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

Fifth Meeting
Montreal, 18-22 November 1991

WORLD BANK
1991 PROGRESS REPORT
AND
1992 WORK PROGRAMME

Interim Multilateral Fund under the Montreal Protocol



Progress Report

Calendar Year 1991 World Bank Work Program

**Progress Report
to the November 18-22, 1991 Meeting of the Executive Committee
on implementation of the
Calendar Year 1991 World Bank Work Program**

Introduction

1. In discussions with the Chief Officer of the Secretariat of the Interim Multilateral Fund under the Montreal Protocol (IMFMP) during a recent inter-agency coordinating meeting it was agreed that the implementing agencies should prepare progress reports for the upcoming meeting of the Executive Committee. This report reviews progress made by the Bank in the implementation of the calendar year 1991 (CY91) work program, interagency coordination, and project documentation, presentation and processing issues requiring review and confirmation by the Executive Committee.

Calendar Year Work Programming

2. Although work programs will be prepared and presented for Executive Committee review on a calendar year basis, they are effectively a time slice of a rolling three year investment program supported by preparatory activities including country program preparation and associated studies. As projects are approved and enter the implementation phase, supervision begins incorporating monitoring, evaluation and reporting to the Executive Committee and other implementing agencies. The CY92 work program is partly defined by progress in implementing the CY91 work program. The Executive Committee will appreciate that because of the dynamic nature of implementation we would expect to present to each of its meetings in a brief progress report any required revisions to update approved work programs on the basis of implementation performance to that time.

Overview of Implementation Performance.

3. A table summarizing the status of work program implementation at the country level is attached as Annex I. The table indicates completed and planned activities in each of the three main components of the Bank's work as an implementing agency: assisting Governments to prepare country programs; assisting Government to undertake pre-investment activities; and helping to prepare, appraising, and supervising investment projects. Variance with plans in approved work programs is noted in the country by country review provided in Annex II.

4. In general, country level work program implementation is on schedule. Significant slippages have occurred in only four countries: Chile, Nigeria, Trinidad & Tobago, and Tunisia. On the other hand, performance better than plan has been achieved in Argentina, Ecuador, Brazil, Mexico, Turkey, Jordan and Venezuela. In particular, pre-investment studies and project identification has been advanced in Venezuela, Brazil and Mexico, and Country Programs have been advanced by several months in Turkey and Jordan. The "model" country program which the Executive Committee authorized the Bank to undertake in June, 1991, is on schedule and has been reviewed in final draft by the Bank. The Egyptian Government is being requested to finalize and submit the CP to the Secretariat of the IMFMP.

Evolution of Investment Program

5. At its June 1991 meeting, the Executive Committee expressed concern that the Bank's CY91 work program appeared to emphasize studies as opposed to investment operations. The Bank responded that this apparent imbalance was a function of countries being at an early stage in country program preparation and project identification. As country programs are defined and implemented, it can be anticipated that work programs will shift to pre-investment and investment activities. The Bank delegation to the June meeting predicted a rapid growth in the investment

project portfolio from the June 1991 level of \$2 million to as high as \$30 million in CY 1992. These expectations have been exceeded by current plans. Projects in the identification and early preparation phase amount now to about \$100 million through CY 1992 (see Annex I). It is anticipated that Executive Committee approval will be sought during 1992 for major investment projects in China, Malaysia, the Philippines, Thailand, Brazil, Chile, Ecuador, Mexico and Venezuela. Bank missions currently underway in Eastern Europe, Middle East and North Africa Region, and the Latin America & Caribbean Region, are also identifying potential investment operations.

Pre-investment and Demonstration Projects

6. An operational pattern is emerging in the larger countries. Pre-investment projects which are effectively engineering design projects, along with demonstration or pilot projects, precede preparation and appraisal of major projects. Although the Bank has undertaken a small pilot project in Mexico at the request of the Government, UNDP is expected to undertake such projects in most circumstances.

7. For example, in several countries, including Egypt, Mexico, the Philippines, and Thailand, the Bank has been preparing a number of smaller pre-investment/demonstration projects. Activities to date have included the following:

Egypt: (1) Reduction of CFC-12 charge in domestic refrigerators through re-design of refrigerator condensers; (2) establishment of recycling units to conserve CFC-11 and CFC-12 in refrigerators and air conditioners.

Mexico: (1) CFC-12 recycling from mobile air conditioning systems; (2) elimination of CFC aerosol propellants and associated safety program.

Philippines: (1) Refrigeration and auto air conditioning CFC recycling; (2) non-ozone depleting substance solvent applications in electronics and mechanical industries; and (3) non-ozone depleting substance foam and tobacco applications.

Thailand: (1) Auto air conditioning CFC recycling; (2) solvent recycling, and (3) CFC substitution in solvent applications.

Operational Procedures

8. In the interim from the June, 1991, Executive Committee meeting the Bank completed a working draft of its internal operations procedures for Montreal Protocol Operations. Minor modifications to these procedures will be required as a result of the Bank's recent structural reorganization through which management responsibility for various stages in processing will change. The documentation package accompanying this report includes draft procedures for project processing and specifications for internally required documentation.

Technical Review Panels

9. A key feature of the Montreal Protocol operations procedures is the technical review process to ensure technical soundness in assessing eligibility in accordance with the Agreement with the Parties and in design. In undertaking technical reviews of projects proposed for IMFMP support, a technical panel is convened including outside specialists who must prepare written and signed opinions for the project file. The Chief Officer of the IMFMP Secretariat is invited to attend or submit written comments and UNEP and UNDP's comments are requested on the project documentation. A technical opinion is prepared by a Bank technical advisor from a roster appointed independent from the Operations Complex of the Bank. The opinion draws on all technical comments made at or in association with a formal meeting of the technical panel convened in the Bank. These technical opinions are

submitted to the Executive Committee as part of proposed project documentation to facilitate project reviews for projects above \$500,000. The project documentation package accompanying this report includes such a technical opinion for each of the Mexico projects.

Project Documentation for Executive Committee Review

10. This November 18-22 meeting of the Executive Committee is the first at which it will consider for approval an investment project greater than \$500,000. There is no explicit understanding in the implementation procedures of the nature of project documentation to be provided for Executive Committee review. The documentation proposed for Executive Committee review is the Executive Project Summary (EPS) for the project and the technical opinion. These are provided in the documentation package accompanying this report.

11. The Bank is undertaking to refer back to the Executive Committee for its approval the additional costs in any project in which project costs increase during final preparation and appraisal.

12. As projects are processed inside the Bank in accordance with the above-mentioned operations procedures, the executive project summary evolves into a Memorandum of the Regional Vice President which is the document on which management makes the judgement that funds can be released in accordance with the Executive Committee's decision and the Bank's role as Trustee of funds deposited with EC approval in the Bank's Ozone Layer Projects Trust Fund. Legal documents are also prepared as the instruments for resource transfer and authorization for the application of Ozone Layer Protection Trust Fund monies received in turn from the UNEP-managed trust fund for the IMF.

13. The \$180,000 Mexico Ozone Protection Pilot Recycling and Training Project provided the opportunity to prepare the first project Memorandum of a Bank MP investment operation. The Memorandum is provided with the documentation package accompanying this report. Other than in exceptional circumstances, the Bank does not intend to process free-standing projects of this size.

Investment Projects for Executive Committee Review

14. At its November, 1991, meeting, the Executive Committee's approval is being sought for a \$10 million Mexican project: Ozone Protection Policy and Institutional Strengthening Project. The EPS and technical opinion for this project are provided in the accompanying documentation.

15. Investment projects above \$500,000 will be presented to the Executive Committee for their approval as they are ready. It is anticipated that most meetings of the EC will be requested to review such projects.

Inter-Agency Coordination Meetings

16. The second such meeting was convened by the Bank on October 8th, 1991. The minutes are provided in the accompanying documentation. It is planned that the Secretariat convene the next such meeting.

17. An issue discussed by the agencies and the Chief Officer of the IMFMP at the inter-agency coordinating meeting was the format of the agencies reports to the Executive Committee. Following a review of the Executive Committee's requirements the Bank indicated that it would revise its reports to the Executive Committee to decrease their volume and highlight tasks and anticipated outcomes over country setting, plans, time-lines and tabulation of inputs and outputs.

Requested Adjustments to WP and Budget

18. Adjustments to the CY91 country program are mostly reflected in the CY92 work program. The Executive Committee is requested to acknowledge one change to the Bank CY91 work program as revised subsequent to the June, 1991, meeting: reallocation within the budget to make provision for the \$250,000 country program preparation activity for Thailand. This activity was not specifically acknowledged in the revised CY91 work program but is well underway.

ANNEX I

WORLD BANK

MONTREAL PROTOCOL WORK PROGRAM MILESTONE SUMMARY

AS OF OCTOBER 31, 1991

	Country Programs				Pre-Invest./Demo. Projects					Proposed Investment Projects							
	Main Mission	Final Report	Gov. Approval	Action Plan	IEPS/ FEPS	EC Approv.	Y.C. Review	Approval/ Completion	Amount (estimated)	IEPS	EC Approval	FEPS	Bank Appraisal	Y.C. Review	Negotiation	Bank Approval	Amount (estimated)
AFRICA																	
Nigeria	Jul-92	Nov-92	Dec-92	Apr-93	Sep-92	Sep-92	Nov-92	Dec-92		Sep-92		Mar-93	Apr-93	May-93	Jun-93	Jun-93	\$5,000,000
ASIA																	
Bangladesh*																	
China	Apr-92*						Feb-92*			Jan-92	Apr-92	Apr-92	Jun-92	Jun-92	Jul-92	Jul-92	\$20,000,000
Malaysia		Jul-91								Oct-91	Apr-92	Apr-92	May-92	Jun-92	Jul-92	Jul-92	\$13,500,000
Philippines		Feb-92			May-91	Jun-91		Apr-92	\$400,000	Oct-91	Apr-92	Apr-92	May-92	Jun-92	Jul-92	Jul-92	\$10,000,000
Sri Lanka*																	
Thailand	Oct-91	Jun-92	Aug-92	Aug-92		Jun-91		Apr-92	\$470,000	Oct-91	Apr-92	Apr-92	Jun-92	Jun-92	Jul-92	Jul-92	\$15,000,000
EMENA																	
Egypt		Oct-91	Nov-91	Jan-92		Nov-91	Jan-92	Feb-92	\$370,000								
Jordan		Dec-91		Apr-92	Jan-92		Jun-92	Jul-92									
Tunisia	Jan-92	Jun-92	Aug-92	Aug-92	Jun-92		Sep-92	Nov-92									
Turkey	Sep-91	Dec-91	Mar-92	Mar-92	Oct-91		Jan-92	Feb-92									
Yugoslavia	Dec-91	Jun-92	Aug-92	Aug-92	Jun-92		Sep-92	Nov-92									
LAC																	
Argentina	Jan-93	Mar-93	Mar-93				May-92			Feb-93		May-93	Jun-93				\$2,000,000
Brazil	Feb-92	Jul-92	Jul-92		Mar-92	Apr-92	May-92	Sep-92	\$1,000,000	Dec-91	Apr-92	Feb-92	May-92		Aug-92	Sep-92	\$15,000,000
Chile	Jan-92	Feb-92	Feb-92							Feb-92	Apr-92	Apr-92	Jun-92	Sep-92			\$1,000,000
Ecuador		Oct-91	Nov-91							Jan-92	Apr-92	Feb-92	May-92				\$10,000,000
Mexico		Oct-91	Oct-91	Oct-91	Aug-91		Sep-91	Nov-91	\$180,000	Oct-91	Nov-91	Jan-92	Jan-92		Mar-92	Apr-92	\$10,000,000
Trinidad & Tobago																	\$2,000,000
Venezuela	Feb-92	Mar-92								Feb-92	Apr-92	Mar-92	May-92				\$10,000,000
Total									\$2,420,000								\$113,500,000**

* Denotes that program/project has been transferred to UNDP, per agreement.

** Amount includes investments in CY92 & CY93, excludes Brazil's R&D fund and CY 91 pre-investment disbursements.

Denotes that activity has been completed as of this date.

Summary of Implementation Performance by Country

Argentina

Argentina is a new addition to the Bank's CY 92 work program. Goals of the new CY 92/93 work program include: (i) agree with the government on a country work program, to include; (ii) completion of a baseline study; (iii) completion of a Country Program; and (iv) establishment of an Investment Fund for controlled substance Phaseout.

Brazil

Due to delays in obtaining Government approvals, the CY 1991 Work Program was essentially stagnating until a Bank reconnaissance mission to Brazil which took place in July 1991. An Inter-ministerial Technical Group has been formed and has committed to preparation of the CY 1992/3 Brazil Work Program in time for presentation to the Executive Committee in November 1991. The National Bank for Economic and Social Development (BNDES) has been designated to handle any further on-lending activities. The Special Division of the Environment of the Ministry of External Relations will represent Brazil's interest in dealing with the MP Executive Committee and Secretariat.

Chile

There has been some slippage in the program for Chile. However, projects under preparation in Chile which could include an Interim Multilateral Fund-supported project for a controlled substance phase-out program. These include the Environmental Institutions Development Project, and the follow-on Environmental Management Investment Project. Revised plans now call for completing a draft Country Program in February-March 1992.

China

A Country Program (CP) and pre-feasibility study, financed by UNDP, identified some specific short and medium-term phase out projects but not all the sub-sectors were fully covered. The National Environmental Protection Agency has now requested the UNDP to proceed with the second phase of the feasibility study. The Bank has also begun a dialogue with appropriate Government authorities in China on the details of a work program and budget for investment project preparation. The Bank is proceeding on the basis that the first \$20 million in anticipated MP investment project funding in China would be justifiable on the basis of reasonable progress being made towards the completion of a Country Program plan.

Ecuador

As a result of a joint Bank/USEPA mission in August, GOE agreed to establish the institutional and legal framework for implementation of the proposed program. To determine the organizational structure of the implementing unit within the Ministry of Industry (MICIP) a Bank consultant is carrying out an institutional capacity analysis. Simultaneously, proposed legal instruments (a presidential and a ministerial decree) are being drafted. These documents will serve to complete the program document to be discussed with government authorities during a Bank/EPA mission scheduled for early November 1991. Given the relevance of aerosols as main users of CFCs, the Program proposes to start phase out activities with a project to replace these substances. EPA has proposed to support preparation of a feasibility study to determine costs and execution timetable. Pre-investment studies for other projects would be agreed with GOE authorities during the November mission.

Egypt

In July 1991, the Bank assisted with the preparation of a Country Program for Egypt, which is intended to serve as a model for other developing countries. This has been completed and a final draft is under review by the Bank. It is anticipated that the GOE will wish to submit this CP to the Secretariat for review by the EC in the near future. Specific demonstration projects were identified, including three activities on training, reduction of CFC-12 charge in domestic refrigerators by redesigning refrigerator condensers, and establishing recycling units to conserve CFC-11 and CFC-12 in refrigerators and air conditioners. The Bank has subsequently proposed that UNDP consider taking on responsibility for carrying out the recycling/recovery demonstration projects and CFC substitution projects.

Jordan

Prior plans for World Bank reconnaissance and identification missions to Jordan in September and November 1991, respectively, were merged into a single October mission, presently underway, whose overall aim is to assist the Government formulate a Country Program and define project proposals. On the basis of this mission the Bank plans to complete a CP by the end of November, 1991, instead of March, 1992. It is anticipated that the GOJ will be able to submit a CP to the Secretariat early in 1992.

Malaysia

The Government of Malaysia has taken full responsibility for completing preparation of its own Country Program (CP). The Bank has proposed to the Government that preparation of the CP and feasibility studies for the short-term action plan proceed in parallel. Although the feasibility study has not yet been completed, in order to expedite the investment process, the Bank sent a mission to prepare project proposals in late September 1991. The proposals arising from this mission were the basis for the IEPS which will be submitted to the Montreal Protocol Executive Committee in April 1992 for approval as the first tranche investment project for Malaysia.

Mexico

The Country Program has now been completed by SEDUE, with the assistance of the USEPA. The Mexican Government and the Bank have agreed on the strategy to implement the MP and the final CP will be submitted to the Executive Committee in November 1991. The first MP project for Mexico (CFC-12 MAC recycling, elimination of CFC aerosol propellants and safety program), which was prepared by the Government with USEPA assistance, has been technically reviewed and appraised by the Bank, and approval by the Government is anticipated prior to the November 1991 meeting of the Executive Committee. At the same time, an the first proposed on-lending project amounting to \$10 million, and including a marketable permit system, will also be presented to the EC in November. In short, Mexico has been making excellent progress.

Nigeria

Changes in the Bank's task management of the Nigeria work program are now complete and plans for a Technical Strategy Development Study, leading to a Country Program in Nigeria, are back on track. Plans have also been made to integrate these activities with on-going plans for an industrial training seminar in Nigeria, to be sponsored by UNDP in early 1992, and a subsequent all-Africa MP workshop to be sponsored by UNEP in September 1992.

The Philippines

The Government has requested the Bank to prepare and supervise implementation of an engineering project comprising the required feasibility studies to be followed immediately by an investment project. The grant agreements for negotiations with Government were completed by the end of October, 1991, and TOR have been agreed to expedite bidding for the required consultant services. To expedite the project preparation, a mission was sent to the Philippines in early October 1991 to assist Government with the development of an investment package. This package will comprise the first tranche of Montreal Protocol Interim Multilateral Fund investments in the Philippines.

Thailand

The Government requested the World Bank to act as executing agency for the CP and related technical assistance, as well as for three feasibility studies to develop a short-term investment plan. The pre-investment feasibility studies are packaged in the form of an engineering grant and are to be agreed with Government in November, 1991 with April 1992 as the targeted completion date. Consultants services procurement is well advanced and feasibility studies should be in final draft by April, 1992. The CP TOR have been agreed and work is progressing, subject to EC approval of budget re-allocation, for planned final draft completion in June, 1992. The Bank is continuing with preparation of an investment project, to incorporate results of the feasibility studies plus a line of credit totalling US \$15 million.

Trinidad & Tobago

Although a reconnaissance mission has been accomplished, the previously anticipated baseline study/Country Program was delayed due to the lack of a Government response. However, the Government has recently established a special working group to prepare, with UNDP assistance, a Country Program (CP) for controlled substance reduction in Trinidad/Tobago, which is now expected to be completed by the end of CY 1991. The Bank will play a review and consultative role if the Government or UNDP requests.

Tunisia

The CY 1991 program schedule for Tunisia has been postponed until January 1992 to make more efficient use of mission resources. The overall aim is to develop, in parallel, a Country Program and feasibility studies for refrigeration, foam and aerosol sector projects. These include the review of the possible use of new alternative refrigerant (HFC-134a) and a modified foam insulation system in the refrigeration industry, establishing a program in a major refrigerant service company to improve service procedures, train technicians to conserve CFC, demonstrating the use of CFC recovery/recycling machines, and demonstrating the use of non-CFC blowing agents in the manufacture of flexible foam.

Turkey

A Bank mission visited Turkey in September 1991 to, (a) complete the terms of reference for the Country Program for controlled substance project funding, (b) prepare a feasibility study and project proposal for a project to convert a major manufacturer to non-CFC technologies for refrigerators (HFC-134a), and (c) prepare a project proposal for recovery and recycling of refrigerants while servicing refrigerators. This mission has been successful in meeting each of these goals and has advanced CP formulation from March 1992 to the end of CY91. Specific new projects identified include a project to provide development facilities, equipment and technological support to enhance the company's (Arcelik) ability to discontinue the use of ODS refrigerants and utilize the alternate refrigerant HFC-134a in their products. Several projects were also identified which will be referred to UNDP for technical assistance support.

Venezuela

The program to implement the MP in Venezuela is now quite well advanced. A July Bank mission reviewed the Government's progress towards preparing a CP and identified possible investment projects. Another Bank mission, in October 1991, will (i) seek approval of the GOV for the proposed CY 1992/3 work program; (ii) review the schedule for definition of a national strategy for controlled substance elimination, and for preparation of the Country Program; (iii) agree on procedures for operation of an "on-financing" investment fund; (iv) advance the identification phase of investment projects through discussions with industry groups and individual enterprises; and (v) identify TA and Workshop/Seminar needs for which financing is not available from other sources (UNDP, UNEP, USEPA). The mission will jointly produce an IEPS draft for \$7 million investment fund on-financing project.

Yugoslavia

By the end of CY 1991, and assuming the return of civil order, terms of reference (TOR) will be prepared for the development of a Country Program in Yugoslavia, including an action plan to implement the CP feasibility studies for projects recommended to assist the refrigeration, foam, and aerosol sectors in the transition from CFCs to other alternatives.

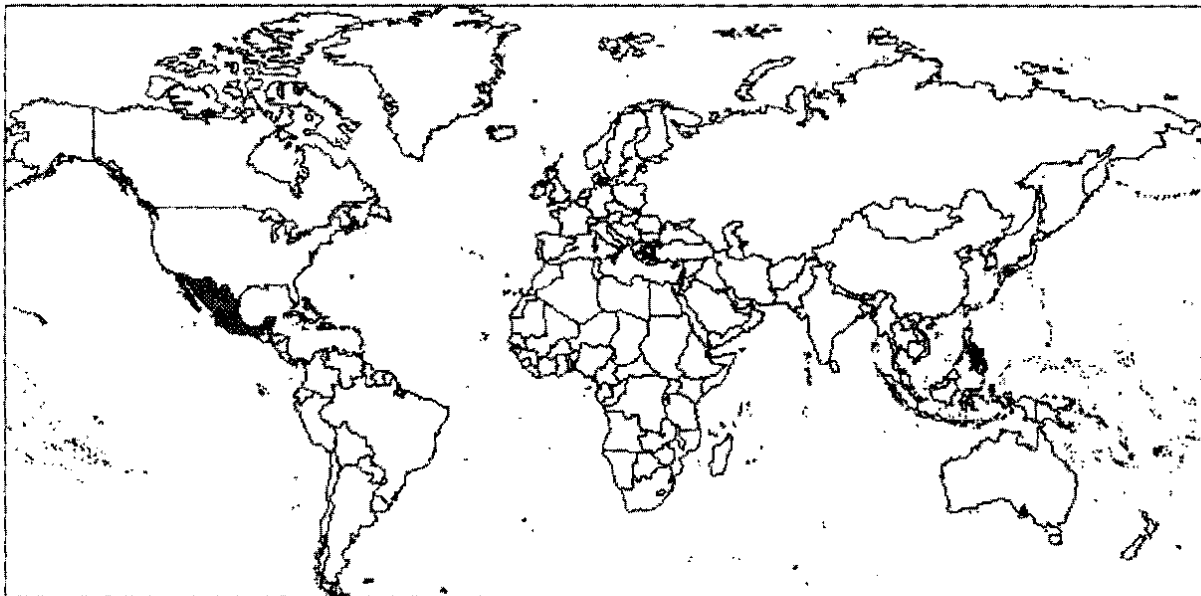
INTERIM MULTILATERAL FUND
UNDER THE
MONTREAL PROTOCOL

**World Bank Work Program
for Investment Project Preparation and Related Studies**

Calendar Year 1992

November 1, 1991

Interim Multilateral Fund under the Montreal Protocol



Mexico

Ozone Protection Policy and Institutional Strengthening Project

MONTREAL PROTOCOL

INITIAL EXECUTIVE PROJECT SUMMARY

Country:	Mexico
Project Name:	Ozone Protection Policy and Institutional Strengthening Project
Ozone Projects Trust Fund:	US\$10 million
Associated Bank Project:	None. Free-Standing Project
Appraisal Date:	January 1992
Bank Approval Date:	April 1992

1. Background on Ozone Depleting Substances (ODS). In 1989, Mexico consumed approximately 8,130 metric tons of Group I substances (CFC-11, CFC-12, CFC-113, and CFC-114), 260 tons of Group II substances (Halon 1211 and Halon 1301), and 9,000 tons of Group III substances (1,1,1-Trichloroethane, also known as methyl chloroform - MCF). CFC-11 and CFC-12 are produced locally by Dupont (2 plants with a total capacity of 15,000 tons) and Quimobasicos (one plant with a capacity of 5,000 tons). Over the last few years, capacity utilization has hovered between 35% and 40%. Most of the CFC-11 and CFC-12 is consumed locally. In recent years, small amounts of these substances have been exported. Carbon tetrachloride (a Group II substance) is also produced in Mexico (PEMEX), but is entirely used as a feedstock for CFC production. Mexico meets its demand for CFC-113, CFC-114, and MCF through imports. In the absence of controls, Mexican industry forecasts that CFC and MCF use would grow at an annual rate of 2.2% and between 3.0 to 5.0%, respectively.

2. Mexico signed the Montreal Protocol in September 1987 and was the first country to ratify it in March 1988. The Protocol limits the production and consumption of Groups I, II, and III ozone depleting substances (ODS), effective in 1989, as shown in Table I attached in annex. Mexico is very committed to phase out the use of ODS and, although the Protocol allows developing countries a 10-year grace period, has publicly announced its intention to go as fast as developed countries and achieve a complete phase out of controlled substances by the year 2000.

3. SEDUE (Secretaria de Desarrollo Urbano y Ecologia), as the lead environmental agency in Mexico, is currently engaged in a number of activities to encourage protection of the ozone layer. It has negotiated and signed voluntary agreements with the two CFC producers and seven users of ODS to encourage reductions in unnecessary emissions. These agreements form the thrust of Mexico's strategy to implement the Protocol and have been instrumental in creating an environment of trust and cooperation between the authorities and industry on this matter. SEDUE is also devoting much of its efforts to help industry identify ozone protection projects. With U.S. EPA's assistance, it has prepared a project consisting of two components (CFC-12 recycling from MACS and Aerosol Propellants Safety Program), which is being processed for a US\$180,000 grant financing from the Ozone Projects Trust Fund (OPTF). To meet the growing demands of its ozone protection program, SEDUE has created an Ozone Protection Technology Center (OPTC). The Center has started to operate with bilateral financing from U.S. EPA as part of the US contribution to the Montreal Protocol Multilateral Fund Interim Fund (MPIMF). It has a staff of two professionals (four are planned at full operation) to help industry prepare ODS phase out projects. OPTC is also responsible for preparing and managing public awareness programs, representing Mexico in international conferences, and for helping other LAC countries implement the Montreal Protocol through assistance in project preparation and exchange of information. Finally, SEDUE has prepared and submitted a Country Program (CP) to the MPIMP's Executive Committee for approval during its November 1991 meeting in Montreal. The Program spells out the strategy Mexico intends to follow to meet its commitment under the Montreal Protocol and gives an indication of the type of ozone protection projects it is preparing for funding from OPTF over the next three years. The Country Program will be updated periodically to incorporate new developments, particularly with regard to progress in the preparation of ODS phase out subprojects. The Project described in this EPS has been designed to support the implementation of the Country Program, which appears as Annex I. In many ways, it is the translation of that program into concrete action.

4. Project Objectives. The overall objective of this Project is to help Mexico establish an adequate policy and institutional framework to ensure an efficient implementation of the Montreal Protocol at the least possible cost to

both the Mexican industry and consumers. Specifically, the Project aims at (i) introducing market-based incentives to induce economically rational reductions of ODS production and consumption by industry; and (ii) establishing in Mexico the necessary capacity to process and finance ozone protection subprojects. This would involve strengthening SEDUE in the preparation and monitoring of ODS phase out subprojects, and setting up in Mexico the financing mechanism through which OPTF funds would be channeled. This approach appears to be best suited as ozone protection subprojects tend to be small (less than \$150,000), and it would not be cost-effective for the Bank, as administrator of OPTF, to appraise and approve for financing each of them directly.

5. Project Description. The Project has three components: (a) establishment of the policy framework under which implementation of the Montreal Protocol would be carried out; (b) strengthening of SEDUE in ozone protection activities; and (c) financing of specific ODS phase out subprojects. (a) The Policy Component would consist of the following elements: (i) preparation and implementation of a program to completely phase out the use of ODS by the year 2000. This would involve agreeing with industry representatives on a phase out timetable and on the specifics of the program, as well as devising the instruments to monitor its execution; (ii) establishment of a marketable permits system to allow individual firms to adopt alternative chemicals and/or convert to non-ODS technologies at their own pace through the possibility of trading and selling ODS permits. The knowledge and practical experience gained would be very useful in deciding whether and how this policy instrument could be applied to other pollution problems in Mexico. A description of the system, its functioning, as well as the trading rules and procedures appears in Annex II. (b) The SEDUE Component would consist of (i) strengthening the Technology Center in ODS subproject preparation and supervision through the financing of the Center's technical personnel and equipment for a period of three years, and provision of short-term consulting services to help deal with specific, short-term technical issues; and (ii) preparing and financing a series of public awareness programs. (c) The Subproject Financing Component would consist of a line of credit to finance ozone protection subprojects prepared by industry and/or OPTC. The credit line would be administered by NAFIN on behalf of the Mexican Government. Funds for training of industry staff, recycling, demonstration/workshops, pilot subprojects would be given to industry beneficiaries as grants. However, investment by industry to convert to non-ODS technologies and other profitable subprojects (defined as subprojects with a FROR higher than the interest rate of the loans--see below) would be given as loans at the same terms and conditions as those existing for other environmental projects in Mexico (i.e., maturity up to 10 years with an interest rate of CETES + 2%). Only for those subprojects would a financial analysis, including the calculation of FROR from the investing company's point of view, be made. It is expected that, at least during the first two years of Project implementation, most subprojects would not be profitable subprojects or be of a pilot nature and, therefore, financed with grants. NAFIN would appraise the subprojects prepared by OPTC and/or the Mexican industry and would send them to the Bank for review to ensure full compliance with MPIMF's eligibility criteria and technical soundness prior to approving them and authorizing disbursement. There will not be any "free limit" (i.e., delegation of approval authority to NAFIN for subprojects below a certain limit) as this would run contrary to the Bank's fiduciary duties as trustee of the OPTF. In addition, Technical Review Panel (TRP) meetings will be arranged for technically complex subprojects. [NAFIN would receive an administrative fee for assistance on procurement and disbursement, maintaining records and, in the case of loans, collecting the funds from beneficiary enterprises]. A detailed description of the financing arrangements can be found in Annex III.

6. Funds of the Project would finance: (i) all the cost associated with the design, establishment, and functioning of the tradable permit system, as well as the monitoring of the ODS phase out (\$300,000); (ii) the full cost of the Center's technical personnel for a period of three years (\$450,000); (iii) the Center's equipment (\$100,000); (iv) short-term consulting services (\$550,000); (v) public awareness programs (\$600,000); and (vi) ozone protection subprojects (\$8,000,000).

7. Project Implementation. SEDUE's Direccion General de Prevencion y Control de la Contaminacion Ambiental would have overall responsibility for Project implementation and coordination with other ministries and institutions involved in the Project. Under the supervision of that Direccion, the Technology Center would be responsible for establishing and monitoring the ODS phase out program, including the functioning of the tradable permit system in coordination with SECOFI (Secretaria de Comercio y Fomento Industrial) and SHCP (Secretaria de Hacienda y Credito Publico). The Center is also responsible for helping industry prepare ODS phase out subprojects and for

INTERIM MULTILATERAL FUND
UNDER THE
MONTREAL PROTOCOL

**World Bank Work Program
for Investment Project Preparation and Related Studies**

Calendar Year 1992

November 1, 1991

Introduction

1. This calendar year 1992 (CY92) work program and budget for assistance to developing countries in reducing their emissions of ozone depleting substances (controlled substances) ^{1/} has been prepared for consideration by the Executive Committee (EC) of the Interim Multilateral Fund under the Montreal Protocol (IMFMP), at its November 18 - 22, 1991 meeting, in Montreal. To the extent possible, the work program provides an indication of activities proposed for support by the IMFMP for calendar year 1993 (CY93). However, budget estimates are not provided for CY93 activities and planned CY93 activities are expected to change in the course of implementation of the CY91 work program.

2. The previous CY91 Work Program was approved by the Executive Committee in June 1991, and at the time that this CY92 work program was prepared more than two months of the CY91 program year remained. Implementation performance during the remainder of CY91 may lead to requirements to adjust the CY92 work program. Required adjustments will be proposed in the Bank's progress report to the first meeting of the Executive Committee in 1992.

Work Program Scope

3. With the recent addition of Argentina and Turkey, the World Bank work program covers 17 countries^{2/}. While the Bank's primary role as an implementing agency of the IMFMP is to manage the investment project cycle, in collaboration with other implementing agencies the Bank will also assist eligible developing countries to prepare country programs and supporting studies. The CY92 work program makes provision for the preparation of six (6) Country Programs, two (2) pre-investment projects, and twelve (12) investment projects. The financial dimensions of the work program are provided in Tables 1, 3, 4 and 5, and are summarized below:

o	Programmed project commitments	US\$107.9 million (Table 4);
o	Estimated CY92 project disbursements	US\$18.0 million (Table 5);
o	Project preparation	US\$2.3 million (Table 3) ^{3/} ;
o	Pre-investment studies	US\$1.0 million (Table 3);
o	Operations coordination, policy analysis, financial and legal administration	US\$1.3 million (Table 3).

^{1/} The use of the term "controlled substance", in this context, should be understood to refer only to those ozone depleting substances specifically controlled by the Protocol.

^{2/} All countries included in the CY92 work program have either ratified the Protocol or will have completed ratification procedures by the beginning of 1992.

^{3/} The underlying assumption in this budget is that the Bank will be reimbursed reasonable costs incurred in fulfilling its role as an implementing agency. The budget does not include any costs attributable to time devoted by senior World Bank managers and related support staff and services in formalizing and overseeing the Bank's participation as an implementing agency, including their attendance at meetings of the Montreal Protocol.

Country programs, supporting studies and policy analyses, and pre-investment studies are all part of a continuum culminating in the preparation, approval and implementation of investment projects. Such studies are only undertaken in so far as they advance and facilitate investment project funding under the IMFMP.

Interagency Cooperation

4. The proposed work program has been prepared in close consultation with UNDP, UNEP, and the Chief Officer of the IMFMP Secretariat. Formal interagency coordination meetings now take place prior to the finalization of work programs for submission to the Executive Committee. The last such meeting took place in Washington on October 8, 1991 and provided and served to increase cooperation between the implementing agencies and eliminate duplication in work programs. The Bank's proposed work program was revised substantially as a result of this meeting. Countries in which the agencies are embarking on direct collaboration with each other and bilaterals are noted in Table 2.

Structure of the Report

5. The Bank's CY92 work program report has been simplified to make it easier to review and use. Background details are kept to a minimum and there is an increased focus on investment projects and underpinning policy analysis which are the main contribution of the Bank in IMFMP implementation. Country activity descriptions identify wherever possible the country level implementing agency, collaboration between the IMFMP implementing agencies, country programs and related studies, and the project cycle stages in the particular country, each with expected outcomes and time-lines (Annex I). As agreed with the Executive Committee:

- o projects and supporting country program and related studies under \$500,000 will be highlighted in the work program and will not be presented separately for EC approval, and;
- o projects above \$500,000 will be identified in work programs but presented separately and whenever they are ready for submission with expanded documentation to the EC for consideration for approval.

It is likely that investment projects will be presented to the Executive Committee for approval at most EC meetings from now on.

Profile of Typical Montreal Protocol Investment Operations

6. Investment operations supported by the IMFMP will typically fall into two broad categories:

- (i) funding defined incremental costs of single industry process or plant reconfiguration, and,
- (ii) establishment of ozone layer protection investment funds (IF) in development finance institutions to finance the incremental costs of eligible small to medium scale investments by private or public sector producers or consumers to reduce utilization of controlled substances.

Usually, both kinds of investment projects will include human resource and institutional capacity building activities, and assistance with implementation of the agreed policy framework, tailored to local needs for effective implementation of the Montreal Protocol. There are examples of both in the CY92 work program. A substantial share of total investment projects will be the general form of ozone layer protection investment funds. The focus of these funds will be defined by the country programs or in the first instance by work being undertaken towards the preparation of country programs and specific pre-investment project studies being undertaken in parallel. Typical steps in preparing an IF-operation include:

- o agreement on the basis of country program analyses or related studies on the policy framework, the financing terms and kinds of projects and controlled substance consumption or production sectors of activity the fund will support. These will be supported by analyses which will identify the range of typical interventions in demand and eligible for IMFMP support;
- o identification and appraisal of the financial intermediary which would hold and administer the IF;
- o identification of training and other needs of the intermediary's and key local implementing agency staffs in analysis and performance review of projects proposed for IF assistance. This training may be part of the project or undertaken in advance either by UNDP, UNEP or earlier Bank investment projects in order to increase implementation readiness and effectiveness;
- o pilot or demonstration projects may be undertaken in advance of an IF operation, typically by UNDP, though occasionally by the Bank or bilaterals, which will inform local businesses of opportunities to reduce the emissions of controlled substances with IMFMP assistance.
- o agreement is reached with the implementing agency representing the Government and the financial intermediary on the process of review and approval of IF sub-projects. Typically, the Bank reserves the right to approve sub-projects financed by the IF.

In parallel with this process, the Bank will be preparing documentation for internal review, including special technical reviews, leading to presentation of the IF project to the Executive Committee for approval prior to Bank appraisal.

7. Following appraisal, negotiations and effectiveness of the EC-approved IF project, sub-projects submitted to the IF would be screened and appraised by the financial intermediary, often with advice from the local implementing agency, in accordance with previously agreed guidelines and methodologies. The Bank will review all sub-projects submitted to it before approving disbursement. The Bank would also undertake a post-hoc review in the course of regular project supervision missions. In all such IF projects, the Bank requires the financial intermediary to submit audited accounts of its entire operations, including specific accounting of the use of IF funds, within agreed periods of the end of each of the intermediary's fiscal years.

First Investment Project for Executive Committee Review

8. At its November, 1991, meeting, the Executive Committee's approval is being sought for a \$10 million project in Mexico, the **Ozone Protection Policy and Institutional Strengthening Project**. The project brief and technical opinion for this project are provided in the accompanying documentation.

9. If during further project preparation and appraisal there are proposed increases in project costs in excess of 10% of the cost approved by the EC, the project will be brought back to the EC for approval of such additional costs.

Reporting to the Executive Committee

10. It is proposed to report to the Executive Committee on progress in processing and implementation performance for specific projects at least twice yearly through progress reports issued in advance of Executive Committee meetings. The first such progress report is being presented to the Executive Committee at its November 18-22, 1991, meeting. In addition, the Executive Committee will always receive from the Bank through the Secretariat the negotiated documents for each project as soon as possible after negotiations are completed.

Table 1

INTERIM MULTILATERAL FUND OF THE MONTREAL PROTOCOL

World Bank Work Program

Estimated Receipts, Disbursements and Fund Balances

(In US\$ million)

	CY91 Estimate	CY92 Estimate	Cumulative from inception through end-CY92
<u>FUNDS RECEIVED (through 9/30/91)</u>			
Contributions	\$4.500		\$4.500
Investment income	\$0.053		\$0.053
TOTAL FUNDS RECEIVED	<u>\$4.553</u>	<u>\$0.000</u>	<u>\$4.553</u>
<u>DISBURSEMENTS</u>			
Initial Workprogram Preparation a/	<u>\$0.589</u>		<u>\$0.589</u>
Estimated Disbursements:			
I. Workprogram Costs			
- CPs and Studies	\$0.815	\$0.994	\$1.809
- Project Preparation	\$1.185	\$2.268	\$3.453
- Administrative Costs	<u>\$0.320</u>	<u>\$1.347</u>	<u>\$1.667</u>
Sub-total WP Costs	<u>\$2.320</u>	<u>\$4.609</u>	<u>\$6.929</u>
II. Project Costs			
- CPs and Studies	\$0.160	\$1.390	\$1.550
- Project Financing	<u>\$0.160</u>	<u>\$16.640</u>	<u>\$16.640</u>
Sub-total Project Costs	<u>\$0.160</u>	<u>\$18.030</u>	<u>\$18.190</u>
Total Estimated Disbursements	<u>\$2.480</u>	<u>\$22.639</u>	<u>\$25.119</u>
TOTAL DISBURSEMENTS	<u>\$3.069</u>	<u>\$22.639</u>	<u>\$25.708</u>
EXCESS OF RECEIPTS (DISBURSEMENTS)	\$1.484	(\$22.639)	(\$21.155)
FUND BALANCE AT BEGINNING OF PERIOD	\$0.000	\$1.484	\$0.000
FUND BALANCE AT END OF PERIOD	\$1.484	(\$21.155)	(\$21.155)

a/ Actual costs for preparatory work on the Montreal Protocol program through June 30, 1991 charged by the Bank but not yet reimbursed from the Ozone Layer Protection Trust Fund account in the World Bank.

TABLE 2
OTHER AGENCY PARTICIPATION

COUNTRY	UNDP	UNEP	WORLD BANK	OTHER*
Brazil			X	USEPA
China	X		X	FINIDA
Chile		X	X	
Ecuador			X	USEPA
Egypt	X	X	X	USEPA
Jordan	X		X	
Malaysia	X		X	CIDA
Mexico		X	X	USEPA
Nigeria	X	X	X	
Philippines	X		X	EEC
Thailand	X	X	X	SIDA
Trinidad/Tobago	X		X	
Tunisia	X	X	X	
Venezuela	X		X	USEPA

* Agency Acronyms:

CIDA - Canadian International Development Agency
 FINIDA - Finnish Agency for International Development
 EEC - European Economic Community
 SIDA - Swedish International Development Agency
 USEPA - United States Environmental Protection Agency

TABLE 3

INTERIM MULTILATERAL FUND OF THE MONTREAL PROTOCOL

World Bank Work Program

CALENDAR YEAR 1992 BUDGET SUMMARY

I. Country Work Programs a/	No. of Manweeks b/	Workprogram Budget (US\$)		
		CP/Studies c/	Proj. Prep.	Total
Argentina	32.0	\$149,337	\$0	\$149,337
Brazil	70.0	\$123,788	\$152,270	\$276,058
Chile	47.2	\$0	\$191,878	\$191,878
China	91.8	\$53,230	\$181,440	\$234,670
Ecuador	132.0 d/	\$76,102	\$95,026	\$171,128
Egypt	46.0	\$27,526	\$227,827	\$255,353
Jordan	19.0	\$27,727	\$92,222	\$119,949
Malaysia	32.0	\$0	\$113,770	\$113,770
Mexico	54.0	\$0	\$292,076	\$292,076
Nigeria	92.4	\$271,255	\$144,078	\$415,333
Philippines	19.0	\$7,428	\$106,090	\$113,518
Thailand	33.0	\$0	\$122,342	\$122,342
Trinidad & Tobago	19.0	\$12,016	\$70,938	\$82,954
Tunisia	19.0	\$106,060	\$81,452	\$187,512
Turkey	44.0	\$13,515	\$217,687	\$231,202
Venezuela	38.0	\$61,591	\$107,058	\$168,649
Yugoslavia	27.0	\$64,249	\$71,838	\$136,087
TOTAL-Country WP	815.4	\$993,824	\$2,267,992	\$3,261,816
II. Administration, Legal and Financial Costs e/				\$1,347,550
TOTAL BUDGET				\$4,609,366

a/ Budget amounts reflect costs of project preparation and country programmes and associated overhead costs.

b/ Planned manweeks for World Bank higher level staff, international and local consultants.

c/ Includes country programmes and supporting technical studies, these underpin project preparation.

d/ About 80% is for local consultant weeks.

e/ Budget amounts for operations coordination, related policy analysis and review,
legal and financial administration and associated overhead costs.

TABLE 4

Montreal Protocol Interim Multilateral Fund

World Bank Work Program

CY92 SCHEDULED APPROVALS/COMMITMENTS

(In US\$ million)

Country	No. of Projs.	Project Type	Total Project Cost	Projected Approval/Commitment Dates				TOTAL CY92
				Jan-Mar '92	Apr-June '92	Jul-Sep'92	Oct-Dec'92	
Brazil	1	Research & Dev.	1.00			1.00		1.00
	1	Project Financing	15.00			15.00		15.00
Chile	1	Project Financing	1.00				1.00	1.00
China	1	Project Financing	20.00			20.00		20.00
Ecuador	1	Project Financing	10.00			10.00		10.00
Egypt	1	Demonstration	0.37	0.37				0.37
Malaysia	1	Project Financing	13.50			13.50		13.50
Mexico	1	Project Financing	10.00		10.00			10.00
Philippines	1	Project Financing	10.00			10.00		10.00
Thailand	1	Project Financing	15.00			15.00		15.00
Trin. & Tob.	1	Project Financing	2.00			2.00		2.00
Venezuela	1	Project Financing	10.00			10.00		10.00
TOTAL	12	TOTAL	107.87	0.37	10.00	96.50	1.00	107.87

Definition of Project Types

Project Financing: Relatively large, multi-million dollar, multi-project, investment packages, meeting Montreal Protocol project criteria and and implementation guidelines, which will be disbursed through financial intermediaries on terms to be determined by country Governments, within the context of the country's Country Program, related policies and institutional arrangements.

Pre-inv. Activities: Activities preceding major project identification and design which are effectively engineering design projects, demonstration or pilot projects or research and development. e.g. demonstration project in Egypt aims to reduce CFC-12 charge in domestic refrigerators and to establish recycling units to conserve CFC-11 and CFC-12 in refrigerators and air conditioners.

TABLE 5

Montreal Protocol Interim Multilateral Fund

World Bank Work Program

CY92 SCHEDULED DISBURSEMENTS

(US\$ million)

Country	No. of Projs.	Project Type	Total Project Cost	Projected Disbursements				Total CY92
				Jan-Mar '92	Apr-June '92	Jul-Sept'92	Oct-Dec'92	
Brazil	1	Research & Dev.	1.00			0.15	0.15	0.30
	1	Project Financing	15.00			1.13	1.13	2.25
Chile	1	Project Financing	1.00				0.08	0.08
China	1	Project Financing	20.00			1.50	1.50	3.00
Ecuador	1	Project Financing	10.00			0.75	0.75	1.50
Egypt	1	Demonstration	0.37	0.06	0.06	0.09	0.09	0.30
Malaysia	1	Project Financing	13.50			1.01	1.01	2.03
Mexico	1	Demonstration a/	0.18	0.03	0.05	0.05	0.02	0.14
	1	Project Financing	10.00		0.75	0.75	0.75	2.25
Philippines	1	Engineering Design a/	0.40	0.06	0.10	0.10	0.04	0.30
	1	Project Financing	10.00			0.75	0.75	1.50
Thailand	1	Engineering Design a/	0.47	0.07	0.12	0.12	0.05	0.35
	1	Project Financing	15.00			1.13	1.13	2.25
Trin. & Tob.	1	Project Financing	2.00			0.15	0.15	0.30
Venezuela	1	Project Financing	10.00			0.75	0.75	1.50
TOTAL	15	TOTAL	108.92	0.21	1.07	8.42	8.34	18.03

a/ Projects approved in CY91.

Definition of Project Types

Project Financing: Relatively large, multi-million dollar, multi-project, investment packages, meeting Montreal Protocol project criteria and implementation guidelines, which will be disbursed through financial intermediaries on terms to be determined by country Governments, within the context of the country's Country Program, related policies and institutional arrangements.

Pre-inv. Activities: Activities preceding major project identification and design which are effectively engineering design projects, demonstration or pilot projects or research and development, e.g. demonstration project in Egypt aims to reduce CFC-12 charge in domestic refrigerators and to establish recycling units to conserve CFC-11 and CFC-12 in refrigerators and air conditioners.

ANNEX I
The Interim Multilateral Fund
under the Montreal Protocol
World Bank Work Program CY1991

Work Programs at the Country Level

ARGENTINA

1. Background

The Bank understands from the GOA that it proposes to embark on an a program for accelerated phase out of controlled substances. The GOA expects to draw on assistance under the IMFMP in implementing this program.

2. Work Program Goals

Work on Argentina will be initiated in CY92. Goals of the CY92 work program include: (i) agreement with the government on a country work program; (ii) completion of a baseline study; (iii) completion of a country program; and (iv) establishment of an investment fund for controlled substance phaseout. The following program description is tentative pending review with the Government.

3. Consultations with UNDP and UNEP

The Bank will consult with UNDP to obtain results of UNDP's sector reconnaissance survey of substances controlled under the Montreal Protocol in Argentina.

4. Country Program

Country Program Formulation will begin with a country work program mission scheduled for March 1992. The mission will review with the Government the status of its program for meeting its responsibilities under the Montreal Protocol and its requirements for assistance channelled through the Bank.

A baseline study to underpin the CP is scheduled to be undertaken with GOA in June 1992. The Bank mission will work with Government and industry to (i) collect baseline information on controlled substances flows in Argentina, (ii) assess the existing policy and institutional framework for controlled substance control, (iii) develop an outline for the CP with the Government and a plan for its preparation, including workshops for information exchange with industry and other interested groups.

A mission scheduled for October 1992 will participate in workshops to (i) disseminate detailed technical information to the various controlled substance-using sectors on the latest technological developments in each of the use sectors; (ii) disseminate information on the science and effects of stratospheric ozone depletion, and (iii) discuss overall policy, incentives, institutional, regulatory and legislative issues with industry, consumer groups, NGOs, environmental groups and other interested parties to enable a clear understanding of the problem.

A follow-up mission in January 1993 will present and discuss a draft CP, and identify an investment operation.

5. Project Cycle

Project Preparation is scheduled to begin formally in March 1993 leading to appraisal of an investment fund operation in June, 1993.

BRAZIL

1. Background

A newly established Inter-ministerial Technical Committee (ITC) will be responsible for coordinating implementation of the MP. The ITC is composed of representatives of the following organizations: Economic Secretariat, BNDES (National Bank for Economic and Social Development), Environmental Secretariat, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renovaveis (IBAMA), Secretary of Science and Technology, FINEP, and the Ministry of External Relations. Participating in the work of ITC although not as official members will be representatives of industry user groups (e.g., ABINEE and others).

Specific responsibilities within the Committee have been allocated as follows:

Liaison with MP Executive Committee: The Special Division of the Environment of the Ministry of External Relations will represent Brazil's interest in dealing with the MP Executive Committee and Secretariat.

Internal Coordination: The Economic Secretariat of the Ministry of Economics, Finance, and Planning (MEFP) will be responsible for overall coordination of the Inter-ministerial Technical Committee for implementation of the MP.

Financial Intermediary: BNDES will be the designated financial intermediary for refinancing of eligible private sector investment projects. BNDES will carry out the technical and financial evaluation, and be directly responsible for GOB approval of investment projects, subject to oversight of the ITC.

The GOB has not as yet begun to formulate an integrated approach to a regulatory policy for controlled substances. Private sector interests, however, have been working to introduce legislation to regulate CFC usage for aerosol and solvent applications.

The following work program for Brazil for CY92 is tentative, pending further interactions with, and approval by, appropriate Government authorities.

2. Goals of the Work Program

The major goals of the work program for CY92 are: (i) definition of a national controlled substance phaseout strategy, to include; (ii) preparation of a Country Program; (iii) identification and preparation of investment projects; (iv) establishment of an Investment Project Financing Fund in BNDES; (v) establishment of a Substitute Technology Research and Product Development Fund to support product/process development; (vi) conduct of substitution/reduction technology workshops.

3. Consultations with UNDP and UNEP

There are no specific plans at this time for collaboration with UNDP or UNEP in preparation of a work program for Brazil.

4. Country Program

Assistance to GOB in the preparation of a country program began in October 1991 with a combined programming and project identification and preparation mission covering the Bank's CY92 work program for Brazil, the Government's strategy for phasing out controlled substances, an investment project fund, and a substitute

technology development fund.

The October/November mission was to (i) seek approval of the GOB for the proposed CY92/3 work program; (ii) develop a schedule for definition of a national strategy for controlled substance elimination, and for preparation of the Country Program; (iii) agree on procedures for operation of the Investment Fund; (iv) advance the identification phase of investment projects through discussions with industry groups and individual enterprises; and (v) initiate discussions concerning the Substitute Technology Development Fund concept. The mission and the ITC will jointly produce Initial Executive Project Summary (IEPS) drafts for the Investment Fund and Substitute Technology Fund projects. The mission will ensure that both public and private sector participants are fully aware of the information requirements for preparation of the CP and for investment project preparation, and will agree to a timetable with the GOB for preparation of a CP. Industry interest in using Multilateral Fund-supported specialists for in-plant process analysis and controlled substance substitution process identification will be assessed.

5. Project Cycle

Project appraisal for a proposed investment project fund is scheduled for May, 1992, and for a substitute technology project fund in July, 1992. The May, 1992, mission should finalize preparation of the Investment Project Financing Fund to finance eligible sub-projects, and advance the preparation of the Substitute Technology Fund concept through a review of research/development proposals prepared by private industry/public sector technical research institutions. It will also review the draft CP and discuss matters related to regulation, institutions and actions needed for implementation of the projects. Discussions with GOB on establishing or fine tuning the policy and institutional framework will also take place. Planning for project identification, seminars, workshops, training and technology demonstration activities to ensure rapid replication of controlled substance substitution technology throughout Brazil will continue. Close coordination with the GOB and ABINEE and with other industry groups will be important throughout the process.

The proposed July, 1992, mission would appraise the substitute technology project fund and review the revised draft CP and discuss implementation of institutional and regulatory aspects of country program defined strategy.

Project Supervision for the investment and substitute technology funds would proceed from November, 1992, with review of proposed sub-projects and review of other aspects of country program implementation. Supervision missions would be undertaken in March and July, 1993.

CHILE

1. Background

There are regular Bank-financed projects under preparation in Chile which include components of a controlled substance phase-out program which would not qualify for assistance under the IMFMP. These include the Environmental Institutions Development Project, and the follow-on Environmental Management Investment Project. It is proposed that each of these Bank projects include components funded by the IMFMP. These components would be prepared and appraised in parallel with their Bank-associated projects.

2. Work Program Goals

The overall goals of the Bank's activities over the next two years in Chile are to: (a) assist Chile in the development of a strategy for the phasing out of controlled substances; (b) help strengthen Chile's institutional capability to manage ozone protection activities, in conjunction with the efforts being made to improve its current

environmental management framework; and (c) support Chile in project identification, preparation and implementation.

3. Consultations with UNDP and UNEP

There are no specific plans at this time for collaboration with UNDP or UNEP in preparation of a work program for Chile.

4. Country Program

Country Program Formulation will proceed with a combined CP and investment project formulation mission in February - March, 1992. The objective of the mission will be to initiate, with CONAMA, preparation of a strategy for controlled substance phase-out, including a definition of the technical, policy and institutional issues and strategy. In addition, it would identify projects which could be supported under the Protocol. The mission would work with CONAMA and associated Government agencies, as well as with relevant industry, consumer and NGO groups. The mission would agree with CONAMA on the strategy and structure of the CP paper, and on the respective contributions from each of these groups to the paper. It is expected that local consultants supported by specialized international experts would be contracted to assist CONAMA. A draft CP is expected to be completed by the end of 1991.

A final CP/project preparation mission is scheduled for May, 1992. This mission would discuss the draft CP to the Government and based on these discussions the document would be finalized. It is expected that this would include agreement of a program to strengthen Chile's policy framework and management capabilities. Resources to carry out this program could be included under the Environmental Institutions Development Project. The mission would also include technical experts who would prepare potential projects which had been identified by the earlier mission.

5. Project Cycle

Provision has been made for an investment project appraisal for the first phase of investment project interventions during the second half of 1992. Projects to be appraised will be identified in the February-March mission. Regular supervision of these projects will be underway early in 1993.

CHINA

1. Background

China signed the Montreal Protocol on June 14, 1991 and is expected to complete the ratification process by the end of 1991. At its June 1991 meeting, the Executive Committee authorized funds for the Bank to engage the GoC in a dialogue on a work program for CY92, including preparation of a country program and identification of a series of investment interventions. A UNDP study was published in May, 1990, which identified some specific short and medium-term controlled substance phase-out projects, although not all the sub-sectors were fully covered. The National Environmental Protection Agency (NEPA) is the focal point in China for Protocol implementation activities and has requested the UNDP to proceed with the second phase of the feasibility study. UNDP fielded missions in September/October, 1991, to advance preparation of the China Country program.

2. Work Program Goals

In view of the GoC's commitment to Protocol ratification, the Bank is undertaking a dialogue with

appropriate Government authorities in China to agree on the details of a work program and budget. As far as possible, the Bank intends to appraise specific investment projects under either Bank environment or industry-related investment operation now in the preparation stage. The possibility of combining a controlled substance proposal with the expansion or modernization of industries will be explored.

3. Consultations with UNDP and UNEP

UNDP will continue to have the leading role in the dialogue with GoC, including providing financing for the completion of the previous work, plus feasibility studies for specific short-term investments. UNDP will also arrange financing for the proposed country program. TOR for both studies have been agreed between UNDP, NEPA and the World Bank. UNDP and NEPA will identify and select the consultants for both endeavors but they welcome further Bank participation in the development of the two studies. The second phase of the previous work will be carried out with UNDP funds (UNDP China has a US\$300,000 unspent allocation for this purpose). Financing of the Country Program (CP) will possibly require a new project with either UNDP, bilateral, or IMFMP financing of US\$500,000-600,000.

4. Country Program

Country program formulation proceeding under UNDP's supervision will require about four months to complete and should be prepared by June 1992. With this clear understanding that the CP is under preparation, the Bank intends to proceed in parallel with preparation of the first \$20 million investment project funding.

5. Project Cycle

Project identification will begin under the CY91 work program with a mission planned for November/December, 1991. The purpose of this mission is to undertake a dialogue with appropriate Government authorities in China to agree on the details of the work program and budget for an investment fund of about \$20 million. During January, 1992, sufficient progress is expected to have been made on feasibility studies underpinning the proposed investment fund to enable project documentation to be prepared to enable the project to be submitted to the Executive Committee for approval at its first meeting in 1992.

Subject to Executive Committee approval, project appraisal should proceed in May, 1992.

ECUADOR

1. Background

To conform with the Protocol's stipulations at the earliest possible time, the Government assigned responsibility to prepare a phase out program to the environmental units of the Ministry of Foreign Relations and of the National Development Council (CONADE). Since then, and under the leadership of CONADE an inter-ministerial committee has been established to assist in the preparation of the program. Representatives of the private sector, scientific community and of non-governmental organizations (NGOs) participate in the committee.

In March 1991 CONADE, requested assistance from the World Bank and the United States Environmental Protection Agency (EPA) to prepare the proposed program. Since then a base line study has been completed which was the basis for the preparation of a proposed country program (CP) for implementing the Montreal Protocol in Ecuador. A draft report of the CP in english is nearly complete, including the identification of 12 potential projects.

As a result of a joint Bank/EPA mission in August, GOE agreed to establish the institutional and legal framework for implementation of the proposed program. The Ministry of Industry (MICIP) has been assigned full implementation responsibility. Cooperating public sector entities would be the Finance Ministry, Central Bank and the Ministry of Health. To determine the organizational structure of the implementing unit within the MICIP a Bank consultant is carrying out an institutional capacity analysis. Simultaneously, proposed legal instruments (a presidential and a ministerial decree) are being drafted. These documents will serve to complete the program document to be discussed with government authorities during a Bank/EPA mission scheduled for early November 1991. It is expected that as a result of the November mission GOE would agree on policy decisions to be recommended under the Program (not yet incorporated in the draft document).

Various activities will be carried out in the next three months to set the stage for CP implementation. These will include: official establishment of the executing unit within the MICIP, enactment of official decrees, seminars for industry representatives, training for staff of the implementing agency, and initiation of a public awareness campaign. UNDP has agreed to support all training activities.

Given the relevance of aerosols as main users of CFCs the GOE proposes to start phase out activities with a project to replace these substances in the aerosol sub-sector. EPA has offered to support preparation of a feasibility study to determine costs and execution timetable. Pre-investment studies for other projects would be agreed with GOE authorities during the November mission and the GOE would be able to submit the CP to the Executive Committee by end January 1992.

2. Work Program Goals

The Government of Ecuador (GOE) wishes to quickly implement projects designed to phase-out the use of controlled substances and is currently preparing the necessary legal framework mandating the phaseout of controlled substances and putting the necessary institutional structure in place. The Bank's work program for the next two years accordingly will be dominated by pre-investment studies and project investments.

3. Consultations with UNDP and UNEP

There are no specific plans at this time for collaboration with UNDP or UNEP in preparation of a work program for Ecuador.

4. Country Program

The Country program and the underpinning baseline study were completed by the GOE during CY91.

5. Project Cycle

A first round of project preparation activities began with the assistance of a Bank mission during October 1991. The mission planned to finalize project selection and conceptual design and discuss them with GOE and the industries involved. Discussions with GOE on establishing the supporting policy and institutional framework were also planned. Each of the proposed projects include seminars, workshops, training, and technology demonstration activities to ensure rapid replication of the project throughout Ecuador. A local project coordinator will be hired half time for a period of three years to oversee the implementation of the projects in Ecuador.

Project appraisal is scheduled for May 1992 and supervision missions should take place in September and November/December 1992.

EGYPT

1. Background

At its June meeting, the Executive Committee endorsed Egypt's proposal to prepare, with Bank assistance, a model Country Program. The GOE indicated that the Egypt Environment Affairs Agency (EEAA) would establish a task force of Egyptian experts to assist in the coordination of this effort. GOE also informed the Executive Committee that it would establish a Program Implementation Office to carry out short and long-term program strategies, associated action plans, conduct workshops, training, and undertake project developments/investments. Finally, the Executive Committee approved funds for UNDP to undertake pre-investment feasibility studies for reduction of controlled substances in 2 small firms not identified for interventions within the Bank's work program for Egypt.

The Government of Egypt is committed to support a program for phasing out controlled substances. The Ministry of Industry has issued a ministerial decree banning the use of CFCs in the aerosol industry as of January 1991.

2. Goals of the Work Program and Project identification

The purpose of this work program is to strengthen Egyptian capacity to consolidate data collection on controlled substances, identify and select alternative technologies which may be deployed in implementing the Montreal Protocol, and to demonstrate CFC conservation in the refrigeration industry.

The work program will be coordinated by EEAA which will support project identification and preparation.

3. Consultations with UNDP and UNEP

The work plan has been developed in collaboration with both UNEP and UNDP. In July 1991, at the invitation of the Government of Egypt, the Bank assisted with the preparation of a Country Program for Egypt, a pre-requisite for funding of projects by the Multilateral Fund. This Country Program is intended to serve as a model for other developing countries. Specific demonstration projects for funding by the Bank were identified, and UNDP intends to include them within its work program for technical assistance activities in Egypt. Total cost of these demonstration projects is estimated at approximately \$370,000.

4. Project Cycle

Project preparation based on the proposed CP action plan is scheduled for January, 1992. Financing and implementation arrangements will be agreed during the mission. The mission will include a reclamation specialist enabling a pre-feasibility study to be made for a regional CFC reclamation facility for possible funding through the Bank under the IMFMP.

A single project to finance implementation of viable demonstration projects throughout Egyptian industry will be prepared for Executive Committee approval at its first meeting in 1992 and will subsequently be appraised by the Bank for effectiveness by mid-year should the project meet with EC approval.

Further project preparation activities are planned for the second half of 1992 consistent with a program of short-term controlled substance phase-out actions agreed between the Bank and EEAA. These include completion of the EEAA/EPA study on the financial and economic impact of CFC phase-out in the refrigeration and foam

industries and the preparation of projects to reduce CFC-12 charge in domestic refrigerators by redesigning refrigerator condensers and to establish recycling units to conserve CFC-11 and CFC-12 in refrigerators and air conditioners.

Project supervision missions will be required during March, June and October, 1992, and will focus on conducting workshops and the review of demonstration projects. The results of the demonstration projects will be evaluated and the action plan for Egypt will be revised if required to reflect experience and future needs. Refrigeration specialists will accompany the October mission.

JORDAN

1. Background

The planned World Bank mission to Jordan in October/November 1991 will help develop a country program for Jordan and define specific project proposals for assisting the controlled substances phase-out.

2. Goals and Status of Work Plan and Project Identification

The purpose of this work plan is to strengthen Jordan's capacity to introduce CFC conservation measures and identify and apply technical alternatives consistent with Montreal Protocol implementation.

3. Consultations with UNDP and UNEP

The work plan has been discussed with both UNEP and UNDP and it has been agreed that the World Bank will take the lead in developing the program. There are no specific plans for collaboration with UNDP or UNEP in work program implementation.

4. Country Program

Country program formulation will begin with a reconnaissance and project identification mission in October, 1991, which will collect information on controlled substance use, current and future growth; obtain, if available, previous studies on controlled substance utilization and substitutes and visited major industrial firms that are using controlled substances. A baseline study will be prepared as background for formulation of the Country Program (CP). The mission will work with the Jordanian Environment Agency on the outline elements of the Country Program (CP) and will identify potential projects that will assist Jordan in reducing CFC.

5. Project Cycle

Project identification and preparation will proceed during a proposed February, 1992, identification/preparation mission. The emphasis will be on users with the largest potential CFC savings in the refrigeration industry. The mission will also discuss the draft of the CP that was prepared following the October 1991 mission. The project preparation phase will also be finalized. The mission will include a refrigeration specialist.

Project appraisal is scheduled for late April/early May, 1992, depending on prior approval of the project by the Executive Committee of the IMFMP in the event that the project is more than \$500,000. The appraisal mission will follow-up the policy and regulatory framework as defined in the CP as well as the institutional, human resources and implementation arrangements for the projects identified.

Project supervision of approved projects will begin in the second half of 1992.

MALAYSIA

1. Background

The Department of Environment (DE) has prepared the Country Program and project feasibility studies and is the lead agency within Government for Montreal Protocol implementation. As opposed to relying on an implementing agency, the Government of Malaysia has taken full responsibility for completing development of the Country Program (CP). A Bank mission in September, 1991, assisted the Government with the definition of a project proposal. The GOM advised the Executive Committee that it intended to submit its own project proposal to the November meeting of the Executive Committee as the first tranche investment project for Malaysia.

The Bank has proposed to the Government that preparation of the CP and feasibility studies for the short-term action plan proceed in parallel.

2. Work Program Goals

The major goal is to assist the Government in establishing and implementing an effective controlled substance phase-out program.

3. Consultations with UNDP and UNEP

There are no specific plans at this time for collaboration with UNDP or UNEP in preparation of a work program for Malaysia. The UNEP/SIDA CFC Project in Bangkok also promotes controlled substance phase-out activity in Malaysia.

4. Project Cycle

Project preparation and appraisal activities are contingent upon the Government's intentions either to fully prepare and appraise a proposed \$13.5 million investment fund project, the procedures required by the Executive Committee in such cases, and the implications these have for Bank assistance to the GOM in this process, if any. Provision has been made in the work program for assistance to the GOM, as required, with ongoing project preparation and processing through to effectiveness of its proposed investment projects.

MEXICO

1. Background

Mexico has actively participated in the discussions and subsequent negotiations leading to the Montreal Protocol and currently chairs the Executive Committee of the Interim Multilateral Fund of the Montreal Protocol. It is fully committed to phase out the use of controlled substances. The Secretario de Desarrollo Urbano y Ecología (SEDUE) has succeeded in convincing the two CFC producers and seven industrial users to sign voluntary agreements to reduce production and consumption of controlled substances, implement recycling and other conservation measures and, in some cases, adopt alternative technologies. About a dozen other agreements are being negotiated with individual firms or industry leaders. These voluntary agreements form the basis of Mexico's strategy to implement the Protocol and has been instrumental in creating an environment of trust and cooperation between the authorities and industry on this matter. SEDUE, with assistance from Camaro Nacional de la Industria de la Transformación (CANACINTRA), has also identified six projects to reduce or recycle CFCs. Three consist

of implementing recycling technologies and the rest concern reduction of controlled substance use in foam, provision of training and safety during aerosol manufacturing. All the projects appear eligible for financing under the Interim Fund and are likely to reduce controlled substance consumption to some extent. Two of these (CFC 12 recycling from MACS and aerosol propellants safety program) are being processed in the World Bank for financing by the Interim Fund.

SEDUE's ozone protection effort consists of periodic oversight by two senior officials and a programs sub-director. USEPA has been working with SEDUE to assist in their Country Program (CP) which is being finalized for submission to the Executive Committee's approval, and in funding the first year of a technical center, and on a number of projects. The Mexican industry has made significant in-kind contributions to these efforts. SEDUE's work plans and goals will require additional staff availability and programmatic support.

2. Work Program Goals

The overall goal of the Bank's activities over the next three years in Mexico is to assist the Government in implementing its country program for phasing out controlled substances by the year 2000. Specifically the Bank will: (1) support Mexico's project preparation and implementation effort, (2) help strengthen Mexico's institutional capabilities to manage ozone protection activities and complement its current policy framework with measures which would ensure that the controlled substance phase-out would be done efficiently and at the lowest possible cost to Mexican industry, and (3) finance well-conceived ozone protection projects.

3. Consultations with UNDP and UNEP

UNDP and UNEP are collaborating with the Bank in assisting Mexico in developing its program. UNDP has been asked by the Mexican Government to provide technical options information, and institutional strengthening and technical assistance will be a special focus of UNDP activities in Mexico. The Bank is continuing to work with the Government in fostering an accelerated investment funding mechanism in Mexico, while UNEP is supporting Mexico in developing replacement technology information for dissemination to other Spanish-speaking countries.

4. Project Cycle

In a joint effort with CANACINTRA (Mexico's Chamber of Industries) and the United States Environmental Protection Agency, SEDUE conducted a study providing baseline data on total controlled substance consumption, growth forecasts, demand for controlled substance by end-use, technology used in these sectors, potential alternative technologies and substances, and first order costs of phasing out controlled substances by the year 2010. Upon completion of this study, Mexico began discussions with industry to identify specific controlled substance reduction projects. The design/engineering projects of immediate interest are:

Recycling

1. Off-site CFC-113 and methyl chloroform recycling from solvent cleaning applications. (Preliminary discussions with firms specialized in solvent treatment have been held and draft terms of reference are under preparation.)
 2. CFC-11 and CFC-12 recycling from refrigeration and air conditioning applications. (A preliminary project proposal has been presented to SEDUE.)
 3. On-site CFC-11 recycling from large chillers. (A preliminary project proposal has been presented to SEDUE.)
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Alternative Technology

Training and technical support to introduce technologies that eliminate the need for solvent cleaning in the electronics industry.

In addition, SEDUE is discussing draft terms of reference of a CFC conservation study for the Maquiladora industry (export-oriented firms typically operating in the Mexico/U.S. border zone). At least five additional projects concepts are currently being formulated.

The second IMFMP-assisted project in Mexico, the Ozone Protection Policy and Institution Strengthening Project, will make provision for funding sub-projects in the above-mentioned categories.

Project appraisal for the Ozone Protection Policy and Institutional Strengthening Project is scheduled for January, 1992, assuming the project is approved by the Executive Committee in November, 1991. Project appraisal mission objectives include to: (i) finalize the operational features of the marketable permit system and agree on the specific arrangements for its implementation; (ii) agree on the program for strengthening SEDUE; and (iii) agree with the Government on the conditions and financial arrangements for passing on the funds to industry beneficiaries.

Project negotiations are scheduled for March, 1992, and the project should be effective by May, 1992.

Project supervision activities will begin in February, 1992, for the First Montreal Protocol to Mexico (CFC-12 recycling from MACs and aerosol propellants safety program) and by mid-year will include the Ozone Protection Policy Project. A key focus of the mid-year supervision mission is to review implementation performance for the establishment of the marketable permit system. Supervision missions in the latter half of the fiscal year will assess the effectiveness of assistance to strengthen SEDUE and the quality of NAFIN's sub-project review and financing to draw lessons for the design and implementation planning for proposed future projects of this kind in Mexico and elsewhere.

NIGERIA

1. Background

The Government of Nigeria (GON) is yet to develop a policy and institutional framework for phase-out of controlled substances. In the Bank's CY91 work program, provision was made to assist the GON with preparation of a country program. However, due to unforeseen delays the substantive part of this assistance must now take place in CY92. A Bank-financed Environmental Management Project now under preparation will strengthen the capacity of the Federal Environment Protection Agency (FEPA) in Nigeria to formulate and oversee implementation of environmental management plans and policies and will complement assistance proposed under the IMFMP for Montreal Protocol implementation.

2. Country Program and Project Identification Activities

Technical studies are planned during the period from March to June, 1992, to provide the sector foundation for the development of a country program (CP) and to recommend technical strategy and investments for CFC and other controlled substance reduction, substitution, and elimination. Starting with a census of all major industrial users of controlled substances prepared by the Federal Environmental Protection Agency (FEPA), a detailed enterprise level technical assessment will be made of major industrial users of controlled substances and a sample of the retail air conditioning repair and maintenance operations. The focus of the assessment will be to compile a profile of controlled substance users for each of the major applications to include inter alia

substitution/reduction measures already taken or possible at the individual enterprise level, and feasible CFC elimination and conservation investments in the air conditioner assembly and repair/maintenance sub-sectors.

In-country training, and technical assistance needs in support of country program implementation, will be defined by the Bank in collaboration with the UNDP, partly in the context of an in-country technical assistance workshop sponsored by the UNDP (see para 3. below). The proposed technical studies will be carried out by an international chemical process design consulting firm with expertise in the principal applications of controlled substances, particularly CFCs. The national counterpart supervising agency will be FEPA.

3. Consultations with UNDP and UNEP

The work program has been discussed with both UNEP and UNDP and it has been agreed that the World Bank will take the lead in developing the program. UNDP and the World Bank have agreed to coordinate planning for an inventory of CFC-consuming industries which would complement Bank-managed technical studies, project preparation activity and CP formulation. UNDP is also coordinating proposed UNIDO work on technical alternatives for phase-out of CFCs in Nigeria and will liaise with the Bank to avoid duplication. UNDP, in cooperation with UNEP, are also considering conducting an MP-related industrial seminar in Nigeria in early 1992. UNEP's scheduled All-Africa Workshop in September 1992, will benefit from the results of the proposed Bank-assisted technical studies which will be completed by then.

PHILIPPINES

1. Background

A country study funded by the EEC and carried out by COWIConsult (Danish), was completed in May 1991. The EEC report recommends a rapid phase-out of controlled substances but does not include all costs and benefits. The Government is requesting the EC to provide financing for preparing the CP and UNDP to provide technical assistance to support training activities. The Government has requested the Bank to prepare and implement an investment program.

2. Work Program Goals

The major goal is to assist the Government in establishing and implementing an effective controlled substance phase-out program. The Government has appointed the Department of Environment and Natural Resources (DENR) as Executing Agency for the engineering design of short-term investment projects and for preparation of the Country Program. A joint UNDP and World Bank mission will be undertaken in February or March 1992 to define remaining technical assistance requirements which UNDP may be able to meet in the Philippines. To expedite the project investment process, a mission was sent to the Philippines in early October 1991 to develop an investment package. This package will comprise the first tranche investment in the Philippines.

3. Consultations with UNDP and UNEP

The Bank and UNDP have collaborated in formulating the work program for the Philippines and will undertake joint missions for identification of technical assistance requirements for Protocol implementation.

4. Project Cycle

Depending on the rate of Government implementation, pre-feasibility studies initiated in 1991 will result

in investment projects being presented to the Executive Committee for approval at its first or second meeting in 1992. Feasibility studies are currently scheduled for completion by April, 1992. A joint UNDP/Bank mission to identify technical assistance needs consistent with proposed investments will be undertaken in March/April 1992. Project appraisal for EC-approved projects is planned for May/June, 1992.

THAILAND

1. Background

The responsibility for compliance with the Protocol provisions has been allocated to the Ministry of Industry (MOI) and the National Environmental Board (NEB) provides technical support for the controlled substance phase-out program.

A UNEP/SIDA project has been initiated for the control of CFCs and other controlled substances.

A Country Program (CP) and three pre-investment studies are under preparation. The Government has also requested UNDP and/or UNEP to finance a separate proposal for technical assistance to local institutions responsible for developing and implementing the controlled substance phase-out program.

2. Work Program Goals

The overall goal is to assist the government in establishing and implementing an effective controlled substance phase-out program.

The three feasibility studies, namely, (1) auto A/C CFC recycling, (2) solvent recycling, and (3) CFC substitution in solvent applications, are designed to develop specific investments in the main CFC consumption areas with the highest growth rates and where cost-effective technology is already established in other countries. The studies will bring in relevant expertise/technology from other sources and provide for appropriate transfer of that technology to local sources. The studies include all the analysis required to take each set of projects to the investment stage.

3. Consultations with UNDP and UNEP

The government has requested the World Bank to act as executing agency for the formulation of the CP, as well as for three feasibility studies to develop a short term investment plan. The Government has requested UNDP to finance a separate proposal for technical assistance to local institutions responsible for developing and implementing the controlled substance phase-out program. The UNEP/SIDA project has an overall coordinating role for controlled substance activities in Thailand.

4. Country Program

A draft of the country program should be complete by May 1992.

3. Project Cycle

Project preparation began in 1991 and culminated in a Bank mission to Thailand in late September which defined a preliminary first tranche of investments for submission for Executive Committee approval in early 1992. The engineering design of these projects has been supported in the CY91 work program and is scheduled for completion by April, 1992.

Pending Executive Committee approval project appraisal will be completed in June, 1992 leading to project effectiveness in the second half of 1992.

TRINIDAD AND TOBAGO

1. Background

The Government has established a special working group to prepare, with UNDP assistance, a Country Program (CP) for controlled substance reduction in Trinidad/Tobago, which is expected to be finished by the end of CY91.

It is anticipated that the Ministry of Environment (MOE), the Caribbean Institute (CARIRI), the Bureau of Standards (BOS), and various industry groups will participate in the design and implementation of a controlled substance phase-out plan.

2. Goals and Status of Work Plan and Project Identification

Pending the formulation of the CP, the goals and specific activities of the Bank's work program are tentative. Provision has been made for a mission to review with Government a possible Bank role in providing IMFMP assistance for investment activities proposed in the CP.

3. Consultations with UNDP and UNEP

The Bank has consulted closely with UNDP in Trinidad & Tobago, ceding UNDP the lead role in country dialogue on Montreal Protocol implementation. The Government has recently established a special working group to prepare, with UNDP assistance, a Country Program (CP), now expected to be completed by the end of CY91.

4. Country Program

The Bank will play a review and consultative role in finalization of the CP, if requested.

TUNISIA

1. Background

The Government of Tunisia (GOT) is committed to support a program for decreasing the use of CFC in the aerosol industry and an eventual phase out of CFC in the foam industry. The Agence Nationale de la Protection de l'Environnement (ANPE) is the local implementing agency for Montreal Protocol implementation.

2. Goals and Status of Work Plan and Project Identification

The goals of this work plan are: (a) to strengthen Tunisian capacity to implement the Montreal Protocol through both technical and policy interventions; and (b) to demonstrate the CFC conservation and recycling options in industry. Because the local CFC market and the scale of individual end-uses are small, Tunisia is ideally suited to serve as a testing ground for policies and programs to conserve, reduce and eventually eliminate CFC uses in other small developing countries.

3. Consultations with UNDP and UNEP

There are no specific plans for collaboration with UNDP or UNEP in preparation of a work program for Tunisia.

4. Country Program

A mission is planned for November, 1991, to prepare and agree terms of reference for the preparation of a CP for Tunisia, including an action plan to implement the CP feasibility studies for projects recommended to assist the refrigeration, foam and aerosol sectors in the transition from CFCs to acceptable alternatives. The CP would be undertaken under contract with an international consulting company selected on the basis of international competitive bidding. The selected company should begin work in March/April, 1992 and the draft CP reviewed by the Bank, including technical specialists, with Government and local industry representatives in August/September, 1992. Details of project proposals will be discussed and an implementation plan will be initiated.

5. Project Cycle

Project interventions under consideration with Government in parallel with preparation of the CP include the following:

- possible application of a modified foam insulation system in the refrigeration industry.
- assistance with establishment of a program in a major refrigerant service company to improve service procedures, train technicians to conserve CFC, and demonstrate the use of CFC recovery/recycling machines.
- demonstration of use of non-CFC blowing agents in the manufacture of flexible foam.
- assistance to aerosol producers to convert their plants from CFC's to LPG.

Project preparation would proceed in the period March to June, 1992, resulting in presentation to the Executive Committee of projects greater than \$500,000 for approval at a meeting in the latter half of 1992. Projects approved by the EC should become effective before the end of 1992 and be under implementation early in 1993.

TURKEY

1. Background

The Government of Turkey has initiated activities for phasing-out controlled substances consistent with implementation of the Montreal Protocol. The Ministry of Health has issued a ministerial decree banning the use of CFC as propellants for insecticides. The Turkish refrigeration industry has expressed enthusiasm for the transition to CFC-free substances in order to maintain a competitive position in the export market. The Under-Secretariat for the Environment, which is the coordinating agency for the implementation of the Montreal Protocol, is preparing to recommend further actions for the phase-out of controlled substances. A Bank mission to Turkey in September 1991 initiated action on a Country Program.

Investment project activities will be coordinated by the Under-Secretariat of Treasury and Foreign Trade, World Bank Projects Department.

2. Goals and Status of the Work Plan and Project Identification

The overall goals of the Bank's activities in Turkey are to:

- (1) avail Turkey of assistance under the IMFMP for its efforts in phasing-out controlled substances; and
- (2) strengthen Turkey's institutional and human resource capacity to manage specific ozone protection activities.

This work plan makes provision for strengthening Turkish capacity in collecting and utilizing for policy and planning data on the use of CFCs and other controlled substances, providing information on feasible alternatives to controlled substances, demonstrating options for conservation and recycling, and aiding the prompt implementation of CFC free technologies for refrigerator manufacture as they are commercially proven.

3. Consultations with UNDP and UNEP

The Government of Turkey has requested the World Bank to assist it in formulating a work program. It is agreed that UNDP will assume responsibility on all public awareness and non-project related training activities.

4. Country Program

A mission is planned for January, 1992, to discuss a Turkey Country Program draft which is to be prepared following the September 1991 mission.

5. Project Cycle

The January, 1992, mission will finalize the program for CP implementation and initiate preparation for all short term project proposals included in the CP. Projects now under consideration include to:

- Demonstrate the use of a modified foam insulation system in an established refrigerator design at a major refrigerator manufacturing facility and when commercially proven, HFC-134a as an alternative refrigerant;
- Establish a program in a major domestic refrigerator service company to improve service procedures and train technicians in conservation of CFCs.
- Provide recycle/recovery machines to a service company to facilitate the conservation program in domestic refrigerators.

Specific projects of this kind in excess of \$500,000 will be presented to the Executive Committee for approval beginning at its first meeting in 1992.

VENEZUELA

1. Background

An ad hoc group, coordinated by the Ministry of the Environment and Renewable Natural Resources (MARNR), with the participation of the Ministry of Finance (Hacienda), Ministry of Industry and Commerce, Ministry of External Relations, and both state and private industry, is taking an active part in country program

preparation. It is planned to replace this ad hoc group with a legally constituted autonomous unit, perhaps in the form of a foundation, which will be the national coordinating unit for implementation of the Protocol. It is intended that operating expenses of the unit will be supported in part by the Trust Fund. Venezuela is a member of the Executive Committee of the MP. MRE is responsible for coordinating Venezuela's contact with the Bank, UNEP, and UNDP for Protocol Implementation.

The GOV has already instituted a series of measures for the purpose of monitoring and regulating controlled substances production and consumption. Among these are a reclassification of tariff codes to permit classification by individual controlled substances; requirement of prior approval by the MARNR for importation; prohibition beginning in 1992 of use of controlled substances in nonessential uses for which non CFC substitutes already are commercially available; and active control of production and consumption to maintain annual consumption below the 0.3 kg per capita level.

Government has also organized, in conjunction with the major trade and producer associations, a series of seminars on alternatives for reducing and substituting for CFC use in refrigeration and air conditioning. The seminars are planned for October 1991, pending confirmation of UNDP support of guest industry experts. The producer associations have already developed the technical agenda for the workshop and it will include a review of the latest developments in commercial scale HFC 134a technology.

The following work program and budget for Venezuela are presented as indicative, pending further review and approval by Government authorities.

2. Work Program Goals

The work program for CY92 will build on current or planned program activity. The major goals of the CY92 work program include: (i) definition of a national controlled substance phase-out strategy; (ii) preparation of a country program; (iii) identification and preparation of investment projects; (iv) establishment of an Investment Fund for financing of eligible sub-projects; and (v) conduct of seminars/workshops on substitution/reduction technology.

3. Consultations with UNDP and UNEP

The GOV intends to make use, as required, of assistance from the Bank and the Trust Fund, the UNDP, and USEPA, and these agencies will collaborate in providing such assistance. UNDP has been requested to provide support to MARNR and Hacienda to mobilize expertise to train customs officials and agents to effectively track controlled substances.

4. Country Program

The basic priorities for country program development will center on (i) legislative and regulatory measures consistent with available technologies to provide dis-incentives for use of controlled substances; (ii) identification and preparation of individual projects to facilitate controlled substance elimination in aerosol, foaming agent, and solvent applications for which commercial scale substitute technology is already available; (iii) cooperation with the domestic AC/refrigeration industries in the monitoring of substitute technologies as they become available, and collaboration with them to develop a strategy and identify programs for Trust Fund support of incremental investment costs for controlled substance applications in these sectors; and (iv) workshops to disseminate conservation and recycling techniques for AC/refrigeration assembly, testing and maintenance.

A planned March, 1992, mission will review the draft CP and discusses issues related to its implementation. The USEPA has financed technical assistance to support CP preparation.

5. Investment Project Actions

Investment project preparation is currently focussed on a Venezuelan producer of molded food packaging containers produced from blown polystyrene sheet in a process which uses CFC 12 as a blowing agent. GOV will be requesting IMFMP assistance for the modifications required to substitute CFC 12 as the blowing agent. Both butane and carbon dioxide foaming agent technologies are being studied. Project preparation will proceed through March, 1992, with a view to presenting the project for Executive Committee approval in the second quarter of 1992. The expected project cost is about \$600,000-700,000.

Ongoing investment project identification actions include MARNR-initiated contacts with pre-selected CFC-users in the aerosol and foam industries to inform them of the availability of IMFMP financing and encourage them to develop a pipeline of eligible projects. Local representatives of American compressor manufacturers have recently begun to submit technical proposals for HFC 134a technology for commercial air-conditioning systems. This development will be monitored closely for the purpose of identifying and quantifying incremental costs eligible for Trust Fund support. In-country sub-project preparation, evaluation and review will be coordinated by the established Implementation Unit responsible for administration of the CP. Disbursement arrangements for Trust Fund proceeds for eligible private sector sub-projects will most likely be handled via the public sector rather than a financial intermediary. Sub-projects will be financed on a grant basis.

Project appraisal will proceed immediately following Executive Committee approval of the proposed CFC 12 substitution project in late April or May, 1992. The appraisal mission will finalize preparation of the Investment Fund to finance eligible sub-projects, review the draft CP, CP implementation, and TA and Workshop proposals which have been identified by the Inter-ministerial Working Group.

Provision is made for project supervision beginning in July, 1992, and for the remainder of the year.

YUGOSLAVIA

1. Background

The Federal Ministry of Health is responsible for the implementation of the Protocol. The Under-Secretariat for the Environment, which is the coordinating agency for implementation of the Montreal Protocol, has already included in its national environment strategy a program for phasing out controlled substances.

2. Work Program Goals

The objective of the work plan is to support the Yugoslav Government and industry in conserving, recycling and phasing out CFCs and other controlled substances and to apply and promote the use of CFC-free technologies in the refrigeration, aerosol and foam sectors wherever feasible.

3. Consultations with UNDP and UNEP

There are no specific plans agreed for collaboration with UNDP or UNEP in preparation of a work program for Yugoslavia.

4. Country Program

Country program formulation began with a mission in November, 1991, during which terms of

reference (TOR) were prepared for the development of a Country Program in Yugoslavia, including an action plan to implement the CP feasibility studies for projects recommended to assist the refrigeration, foam, and aerosol sectors in the transition from CFCs to other alternatives. Provision is made for procurement of an international firm of consultants for assisting the GOY prepare the CP. The Bank will review the draft CP with the Government in August 1992, if feasible.

5. Project Cycle

Projects under consideration in Yugoslavia include the following:

- Establishment of a central recovery/recycling plant for CFC-12.
- Establishment of two LPG purifying units in two refineries for the cosmetic industry
- Use of non-CFC blowing agents in the foam and polystyrene manufacture.

Either in parallel UNDP technical assistance projects or as part of the proposed investment operations the following technical assistance activities are proposed:

- Establish a database on controlled substance import and consumption conforming to Protocol.
- Conduct a series of workshops on controlled substance alternatives.
- Train a core of engineers in the use of controlled substance alternatives.

The current schedule for project preparation is March-June 1992, depending on the state of civil unrest. Consultant services will be procured under international competitive bidding to prepare, in addition to the CP, feasibility studies for proposed projects.

Project appraisal will follow approval by the Executive Committee of the proposed projects. Projects should be ready for presentation to the Executive Committee at their last meeting in 1992 leading to implementation early in CY93. Supervision missions would begin in 1993 also.

Interim Multilateral Fund under the Montreal Protocol



Mexico

Ozone Protection Policy and Institutional Strengthening Project

MONTREAL PROTOCOL

INITIAL EXECUTIVE PROJECT SUMMARY

Country:	Mexico
Project Name:	Ozone Protection Policy and Institutional Strengthening Project
Ozone Projects Trust Fund:	US\$10 million
Associated Bank Project:	None. Free-Standing Project
Appraisal Date:	January 1992
Bank Approval Date:	April 1992

1. Background on Ozone Depleting Substances (ODS). In 1989, Mexico consumed approximately 8,130 metric tons of Group I substances (CFC-11, CFC-12, CFC-113, and CFC-114), 260 tons of Group II substances (Halon 1211 and Halon 1301), and 9,000 tons of Group III substances (1,1,1-Trichloroethane, also known as methyl chloroform - MCF). CFC-11 and CFC-12 are produced locally by Dupont (2 plants with a total capacity of 15,000 tons) and Quimobasicos (one plant with a capacity of 5,000 tons). Over the last few years, capacity utilization has hovered between 35% and 40%. Most of the CFC-11 and CFC-12 is consumed locally. In recent years, small amounts of these substances have been exported. Carbon tetrachloride (a Group II substance) is also produced in Mexico (PEMEX), but is entirely used as a feedstock for CFC production. Mexico meets its demand for CFC-113, CFC-114, and MCF through imports. In the absence of controls, Mexican industry forecasts that CFC and MCF use would grow at an annual rate of 2.2% and between 3.0 to 5.0%, respectively.

2. Mexico signed the Montreal Protocol in September 1987 and was the first country to ratify it in March 1988. The Protocol limits the production and consumption of Groups I, II, and III ozone depleting substances (ODS), effective in 1989, as shown in Table I attached in annex. Mexico is very committed to phase out the use of ODS and, although the Protocol allows developing countries a 10-year grace period, has publicly announced its intention to go as fast as developed countries and achieve a complete phase out of controlled substances by the year 2000.

3. SEDUE (Secretaria de Desarrollo Urbano y Ecologia), as the lead environmental agency in Mexico, is currently engaged in a number of activities to encourage protection of the ozone layer. It has negotiated and signed voluntary agreements with the two CFC producers and seven users of ODS to encourage reductions in unnecessary emissions. These agreements form the thrust of Mexico's strategy to implement the Protocol and have been instrumental in creating an environment of trust and cooperation between the authorities and industry on this matter. SEDUE is also devoting much of its efforts to help industry identify ozone protection projects. With U.S. EPA's assistance, it has prepared a project consisting of two components (CFC-12 recycling from MACS and Aerosol Propellants Safety Program), which is being processed for a US\$180,000 grant financing from the Ozone Projects Trust Fund (OPTF). To meet the growing demands of its ozone protection program, SEDUE has created an Ozone Protection Technology Center (OPTC). The Center has started to operate with bilateral financing from U.S. EPA as part of the US contribution to the Montreal Protocol Multilateral Fund Interim Fund (MPIMF). It has a staff of two professionals (four are planned at full operation) to help industry prepare ODS phase out projects. OPTC is also responsible for preparing and managing public awareness programs, representing Mexico in international conferences, and for helping other LAC countries implement the Montreal Protocol through assistance in project preparation and exchange of information. Finally, SEDUE has prepared and submitted a Country Program (CP) to the MPIMP's Executive Committee for approval during its November 1991 meeting in Montreal. The Program spells out the strategy Mexico intends to follow to meet its commitment under the Montreal Protocol and gives an indication of the type of ozone protection projects it is preparing for funding from OPTF over the next three years. The Country Program will be updated periodically to incorporate new developments, particularly with regard to progress in the preparation of ODS phase out subprojects. The Project described in this EPS has been designed to support the implementation of the Country Program, which appears as Annex I. In many ways, it is the translation of that program into concrete action.

4. Project Objectives. The overall objective of this Project is to help Mexico establish an adequate policy and institutional framework to ensure an efficient implementation of the Montreal Protocol at the least possible cost to

both the Mexican industry and consumers. Specifically, the Project aims at (i) introducing market-based incentives to induce economically rational reductions of ODS production and consumption by industry; and (ii) establishing in Mexico the necessary capacity to process and finance ozone protection subprojects. This would involve strengthening SEDUE in the preparation and monitoring of ODS phase out subprojects, and setting up in Mexico the financing mechanism through which OPTF funds would be channeled. This approach appears to be best suited as ozone protection subprojects tend to be small (less than \$150,000), and it would not be cost-effective for the Bank, as administrator of OPTF, to appraise and approve for financing each of them directly.

5. Project Description. The Project has three components: (a) establishment of the policy framework under which implementation of the Montreal Protocol would be carried out; (b) strengthening of SEDUE in ozone protection activities; and (c) financing of specific ODS phase out subprojects. (a) The Policy Component would consist of the following elements: (i) preparation and implementation of a program to completely phase out the use of ODS by the year 2000. This would involve agreeing with industry representatives on a phase out timetable and on the specifics of the program, as well as devising the instruments to monitor its execution; (ii) establishment of a marketable permits system to allow individual firms to adopt alternative chemicals and/or convert to non-ODS technologies at their own pace through the possibility of trading and selling ODS permits. The knowledge and practical experience gained would be very useful in deciding whether and how this policy instrument could be applied to other pollution problems in Mexico. A description of the system, its functioning, as well as the trading rules and procedures appears in Annex II. (b) The SEDUE Component would consist of (i) strengthening the Technology Center in ODS subproject preparation and supervision through the financing of the Center's technical personnel and equipment for a period of three years, and provision of short-term consulting services to help deal with specific, short-term technical issues; and (ii) preparing and financing a series of public awareness programs. (c) The Subproject Financing Component would consist of a line of credit to finance ozone protection subprojects prepared by industry and/or OPTC. The credit line would be administered by NAFIN on behalf of the Mexican Government. Funds for training of industry staff, recycling, demonstration/workshops, pilot subprojects would be given to industry beneficiaries as grants. However, investment by industry to convert to non-ODS technologies and other profitable subprojects (defined as subprojects with a FROR higher than the interest rate of the loans--see below) would be given as loans at the same terms and conditions as those existing for other environmental projects in Mexico (i.e., maturity up to 10 years with an interest rate of CETES + 2%). Only for those subprojects would a financial analysis, including the calculation of FROR from the investing company's point of view, be made. It is expected that, at least during the first two years of Project implementation, most subprojects would not be profitable subprojects or be of a pilot nature and, therefore, financed with grants. NAFIN would appraise the subprojects prepared by OPTC and/or the Mexican industry and would send them to the Bank for review to ensure full compliance with MPIMF's eligibility criteria and technical soundness prior to approving them and authorizing disbursement. There will not be any "free limit" (i.e., delegation of approval authority to NAFIN for subprojects below a certain limit) as this would run contrary to the Bank's fiduciary duties as trustee of the OPTF. In addition, Technical Review Panel (TRP) meetings will be arranged for technically complex subprojects. [NAFIN would receive an administrative fee for assistance on procurement and disbursement, maintaining records and, in the case of loans, collecting the funds from beneficiary enterprises]. A detailed description of the financing arrangements can be found in Annex III.

6. Funds of the Project would finance: (i) all the cost associated with the design, establishment, and functioning of the tradable permit system, as well as the monitoring of the ODS phase out (\$300,000); (ii) the full cost of the Center's technical personnel for a period of three years (\$450,000); (iii) the Center's equipment (\$100,000); (iv) short-term consulting services (\$550,000); (v) public awareness programs (\$600,000); and (vi) ozone protection subprojects (\$8,000,000).

7. Project Implementation. SEDUE's Direccion General de Prevencion y Control de la Contaminacion Ambiental would have overall responsibility for Project implementation and coordination with other ministries and institutions involved in the Project. Under the supervision of that Direccion, the Technology Center would be responsible for establishing and monitoring the ODS phase out program, including the functioning of the tradable permit system in coordination with SECOFI (Secretaria de Comercio y Fomento Industrial) and SHCP (Secretaria de Hacienda y Credito Publico). The Center is also responsible for helping industry prepare ODS phase out subprojects and for

submitting them to NAFIN. NAFIN would be responsible for appraising the subprojects and for forwarding them to the Bank for review and approval. NAFIN would also be entrusted with disbursing the funds to the beneficiaries, keeping the Project accounts (including arranging for their auditing by independent auditors and sending the audits to the Bank) and, in the case of loans, for debt collection.

8. Project Sustainability. The Project has been designed to set the policy and institutional framework for ozone protection activities in Mexico. The policy component should help induce economically rational ODS phase out by industry, while the proposed SEDUE strengthening and the establishment of the financing mechanism in Mexico should ensure speedy preparation and funding of ozone protection subprojects that are technically sound.

9. Rationale for Montreal Protocol Financing. As per the Implementation Guidelines and Criteria for Project Selection established by the MPIMF's Executive Committee during its third meeting in April 1991, all technical assistance, pre-investment and investment activities, which lead to reduction in ODS emissions are eligible for financing. The proposed Project aims at establishing the framework under which the ODS phase out program would be effected. Without the Project, the implementation of the Montreal Protocol will most likely be slower, disorderly, and more costly for the Mexican industry and the Interim Fund.

10. Issues and Actions. There is no major issue outstanding as the Government had already agreed to the design and scope of the Project, including the establishment of a tradable permit system and the financial conditions to the beneficiaries. The following actions should be agreed during appraisal and negotiations: (i) agreement on the phase out schedule on a yearly basis and date of its introduction; (ii) agreement on the design and implementation of the marketable permit system, including whether to auction off or to grant the permits to existing ODS producers and importers, choice of the system design, trading rules and procedures, and date for the introduction of the system (see Annex II); (iii) confirmation that investment to industry to convert to non-ODS technologies and other profitable projects would be financed with loans at the same conditions as those granted to other environmental projects in Mexico. Training, technical assistance, recycling, demonstration, and other pilot subprojects would be given grants; (iv) terms of an agreement between Government and NAFIN regarding the transfer of MP funds from NAFIN to the Government for all Project components other than subproject financing. Signing of this agreement would be a condition of effectiveness; and (v) reporting requirements by NAFIN and SEDUE, the main implementing agencies.

11. Environmental Aspects. While all the ozone protection subprojects are clearly environmentally sound, the beneficiary companies may not. SEDUE will be asked to ensure that companies requesting Montreal Protocol funds are in compliance with environmental regulations in Mexico before approving the requested grant or loan, and thereafter shall ensure that such compliance is maintained.

12. Project Benefits. The Project's major benefit is to help Mexico achieve its objective of completely phasing out the use of controlled substances by the year 2000 (i.e., 10 years before the deadline mandated by the Montreal Protocol for developing countries) in the most efficient way. It is estimated that, by the end of the Project period (end 1994), the consumption of ODS in Mexico would have decreased by a third compared to its 1989 level of 8,130 tons of Group I substances, 260 tons of Group II substances, and 9,000 tons of Group III substances. The Project would also help build up SEDUE's expertise in ozone protection activities, thus enabling it to better assist other LAC countries in their efforts to phase out ODS. Finally, the Project is expected to demonstrate the value of the wholesale approach to ozone protection financing and it is hoped that its design and special features, particularly its emphasis on policy and institutional strengthening, would be replicated elsewhere.

13. Project Risks. The Project faces two major risks. The first concerns SEDUE's and NAFIN's inability to prepare and finance sound ozone protection subprojects. This risk is mitigated by the technical assistance (both in personnel and in the form of short-term consulting services) provided under the Project, the Bank's close monitoring of project implementation, and the requirement for SEDUE and NAFIN to submit the subprojects for review to the Bank and the TRP. This risk is also worth taking, in view of the expected benefits in terms of capacity building. The second risk related to the reluctance of industry to use alternative chemicals and/or adopt non-ODS technologies. This risk is very small --if it is not nil-- given the very concessionary nature of the Montreal Protocol resources

provided to industry beneficiaries, and the introduction of the tradable permit system, which very much allows industry to adapt at its own pace.

14. Staff Review Arrangements. The following staff is responsible for the Project and for the review:

Task Manager:	Chuong N. Phung, LA2C1
Division Chief:	Lyn Squire, LA2C1
CD Director:	Rainer Steckhan, LA2DR
RED Chief:	Nancy Birdsall, LATEN
Bank Tech. Advisor:	Donald Brown (ASTIF)
External Advisor:	Robert Hahn (American Enterprise Institute)

15. Project Timetable. The current timetable for processing the Project is as follows:

Technical Review Panel:	October 17, 1991 (A)
Submission to Secretariat of MPIMF's ExCom:	October 28, 1991
ExCom Meeting:	November 18-19, 1991
FEPP Review:	January 6, 1992
Appraisal:	January 15, 1992
Yellow Cover Review:	February 15, 1992
Negotiations:	March 1992
Bank Approval:	April 1992

October 18, 1991
Country Operations Division I
(Mexico)
Country Department II
Latin America and the Caribbean Region

Mexico First Montreal Protocol Project

A Technical Review Panel convened in Mid-September to review two Mexico project proposals. Mr. Donald Grob, Managing Engineer, Underwriter's Laboratory, served as the panel's outside technical specialist. The panel recommended MP support following discussions concerning the adoption of technical standards, certifications in training, and verification that no inappropriate precedents would be established.

The project under technical review is composed of two sub-projects: a pilot CFC mobile air conditioning (MAC) recycling/demonstration program and a training program for enhancing manufacturing safety in aerosol producing facilities. Together, they would constitute the first operation for any country funded under the auspices of the Interim Multilateral Fund of the Montreal Protocol.

MAC Recycling Demonstration Project

The Mexican MAC service industry is comprised of companies which install, maintain, and repair automobile and bus air conditioning systems. CFC-12 is the only refrigerant used in charging and re-charging automobile and bus air conditioning systems. Properly performed, the efficiency of recycling equipment is approximately 90 percent.

A private company has volunteered its air conditioning repair shop to undertake the recycling project in Mexico City to include training and use for 4 months in order to make an assessment of how much CFC can be recovered in a typical Mexican setting and under ordinary working conditions. There will be a follow-up workshop to review the pilot project and, most

importantly, to determine the actual status of the initial charges of typical users, since such factors will be critical in determining the relative importance and effectiveness of recovery and recycling techniques.

Technical Review Panel Comments. One of the criteria by which the Montreal Protocol will measure its success, is the cost-effectiveness of projects. It would therefore be helpful to include some indication of the prospective amount of controlled substance abatement which is likely to occur as a consequence of the eventual adoption of the proposed measures. Specifically, how much will be saved on a country-wide basis, and at what cost per kilogram?

There should be some specific mention of Mexico's plans for development of the Country Program (CP) and its relation to the success of the demonstration project. In particular, Mr. Grob noted that the anticipated reduction in the cost payback period for recycling shortens dramatically as the price of CFCs increases due to taxes, import restrictions and reduced production, and thus a sensitivity analysis in Exhibit G would be a useful addition.

Since not all small repair shops are in the business of repairing MACs per se, but may need to remove CFCs for other repair work, it was suggested and agreed by the Panel that recovery only options should also be included in the project design. This will be important because one of the everyday problems which must be comprehensively addressed is the commonplace tendency to focus on pressure rather than weight in determining charge levels in both recovery and recycling modes. Pressure readings can be very misleading, particularly in warmer climates such as in most developing

countries, and can easily complicate and/or frustrate handling procedures leading to excessive labor time and/or exasperated venting of controlled substances.

Certification and control of the repairmen, recharge supplies, and repair sites is considered of critical importance and the US SAE standard J1991 should be referenced and used as part of this standard. Mr. Grob encouraged consideration of a computer-automated test as an aid to the maintenance/training certification process. Mexican automobile manufacturers should also be required to specify recycling in their repair procedure and include it in their warranty agreements. These comments will be passed on to SEDUE for it to take them into account during the course of project implementation. Other miscellaneous editorial comments provided by Mr. Grob were noted and will be incorporated in document revisions.

CFC Aerosol Conversion Project.

This project is designed to facilitate the conversion of CFC-using aerosol manufacturing facilities to alternative technologies. Since one of the most cost-effective alternatives, hydrocarbons, are flammable, safety considerations may be a barrier to comprehensive conversion of the industry (at the present time, 88 percent of the industry has already converted to non-CFC technologies). As a consequence, the project aims to support the elimination of CFCs by implementing an aerosol manufacturing safety review and conducting in-plant safety training.

Technical Review Panel Comments. Concerns were raised that the aerosol safety project might establish the wrong precedent by providing "retroactive" support to the 88 % of plants which had already converted to non-CFC propellants. A suggestion was

even made that an environmental analysis of companies within the industry be performed as a pre-condition for implementation of the project. However, in view of the very low funding level under discussion (\$43,200) for in-plant training, a credible analysis would not be cost-effective at any realistic level of effort. Indeed, it would be unrealistic to make an environmental assessment of all firms participating in the proposed training to ensure that they are environmentally sound. Even Bank policy does not go that far. The Bank makes environmental assessments of projects which it finances, not of companies. Furthermore, the in-plant training itself could be conducted in such a manner that it could generate analysis of the kind of safety risks which could be expected to have evolved in other countries unless CFC-related policies are made more effective. Such a project has merit, therefore, as a learning opportunity useful to the industry in general and to other countries as well.

Following discussion on the above points, the Panel determined that the project is targetted specifically at the needs of the 12% of the market which has not yet converted out of CFCs, and that while a by-product of this safety training activity may indeed be to the benefit of the other 88%, it does not constitute "retroactive" financing for already converted firms, nor does it thereby establish any undesirable precedents for the Montreal Protocol. The Panel also agreed to request SEDUE to ensure that the MAC company participating in the project is in compliance with all related environmental requirements within Mexico.

TABLE 1
SUBSTANCES CONTROLLED BY THE MONTREAL PROTOCOL

Group	Substance	Control Measures
<u>Group I*</u>		
CFC1 ₃	CFC-11	20% reduction by 1993; 50%
CF ₂ Cl ₂	CFC-12	reduction by 1995;
C ₂ F ₃ Cl ₃	CFC-113	85% reduction by 1997;
C ₂ F ₄ Cl ₂	CFC-114	100% reduction by 2000
C ₂ F ₅ Cl	CFC-115	
<u>Group II</u>		
CF ₂ BrCl	Halon-1211	50% reduction by 1995; 100%
CF ₃ Br	Halon-1301	reduction by 2000 (with
C ₂ F ₄ BR ₂	Halon-2402	exemption for essential uses)
CCl ₄	Carbon Tetra- chloride	85% reduction by 1995; 100% reduction by 2000
<u>Group III</u>		
C ₃ H ₇ Cl ₃	Methyl Chloforo- form (1,1,1-Tri- chloroethane)	Freeze by 1993; 30% reduction by 1995; 30% reduction by 1995; 70% reduction by 2000; 100% reduction by 2005

* Ten additional fully halogenated chlorofluorocarbons were included in Group I as part of the June 1990 Amendments to the Protocol. These substances have limited applications in industrialized countries and are not currently used in Mexico.

Source: UNEP. London, 27-29 June 1990. Draft Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer.

PROJECT FILE

The following documents directly relevant to the proposed project are in the project file and can be made available upon request:

- (i) Case Study of the Cost to Mexico of Protecting the Ozone Layer. Secretaria de Desarrollo Urbano y Ecologia, Mexico. June 1990;
- (ii) Montreal Protocol on Substances That Deplete the Ozone Layer. Final Act. 1987;
- (iii) Report of the Second Meeting of the Parties to the Montreal Protocol on Substances That Deplete the Ozone Layer. UNEP/Oz1.Pro.2/3. June 29, 1990;
- (iv) Draft Report of the Third Meeting of the Executive Committee for the Interim Multilateral Fund under the Montreal Protocol. UNEP/Oz1.Pro/ExCom/3/18. April 19, 1991. This report contains the ExCom's Implementation Guidelines and Criteria for Project Selection (Annex III);
- (v) SEDUE's voluntary agreements with seven Mexican industries;
- (vi) Alternative Policy Approaches for Implementing the Montreal Protocol in Mexico. LA2C1. May 2, 1991; and
- (vii) A Marketable Permit System for Controlling Ozone Depleting Substances in Mexico. LA2C1. Draft Report, September 25, 1991.

October 10, 1991
Country Operations Division I
(Mexico)
Country Department II
Latin America and the Caribbean Region

MEXICO's COUNTRY PROGRAM FOR IMPLEMENTING THE MONTREAL PROTOCOL

DIRECCION GENERAL DE PREVENCION Y
CONTROL DE LA CONTAMINACION AMBIENTAL.
SUBSECRETARIA DE ECOLOGIA
SEDUE. MEXICO.

**MEXICO'S PROGRAM OF ACTIVITIES TO BE SUPPORTED
BY THE MONTREAL PROTOCOL INTERIM MULTILATERAL FUND**

1. INTRODUCTION

This country program presents the strategy and policy framework for implementing the Montreal Protocol in Mexico over the next ten years. An action plan and a budget are presented for the specific activities Mexico plans to undertake with the support of the Fund. The action plan and the budget correspond to activities through the end of 1993 -- a time frame consistent with the initial time span of the Fund (three years beginning on January 1, 1991). The strategy and policy framework for implementing the Protocol in Mexico will evolve and new action plans and budgets will be submitted after 1993 to the Executive Committee for approval.

2. REVIEW OF PRODUCTION AND CONSUMPTION OF THE CONTROLLED SUBSTANCES

CFCs

Total CFC production (which consists entirely of CFC-11 and CFC-12) in Mexico was estimated at 9,465 metric tons for 1989. Of this 7,684 metric tons was for domestic use and the rest was exported. Domestic use dropped to an estimated 6,981 metric tons in 1990, but would have been expected to resume growth and reach 7,470 metric tons in 1993 if Mexico were not undertaking effective programs to phase out ozone depleting substances. The country imports CFC-113 (400.3 metric tons in 1988) and CFC-114 (44.3 metric tons in 1988). CFC-115 is neither produced nor imported.

Two manufacturers produce CFC-11 and CFC-12 in three facilities. Both of the manufacturers have swing plants which are capable of shifting production from CFC-11 and CFC-12 to produce HCFC-22. Such a shift results in approximately a 50 percent reduction in the production capacity of the plants. Two of the facilities have a production capacity of approximately 14,000 metric tons. A third facility has a capacity of 4,000 to 7,000 metric tons per year. No facilities are under construction to produce CFCs, halons, methyl chloroform, or any other controlled substances.

The distribution of total CFC consumption by type of CFC and by use is shown in Exhibit 1.

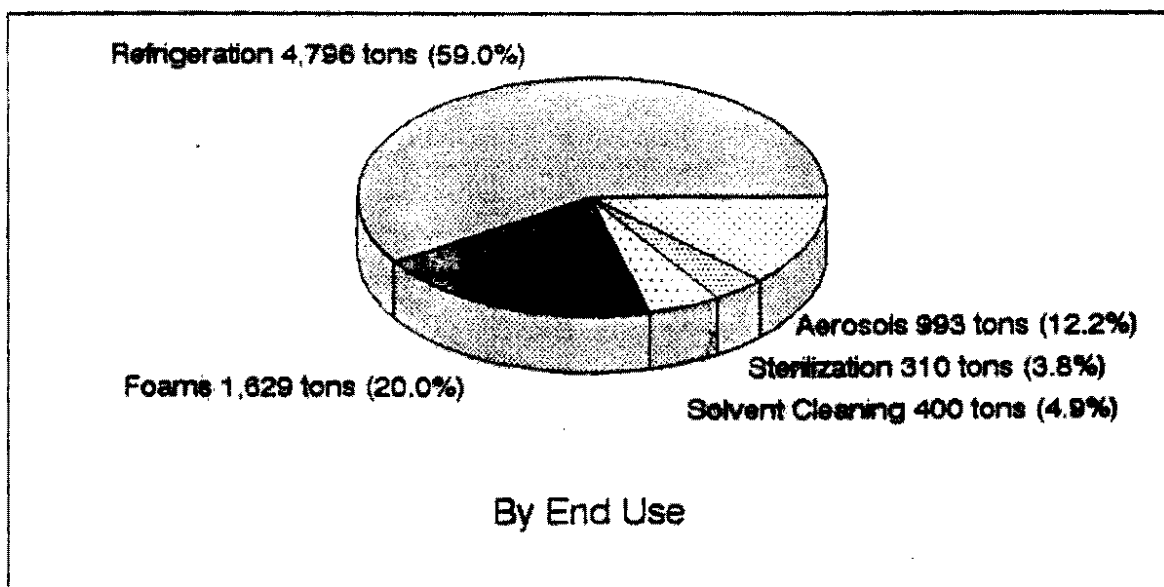
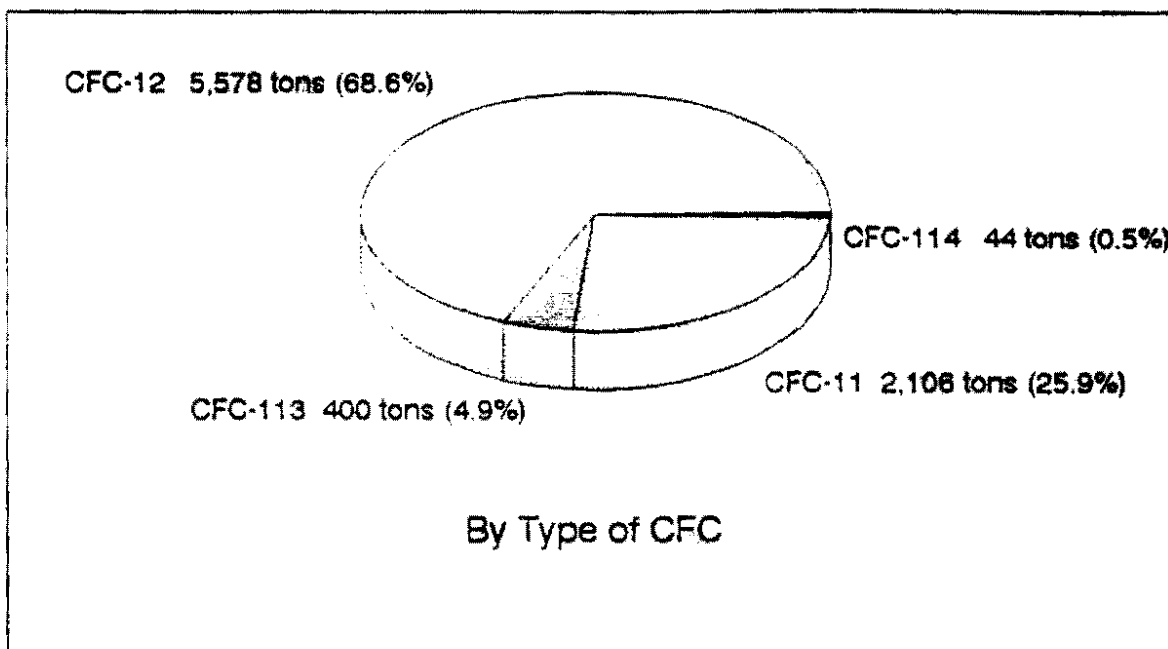
Exhibit 2 shows the distributions of consumption by use for CFC-11 and CFC-12. CFC-114 is used exclusively in the commercial and industrial refrigeration sector, and CFC-113 is used exclusively in electronics and metal cleaning.

**** Mexico Country Program ****

Exhibit 1

Mexico: Distribution of CFC Consumption

(Based on Actual Tons Consumed in 1989)



Total: 8,128 Tons Consumed in 1989

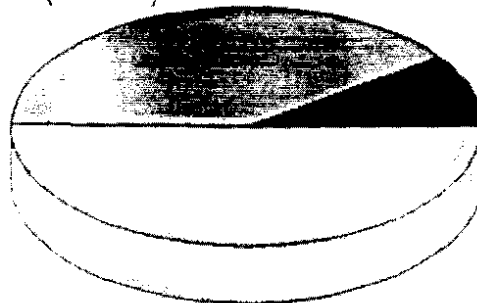
** Mexico Country Program **

Exhibit 2

Mexico CFC-11 Consumption by End Use

(Based on Actual Tons Consumed in 1989)

Refrigeration 840 tons (39.9%)



Aerosols 207 (9.8%)

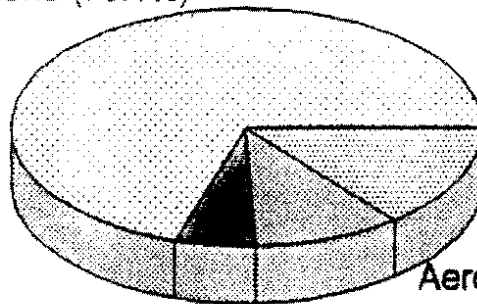
Foams 1,059 tons (50.3%)

2,106 Tons Consumed in 1989

Mexico CFC-12 Consumption by End Use

(Based on Actual Tons Consumed in 1989)

Refrigeration 3,912 tons (70.1%)



Aerosols 786 tons (14.1%)

Sterilization 310 tons (5.6%)

Foams 570 tons (10.2%)

5,578 Tons Consumed in 1989

**** Mexico Country Program ****

Halons

Halons are imported to Mexico for fire extinguishing equipment. Imports in 1989 were estimated at 200 metric tons of Halon-1211 and 60 metric tons of Halon-1301, with expected growth to 293 metric tons and 88 metric tons, respectively, in 1993. These figures might be reduced by taking the necessary measures to eliminate non-essential uses.

Carbon Tetrachloride

Approximately 4,200 metric tons of carbon tetrachloride were produced in 1989 (all by Petroleos Mexicanos, or PEMEX, the state-owned oil company) and 5,000 metric tons were imported. All the carbon tetrachloride is consumed in the manufacture of CFC-11 and CFC-12.

Methyl Chloroform (MCF)

Consumption of MCF in 1988 was approximately 9,000 metric tons, and was distributed among end-uses as shown in Exhibit 3. Because 75 percent of this use is by electronics firms operating near the Mexico-U.S. border, future demand will reflect the future needs of those operations and the success of efforts already underway to phase out their use. All of the MCF is imported, mostly from the United States.

3. REVIEW OF ACTIVITIES ALREADY UNDERTAKEN

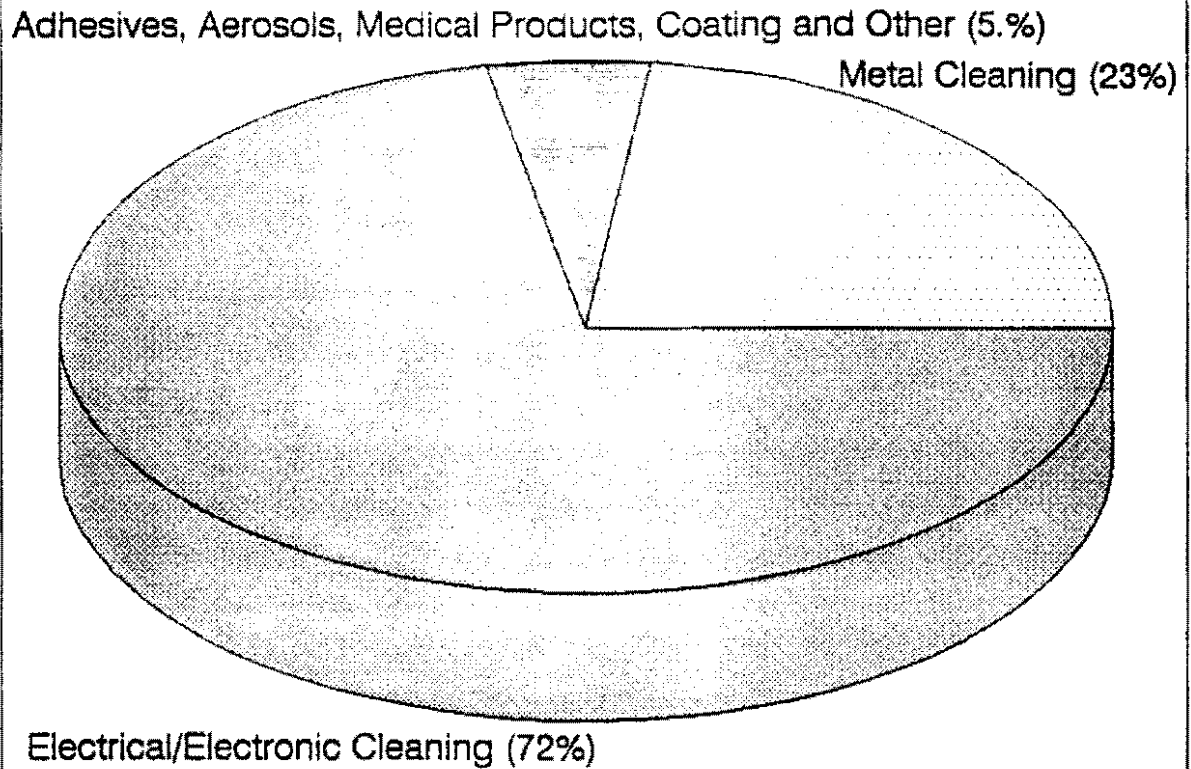
Mexico has been an active participant in efforts to protect the stratospheric ozone layer. In 1985, the Mexican Secretariat for Urban Development and Ecology (SEDUE) met with the two CFC manufacturers in Mexico. During these meetings, the CFC producers agreed to collaborate with SEDUE in controlling the production and emissions of ozone-depleting substances. In that year, Mexico helped author the Vienna Convention for the Protection of the Ozone Layer and was a key participant in negotiations leading to the Montreal Protocol. Mexico was the first country to ratify the Montreal Protocol -- March 31, 1988.

As shown in Exhibit 4, several voluntary agreements have been signed between SEDUE and CFC producers, halon distributors, and industry associations of user firms, for the control of substances covered by the Protocol. These agreements, which have been negotiated since 1988, include measures to reduce consumption of the controlled substances in aerosols, flexible polyurethane foams, and fire protection. The agreements indicate specific reductions or activities leading to their substitution and typically require the industrial party to report its progress to SEDUE each quarter.

**** Mexico Country Program ****

Exhibit 3

Consumption of Methyl Chloroform in Mexico by End Use



1988 Demand = 9,000 Metric Tons

Source: Chem Systems 1989

** Mexico Country Program **

EXHIBIT 4

VOLUNTARY AGREEMENTS WITH THE MEXICAN INDUSTRY TO REDUCE CFC AND HALON USE

End Use	Agreement Signatories	Nature of Organization	Measures
Polyurethane Foams	DuPont	CFC Producer	■ Phase out CFC use by 1990 in flexible foams
	Quimobásicos	CFC Producer	■ Update information on development of CFC substitutes for adoption in rigid foam systems
	Mexican Polyurethane Institute	Industry Association	■ Facilitate technology transfer
Aerosol Products	DuPont	CFC Producer	■ Cut non-essential CFC use by 50% in 1989
	Quimobásicos	CFC Producer	■ Phase out remaining 50% non-essential use by 1990
	National Chamber of Industries	Association of Manufacturing Industries	■ Medicinal, electronic cleaners, and spray products used in aircraft cabins are considered essential
	Mexican Aerosol Institute	Industry Association	
	Chamber of Perfume and Cosmetics Industry	Industry Association	■ Recommend labeling of ozone-safe aerosols
Halons	DuPont	Halon Importer/Distributor	■ Provide users with information on halon conservation measures
	CAISA	Halon Importer/Distributor	
	ICI	Halon Importer/Distributor	■ Keep users informed of progress in development of alternatives
Miscellaneous	National Board of In-Bond (Maquiladora) Industries	Association of Export Industries Neighboring the U.S./Mexico Border	■ Promote reduced use of ozone-depleting substances

** Mexico Country Program **

SEDUE and the Mexican Chamber of Industries (CANACINTRA) have organized various conferences and seminars to exchange technical information on new developments to replace ozone depleting substances. In the summer of 1989, SEDUE, in cooperation with the U.S. Environmental Protection Agency, prepared a case study of the costs to Mexico of implementing the Montreal Protocol. The study describes the production and consumption of ozone-depleting substances in Mexico, including projections for future demand. The study also presents the characteristics of the current technology used in industry end uses and describes the practices, technologies, and substitute technologies and chemicals that can be used to reduce or eliminate such consumption in each end use and estimates the associated costs.

In addition, the case study also highlights cost-effective technologies that could be implemented in the short term in specific end-uses (e.g., CFC recycling in mobile air conditioning, solvents, and refrigeration). The study received strong support from the Mexican Chamber of Industries (CANACINTRA) and technical advice from the U.S. Environmental Protection Agency.

Based on the technologies highlighted in the case study, SEDUE identified and prepared two project proposals which were presented for discussion during the April 15-19 meeting of the Executive Committee of the Interim Multilateral Fund. The creation of the Ozone Protection Technical Information Center was also proposed as a dedicated unit within SEDUE to assist in implementing the Montreal Protocol. (A more detailed discussion of this unit is presented in section 4 below).

The first proposal presents a program to demonstrate CFC-12 recycling from mobile air conditioning systems (MACs). The program consists of a pilot recycling project and a recycling technology training and public outreach program. The pilot project provides recycling equipment and training to a large mobile air conditioning recycling facility in Mexico City. This pilot facility will provide hands-on training to technicians from other mobile air conditioning recycling facilities. The program will be supplemented with a public education campaign about proper service and maintenance procedures that minimize CFC-12 emissions from mobile air conditioning systems. If this demonstration is successful, recycling will become common practice in this sector. It is expected that the expanded use of this technology in Mexico could result in an overall savings of 25 to 30 percent of the CFC-12 used in the MAC sector.

The second proposal is for safety evaluation, engineering, and training to support the safe elimination of CFC aerosol propellants in Mexico and to assure the safe use of flammable substitute hydrocarbons. Aerosols in Mexico are produced without

**** Mexico Country Program ****

CFCs except for medical and other CFC-dependent uses where no safe substitutes are approved. The experience gained from implementing the program and the existing technical expertise in Mexico can be transferred to other Article 5 countries.

SEDUE, in cooperation with the Environmental Protection Agency and Northern Telecom, has also announced a program to expedite the elimination of CFC-113 solvent consumption from Mexico's electronic manufacturing industries. Northern Telecom, a manufacturer of telecommunications equipment, will provide technical expertise for these efforts. The program will be implemented in four stages: project planning, training, demonstration, and plant conversion. Moreover, Northern Telecom and other member companies of the Industry Cooperative for Ozone Layer Protection (ICOLP) have agreed to make available to the Mexican electronic industries an on-line, international database called OZONET, which is designed to provide users of CFC compounds with information on alternative processes, materials, and technologies.

In addition, initial terms of reference have been prepared for the following new projects:

- . centralized CFC recycling system
- . low CFC foam insulation
- . centralized CFC-113 and MCF recycling plants
- . halon conservation training program
- . support for plant conversions in the electronics industry
- . support for expanded use of recycling in MACs
- . training seminar for service contractors on handling new refrigerants
- . coordinated efforts to eliminate requirements for CFC or halon use in production standards, building codes, or vehicle fire protection guidelines.

Detailed proposals will be documented for each of these projects in a similar form as the MACs and aerosols proposals presented to the Executive Committee in April.

4. INSTITUTIONAL AND POLICY FRAMEWORK GOVERNING CONTROLLED SUBSTANCES

SEDUE's Office of Pollution Prevention and Control has been the lead office participating in ozone protection activities in Mexico. As its plan for an accelerated phaseout unfolds, SEDUE will find itself more deeply involved in program implementation including time-consuming tasks such as negotiating voluntary agreements, attending international meetings and technical conferences, providing information in response to public requests, and leading the preparation and execution of technical cooperation projects.

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The Ozone Protection Technical Information Center within SEDUE will respond to the increasing demand for SEDUE's involvement in these ozone protection activities. The Center's dedicated technical and administrative staff will support SEDUE by:

- assisting in the implementation of SEDUE's ozone protection program to monitor and facilitate industry's conversion to alternative technologies;
- supporting the identification of projects and negotiation of voluntary agreements;
- acting as a liaison between Mexico, bilateral and multilateral agencies (e.g., the World Bank, UNDP, and UNEP) and other Latin American countries to promote both technical cooperation and information exchange;
- building public awareness of, and support for, products and service procedures that are safe for the ozone layer.

The Center will generate concrete results in response to each of the above goals. These include:

- technical and institutional support for project proposals to obtain funding from the Interim Multilateral Fund of the Montreal Protocol;
- technical and institutional support as follow-up to funded proposals to insure that reductions are achieved;
- monitor compliance with voluntary agreements and Mexico's plan for compliance with the Protocol;
- Spanish technical manuals on substitute chemicals, technologies, and practices that reduce the use and/or emissions of ozone-depleting substances;
- Spanish language training programs to support ozone protection projects; and
- public education and outreach programs which will include press releases on important developments, brochures on specific technologies, and a newsletter for industry coordination.

In addition to the existing voluntary agreements and technical support, Mexico will (1) develop additional agreements in the area of solvent use and refrigeration and (2) will announce specific targets for reduction in the overall

**** Mexico Country Program ****

consumption of the controlled substances through the year 2000. For this purpose, a system for limiting the production and imports of these substances will be necessary. This timetable will seek to require phaseouts on a timetable as close to that of developed countries as possible. The Government of Mexico is exploring the possibility of using market mechanisms for implementing the phaseout. A specific system for production and import controls will be defined and implemented in coordination with Mexico's Ministry of Commerce and Industrial Development, the Treasury Ministry, and other ministries with relevant expertise and jurisdiction.

5. ROLE OF THE THREE IMPLEMENTING AGENCIES

World Bank

As part of this country program, Mexico is working with the World Bank to identify a mechanism for transferring resources from the Montreal Protocol Multilateral Fund. This mechanism shall allow rapid implementation of the activities described in Section 7 (Budget). The World Bank is:

- supporting Mexico's establishment of a domestic financing mechanism to expedite funding of the phaseout program; and
- helping to strengthen Mexico's institutional capabilities to manage ozone protection activities.

United Nations Development Programme (UNDP)

Mexico will work with UNDP in the design of training programs. Specifically, UNDP will develop Spanish language training program components for several of the investment projects identified in Section 7. SEDUE's Pollution Prevention and Control Office will work with UNDP to prepare terms of reference for these activities.

United Nations Environment Programme (UNEP)

In addition to its activities with the World Bank and UNDP, Mexico will work with UNEP to facilitate the dissemination of information regarding replacement technology for ozone-depleting substances to other Spanish-speaking countries. The Ozone Protection Technical Information Center will liaise with UNEP's Industry and Environment Office (IEO) to achieve the following goals:

- disseminate Spanish technical manuals on ODS substitute chemicals, technologies, and practices that reduce the use and/or emissions of ozone-depleting substances; and

**** Mexico Country Program ****

- create public education and outreach programs such as press releases and brochures on specific technologies.

Detailed terms of reference will be prepared by SEDUE's Pollution Prevention and Control Office.

6. ACTION PLAN AND TIMETABLE FOR FIRST THREE YEARS OF IMPLEMENTATION

Mexico will undertake a series of activities through 1993 to establish a solid basis for the implementation of a 10-year ozone protection program. This program will be managed by the Ozone Protection Technical Information Center and will include activities which will fall under two categories: program management and industry support.

Program Management

A successful implementation of the Montreal Protocol in Mexico will result in a cost-effective elimination of ozone depleting substances in the shortest time frame possible. Mexico's goal is to eliminate these substances as fast as industrialized nations. Thus, Mexico's ability to meet this goal depends to a large extent on the establishment of a sound management plan which will include the following elements:

- a timetable for interim reductions and final phaseout date;
- a system for implementing import and production controls;
- a system for monitoring progress;
- update existing agreements and negotiate additional agreements with industry in support of the above reduction targets; and,
- coordinate institutional arrangements for the transfer of funds from the Multilateral Fund.

Industry Support Activities

To continue and expand existing activities to support industry's transition to alternative technologies, SEDUE will undertake the following activities:

- define an initial three-year workplan (which can be updated and extended periodically) for the Ozone Protection Technical Information Center including the following elements:

**** Mexico Country Program ****

- project proposals
 - supervision of project implementation
 - training seminars
 - demonstration of alternative technologies
 - public education and outreach programs
 - joint projects with other Article 5 countries
- support implementation of technical projects already proposed to the Executive Committee of the Interim Multilateral Fund (i.e., CFC-12 MACs recycling demonstration project, aerosols safety and training program).
 - participate in international fora and contribute to UNEP technical assessments.

7. BUDGET

The budget for Mexico presented in this document covers activities through the end of 1993 -- a time frame consistent with the first three years of operation of the Interim Multilateral Fund.

The three-year budget is estimated at \$9,820,930. The specific line items for the budget are described below:

- \$1,411,610 for the operation of the Ozone Protection Technical Information Center during the second and third years (see Appendix A);
- \$177,700 for a CFC-12 recycling demonstration project to expand the use of recycling in mobile air conditioning and for an aerosols safety and training program (see Appendix B);
- an estimated \$8 million for investment in various projects:
 - centralized CFC recycling plant for refrigerants
 - training for new refrigerant handling
 - low CFC foam insulation
 - centralized CFC-113 and MCF recycling plants
 - halon conservation training program
 - support for plant conversions in the electronics industry
 - support for expanded use of recycling in MACs
 - training seminar for service contractors on handling new refrigerants
 - support for chiller conversion to HCFC-123
 - engineering and retrofit of MACs compressor plant
 - conversion of polyurethane foam from CFC-based to HCFC-based

** Mexico Country Program **

The \$8 million estimate is based on the range of costs over three years estimated in the Mexico Case Study. This amount is broken out by year and end use category in Appendix D.

**** Mexico Country Program ****

APPENDIX A

BUDGET FOR THE OZONE PROTECTION TECHNICAL INFORMATION CENTER

**** Mexico Country Program ****

ONE-TIME SETUP COSTS	FIRST YEAR	SECOND YEAR	THIRD YEAR
OFFICE EQUIPMENT COMPUTER • FAX BOARD SOFTWARE • PHOTOCOPY MACHINE QUALITY PRINTER • TELEPHONE FAST MODEM	20,300	16,000 (2)	-----
OFFICE REMODELING SCREENS AND ITS MOUNTING ELECTRICAL INSTALLATION TELEPHONE SWITCHBOARD INSTALLATION PAINTING	3,100	-----	-----
FURNITURE DESKS AND CHAIRS • ARCHIVES MEETING TABLE AND CHAIRS • BOOKCASE	3,400	5,000 (3)	-----
ANNUAL OPERATING COSTS	FIRST YEAR	SECOND YEAR	THIRD YEAR
SALARIES TECHNICAL COORDINATOR INSTITUTIONAL COORDINATOR ADMINISTRATIVE ASSISTANT BENEFITS	34,400	136,470 (5)	162,690
TRAVEL AND CONFERENCES DOMESTIC TRAVEL INTERNATIONAL TRAVEL CONFERENCES	26,000	52,000 (6)	62,400
COMMUNICATIONS MAIL PHONE SERVICE AND MAINTENANCE	6,000	7,200 (4)	8,640
OFFICE SUPPLIES PAPER FOR THE PRINTER, TELECOPY, PHOTOCOPY MACHINE TONERS FOR THE PRINTER AND PHOTOCOPY MACHINE DISKETTES BUSINESS CARDS	3,800	4,560 (4)	5,480
COMPUTERIZED TRACKING SYSTEM SEE APPENDIX C FOR DETAILS	-----	64,750	-----
SHORT-TERM EXPERT FUND BUDGET FOR SHORT TERM EXPERTS WHO WILL ASSIST THE OZONE PROTECTION TECHNICAL AND INFORMATION CENTER ON SPECIFIC ASSIGNMENT RELATED TO THE TECHNICAL EVALUATION OF INDUSTRY PROJECTS. THESE EXPERTS MAY BE LOCAL OR INTERNATIONAL, DEPENDING ON THE EXPERTISE REQUIRED FOR EACH PROJECT.	-----	180,000	180,000
PUBLIC EDUCATION AND OUTREACH PROGRAM CONTINUOUS PROGRAM TO INFORM AND EDUCATE THE GENERAL PUBLIC AND INDUSTRIES THAT USE CONTROLLED SUBSTANCES, ABOUT THE ACTIVITIES UNDERWAY TO PROTECT THE OZONE LAYER. THIS BUDGET WILL ALLOW THE PRODUCTION OF SPECIAL BROCHURES, PRESS RELEASES, MANUALS, AND THE ORGANIZATION OF SPECIAL EVENTS, CONFERENCES AND OTHER MEETINGS.	-----	200,000	200,000
CONTINGENCIES (10% OF OPERATING COSTS)	7,020	64,500	61,920
TOTAL	104,020 (1)	730,480	681,130

**** Mexico Country Program ****

FOOTNOTES

- (1) The budget for the first year will be provided by the United States as part of its contribution to the Multilateral Fund. For this reason it is excluded from the overall \$9,820,930 budget.
- (2) Budget for another computer and printer, scanner and necessary software for its operation.
- (3) Budget for 2 desks, 2 chairs and 4 archives.
- (4) This cost increased by 20% over the previous year because of an increasing inflation rate.
- (5) Budget for a general coordinator, 2 technical coordinators, an institutional coordinator and 2 assistants.
- (6) Higher than first year due to the increased travel brought upon by public outreach programs and follow-up projects.

**** Mexico Country Program ****

APPENDIX B

COMPLETED PROPOSALS SUBMITTED TO THE EXECUTIVE COMMITTEE¹

PROPOSAL	KEY COMPONENT	BUDGET
CFC-12 Recycling from MACs: Demonstration Program	- Pilot Recycling Project - Training and Outreach Program	\$47,780 \$26,620 ===== \$74,400
Subtotal		
Elimination of CFC Aerosol Propellants: Manufacturing Safety Program	- Workshop - Plant Safety Review - In-Plant Training - Project Administration	\$7,150 \$36,615 \$42,235 \$15,900 ===== \$102,900
Subtotal		
TOTAL BUDGET		\$177,300

¹As presented at the Third Meeting of the Executive Committee of the Multilateral Fund Under the Montreal Protocol, April 15-19, 1991.

** Mexico Country Program **

TRADABLE PERMIT SYSTEM

Objective

1. The tradable permit system would complement the phase out schedule that SEDUE will announce to industry and put into place to ensure a complete elimination of ODS use in Mexico by the year 2000. The system should help make the phase out less costly for industry by allowing firms to convert very much at their own pace.

Description of the System

2. Under the system, permits (denominated in kilograms) would be auctioned or given to producers and importers of ODS based on their market share in a reference or "base" year. Permits would authorize companies to produce or import ODS up to a specified quantity during a particular year; companies would be allowed to buy and sell permits as they wish in response to market conditions or their own business strategy. The quantity of permits would be decreased over time according to the phase out schedule, ensuring that Mexico would reduce its production and consumption of ODS to zero by the target year.

3. Under one option, permits would not be denominated like currency or stock certificates, but would function more like the balance of a checking account. Just as a bank allows the owner of a checking account to write checks up to the amount in the account, SEDUE would allow the holder of the permit to produce or import controlled substances up to the stated value of the permit. Alternatively, SEDUE could issue paper permits in various denominations; these would then be exchanged between the companies involved in a trade. One disadvantage of paper permits is the need for a large number of denominations to facilitate trade. The first option is more flexible, but requires constant monitoring by SEDUE and assumes good communication networks.

4. Two system designs are also prepared for discussion and agreement with the Mexican authorities. In the first design, three types of permits would be issued, corresponding to the three main groups of controlled substances: CFCs, halons, and 1,1,1 - trichloroethane (also known as methyl chloroform - MCF). Trading would only be permitted within the groups, not across groups. This design strictly complies with the directives of the Montreal Protocol, which call for the scheduled phase out of these three groups of substances, without possibility of substitution or compensation between groups.

5. In the second design, there would only be one type of permits. Trading would be allowed between groups and would be based on the ozone depleting potential (ODP) of the substances. This system is more flexible as it would create a larger market in which permit trading could take place and would not force reduction of substances such as halons for which substitutes are still being developed. The system would also be allowed by the Montreal Protocol as Mexico would be implementing a faster phase out than mandated by the Montreal Protocol for developing countries.

Implementation of the system

6. SEDUE would be the main agency responsible for establishing the system and for monitoring its functioning. It will be assisted by SECOFI, which has responsibility for industrial and trade policies in Mexico and by Hacienda.

7. To record and control the import and export of controlled substances, the system would use an existing mechanism: "La Guia Ecologica". SEDUE currently requires companies that import and export chemicals to submit to it a request or "Manifiesto". If SEDUE approves the request, it issues a "Guia Ecologica" that must be presented to customs officials before a shipment of chemicals enters or leave Mexico. When the tradable permit system is implemented, before issuing the Guia SEDUE would check its record to make sure the importing company held a permit that allowed it to import the requested quantity of ODS.

8. Under the "checking account balance" option, trade or sale of permits should have prior authorization of SEDUE. This requirement is meant to protect buyers, but would also allow SEDUE to monitor the functioning of the system. Companies wanting to trade permits would inform SEDUE of the quantity and type of permits to be sold; SEDUE would authorize the sale if the seller held permits in sufficient quantities. In this manner, SEDUE would act much as a bank does in verifying that the funds in an account are sufficient to cover a check on the account.

Budget for system implementation

9. It is estimated that a budget of about US\$120,000 would be needed to implement the marketable permit system in the first year. However, the actual cost is likely to be somewhat lower as some of the foreseen expenses (such as office equipment, computer, fax machine, etc.) have already been included in SEDUE's funding request for the Technology Center

Major actions to be agreed

10. During the course of preparation of the proposed project and, at the latest, during appraisal (to be confirmed during negotiations), the following actions would be agreed with the Mexican authorities: (i) the phase out timetable on a yearly basis; (ii) auctioning or granting of permits; (iii) selection of the "base" year; (iii) choice of the system design; (iv) issuance of permits as paper certificates or as SEDUE's notices; (v) trading rules and procedures; and (vi) date for the introduction of the system.

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Country Program Department II
Latin America and the Caribbean Region

FINANCING ARRANGEMENTS

Role and Responsibilities of the Financial Agent/Financial Intermediary.

1. Under the proposed Project, NAFIN will act both as a financial agent and a financial intermediary. Under an agreement with the Government, the signing of which is a condition of effectiveness of the proposed Project, NAFINSA will perform the following tasks:

- (i) channel all disbursements to the Government related to the implementation of the policy and the SEDUE strengthening components (e.g., the establishment and functioning of the tradable permit system; remuneration of the Technology Center's personnel, purchase of office equipment, short-term consulting services; and the preparation and implementation of public awareness programs). These are regular services performed by a financial agent of the Government in a World Bank-managed project;
- (ii) ensure disbursement of the Project funds to industry beneficiaries under the line of credit (the subproject financing component) and, in the case of loans, collect the debt for the Government. These are services normally performed by a financial intermediary. [NAFIN will be compensated for the services rendered. Its remuneration will be discussed and agreed with the Government];
- (iii) keep Project accounts, arrange for their auditing by independent and reputable auditors, and send the audited accounts to the Bank (the Government will likewise keep and audit accounts relating to its use of non-subproject funds); and
- (iv) prepare periodic Project progress reports (as will the Government) for monitoring of Project implementation by the Bank.

2. A Special Account would be opened in NAFIN to facilitate disbursements. At effectiveness, the Bank will make an initial deposit equivalent to four months of estimated expenditures and will replenish the Account every time it is half drawn down. Withdrawals from the Special Account would be supported by documentation normally required under Bank-financed projects.

Disbursement Procedures.

3. All requests for financing would need prior World Bank approval. For the policy and SEDUE strengthening components, the requests would be submitted to the Bank by SEDUE (with copy to NAFIN) and would include the following documentation:

(i) justification of the financing requested (e.g., description of a proposed public awareness program, or of a technical problem requiring expert advice, etc.); (ii) estimation of the costs; (iii) employment contracts in the case of consultants and technical personnel for OPTC; and (v) pro-forma invoice in the case of equipment purchase. Selection of consultants and OPTC technical staff will be consistent with the Guidelines for recruiting consultants under Bank projects. Procurement of equipment will be done through international shopping using procedures satisfactory to the Bank on the basis of at least three quotations, taking into account price, quality of the equipment, as well as the availability of spare parts and service.

4. For the line of credit component, the financing requests would be submitted by NAFIN on the basis of subproject documentation prepared by industry and/or the OPTC. This documentation would include, as a minimum, the following information: (i) objectives of the subproject; (ii) estimated cost; (iii) summary description of the ODS subsector; (iv) detailed technical description of the subproject components, paying particular attention to the technologies proposed in the subproject; (v) expected results, including a quantitative estimation of the emissions reduction achieved; (vi) assessment of the beneficiary enterprise(s), including compliance to environmental regulations in Mexico; (vii) implementation arrangements; and (viii) justification for Montreal Protocol financing. In the case of investment by industry for conversion to non-ODS technologies and other profit-oriented subprojects (e.g., recycling on a large, commercial scale), a financial analysis would be made, including calculation of FROR from the investing company's point of view, to determine whether a loan would not be more appropriate.

5. Upon receipt of a subproject financing request, the Bank will assess its overall soundness and readiness for implementation before approving its financing. For technically complex subprojects, the Bank will also organize Technical Review Panel (TRP) meetings. Following approval, NAFIN would enter into an agreement with the beneficiary(ies), which would spell out in detail the rights and obligations of all parties. Signing of this agreement would clear the way for disbursement to the subproject beneficiaries.

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Country Department II
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Mexico Second Montreal Protocol Project

A Technical Review Panel was convened in late October to review a proposal, namely the, "Ozone Protection Policy and Institutional Strengthening Project", which would include the establishment of a marketable permit system for controlling ozone depleting substances in Mexico, in tandem with creation of a line of credit for funding approved investment projects and strengthening the main implementing agency in Mexico, SEDUE (Secretaria de Desarrollo Urbano y Ecologia). Dr. Robert Hahn, Resident Scholar at the American Enterprise Institute, served as the panel's outside technical specialist. The Panel endorsed the use of a tradeable permit system as a good policy approach to meeting Mexico's phase-out targets.

Components of the Project

The project has three components: (a) establishment of the policy framework under which implementation of the Montreal Protocol would be carried out; (b) strengthening of SEDUE in ozone protection activities; and (c) financing of specific controlled substance phase-out sub-projects. The policy component includes the establishment of a marketable permits system to allow individual firms to adopt alternative chemicals and/or convert to non-controlled substance technologies at their own pace through trading and selling permits. Support for SEDUE would include providing financing of technical personnel, including short-term consulting services, and equipment for SEDUE's Ozone Protection Technology Center (OPTC) for a period of three years, and preparing and delivering a series of public awareness programs. The financing component would consist of a line of credit to finance ozone protection sub-projects prepared by industry and/or the OPTC.

Technical Review Panel Comments. Dr. Hahn began with the observation that there was not a lot he could add to the referenced proposal. It is well written and well thought out. However, he did raise the question as to whether or not it would really be feasible in Mexico City, a context with which he is not personally familiar. He also questioned whether or not permits should be limited to one year and suggested that banking

of permits be considered. He noted that, in general, it is better to allow trades between chemicals based upon their ozone depleting potentials (ODPs), than it is to segregate markets. He said that there needs to be more emphasis on enforcement and suggested that fines of 200-300 % be considered. He added that discussion of the bidding process should highlight the need for a lot of buyers and sellers and suggested that Mexico might want to consider an early auction to minimize possible windfall profits, particularly if no grand bargain, or grandfather clause, has already been struck.

It was then affirmed that, at a preliminary review meeting, agreement was reached within the Bank that bidding would be open between sectors and that an early auction would be proposed to the Mexican government. It was also confirmed that additional information concerning proposed legal and enforcement requirements would be proposed to Mexico. The panel also endorsed the strengthening of SEDUE's Technology Center with the proviso that more complete information would be forthcoming concerning its activities, performance standards and monitoring procedures.

A number of related permit system design issues were discussed, but most were deferred to possible subsequent Initial Executive Project Summary (IEPS) meetings and/or negotiations with the Mexican government. These issues included the possibility of international trade in production permits, the separation of production and consumption permit markets, consideration of legal and tax issues, temporal design of the auctions, estimation of the total incremental cost for Mexico, and request for clarification of overlaps, if any, between tradeable permits and SECOFI (Secretaria de Comercio y Fomento Industrial) permits (there are none of any significance, it was concluded).

The panel noted that it is not possible at this time to estimate full incremental costs, and that it will be important in documentation to be clear about the interest rate and project criteria for determining what should be grant and what should be loan financing. It was observed that

there may be a tradeoff between the use of a marketable permits approach and the relative ease of estimating incremental costs. Finally, it was noted that the Bank will agree with Mexico on the rate and criteria for loans versus grants.

The panel made the observation that since Mexico would be qualified to sell permits internationally, non-governmental organizations (NGO's) could buy permits and hold them, if they thought the price of CFCs was too low and wanted to raise them. Mexico should also be favorable to this arrangement because it would be a source of foreign capital inflow. Furthermore, allowing permit banking to take place between periods and over time would have enormous cost reduction advantages.

The panel recognized that, given Mexico's present voluntary agreements with industry, there is a potential moral hazard, or risk, associated with the introduction of tradeable permits, since players might decide against following through on their agreements since there could be a payoff to them with the permits system, depending on its design. An early auction would help to minimize this risk.

Although Mexico's Country Program was discussed only briefly, it was noted that a number of issues were yet to be addressed in subsequent updates, including: estimation of Mexico's total incremental costs, other policy instruments which might be necessary to meet the phase-out targets, how to approach adjustment problems in the refrigeration sector, and how to treat consumer costs.

**A Marketable Permit System
for Controlling Ozone Depleting
Substances in Mexico**

Discussion Paper

**** Draft ****

October 1991

GLOSSARY

<u>Article 5 Country:</u>	a developing country that has a per capita consumption of controlled substances of less than 0.3 kg/year (Annex A lists the Article 5 countries as of 15 September 1991).
<u>Baseline Year:</u>	the year to which reductions in the production and consumption of controlled substances are referenced.
<u>Consumption:</u>	as defined by the Montreal Protocol, the quantity equal to production plus total imports minus total exports of controlled substances. Because inventory changes are neglected, a country's computed consumption of ODSs is not necessarily equal to the quantity that it uses in any period.
<u>Controlled Substance:</u>	a halogenated substance in Annex A or in Annex B to the Montreal Protocol ¹ , whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture that is in a manufactured product other than a container used for the transportation or storage of that substance.
<u>Industrial Rationalization:</u>	the transfer of all or a portion of the allowed production of one Party to another for the purpose of achieving economic efficiencies or responding to anticipated shortfalls in supply as a result of plant closures.
<u>Ozone Depletion Potential:</u>	a measure of the ability of a controlled substance to deplete stratospheric ozone. Ozone

¹ Annex A of the Montreal Protocol lists the five CFCs (CFC-11, CFC-12, CFC-113, CFC-114, and CFC-115) and the three Halons (Halon-1211, Halon-1301, and Halon-2402) that were originally controlled under the Protocol. Annex B of the Protocol lists the 10 additional CFCs (not used in Mexico), carbon tetrachloride, and 1,1,1-trichloroethane that were added to the list of controlled substances in June 1990. Both Annexes are reproduced here as Annex B.

depletion potentials, or ODPs, are determined by the parties to the Montreal Protocol.

Permit:

the proposed device to be used by SEDUE to authorize production and import of CFCs, halons, and 1,1,1-trichloroethane. Permits are denominated in kilograms and allow the holder to produce or import controlled substances up to the ODP-weighted quantity stated on the permit. Permits are valid for one year and may be bought and sold. Companies must hold a valid permit in order to produce or import controlled substances.

Production:

the amount of controlled substances produced, minus the amount destroyed by technologies to be approved by the Parties and minus the amount entirely used as feedstock in the manufacture of other chemicals. The amount recycled and reused is not to be considered as "production".

Transitional Substance:

a partially halogenated substance in Annex C² of the Montreal Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as may be specified in Annex C, but excludes any transitional substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.

²Annex C of the Protocol lists 34 HCFCs, of which HCFC-22 is commercially used in Mexico. Other HCFCs, primarily HCFC-123 and HCFC-141b, are candidates to replace the CFCs. This list is reproduced here as Annex C.

MARKETABLE PERMIT SYSTEM FOR CONTROLLING OZONE DEPLETING SUBSTANCES IN MEXICO

I. BACKGROUND

1. Mexico was the first country to ratify the Montreal Protocol on Substances that Deplete the Ozone Layer and has remained a strong supporter of this landmark international agreement. SEDUE, the primary implementing institution in charge of Montreal Protocol activities in Mexico, has undertaken an ozone protection program that relies on voluntary reductions in the use of ozone depleting substances (ODSs) by specific industries. Along with these efforts, SEDUE is requesting funding for specific ozone-related projects from the Protocol's Interim Multilateral Fund. As one of the Fund's implementing agencies, the World Bank is assisting Mexico in three key areas of its ozone protection program: (i) building an adequate institutional and policy framework for supporting the implementation of the Protocol, (ii) introducing policies to encourage an efficient phase out of controlled substances, and (iii) preparing a project to provide financing for ODS phaseout activities over a period of three years.

2. This paper is the result of discussions between the World Bank staff and officials from SEDUE, SECOFI, and SHCP about policies that could be used to encourage an orderly phase out of controlled substances in Mexico. In July 1991, the World Bank initiated these discussions by submitting for government review a paper entitled "Alternative Policy Approaches for Implementing the Montreal Protocol in Mexico." The paper discussed the advantages of two basic approaches for controlling ODSs, one based on traditional command and control measures and the other based on market incentives. The World Bank and Mexican officials agreed that, given the narrowly defined nature of the activities to be controlled, the case of ozone depleting substances lends itself to a system based on marketable permits.

3. This paper presents the proposed structure of the marketable permit system and explains how it would operate. Because the focus of the paper is on the implementation aspects of the permit system, the paper provides only a brief summary of the economic rationale supporting the use of marketable permits for environmental protection. Readers interested in a more detailed presentation on the subject are provided a bibliography of relevant work.

4. In recent discussions with SEDUE, the Bank identified an existing mechanism for recording and controlling the import and export of chemical substances that could be adapted as part of the proposed marketable permit system. SEDUE requires that companies intending to import or export certain chemicals first submit to it a request or "Manifiesto." If the request is approved, SEDUE issues to the company a "Guía Ecológica." Customs officials require that a Guía accompany each shipment of bulk controlled chemicals entering or leaving the country. The Guía Ecológica is part of a regulation originally designed to control trade of hazardous substances, but the list of

substances requiring import or export approvals has been extended to other substances, including ozone depleting substances.

5. The World Bank also assisted SEDUE review company files containing Guías Ecológicas to determine which companies imported and exported controlled substances during the past three years; this information was used to assess the number of companies that would be a part of the proposed permit system.

II. PURPOSE

6. This discussion paper is intended to facilitate the understanding and evaluation of a proposed marketable permit system for controlling production and consumption of ozone depleting substances in Mexico.

7. The specific goals of this document are:

- to describe the provisions of the Montreal Protocol as they apply to Mexico;
- to present the structure and operation of a marketable permit system for implementing these measures; and,
- to describe the roles of the institutions that would be in charge of implementing the system, and to estimate the resources required for designing, implementing, and monitoring the marketable permit system.

8. Simplicity and transparency were two key features considered during the design of the proposed marketable permit system. The operation of the system and the role of the government must be clear and straightforward in order for the system to bring about the efficiency associated with market mechanisms.

III. MONTREAL PROTOCOL CONTROL MEASURES FOR MEXICO

9. As originally drafted, the Montreal Protocol required each ratifying country to limit its production and consumption of five CFCs and three halons according to a specified schedule.³ According to the 1987 Protocol, quantities of controlled substances were to be frozen at 1986 levels (the baseline), then reduced in steps to 50 percent of the baseline by the year 2000. Article 5 of the Protocol recognized the special needs of developing countries by allowing them a ten year grace period before the restrictions were to apply.

10. Increasing scientific evidence about the rapidly deteriorating condition of the ozone layer prompted the Parties to amend the original Protocol in

³The eight chemicals originally controlled by the Montreal Protocol are CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, Halon-1211, Halon-1301, and Halon-2402. See the Glossary for the Protocol's definition of production and consumption.

1990. At a meeting in London, the Parties agreed to adjust the original restrictions so that production and consumption of the eight ozone depleting substances would cease completely by 2000, rather than just be reduced by half. As an adjustment, this decision was binding on all Parties.

11. The meeting also agreed to amend the Protocol so as to restrict and eventually phase out ten additional fully halogenated CFCs, carbon tetrachloride, and 1,1,1-trichloroethane (also known as methyl chloroform). Since this represented a major change, the new provisions were only to be binding on countries that ratified the amendment. On June 25, 1991 Mexico did so, thereby signaling its intent to adhere to the new provisions of the Protocol.

12. Although Mexico, as an Article 5 country, is allowed a ten year grace period to implement the phase out of controlled substances, it has announced that it will cease producing and importing CFCs, halons, and carbon tetrachloride by 2000, and 1,1,1-trichloroethane by 2005. Since it has voluntarily agreed to a faster phase out, Mexico is not bound to meet the interim reductions specified in the Protocol. Likewise, it is not required to determine the 1986 (for CFCs and halons) and 1989 (for 1,1,1-trichloroethane) baseline levels that non-Article 5 countries must use in meeting the interim reductions. Mexico can significantly simplify the task of controlling ozone depleting substances by using an alternative method to set its baselines and adopting a phase out schedule that meets the 2000/2005 targets with less disruption to Mexican industry and consumers.

13. Apart from the phase out requirements, Mexico has several other obligations as a Party to the Montreal Protocol. By ratifying the Protocol, Mexico has agreed to:

- supply to the United Nations Environment Programme (UNEP) Ozone Secretariat information about its production, import, and export of each controlled substance and of the HCFC transitional substitutes;
- prohibit the import or export of controlled substances to non-party countries;
- prohibit the import of products containing controlled substances from non-party countries; and,
- study the feasibility of a similar restriction on products manufactured with controlled substances.

14. As discussed below, a marketable permit system will allow Mexico to meet these obligations in a manner that reduces the costs to the country.

IV. ECONOMIC RATIONALE FOR IMPLEMENTING A MARKETABLE PERMIT SYSTEM

15. Economists have for years stressed the advantages of market based incentive approaches over traditional command and control approaches for

controlling pollution.⁴ Economic incentive systems, of which a marketable permit system is but one example, allow governments to reduce pollution while minimizing the cost to their economies. Several characteristics of the problem of controlling the production and consumption of CFCs, halons, and other ozone destroying substances suggest that a marketable permit system would work particularly well in reducing the use of these substances. These include the well delineated scope of clearly identified activities to be controlled, and economies of scale in conducting the activities.

16. Such a system has been used successfully now for several years by the U.S. Environmental Protection Agency to ensure U.S. compliance with the Montreal Protocol. Approximately 30 companies have been granted permits that allow them to produce or import controlled substances. Although there was some initial hesitation about the system, companies are now familiar with its operation, and the volume of trade has increased significantly, particularly after the first phase out imposed production reductions took affect.

General Theory of Marketable Permit Systems

17. Many regulatory decisions by environmental agencies involve a discretionary determination of who (a factory, for example) can do what (emit a specific amount of pollution). These decisions result in the limiting of undesirable activities through the issuance of licenses, permits, or certificates that create an asset for those who hold them. Under traditional regulatory approaches, these assets cannot be sold or given to others. For example, a government permit allowing a factory to discharge wastewater is usually not transferable to an adjacent factory even though the wastes may be similar.

18. Under a marketable permit system, permits that allow the holder to engage in some environmentally harmful activity can be bought and sold. The government controls the number and initial allocation of permits, and thus controls the level of pollution or other undesirable activity, but leaves it up to the companies involved to decide exactly how to distribute and exercise the permits after the initial allocation. This decentralized approach allows the permits to be used where their economic value is greatest. The regulatory benefits are maintained, but at a reduced cost to society. Other advantages of a marketable permit system include:

- reduced regulatory costs to firms since firms are rewarded for efficiency;
- reduced administrative burdens for government agencies, since some decision-making is shifted to companies; and
- greater policy flexibility, since governments can affect the supply of permits available on the market.

⁴A short bibliography of articles on this topic is presented in Annex D.

The Advantages of Using a Marketable Permit System for ODSs in Mexico

19. Under a marketable permit system, the government would distribute permits to producers and importers of controlled substances, either through an auction or through an administrative allocation based on their historical market shares. Permits would be denominated in kilograms and the holder would be allowed to produce or import the controlled chemicals up to the quantity stated on the permit. Only companies holding a valid permit would be allowed to engage in these activities. Over time, the permits would expire and be reissued in lower kilogram values to meet the phase out targets.⁵ Since the permits could be traded, producers and importers would be able to sell their permits to each other as they reacted to changing market conditions. Taking into account limits on future production, capacity utilization, prices, availability of substitutes, and other economic and engineering criteria, permit holders would shift production and import to those companies who could do so most cheaply.

20. For example, there are two producers of CFCs in Mexico. Quimobásicos, S.A. de C.V. operates one plant, while Du Pont, S.A. de C.V. has two plants. All three plants produce a mix of CFC-11 and CFC-12, but can be converted to produce HCFCs, the class of chemicals that most countries intend to use as interim substitutes for CFCs. As a Party to the Protocol, Mexico is committed to limiting CFC production to only a fraction of the total capacity of the three plants later in the decade. Given economies of scale in producing CFCs (it is relatively more expensive to run a plant at partial capacity), it would be cheaper to rearrange production so that one plant was fully utilized while the others were switched to HCFC production. The government could issue a directive that accomplished this, but if it wanted to minimize the costs of producing CFCs and HCFCs it would need to collect extensive information about the relative costs of production at each plant. If production "rights" were taken from one company and given to the other, the question of compensation might result in a lengthy debate. If instead the government allowed the companies to trade the right to produce, the companies could make the allocation decision themselves. Production of CFCs and HCFCs would occur in a manner that minimized the production costs to the two companies, and to Mexico as a result.

21. The development of a permit market for imports depends to some extent on the number of firms that import controlled substances. Although the economies of scale in importing controlled substances are less than in their production, when imports begin to shrink some reorganization of the market is likely to occur. An import control plan that relied on marketable permits would again allow this reorganization to occur in response to market pressures. Section V discusses the present market for controlled substances in Mexico.

⁵It is also possible to structure the system so that permits do not expire but can be used any time after they are distributed. This is commonly referred to as "banking."

V. STRUCTURE OF THE MARKET FOR CONTROLLED SUBSTANCES IN MEXICO

Chlorofluorocarbons

22. Domestic production of CFCs is limited to CFC-11 and CFC-12.⁶ Two companies, Quimobásicos, S.A. de C.V. and Du Pont, S.A. de C.V., have a combined production capacity of approximately 21,000 metric tons per year at their three plants. Production in 1989, however, was only 35 percent of the total capacity. CFC production primarily serves the domestic foam, refrigeration, and aerosols industries, but approximately 1,500 tons of CFCs were exported to the U.S. in 1989. When production of CFC-11 and CFC-12 is phased out, the existing facilities can be converted to HCFC-22 production relatively easily. CFCs are also imported by approximately 50 companies, some of which are distributors of chemical products. Others are final end-users. For example, relatively small quantities of CFC-113 are imported by metal cleaning and electronic industries that are the final users of this substance (SEDUE Case Study, 1989).

Halons

23. The market for halons is small (183 tons were imported in 1989, 700 tons in 1990) and is dominated by a few suppliers of fire extinguishing chemicals and equipment. The data reviewed by SEDUE indicate that the number of firms importing halons was three in 1989 and seven in 1990. Six firms imported halons from January through August 1991.

1,1,1-trichloroethane

24. There are two markets for 1,1,1-trichloroethane in Mexico, the domestic market and the Maquiladora market.⁷ In both cases, U.S. producers sell the chemical in bulk quantities to U.S. distributors, who in turn export 1,1,1-trichloroethane to Mexico. Different distributors serve each market.

25. Approximately four firm import 1,1,1-trichloroethane to satisfy domestic demands, primarily in the electronics and metal cleaning sectors. The demand for 1,1,1-trichloroethane is dominated by a handful of multinational corporations with Mexican subsidiaries. The largest users include Motorola, Hewlett Packard, General Instruments, Siemens, Shisuki, and Gillette (Chem Systems, 1989).

26. As with domestic consumers, demand for 1,1,1-trichloroethane in the Maquiladora market is dominated by electronics and metal cleaning firms. In

⁶The Mexican state owned oil company, Petroleos Mexicanos (PEMEX), is the only domestic producer of carbon tetrachloride, a controlled substance used as the main feedstock in producing CFCs. PEMEX production meets half of the total domestic demand for the chemical; the remainder is met through imports.

⁷ The term "Maquiladora" is commonly used to describe a firm, typically operating in Northern Mexico, that imports raw materials duty free and exports finished products.

the electronics sector, 1,1,1-trichloroethane is used by large communications, computer, and defense companies, such as Zenith, Sanyo, Rockwell, Sony, Motorola, IBM, Allen Bradley, and Hitachi. In the metal cleaning sector, the major demand for 1,1,1-trichloroethane is in the automotive industry, where the largest consumers are General Motors and Chrysler (Chem Systems, 1989).

VI. STRUCTURE OF THE PROPOSED PERMIT SYSTEM

27. This section describes the key elements of a marketable permit system for controlled substances in Mexico, including:

- the general functioning of a marketable permit system for ODSs;
- the types of permits needed;
- the choice of the base year;
- the procedure for determining the baseline quantity of permits;
- the procedure for determining the allocation of permits (either through an auction or administratively);
- the phase out schedule to be used; and
- the advantages and disadvantages of various permit system options.

General Functioning of a Marketable Permit System for ODSs

28. Section I discussed the Guías Ecológicas that SEDUE currently uses to control the import of hazardous chemicals. Under the marketable permit system, each company will buy at auction or be given a permit that sets a cap on the amount of controlled substances it can produce or import using the Guías. Permits will be denominated in kilograms, so that the permit holder may produce or import any quantity of substances up to but not exceeding the kilogram value of its permit during a particular control period (e.g., six months).^{8,9} Because only companies that hold a valid permit will be issued Guías Ecológicas, the government will indirectly control the quantity of these substances imported into Mexico. As the Guías do not apply to production of controlled substances, SEDUE will require producers to submit production reports and, if necessary, conduct audits to ensure that the two CFC producers do not exceed their allowed production levels.

⁸The "value" of a permit refers to the number of kilograms represented by the permit, not its monetary worth in the marketplace. No attempt is made here to estimate the prices at which permits would be traded.

⁹The control period can be a quarter, a semester, or a calendar year, depending on the desired frequency of the auctions. A semester is used in the remainder of this document to illustrate the operation of the auction system.

29. There are two ways that SEDUE can distribute ODS permits: through an auction or through an administrative allocation. If it adopted an auction system, SEDUE would hold auctions every semester where buyers would bid for the right to obtain permits to import one half of the total number of kilograms of controlled substances allowed for that year. Permits would expire at the end of year. An alternative, discussed below, is to allow "banking" of permits so that they could be carried over from one year to the next. Over time, the number of kilograms of ODSs auctioned off would be reduced to meet the phase out targets. Companies would be allowed to produce or import controlled substances during a control period up to the kilogram value of the permits they held. Companies could also trade permits after they had purchased them at the auction.

30. If a distributive allocation system were adopted, each company that had produced or imported ODSs during a base year would at the beginning of a year be given a permit having a kilogram value equal to some percentage of its baseline level. As with the auction system, each company could then produce or import controlled substances during that year up to the value of its permit (the level that the permit allowed). Companies could also trade any portion of the kilogram value of their permit, as well as their baseline level, if they chose. Any company could buy permits, not only those companies that were part of the initial allocation. The unused portion of a permit would expire at the end of the year or could be "banked" depending on the type of system that was adopted.

31. The main advantage to allowing banking of permits is that companies can minimize their total costs of adapting to the phase out while the country as a whole meets the overall cap that the phase out schedule sets on consumption of ODSs. By carrying over permits, companies have more flexibility in adopting alternative technologies.

32. In succeeding years, each company with a baseline level (those companies that had them initially and those that had purchased them from other companies) would receive a new permit, again equal to some fraction of the baseline allocation. By steadily reducing the fraction, over time the government would reduce the production and import of controlled substances to zero.

33. The main distinction between a marketable permit system and a strict regulatory system is that companies are permitted to buy and sell permits that they have legally obtained, subject to a few restrictions described in Section VII below. By reacting to information available in the marketplace, companies would shift between producing and importing ODSs in a way that minimized the cost to Mexico of complying with the provisions of the Montreal Protocol.

Type of Permits Needed

34. The Protocol requires Parties to reduce, and eventually eliminate, their production and consumption of controlled substances. There are no restrictions on the actual use of controlled substances, nor on their export to other Parties during the phase out period. The proposed marketable permit

system similarly will limit the production and import, but not the export, of controlled substances. Companies that export or destroy controlled substances will be allowed to request additional permits under certain circumstances that are explained in Section VII below.

35. Two variations on this basic framework are possible; each is discussed below for consideration by the Mexican authorities. Under one variation, permits would be issued for each group of chemicals controlled under the Protocol (i.e., CFCs, halons, and 1,1,1-trichloroethane), and would be convertible between chemicals in the same group based on ozone depletion potential (ODP). Thus, a company that received a CFC permit because it historically had imported CFC-113 (ODP = 0.8) would be allowed to import CFC-11 (ODP = 1.0) in the future, although in slightly smaller quantities since CFC-11 has a higher ODP. The company could not, however, use its permit to import chemicals in other groups, such as halons. This system parallels the Protocol, which allows countries to adjust the relative mix of chemicals within a group as long as the total ODP-weighted quantity for that group is capped.

36. The second variation would allow permit holders to import or produce controlled substances in any group on an ODP-weighted basis. Companies would be granted a generic ODS permit, and could adjust their production or import in response to market conditions. This would create a larger market in which permit trading could occur. Although a marketable permit system set up on these lines would not parallel the group-specific caps of the Protocol, Mexico could adopt such a program because it is voluntarily hastening its phase out. Table 1 shows the types of permits that would be issued under each variation of the tradeable permit system.

Table 1: Types of Permits to be Issued

<u>Group Specific System</u>	<u>Open System</u>
CFC Permit ¹ Halon Permit ² 1,1,1-trichloroethane Permit	ODS Permit
¹ Includes CFC-11, CFC-12, CFC-113, CFC-114, and CFC-115 ² Includes Halon-1211 and Halon-1301	

37. Carbon tetrachloride is produced and imported into Mexico, primarily as a feedstock for CFC production. SEDUE should continue to monitor imports of carbon tetrachloride through the Guías Ecológicas but it is suggested that permits not be granted for this chemical. Continued monitoring of carbon tetrachloride imports would give SEDUE an independent check on the quantity of CFCs produced because the feedstock and CFC quantities are related stoichiometrically. If more carbon tetrachloride was imported than was required for proven CFC production, SEDUE could investigate whether the excess was being emitted to the atmosphere.

38. There are a number of options concerning the permits themselves. Under one option, permits would not be denominated like currency or stock certificates, but would function more like the balance of a checking account. Just as a bank allows the owner of a checking account to write checks up to the amount in the account, SEDUE would allow the holder of the permit to produce or import controlled substances up to the kilogram value of the permit. Alternatively, SEDUE could issue paper permits in various denominations; these would then be exchanged between the companies involved in a trade. Paper permits would have to be reissued each control period.

Choice of the Base Year

39. The kilogram value of permits distributed, whether by auction or through an administrative allocation, will be based on the quantity of controlled substances produced and imported in a base year (baseline level). If an auction system is used to allocate permits every semester, then the kilogram value of the permits auctioned will be half the quantity to be issued during that year, and the total quantity will be some fraction of the baseline level. Similarly, under an administrative allocation the quantity of permits each company would receive would depend on its activity in the base year. The selection of the base year is important since information becomes spotty or unavailable more than a few years in the past, while selecting a base year in the future creates an incentive for companies to increase their production or import of controlled substances to set a higher baseline level. Information collected by SEDUE shows that data on production and imports in 1989, 1990, or an average of the two can be used to determine the baseline levels.

Determining Which Companies are Eligible to Receive Permits

40. Whether an auction system or an administrative allocation is adopted partly determines which companies receive permits. If periodic permit auctions were used, any company registered with SEDUE would be allowed to bid, and if successful, buy a permit. It could then use its permit to produce or import CFCs or trade some portion or all of the kilogram value of the permit to other companies.

41. Ideally, every company that produced or imported controlled substances in the selected base year would be given a permit in an administrative allocation. If including small quantity importers would create an administrative burden, however, SEDUE might choose to set a minimum or threshold level of 50 kilograms, below which companies would not be given permits. Including the two producers, some 46 companies would constitute the larger market for ODS permits in Mexico if this threshold were used. Including small companies would increase the number of firms receiving permits to 56.

Distributing Permits - Auctions vs Administrative Allocation

42. As mentioned previously, the baseline levels must be determined if either an auction or administrative allocation is used to distribute permits. Setting an accurate baseline is more important if an administrative allocation is used because such a system gives to permit holders, at no cost, the right to engage in a valued activity. Under an auction system, companies bid for permits and the government theoretically captures for the public good any extra profits associated with the shortage-induced rise in ODS prices.

43. Because equity issues are more prominent under an administrative allocation system, more attention must be paid to setting the baseline if such a system is adopted. The relatively more thorough procedures used to determine the company-specific baselines can be relaxed somewhat if an auction system is adopted. Once the baseline levels have been set for an administrative allocation, little additional work is needed to distribute permits at the beginning of each year. As discussed below, a system formed around auctions requires relatively more work each time an auction is conducted.

Distribution of Permits Through Auctions

44. There are a number of ways that SEDUE could conduct an auction of permits to produce or import ODSs, but the core elements would remain essentially the same under most versions. The discussion below is meant to illustrate how one version might work, and is patterned after an auction system used by the Government of Singapore to allocate half of the CFC permits issued in that country.

45. Auctions would be conducted by SEDUE (or SECOFI) at periodic intervals, perhaps quarterly or semi-annually. The government would announce the details several months prior to the auction date, providing prospective bidders with information about the number of kilograms of ODSs to be auctioned, the lot size (minimum number of kilograms that could be bid on), the minimum (or reservation) price that would be accepted, whether or not a deposit was required to bid, the date and time of the auction, and so on. Invitations to bid could be restricted to companies that had produced, imported, or used ODSs historically, or the auction could be open to all bidders. The justification for an open auction is that new users of ODSs would not be shut out of the auction.

46. On the day of the auction, each company bidding would submit a sealed bid for ODP-adjusted quantities of controlled substances, stating the quantity and price that the company was willing to pay. After all bids were received, the government would order the bids from highest to lowest price offered, and determine the market clearing price, that is, the price at which the total number of ODP-adjusted kilograms offered in the auction would be purchased by bidders. This would set the price at which all permits would be sold to successful bidders.

47. To prevent one company (or several colluding companies) from controlling too large a portion of the market in ODSs, the government may decide to limit

the quantity of permits purchased by any one company to, say, 25 percent of those offered. As in the case of an administrative allocation, the permits would expire at the end of the year. Trading of permits purchased in the auction would be permitted.

48. One disadvantage of an auction system for allocating permits is the possibility that some firms will be shut out of the auction because their bid prices were too low. Since there is an incentive to reveal through the bid the actual value of ODSs to the bidder, this situation would indicate that some companies or sectors, not surprisingly, valued ODSs more highly than others. Under an administrative allocation, rising prices would eventually result in ODSs flowing to those sectors that valued them highly, but the auction system might bring this change about unduly hastily. Certain companies or sectors might not have enough time to adopt conservation techniques, switch to substitutes, or generally react to the overall phase out of ODSs before they were shut out of the ODS market.

49. One way to avoid the economic disruption that this would cause would be to use a hybrid system, allocating some fraction of the yearly number of kilograms on the basis of market share in the base year and the balance through an auction or series of auctions. Singapore has adopted this strategy successfully, although it does not allow trading of permits. The auction price determines the price for permits distributed through the auction as well as those allocated administratively. The history of permit prices in Singapore is illustrative. After an initial price jump from S\$1000 per tonne to S\$4000 per tonne, the price in the fourth quarterly auction fell to only S\$500 as companies reduced their consumption by adopting alternative technologies and through conservation.

Distribution of Permits by Administrative Allocation

50. To institute a marketable permit system based on an administrative allocation, SEDUE must first compute baseline ODP-weighted production and import quantities for each company in the specified base year. This requires determining the actual quantity of each controlled substance produced or imported and adjusting it to account for the substance's ozone depletion potential. As noted above, SEDUE has already collected information on each company's production and imports of each controlled substance.

51. To determine the baseline levels, SEDUE would need to calculate each company's actual production of each controlled substance in the base year. (For most companies this will be zero.) Quantities of substances transformed into other chemicals or destroyed would not be counted. Similarly, recycled or reused substances would not be counted. Since only two companies produce controlled substances in Mexico, this would be a fairly straightforward task.

52. Because imports also figure into the baseline levels, SEDUE would need to add to each company's production known imports of each substance and, ideally, subtract known exports, a procedure that is consistent with the Protocol's definition of consumption. Since SEDUE does not have complete information about exports, it would be easier to define each company's baseline level as being equal to the sum of its production and imports in the

baseline year. Table 2 shows the information needed to compute the baseline levels, while Table 3 shows how the baseline production and consumption permits would be calculated for five hypothetical companies. The example assumes that companies would receive a generic ODS permit and could produce or import any controlled substance up to the allowed ODP-weighted amount. Under a group-specific system, a similar procedure would be used to calculate baseline levels for each of the three groups (CFCs, halons, and 1,1,1-trichloroethane).

Table 2: Information Required to Determine Baseline Levels

Information required of producers:

Necessary Information

- Year of production
- Name of producer
- Name of controlled substance produced
- Quantity of controlled substance produced that year, excluding quantities used as feedstocks, recycled, or destroyed.

Desirable Information

- Name of person in the producing company who could verify information or answer questions

Information required of importers:

Necessary Information

- Date of import
- Name of importer
- Name of controlled substance imported
- Quantity of controlled substance imported
- If the controlled substance is in a mixture, the percentage of controlled substance in the mixture or the chemical tradename of the mixture

Desirable Information

- Name of company that exported the controlled substance
- Country of export
- Name of person in the importing company who could verify information or answer questions

Example Summary of imports

Date	Name of Company	Substance	Quantity (kg)	% If a mixture	Name of Exporter
14/02/90	Superelectronica	CFC-113	25,000		Dupont, USA
27/09/90	CFC Mexicana	CFC-12	10,000		Allied Chemical USA
27/09/90	Antifuego, S.A.	Halon-1211	12,000		Great Lakes Chemical
13/10/90	Electramex, S.A.	CFC-113	16,300		ICI Britain
21/11/90	Circuitos Mexicanos	CFC-113	20,000	95%	Ace Chemicals, USA

Table 3: Computing Baseline levels

Example 1: Quimica Universal, S.A. produces, but does not import or export, CFCs. It sells its production domestically. In the base year, the company produced 150,000 kg of CFC-11 and 125,000 kg of CFC-12.

Quimica Universal's baseline level equals:		Chemical	Quantity	ODP	Adjusted Quantity
	Production	CFC-11	150,000	1.0	150,000
	Production	CFC-12	250,000	1.0	250,000
					<u>400,000</u> kilograms

Example 2: Refrigerantes Mexicanos both produces and imports CFCs and halons, then sells them domestically. In the base year, Refrigerantes produced 200,000 kg of CFC-11 and 255,000 kg of CFC-12. It imported 120,000 kg of CFC-12, 350,000 kilograms of CFC-113, and 15,000 kg of Halon-1211.

Refrigerantes Mexicanos's baseline level equals:		Chemical	Quantity	ODP	Adjusted Quantity
	Production	CFC-11	200,000	1.0	200,000
	Production	CFC-12	255,000	1.0	255,000
	Import	CFC-12	120,000	1.0	120,000
	Import	CFC-113	350,000	0.8	280,000
	Import	Halon-1211	15,000	3.0	45,000
					<u>900,000</u> kilograms

Example 3: Circuitos Mexicanos imports CFCs and 1,1,1-trichloroethane only, then sells them domestically. In the base year, Circuitos Mexicanos imported 90,000 kg of CFC-113 and 380,000 kg of 1,1,1-trichloroethane.

Circuitos Mexicanos's baseline level equals:		Chemical	Quantity	ODP	Adjusted Quantity
	Import	CFC-113	90,000	0.8	72,000
	Import	1,1,1-trichloroethane	380,000	0.1	38,000
					<u>110,000</u> kilograms

Example 4: Friomex, S.A. exports CFCs only, after buying them from domestic producers and importers. Friomex does not have a baseline level since it neither produced or imported controlled substances in the base year. If it exports CFCs in future years, however, it will be able to request permits from SEDUE.

Example 5: Centro Electronica both imports and exports CFCs. In the base year it imported 250,000 kg of 1,1,1-trichloroethane.

Centro Electronica's baseline level equals:		Chemical	Quantity	ODP	Adjusted Quantity
	Import	CFC-113	250,000	0.1	<u>25,000</u>
					25,000 kilograms

53. At the beginning of each year, SEDUE would allocate to each company a permit having a kilogram value that depended on its baseline level and the phase out schedule. Companies could use their permits to import or produce ODSs during that year or trade the permits to other companies.

Phase Out Schedule

54. As shown in Table 4, the Montreal Protocol sets a specific schedule that Parties must follow in reducing their production and consumption of controlled substances to zero. Article 5 countries are allowed a ten year grace period. Although Mexico has announced that it will comply with the faster phase out schedule, there is no reason that it must also meet the interim reductions, particularly if it suspects that substitutes for controlled substances might take more time to become available in Mexico. The rather steep phase out steps called for in the Protocol (from 100 percent of baseline to 50 percent of baseline for CFCs between 1994 and 1995) might also present difficulties for Mexico. For these two reasons, a somewhat softer phase out schedule might

be more appropriate. Table 5 presents a schedule that, after a more rapid start, incorporates 20 percent reductions from the baseline every two years to reach a complete phase out by the year 2000 (2005 for 1,1,1-trichloroethane).

55. The Parties to the Protocol have agreed to examine the phase out schedule periodically and adjust it if necessary. There is a strong possibility that the Parties will agree at their next meeting to accelerate the phase out schedule by three years. If this occurred and the Government of Mexico decided to adhere to a 1997 phase out, it could do so by adjusting the percentage reduction from the baseline levels that it used in calculating the quantities to be auctioned or allocated each year. Once the baseline is determined, it is easy to adjust the value of permits distributed to match any phase out schedule. It is important to note, however, that frequent changes in the announced phase out schedule make it more difficult for companies to plan strategically, and reduce the attractiveness of a marketable permit system.

Advantages and Disadvantages of Various Permit System Options

Auctions

56. There are a number of advantages associated with auctioning ODS permits, first among them, perhaps, that the government is able to capture from the companies the scarcity induced rents brought about by the phase out. The monies raised by the auction can be used to offset the administrative costs of the system, conduct training or demonstration projects on ODS alternatives, promote alternative technologies, or simply turned over to the country's reserves. If the auction is open to any company, the number of players in the market is potentially larger than if permits are given to historic importers and producers only. Finally, the auction allows companies that place the highest value on ODSs to purchase them.

Table 4: Montreal Protocol Phase Out Schedule for Controlled Substances

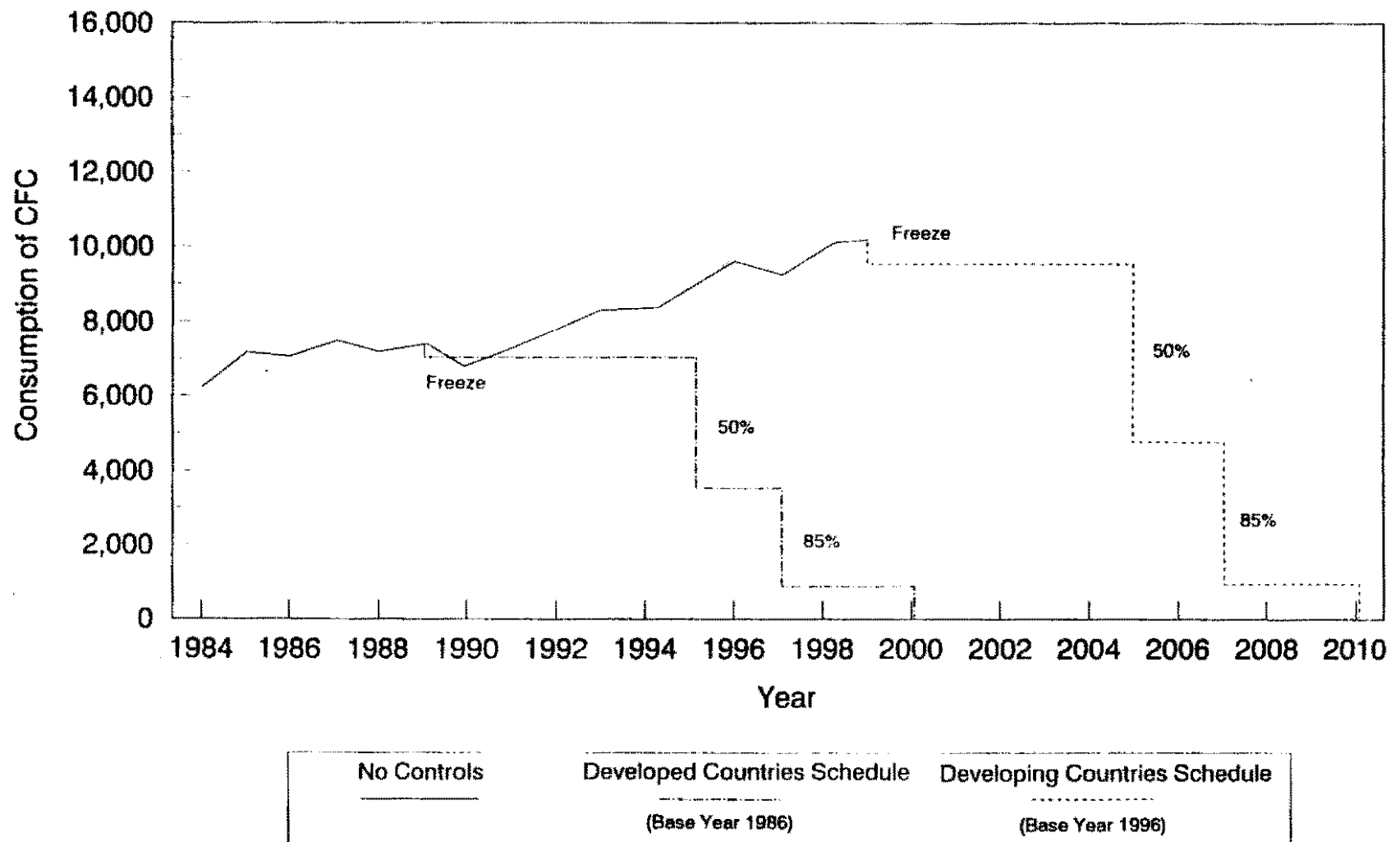
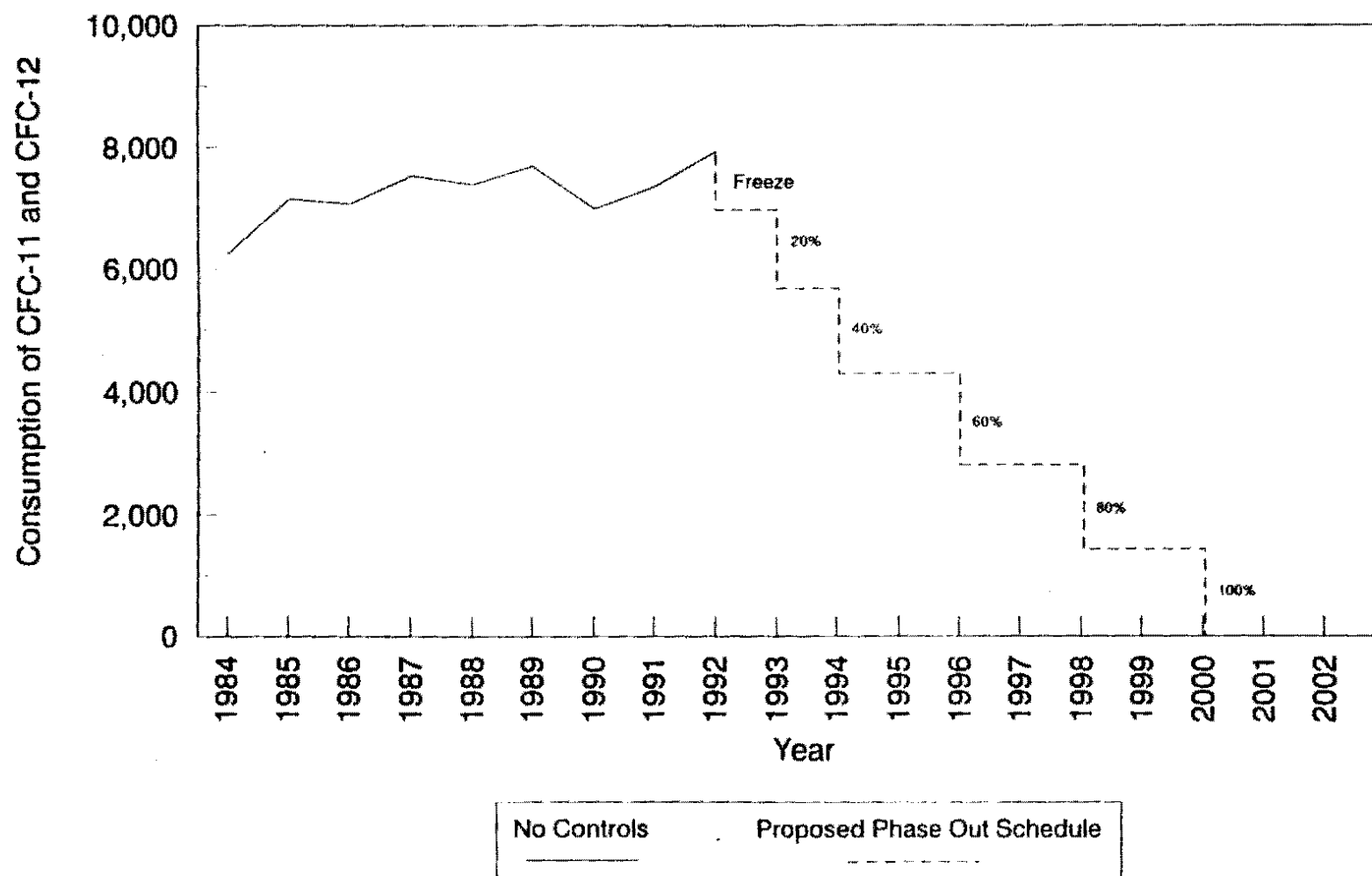


Table 5: Proposed Phase Out Schedule for Mexico



Note: For illustrative purposes, this chart assumes that 1990 is the base year for Mexico.

57. Drawbacks to an auction system include that continuing administrative costs are higher since the auctions are periodic, and that they might easily be perceived as being corrupted by collusion between influential bidders. Monopolistic behavior is possible unless there are limits placed on the quantity of ODS permits any company can buy. That is, the bidding process may price out small users who would not be able to obtain ODSs in the short run. The same is true of an administrative allocation, however, although it would presumably be more difficult for a company to purchase enough permits to obtain monopoly power.

Administrative Allocation

58. An administrative allocation gives to companies that have historically imported or produced ODSs a windfall profit if the phase out results in rising prices for controlled substances. Unless they are captured by taxes, increased profits go to the importing or producing firms rather than to the government. Administrative allocations are almost always contentious because the choice of the base year determines what firms receive ODS permits and the quantity they receive. To minimize complaints about equity issues, the baseline quantities must be determined accurately.

59. One advantage of an administrative allocation is that the costs of such a system are largely confined to determining the baseline quantities. Once the baseline is set, computing the kilogram value of permits issued to each company at the beginning of the year is trivial. Another advantage of an administrative allocation is that it is less likely to be viewed suspiciously since the method of allocation is clearly visible to all parties.

Group Specific System

60. Under the group-specific option, permits would be granted for each group of controlled substances defined by the Montreal Protocol and could be traded only within that group. For instance, a company that received a CFC permit because it had imported CFC-12 in the base year could trade its permit to an importer of CFC-11 (or could import CFC-11 itself), but it could not trade the permit to a company that wanted to increase its import of 1,1,1-trichloroethane. Three types of permits would be issued -- CFC permits, halon permits, and 1,1,1-trichloroethane permits.

61. One advantage of structuring the marketable permit system in such a manner is that it parallels the Protocol and the existing market structure for controlled substances in Mexico. Companies that import CFCs and halons tend to be segregated because the substance are used for different purposes (CFCs for refrigeration, aerosols, and foam blowing; halons for fire protection).¹⁰ Because it would mimic the existing market for controlled substances, this system would be more easily understood by companies, so there would be less burden on SEDUE to explain the system. Greater familiarity and understanding by users could result in increased trading activity. The main

¹⁰The exception is the market for CFC-113 and 1,1,1-trichloroethane, which have similar solven uses in the metal cleaning and electronics industries.

drawback is that the permit market would be divided into three sub-markets, some of which could be very small.

Open System

62. Under the open system, permits would be freely convertible between groups of controlled substances based on ozone depletion potentials. This system would, in theory, be more flexible and result in a larger overall market in which trading of permits could occur. It would also be more complicated, which could hinder trading unless the system were well explained initially. Because the existing markets for controlled substances are segregated, SEDUE might need to take a more active role in providing information about market participants in order to overcome their lack of information about each other.

63. Administratively, an open system would be somewhat more complicated than a group-specific system because of the different phase out schedules for 1,1,1-trichloroethane and the other controlled substances. SEDUE would need to check proposed trades of permits to make sure that the ODP-weighted sum of CFCs and halons, which share the same, faster schedule, was not exceeded as a result of trades between 1,1,1-trichloroethane and these substances.

VII. TRADING AND REPORTING REQUIREMENTS

64. This section first discusses rules for trading permits, including those for trades between companies, trades between domestic and foreign producers, and special requirements regarding Maquiladoras. It concludes with a discussion of reporting requirements.

Trading Requirements

Trades Between Companies

65. Because the economic attractiveness of a marketable permit system stems from its allowing companies to trade or sell permits, trading rules should allow for government oversight but not stifle trading. SEDUE's main role will be to protect buyers by ensuring that a company purporting to trade away its right to produce or import controlled substances actually had a permit that allowed it to do so. SEDUE can protect buyers by requiring that companies wanting to engage in a trade inform SEDUE prior to the trade taking place. SEDUE would check its records to make sure that the company trading away some portion of its permit had a sufficient balance to cover the trade, note the transaction, and send a simple notification approving the trade to both parties. If for some reason the company did not have a sufficient permit balance, SEDUE could inform both parties and halt the trade. To facilitate trading, SEDUE could announce that if the parties did not receive an objection within three days that the trade could proceed. Examples of how trading would affect permit balances of the two trading parties are shown in Table 6 and Table 7.

66. SEDUE will need to collect basic information concerning trades. At a minimum it will need to know the names of the two companies engaging in the trade, the type and quantity of permits being traded, and the name of a contact person in each company that could answer questions or verify the accuracy of the information provided. The use of standardized forms, discussed below, will make it much easier for companies to report accurately the information needed by SEDUE.

Trades Between Parties

67. The Montreal Protocol allows any Party to transfer to another Party any part of its calculated level of production, either temporarily or permanently. The purpose of this provision is to minimize the global costs of the phase out by allowing for worldwide economies of scale in production. Mexican producers, because their plants are relatively small, might be able to obtain production rights from large producers when Protocol restrictions make it uneconomical to run large capacity plants in their home countries. Because trading away production might have economic consequences for Mexico, the government would need to review any proposal by either of the domestic producers to trade production to another Party. Presumably, trades could occur only if the permits were obtained through an administrative allocation.

68. Because the Parties are only allowed to trade production, it would be administratively easier if SEDUE allowed only the two producers of ODSs to trade permits to other producing Parties, and only up to the level of the production permits they held. This would ensure that Mexico remained in compliance with the Protocol. Any company could trade to receive calculated levels of production from another producing party; the amount traded would be converted into permits by SEDUE. This would be far easier than tracking trades of permits originally allocated to the producers, or devising a system that had both production and consumption permits.

Special Provisions Regarding Maquiladoras

69. The U.S. government counts consumption of controlled substances by Maquiladora companies against U.S. consumption allowed by the Protocol, as does the Mexican government. SEDUE, however, monitors imports of chemicals by Maquiladoras through the Guías Ecológicas to make sure that the chemicals are not being diverted to other users and that Mexican environmental laws are not being violated. It is not necessary to include imports by Maquiladora companies as part of the permit system, but SEDUE should continue to record the quantities imported under the Guías.

Reporting Requirements

70. Like trading rules, reporting requirements should be kept to a minimum so as not to discourage participation in the system. It is important to note that reporting requirements are critical to any control system and are not a special characteristic of a marketable permit system.

Table 6: Examples of Permit Trades

Example 1: Company trades permits for one year - 1992

Quimica Universal's managers decide that they need more permits and approach Refrigerantes Mexicanos, which agrees to sell 30,000 kg of permits for 1992 only. With these extra permits, Quimica Universal can increase its production of CFC-11 and CFC-12. After the trade, the balance looks like this (assumes that in 1992, companies receive 100 percent of baseline levels at the beginning of the year).

	Before Trade	After Trade
	Value of Permits	Value of Permits
Quimica Universal	275,000 kg	305,000 kg
Refrigerantes Mexicanos	900,000 kg	870,000 kg
Circuitos Mexicanos	110,000 kg	110,000 kg
Friomex	0 kg	0 kg
Centro Electronica	25,000 kg	25,000 kg

Quimica Universal's permits have increased and Refrigerantes Mexicanos's permits have decreased by 30,000 kg. Remember, though, that this increase is for one year only as the trade in permits was for only that year.

Example 2: Company trades permits permanently

Suppose that Centro Electronica decides that it no longer wants to import 1,1,1-trichloroethane. It convinces Circuitos Mexicanos to purchase its permits permanently. This would mean that Circuitos Mexicanos would receive Centro Electronica's allocation of permits each year in the future, just as if it had purchased the latter company's baseline level. After this trade, the permit balance would look like this:

	Value of Permits
Quimica Universal	305,000 kg
Refrigerantes Mexicanos	870,000 kg
Circuitos Mexicanos	135,000 kg
Friomex	0 kg
Centro Electronica	0 kg

71. Producers should be required to keep records of their production and consumption of each controlled substance. Traders, similarly, should keep records of their import and export of each controlled substance. SEDUE needs to collect such information as part of its reporting requirements under the Protocol, and would find it advantageous to require permit holders to submit periodic reports containing this information, perhaps quarterly, or, at a minimum, annually. It is possible that the Guías Ecológicas could serve this purpose for imports and exports. To ease the burden of reporting production amounts, SEDUE should prepare a standardized reporting form that would contain blanks or boxes where information would be entered by producing companies. Annex E presents an examples of a standardized form for producers while Annex F presents a Guía Ecológica.

Table 7: Value of Permits Allocated in 1996

In 1996, companies receive permits having a value of only 40 percent of their baseline levels at the beginning of the year. Centro Electronica no longer receives a permit because it traded its baseline level to Circuitos Mexicanos permanently. The balance would look like this at the beginning of the year:

	1996 Value of Permits
Quimica Universal	110,000 kg
Refrigerantes Mexicanos	360,000 kg
Circuitos Mexicanos	54,000 kg
Fromex	0 kg
Centro Electronica	0 kg

Permit Accounting Procedure

72. To administer the marketable permit system, SEDUE will need to set up a simple accounting procedure, using either a notebook style ledger or a personal computer spreadsheet program. The kilogram value of the permit (or permits if a group-specific system is adopted) that each company is given or

Table 8: Examples of Changes in Permit Balances

Example 1: Company produces controlled substances

Suppose that Quimica Universal produced 31,400 kg of CFC-11 and 22,600 kg of CFC-12. In doing so, it uses up 54,000 kg of the value of its permit.

Quimica Universal's balance in permits becomes:	272,100 kg
	<u>- 54,000 kg</u>
	218,000 kg.

Quimica Universal can continue to produce CFCs, import CFCs, or trade a portion of its permit value up to this new limit.

Example 2: Company imports CFCs

Suppose that Refrigerantes Mexicanos imports 52,700 kg of CFC-13. In doing so its permit balances drop by 42,160 kg ($52,700 \times 0.8 = 42,160$).

Refrigerantes Mexicanos balance in permits becomes:	900,000 kg
	<u>- 42,160 kg</u>
	857,840 kg.

purchases through auctions at the beginning of the control period will be noted in the ledger or computer. As companies use up their "permits" by producing or importing controlled substances, they will inform SEDUE either through periodic reports or through the Guías. SEDUE will then adjust the balances in its accounts. Similarly, if two companies trade permits, SEDUE staff will note the transaction, increasing the balance of one company and reducing the balance of the other by an equal amount. If permits were to expire at the end of the year, SEDUE would set each company's balances to zero to start the new year. If banking of permits were allowed, then permits distributed through periodic allocations would merely be added to each company's balances.

73. The system should function much like a simple checking account, with additions and subtractions from the company balances noted. Companies will not be allowed to have a negative balance of permits. Indeed, a negative balance would indicate that a company had either imported or produced a controlled substance in a quantity greater than the kilogram value of the permit it held. Examples of how production and import of controlled substances affect a company's permit balances are presented in Table 8.

Table 9 shows an example of sample accounting spreadsheet that could be used by SEDUE to administer the marketable permit system. Each company holding permits would have a similar account balance sheet.

Extra Permits Granted for Exports or Destruction of Controlled Substances

74. As noted above, the Montreal Protocol does not count exports against a country's consumption of controlled substances. Instead, it requires the importing country to count the quantity of imported chemical against its consumption limits. Companies that export controlled substances in bulk containers, therefore, should be given additional permits if they provide proof to SEDUE that an export occurred. A shipping invoice, bill of lading, or export declaration form might be used as proof that a quantity of controlled substance did indeed leave Mexico. Table 10 provides an example of a company receiving additional permits as a result of its exporting a controlled substance to another Party.

75. The Protocol similarly does not count quantities of controlled substances that are destroyed against a Party's production and consumption caps. A company that could prove to SEDUE that it had destroyed an ODS should be eligible to receive additional permits. The Parties to the Protocol have not yet agreed on approved destruction technologies or a definition of destruction, however, so it is not necessary to make this a provision of the Mexican marketable permit system at the present time.

VIII. INSTITUTIONAL FRAMEWORK AND ENFORCEMENT

76. During the July and August discussions between the Bank and the Mexican authorities, it was generally agreed that SEDUE would be the primary agency in charge of administering the marketable permit system. At that point, the

Table 9: Example Accounting Sheet for Recording Permit Balances

Refrigerantes Mexicanos			1992 Transaction Summary		
Transaction Number	Transaction Date	Permit Debits	Permit Credits	Permit Balance	Comments/Explanation
1	01-01-92	-	-	900,000	Initial Allocation (100% of baseline level)
2	15-04-92	86,000	-	814,000	Production of CFCs in first quarter.
3	11-05-92	40,000	-	774,000	Import of CFC-11 from Du Pont, USA
4	06-06-92	30,000	-	744,000	Sale of CFC to Company A
5	11-07-92	110,000	-	634,000	Production of CFCs in second quarter
6	23-07-92	-	25,000	659,000	Proof of export of CFC-12 to Importadores del Caribe, S.A., Colombia
7	07-08-92	90,000	-	569,000	Import of CFC-113 from Atochem North America, USA
8					
9					
10					
11					
12					
13					
14					
15					
16					

Table 10: Example of a Company Getting Consumption Permits for Exporting

Example 1: Company Imports and exports CFCs

Suppose that company C imports 10,000 kg of CFC-113, packages it into smaller containers, and exports the same quantity in bulk to the U.S. Company C initially uses up 10,000 kg of consumption permits. Since a company can get extra consumption permits for exporting, if Company C provides SEDUE with proof of this export it can get an extra 10,000 kg of consumption permits.

Company C's consumption permits first drop:	135,000 kg
	<u>- 10,000 kg</u>
	125,000 kg.

Upon proof of export they increase:	10,000 kg
	<u>+ 125,000 kg</u>
	135,000 kg.

possibility of introducing auctions for permit allocation had not been contemplated. Assistance from SECOFI might be required for planning and /conducting auctions if this option were to be chosen. In addition, SECOFI would provide insights on licensing policies during the design stages of the system. Regardless of the allocation system chosen, SEDUE would be responsible for day-to-day operation and performance monitoring of the tradeable permit system. SHCP would also assist in liaising with the World Bank, and providing guidance on inter-institutional coordination.

77. As discussed earlier, SEDUE has been the main agency involved in ozone protection activities since these began in 1988. Activities undertaken have included negotiating and signing voluntary agreements with CFC and halon users and producers (on both an individual and group basis), and organizing conferences on ODS alternatives. As the scope and scale of these activities has significantly increased, SEDUE has proposed to create a unit dedicated to addressing Mexico's ozone protection program -- the Ozone Protection Technology Information Center. SEDUE described the work program of the unit and estimated its budget needs in a funding request submitted to the Executive Committee of the Montreal Protocol Interim Multilateral Fund. Funding for this unit, and for investment projects, is now being contemplated as part of a \$10 million operation currently being prepared by the Bank.

78. The implementation of the marketable permit system will require an initial effort to explain the system to government and industry representatives, illustrate its operation, and assist in early stages of its use. The budget discussed below includes funds for conducting a seminar or series of seminars for different end-use sectors where SEDUE staff (and possibly SECOFI staff if auctions were used) would explain how the marketable permit system would function. Once the system is in place, however, little administrative oversight is foreseen. As discussed in Section IX below, the marketable permit system can be operated by a professional staff on a part-time basis. The costs associated with permit auctions would depend on the frequency of the auctions.

- develop accounting and control procedures (includes computer coding);
- standardize SEDUE forms and communications procedures;
- Installation

- develop training seminars and manuals;
- conduct seminars;
- install and test system.

86. If these activities are conducted sequentially, the entire system could be in operation in 21 weeks (assuming an auction system is used).

XI. CONCLUSION

87. Using a marketable permit system to control the production and importation of ozone depleting substances will allow Mexico to meet its goal of a year 2000 phase out while reducing the costs to the country. The benefit of using market forces for reducing the availability of ODSs is that affected parties (i.e., importers and producers of ODSs) can directly make decisions based on private economic considerations on how the permitted amount should be distributed. This provides flexibility to companies and reduces the administrative burden placed on the government.

88. A key feature of all marketable permit systems is the manner in which the permits are distributed. One option is to conduct periodic auctions where companies bid for the right to produce or import ODSs in specified quantities. Revenues generated by the auctions can be used to offset administrative costs, and because the auctions are open to any company registered with SEDUE, the possibility exists that a larger market for ODS permits will develop. An alternative system for distributing permits relies on an administrative allocation based on historic market share. This type of system favors those companies that imported or produced ODSs in a predetermined base year. Although auctioning permits requires additional labor and resources, the advantages of establishing a marketable permit system that uses auctions make it an attractive option for Mexico.

89. A marketable permit systems for ODSs can be structured so that permits can be applied to all controlled substances or only to specific groups of ODSs. The "open" system would increase the number of companies in the overall ODS permit market, making for a stronger market. The permits themselves could either be issued as physical objects to be traded, or, in an administratively simpler manner, recorded as credits in a central bookkeeping system.

90. The tradeable permit system adopted by SEDUE should be broadly applicable to other environmental problems facing Mexico. The experience gained in designing and administering a tradeable permit system for ODSs will ideally enable SEDUE to apply similar market-based approaches to problems of water pollution, air pollution, and disposal of toxic substances.

Table 11: Preliminary Budget for Implementing a Marketable Permit System for ODS Phase Out in Mexico

<u>Project Stage</u>	<u>US Dollars^a</u>
<u>Design</u>	
Short-Term External Consultant (8-10 weeks @ \$2,900/week)	23,200 - 29,000
Travel and per diem (1 trip @ \$500 and 13 days @ \$150/day)	2,450
SEDUE staff (4 weeks estimated @ \$260/week ^b)	1,040
<u>Installation</u>	
Short-Term External Consultant	
Develop training seminar (2-3 weeks)	5,800 - 8,700
Develop seminar materials and guidance document (5 weeks)	14,500
Coordinate logistics and conduct seminars (1 week)	2,900
Start-up and trouble shooting (2 weeks)	5,800
Travel and per diem (2 trips and 20 days)	6,000
Local Consultant	
Logistical support (2 weeks @ \$1,500/week)	3,000
SEDUE Staff (4 weeks)	1,040
Seminar Materials 1,000	
Seminar Services (Facilities, A/V Equipment, Hospitality)	3,000
Printing (Standardized forms, manuals)	1,000
Computer and Software ^c	4,000
Fax Machine ^c	3,000
Phone Line ^c	500
Photocopies ^c	4,000
<u>Operation (one year)</u>	
SEDUE Staff (1-2.5 day/week; 52 weeks)	2,700 - 6,750
Communications (phone, postage)	3,000
Equipment Maintenance	500
Office Supplies	<u>2,000</u>
Subtotal	90,430 - 103,180
Contingency (15%)	13,565 - 15,477
TOTAL	\$103,997 - 118,657
^a The lower bound of the range reflects the level of effort required for the design, installation, and operation of a permit system with an administrative allocation of permits; the upper bound is for a system that uses periodic auctions to distribute permits. ^b As estimated by SEDUE in the budget for the Ozone Protection Technology Center reported in "Project Proposals Eligible for Funding Under the Interim Multilateral Fund of the Montreal Protocol on Substances that Deplete the Ozone Layer," presented during the Third Meeting of the Executive Committee held in Montreal, Canada, April 15-19, 1991. ^c These resources may already be available from the Ozone Protection Technology Center.	

Annex A

Countries Eligible for Assistance Under Article 5 of the Protocol

- | | | |
|----------------------------------|-----------------|--------------------------|
| 1. Argentina | 13. Ghana | 26. Sri Lanka |
| 2. Bangladesh | 14. Guatemala | 27. Syrian Arab Republic |
| 3. Brazil | 15. Iran | 28. Thailand |
| 4. Burkina Faso | 16. Jordan | 29. Togo |
| 5. Cameroon | 17. Kenya | 30. Trinidad and Tobago |
| 6. Chile | 18. Libya | 31. Tunisia |
| 7. People's Republic
of China | 19. Malawi | 32. Turkey |
| 8. Costa Rica | 20. Malaysia | 33. Uganda |
| 9. Ecuador | 21. Maldives | 34. Uruguay |
| 10. Egypt | 22. Mexico | 35. Venezuela |
| 11. Fiji | 23. Nigeria | 36. Yugoslavia |
| 12. The Gambia | 24. Panama | 37. Zambia |
| | 25. Philippines | |

Note:

Turkey will become eligible for assistance under the Fund when its ratification of the Protocol takes effect on 19 December 1991.

Annex B

Controlled substances

Annex A to the Protocol

Group I

CFCl_3	(CFC-11)	
CF_2Cl_2	(CFC-12)	1.0
$\text{C}_2\text{F}_3\text{Cl}_3$	(CFC-113)	1.0
$\text{C}_2\text{F}_4\text{Cl}_2$	(CFC-114)	0.8
$\text{C}_2\text{F}_5\text{Cl}$	(CFC-115)	1.0
		0.6

Group II

CF_2BrCl	(halon-1211)	
CF_3Br	(halon-1301)	1.0
$\text{C}_2\text{F}_4\text{Br}_2$	(halon-2402)	10.0

Group I

CF_3Cl	(CFC-13)	1.0
C_2FCl_5	(CFC-111)	1.0
$\text{C}_2\text{F}_2\text{Cl}_4$	(CFC-112)	1.0
C_3FCl_7	(CFC-211)	1.0
$\text{C}_3\text{F}_2\text{Cl}_6$	(CFC-212)	1.0
$\text{C}_3\text{F}_3\text{Cl}_5$	(CFC-213)	1.0
$\text{C}_3\text{F}_4\text{Cl}_4$	(CFC-214)	1.0
$\text{C}_3\text{F}_5\text{Cl}_3$	(CFC-215)	1.0
$\text{C}_3\text{F}_6\text{Cl}_2$	(CFC-216)	1.0
$\text{C}_3\text{F}_7\text{Cl}$	(CFC-217)	1.0

Group II

CCl_4	carbon tetrachloride	1.1
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Group III

$\text{C}_2\text{H}_3\text{Cl}_3$	1,1,1-trichloroethane (methyl chloroform)	0.1
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6.0

Transitional substances

<u>Group</u>	<u>Substance</u>
<u>Group I</u>	
CHFCl ₂	(HCFC-21)
CHF ₂ Cl	(HCFC-22)
CH ₂ FCI	(HCFC-31)
C ₂ HFCI ₄	(HCFC-121)
C ₂ H ₂ FCI ₃	(HCFC-122)
C ₂ H ₂ F ₃ CI ₂	(HCFC-123)
C ₂ H ₂ F ₄ CI	(HCFC-124)
C ₂ H ₂ FCI ₃	(HCFC-131)
C ₂ H ₂ F ₂ CI ₂	(HCFC-132)
C ₂ H ₂ F ₃ CI	(HCFC-133)
C ₂ H ₃ FCI ₂	(HCFC-141)
C ₂ H ₃ F ₂ CI	(HCFC-142)
C ₂ H ₄ FCI	(HCFC-151)
C ₃ HFCI ₆	(HCFC-221)
C ₃ H ₂ FCI ₅	(HCFC-222)
C ₃ H ₂ F ₃ CI ₄	(HCFC-223)
C ₃ H ₂ F ₄ CI ₃	(HCFC-224)
C ₃ H ₂ F ₅ CI ₂	(HCFC-225)
C ₃ H ₂ F ₆ CI	(HCFC-226)
C ₃ H ₂ FCI ₅	(HCFC-231)
C ₃ H ₂ F ₂ CI ₄	(HCFC-232)
C ₃ H ₂ F ₃ CI ₃	(HCFC-233)
C ₃ H ₂ F ₄ CI ₂	(HCFC-234)
C ₃ H ₂ F ₅ CI	(HCFC-235)
C ₃ H ₃ FCI ₄	(HCFC-241)
C ₃ H ₃ F ₂ CI ₃	(HCFC-242)
C ₃ H ₃ F ₃ CI ₂	(HCFC-243)
C ₃ H ₃ F ₄ CI	(HCFC-244)
C ₃ H ₄ FCI ₃	(HCFC-251)
C ₃ H ₄ F ₂ CI ₂	(HCFC-252)
C ₃ H ₄ F ₃ CI	(HCFC-253)
C ₃ H ₅ FCI ₂	(HCFC-261)
C ₃ H ₅ F ₂ CI	(HCFC-262)
C ₃ H ₆ FCI	(HCFC-271)

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**SECRETARIA DE DESARROLLO URBANO Y ECOLOGIA
SUBSECRETARIA DE ECOLOGIA
DIRECCION GENERAL DE PREVENCION Y CONTROL
DE LA CONTAMINACION AMBIENTAL**

SEDUE

**MANIFESTO PARA LA PRODUCCION
DE SUSTANCIAS CONTROLADAS**

Annex E

A. INFORMACION GENERAL				
Nombre de Generador _____ No. _____ Ubicación _____ Responsable _____ Cargo _____ Teléfono _____	DESTINARIO Nombre de la empresa _____ Ubicación _____ Responsable _____ Cargo _____ Teléfono _____			
B. PRODUCCION DE SUSTANCIAS CONTROLADAS				
SUSTANCIA	CANTIDAD BRUTA DE PRODUCCION	CANTIDAD CONVERTIDA A OTRA SUSTANCIA	CANTIDAD DESTRUIDA	PRODUCCIÓN NETA
CFC-11	_____	_____	_____	_____
CFC-12	_____	_____	_____	_____
CFC-113	_____	_____	_____	_____
CFC-114	_____	_____	_____	_____
CFC-115	_____	_____	_____	_____
Halon-1211	_____	_____	_____	_____
Halon-1301	_____	_____	_____	_____
Halon-2402	_____	_____	_____	_____
TET	_____	_____	_____	_____
MCF	_____	_____	_____	_____
TOTAL	_____	_____	_____	_____
Por este medio, certifico que toda la información incluida en este y todos los documentos adicionales es completa y verídica.				
_____ Nombre y firma autorizados del Gestor		_____ Nombre y firma del Técnico responsable de la Empresa		



SUBSECRETARÍA DE ECOLOGÍA
DIRECCIÓN GENERAL DE PREVENCIÓN Y CONTROL
DE LA CONTAMINACIÓN AMBIENTAL
MANIFIESTO PARA LA IMPORTACIÓN O EXPORTACIÓN
DE MATERIALES O RESIDUOS PELIGROSOS

MANIFIESTO

No. _____

EDC. _____

MPO. _____

A. INFORMACIÓN GENERAL

Nombre del Remitente CHAPARRAL STEEL
 No. _____
 Ubicación 300 WARD ROAD MIDLO THIAN, TX.
77704
 Responsable CHRIS W. ALVERT
 Correo GP SPEC PROJ ENG Teléfono (214) 7758247
 Nombre del material o residuos RESIDUOS DE CASH
DE BOLSA DE NORMAS ELECTRICAS

Además de enviado NUÉVO LARRO, TAMPS
 DESTINATARIO
 Nombre de la empresa ZINC NACIONAL, S.A.
 No. _____
 Ubicación HIDALGO 640 PTE.
MONTERREY, NL
 Responsable ING. RAUL GONZALEZ DEL BOSQUE
 Correo CTA ADMINISTRATIVA Teléfono (83) 76-57-30
 Precaución para la utilización del material o residuos FABRICACION DE OXIDO DE ZINC
 (Incluir descripción completa con diagrama de flujo)

B. CARACTERÍSTICAS FÍSICAS DEL MATERIAL

Color CAFE	Olor ☐ No ☐ SI ☐ Falso	Estado físico a 25°C ☐ Sólido ☐ Líquido	☐ Gaseoso ☐ Pastoso	Líquidos Libres ☐ SI ☐ No
pH. ☐ < 2 ☐ 2-4 ☐ 4-6.9 ☐ 7	☐ 21-10 ☐ 101-12.5 ☐ > 12.5 ☐ Exacto	☐ < 0.8 ☐ 0.8-10 ☐ 11-12 ☐ Exacto	☐ < 25°C ☐ 25-30°C ☐ 30-35°C ☐ > 35°C	☐ > 35°C ☐ No inflamable ☐ Exacto NO COMBUSTIBLE

C. COMPOSICIÓN QUÍMICA (suma total hasta 100 %)

ALUMINIO (Al) 20.3 45% PLOMO (Pb) 14.8%
 AZUFRE (S) 7.11% SILICIO (Si) 3.8 %
 CALCIO (Ca) 6.57% SODIO (Na) 20 3.8 %
 CARBONO (C) 1.7% ZINC (Zn) 33.33 %
 CLORO (Cl) 2.30% _____ %
 COBRE (Cu) 3.3% _____ %
 FIERRO (Fe) 35.8% _____ %
 MAGNESIO (Mg) 2.95% _____ %
 POTASIO (K) 3.1% _____ %
 Fuente No M-5000484
 Seguridad T. 0.00496

D. METALES (total (ppm) y pruebas de extracción (mg/L))

Artesón (As)	90 0.0	Selenio (Se)	0.0 0.0
Berio (Ba)	93 0.0	Plata (Ag)	167 0.0
Cadmio (Cd)	130 11	Cobro (Co)	1640 0.0
Cromo (Cr)	270 0.4	Níquel (Ni)	1340 0.0
Mercurio (Hg)	0.0 0.0	Zinc (Zn)	1252 269 0
Plomo (Pb)	44.568 21	Talio (Tl)	0.0 0.0

E. OTROS COMPONENTES TOTAL (ppm)

Cianuros	0.0	SPC's	0.0
Sulfatos	0.0	Fosfatos	0.0

F. INFORMACIÓN DE EMBARQUE

Empresa Transportadora F.E.C.C.N. DE M.
 Ubicación MANUEL L. BARRAGAN AL NORTE
 Tipo de Transporte FERROVIARIO
 Tipo de contenedor GONDOLA Cap. 60-70 TONS
 Ruta o seguir NUÉVO LARRO TAMPS, SAN NICOLAS
 Materiales o residuos peligrosos MSI CNO
 Riesgo involucrado INGESTION

Estado en que se transporta SOLIDO
☐ Volumen líquido ☐ Volumen sólido 100%
TOTAL: 1500 TONS.

G. CARACTERÍSTICAS PELIGROSAS

REACTIVIDAD
☐ Sensible a choque ☐ CORROSIVO
☐ Reacciona con el agua ☐ EXPLOSIVO
☐ Piroclítico ☐ TOXICO
☐ RADIOACTIVO ☐ INFLAMABLE
☐ OTROS ☐ NINGUNA

H. INFORMACIÓN DE MANEJO ESPECIAL

SE TRANSPORTA EN GONDOLA DE FERROCA
RED CON TABAS BUNDO CONICO CON LINA
CARA DE ELICE EN EL FONDO
 (Incluir página adjunta)

Por este medio certifico que toda la información incluida en este y todos los documentos adicionales es completa y verídica, que todos los peligros conocidos o posibles han sido incluidos.

Nombre y firma autorizados del Gestor

ING. RAUL GONZALEZ DEL BOSQUE
 Fecha y firma del Técnico responsable de la Empresa

Annex G

References

SEDUE, 1989. "Mexico's Strategy on Ozone Layer Protection: A Case Study on the Costs of Implementing the Montreal Protocol," sponsored by Secretaría de Desarrollo Urbano y Ecología, Cámara Nacional de la Industria de Transformación, and the United States Environmental Protection Agency. First Edition, June 1990.

Chem Systems, 1990. "Methyl Chloroform Markets in Brazil, Mexico, Venezuela and the Republic of Korea," Chem Systems Ltd., June 1990.

MEMORANDUM AND RECOMMENDATION
OF THE
REGIONAL VICE PRESIDENT OF THE
INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT
TO THE SENIOR VICE PRESIDENT, OPERATIONS
ON A
PROPOSED OZONE TRUST FUND GRANT
IN THE AMOUNT EQUIVALENT TO US\$ 180,000
TO
NACIONAL FINANCIERA, S.N.C.
FOR AN OZONE PROTECTION PILOT RECYCLING
AND TRAINING PROJECT

OCTOBER 9, 1991

Country Operations Division I
Country Department II
Latin America and the Caribbean Region

CURRENCY EQUIVALENTS

Currency unit = Mexican Peso (Mex\$)
US\$1.00 = Mex\$ 3,060.00 (Exchange rate as of October 9, 1991).

UNITS AND MEASURES

metric ton = Ton (T) = 1000 kg

ACRONYMS

CANACINTRA	:	Cámara Nacional de la Industria de Transformación (Chamber of manufacturing industries)
CFCs	:	Chlorofluorocarbons
MACS	:	Mobile air conditioning systems
MPIMF	:	Montreal Protocol Interim Multilateral Fund
NAFIN	:	Nacional Financiera, S.N.C. (Government's National Industrial Development Bank)
ODS	:	Ozone Depleting Substances
OPTC	:	Ozone Protection Technology Center
SECOFI	:	Secretaría de Comercio y Fomento Industrial (Ministry of Commerce and Industrial Development)
SEDUE	:	Secretaría de Desarrollo Urbano y Ecología (Ministry of Urban Development and Ecology)
SHCP	:	Secretaría de Hacienda y Crédito Público (Ministry of Finance and Public Credit)
UNDP	:	United Nations Development Programme
UNEP	:	United Nations Environment Programme
USEPA	:	United States Environment Protection Agency

FISCAL YEAR

January 1 - December 31

MEXICO

FIRST MONTREAL PROTOCOL PROJECT

Project and Grant Summary

<u>Financial Agent</u>	Nacional Financiera, S.N.C. (NAFIN) (This would be confirmed before submission to SVPOP)																								
<u>Executing Agency</u>	Secretaría de Desarrollo Urbano y Ecología (SEDUE)																								
<u>Beneficiaries</u>	Mobile Air Conditioning service firms and aerosol manufacturing firms participating in project.																								
<u>Amount</u>	\$180,000 equivalent																								
<u>Terms</u>	Grant																								
<u>Re-lending Terms</u>	Grant																								
<u>Project Cost Summary</u>	<table><thead><tr><th><u>Component</u></th><th><u>US\$ Thousand</u></th></tr></thead><tbody><tr><td><u>CFC-12 Recycling from MACS</u></td><td><u>75.7</u></td></tr><tr><td>Pilot Recycling</td><td>45.5</td></tr><tr><td>Training and Public Outreach</td><td>25.4</td></tr><tr><td>Contingency</td><td>4.8</td></tr><tr><td> <u>Aerosol Propellants Safety Program</u></td><td> <u>104.3</u></td></tr><tr><td>Workshop</td><td>7.2</td></tr><tr><td>Plant Safety Review</td><td>36.6</td></tr><tr><td>In-Plant Training</td><td>43.2</td></tr><tr><td>Administration</td><td>11.0</td></tr><tr><td>Contingency</td><td>6.3</td></tr><tr><td> <u>TOTAL</u></td><td> <u>189.0</u></td></tr></tbody></table>	<u>Component</u>	<u>US\$ Thousand</u>	<u>CFC-12 Recycling from MACS</u>	<u>75.7</u>	Pilot Recycling	45.5	Training and Public Outreach	25.4	Contingency	4.8	 <u>Aerosol Propellants Safety Program</u>	 <u>104.3</u>	Workshop	7.2	Plant Safety Review	36.6	In-Plant Training	43.2	Administration	11.0	Contingency	6.3	 <u>TOTAL</u>	 <u>189.0</u>
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In-Plant Training	43.2																								
Administration	11.0																								
Contingency	6.3																								
 <u>TOTAL</u>	 <u>189.0</u>																								
<u>Economic Rate of Return</u>	N/A																								
<u>Staff Appraisal Report</u>	N/A																								

MEMORANDUM AND RECOMMENDATION
OF THE REGIONAL VICE PRESIDENT
TO THE SENIOR VICE PRESIDENT, OPERATIONS
ON A PROPOSED OZONE TRUST FUND GRANT
TO NACIONAL FINANCIERA, S.N.C. (NAFIN)
FOR AN OZONE PROTECTION PILOT RECYCLING AND TRAINING PROJECT

1. I submit for your approval the following memorandum and recommendation on a proposed Ozone Trust Fund grant to NAFIN for the equivalent of US\$180,000 to help finance a project which consists of two components: (i) a pilot CFC (Chlorofluorocarbons) recycling demonstration program; and (ii) a training program to enhance manufacturing safety in aerosol producing facilities and to complete the elimination of the use of CFC propellants in Mexico. The proposed operation would be the first for Mexico under the Montreal Protocol Interim Multilateral Fund (MPIMF), which is administered by the Bank and jointly implemented with UNDP (United Nations Development Programme) and UNEP (United Nations Environment Programme).
2. Background on Ozone Depleting Substances (ODS). In September 1987, 24 nations, including Mexico, negotiated and signed the Montreal Protocol on Substances that Deplete the Ozone Layer (The Protocol). Mexico was the first country to ratify the Protocol on March 31, 1988. The Protocol limits the production and consumption of three groups of ozone-depleting substances, as shown in Table 1 of Annex I. In 1989, Mexico consumed approximately 8,130 metric tons of Group I Substances (primarily CFC-11 and CFC-12). Mexico also consumed 260 metric tons of Group II Substances (namely, Halon-1211 and Halon-1302), and about 9,000 metric tons of methyl chloroform. All carbon tetrachloride produced in or imported to Mexico is consumed to manufacture CFC-11 and CFC-12. The Montreal Protocol requires the phasing out of ODS by the year 2000, but allows developing countries a 10 year grace period, i.e., until 2010. However, Mexico publicly announced in July 1991 its intentions to complete the phase out as fast as industrialized countries by the year 2000.
3. The Secretaria de Desarrollo Urbano y Ecologia (SEDUE), as the lead environmental agency in Mexico, is currently engaged in a number of activities to encourage protection of the ozone layer. SEDUE has negotiated and signed several voluntary agreements with producers and users of ozone depleting compounds to encourage reductions in unnecessary emissions. SEDUE is in the process of negotiating additional voluntary agreements and it is identifying ozone protection projects which could assist specific firms or industry sectors in reducing their consumption of the controlled substances. To meet the growing demands of its ozone protection program, SEDUE has created a specialized Ozone Protection Technology Center (OPTC).
4. Background on Mobile Air Conditioning Systems (MACS) and Aerosols. In Mexico, approximately 780 metric tons of CFC-12 are consumed by MACS every year. Over 70% of this consumption is emitted during the repair of MACS. When a car is brought to a service center for MACS servicing, the current practice is to disassemble the system for inspection and to vent the refrigerant (CFC-12) into the atmosphere, which contributes to ozone depletion. If this practice were to continue, Mexico would emit approximately 1,000 metric tons through the year 2010 (or about 110 mt/y). The market for servicing of MACS comprises two segments: new car dealers and independent service shops. The independent service segment is larger both in terms of number of locations and in terms of number of cars serviced. The demonstration is intended to target this larger segment.
5. Approximately 88% of all aerosols manufactured in Mexico do not contain CFCs, and the remaining 12% account for 76 metric tons of CFC-12 and CFC-11. Most of these

aerosols use hydrocarbons as substitutes for CFCs. In contrast with CFCs, which are non-flammable, hydrocarbons are flammable and require proper safety features for handling. Although the use of hydrocarbon propellants for aerosols is a well-established technology in Mexico, some of these plants are operating below accepted industry safety standards. Firms currently using CFCs perceive the use of hydrocarbon as risky, despite their much lower raw material costs as compared with CFCs. In addition to flammability risks, a switch from CFCs to hydrocarbons requires significant efforts to reformulate the products to preserve their effectiveness.

6. Project Background. Since January 1991, the Bank and the Mexican Government have been engaged in a dialogue on the policy and approach to complement SEDUE's current efforts and achieve the ODS phase out as mandated by the Montreal Protocol in the most efficient and least-cost way. In this dialogue, the emphasis has been on (i) establishing an adequate policy framework to encourage efficient substitution and adoption of non-controlled substances and technologies by industry; and (ii) strengthening Mexico's technical and institutional capabilities to prepare, appraise, and monitor the implementation of ozone protection projects. Indeed, such an approach is best suited to implement the Montreal Protocol measures in Mexico because most ozone protection projects identified so far in the country tend to be small (less than \$150,000 total cost) and mainly require funds for recycling, training, demonstration, and workshops. Since it would not be feasible for the Bank to review and authorize grant financing of a large number of small ODS control projects, we have initiated discussions on establishing a mechanism in Mexico for preparing, appraising, and financing these projects, with the Bank only making an ex-post review of project proposals to ensure full compliance with MPIMF's eligibility criteria prior to approving them and authorizing disbursement. There will not be any "free limit" (i.e., delegation of approval authority to the financial intermediary for subprojects below a certain limit), however, as all ODS control projects need to be cleared by the Technical Review Panel. This wholesale approach to ozone protection financing could be adopted in future MPIMF projects Bank-wide. With regard to the policy framework, there is a need to complement SEDUE's approach of voluntary agreements signed by individual companies and industry associations with incentive measures to ensure that the Montreal Protocol implementation can be easily monitored and be at the least possible cost to industry.

7. Prior to these discussions, SEDUE had primarily put the accent on projects and, with the assistance of the U.S. EPA (United States Environment Protection Agency) and CANACINTRA (Camara Nacional de la Industria de Transformacion), prepared and submitted to the Bank in June 1991 the proposed project for financing under the MPIMF. However, during a Bank mission to Mexico in July 1991, SEDUE (as well as SHCP - Secretaria de Hacienda y Credito Publico - and SECOFI - Secretaria de Comercio y Fomento Industrial) agreed to rely more on market-based incentives in phasing out the use of ODS in Mexico. In particular, they agreed to try the tradable permit system to encourage economically rational ODS emissions reductions. They also agreed that a mechanism should be established in Mexico to prepare and process individual ozone protection subprojects and that not all funds channeled to industry should be in the form of grants. Investment by industry to convert to non-ODS technologies and other profit-oriented projects would be given loans on the same conditions as those existing in Mexico for other environmental projects. These policies form the basis of the strategy outlined in the Country Program recently submitted by SEDUE to the MPIMF's Executive Committee. Implementation of this Program is expected to be supported by a MPIMF-funded follow up operation which is under preparation by the Bank and would emphasize policy measures and strengthening of SEDUE.

8. While that follow up operation is being prepared, the Bank agreed to process the proposed project for financing on an exceptional basis for two reasons. First, the Bank and the Mexican Government are now in full agreement on the approach and strategy to implement the Montreal Protocol. Second, like Mexico, we believe that it

is important to move quickly and show that the Bank can be flexible and can rapidly commit the funds for good ozone protection projects consistent with the Montreal Protocol guidelines and within the Bank's functions and authority.

9. The MPIMF's Executive Committee has endorsed the Bank's work program on ozone protection activities for Mexico and expects an accelerated implementation of the proposed project. A Country Program outlining the strategy and action plan aimed at eliminating the use of ODS, which is required by the Executive Committee for each developing country requesting assistance from the MPIMF, has been completed by SEDUE and has been submitted to the Executive Committee for approval during its November 1991 meeting in Montreal. The proposed project is consistent with both Mexico's Country Program and with MPIMF's eligibility criteria (Annex 2).

10. Project Objectives. The purpose of the project is twofold: (i) to demonstrate on a pilot basis the feasibility of recycling technology for CFC-12 used in MACS and encourage its widespread diffusion, and (ii) to support the ongoing process of elimination of CFC propellants in aerosol manufacturing in Mexico with a training program.

11. Project Description. The project consists of two components: (i) a MACS Recycling component (\$76,000); and (ii) an Aerosols Training component (\$104,000). The MACS Recycling component involves the installation of pilot recycling equipment, supplemented with training and public outreach. For this demonstration, it will be necessary to enlist the cooperation of a firm with an established position in the independent sector of M.A.S servicing so that multiple sites can be covered, a sufficient number of cars will be available, and service technicians can be provided for the training and recycling demonstration. The MACS service firm must meet SEDUE's technical and managerial requirements, and SEDUE will check the operation of the selected firm to ensure that it is environmentally sound. The Aerosols Training component will utilize a workshop, plant safety reviews, and in-plant training to enhance safety in the manufacture of aerosols. More details on the two components are given in the Technical Annex.

12. Project Implementation. SEDUE will be the primary implementing agency for the project. It will be assisted by an independent MACS servicing firm for the pilot demonstration part of the program. The budgets for both components are included in Tables 1 and 2 of Schedule A of the Technical Annex. These budgets will be managed by SEDUE's OPTC, except for \$42,000 required for the pilot recycling, which will be allocated to the MACS servicing firm participating in the project for the purchase of the recycling equipment. Entities helping SEDUE by providing in-kind technical assistance for project set-up are expected to include institutions such as USEPA and the Mexican Automobile Manufacturers Association, CANACINTRA, and the following U.S. organizations: the Society of Automotive Engineers, the Mobile Air Conditioning Society, and Underwriters Laboratory. Selection of consultants for specific project implementation tasks will be made following the Bank's guidelines for selecting consultants. NAFIN will be responsible for channelling the grant funds to the project implementing agencies and beneficiaries and for keeping the project accounts, including arranging for their auditing by reputable auditors and for sending the audits to the Bank.

13. Project Sustainability. The project is designed to encourage adoption of technologies which will reduce and safely eliminate the use of ODS. The project's strong emphasis on hands-on training is believed to facilitate technology replication by eliminating perceived risks associated with unfamiliar technology.

14. Rationale for Montreal Protocol Financing. As per the Implementation Guidelines and Criteria for Project Selection established by the Executive Committee of the Montreal Protocol Interim Multilateral Fund during its third meeting in April

(UNEP/OzL.Pro/ExCom/3/18, April 18, 1991), all technical assistance, pre-investment and investment activities which lead to reductions in CFC emissions are eligible for MPIMF financing. Annex 2 summarizes the Montreal Protocol implementation and selection criteria. The proposed project is consistent with these guidelines and criteria and with the Country Program prepared by SEDUE. It is primarily intended to serve as promoter of technological change which may not otherwise occur in the MACS and aerosol sectors. Because the grant amount is below \$500,000, specific approval by the Executive Committee is not required.

15. Actions to be Agreed. The following actions will be agreed with the Government before signing of the Grant Agreement: (i) agreement between the Government, NAFIN (the proposed financial agent), and the Bank regarding project administration, including procurement, disbursement of funds, record keeping, and reporting requirements; and (ii) content of the agreement between NAFIN and the participating MACS firm, clearly specifying the rights and obligations of the latter in the project, including the ownership and use of equipment financed by the grant beyond the initial demonstration period. Signing of a satisfactory agreement with the selected MACS firm is a condition of disbursement of the MACS recycling component. A condition of effectiveness of the Grant Agreement would be the execution of a satisfactory agreement between NAFIN and the Government for transfer to the Government by NAFIN of grant proceeds other than the US\$42,000 equivalent allocated to the MACS firm.

16. Project Benefits. If the MACS recycling technology demonstrated by the project is adopted widely in Mexico as expected, approximately 1,000 tons of cumulative emission of ODS would have been prevented during the period 1991-2010. Also, the project would support a virtual elimination of ODS still in use in aerosol manufacturing in Mexico by 1995. In 1989, these controlled substances (CFC-11 and CFC-12) amounted to over 76 tons. Furthermore, the aerosols component provides an opportunity to the Government to detect and address potential industrial safety shortcomings, which may provide a useful feedback for existing regulations in this area.

17. Risks. The major risk of the project is its failure to attract sufficient participation from the MACS servicing and aerosols industries. The inclusion in the project design of promotional activities together with the support of industry associations and enforcement actions by SEDUE, if necessary, should minimize this risk.

18. Recommendation. I am satisfied that the proposed Ozone Projects Trust Fund grant would comply with the Executive Directors' Resolution No. 91/5, establishing the Global Environment Facility, and I recommend that the Senior Vice President, Operations, approve the proposed grant.

Shahid S. Husain
Regional Vice President
Latin America and the Caribbean Region

Attachments
Washington, D.C.
October 9, 1991

ANNEX 1 - TECHNICAL ANNEX

TABLE 1

SUBSTANCES CONTROLLED BY THE MONTREAL PROTOCOL
AND PHASE OUT TIMETABLE FOR INDUSTRIALIZED COUNTRIES

Group	Substance	Control Measures
<u>Group I*</u>		
CFCl ₃	CFC-11	20% reduction by 1993; 50%
CF ₂ Cl ₂	CFC-12	reduction by 1995;
C ₂ F ₃ Cl ₃	CFC-113	85% reduction by 1997;
C ₂ F ₄ Cl ₂	CFC-114	100% reduction by 2000
C ₂ F ₅ Cl	CFC-115	
<u>Group II</u>		
CF ₂ BrCl	Halon-1211	50% reduction by 1995; 100%
CF ₃ Br	Halon-1301	reduction by 2000 (with
C ₂ F ₄ Br ₂	Halon-2402	exemption for essential uses)
CCl ₄	Carbon Tetra- chloride	85% reduction by 1995; 100% reduction by 2000
<u>Group III</u>		
C ₂ H ₃ Cl ₃	Methyl Chloroform (1,1,1-Tri- chloroethane)	Freeze by 1993; 30% reduction by 1995; 70% reduction by 2000; 100% reduction by 2005

* Ten additional fully halogenated chlorofluorocarbons were included in Group I as part of the June 1990 Amendments to the Protocol. These substances have limited applications in industrialized countries and are not currently used in Mexico.

Source: UNEP. London, 27-29 June 1990. Draft Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer.

- 6 -

ANNEX 1 (CONT'D)

PROJECT DESCRIPTION

(i) MACS Recycling Component

The demonstration program consists of two primary elements: installation of pilot recycling equipment and a recycling technology training and public outreach program. Procurement of the equipment will be overseen by NAFIN in consultation with SEDUE, following World Bank guidelines. The selected participating firm (the firm) will be responsible for installation, training the service technicians, and operating the recycling equipment. The firm will own the equipment after completion of the demonstration project, and will commit to hosting future MAC recycling demonstrations for a period of two years. A MAC service firm has already volunteered six sites for the installation of pilot recycling equipment. This firm will cooperate with NAFIN and SEDUE to oversee the procurement, installation, training of service technicians, and operation of the recycling equipment. The goal of the recycling technology training component is to have other firms currently conducting MACS repair witness a demonstration of the recycling equipment at the pilot sites and to learn from their experience. The public outreach program will increase public awareness of correct MAC operating and maintenance procedures. This includes the dissemination of public education documents on the importance of preserving the ozone layer, how CFC-12 emissions from MACS contribute to ozone depletion, and the importance of correct operating and maintenance procedures for MACs.

(ii) Aerosols Training Component

The manufacturing safety training program consists of four main elements: (i) a technology workshop; (ii) plant safety review; (iii) in-plant training; and (iv) transfer of program experience to other Latin American countries. The workshop on CFC alternatives for aerosols, to be held no later than January 18, 1992, will present information on the technologies that can ensure the safe elimination of CFCs in at least 96 percent of all aerosol units produced in Mexico*. A consultant will conduct a review of existing safety equipment and operating practices in 48 aerosol plants in Mexico. The consultant will, no later than April 30, 1992, prepare a report with recommendations on ways to enhance safety measures. The report will also include estimates of the costs and the benefits (e.g., prevention of accidents) associated with the recommended changes in equipment/facilities and an explanation of the risks likely to be eliminated with such changes. Companies now filling aerosol products with hydrocarbons and those companies involved in converting to hydrocarbons will be invited to participate in a training program. The training program will be conducted in each plant to address the special circumstances of each company and follow the recommendations of the safety review. Finally, educational materials, and products from the technology workshop and training program will be transferred from Mexico to other Latin American countries.

* A maximum of 4% of all aerosols produced in Mexico are estimated to be specialized products which may require the use of CFCs in the short-run as no proven alternatives exist for such products.

SCHEDULE A: ESTIMATED PROJECT COSTS

A. TABLE 1: BUDGET FOR MACS RECYCLING

PROGRAM COMPONENT	ESTIMATED BUDGET
<u>Pilot Recycling Project:</u>	
• 6 Recycling Machines:	\$42,000
• One-time Training:	\$ 1,000
• Evaluation:	\$ 2,500
• Contingency:	\$ 3,125
	=====
Subtotal:	\$48,625
<u>Training and Public Outreach Program:</u>	
• Translation of technical standards and manuals:	\$9,400
• Preparation of public education brochure:	\$4,800
• Workshop and materials:	\$8,000
• Live demonstration:	\$3,200
• Contingency:	\$1,675
	=====
Subtotal:	\$27,075
TOTAL BUDGET	\$75,700

SCHEDULE A: ESTIMATED PROJECT COSTS (CONT'D)

TABLE 2: BUDGET FOR AEROSOLS

PROGRAM COMPONENT	ESTIMATED BUDGET
• Workshop	\$7,150
• Plant Safety Review	\$36,615
• In-Plant Training	\$43,235
• Project Administration Costs	\$11,000
• Contingency	\$6,300
TOTAL BUDGET	\$104,300

SCHEDULE B

PROCUREMENT ARRANGEMENTS*
((\$000))

Procurement Method						
	ICB	LCB	Other 4a		N.A	Total
			MACs Recycling	Aerosols		
1. Consultant Services	--	--	28.9	98.0	--	126.9
2. Equipment	--	--	42.0 4b	--	--	42.0
3. Contingency	--	-	4.8	6.3	--	11.1
<u>Total</u>	<u>0</u>	<u>0</u>	<u>75.7</u>	<u>104.3</u>	<u>0</u>	<u>180.0</u>

* All Figures Correspond to Multilateral Fund Financing.

4a Contracting of Consultants in accordance with Bank guidelines.

4b Local or international shopping.

DISBURSEMENTS
(\$000)

Category	Amount		Percentage Financing
	MACs Recycling	Aerosols	
1. Consultant Services	28.9	98.0	100 percent
2. Equipment	42.0	--	100 percent
3. Contingency	4.8	6.3	100 percent
4. Overall Contingency	--	--	--
Total	75.7	104.3	

ESTIMATED DISBURSEMENTS

MACS Recycling Component
(\$000)

	4th quarter 91	1st Quarter 92	2nd Quarter 92
Quarterly	48.2	14.7	12.8
Cumulative	48.2	62.9	75.7

Aerosols Component

	4th Quarter 91	1st Quarter 92	2nd Quarter 92	3rd Quarter 92
QUARTERLY	27.2	27.0	23.0	27.1
CUMULATIVE	27.2	54.2	77.2	104.3

SCHEDULE C

Timetable of Key Processing Events

<u>Event</u>	<u>Date</u>
Time taken to prepare	3 months
Prepared by	SEDUE with USEPA assistance
First Presentation to the Bank	June 13, 1991
Departure of Bank Mission	July 8, 1991
Negotiations	October, 1991
Planned date of effectiveness	November, 1991
List of relevant PCRs and PPARs	Not applicable
Planned completion date	August, 1992

ANNEX 2

SUMMARY IMPLEMENTATION GUIDELINES AND CRITERIA FOR MPIMF FINANCING

The following is a summary of the implementation guidelines and criteria for project selection drafted by the Executive Committee of the MPIMF.

- I. Roles and Responsibilities of Executive Committee and Implementing Agencies
- A. The Executive Committee develops and monitors the implementation of policies, guidelines, and arrangements, including disbursement of resources.
 - B. The Fund Secretariat assists the Executive Committee in discharging its functions.
 - C. The United Nations Environment Programme (UNEP) operates as treasurer of the Fund. It also assists in political promotion, research, data-gathering, and clearing-house functions.
 - D. The United Nations Development Programme (UNDP) assists in feasibility and pre-investment studies, and in other technical assistance measures.
 - E. The World Bank assists in administering and managing the financing of agreed incremental costs of developing countries in complying with the Protocol.
 - F. Other agencies may be invited by the Executive Committee to assist.
- II. Framework for Activities Supported by the Fund
- A. Country Programs
 - 1. The Executive Committee invites each developing country to develop a country programme.
 - 2. The country programme describes existing use of controlled substances, the policy and institutional framework as it relates to the Protocol, and government and industry responses to the Protocol. It also delineates a strategy, action plan, budget, and timetable for implementing the Protocol. In developing its country programme will qualify for funding, a country may request assistance from the implementing agencies.
 - 3. The developing country submits its country programme to the Executive Committee for consideration and approval. It then serves as a basis for project preparation and further assistance from the implementing agencies. However, projects prepared prior to completion of the country programme are eligible for financing if consistent with the project eligibility criteria described in section III below.
 - B. The implementing agencies will each develop a work programme with recipient countries.

- C. Projects exceeding \$500,000 will be approved by the Executive Committee. Project proposals under \$500,000 will be approved by the implementing agencies within the context of an approved work programme and after confirmation by the Fund Secretariat on the availability of funds and contributions in-kind.

III. Project Eligibility Criteria

- A. Assistance is available only to developing nations in compliance with the Protocol, and only for incremental costs of implementing articles 2A to 2E of the Protocol.
- B. All projects must receive approval of the developing country's government. A project may be any activity qualifying for assistance, and could include, among other things, training, technical assistance, pre-investment studies, country programme preparation, technology development or capital investments.
- C. Assistance for capital investment projects is available only for incremental costs incurred in supply of substitutes, use of substitutes in manufacturing as an intermediate goal, and in the end use of substitutes, unless approved by the Executive Committee.
- D. Projects for assistance other than capital investment will also qualify.
- E. Assistance will also be available for projects that are cost-effective and based on environmentally sound alternative technologies or substitutes to the substances restricted by the Protocol, taking into account the industrial strategy of the country.

IV. Guidelines for Setting Priorities

- A. Projects with potential for most cost-effective and efficient reduction in emissions of controlled substances.
- B. Projects involving broad geographical balance.
- C. Projects with ease of replication and technology transfer to other developing countries.
- D. Projects with the fastest reduction of controlled substances.

V. Grants, Loans, and In-Kind Support

- A. All technical assistance and pre-investment activities shall be provided in the form of grants or, in certain circumstances, in-kind support.
- B. At the request of developing countries, in-kind support can be provided in the form of expert personnel, technology, technical documentation, and training.
- C. Assistance shall generally be in the form of grants. Where an investment has a short payback period, a highly concessional loan may be considered.

VI. Requirements for Reporting to the Executive Committee

The Secretariat, the UNDP, the UNEP, the World Bank, and other Implementing Agencies are each required to provide regular reports on their respective activities, progress, budget, and plans related to the Protocol activities.