumption during servicing of refrigeration units. In order to achieve the objectives identified in the Country Programme Action Plan and the Refrigerant Management Plan, professional hands-on training for service, maintenance and repair technicians is essential. The refrigeration sector uses 663.76 ODP Tons or 51 percent of the total ODS consumption in 1998. This training project will reduce by 8 percent the use of ODS in the refrigeration servicing sector. It is thus critical for the effective phase-out of CFC in Kazakhstan.

STAP REVIEW: Not applicable

PROJECT DESCRIPTION

1. Background

This project will use the train-the-trainers approach and will provide technical information and training on good servicing practices to technicians in the refrigeration sector in order to reduce CFC consumption during the servicing of refrigeration units. In order to achieve the objectives as identified in the Country Programme Action Plan and Refrigerant Management Plan, professional training for hands-on service, maintenance and repair personnel is essential. The refrigeration sector amounts to 663.76 ODP tonnes or 51 percent of the total ODS consumption in the country. This includes servicing of domestic refrigeration equipment, which accounts for 140.91 ODP tons or 21.2 percent of the total in the sector, servicing of industrial refrigeration for 135.47 ODP tons or 20.4 percent, servicing of commercial refrigeration for 263.99 or 40 percent, transport refrigeration for 9 ODP tons or 1.4 percent. Therefore, this training project for refrigeration servicing technicians is critical for the effective CFC phaseout in Kazakhstan since the refrigeration sub-sector consumes the majority of CFCs in the country.

Table 1.1 illustrates in detail the consumption in the refrigeration sector.

Table 1.1. Consumption in Refrigeration Sector

Area of Use	Substance	Application	Consumption in ODP tons	% of each sub- sector
<u>Refrigeration equipment</u>				
Production	CFC-12	Charge		
Servicing domestic refrigerators	CFC-12	Servicing	140.91	
Sub-total domestic refrigerators			140.91	21.2
Industrial refrigerators	CFC-12	Servicing	134.01	
	HCFC-22	Servicing	1.46	
Sub-total industrial refrigerators			135.47	20.4
Commercial refrigerators	CFC-12	Servicing	260.58	
	HCFC-22	Servicing	3.41	
Sub-total commercial refrigerators			263.99	40
Railway refrigeration wagons	CFC-12	Servicing	-	
Automobile refrigeration wagons	CFC-12	Servicing	9.00	
Sub-total transport refrigeration			9.00	1.4
TOTAL REFRIGERATION EQUIPMENT			549.37	82.8
<u>Air-conditioning</u>				
Air-conditioning systems	CFC-12	Servicing	2.68	
Air-conditioning in rooms	HCFC-22	Servicing	1.12	
Air-conditioning in vehicles (MAC & Railway carriages)	CFC-12	Servicing	110.60	
TOTAL AIR -CONDITIONING			114.39	17.2
TOTAL REFRIGERATION SECTOR			663.76	100

2. Objectives

The aim of the project is to improve service and maintenance practices in order to prevent intentional and/or unintentional releases of CFC into the atmosphere, making it possible for

refrigeration equipment to operate to the end of its useful life. Because of the hot continental summers and required four times more repair and maintenance works. At present these activities are not very effective economically or environmentally and need considerable improvement.

The training programme will cover the following items: Elements of ozone depletion, its effects, and the relation with control measures and provisions under the Montreal Protocol on controlled refrigerants; use of alternative non-ODS refrigerants and synergy with the related requirements of the Climate Change Convention; of methods for appropriate servicing and maintenance practices for CFC-containing refrigeration equipment, as well as for equipment working with new drop in refrigerants, leak detection; concepts of refrigerant recovery and recycling; correct handling of refrigerants; government regulations which will affect the refrigeration sector, including practical hand-on sessions with R&R equipment.

It will ensure permanent use of good refrigeration service and maintenance practices for systems using CFC as well as ozone-friendly substances, and the correct handling of new replacement refrigerants throughout the Institutes, which offer technical training. This project will be coordinated with the Recovery and Recycling project being submitted by UNDP along with the Government's Refrigerant Management Plan.

Throughout the implementation of this project the aims and goals of the Montreal Protocol and the Climate Change Convention will be taken into consideration when applying the chosen training methodology specified in the document.

3. Expected Results

It is expected that the following results will be obtained by this project:

- Reduction of CFC consumption due to leaks and poor servicing practices;
- Re-training of more than 2,400 refrigeration technicians on good practices, and inclusion of such Training as a permanent part of the curriculum of the Technical University in Almaty, Kokchetau and Aktau;
- Reduction in the number of repairs of refrigeration equipment and preventive maintenance;
- Improved maintenance and servicing practices in the refrigeration sector with reduced CFC consumption;

4. Target Audience

This project is being proposed to train the most experienced refrigeration technicians in the country in the proper methods of performing repairs, maintenance and installation of refrigeration and air conditioning equipment to avoid leaks and unnecessary emissions of CFCs.

5. Approach

The UNEP training manuals on Good Practices in Refrigeration and "Chillers and Refrigerant Management" will be used as the main training material and adaptation to local conditions will be made if necessary. The "Guidelines for Implementation of Codes of Good Practice" will also be used extensively as a key reference document.

5.1. The project will be organized in two Phases:

Phase I: Initial "Train the Trainers" Workshop in Refrigeration Servicing.

Since the territory of Kazakhstan is 2,756 million square kilometers, four potential Training Centres are selected which are geographically isolated and in the main regions: one in Western Kazakhstan, one in East Kazakhstan, one in Northern Kazakhstan, and one in Almaty. Three international consultants supported by four national consultants will carry out the initial Training of the Trainers workshops in four Training Centres in Aktau, in Ust-Kamenigorsk, in Astana, and in Almaty. It will be implemented and coordinated by the National Ozone Office in the National Environmental Centre for Sustainable Development to the Ministry of Nature Resources and Environmental Protection of Kazakhstan, in consultation with the local consultants, and the Technical University in Kokchetau, in Almaty and in Aktau. The training in each centre will include four sessions for not more than 25 technicians each. Technicians will be selected from each regional office in the National Systems of "Rembittechnica" and "Kaztorgtechnica", Industrial Refrigeration Workshops, from the Service Workshop of "Bakkonditioner" in Kazakhstan and from the Repair Workshop to the State Railway Company.

The main tasks of the international consultants will be to organise and implement the initial training activities for service and maintenance of refrigeration systems; assist organisations and technicians in evaluating their systems and advice on possible retrofitting of existing equipment using non-CFC, and advise the trainers on the second phase for training all technicians in the country.

The main tasks of the national consultants will be to make full inventory of technicians to be trained in the country, to assist the international consultants in the preparation of the training sessions, to select the trainers to be trained, to organise and assist in the preparation of the second phase training sessions and to follow up on the further establishment of the good practices in the refrigeration servicing sector.

Phase II: Training of 2,000 refrigeration maintenance service technicians in good servicing and maintenance practices in the domestic, commercial, industrial and transport refrigeration sub-sectors.

During this phase, the 400 trainers initially trained during Phase I will carry out additional training workshops in each of the established National Training Centers. Taking into account that there are more than 340 big repair workshops with more than 2,700 formally employed technicians to be trained in Kazakhstan, and that there should be no more than 25 participants in each training course, approximately 80 training courses should be held in regional cities around Kazakhstan.

When the 2,400 technicians are trained, a license certificate will be awarded to the technicians who have successfully completed the training course. This certificate should become one of the requirements to be licensed to handle and purchase CFCs. Only organisations whose technicians will have been trained would receive the proposed equipment to be used for the training sessions in the regions of the country. When the training of all technicians is completed the equipment will remain in the four Training Centres to be used for future training purposes. A system of various incentives will be established for all technicians that are certified.

5.2. Equipment for the Training Sessions

This project will provide sixteen (16) sets of recovery and recycling equipment (four for each Centre) as well as the associated equipment similar to that, which is included in the Recovery

and Recycling Project. After the training sessions are over, the equipment will be left in the Training Centres, which will continue development of the refrigeration technicians curriculum after the training sessions were held.

6. Time Frame

Activity	Quarter											
	2001				2002				2003			
	1	2	3	4	5	6	7	8	9	10	11	12
Training of Trainers for good refrigerant management practices				X	X							
Training of technicians in good refrigerant management practices					X	X	X	X	X	X	X	X

7. Cooperating partners

The National Ozone Office would be responsible for the monitoring and reporting on the progress of the various activities of this project, and suggested corrective measures, if applicable. It would be assisted by the management of the Repair Workshops System "Kaztorgtechnica" and "Rembittechnica", to coordinate the involvement of the regional and city repair workshops in the country. This phase should also include some consideration of how to make the training a permanent part of the curriculum of the Technical University in Almaty and in other cities.

8. Follow up actions

This project would include follow up on the implementation of the further training of refrigeration technicians, as well as monitoring on the progress achieved in using the good practices in the refrigeration servicing sector. This would be done by the national consultant, in cooperation with the National Ozone Office.

9. Budget

The total budget for this project is US\$423,947 and is detailed below:

COST ITEM	TOTAL US\$
International consultants; including fees, travel and DSA	36,000
Local Consultants	12,000
Technical Training Material - adaptation and additional literature (includes training material for local training programmes)	8,000
Equipment for the training sessions (for four Training Centers)	100,000
Office supplies, photocopying	5,000
Cost of initial training (Train-the-trainers in four Training Centers)	60,000
Cost of subsequent ongoing training activities and certification process (80 Train-the-technicians sessions)	80,000
Simultaneous Translation	12,000
DSA and Travel for non-local participants	20,000
Contingencies 10%	32,900
Substantive assessment and coordination of technical and policy issues by UNEP	47,047
Governmental contribution (administrative support, office space, coordination)	15,000
TOTAL PROJECT COST	423,947