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

Fourteenth Meeting
Nairobi, 29-30 September 1994

1994 UNDP WORK PROGRAMME AMENDMENTS

This document includes:

- Comments and Recommendations from the Fund Secretariat
- UNDP 1994 Work Programme Amendments

COMMENTS AND RECOMMENDATIONS FROM THE FUND SECRETARIAT

COMMENTS

1. UNDP is requesting approval from the Executive Committee for its Work Programme Amendments for the 1994 calendar year.

2. The activities in the Work Programme Amendments submitted for funding were discussed between the Secretariat and UNDP headquarters.

3. The Work Programme Amendments include the following requests:

Projects under US \$500,000	US \$1,069,000
Project support costs (13 per cent)	US \$ 185,705

4. The amount of US \$1,254,705 (including project support costs of US \$185,705) is being requested as funding for projects under US \$500,000 to undertake activities in 6 countries (including one global project). These activities cover project preparation, institutional strengthening, development of cost-effective phase-out approaches and an investment project in the foam sector.

5. The activities for which funds are being requested and amounts recommended by the Secretariat for approval are indicated in the attached Table.

Project No. 2, Argentina: Conversion to non-CFC technology in the manufacture of flexible and integral skin polyurethane foam at PRENSIPLAST Company

6. The implementation of the investment project on conversion to non-CFC technology in the manufacture of flexible and integral skin polyurethane foam will eliminate 30 tonnes of CFC-11 at PRENSIPLAST Company, Argentina.

7. Incremental capital costs of US \$270,000 cover modification of the foaming system, installation, trials, technology transfer and training. Incremental recurring costs reflect the increase for the new formulation and the higher cost of HCFC-141b blowing agent. The cost-effectiveness of the project is US \$11.50 per kg. ODP phased out which is in the high range of similar projects approved by the Executive Committee so far.

RECOMMENDATIONS

8. The Secretariat recommends approval of US \$1,254,705 for funding of activities under the 1994 UNDP Work Programme Amendments, including final approval in the amount requested, i.e. US \$345,000 for PRENSIPLAST Company, Argentina and project support costs of US \$185,705.

1994 UNDP Work Programme Amendments
Activities/Projects and Corresponding Funding Levels

Country	No.	Activity/Project	Amount Requested (US \$)	Amount Recommended (US \$)
Argentina	1.	Project preparation assistance	70,000	70,000
	2.	Conversion to non-CFC technology in the manufacture of flexible and integral skin polyurethane foam at PRENSIPLAST	345,000	345,000
	3.	Institutional strengthening project	359,500 ¹	0
Bangladesh	4.	Project preparation assistance	35,000	35,000
	5.	Institutional strengthening under the Multilateral Fund for the Implementation of the Montreal Protocol	150,000	150,000
Jamaica	6.	Project preparation assistance	30,000	30,000
Mexico	7.	Project preparation assistance	100,000	100,000
Pakistan	8.	Institutional strengthening project	259,000	259,000
Sri Lanka	9.	Project preparation assistance	30,000	30,000
Global	10.	Determination of cost-effective phaseout approaches for enterprises with relatively small ODS use in foams	50,000	50,000
		PROJECT TOTAL	1,069,000	1,069,000
		PROJECT SUPPORT COSTS (13%)	185,705 ²	185,705 ²
		TOTAL	1,254,705	1,254,705

¹ Annex I includes a request from the World Bank to transfer US \$359,500 approved for the World Bank at the 13th Executive Committee Meeting to UNDP.

² Including US \$46,735 project support costs for Argentina institutional strengthening project.

ANNEX I

The World Bank

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTBAFRAD
INTERNATIONAL DEVELOPMENT ASSOCIATION

1818 H Street N.W.
Washington, D.C. 20433
U.S.A.

(202) 477-1234
Cable Address:
Cable Address: INDEVAS

August 31, 1994

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

Dear Dr. El-Arini:

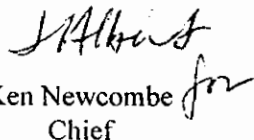
This is to advise the Executive Committee of an adjustment to the World Bank's Montreal Protocol work program for Argentina. The adjustment consists of a transfer to UNDP of the institutional strengthening component (US\$359,500) approved by the Executive Committee at its 13th meeting in July. This will facilitate disbursement of these resources faster which are critically needed by the country to establish its Montreal Protocol desk. The Bank is pursuing its assistance to the Government of Argentina for the preparation of an investment operation in support of the implementation of the Country Program.

This action is based on our experience that a grant of this nature to the Republic of Argentina would require a Presidential Decree which could take several months to be finalized. UNDP is not subject to this requirement and has agreed to facilitate the execution of the component. This will strengthen our cooperation in assisting Argentina's Montreal Protocol program. Given the small amount involved and the readiness of the local coordinating office to utilize these funds, this transfer to UNDP will also allow for faster disbursements.

We understand that UNDP will be requesting an amendment to its Work Program to cover the agency fee of 13 percent which amounts to US\$46,735.

A copy of this letter has been cleared by the Government of Argentina. I thank you in advance for your prompt attention to this matter.

Sincerely,


Ken Newcombe
Chief

Environment Coordination Division
Environment Department

cc: Mr. R. Kurtz, Secretary of Natural Resources and Human Environment
Mr. F. Pinto, UNDP.
Messrs. F. Guerrero, Kapiga, UNEP Treasury.

**EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND
FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL**

(14th Meeting, 29-30 September 1994, Nairobi)

**1994 WORK PROGRAMME AMENDMENT
OF THE
UNITED NATIONS DEVELOPMENT PROGRAMME**

2 September 1994

	<u>US \$</u>
5. JAMAICA: Project preparation assistance	30,000
6. MEXICO: Project preparation assistance	100,000
7. PAKISTAN: Institutional Strengthening	259,000
8. SRI LANKA: Project preparation assistance	30,000
9. GLOBAL: Determination of cost-effective phaseout approaches for enterprises with relatively small ODS use in foams	50,000

TOTAL	\$ 1,069,000

- D. The documentation for the above project proposals is attached. Project support costs (13%) would be added to each project proposal above.
- E. At the 13th Executive Committee Meeting in July 1994, an Institutional Strengthening project for Argentina with a budget of US \$359,500 was approved with the World Bank as implementing agency. At this 14th Executive Committee Meeting the World Bank, with the approval of the Government of Argentina, is requesting that the project be transferred to UNDP for implementation. UNDP is in agreement with this request. Further, since project support costs were not approved for this project, UNDP requests ExCom approval of 13% project support costs (US \$46,735) for this project.

(14ECWP2)

BRAND	HP/LP	TYPE	OUTPUT	APPLICATION	CFC USE
KRAUSS MAFFEI	HP	RIM STAR -155	300 l/min	F-PUF	13.0t
BATTENFELD	HP	SH 15-15	32	IS-PUF	21.5t
KRAUSS MAFFEI	HP	PU-16	32	SR-PUF	-
ELASTOGRAN	HP	PU-30	32	R-RIM	-
HENNECKE	HP	HK-245	32	MICROCELLULAR FOAM	1.0
ADMIRAL	HP	PRENSI	32	(NOT IN USE)	-
TOTAL CFC-USE (7/93-6/94)					35.5t

TABLE 2: Equipment Information

4. PROJECT DESCRIPTION

PRENSIPLAST will under this project implement preselected CFC-replacement technologies for the production of cushions, steering wheels and microcellular foam.

For cushions, all water-blown formulations are selected. For integral skin foam HCFC-141b is initially selected; this will ultimately be followed by a non-ODS technology (water, HFCs) when technically and economically feasible. For microcellular foam, air loading is selected.

The project is the first one in this category in Argentina and will serve as a demonstration project for the technical and financial feasibility of ODS-phaseout projects under the Multilateral Fund in Argentina.

5. TECHNOLOGY

5.1 OVERVIEW

AUTOMOTIVE BACK CUSHIONS (FLEXIBLE MOLDED FOAM)

CFC-11 is used in this application to soften the foam. Available replacements are (ref.: UNEP Technical Options Assessment):

- o Alternative blowing agents (Methylene Chloride, HCFC-141b, HCFC-123)
- o Softening agents
- o All water blown foams

AUTOMOTIVE STEERING WHEELS (INTEGRAL SKIN FOAM)

CFC-11 serves predominantly the skin formation and the viscosity reduction of the system. Available replacement/reduction options are:

- o Reduced CFC technology
- o HCFCs (-22; -123; -141b)
- o All water based
- o Hydrocarbons (n-pentane; isopentane, butane)
- o Methylene chloride
- o "Renosol" technology (HFC-134a/water blend)

MICROCELLULAR FOAM

Air loading is (ref. UNEP Technical Options Review) the general option for CFC replacement in this low-CFC application.

5.2 SELECTION

In cushion applications, all water blown formulations will be used. This is economically and environmentally the preferred solution. HCFC-123 and -141b are eliminated based on price and/or environmental/safety factors; methylene chloride based on performance.

For steering wheels, the use of HCFC-141b is selected in combination with reduced ABA. Water based systems are eliminated based on performance and HCFC-123 based on safety. HCFC-22 could be used and will be evaluated, but could be more complicated in processing. The plant layout makes hydrocarbon use problematic from a safety standpoint. Methylene chloride is currently not a proven technology and Rhenosol not locally available.

For microcellular foams air loading will be applied.

5.3 IMPACT ON PRODUCTION PROCESS

The higher viscosities of non-ABA/low-ABA systems requires more stringent specifications of metering equipment, mixing efficiencies and temperature control of the chemicals.

PRENSIPLAST operates high pressure foam equipment which can handle the higher viscosities adequately. The mixing heads are, however too large and need replacement. The storage facilities for the polyol systems need to be pressurized and climatized (temperature control on the tank or the tank area).

6.2 OPERATING COSTS

F-PUF:	BEFORE:	13t CFC-11 @ 2,600.....USD	33,800
		87t Polyol @ 2,340.....USD	203,580
		52t MDI @ 2,600.....USD	135,200
	AFTER:	100t Polyol @ 2,450.....USD	245,000
		58t MDI @ 2,45000.....USD	142,100
		DIFFERENCE.....USD	14,500
IS-PUF:	BEFORE:	21.5t CFC-11 @ 2,600.....USD	55,900
	AFTER:	12.8t HCFC-141b @ 5,000.....USD	64,000
		9.7t MDI @ 2,450.....USD	23,765
		DIFFERENCE.....USD	31,865
MC-PUF:	BEFORE:	1.0t CFC-11 @ 2,600.....USD	2,600
	AFTER:	Air loading (no cost).....USD	-,-
		DIFFERENCE.....USD	(2,600)
TOTAL INCREMENTAL RECURRENT COST/Y.....USD			43,765
=====			

This amounts at 10% discount over 2 years to a Net Present Value of USD 79,070, say:

USD 75,000

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6.3 UNIT ABATEMENT COST

a)	ODS Reduction Capital Costs.....USD	270,000
b)	Annual Incremental Costs.....USD	
43,765	c) Capital Recovery factor	
(10%/10y).....	0.16275	
d)	ODS Reduction/y.....kg	35,500

Unit Abatement Costs [{a(c) + b}/d].....USD/kg/y 2.47

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7. FINANCING PLAN

The company requests a grant covering the full incremental capital and recurrent costs amounting to

USD 345,000

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8. PROJECT IMPLEMENTATION

8.1 MANAGEMENT

UNDP and INTI will oversee the successful implementation of the project. The project will be carried out by PRENSIPLAST at its facility.

8.2 SCHEDULE

TASK	Q1	Q2	Q3	Q4
Project Preparation				
Specifications	x			
Tenders, Selection	x			
Purchase Orders	x			
Site preparation				
Civil Works		x		
Equipment arrival				
Customs Clearance		x		
Installation		x		
Startup, Trials, Training			xxx	
Commissioning				x

9. REQUIRED REGULATORY ACTION

The project will not require regulatory action.

10. PROJECT IMPACT

This project will eliminate the use of at least 35.5 tonnes of CFC-11 in the first year of implementation. The project will employ commercially and environmentally acceptable technology. The project serves as a demonstration project, and will thus be instrumental in the subsequent elimination of the use of CFCs in similar plants in Argentina (CFC-consumption 135 tonnes in 1992).

ANNEX: Technical Assessment

...\ARGENTINA\PRENSIPLAST.PRD
94-08-24/004

TECHNICAL REVIEW

1. COUNTRY: ARGENTINA
2. PROJECT TITLE: PRENSIPLAST conversion to non-CFC technology in the manufacture of flexible and integral skin polyurethane foam
3. (SUB)SECTOR: Foamed Plastics/Flexible & Semi-Rigid Molded Foams
4. CP RELATIONSHIP: Consistent with the country's action plan
5. TECHNOLOGY:

The company's choice of technology is the use of water/HCFC-141b for integral skin foam and all water blown foam for cushions. Other technologies were considered but eliminated on performance, safety or cost. The choice is supported.

HCFC-141b constitutes a "transition" technology. The equipment, however, is capable to handle the expected next generation of zero ODP HFC technologies with no or minor modifications.

The technology will be implemented with the help of an external consultant (steering wheels) and chemical suppliers (cushions).

The operational cost are higher than for CFC-11, predominantly related to the cost of HCFC-141b but also related to the higher isocyanate use.
6. ENVIRONMENTAL IMPACT: HCFC-141b has an ODP of 0.11 and a GWP of 0.12 (relative to CFC-11). The compound does not pose a significant fire OR inhalation risk. Recommended PEL is 500 ppm, which allows processing under the standard ventilation conditions for the existing process.
7. PROJECT COSTS: All cost components included in the project are essential for the conversion program. These costs are relatively low as only minor retrofitting is required. The level of service and the existing capacity will be maintained. The project does not include elements that could reasonable be expected to be present prior to conversion.

EQUIPMENT: The project is based on retrofit of baseline equipment. The existing capacity will remain unchanged.

**START-UP/
COMMISSIONING:** Training/technology transfer cost are appropriate. No commissioning costs are included.

OPERATING COSTS: disbursement for IRC is requested. From comparison with other projects, such a cost increase could be expected based on higher formulation costs. The formulations and price information for the future systems originate from the chemical supplier.

OTHER COSTS: Other costs includes trial costs, technology transfer and 10% contingency. These cost are supported.

**COST
EFFECTIVENESS:** The unit abatement costs are reasonable compared with other projects in flexible/semirigid molded PUF (USD 2.53 COMPARED WITH KEY ASSETS/MAL 2.68, PU-TECH/MAL 2.41, YANGFENG/CHI 1.66 AND DASA/INS 2.71).

8. IMPLEMENTATION: Adequate

9. RECOMMENDATION: The project is recommended for approval as proposed.

PREPARED BY: Jerry S. Pool
DATE: August 10, 1994

PROJECT OUTLINE

COUNTRY: BANGLADESH
SECTORS COVERED: Aerosols and refrigeration
NATIONAL ODS CONSUMPTION: 235.9 tonnes ODP in 1993
PROJECT TITLE: Project preparation assistance
DURATION: Nine months
PROJECT IMPACT: Preparation of projects in the aerosols and refrigeration sectors
PROPOSED BUDGET: US\$ 35,000
IMPLEMENTING AGENCY: UNDP
NATIONAL COORDINATING AGENCY: Department of Environment, Ministry of Environment and Forests

******* PROJECT DESCRIPTION**

The Bangladesh Country Programme (CP) was prepared with the assistance of UNDP. In 1993, total ODS consumption was 281 metric tonnes amounting to 235.9 metric tonnes ODP equivalent. The percentage shares of ODS consumed by substance were as follows: CFC-11 (24%), CFC-12 (56%), HCFC-22 (17%), Methyl Chloroform (2%), Halons (0.9%) and Carbon Tetrachloride (0.1%). The sectoral shares of ODS consumption are as follows:

- a) refrigeration and air-conditioning, cold storage, fish freezing plants, ice cream and dairy plants, etc (55%)
- b) aerosols sector use (42%)
- c) use of methyl chloroform, carbon tetrachloride and halons in pharmaceutical, chemical & fire fighting sectors (3%).

The CP is being presented for approval at the 14th Executive Committee (29-30 September 1994, Nairobi). UNDP is designated as implementing agency for technical assistance and investment projects in the aerosols and refrigeration sectors.

Accordingly, the Government has requested UNDP to include in its work programme amendment a project preparation request for the following projects and technical assistance activities:

- a) Aerosols sector conversion from CFCs to LPG usage.
- b) Conversion of large CFC refrigeration units (cold storage, fish freezing plants, etc.) to ammonia. Such units total 60 at the present time.
- c) Conversion to non-CFCs in domestic refrigeration.
- d) Technical assistance for servicing to reduce CFC losses in domestic refrigeration as well as training, awareness and demonstration programmes on the above.

The US\$ 35,000 preparatory assistance funds will be utilized over a six-month period to recruit international and national consultants to work with national staff in the preparation of these project proposals. Local expenses incurred during the preparation of these project proposals will be covered. The completed project proposals will be submitted for approval at the 15th and subsequent meetings of the Executive Committee.

INSTITUTIONAL STRENGTHENING IN BANGLADESH UNDER THE MONTREAL PROTOCOL

COUNTRY:	BANGLADESH
PROJECT TITLE:	INSTITUTIONAL STRENGTHENING UNDER THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL
PROJECT DURATION:	3 YEARS
GNP/CAPITA IN US\$:	\$ 220 (1991)
IMPLEMENTING AGENCY:	UNDP
NATIONAL EXECUTING AGENCY:	DEPARTMENT OF ENVIRONMENT
TOTAL BUDGET:	US\$ 150,000

BACKGROUND:

No ozone depleting substances (ODS) are manufactured in Bangladesh. All ODS consumed in the country are imported. In 1993, ODS imports amounted to around 281 metric tonnes (MT) of which CFC-11, CFC-12 and HCFC-22 together accounted for 97% of the total (273 MT), with the remaining 3% covering methyl chloroform, halons and carbontetrachloride as can be seen below:

<u>Substances</u>	<u>% share</u>	<u>ODS Tonnes</u>	<u>ODP Tonnes</u>
CFC-11	24%	67.4	67.4
CFC-12	56%	157.4	157.4
HCFC-22	17%	47.8	2.7
Methylchloroform	2%	5.6	0.6
Halons	0.9%	2.5	7.5
Carbontetrachloride	0.1%	0.3	0.3
TOTAL:	100%	281.0	235.9

The sectoral shares of ODS consumption were as follows:

- refrigeration and air-conditioning, cold storage, fish freezing plants, ice cream and dairy plants, etc (55%)
- aerosols sector use (42%)
- use of methyl chloroform, halons and carbontetrachloride in the pharmaceutical, chemical and fire fighting sectors (3%).

OBJECTIVES AND SCOPE:

The objective of this project is to enhance the capability of the Department of Environment and the Ministry of Environment and Forests to coordinate the implementation of government actions developed to comply with the provisions of the Montreal Protocol.

The project comprises:

- o The establishment and provision of a National Ozone Office (or Ozone Cell) to carry out the coordination and monitoring functions;
- o The establishment of a Technical Committee on Ozone Depleting Substances (NTCODS) to provide technical advisory services to the Ozone Cell and to formulate strategies and action programmes; and
- o The organization of public awareness campaigns.

JUSTIFICATION:

Bangladesh is a signatory to and has ratified the Montreal Protocol. As a signatory, Bangladesh is committed to phasing-out the use of ODS by the time limits set in the Protocol and its Amendments. However, there is no institutional mechanism in Bangladesh set up to implement the provisions of the Protocol.

The Department of Environment is the technical arm of the Ministry of Environment and Forests and is responsible for all the environmental programmes in the country, from overall planning, management and liaison to programme monitoring. Therefore the Department of Environment is the appropriate institution to implement the Action Plan as specified in the Bangladesh Country Programme which has been submitted to the Executive Committee for approval at its 14th Meeting. However, available personnel in the Department of Environment cannot fulfil the wide array of activities required for effective ODS phaseout in the economy.

The creation of a separate Ozone Cell and a National Technical Committee on ODS will provide the dedicated institutional setting required for the effective implementation of the ODS phaseout programme in Bangladesh. In addition, an inter-ministerial/departmental National Technical Committee on Ozone Depleting Substances (NTCODS) will be constituted to provide technical advisory services to the Ozone Cell and to formulate strategies and action programmes for the effective implementation of the ODS phaseout action plan specified in the Country Programme.

In view of the Government's limited resources and budgetary constraints, support from the Multilateral Fund is sought to ensure the effective functioning of the Ozone Cell and the National Technical Committee on Ozone Depleting Substances.

BENEFICIARIES OF THE PROJECT:

The Institutional Strengthening project will help build the capacity of the Government to implement the ODS phaseout programme. An Ozone Cell will be created in the Department of Environment to carry-out policy and programme coordination and monitoring functions and an inter-ministerial committee will be created to provide advisory services and formulate strategies.

MANAGEMENT

The Ozone Cell will be headed by a Director who will report directly to the Director-General of the Department of Environment who will be the overall Coordinator of the Country Programme activities and who will, in turn, report to the Secretary of the Ministry of Environment and Forests. The Director-General of the Department of Environment will also act as the chairman of the inter-ministerial National Technical Committee on Ozone Depleting Substances (NTCODS) and ensure that periodic reports on the progress of implementation of the Country Programme are prepared and distributed to the members of the committee and relevant agencies.

STAFFING OF THE OZONE CELL

In addition to the Director of the Ozone Cell, there would be one other senior officer assigned to the Ozone Cell who would assist the Director in policy and programming matters. Use will be made of consultants in environmental economics and law to answer questions as needed and to contribute to the necessary economic analysis and the drafting of legal instruments necessary for implementation of the Country Programme. Two support staff will also be necessary to help carry-out the workload of the Ozone Cell.

ACTIVITIES

The main functions of the Ozone Cell will include:

- o to act as Secretariat for the National Technical Committee on ODS;
- o to coordinate and facilitate activities related to ODS phaseout;
- o to monitor activities related to ODS use in Bangladesh;

- o to be responsible for the reporting of data on the consumption of controlled substances to the Ozone Secretariat as required by Article 7 of the Montreal Protocol (UNEP/OzLPro/ExCom/13/47 paras 98-99);
- o to grant permits for ODS imports during the transition period (1995-2006);
- o to facilitate exchange of information and access to information on ODS phaseout activities, technology alternatives, technical reports, etc.;
- o to organize seminars/workshops on ODS substitutes, alternative technologies, recycling and recovery, etc.
- o to participate in relevant meetings on ozone layer protection issues;
- o to report to the Executive Committee, on a yearly basis, on progress being made in the implementation of the country programme (UNEP/OzLPro/ExCom/10/40 para. 135), following the format approved by the Executive Committee ((UNEP/OzLPro/ExCom/13/47, Annex II).

The main functions of the National Technical Committee on ODS will include the following:

- o to advise the Government on import and export policy concerning ODS during the transition period;
- o to advise the Government on the required legal instruments and regulatory measures for ODS phaseout and submit specific proposals for ODS phaseout to the Ministry of Environment and Forests;
- o to increase public awareness on environmental problems caused by ODS;
- o to review all new industrial project proposals using ODS or any transitional substances and prepare Environmental Impact Assessment (EIA) statements before the proposals can be approved for implementation.

INPUTS

The following are the required inputs:

Capital Equipment

Microcomputer system, photocopier, fax machine and E-mail setup

Personnel Costs

2 professional staff and two support staff

Operational Costs

These include clearing house functions (data processing/handling), organization of NTCODES and travel and related costs, telecommunications and postage, office supplies, equipment maintenance, travel costs on official missions and training courses and other miscellaneous expenses.

The Government will provide the office space and management services of the Director-General of the Department of Environment.

COST AND BUDGET

The requested support from the Multilateral Fund for the 3-year operation of the Ozone Cell is \$150,000 comprising:

Equipment	:	\$ 14,000
Personnel costs	:	54,000
Operational costs	:	<u>72,000</u>
Sub-total		140,000
Contingency		<u>10,000</u>
Total		150,000

A detailed budget is attached as Annex I.

PROJECT TIME FRAME:

The project will commence in January 1995 and will be completed by December 1997.

IMPACT:

The project will provide the means for achieving an effective ODS phaseout programme in Bangladesh by enhancing the institutional capacity for country programme and ODS phaseout project coordination, monitoring and evaluation, through the establishment of an inter-ministerial body to formulate strategies and actions for the national ODS phaseout programme, and by promoting the awareness of ODS phaseout in government and the public at large.

ANNEXES

I : DETAILED PROJECT BUDGET

II : ORGANIZATIONAL CHART OF THE OZONE CELL

(BGDINS02)

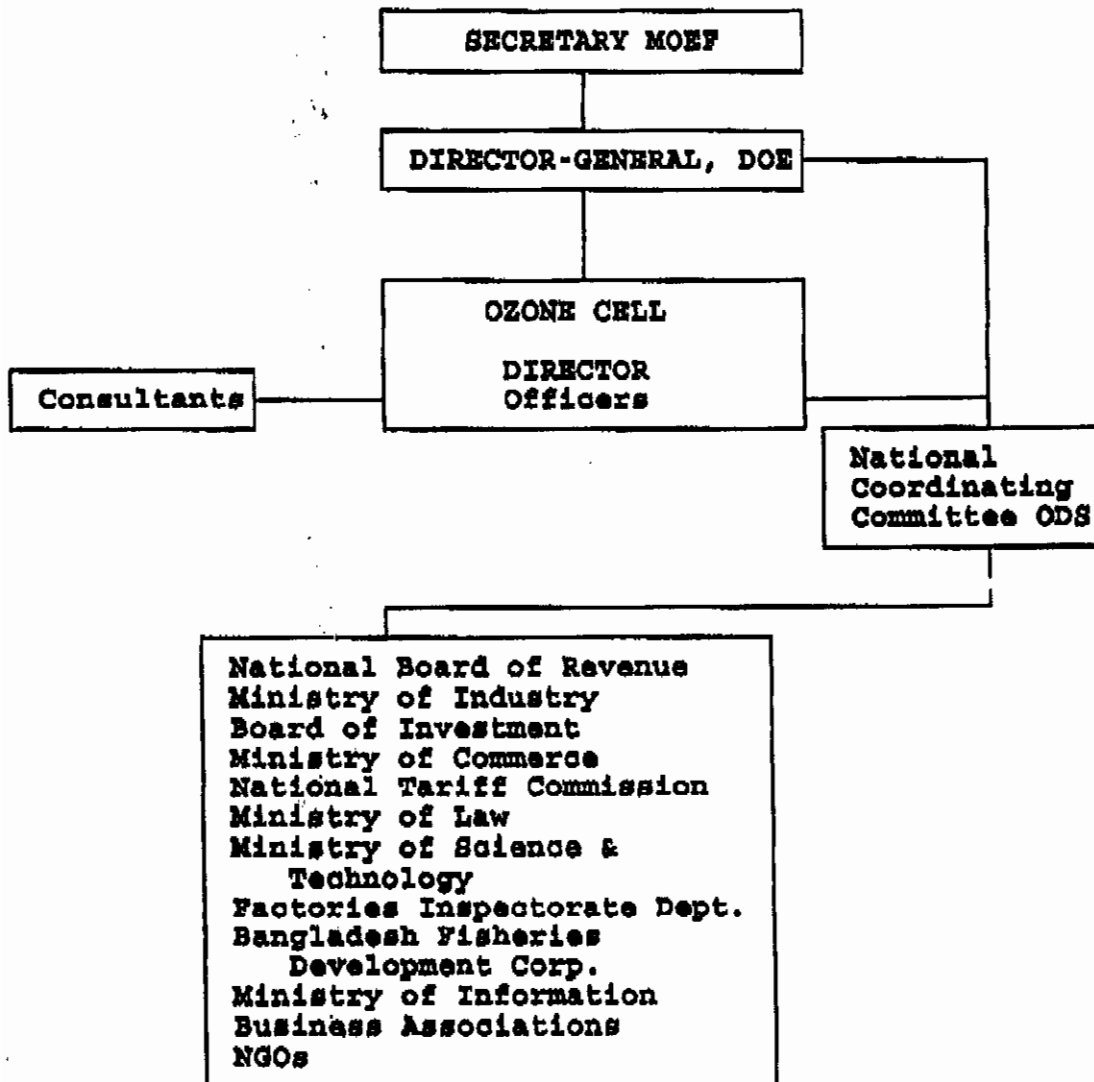
ANNEX-I

DETAILED PROJECT BUDGET (in US\$)

ITEM	1995	1996	1997	TOTAL
i) CAPITAL EQUIPMENT	14,000			14,000
- Personal Computer, Printer & Accessories				
- Photocopier				
- Fax				
- Electronic Mail				
			SUBTOTAL	14,000
ii) PERSONNEL				
Director	7,000	7,000	7,000	21,000
Senior Officer	6,000	6,000	6,000	18,000
Support Staff (2)	5,000	5,000	5,000	15,000
			SUBTOTAL	54,000
iii) OPERATIONAL COSTS	24,000	24,000	24,000	72,000
			SUBTOTAL	72,000
SUM OF ii) + iii)				126,000
iv) CONTINGENCY				10,000
TOTAL = i+ii+iii+iv				150,000

ANNEX-II

ORGANIZATIONAL CHART OF THE OZONE CELL



PROJECT OUTLINE

COUNTRY: MEXICO
SECTORS COVERED: Foams, halons, refrigeration
and solvents
NATIONAL ODS CONSUMPTION: 10,148 tonnes in 1989
PROJECT TITLE: Project preparation assistance
DURATION: 15 months (until Dec. 1995)
PROJECT IMPACT: Preparation of projects in the
various sectors
PROPOSED BUDGET: US\$ 100,000
IMPLEMENTING AGENCY: UNDP
NATIONAL COORDINATING AGENCY: Ozon Protection Unit, Instituto
Nacional de Ecologia, Secretaria de
Desarrollo Social (SEDESOL)

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PROJECT DESCRIPTION

Mexico's ODP consumption in 1989 was 10,148 tonnes comprising refrigeration/AC at 4,796 tonnes (47.3%), foams at 1,629 tonnes (16.1%), solvents at 1,220 tonnes (12.0%), halons at 1,200 tonnes (11.8%), aerosols at 993 tonnes (9.8%) and sterilants at 310 tonnes (3.0%).

Mexico's Country Programme (CP) for the reduction of ODS was prepared with the assistance of the World Bank and USEPA, and was approved at the 6th Executive Committee Meeting in February 1992. USEPA is also assisting Mexico in the design and implementation of projects in the refrigeration and solvents sectors.

UNDP's initial preparatory assistance project for Mexico of US\$ 50,000 which was approved in November 1993 at the 11th Executive Committee Meeting has resulted in the following:

- o March 94: UNDP refrigeration and foam consultants along with UNDP staff undertake a first project identification visit for the domestic and commercial refrigeration sectors (MABE Group, OJEDA and META-PLUS).
- o April 94: UNDP foam consultant visits SEDESOL to discuss the need for a foams sector phaseout strategy.
- o May 94: Second visit by UNDP refrigeration sector consultant continues work for the MABE Group and initiates work on the VITRO Group. Initial work on certain commercial refrigeration projects is also started.
- o July 94: Visit by UNDP foam and refrigeration consultants and UNDP staff to continue work on the MABE and VITRO Groups leading to submission of the MABE project to the Fund Secretariat for submission to either the 14th ExCom Meeting or for in-between meeting approval. The VITRO proposal would be submitted in December 1994.

personnel for the nodal unit and help equip it with the necessary equipment to undertake its functions. This nodal unit would work within the Environment and Urban Affairs Division of the Ministry of Housing and Works. The nodal unit will ensure that the required steps under the Montreal Protocol are initiated and carried out by Government and industry. The longer-term objective includes the development of mechanisms for project formulation, review, assessment and monitoring to enable Pakistan to adhere to the agreed schedules for the phaseout of ODS and to complete other related activities.

SCOPE OF THE PROJECT

The scope of this institutional strengthening project is provide the necessary policy implementation, data collecting and evaluation capacities needed for ODS phaseout and related activities in Pakistan.

The project would encompass periodic involvement of the nodal unit with the Ministry of Industry and with the Ministries of Science and Technology and Defence Production in the evaluation of qualified public sector enterprises for ODS phaseout; the Ministry of Industry and the Federation of Chambers of Commerce and Industries in the evaluation of private sector enterprises for ODS phaseout; the National Science Laboratories and scientific institutions in technology evaluation; and NGOs to promote public awareness and public participation.

JUSTIFICATION

Pakistan, having ratified the Montreal Protocol, is obliged to implement the provisions of the Protocol. However, this could be done only if sufficient funds and the requisite technologies are made available. The institutional strengthening project proposed is a prerequisite for studying, analyzing and responding to information gathered in the context of the Montreal Protocol and to provide an effective liaison among various sectors involved in the phaseout of ODS. A separate nodal unit as proposed needs to be established under the Environment and Urban Affairs Division (which is the Federal authority for the implementation of the Montreal Protocol) to carry out the tasks described above.

The existing sections in the Environment and Urban Affairs Division have a clearly defined scope of work. The proposed duties cannot be entrusted to them as their responsibilities do not include ozone layer protection and they have no background in this area. Therefore, the present administrative staff of the Division would not be able to undertake the kind of detailed analytical and professional work required for the implementation of the Montreal Protocol. However, the Environment and Urban Affairs Division will oversee the work of the nodal unit.

- o To report to the Executive Committee, on a yearly basis, on progress being made in the implementation of the country programme (UNEP/OzLPro/ExCom/10/40 para. 135), following the format approved by the Executive Committee ((UNEP/OzLPro/ExCom/13/47, Annex II).

MULTILATERAL FUND INPUTS

The following are the required inputs for the project:

Infrastructure and Capital Expenditure

The following equipment is needed: one microcomputer with laser printer & software, one photocopier and one fax machine.

Personnel

- 1 Senior Officer (BPS-19) to be in charge of the unit
- 2 Officers (BPS-18/17) who will render analytical, review, monitoring and technical services
- 3 Support staff (2 stenographers (BPS-15), 1 assistant/cashier (BPS-11)) will provide clerical and secretarial services

Operational Costs

These include the costs for data processing and dissemination, telecommunications and postage, office supplies, equipment maintenance, travel and per diem on official missions and training courses and other miscellaneous expenses.

GOVERNMENT INPUTS

The Government will provide for the office space to house the nodal unit. In addition, the Government will also be responsible for the provision of the legal and administrative framework, access to pertinent organizations and ministries and qualified management and oversight from the ESUAD necessary for the effective operation of the nodal unit.

COST AND BUDGET

The requested support from the Multilateral Fund for the 3-year operation of the nodal unit is \$259,000 comprising:

Equipment	:	\$ 14,000
Personnel costs	:	74,000
Operational costs	:	150,000
Sub-total		238,000
Contingency		21,000
Total		259,000

A detailed budget is attached as Annex III.

OUTPUTS

The expected outcome of the project will include the following:

- o The enhancement of national institutional capacity to deal with the overall objectives of the Montreal Protocol and set in place and monitor the national policy for ODS phaseout in Pakistan to meet the ODS phaseout provisions of the Montreal Protocol;
- o Evaluation and analysis of information related to the Montreal Protocol, and technical feedback to policy makers; and
- o Promotion and coordination of ODS phaseout activities and public awareness.

ANNEXES:

- I. DISAGGREGATION OF CONSUMPTION IN PAKISTAN OF SUBSTANCES SUBJECT TO CONTROLS UNDER MONTREAL PROTOCOL (1992)
- II. ORGANOGRAM OF THE PROPOSED NODAL UNIT - OZONE CELL
- III. DETAILED PROJECT BUDGET

(PAKINS02)

ANNEX I

**DISAGGREGATION OF CONSUMPTION IN PAKISTAN OF SUBSTANCES
SUBJECT TO CONTROLS UNDER MONTREAL PROTOCOL**

(Year: 1992)

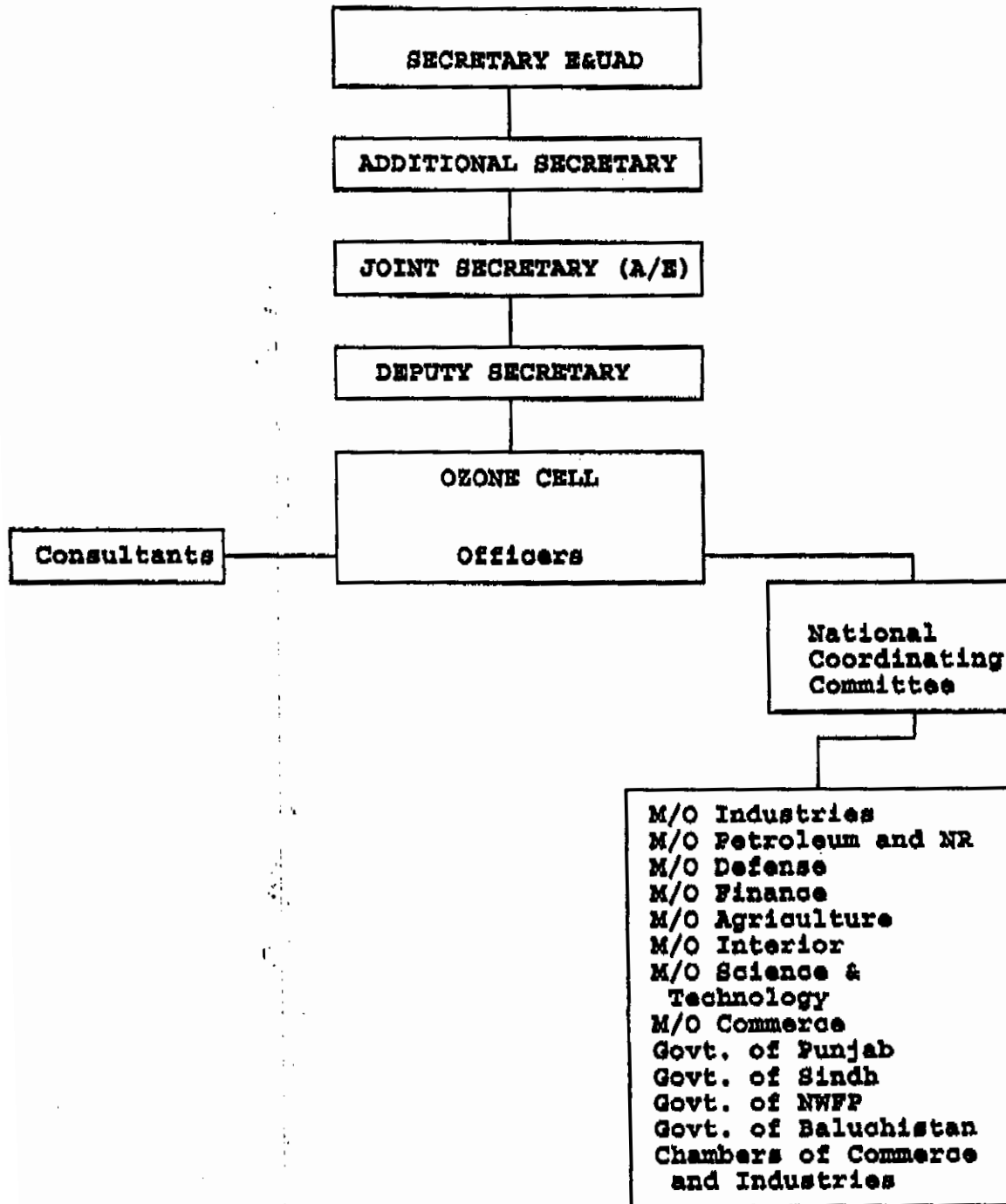
CONTROLLED SUBSTANCE	CONSUMPTION (MT-ODS)	MT-ODP
CFC-11	1,550	1,550
CFC-12	450	450
CFC-113	100	80
Halon-1211	70	210
Halon-1301	30	300
CFC-13	50	50
1,1,1-trichloromethane Methyl Chloroform	700	70
Carbon-tetrachloride	450	495
TOTAL	3,400	3,205

NOTES:

1. These estimates are based on preliminary data being used in the preparation of the Pakistan Country programme. Actual annual ODS consumption could be much higher since estimates for military and defence use of ODS are not available.
2. Estimates for HCFC and methyl bromide use are also not available at present.

ANNEX-II

ORGANIZATIONAL CHART OF THE NODAL UNIT (OZONE CELL)



ANNEX-III

DETAILED PROJECT BUDGET (in US\$)

ITEM	1ST YEAR	2ND YEAR	3RD YEAR	TOTAL
<u>CAPITAL EXPENDITURE</u>				
1 fax machine, 1 photocopier	\$14,000	--	--	\$14,000
one microcomputer system/software				
				SUBTOTAL \$14,000
<u>PERSONNEL COSTS</u>				
Professional Staff:				
1 Senior Officer (BPS-19)	\$ 6,600	\$ 6,800	\$ 7,000	\$20,400
2 Officers (BPS-18/17)	\$ 9,900	\$10,500	\$11,000	\$31,400
Support Staff:				
2 Stenographers (BPS-15)	\$ 5,500	\$ 5,700	\$ 5,800	\$17,000
1 Assistant/Cashier (BPS-11)	\$ 1,700	\$ 1,700	\$ 1,800	\$ 5,200
				SUBTOTAL \$74,000
<u>OPERATIONAL COST</u>				
Data processing/dissemination	\$10,000	\$10,000	\$10,000	\$30,000
Telecommunications & postage	\$10,000	\$10,000	\$10,000	\$30,000
Office Supplies and maintenance	\$ 7,000	\$ 7,000	\$ 7,000	\$21,000
Official travel/per diem costs	\$18,000	\$18,000	\$18,000	\$54,000
Utilities & other costs	\$ 5,000	\$ 5,000	\$ 5,000	\$15,000
				SUBTOTAL \$150,000
Contingency				TOTAL \$238,000
				GRAND TOTAL \$ 21,000
				\$259,000

END

PROJECT OUTLINE

COUNTRY:	SRI LANKA
SECTORS COVERED:	Refrigeration, solvents, foams
NATIONAL ODS CONSUMPTION:	231 tonnes in 1991
PROJECT TITLE:	Project Preparation Assistance
DURATION:	Nine Months
PROJECT IMPACT:	Preparation of projects in the various sectors
PROPOSED BUDGET:	US\$ 30,000
IMPLEMENTING AGENCY:	UNDP
NATIONAL COORDINATING AGENCY:	Montreal Protocol Unit, Ministry of Environment and Parliamentary Affairs (MEPA)

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PROJECT DESCRIPTION

Sri Lanka's Country Programme on the phaseout of ozone depleting substances under the Montreal Protocol was approved at the 12th Executive Committee Meeting in March 1994. From the total consumption of 231 tonnes per annum, 81.4% of ODP was consumed in the refrigeration and air conditioning sectors, 11.8% in solvents, 4.3% in foams, 1.2% in halons and 1.3% in aerosols.

The Country Programme specifies that projects will be prepared in several sectors. The Government has requested UNDP to assist in project preparation assistance for all sectors with emphasis on the following projects and activities:

- o CFC refrigerant recovery and recycling programme, including training of technicians in this sector.
- o Phaseout use of CFC-11 and CFC-12 technology in one compressor manufacturer and in three refrigerator manufacturing enterprises.
- o Phaseout the use of CFCs in the foams and solvents sectors.
- o Halons recovery/recycling programme.

The US\$ 30,000 preparatory assistance funds will be used over a 9-month period to recruit international/national consultants to work with national counterparts to prepare project proposals in these sectors. The completed project proposals will form part of UNDP's 1995 work programme that will be submitted for approval at the 16th and subsequent Executive Committee Meetings.

PROJECT COVER SHEET

COUNTRY: GLOBAL

PROJECT TITLE: Determination of Cost-Effective Phaseout Approaches for Enterprises with Relatively Small ODS Use

SECTOR COVERED: Foamed Plastics

PROJECT DURATION: One Year

TOTAL PROJECT COST: US \$50,000

PROPOSED MLF GRANT: US \$50,000

IMPLEMENTING AGENCY: UNDP

DATE OF SUBMITTAL: August 11, 1994

PROJECT SUMMARY

The ODS phaseout programme in the foam industry has concentrated so far on the larger ODS users. The approach focussed on individual projects, in-house technical/chemical expertise, integrity of the production unit, supplier support and the choice of capital expenses rather than recurring incremental costs. This approach is not cost-effective for small ODS users. A new strategy will have to be devised that may include group approaches and technologies that require lower investment combined with acceptable operational cost consequences.

Under this project, existing and emerging technologies will be analyzed on a potentially scaled-down application for small users and potential cost savings from group approaches will be evaluated. Demonstration projects to validate this approach will be implemented--under separate budgets--and an adjusted strategy for small ODS users will be developed.

PREPARED BY: Bert Veenendaal, with support from the Multilateral Fund Secretariat in Montreal

**DETERMINATION OF COST-EFFECTIVE PHASEOUT APPROACHES
FOR
ENTERPRISES WITH RELATIVELY SMALL ODS USE**

1. PROJECT OBJECTIVE

The objective of this project is to devise a strategy on how to phaseout ODS at small users in the manufacture of plastic foams in a cost-effective way.

2. BACKGROUND

Foamed plastics can be categorized on the basis of composition, chemical/physical characteristics, manufacturing processes or product applications. ODS phaseout technologies are generally category specific, and this is reflected in UNEP's periodic assessment of these technologies. These technologies are generally:

- o developed in industrialized countries,
- o to be applied in chemically/technically sophisticated enterprises,
- o focussed on retention of existing product characteristics,
- o based on an "industrial scale" or "economically optimized" production size,
- o mandated by specific regulations that prohibit or tax the use of CFCs.

It is evident that cost effectiveness, while important, is not the determining factor for selection and that the alternatives are offered under the assumption of dealing with sophisticated, sizable users.

Many companies operating in "Article 5, para 1" countries do not meet the assumptions under which the most commonly applied ODS phaseout technologies are offered. These companies are often small, relatively unsophisticated in equipment as well as in chemical/technical staff, offer less than optimized product quality and operate under no immediate or imminent government restrictions as to the use of CFCs--which means that the influence of non-ODS technologies on operating costs is a critical parameter.

In most Article 5, para 1 countries, phaseout efforts in the foam industry have started with the conversion at relatively large companies. These companies were

- o easy to identify,
- o well informed about the need to ODS-phaseout,
- o frequently export driven (to countries that require already or require in the near future CFC-free manufacturing technologies for imported products),
- o effective in their capacity use (which means a favourable "investment/production" ratio or "Investment/ODS consumption" ratio),
- o carrying knowledgeable chemical and technical staff,
- o maintaining good direct relations with international or internationally-oriented chemical suppliers.

Consequently the companies were motivated, able to carry out significant parts of the programme by themselves and to willingly compromise on operational cost aspects or bear part of the investment cost in case benefits such as increased capacity, higher quality or other operational benefits were expected. Unit Abatement Costs (UAC)¹ for these plants are comparable within a certain foam category.

So far, the Executive Committee has approved more than 90 investment projects in the foam sector. Except for eight projects, the annual amount of ODS to be phased-out per enterprise is larger than 10 tonnes/year.

Several approaches have already been applied to keep phaseout costs for small ODS-users within "reasonable" limits:

- o In Indonesia, Malaysia and the Philippines, umbrella projects have been approved for small flexible PUF slabstock manufacturers ("box foamers"). The umbrella approach allowed in these cases cost advantages through joint procurement, innovative application of existing technology and a joint programme for technology transfer and training.
- o In two cases in Malaysia where small users had to change from manual procedures to automated procedures for safety reasons, a solution was reached through financial participation by the companies.

¹

The definition of Unit Abatement Cost (UAC) as proposed by The World Bank and applied in all Foam projects from the Bank as well as from UNDP and UNIDO is used in this proposal. This definition includes treatment of Incremental Recurrent Costs (IRC) in a way independent of how these cost are included in the grant and therefore allow good abatement cost comparison between individual projects in the same category.

In Egypt, the ODS phaseout programme for non-refrigeration foams has progressed to a point that virtually only small ODS users are left. In this case, the currently used approach has met its limits. Projects prepared but not yet submitted show UACs that are an order of magnitude higher than those for larger plants in the same categories. Consequently, projects in flexible PUF molded, in integral skin PUF and in rigid PUF had to be postponed until some strategy on how to treat these projects could be devised and agreed upon².

There are different possible approaches to the solution of the mentioned problem:

- a) One would be to create a different category of "small ODS users" within a certain foam category, with their own UAC range. Based on current experience, this range will be about one order of magnitude above the current one.
- b) Another option would be to have the companies share in the conversion cost based on the assumption that by changing their equipment they will have calculable advantages in quality, increase of capacity, etc. This assumes that the enterprises will have the funds to do so or that this will decrease/eliminate payment of IRC.
- c) One could reevaluate the potential of currently available and emerging technologies to adapt these to small scale production. This has been done successfully for box foam operations.
- d) An "umbrella" approach would save costs by combining activities to the extent possible. This could comprise:
 - o combined training programs,
 - o joint technology selection, allowing joint technology transfer and procurement,
 - o combining existing capacities, thus achieving lower capital costs and incremental operational efficiencies.

Other options may exist. UNDP hopes and expects through the circulation of this document and the execution of this proposed project to initiate a discussion that may reveal these.

2

Currently projects for fifteen companies in Egypt alone are withheld from submission pending the development of such a strategy.

3. PROJECT DESCRIPTION

Under this project UNDP will develop a proposed strategy for the implementation of ODS phaseout projects for small foam producers/ODS users. The implementation of the project is divided into the following steps:

1. OPTIONS TO SCALE DOWN TECHNOLOGIES

- 1.1 Review and analysis of existing ODS phaseout projects in the foam sector on
 - o production process utilized
 - o products produced
 - o technologies applied
 - o ODS phaseout cost for
 - equipment
 - support cost (technology transfer, training, trials)
 - operations
 - o Unit Abatement Cost
- 1.2 Based on this information UNDP would categorize (perhaps sometimes re-categorize) these projects, determine per category typical ranges per parameter--with UAC as the determining and the other ones as secondary parameters--and make a list of available technologies.
- 1.3 The list of available technologies will be complemented through comparison with the latest "Montreal Protocol Assessment" from the UNEP Technical Options Committee on Flexible and Rigid Foams (slated for publication December 1994), the "Catalogue of ODS-Free Technologies: Flexible and Rigid Foams" from UNEP (currently under final peer review), and interviews with equipment/chemical producers. In addition emerging technologies will be assessed on potential applicability according to the same parameters as mentioned above.
- 1.4 All the thus listed available and emerging technologies will then be assessed on potential scaling down or other measures to suit small ODS users.
- 1.5 The most promising of these technologies for small scale production will then be applied in investment projects. These investment projects could be some already approved (with the stipulation of renewed independent technical review and reduction of--or at a minimum maintaining--the existing grant) or ones to be newly submitted. **The cost of these projects are not included in the budget for this proposal.**

- 1.6 From the results of the demonstration projects a list of proposed approved technologies will be derived for small scale production/small scale ODS use. Standardized costs will be calculated for future application, including support costs, operating cost and a proposed range of UAC. Disclaimers will be formulated where exceptions are expected and to take into account the fact that every project has a certain degree of uniqueness that will have to be addressed.

2. OPTIONS TO SCALE UP PROJECTS

The institution of "umbrella" projects, consisting of several companies in a certain category provides options for cost reduction through the resulting upscaling of the project. The precondition is the selection of one technology to be applied. This opens the potential for possible cost savings that will be evaluated through this project:

- 2.1 **Joint Procurement.** Substantial price rebates, freight advantages and cost reductions in installation can be derived from joint procurement based on standardized equipment. The procurement options may differ somewhat per technology selected.
- 2.2 **Customized equipment.** For box foam, say one company has developed drawings and specifications for ventilation and accelerated curing equipment. This equipment can be locally procured at prices that are a magnitude lower than equipment that is currently offered on the market. This approach could be tested on other technologies.
- 2.3 **Joint technology transfer/training.** The use of video training, workshops and integrated visit schedules (less travel time, lower travel cost) can provide substantial cost savings.
- 2.4 **Combination of capacities.** This comprises two areas:
- o A group of plants using the same chemicals can combine or contract certain functions such as pre-blending of chemicals;
 - o A group of plants producing the same products can pool production.

Areas of investigation include the option to perform blending through suppliers, and the potential influence of increased freight and other variables that are impacted by the relocation of production.

A proposed strategy for small scale users will then be devised based on the above-mentioned analysis and will be proposed to the Executive Committee through the Fund Secretariat. The proposal will include general approaches for ODS phaseout per country for small scale users and recommended technologies per foam sub-sector.

UNDP will keep the Fund Secretariat informed through interim reports after the completion of each of the described steps in the execution in this project and through a final report.

4. PROJECT COST

Consultant costs for international/national experts.....	USD 30,000
Travel, per diem.....	USD 10,000
Miscellaneous, including communication costs.....	USD 10,000
TOTAL.....	USD 50,000
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A grant in the same amount is requested.

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