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

Tenth Meeting
Montreal, 28–30 June 1993

COUNTRY PROGRAMME: IRAN

This document consists of:

- a) Evaluation Sheet (prepared by the Fund Secretariat)
- b) Country Programme Cover Sheet (prepared by the Fund Secretariat)
- c) Transmittal letter from the Islamic Republic of Iran
- d) The Country Programme

Iran Country Programme Evaluation Sheet

The Iran Country Programme is submitted to the Tenth Meeting of the Executive Committee as document UNEP/OzL.Pro/ExCom/10/24. The document is consistent with the format provided in the "Procedures for Presentation of Country Programmes and Project Proposals to the Executive Committee (UNEP/OzL.Pro/ExCom/5/16).

It consists of:

- Letter of transmittal from the Government of Islamic Republic of Iran;
- Executive Summary;
- Introduction;
- Current use of ODS and alternatives (including future demand of ODS);
- Description of economic conditions in Iran;
- Strategy statement by the Government;
- Action Plan;
- Government's action in response to the Montreal Protocol, and
- Projects and estimated budget.

The total ODS consumption in Iran in 1991 was 2,445 ODP tonnes. The consumption of CFC-11 and CFC-12 constituted 1,699 and 546 ODP tonnes respectively. Distribution of consumption per sector for the same year was estimated as follows:

24% in the refrigeration sector
30% in the foam sector

It is reported that CFC-115 is used as a component of a refrigerant R 502 in the commercial refrigeration sector, however no exact data is provided. Some quantity of halons are used in fire extinguishers. No halons were imported in Iran in 1991. It should be noted that about 46 percent of total ODS is consumed by unrecognized end users. More investigation is needed to determine the specific users and quantities consumed.

The Government of the Islamic Republic of Iran expects to reduce the consumption of controlled substances by 40% in the period from 1991 to 1997 or by 978 ODP tonnes in absolute figures. The remaining consumption is expected to be phased-out during 1998 to 2005. The imports of controlled substances will be banned after the year 2005 except for essential uses.

The following government actions are proposed in the country programme to achieve these goals:

- A. Technological Conversion Financing Programme;
- B. Public Awareness Programme; and
- C. Creation of Ozone Monitoring Centre.

The net incremental economic costs to the Islamic Republic of Iran for the phase-out of controlled substances are estimated at US \$116 million.

The following are the main policies that are recommended to be included in the National Ozone Policy (NOP) for the Islamic Republic of Iran:

- Enhance public awareness of the "ozone issue" through the media. The emphasis should at first be placed on the conservation aspects of ODS and subsequently on substitution;
- Announce proposed phase-out schedule;
- Establish ODS import monitoring policies and procedures which account for all ODS as required under the Montreal Protocol and from which progress in reducing ODS consumption is tracked to guide appropriate adjustments in programmes and policies, and
- Create an "Ozone Monitoring Centre" within the Department of Environment to act as a focal point that will provide guidance in the formulation and promulgation of specific policies consistent with the NOP.

In support of the Government Action Plan the following five projects have been identified so far to be financed from the Multilateral Fund.

1. Creation of an ozone monitoring centre;
2. Refrigerant recovery and reclamation;
3. Phase-out of CFC-11 and CFC-12 in the domestic refrigeration industry;
4. Conversion of CFC-11 technology to methylene Chloride in the foam sector;
5. Conversion to CO₂ and ethylene oxide in the sterilant sector.

It is estimated that the total costs of investment projects for the country programme would be in the order of US \$10 million.

Recommendations

The country programme is recommended for approval by the Executive Committee without approval of the funding level.

In the name of Allah



مازاد حاکمیت میزبان

Islamic Republic Iran

Department of the Environment

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

Date May 7, 1993
Ref. No. 3-908

Dear Dr. El-Arini

We hereby submit the country programme for the phaseout of ozone depleting substances in the Islamic Republic of Iran which has been prepared by this department and which is being presented for approval to the tenth Meeting (28 - 30 June 1993, Montreal) of the Executive Committee of the Multilateral Fund of the protocol.

As you are aware the Islamic Republic of Iran is a party to the protocol operating under paragraph 1 of article 5 and is eligible to benefit from the provisions of the protocol.

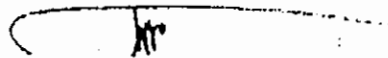
By submitting our country programme we do hope to get the necessary financial , technical and technological support through your good offices and there to be able encouraging our industry to enforce and implement the required plan of action for the phaseout of the ODS.

Our primary plan of action comprises sections as follows:

- a) a set of government actions that support the ODS phaseout strategy in the country programme.
- b) a series of projects to be undertaken by the private sector to meet the targets put forward in the strategy.
- c) monitoring and control of all activities that deal with the ozone issue by the ozone monitoring centre, which include monitoring of implementation of ODS phaseout activities under the country programme.

The country programme would be presented by UNDP , on behalf of this department.

Your sincerely,


Nasser Moharamnejad

Assistant Director for Research
Department of the Environment
Islamic Republic of Iran

In the Name of God

**ISLAMIC REPUBLIC OF IRAN
DEPARTMENT OF THE ENVIRONMENT**

**COUNTRY PROGRAMME
FOR
PHASE-OUT OF
OZONE DEPLETING SUBSTANCES**

MAY 1993

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EXECUTIVE SUMMARY

INTRODUCTION

- ES.1 The Montreal Protocol is an agreement ratified by over 70 countries worldwide to reduce the emissions of Ozone Depleting Substances (ODSs) through regulation of consumption. Under the Montreal Protocol (MP), the participating developed countries have established the Interim Multilateral Fund, which has now become the Multilateral Fund. The Multilateral Fund is to help qualified developing countries with technical and financial assistance to meet their obligations under the MP agreement. At the request of the Government of the Islamic Republic of Iran, the United Nations Development Programme (UNDP) assisted with the preparation of the Country Programme, a requisite document for assistance from the Multilateral Fund.
- ES.2 The Islamic Republic of Iran ratified the Montreal Protocol on 10 March 1990. The consumption of Ozone Depleting Substances (ODS) in 1991 is 0.042 kg / capita. The country thus qualifies under Paragraph 1. of Article 5 of the Protocol for a ten year delay in the phase-out of ODSs. The Islamic Republic of Iran can thus qualify for assistance from the Multilateral Fund in accomplishing the phase-out as of 8 June 1991. Such assistance will be available once it has met the Multilateral Fund criteria for its projects.
- ES.3 Even before ratifying the Protocol, the Islamic Republic of Iran made the entire Montreal Protocol as part of its constitutional laws (Official Gazette No.13063 of

28/9/1368 AH (8 Dec 1989) and at present, the Department of the Environment is operating under the President of the Republic.

ODS CONSUMPTION IN THE ISLAMIC REPUBLIC OF IRAN

ES.4 The Islamic Republic of Iran does not produce ODS. The total ODS consumption is estimated to be 2445 tones in 1991. However, there are numerous users of ODS in the country. The bulk of the demand is in the industries that manufacture and service domestic refrigerators (approximately 12 Million refrigerators are currently in use). The foam industry produces mattresses, cushions, building insulation as well as packaging materials. Solvents are also used in the country. The industries that consume ODSs contribute to a higher standard of living and, in recent years, have experienced growth sometimes even exceeding that of the population. Some fire extinguishing equipment use ODSs, unfortunately available data is limited. Based on interviews with the fire department, it is estimated that the consumption is small.

ES.5 The methodology for the preparation of the Country Programme for the Islamic Republic of Iran involved a data collection and analysis mission by a UNDP consultant to the Islamic Republic of Iran in March 1992. During this mission, data on the supply and demand for ODSs was collected; the institutional and policy framework was researched with industry leaders and government officials. ODS phase-out problems and plans were discussed with major consumers of ODS; and the availability of ODS substitutes was investigated. A set of projects

which may qualify for Multilateral Fund grants was identified. Prefeasibility studies for these projects were prepared and costed. A set of ODS phase out scenarios which spanned a range of probable activities were identified and costed. The optimum scenario was selected and was used as a foundation for a phase-out strategy for the Islamic Republic of Iran. An action plan to accomplish the strategy was also studied.

CURRENT DEMAND OF ODS

ES.6 The Government of the Islamic Republic of Iran uses the Brussels Harmonized Classification System for chemicals that are imported into the country. Besides, the Ministry of Commerce keeps records of imported chemicals too. Therefore, some statistical data may be available within these two organizations.

ES.7 The Montreal Protocol defines Consumption of Controlled Substances as Production plus Imports minus Exports. The Montreal Protocol also defines "controlled substance" see UNEP/OzI.Pro.1/5. In conformity with these definitions, in 1991, the ODS consumption in the Islamic Republic of Iran is 2445 tones. The consumption in 1991 is 0.042 kg/capita.

ES.8 The forecasts presented in this section are based on the assumption that the Montreal Protocol does not exist, that there are no supply constraints and therefore defines demand with no substitution. They do not take into account any possible product development or other changes in manufacturing practices as a

result of normal progress. These unconstrained demand projections are the starting point for determining the demand for substitutes.

ES.9 The overall unconstrained CFC consumption is projected from 2445 tones in 1991 to 7778 tones in 2010. This corresponds to an average annual growth rate of about 6.5 %. It is evident that the annual growth rate is high, however, it should be pointed out that these figures have been established based on interviews with leading foam and refrigerator industries.

UNDERLYING GROWTH ASSUMPTIONS

ES.10 In making these projections, the following were taken into account:

- * The opinion of industry leaders about the growth of production and its forecast: Based on the interviews it was found that the annual growth rate in refrigerator production would be 12% for the next 4 years (1991-1995) and 4% from 1996 to 2010.
- * The annual growth rate for the foam productions would be around 6.5%.
- * Population: The 1991 census shows a population of 57.59 Million. The Government is forecasting this to grow at 3.17% per year to 107 Million in 2010.
- * GDP is assumed to grow at an average rate of 3.4% per year for the next 19 years.

ES.11 The largest use of CFCs in the Islamic Republic of Iran is in the Foam and Refrigerator sectors. According to the refrigeration industry, production would continue at an annual growth rate of 12% for the years 1991-1995 and at 4% for the years 1996-2010. The growth in foam production is estimated at 6.5% per year.

ES.12 There are about 12 Million refrigerators in use in 1991 with an average life of 16-18 years. Based on the estimated growth rate this will rise to 20 and 30 Million units in the years 2000 and 2010 respectively. Based on an average family size of 5 in urban and rural areas, the number of households in the Islamic Republic of Iran is about 12 Million in 1991. This will increase to 30 Million by the year 2010.

SUMMARY OF GROWTH AND OTHER ASSUMPTIONS

ES.13 The table on the following page gives a summary of growth and the other assumptions used in the preparation of the Country Programme.

AREA	GROWTH AND OTHER ASSUMPTIONS	PERIOD
POPULATION	3.17 % ANNUAL GROWTH RATE	1991-2010
GDP	3.4 % AVERAGE ANNUAL GROWTH RATE	1990-2010
ACCORDING TO	12 % ANNUAL GROWTH RATE	1991-1995
DOMESTIC	4 % ANNUAL GROWTH RATE	1996-2010
REFRIGERATOR	20 MILLION WILL BE IN USE	2000
MANUFACTURERS	30 MILLION WILL BE IN USE	2000
AVERAGE LIFE OF REFRIGERATOR	16 - 18 YEARS	
HOUSEHOLDS	11.4 MILLION	1991
REFRIGERATOR FAILURE	3 %	1 ST YEAR
	5 %	5-10 YEARS
	10%	10 - 18 YEARS
CENTRAL AIR CONDITIONING	VERY LIMITED - IMPORTED ONLY	
MOBILE AIR CONDITIONING	VERY LIMITED - IMPORTED ONLY	
FOAMS FLEXIBLE AND RIGID	6.5 % AVERAGE GROWTH RATE	1991 - 2010

ECONOMIC COST TO THE ISLAMIC REPUBLIC OF IRAN

ES.14 The net incremental economic cost to the Islamic Republic of Iran for phase-out of ODSs is 116 Million US \$ (1991) using a 10 % discount rate. This analysis is based on the new refrigerators being charged with HFC-134a and no drop-in substitutes being used for charging old refrigerators. If drop-in substitutes (at a cost of 50% of cost of HFC-134a) were used in charging the old CFC-12 refrigerators and the new refrigerators were charged with HFC-134a, then the net incremental cost to the economy would be in the order of 58 Million US \$ (1991).

ES.15 The primary conclusion drawn from this analysis is that a prompt ODS phase-out will be beneficial to the protection of the Ozone layer. The determination of reimbursement of costs for financing the projects proposed in this country programme is an issue for the Multilateral Fund Executive Committee to decide in accordance with the set criteria of the Montreal Protocol.

ES.16 The following conclusions were also reached. These are presented in the order of importance to the economy of the Islamic Republic of Iran.

- 1) The most significant net incremental costs to the Islamic Republic of Iran are those associated with the potential forced early replacement of domestic refrigerators when virgin CFCs will no longer be available for recharge. This stems from the fact that there will be roughly 30 Million refrigerators in service in the Islamic Republic of Iran in 2010, but

replacement costs only apply to those refrigerators which would not be able to find CFC-12 for recharge. The possibility of using drop-in substitutes for charging refrigerators is an important first option for the country has. Another option is the early transition to refrigerant HFC-134a for domestic refrigerators. This will reduce the population of CFC-12 refrigerators in 2010, and hence reduce early replacement costs. It is to be noted that the average age of the CFC-12 refrigerator population in 2010 was also a factor. In the absence of recycling of CFC-12 refrigerant, the average age of CFC-12 refrigerators is substantially decreased.

- 2) The incorporation of recycle/recovery into any phase-out case will have the effect of directly reducing ODS consumption. Its primary benefit will be to assure local supplies of CFC-12 for recharging refrigerators. Additional savings (not included) should be expected from applying recycle/recovery technology to the conservation of HFC-134a.
- 3) Capital requirements shall be determined once the project preparation activities are completed. It is estimated however, that the total costs of investment projects for this country programme would be in the order of 10,000,000 US \$. Any delay in the timing of investments shall increase the economic cost to the country.

ES.17 The order of priority of projects in the refrigeration sector are based on the existing technologies that will rapidly reduce consumption. The following are the actions that the country will take:

- * At first will be the implementation of projects that reduce the use of CFC-11 for rigid foam.
- * The maximization of use of "drop in" substitutes to save the refrigerators charged with CFC- 12 when this chemical will no longer be available and the introduction of recycling and recovery of CFC-12.
- * The use of HFC-134a in refrigerator production.
- * Retrofit of the compressor manufacturing facility.

ES.18 In the foam industry, the introduction of technologies geared at reducing the consumption of CFC-11.

ES.19 The following table gives the budget requirements to implement the project preparation activities of the Country Programme.

BUDGET REQUIREMENTS TO START IMPLEMENTING THE COUNTRY PROGRAMME

PROJECT NUMBER	US \$ REQUIRED IN 1993	STATUS
1	200,200	APPROVED
2 - 5	300,000	APPROVED IN PART
TOTAL	500,200	

ES.20 The optimum strategy for the Government of the Islamic Republic of Iran is to adopt a set of policies and implement a series of projects that support a phase-out of ODSs consumption as soon as is technically feasible. The order of priority is based on the above policies.

ES.21 This strategy will accomplish the complete phase-out of ODSs at the least economic cost to the country and provide the basis for an officially recognized National Ozone Policy to which industry and government leaders are committed for phasing out ODSs.

POLICIES

ES.22 The following are the main policies that are recommended to be included in the National Ozone Policy (NOP) for the Islamic Republic of Iran :

- * Enhance public awareness of the "ozone issue" through media attention. The emphasis should at first be placed on the conservation aspects of ODS and subsequently on substitution;
- * Announce a proposed phase out schedule;
- * Establish ODS import monitoring policies and procedures which account for all ODS as required under the Montreal Protocol and from which progress in reducing ODS consumption is tracked to guide appropriate adjustments in programmes and policies;
- * Create an "Ozone Monitoring Office" within the Department of the Environment to act as the focal point that will provide guidance in the

formulation and promulgation of specific policies consistent with the national ozone policy.

PROJECTS

ES.23 This Country Programme document contains projects presently presented to the Multilateral Fund for financing of the project preparation activities. Capital investment figures shall be determined once the project preparation activities are completed. The following projects are being presently considered .

ES.24 Projects that are being presented for financing of project preparation activities and actual financing in the case of the first project. These are:

PROJECT NO 1: CREATION OF OZONE MONITORING CENTER

PROJECT NO.2: REFRIGERANT RECOVERY AND RECLAMATION

PROJECT NO.3: PREPARATION OF INVESTMENT PROJECT PROPOSAL FOR PHASE-OUT OF CFC-11 AND CFC-12 IN THE DOMESTIC REFRIGERATION INDUSTRY.

PROJECT NO.4: PROJECT PREPARATION IN THE FOAM SECTOR FOR ABOUT 15 MAJOR COMPANIES

PROJECT NO.5: STERILANTS

ACTION PLAN

OBJECTIVES AND COORDINATION

ES.25 The objective of the Action Plan is to effectively, efficiently and as fairly as possible, phase-out the consumption of ODS in the Islamic Republic of Iran in compliance with the Montreal Protocol, as ratified by the Government of the Islamic Republic of Iran in accordance with the proposed optimum strategy.

ES.26 The Action Plan comprises the investments, policies and implementation actions needed to ensure compliance. The principal agents are the Government (which is responsible for the specific policies, referred to here as "National Ozone Policy"), UNDP and UNIDO (as implementing agencies). These agencies must be synchronized to effect the purpose of the Action Plan, i.e., compliance with the terms of the Protocol. The required budget for phase-out of ODSs would be transferred into the UNDP and UNIDO accounts in Tehran. Checks would be drawn to the industries (project executors) by the UNDP and UNIDO upon the acceptance of Projects by UNDP, UNIDO and the Ozone Monitoring Center. The Ozone Monitoring Center and a supervisors from UNDP and UNIDO will be responsible for checking the progress of the projects.

ES.27 This action plan is consistent with the principles for evaluating and financing incremental costs for the ODS phase-out as detailed in the "Indicative List of Categories of Incremental Costs". In summary these are:

- * be cost-effective and attuned to the national industrial strategy;
- * include a careful review of cost items and avoid double counting;

- * feature early adoption of ozone protecting technologies.

ES.28 The action plan proposed for the Islamic Republic of Iran is based on the optimum phase-out scenario. In this strategy, action is initiated in 1993. The phase-out is completed by 2005. The proposed phase-out scenario is shown at the end of this chapter.

SUMMARY OF PROPOSED ACTIONS

ES.29 The followings are the outlines of Action Plan:

- A. Technological conversion financing programme;
- B. Public awareness programme; and
- C. Creation of Ozone Monitoring Center.

ES.30 The graph at the end of this chapter shows the reduction of consumption over time that will result from the implementation of the action plan.

OTHER FACTORS OF SIGNIFICANT IMPACT ON THE PHASE-OUT PROGRAMME

ES.31 The following factors will have direct bearing on phase-out activities, timing and process:

- * The future supply and associated costs of alternate refrigerants and foam blowing agents as well as their associated costs is not known precisely, and the feasibility of some technologies remains to be confirmed. The cost of

alternatives is expected to approach the cost of existing technologies at some point in the future. It is anticipated that the cost of the available ODS, after an initial period of oversupply, will eventually rise sharply as supplies become greatly diminished with limited production.

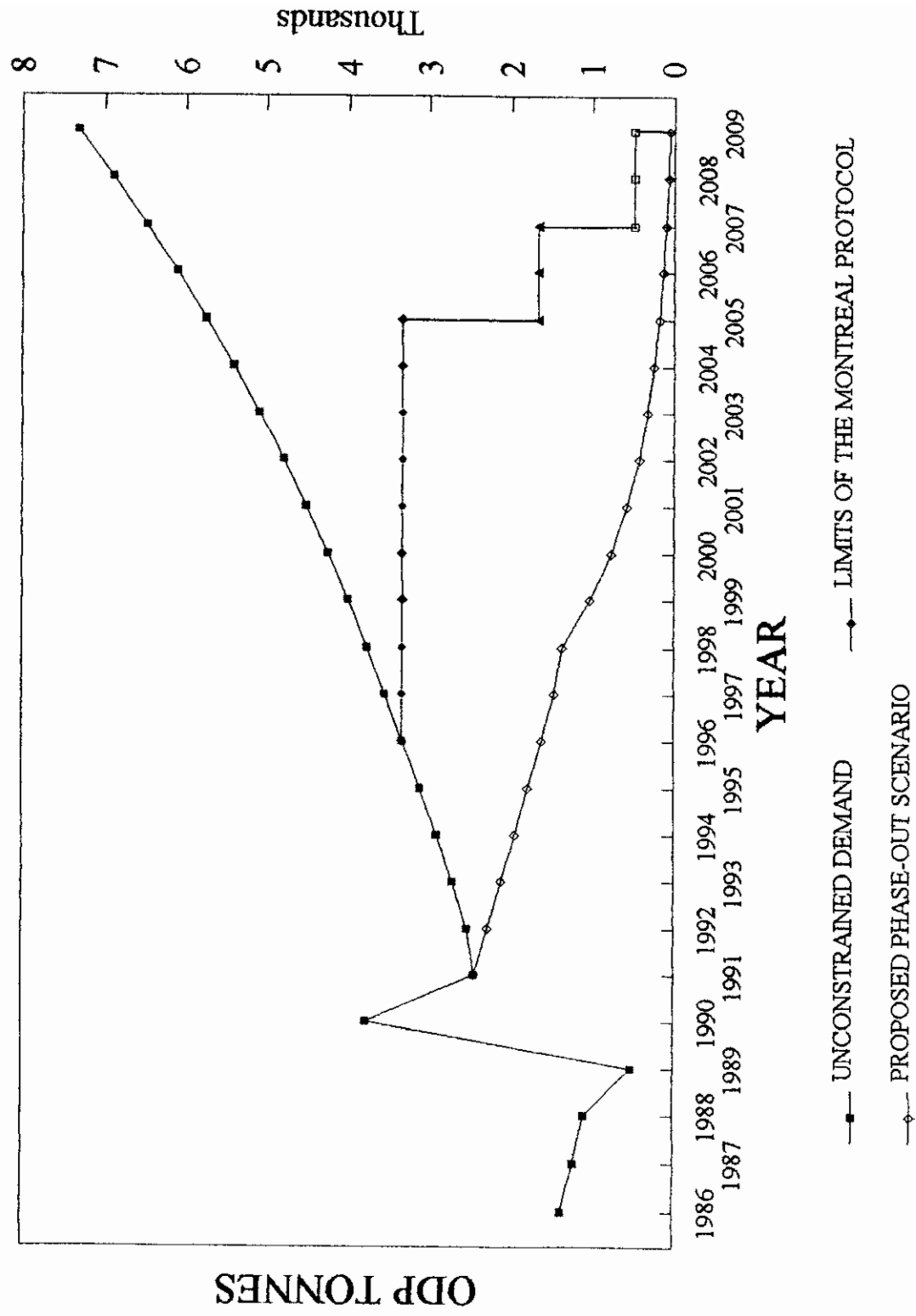
- * If phase-out is slow in a fast developing economy, the stock of existing ODS using plant equipment and products will continue to grow. The result of such build up will ultimately increase the overall cost of ODSs phase-out.

- * The make-up of the national ozone policy will directly influence the cost of phase-out to participating industries. It should be recognized that the eligibility rules under the Multilateral Fund will also create strategic incentives. To the extent that incremental costs incurred by rapid phase-out are reimbursable under the Multilateral Fund's incremental cost rules, higher costs need not be a burden to the developing country. The best approach for formulating the national ozone policy appears to be a combination of elements representing various approaches in a pragmatic way.

IMPLEMENTING AGENCIES

ES.32 The Government implementing agency that will have the responsibility of the present country programme is the Ozone Monitoring Center within the Department of the Environment. UNDP and UNIDO are the chosen implementing agencies.

PROPOSED PHASE-OUT SCENARIO AND LIMITS OF THE MONTREAL PROTOCOL



1.0 INTRODUCTION

THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER

1.1 The Islamic Republic of Iran has prepared the present document as a pre-requisite for assistance from the Multilateral Fund under the Montreal Protocol. This document encompasses all items needed to qualify as a country programme.

1.2 The Islamic Republic of Iran ratified the Vienna Convention and the Montreal Protocol on 10 March 1990. The Islamic Republic of Iran thus became a Party to the Montreal Protocol on 8 June 1990, ninety (90) days following the date of ratification as stipulated in the Protocol.

1.3 The Montreal Protocol defines Consumption of Controlled Substances as Production plus Imports minus Exports. The Montreal Protocol also defines "controlled substance" see UNEP/OzI.Pro.1/5. In conformity with these definitions, in 1991 the ODS consumption in the Islamic Republic of Iran is 2445 tones. The consumption per Capita in 1991 is 0.042 kg.

1.4 Since the Islamic Republic of Iran is a developing country that is a Party to the Protocol and its consumption of controlled substances in 1991 is less than the 0.3 kilograms per capita, the limit imposed by the Montreal Protocol, the country is eligible to receive technical and financial assistance from the Multilateral Fund.

1.5 At the request of the Government of the Islamic Republic of Iran, the United Nations Development Programme (UNDP) fielded missions to the country in April, May/June and Aug. 1992. The objectives were:

- 1) to assist in the formulation of the country programme;
- 2) to examine the least cost phase-out option to the country; and
- 3) to anticipate the rate of transition to alternatives based on interviews with industry leaders in the Islamic Republic of Iran.

1.6 According to paragraph 1 of Article 5 of Montreal Protocol on Substances that Deplete the Ozone Layer, "ANY PARTY THAT IS A DEVELOPING COUNTRY AND WHOSE ANNUAL CALCULATED LEVEL OF CONSUMPTION OF THE CONTROLLED SUBSTANCES IN ANNEX A IS LESS THAN 0.3 KILOGRAMS PER CAPITA ON THE DATE OF ENTRY INTO FORCE OF THE PROTOCOL FOR IT, OR ANY TIME THEREAFTER UNTIL 1 JANUARY 1999, SHALL IN ORDER TO MEET ITS BASIC DOMESTIC NEEDS, BE ENTITLED TO DELAY FOR TEN YEARS ITS COMPLIANCE WITH THE CONTROL MEASURES SET OUT IN ARTICLES 2A TO 2E".

1.7 Initial communications with industries using CFC-11 and CFC-12, indicate their desire for transition to non-ozone depleting substances or using recycling whenever such substances are still under development.

1.8 For the purpose of this document, Ozone Depleting Substances (ODSs) are defined as substances currently regulated by the Montreal Protocol and its London amendments of June 1990.

1.9 The ODSs most used in the Islamic Republic of Iran are CFC-11 and CFC-12.

2.0 USE OF OZONE DEPLETING SUBSTANCES AND ALTERNATIVES

BACKGROUND

2.1 This chapter deals with a review of current uses of ODSs in the Islamic Republic of Iran and the options open to this country in preparing for and implementing the complete phase-out of these substances in accordance with the requirements of the Montreal Protocol.

2.2 The Islamic Republic of Iran has no CFC or Halon production facilities. All ODSs used in the country are directly imported by the users. The only consumers of ODSs are private industries. These industries manufacture and service domestic refrigerators as well as blow foam. Small quantities of ODSs are also used in some fire extinguishing applications. The data obtained indicate that in 1991, no halons were imported into the Islamic Republic of Iran.

2.3 The consumption of CFCs in the Islamic Republic of Iran is not only limited to CFC-11 and CFC-12. HCFC-22 and little CFC-502 are being used in many cold storage facilities. Some HCFC-22 is also being used in mobile air conditioners.

ODS CONSUMPTION

2.4 The consumption of CFC-11 and CFC-12 have increased from 1231 tones in 1987 to 2445 tones in 1991, with a decline in 1989 and a sharp increase in 1990. This was followed to date by "normal" consumption as shown in Table 6 and Figures 6.

CFC-11 imports was 864 tones in 1987. A sudden increase to 3550 tones was recorded in 1990 as shown in Figure 6A. As for CFC-12, imports were 367 tones in 1987 then declined in 1989 to 37 then rose to 546 tones in 1991 as shown in Figure 6B. The sudden lowering and rise in consumption was due to the prevailing conditions at the time.

2.5 The total import/consumption of ODSs by sector in the Islamic Republic of Iran is presented in Tables 1, 2, 3, 4 and 5. The tables shown in Annex A give the details of imports and production by company/consumer.

2.6 It is to be noted that some companies may have bought ODSs from unrecognized sources and therefore may have consumed more quantities than noted in the import registers. There is change in pattern of import that may be due to a change in the economic conditions.

TABLE 1. IMPORT OF CFC-11 IN TONNES BY THE REFRIGERATION INDUSTRY

YEAR	1987	1988	1989	1990	1991
TONNES	138.58	203.00	297.50	108.94	349.65

FIGURE 1. IMPORT OF CFC-11 BY REFRIGERATION INDUSTRY

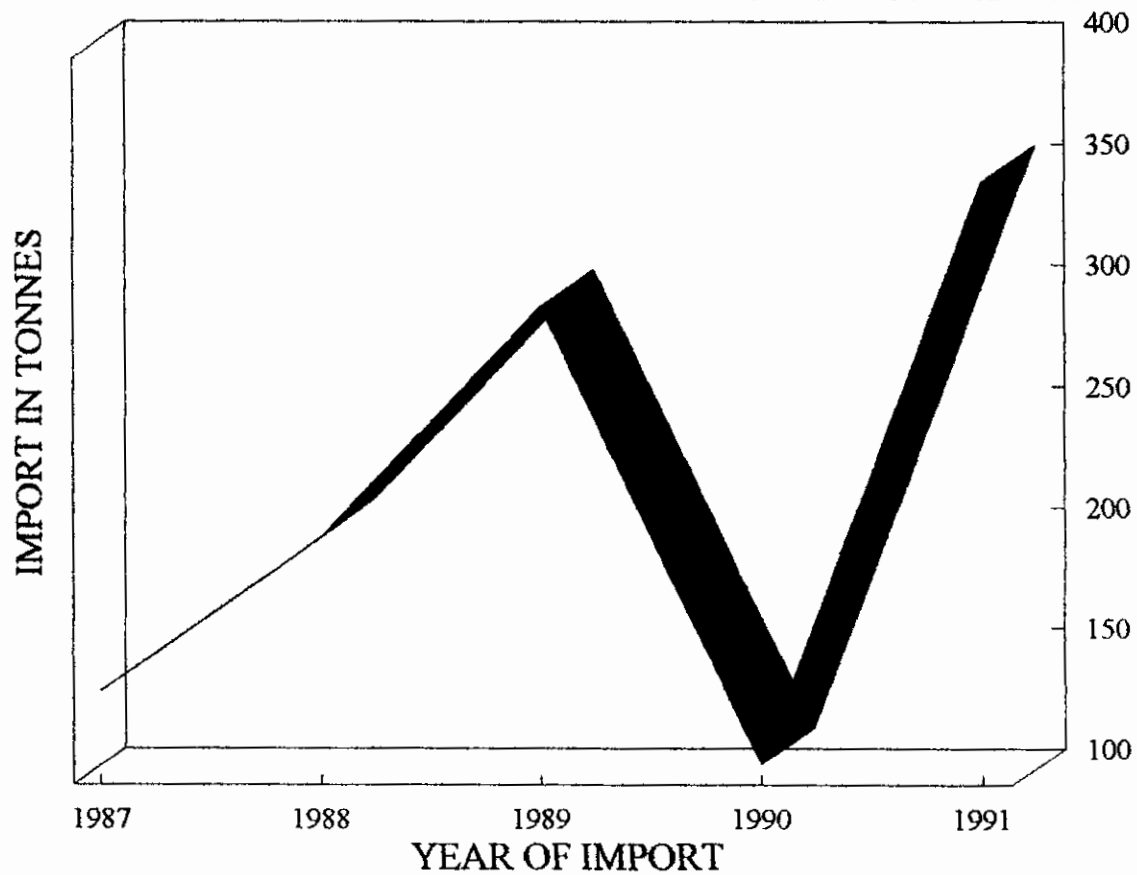


TABLE 2. IMPORT OF CFC-12 IN TONNES BY THE REFRIGERATION INDUSTRY

YEAR	1987	1988	1989	1990	1991
TONNES	133.64	39.00	19.00	68.99	242.47

FIGURE 2 - IMPORT OF CFC-12 BY THE REFRIGERATION INDUSTRY

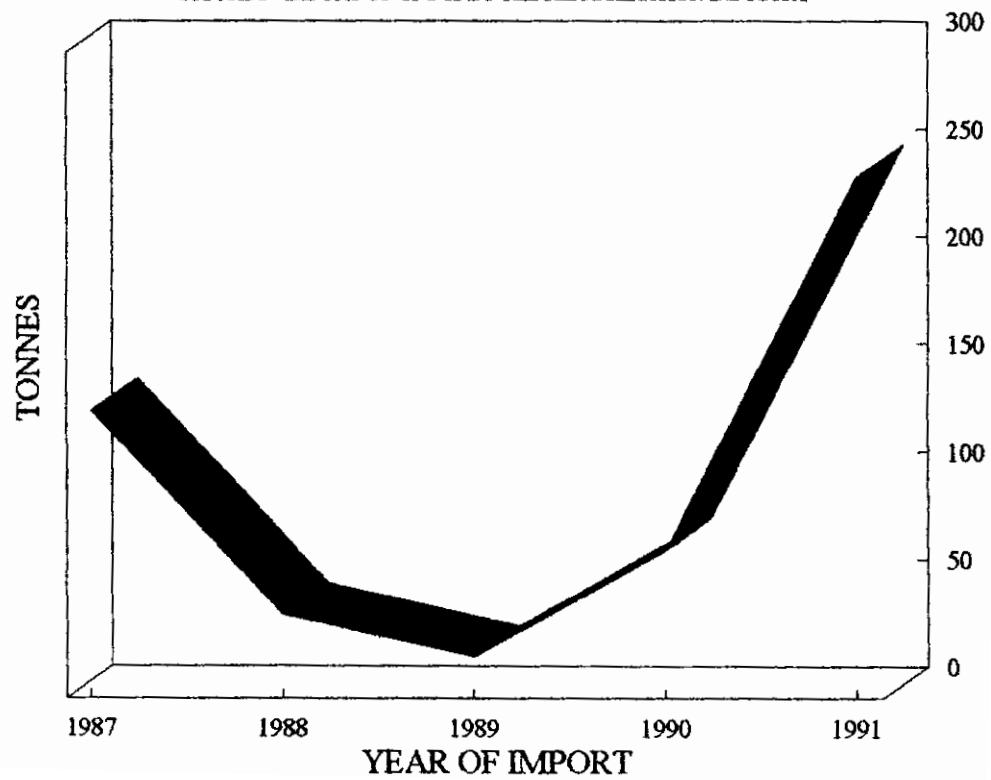


TABLE 3. USE OF CFC-11 IN THE FOAM INDUSTRY

YEAR	1987	1988	1989	1990	1991
TONNES	5.04	145.00	122.40	156.70	744.40

FIGURE 3. USE OF CFC-11 IN THE FOAM INDUSTRY

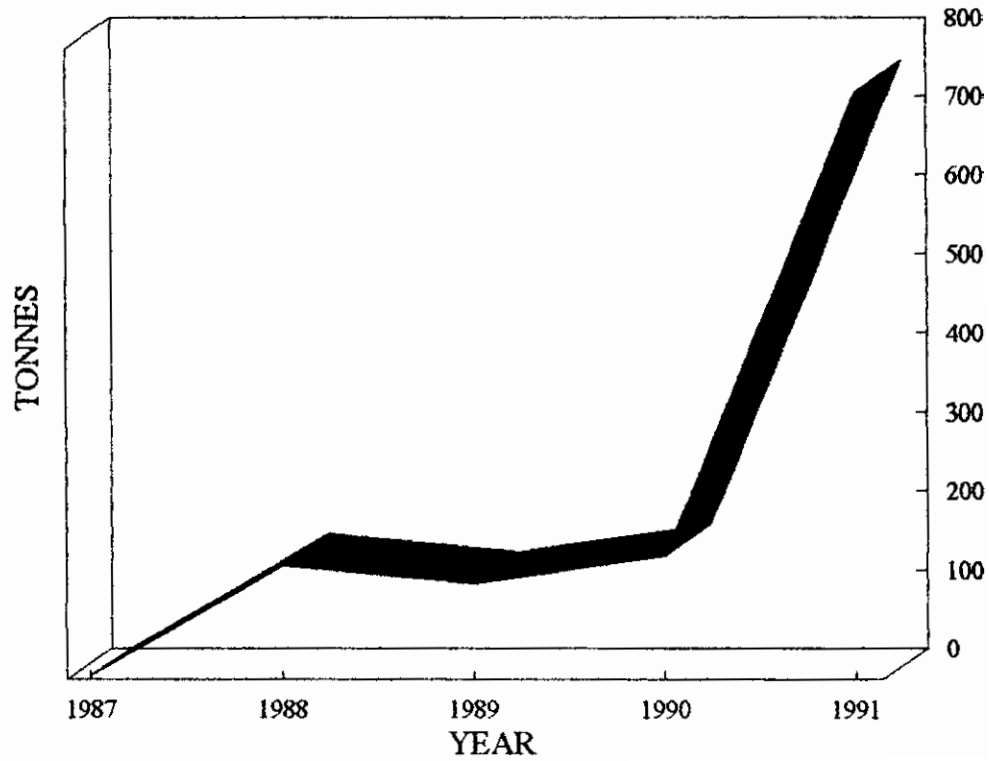


TABLE 4. IMPORT OF CFC-11 BY THE UNRECOGNIZED SECTOR

YEAR	1987	1988	1989	1990	1991
TONNES	234.40	1.96	17.92	165.32	302.70

FIGURE 4 - IMPORT OF CFC-11 BY THE UNRECOGNIZED SECTOR

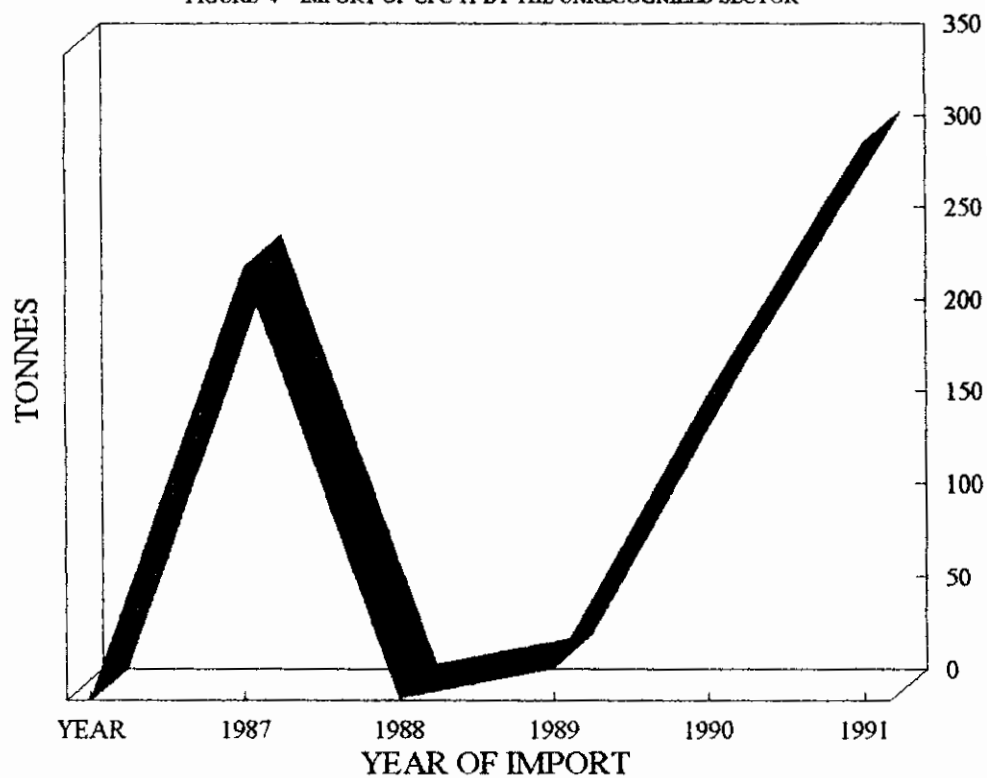


TABLE 5. IMPORT OF CFC-12 BY THE UNRECOGNIZED SECTOR

YEAR	1987	1988	1989	1990	1991
TONNES	721.00	705.00	72.00	3284.00	805.00

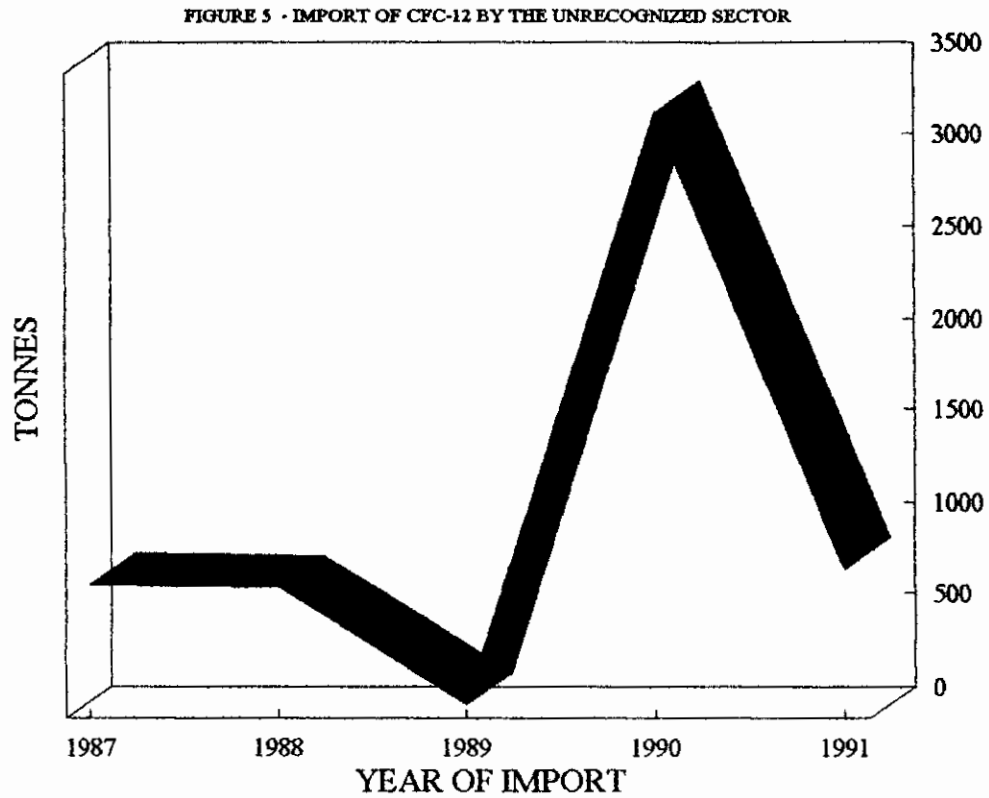


TABLE 6. IMPORT OF ODS IN THE ISLAMIC REPUBLIC OF IRAN

SECTOR	ODS	1986 est.	1987	1988	1989	1990	1991
UNREC.	CFC-11		721	705	72	3284	805
UNREC.	CFC-12		234	2	18	165	303
FOAM	CFC-11		5	145	122	157	744
FRIG	CFC-11		138	203	298	109	350
FRIG	CFC-12		133	39	19	69	243
TOTAL	CFC-11	787	864	1053	492	3550	1899
TOTAL	CFC-12	581	367	41	37	234	546
TOTAL	ODS	1368	1231	1094	529	3784	2445

FIGURE 6A - IMPORT OF CFC-11 IN THE ISLAMIC REPUBLIC OF IRAN

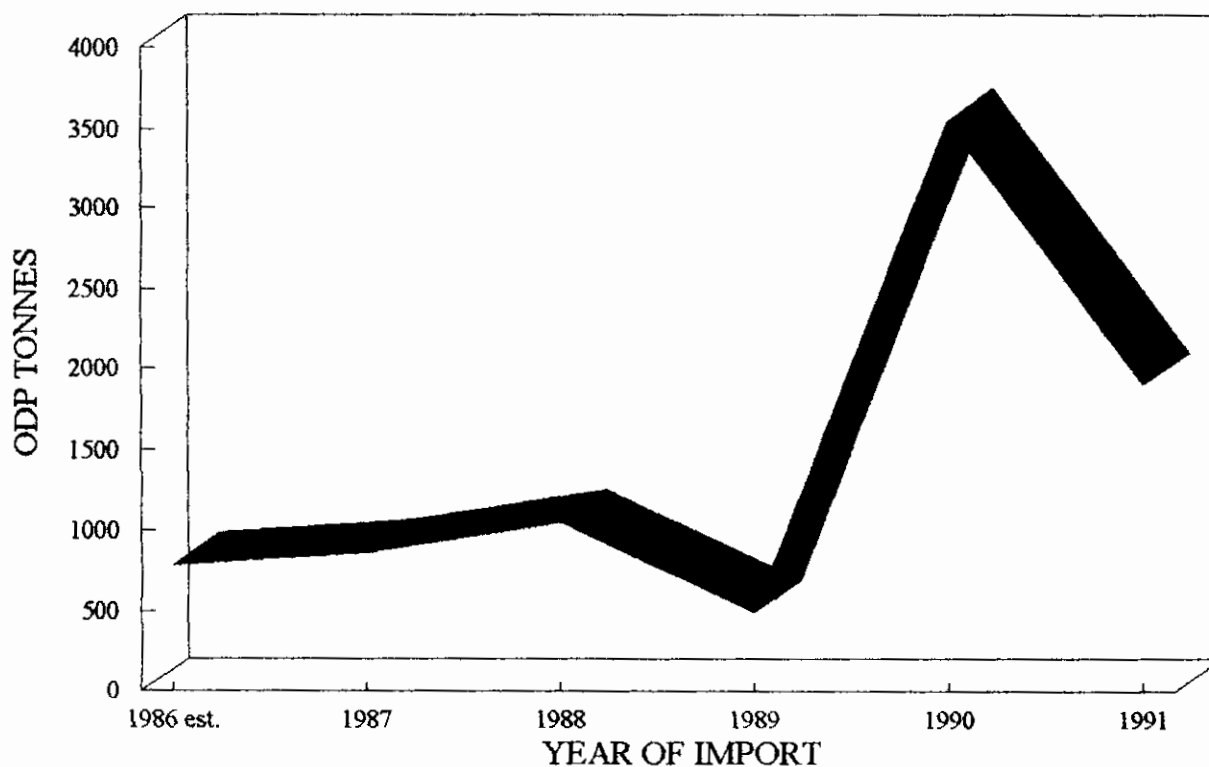


FIGURE 6B - IMPORT OF CFC-12 IN THE ISLAMIC REPUBLIC OF IRAN

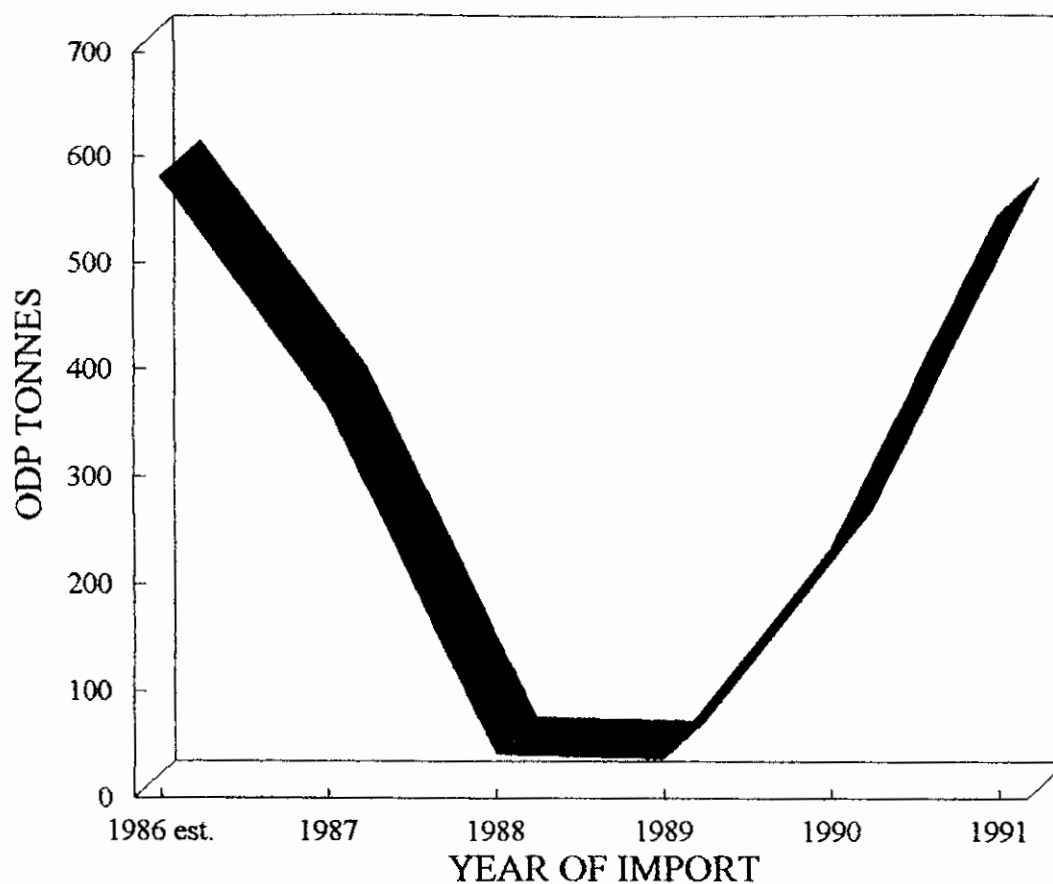


FIGURE 6C - IMPORT OF ODS IN THE ISLAMIC REPUBLIC OF IRAN

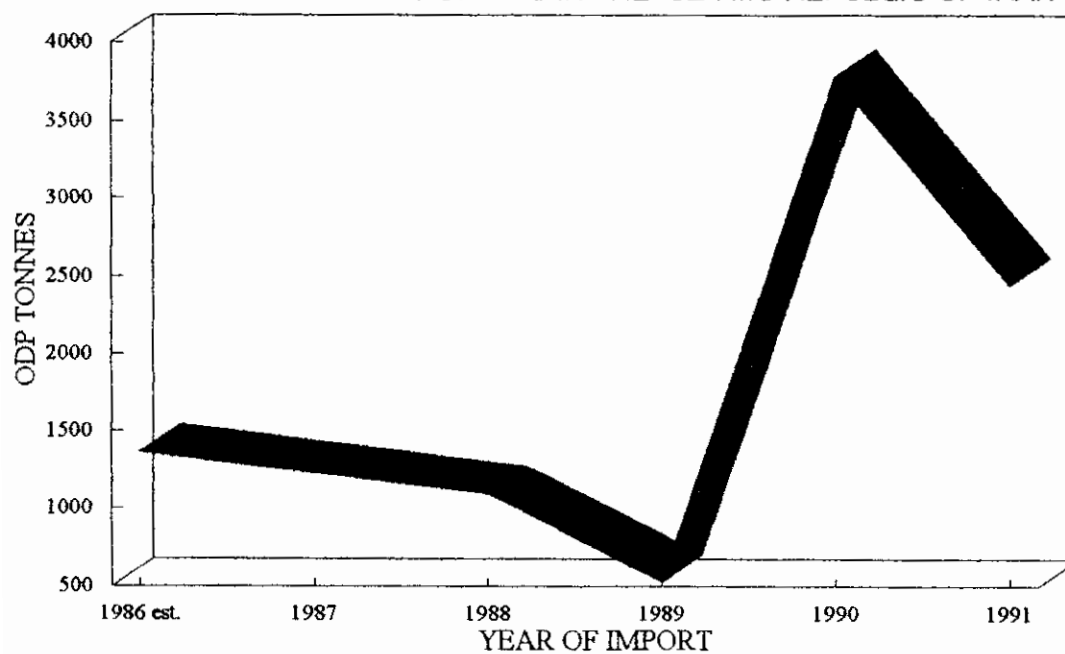
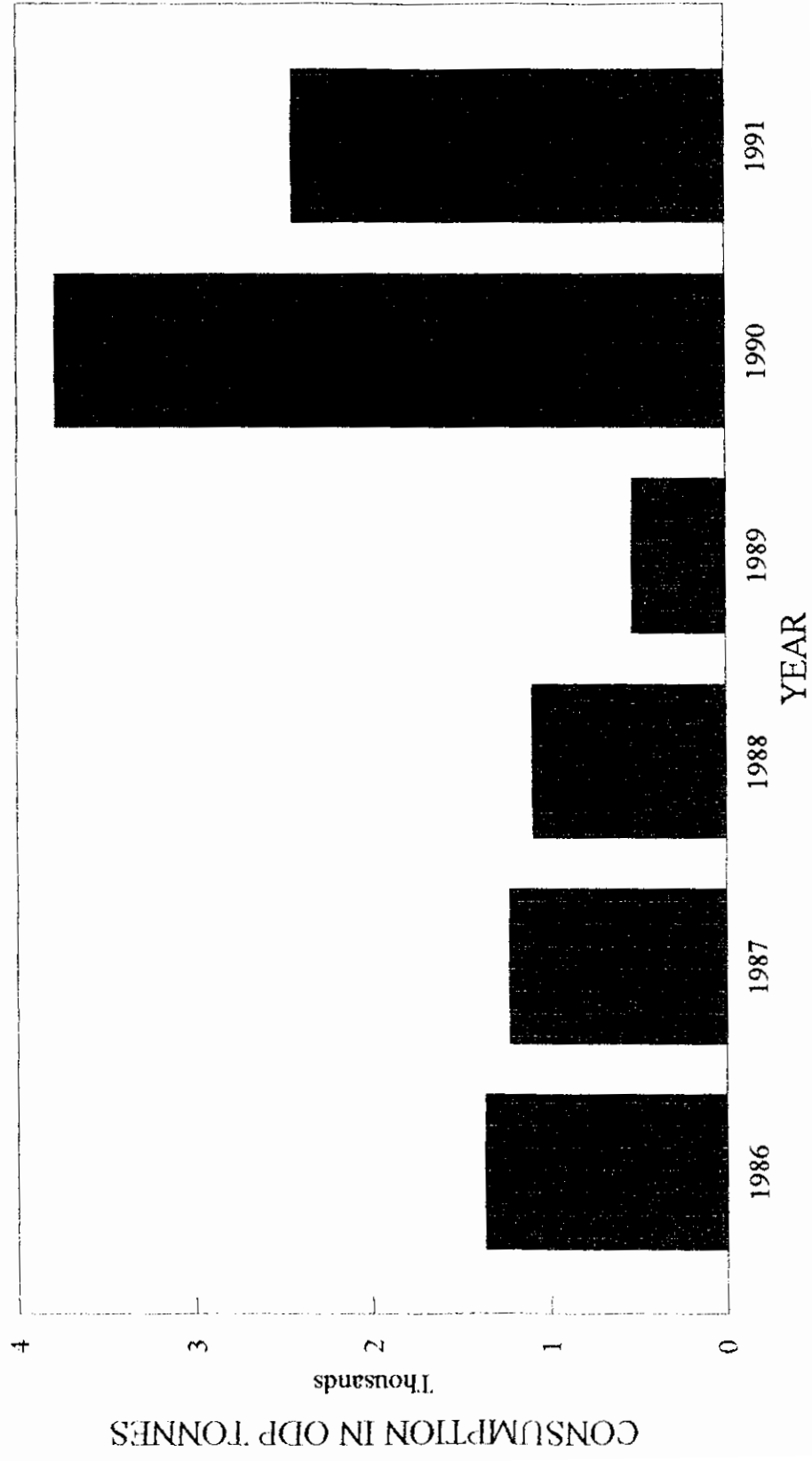


FIGURE 6D. CONSUMPTION OF ODS IN ODP TONNES



2.7 It is worthy to note that the exact consumption of CFC-11 and CFC-12 by some entities is not known. Amounts of CFCs classified in this document as unrecognized have been received by large factories and organizations. The reason for the import of these quantities has yet to be identified. Such importers as the Islamic Republic of Iran Broadcasting and others have not yet responded to quires. Also to be noted that some citizens blow foam in their houses using CFC-11. More investigation is needed to determine the use and quantities consumed.

SOURCES OF SUPPLY OF ODSs TO THE ISLAMIC REPUBLIC OF IRAN

2.8 In order to cross check the data obtained, the analysis comprised a comparison of data with that obtained from different suppliers of CFC-11 and CFC-12 to the Islamic Republic of Iran.

2.9 The main exporters to the Islamic Republic of Iran are given in the following table.

EXPORTER	MARKET SHARE
INDUSTRIES CHIMIQUES DU NORD DE LA GRE	44.71%
WECO EXPORT GMBH	10.29%
HOECHST AKTIENGESELLSCHAFT	8.96%
OTHER	36.04%

SOURCE: The figures used for the compilation of this table were obtained from the Centre for Distribution of Chemicals, Ministry of Commerce.

2.10 As mentioned earlier, there is no CFC production in the country. The industries involved, import CFCs directly from world producers. These are refrigerator and freezer manufacturers and foam blowers. Through interviews with foam and refrigerator industries it was found that they paid on the average 1250 US \$ per tonne of CFC-11 and 1400 US \$ per tonne of CFC-12.

2.11 Most companies manufacturing refrigeration units have licensed servicing shops. Each company imports its requirement ODSs and supplies its service shops with the necessary refrigerants. All companies involved with ODSs are semi-privately owned.

MANUFACTURERS OF DOMESTIC REFRIGERATORS

2.12 There are 12 major refrigerator manufacturing companies in the Islamic Republic of Iran and 18 small ones. A company is referred to as major if its production is more than 10,000 units per year.

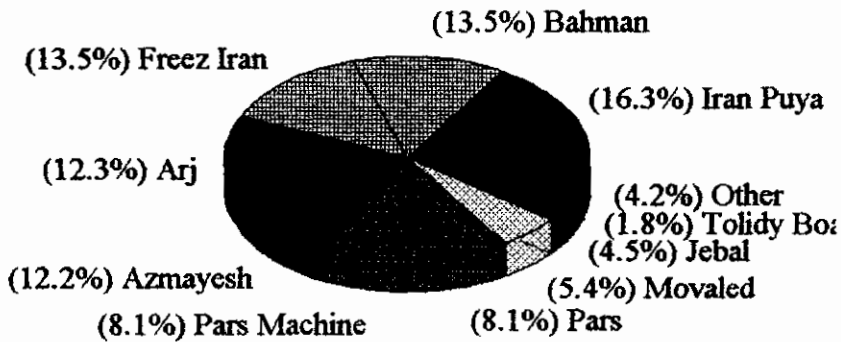
2.13 The total production capacity in the Islamic Republic of Iran is 1,227,600 units per year. It is estimated however that only 1,119,000 units are presently actually being produced. The companies that manufacture the largest number of refrigerators in the Islamic Republic of Iran are: AZMAYESH, ARJ, IRAN PUYA, BAHMAN, PARS MACHINE, FREEZ IRAN and PARS. Their total market share of these seven companies is about 83.97%. Their individual market shares are shown on the figure on the following page.

2.14 The major refrigerator manufacturers import compressors, although there are compressor manufacturing facilities in the Islamic Republic of Iran. Information on users of locally manufactured compressors is being sought. All the refrigerator and freezer manufacturers blow rigid polyurethane foam as insulation directly into the cavity between the inner and outer skins of the cabinets. Tables in Annex A give information on the production of refrigerators by the various manufacturers.

1991 PRODUCTION OF REFRIGERATORS IN THE ISLAMIC REPUBLIC OF IRAN

Refrigerator Manufacturer	Production	Market Share (%)
Iran Puya	180000	16.25
Bahman	150000	13.54
Freez Iran	150000	13.54
Arj	136000	12.28
Azmayesh	135000	12.19
Pars Machine	90000	8.13
Pars	90000	8.13
Movaled	60000	5.42
Jebal	50000	4.51
Tolidy Board	20000	1.81
Other	46538	4.20

1991 Production of Refrigerators by Manufacturer



MANUFACTURERS OF DOMESTIC FREEZERS

2.15 There are four major freezer manufacturers and nine smaller ones in the country. It is estimated that about 137 750 units are being produced yearly.

2.16 It is worth noting that imported freezers are more abundant than locally produced ones on the market. Some investigation is underway to estimate the actual numbers of imported freezers.

2.17 Tables in Annex A show the production of freezers. The companies that produce the largest number of freezers in country are shown in the figure on the following page.

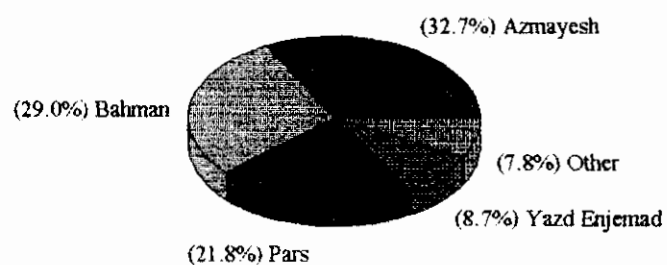
REFRIGERATOR REPAIR WORKSHOPS

2.18 It is estimated that there are about 1 200 workshops that repair refrigeration equipment in the country. About 900 of these are authorized service centers for the manufacturing companies. The remainder are small , often family businesses. Typically 13.5 kilograms disposable cylinders of CFC-12 are used in recharging. Recharging an average refrigerator usually takes 500 grams.

1991 PRODUCTION OF FREEZERS IN THE ISLAMIC REPUBLIC OF IRAN

Freezer Manufacturer	Production	Market Share (%)
Azmayesh	45000	32.67
Bahman	40000	29.04
Pars	30000	21.78
Yazd Enjemad	12000	8.71
Other	10750	7.80

1991 Production of Freezers by Manufacturer



CUSTOMS DUTIES AND COMMERCIAL TAX ON IMPORTED REFRIGERATORS, FREEZERS AND SPARE PARTS

2.19 The following table gives custom duties and taxes on imported refrigerators and freezers:

ITEM	CUSTOM DUTY %	COMMERCIAL TAX %
HOUSEHOLD REFRIGERATORS	25	100
BOX FREEZERS	25	200
SHOW CASE FREEZERS	25	100
BLOOD BANK FREEZERS	25	NONE
WATER CHILLERS	25	50
SPARE PARTS	25	10

2.20 All mobile air conditioning units are imported with the vehicles. Servicing is typically undertaken by the vehicle manufacturer's servicing centers. However, some servicing is undertaken in small workshops specially once the warranty period has expired.

2.21 The commercial tax on imports of Mobile Air Conditioning Units is 80% and the customs duty is 20%.

FOAM INDUSTRY

2.22 The foam industry imports/consumes CFC-11 and polyurethane foam formulations (for both rigid and flexible foams) into the country. The sources of supply of CFC-11 are given in Table 7 in Annex A. Industries Chimiques Du Nord De la Gre has exported about 1565 tonnes of CFC-11 and CFC-12 (a market share of 44.71%) to the Islamic Republic of Iran. WECO EPORT GMBH and HOECHST AKTIENGESELLSCHAFT have a market share of 10.29 and 8.96% respectively.

2.23 Apart from the rigid polyurethane foams produced by refrigerator manufacturers for insulation of the manufactured units themselves, rigid polyurethane foam which uses CFC-11 as the blowing agent is also used to produce building insulation. It is estimated that about 50 % of the foam blown in the country is rigid foam. The following factories are major foam producers in the country. Tables in Annex A give more details on these foam blowers.

Company Name	Market Share (%)
Iran Gharb	27
Shizar	16
Khozestan Plast Ahvaz	12
Urethan System	8
Mashad Foam	7
Bahman Plastic	5
Tolidy Tehran	4
Abre Iran	3
Latex	3
Peak Foam	3

2.24 There are about 8 smaller foam blowers with an overall market share of 12%. These are; Pars Foam, Penon, Tehran Foam, Abre Sanati Iran, Behravash, Esfanj Tabriz, Esfanj Shirvan, Ghouchan and small workshops of Khozestan. More investigations are underway to find out the exact amount of flexible and rigid polyurethane foam productions. The data presented in Table 9 in Annex A indicates that in 1991 40 264 tonnes of flexible and rigid polyurethane foams have been produced. Tables in Annex A provide information on the import/consumption of CFC-11 from 1986 to 1991 in the foam industry.

2.25 Chemicals that are commonly used in the foam industry include; Polyol, T.D.I, Dabco, D.M.E.A, Silicon, Cosmos, CFC-11, and Water.

AEROSOL FILLING OPERATIONS

2.26 There are eleven aerosol fillers in the Islamic Republic of Iran. Five of these dominate the market. All aerosols in the country use hydrocarbons as propellant. However, one finds on the market small quantities of imported aerosols. These are mainly hydrocarbon filled. Very few do not indicate the propellant used. More investigations are underway to identify the propellant used in these cases.

CURRENT DEMAND FOR ODSs

2.27 The Government of the Islamic Republic of Iran is presently using the Brussels Harmonized Classification System for chemicals that are imported. The Customs

Department issues a yearly book on imports and exports. Since all ODS users should have licenses to operate, they are allowed to import their requirements for themselves with no restrictions. They only have to obtain a license from the Procurement and Distribution Centre of the Ministry of Commerce. This organization keeps computerized records of imports into the country.

FUTURE DEMAND FOR ODS

2.28 Yearly demand projections in each user sector are required to the year 2010. The forecasts presented in this section assume that the Montreal Protocol does not exist, that there are no supply constraints and therefore define demand with no substitution. They do not take into account any possible product development or other changes in manufacturing practices as a result of normal progress.

2.29 It is assumed that the "unrecognized" sector sells ODS to the other sectors. This assumption is made on the basis of the figures for import and those for use in refrigeration and foam sectors.

2.30 The unconstrained demand projections are the starting point for determining the demand for substitutes.

2.31 According to production projections, the production of refrigerators will increase from the present 1991 number of 1,119,000 units to 3,160,000 units in the year 2010. The total production of rigid and flexible foams will rise from 40,264 tonnes in 1991 to 120,500 tonnes in the year 2010.

2.32 The demand for CFC-11 and CFC-12 by refrigerator manufacturers increases from 593 tonnes in 1991 to 1288 tonnes in 2010. The unconstrained forecast demand for CFC-11 by foam industries are on the increase from 744 tonnes in 1991 to 1711 tonnes in the year 2010.

2.32 The overall unconstrained CFC consumption for the foam and refrigerator industries is projected to increase from 1337 tonnes in 1991 to 2999 tonnes in 2010.

2.33 The unrecognized consumers have increased their consumption from 955 tonnes in 1987 to 1108 tonnes in 1991 with a jump to 3449 tonnes in 1990. The forecast demand for this sector is 5267 tonnes by the year 2010.

TABLE 10. FORECAST PRODUCTION OF REFRIGERATORS AND FREEZERS FROM 1991 TO THE YEAR 2010

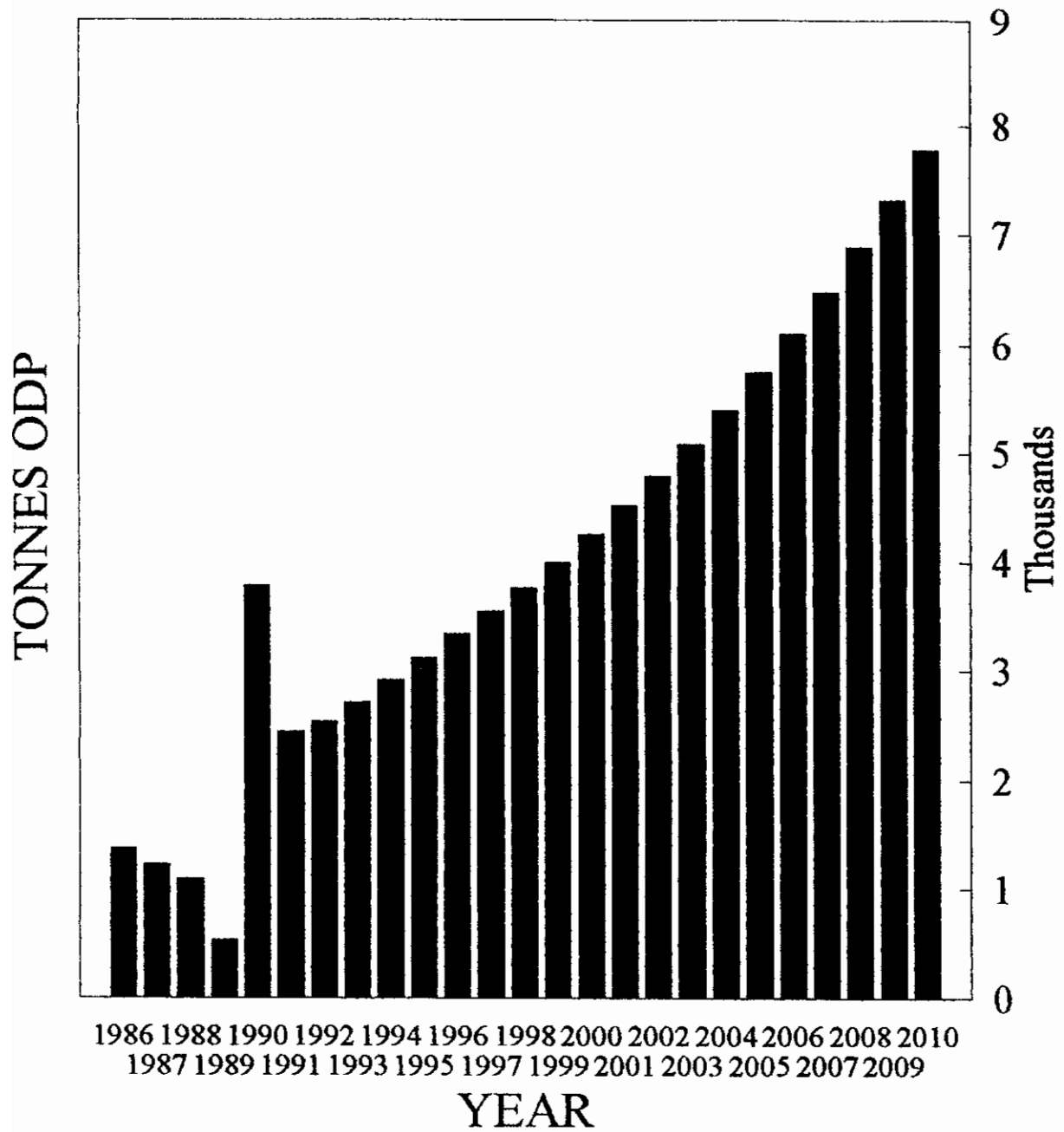
YEAR	UNITS PRODUCED
1991	1,119,000
1995	1,756,000
2000	2,756,000
2005	2,132,900
2010	3,160,200
TOTAL	10,764,400

TABLE 11. PRODUCTION FORECAST IN THE FOAM INDUSTRY (FROM
1991-2010)

YEAR	1991	1995	2000	2005	2010
TOTAL	36848	47200	63850	86700	120500

** Only major factories were considered in the forecast.

UNCONSTRAINED DEMAND FOR ODS



3.0 ECONOMIC CONDITIONS

CHARACTERISTICS OF THE COUNTRY

3.1 The following are selected characteristics and trends in the Islamic Republic of Iran:

The following table gives population data, past, present and forecast:

	YEAR	NUMBER
	1980	38,783,000
	1985	46,600,000
	1986	49,445,000
	1989	53,876,000
1. Population		
	1990	55,698,000
	1991	57,592,000
	1995	65,508,000
	2000	77,812,000
	2005	91,393,000
	2010	107,346,000
2. Population Growth Rate :	3.17 %.	
3. Labor Force :	22.25% of the total population	
4. Agriculture :	29.99% of the total employees	

5. Industry	:	14.79% of the total employees
6. Services	:	55.22% of the total employees
7. Scientists	:	0.082/1000 in 1987
8. Adult Literacy	:	74.4% in 1991 & 61% in 1986
9. Land Area	:	1,648,000 km ²
10. Forest land	:	18 million hectares in 1987
11. Arable Land	:	16.9 Million hectares in 1987
12. Population Density	:	350/1000 hectares in 1991
13. Protected Land Area	:	30,000 hectare
14. Human Development Index:		12.8 Million active population
15. GDP per Capita	:	

Year	US \$
	1 US \$ = 600 Rials
1987	98.00
1988	105.00
1989	113.00
1990	122.00
1991	132.00
1992	143.00

1995	180.00
2000	250.00
2005	390.00
2010	570.00

16. GNP : YEAR MILLION US \$

1988 84,672

1989 82,979

1990 81,319

1991 92,703

1995 156,572

17. Number of years in which

population doubles : 21 years

18. Urbanization : 54.1 %

19. Average number of persons

in one family : Five (based on average of years 1965-91)

20. Number of households

receiving electricity : 8,826,000 in 1991

21. Rate of inflation : YEAR RATE (%)

1988 27.60

1989 17.40

1990 9.00

1991 20.00

22. Unemployment rate : YEAR RATE (%)

1991 15.90

1992 14.70

1993 13.40

FACTORS AFFECTING THE ECONOMIC CONDITIONS OF THE ISLAMIC REPUBLIC OF IRAN

3.2 The Following are the main factors affecting the economic conditions of Iran:

A. External factors

- * Reduction in the foreign currency revenue and subsequently reduction in imports;
- * Reduction in the rate of exchange of the dollar as compared to other foreign currencies;
- * Increase in the international prices of raw materials; and
- * Problems associated with international policies.

B. Internal factors

- * Population growth rate;
- * Increase in income of personnel which is not compatible with inflation;
- * Utilization of different rates of foreign exchange in the country;
- * rapid increase in the prices of goods;
- * Exemption of some goods from price fixation;
- * Increase in the number of middle persons on the one hand and decrease in production/import on the other;
- * Increase in production costs as a result of the increase in the price of raw materials; and
- * Implementation of a policy of subsidies for basic goods.

BUSINESS REGULATIONS AND INCENTIVES

3.3 A survey of existing documentation on business regulations indicates that the imports of goods into the country requires permissions issued by concerned Ministries.

3.4 The following Ministries are frequently involved in imports:

- * Ministry of Commerce;
- * Ministry of Industries;
- * Ministry of Heavy Industries;
- * Ministry of Mines and Metals;
- * Ministry of Health and Medical Education;
- * Ministry of Agriculture;
- * Ministry of Post, Telegraph and Telephone; and
- * Ministry of Oil.

3.5 Usually the imported goods are subject to commercial tax and customs duties. As for the ongoing Ozone Project on Ozone Depleting chemicals, the import of most of the chemicals is authorized by the Ministry of Commerce.

3.6 As the names of CFCs does not appear in the relevant lists, 15 and 25% commercial tax and customs duties are levied.

INCENTIVES

3.7 At present most imports are based on a rate of exchange of 1 US \$ to 1450 Rials, however, to encourage the industries, The Government of Islamic Republic of Iran is providing a rate of exchange of 1 US \$ to 600 Rials.

3.8 There are also some special loans provided by local banks to industries for their development . Usually, the interest on "normal" bank loans is more than 13 %. For the agricultural and industrial sectors the interest on bank loans is much lower, ranging from 4 to 8 %.

COST OF PHASE-OUT TO THE ECONOMY

3.9 The net incremental economic cost to the Islamic Republic of Iran for phase-out of ODSs is 116 Million US \$ (1991) using a 10 % discount rate. This analysis is based on the new refrigerators being charged with HFC-134a and no drop-in substitutes being used for charging old refrigerators. If drop-in substitutes (at a cost of 50% of cost of HFC-134a) were used in charging the old CFC-12 refrigerators and the new refrigerators were charged with HFC-134a, then the net incremental cost to the economy would be in the order of 58 Million US \$ (1991).

3.10 The primary conclusion drawn from this analysis is that a prompt ODS phase-out will be beneficial to the protection of the Ozone layer. The determination of reimbursement of costs for financing the projects proposed in this country programme

is an issue for the Multilateral Fund Executive Committee to decide in accordance with the set criteria of the Montreal Protocol.

3.11 The following conclusions were also reached. These are presented in the order of importance to the economy of the Islamic Republic of Iran.

- 1) The most significant net incremental costs to the Islamic Republic of Iran are those associated with the potential forced early replacement of domestic refrigerators when virgin CFCs will no longer be available for recharge. This stems from the fact that there will be roughly 30 Million refrigerators in service in the Islamic Republic of Iran in 2010, but replacement costs only apply to those refrigerators which would not be able to find CFC-12 for recharge. The possibility of using drop-in substitutes for charging refrigerators is an important first option for the country has. Another option is the early transition to refrigerant HFC-134a for domestic refrigerators. This will reduce the population of CFC-12 refrigerators in 2010, and hence reduce early replacement costs. It is to be noted that the average age of the CFC-12 refrigerator population in 2010 was also a factor. In the absence of recycling of CFC-12 refrigerant, the average age of CFC-12 refrigerators is substantially decreased.
- 2) The incorporation of recycle/recovery into any phase-out case will have the effect of directly reducing ODS consumption. Its primary benefit will be to assure local supplies of CFC-12 for recharging refrigerators.

Additional savings (not included) should be expected from applying recycle/recovery technology to the conservation of HFC-134a.

4.0 IMPLEMENTING PHASE-OUT

STRATEGY STATEMENT BY THE GOVERNMENT

4.1 According to the Montreal Protocol, paragraph 1 of Article 5 countries may phase out CFCs, Halons and Carbon Tetrachloride by the year 2010 and Methyl Chloroform by the year 2015. The Islamic Republic of Iran does not produce ODSs. It imports them. The ODSs are consumed by a small number of large industries. The coordination of phase-out activities by the Government would not be difficult. Thus, as an importer of controlled substances and associated technology, phase out by the year 2005 or earlier in the Islamic Republic of Iran is feasible provided that the financial and technical support proposed in this country programme is received.

4.2 The Government of the Islamic Republic of Iran expects to reduce the consumption of controlled substances by 40% between 1993 to 1997 and will reduce the remaining consumption during 1998 to 2005. The Action Plan describes the activities for reduction of ODSs. Measures that are included in the action plan are consistent with the current policy framework for environmental protection as stated in Article 50 of constitutional law of the Islamic Republic of Iran. The Government will announce that importation of controlled substances will be banned after the year 2005 except for essential uses. Servicing of the remaining stock of refrigeration equipment will be done using "drop in" substitutes providing funds are made available to pay for the incremental costs of these substitutes. Medical and other very special applications would be allowed to consume ODSs until such a time as substitutes are made available. The Government will avoid the imposition of import quotas or import tariffs

during the transition to complete phase-out. However, bans where and when appropriate will be imposed.

ACTION PLAN

4.3 The Action Plan consists of three main elements. These are:

- 1) A set of Government actions that support the above mentioned strategy;
- 2) A series of projects to be undertaken by the private sector to respond to the Government actions; and
- 3) Monitoring and control of all the activities that deal with the Ozone Issue by the Government through the Ozone Monitoring Centre.

GOVERNMENT ACTIONS

4.4 The following are the Government Actions that constitute the essence of this Country Programme:

- A. Creation of an Ozone Monitoring Centre;
- B. Public Awareness Programme; and
- C. Technological Conversion Financing Programme.

A. CREATION OF AN MONITORING OZONE CENTER

4.5 This centre would be responsible for the evaluation, coordination and supervision of all Government Actions and the projects that will phase-out ODSs. For

the first five years (1993-1997) of the programme, the centre would operate with two professionals and four assistants. An international consultant may also be needed to assist in technical and other matters. The responsibility of the centre would be as follows:

1. To monitor the commitments made by the government and the private companies as described in this country programme;
2. To supervise public awareness activities;
3. To communicate with the Montreal Protocol, international organizations and government agencies to be informed on the latest developments in the field;
4. To provide the industries with the latest information on the substitution of ODSs;
5. To provide the industries with information on the latest technology developments in other parts of the world;
6. To propose an action programme for 1997-2007;
7. To evaluate potential applicants for specific training;
8. To organize seminars and training courses;
9. To investigate and assess the problems that industries may be faced with in implementing the Montreal Protocol;
10. To supervise the operations of transition in industry; and
11. To monitor the acquisition of the latest information on the import of ODSs and its use in the country as well as to report yearly to the Montreal Protocol on consumption in the country.

B. PUBLIC AWARENESS PROGRAMME

4.6 This programme would have two objectives. The first is to raise public awareness on Ozone Layer depletion and induce consumers to prefer products than do not deplete the Ozone layer. Some of these products may exhibit the Ozone Seal. The second objective is to provide guidelines to prevent excessive exposure to Ultra Violet Rays.

4.7 The two objectives will be carried out intensively during 1993 to 1997. It would however be continued beyond 1997, but at a slower pace. At present, some environmental issues are being discussed on television, Radio and newspapers. A series of seminars would also be conducted on this important subject matter.

C. TECHNOLOGICAL CONVERSION FINANCING PROGRAMME

4.8 In order to encourage the industries, the Government is providing foreign exchange on a preferential basis. There are some special loans that are available to industries to assist in their development by various banks. Usually, the interest on bank loans is more than 13%, reaching 22%, in some cases. For example, in the agricultural and industrial sectors the interest on bank loan may be much lower, ranging from 4 to 8%. The Technological Conversion Financing Programme would be partially supported in this way by the Government. In order to substitute ODSs, grant financing is required to industries in order to encourage these to convert rapidly. Only incremental costs, in these cases, would be grant financed.

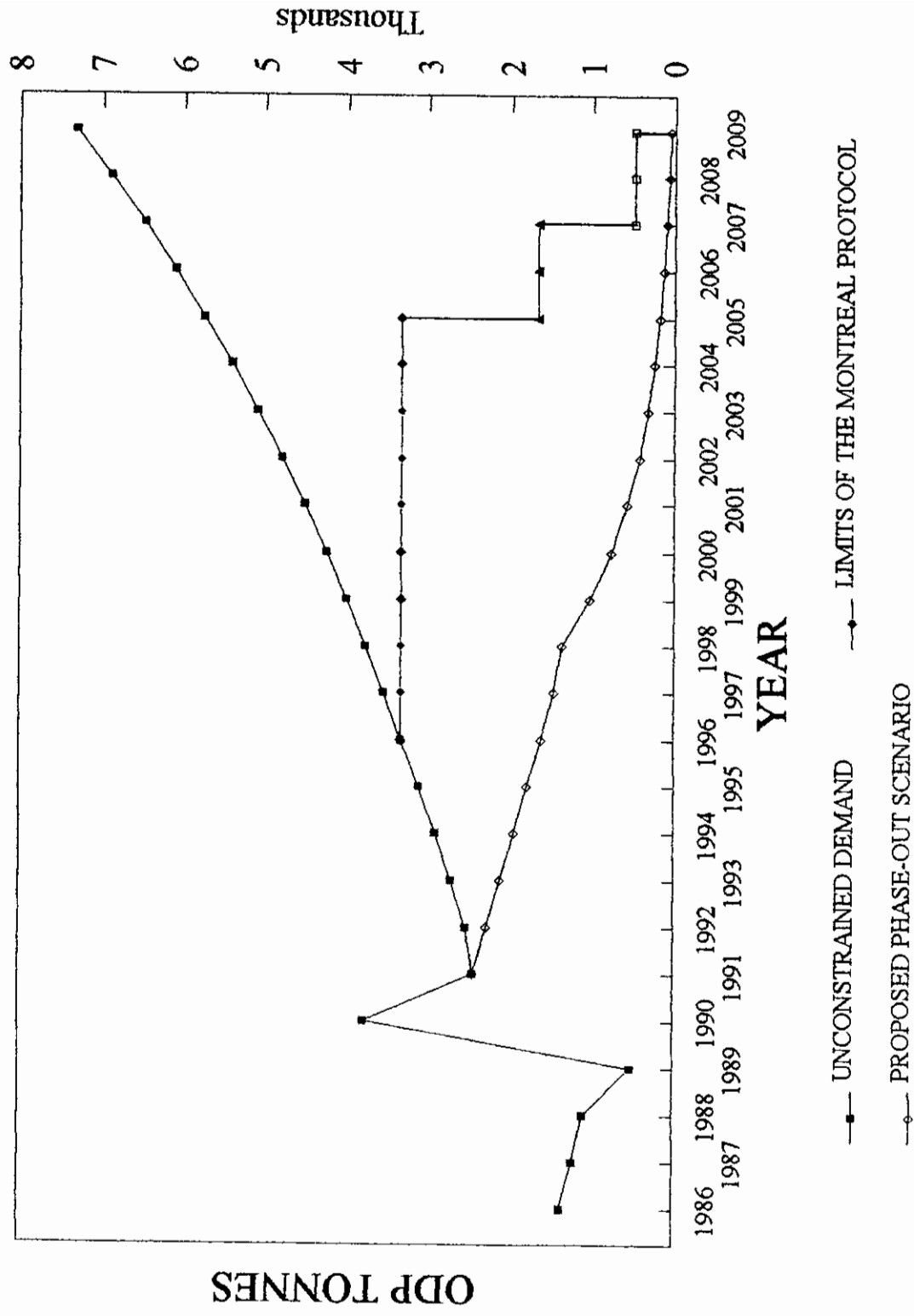
4.9 The intended effect of each of these programmes is to reduce consumption of ODSs in the various sectors within the set time-table.

4.10 Based on the structure of the industry that consumes controlled substances, current users could be divided into the following three categories:

1. Negligible incremental conversion cost (hereafter referred to as miscellaneous. Examples of these include extinguishers using Halons, shoe manufacturing;
2. Low incremental conversion costs such as for small foam blowing operations; and
3. Significant incremental conversion costs such as in the case of the production of commercial refrigeration equipment and their maintenance as well as large foam blowing factories.

4.11 Based on the action plan described, it is expected to reduce the consumption of ODSs by 40 percent from to 2445 ODP tonnes in 1991 to 1467 ODP tonnes in 1997. This is shown on the figure entitled Proposed Phase-out Scenario on the following page.

PROPOSED PHASE-OUT SCENARIO AND LIMITS OF THE MONTREAL PROTOCOL



4.12 The foam and refrigerator industries have expressed their willingness for rapid transition, it thus is expected that the phasing out of ODSs will be achieved on time by companies in these two sectors.

PRIVATE SECTOR PROJECTS

4.13 The Government actions shall create the incentives to the private sector for the formulation and implementation of technological conversion projects. Except for the Ozone Monitoring Centre each project has to be evaluated according to Montreal Protocol standards before financing.

PROJECTS

4.14 The following projects are given in their order of priority to the Government. Further details are found in Annex B.

Monitoring project

PROJECT NO 1: CREATION OF OZONE MONITORING CENTRE

OBJECTIVES : To monitor the commitments made by the Government of the Islamic Republic of Iran and the companies consuming ODS as described in this country programme.

COST ESTIMATE: 200,200 US \$

Projects in the refrigeration sector

PROJECT NO.2: REFRIGERANT RECOVERY AND RECLAMATION

OBJECTIVES: -To recycle and conserve refrigerant in 50 service stations including training of service personnel.

PROJECT NO.3: PREPARATION OF INVESTMENT PROJECT PROPOSAL FOR THE PHASE-OUT OF CFC-11 AND CFC-12 IN THE DOMESTIC REFRIGERATION INDUSTRY.

OBJECTIVES : Change the production equipment and training. Evaluation of the costs associated with the change in the production equipment and training including test facilities.

EXPECTED ODS REDUCTION: About 200 tonnes ODS in the first two years.

Projects in the foam sector

PROJECT NO.4: PROJECT PREPARATION IN THE FOAM SECTOR FOR ABOUT 15 MAJOR COMPANIES

OBJECTIVES: Evaluation of costs of ventilation and other equipment as well as training in the conversion of CFC-11 to methylene Chloride for production of foam

EXPECTED ODS REDUCTION:
750 tonnes (Approx.)

Other projects

PROJECT NO. 5 : STERILANTS

OBJECTIVES: Project preparation in the field of conversion from CFC-12 and ethylene oxide to CO2 and ethylene oxide

EXPECTED ODS REDUCTION:

25 tonnes

BUDGET

4.15 There are about 30 refrigerator manufacturers, 12 major and 18 small, in the country. The total number of refrigerator production is 1,119,000 units per year. In the year 1995, the target date for 60 % phase-out of ODS, the number of units that are forecast to be produced in the country will be about 1,761,000.

4.16 The present number of factories producing foam is 17, 9 major and 8 smaller ones. The total production of these factories is about 40,000 tonnes in 1991 and would reach 59,000 tonnes in 1995.

4.17 Considering the consumption in these two sectors, the projects will cover about 50 factories in order to reach the set goals. The budget estimate for incremental costs including investments is in the order of 10,000,000 \$ US. However, the exact figures will only be known after the project preparation activity will be completed. The budget requirements for the preparation of these projects is shown in the following table.

BUDGET REQUIREMENTS TO START IMPLEMENTING THE COUNTRY PROGRAMME

PROJECT NUMBER	US \$ REQUIRED IN 1993	STATUS
1	200,200	APPROVED
2 - 5	300,000	APPROVED IN PART
TOTAL	500,200	

IMPLEMENTING AGENCIES

4.17 The Government implementing agency that will have the responsibility of the present country programme is the Ozone Monitoring Center within the Department of the Environment. UNDP and UNIDO are the chosen implementing agencies.

ANNEX A

DETAILED TABLES

TABLE 1. IMPORT OF CFC-11 BY REFRIGERATOR INDUSTRY

COMPANY'S NAME	AMOUNT OF CFC-11 (TONNES) DURING 1987-1991				
	(1987)	(1988)	(1989)	(1990)	(1991)
IRAN PUYA	19.04				
FREEZ IRAN	37.80	56.70			18.90
BAHMAN	56.70	56.70			94.50
JEBAL	6.00				
AZMAYESH	19.04		71.92	89.90	94.51
PARS		89.60	66.08		132.30
MOVALED			159.50	19.04	9.44
TOTAL	138.58	203.00	297.50	108.94	349.65

NOTE: Some of the companies may have bought quantities from other sources

TABLE 2. USE OF CFC-12 BY REFRIGERATION INDUSTRY

COMPANY NAME	AMOUNT OF CFC-12 (TONNES) DURING 1987-1991				
	(1987)	(1988)	(1989)	(1990)	(1991)
IRAN PUYA				20.00	78.00
FREEZ IRAN	20.64				13.00
BAHMAN	100.00			40.00	60.00
JEBAL	13.00			5.99	
AZMAYESH					40.00
PARS		39.00	19.00		26.00
MOVALED				3.00	25.47
TOTAL	133.64	39.00	19.00	68.99	242.47

NOTE: Companies may have purchased quantities from other sources.

TABLE 3. USE OF CFC-11 BY FOAM INDUSTRIES

COMPANY'S NAME	AMOUNT OF CFC-11 (TONNES) DURING 1987-1991				
	(1987)	(1988)	(1989)	(1990)	(1991)
Abre Sanati Iran	5.04		1.94	10.08	
Peak Foam		15.95	4.93	18.03	34.85
Tolidy Polyurethane		36.4	17.92	75.52	93.00
Safoam		17.98	95.7		17.08
Shizar		17.98			99.90
Bahman		56.70			94.50
Bahman plastics			1.94	17.98	19.04
Esfanj Abre Iran				15.95	
Pars Foam					18.90
Urethan Systems					113.40
Esfanj Hamedan					18.90
Khorasan Synthetic Alyaf					38.35
Tolidy Tehran				19.09	49.80
Khozestan Plastics					30.00
Mashad Foam					116.65
TOTAL	5.04	145	122.4	156.7	744.40

TABLE 4. CFC-11 IMPORTED BY UNRECOGNIZED SECTOR

IMPORTER	AMOUNT OF CFC-11 IMPORTED DURING 1987-1991 (TONNES)				
	(1987)	(1988)	(1989)	(1990)	(1991)
Tolidy FM	114.24			24.03	57.12
Ministry of Sepah Pasdaran	120.16				
Islamic Republic of Iran Broadcasting		1.96			
Azadeh Shoes			17.92		
Ferdousi University				0.04	
M. Zargarian				37.12	
Fadak Shoes				19.04	
Zidans Co.				6.99	
Lizinc Iran				19.04	
Yekodow				18.56	
A. Abbass Fard				40.50	
M. Ashaliene					23.04
E. J. Gillani					5.40
N. Shahedi					29.46
Pars Aluminium					75.52
Electro Steel					5.04
Pak Fam					19.04
Fabis Industries					47.85
Iran Khodrow					40.20
TOTAL	234.40	1.96	17.92	165.32	302.70

TABLE 8.MANUFACTURERS OF REFRIGERATORS

COMPANY'S NAME	ADDRESS	TELEPHONE	CAPACITY PER YEAR	
			REFRIGERATOR	FREZER
AZMAYESH	FARS	49510/2293	135000	45000
ARJ	TEHRAN	903915-9	136000	
IRAN PUYA	KARAJ	992001-4	180000	
BAHMAN(FILCO)	TEHRAN	348091-8	150000	40000
PARS MACHINE	KARAJ		90000	
PAYAM MINAB	HORMOZGAN		5000	
TOLIDY BOARD	TEHRAN		20000	
JEBAL(GENERAL)	TEHRAN		50000	
SAEED SHAFEE	ARAK			250
GADOUK	JAJOUD		10000	
FREEZ IRAN	TEHRAN	941196-7	150000	
PARS	QAZVIN	5050	90000	30000
PARS-NOO	TEHRAN		750	
MOVALED	SAVEH	4020	60000	
MIR JAVAD KHAYAT				
BAGHER ZADEH	TEHRAN		2500	2500
YAZD ENJEMAD	YAZD		18000	12000
JAVIDAN	ARAK			300
ALI HAIDAR QOMI	ARAK			300
SALEHI Co.	ARAK			100
HAGHIGHI NEJAD	KERMAN			1000
SANATI AFSHAR KAR	KERMAN			1000
KHOZESTAN	KHOZESTAN			5000
RAVANSHAD	FARS		40	
EHSANI			30	
BROODATI HORMOZGAN	BANDAR ABBASS		300	300
PARS	EAST AZARBAIJAN		4000	
CRYSTAL	EAST AZARBAIJAN		300	
NASRIN	EAST AZARBAIJAN		400	
BARFAK	EAST AZARBAIJAN		218	
QOTBI AND Co	EAST AZARBAIJAN		5000	
TOTAL			1107538	137750

TABLE 9. THE FOAM INDUSTRY

COMPANY'S NAME	ADDRESS	TELEPHONE	PRODUCTION (TONNES/Yr)
1. Latex	Karaj	945993	1170
2. Bahman plastic	Karaj		2000
3. Pars foam	Khavaran		400
4. Penon	Karaj		20
5. Tolidy Tehran	Karaj(km12)	944002	1500
6. Shizar	Qazvin		6440
7. Peak foam	Karaj(km18)		1150
8. Tehran foam	Qazvin		350
9. Abre Sanati Iran	Qazvin	(0283)6424	600
10. Tolidy Iran Gharb	Karaj(km14)		11000
11. Behravash	Qom		540
12. Abre Iran	Rasht		1188
13. Abre Shomal	Rasht	3333746	1200
14. Urethan system	Rasht		3200
15. Esfanj Tabriz	Tabriz		300
16. Mashad Foam	Mashad	43850	3000
17. Esfanj Shirvan	Ghouchan		1200
18. Khozestan plast	Ahvaz		5000
19. Small workshops	Khozestan		4
TOTAL:			40254 (Tonnes)

ANNEX B

PROPOSED PROJECTS

A. GENERAL

1. TITLE OF REQUEST : Creation of an Ozone Monitoring Centre
2. NAME OF COUNTRY : Islamic Republic of Iran
3. EXECUTING AGENCY : Department of Environment
4. IMPLEMENTING AGENCY : UNDP and UNIDO
5. GNP/CAPITA : 1626 US\$
6. CONSUMPTION OF CONTROLLED SUBSTANCES: 2445 ODP/TONNES

7. OBJECTIVES:

This centre would be responsible for the evaluation, coordination and supervision of all Government Actions and their corresponding projects. For the first five years (1993-1997) of the programme, the centre would operate with two professionals and four assistants. A consultant from abroad may also be needed. The responsibility of the centre would be as follows:

- A. To monitor the commitments made by the government as described in this country programme
- B. To supervise public awareness programme
- C. To communicate with the Montreal Protocol and other agencies
- D. To provide the industries with the latest information about the substitution of ODSs
- E. To provide the industries with the latest technologies achievements in other parts of the world
- F. To propose an action programme for 1997-2007 period
- G. To evaluate potential applicants for specific training courses
- H. To conduct seminars
- I. To investigate the problems of industries
- J. To supervise the operations of transition in industry sectors
- K. To monitor the gathering of the latest information about the import of ODSs and its use in the country.

- 8 SCOPE OF PROJECT: Covers foam and refrigeration sectors all over the country

9 JUSTIFICATION:

- A. The relative lack of awareness of the phenomenon of stratospheric ozone depletion and its potential impacts, coupled with the complexity and fast changing nature of technical and scientific issues involved in protecting the ozone layer in general, and in using ODS substitute technology in particular.
- B. The weak institutional infrastructure for dealing with issues involved in the phase-out of the ODSs, such as transfer of technologies
- C. The commitment to earlier ODS phase-out schedules than provided for under the Protocol.

10 BENEFICIARIES OF THE PROJECT:

About 50 foam and refrigerator industries (20 large and 30 small ones)

11 CAPABILITIES OF BENEFICIARIES:

Some of the beneficiaries possess skilled technicians for transition. Some of them are not aware of substitutes of ODS.

B. STRUCTURE AND MANAGEMENT:

Ozone Monitoring Centre does not exist and this Centre will be solely responsible for the implementation of the Montreal Protocol in the country. The Department of the Environment will be responsible for this centre.

C. ACTIVITIES:

- A. To monitor the commitments made by the government as described in this country programme
- B. To supervise public awareness programmes
- C. To communicate with the Montreal Protocol committee and other Government agencies
- D. To provide the industries with the latest information about the substitution of ODSs
- E. To provide the industries with the latest technologies achievements in other parts of the world
- F. To propose an action programme for 1997-2007 period
- G. To evaluate potential applicants for specific training courses
- H. To conduct seminars
- I. To investigate the problems of industries
- J. To supervise the operations of transition in industry sectors
- K. To monitor the gathering of the latest information about the import of ODSs and its use in the country.

D. ESTIMATED BUDGET: 200,200 US

1. CAPITAL EXPENDITURE FOR A 3 YEAR PERIOD

THIS INCLUDES:

COMPUTER WITH DISK DRIVE, MONITOR,
PRINTER AND SOFTWARE
PHOTOCOPIER
TYPE WRITER
FAX MACHINE

2. RECURRENT EXPENDITURE

2 PROFESSIONAL STAFF

4 SUPPORTING STAFF

3. OPERATIONAL COSTS

TELECOMMUNICATIONS

OFFICE SUPPLIES

TOTAL

US \$ 200 200

E. OUT PUTS

- * Preparation of Country Programme for 1997-2007
- * Monitor progress of implementation of actions within the country programme to phase out ODSs and report to the Fund Secretariate as necessary
- * Submit annual account of expenditure on the institutional support activities
- * Collect and process local data
- * Exchange relevant information with other countries
- * Disseminate to local end-users on the ODS phase- out process received
- * Facilitate access of local entrepreneurs to relevant experts.

B. GENERAL

1. TITLE OF REQUEST : Preparation of investment project proposal for the phase-out of CFC-11 and CFC-12 in the domestic refrigeration industry
2. NAME OF COUNTRY : Islamic Republic of Iran
3. COORDINATING AGENCY : Department of Environment
4. IMPLEMENTING AGENCY : UNDP and UNIDO
5. GNP/CAPITA : 1626 US\$
6. CONSUMPTION OF CONTROLLED SUBSTANCES: 2445 ODP/TONNES
7. OBJECTIVES:

Elaboration and technical assistance of projects in ten plants of the refrigeration sector. The expected ODP reduction is 150 tonnes of CFC-12 and 360 tonnes of CFC-11.

8. PROPOSED BUDGET : US \$ 200,000 to cover the plants in this sector. UNIDO has already obtained an approval of 50,000 US \$ (excluding support costs) as an interagency transfer from an approved allocation for UNDP for US \$ 113,000. This approval is for projects covering five plants.

9. PROJECT DESCRIPTION :
The domestic refrigeration sector is an important consumer of CFCs in the Islamic Republic of Iran. In 1991 the consumption of CFC-11 by this sector was about 350 tonnes and that of CFC-12 was 242 tonnes.

The largest manufacturers of refrigerators are:
Azmayesh, Arj, Iran Puya, Bahman, and Freez Iran.

Investment projects will be developed in close collaboration between UNDP, UNIDO and the local industry for the phase-out of CFC-11 and CFC-12 in this sector.

Each investment proposal shall encompass:

- * assessment of current technology and equipment in each plant,
- * assessment of the technology option identified,
- * equipment specification, costing and installation programme, with a schedule of trial use,
- * calculation of incremental costs,
- * specification of training programme for the smooth operation of each plant.

C. GENERAL

1. TITLE OF REQUEST : Preparation of investment project proposal for the phase-out of CFC-11 and CFC-12 in the foam industry
2. NAME OF COUNTRY : Islamic Republic of Iran
3. COORDINATING AGENCY : Department of Environment
4. IMPLEMENTING AGENCY : UNDP
5. GNP/CAPITA : 1626 US\$
6. CONSUMPTION OF CONTROLLED SUBSTANCES: 2445 ODP/TONNES
7. OBJECTIVES:

Elaboration and technical assistance of projects in ten plants of the foam sector. The companies in this sector blow rigid and flexible foams. About 40000 tonnes of foam was blown in 1991. It is estimated that about half is rigid and the remainder is flexible foam.

8. PROPOSED BUDGET : US \$ 100,000 to cover the plants in this sector.

9. PROJECT DESCRIPTION :

The foam sector is an important consumer of CFCs in the Islamic Republic of Iran. About 22 foam blowing firms have been identified in the country. The largest produces 11000 tonnes a year. The others produce various quantities.

Investment projects will be developed by UNDP in collaboration with the local companies for the reduction in the use and a phase-out of CFC-11 and CFC-12 whenever technically possible.

Each investment proposal shall encompass:

- * assessment of current technology and equipment in each plant,
- * assessment of the technology option identified,
- * equipment specification, costing and installation programme, with a schedule of trial use,
- * calculation of incremental costs,
- * specification of training programme for the smooth operation of each plant.