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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fortieth Meeting
Montreal, 16 -18 July 2003

PROJECT PROPOSALS: PAKISTAN

This document consists of the comments and recommendations of the Fund Secretariat on the following project proposals:

Solvent:

- Conversion of cleaning installations from carbon tetrachloride (CTC), methyl chloroform (MCF) and CFC-113 to tetrachloroethylene (PER) and water in combination with process modification at Breeze Frost Industries Ltd., Lahore UNIDO
- Conversion of cleaning installations from carbon tetrachloride (CTC) and methyl chloroform (MCF) to tetrachloroethylene (PER) and water in combination with partial process modification at Hirra Farooq Ltd., Lahore UNIDO

**PROJECT EVALUATION SHEET
PAKISTAN**

SECTOR:	Solvent	ODS use in sector (2001)
	CFC-113	32 ODP tonnes
	CTC	656 ODP tonnes
	TCA	3.5 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

- (a) Conversion of cleaning installations from carbon tetrachloride (CTC), methyl chloroform (MCF) and CFC-113 to tetrachloroethylene (PER) and water in combination with process modification at Breeze Frost Industries Ltd., Lahore
- (b) Conversion of cleaning installations from carbon tetrachloride (CTC) and methyl chloroform (MCF) to tetrachloroethylene (PER) and water in combination with partial process modification at Hirra Farooq Ltd., Lahore

Project Data	Solvent	
	Breeze Frost	Hirra Farooq
Enterprise consumption (ODP tonnes)	33.2	37.5
Project impact (ODP tonnes)	33.2	37.5
Project duration (months)	24	24
Initial amount requested (US \$)	336,335	299,381
Final project cost (US \$):		
Incremental capital cost (a)	186,947	168,692
Contingency cost (b)	18,695	16,869
Incremental operating cost (c)	76,414	60,932
Total project cost (a+b+c)	282,056	246,493
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US \$)	282,056	246,493
Cost effectiveness (US \$/kg.)	8.50	6.60
Counterpart funding confirmed?		
National coordinating agency	Ozone Cell	
Implementing agency	UNIDO	

Secretariat's Recommendations		
Amount recommended (US \$)	282,056	246,493
Project impact (ODP tonnes)	33.2	37.5
Cost effectiveness (US \$/kg)	8.50	6.60
Implementing agency support cost (US \$)	21,154	22,184
Total cost to Multilateral Fund (US \$)	303,210	268,677

SECTOR BACKGROUND

Latest consumption reported to Fund and Ozone Secretariats:

CFC-113	32 ODP tonnes (2001)
CTC	656 ODP tonnes (2001)
TCA	3.5 ODP tonnes (2001)

Consumption in approved projects currently under implementation:

CFC-113	nil ODP tonnes
CTC	10 ODP tonnes
TCA	nil ODP tonnes

Consumption remaining to be addressed:

CFC-113	32 ODP tonnes
CTC	646 ODP tonnes
TCA	3.5 ODP tonnes

Consumption in projects submitted to 40th Meeting:

CFC-113	1.28 ODP tonnes
CTC	68.3 ODP tonnes
TCA	1.07 ODP tonnes

PROJECT DESCRIPTIONS

Hirra Farooq

1. The project will phase out 36.6 ODP tonnes of carbon tetrachloride (CTC) and 0.89 ODP tonnes of 1.1.1. trichloroethane (TCA) at Hirra Farooq Ltd., Lahore. CTC and MCF are used to clean heat exchangers which are subsequently installed in refrigerators and air-conditioners. Currently cleaning is carried out in open baths and by hand pouring of solvent. Compressed air or nitrogen is used to dry the interior of heat exchanger tubes, also by hand.

2. To clean the interior and exterior of smaller heat exchangers a fully enclosed, automatic cleaning machine will be installed. The machine will use the non-ozone depleting solvent perchloroethylene (PCE). Large heat exchangers manufactured by the enterprise, which form 20-25 percent of the of the overall production, will be cleaned manually using water, after modifying the manufacturing process to enable a switch to water-soluble manufacturing lubricants. The major new investment will be for a closed solvent cleaning machine and ancilliary equipment (US \$130,000 after a 35 percent counterpart contribution for technological upgrade), a coalescence separator to separate waste oil and sludge from the cleaning water (US \$8,000) and machinery to expand tubes for large heat exchangers to enable the use of water

soluble oils (US \$11,000). Incremental operating costs over 4 years of US \$45,716 are sought. They arise mainly from energy costs for the cleaning machine offset by reduced costs for cleaning solvents.

Breeze Frost

3. The project will phase out 31.7 ODP tonnes of carbon tetrachloride (CTC) 1.28 ODP tonnes of CFC-113 and 0.18 ODP tonnes of 1.1.1. trichloroethane (TCA) at Breeze Frost Industries Ltd., Lahore. The three solvents are used to clean heat exchangers which are sold to other manufacturers for subsequent installation in refrigerators, air-conditioners and similar equipment.

4. The same hand cleaning and open bath technologies operated in Hirra Farooq, above, are also used at Breeze Frost and similar technologies will be employed to achieve the phase-out. The major new investment will be for a closed solvent cleaning machine and ancillary equipment (US \$130,000 after a 35 percent counterpart contribution for technological upgrade), a coalescence separator to separate waste oil and sludge from the cleaning water (US \$8,000) and machinery to expand tubes for large heat exchangers to enable the use of water soluble oils (US \$29,000). Incremental operating costs over 4 years of US \$57,394 are sought. They arise mainly from energy costs for the cleaning machine offset by reduced costs for cleaning solvents.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

5. The Secretariat notes that the consumption of CFC-113, CTC and TCA to be phased out in the two projects is within the levels remaining to be addressed in Pakistan.

6. A project to convert the manufacture of refrigerators was approved for Hirra Farooq at the 23rd Meeting in November 1997. In the previous project document, UNIDO indicated that the enterprise will convert its production of air conditioners to the use of non-ozone depleting substances at its own expense and that the use of R-11 for cleaning purposes does not form a part of this project since it falls under the solvent sector. The Secretariat asked UNIDO to clarify whether, in view of these statements, the current project involved the cleaning of equipment that would be used in air-conditioners. UNIDO advised that the previous project was referring only to conversion of the foam and refrigeration parts of refrigerator manufacture and not to any solvent cleaning, and further, that the reference to future conversions was the conversion of R-22 air conditioners to non-ODS technology (since CFCs had never been used by the enterprise in its air-conditioners). Therefore the project encompassed the cleaning of all the heat exchangers produced by the enterprise.

7. The Secretariat raised with UNIDO the proposed use of more costly, fully closed, automatic cleaning equipment to replace manual processes. UNIDO indicated that the justification for the selected equipment was based primarily on technical cleaning requirements rather on environmental performance. It was agreed that, consistent with other solvent sector

projects, the enterprises would provide counterpart funding of 50 percent for the cleaning machines and ancillary equipment to account for the technological upgrade arising from the change from hand cleaning to closed, automatic cleaning machines. The cost of the oil separators was also determined not to be eligible since they did not exist in the baseline. The final cost effectiveness of the projects is US \$6.60/kg for Hirra Farooq and US\$8.50/kg for Breeze Frost.

RECOMMENDATIONS

8. The projects are recommended for blanket approval at the level of funding indicated in the table below, including agency support costs of 9 percent for Hirra Farooq and of 7.5 percent for Breeze Frost:

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Conversion of cleaning installations from carbon tetrachloride (CTC), methyl chloroform (MCF) and CFC-113 to tetrachloroethylene (PER) and water in combination with process modification at Breeze Frost Industries Ltd., Lahore	282,056	21,154	UNIDO
(b)	Conversion of cleaning installations from carbon tetrachloride (CTC) and methyl chloroform (MCF) to tetrachloroethylene (PER) and water in combination with partial process modification at Hirra Farooq Ltd., Lahore	246,493	22,184	UNIDO
