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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-third Meeting
Montreal, 12-14 November 1997

PROJECT PROPOSALS: KOREA, DPR

This documents includes the comments and recommendations of the Fund Secretariat on the following project proposals:

Foam

• Phasing out CFC-11 at Chongjin Foam Factory, Hamgyong North Province	UNIDO
• Phasing out CFC-11 at Pyongyang Foam Plant	UNIDO
• Phasing out CFC-11 at Hamhung Foam Factory, Hamgyong South Province	UNIDO

Solvent

• Conversion of metal cleaning processes from ODS solvents to vapour degreasing at Unsan Tools Factory (UTF)	UNIDO

PROJECT EVALUATION SHEET
KOREA

SECTOR: FOAM ODS use in sector (1996): 150 ODP tonnes

Sub-sector cost-effectiveness thresholds: General 9.53 US $/kg

Project Titles:
(a) Phasing out CFC-11 at Chongjin Foam Factory
(b) Phasing out CFC-11 at Pyongyang Foam Plant
(c) Phasing out CFC-11 at Hamhung Foam Factory

Project Data	**General**		
	Chongjin Foam Factory	Pyongyang Foam Plant	Hamhung Foam Factory
ODS phase-out (ODP tonnes)	32	83	35
Proposed project duration (months)	12	12	12
Incremental capital cost (US $)	104,500	104,500	104,500
- including contingency (%)	10	10	10
Incremental operational cost (US $)	(830)	(930)	(1,820)
Total project cost (US $)	103,670	103,570	102,680
Local ownership (%)	100	100	100
Export component (%)			
Amount requested (US $) {Original}	103,670	103,570	102,680
{Revised}			
Cost effectiveness (US $/kg)	3.24	1.25	2.93
National Coordinating Agency	National Coordinating Committee for Environment		
Implementing Agency	UNIDO		
Technical review completed?	Yes	Yes	Yes

Secretariat's Recommendations:			
Amount recommended (US $)	103,670	103,570	102,680
Project impact (ODP tonnes)	32	83	35
Cost effectiveness (US $/kg)	3.24	1.25	2.93
Implementing Agency support cost (US $)	13,477	13,464	13,348
Total cost to Multilateral Fund (US $)	117,147	117,034	116,028

PROJECT DESCRIPTION

Foam Sector Profile

Sector ODS consumption (1996) reported in country programme	150 tonnes ODP
ODS to be phased out in approved projects (as at July 1997)	0
Latest (1995) CFC-11 consumption reported according to Art.7	Nor reported

(a) Phasing out CFC-11 at Chongjin Foam Factory
(b) Phasing out CFC-11 at Pyongyang Foam Plant
(c) Phasing out CFC-11 at Hamhung Foam Factory

1. The three enterprises will phaseout the use of CFC-11 in the production of flexible block foams used for the production of laminate in the textile industry, foam mattresses and furniture seating, by converting to methylene chloride technology.

2. Production is based on original locally-made equipment and designed for discontinuous block foam production, and includes one mixing unit, metering devices, runtanks, ventilation closure and a cure area.

3. The capital costs for conversion at each enterprise include one methylene chloride metering and dosing pumping system (US $15,000), one machine closure and process ventilation system (US $50,000); safety devices (US $5,000), commissioning and start-up (US $10,000), trials, technology transfer and training (US $95,000). Incremental operating benefits are requested as follows: Chongjin Foam Factory (US $830), Pyongyang Foam Plant (US $930), and Hamhung Foam Factory (US $1,820) based on the fact that methylene chloride is lower in price than CFC-11 and the quantity needed in the formulation to produce foams of equal density is reduced.

Equipment or Components to be Destroyed or Rendered Unusable

4. The projects states that the old equipment using CFC-11 will be destroyed or rendered unusable with implementation of the non-ODS technology.

Impact of Project on 1999 Freeze

5. Implementation of the three projects will phase-out 150 tonnes of CFC-11, equivalent to the total CFC consumption in the flexible and rigid polyurethane foam subsector. The projects will be completed by 1999, and will considerably contribute to the achievement of the 1999 freeze target.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The three projects were discussed between the Fund Secretariat and UNIDO and costs agreed to as indicated in the project evaluation sheet.

RECOMMENDATION(S)

1. The Fund Secretariat recommends blanket approval of the projects with associated support costs at the funding level shown in the table below:

Project Title	Project Cost US $	Support Cost US $	Implementing Agency
(a) Phasing out CFC-11 at Chongjin Foam Factory	103,670	13,477	UNIDO
(b) Phasing out CFC-11 at Pyongyang Foam Plant	103,570	13,464	UNIDO
(c) Phasing out CFC-11 at Hamhung Foam Factory	102,680	13,348	UNIDO

PROJECT EVALUATION SHEET
KOREA (DPR)

SECTOR: SOLVENT ODS use in sector (1995): 355.0 ODP tonnes

Sub-sector cost-effectiveness thresholds: TCA 38.50 US $/kg

Project Title:
Conversion of metal cleaning process from ODS solvents to vapour degreasing at Unsan Tools Factory (UTF)

Project Data	**CTC**
	Unsan Tools Factory (UTF)
ODS phase-out (ODP tonnes)	110
Proposed project duration (months)	18
Incremental capital cost (US $)	337,700
- including contingency (%)	10
Incremental operational cost (US $)	(25,778)
Total project cost (US $)	311,922
Local ownership (%)	100
Export component (%)	-
Amount requested (US $) {Original}	449,422
{Revised}	311,922
Cost effectiveness (US $/kg)	2.83
National Coordinating Agency	National Coordinating Committee for Environment, Ozone Cell
Implementing Agency	UNIDO
Technical review completed?	Yes

Secretariat's Recommendations:	
Amount recommended (US $)	311,922
Project impact (ODP tonnes)	110
Cost effectiveness (US $/kg)	2.83
Implementing Agency support cost (US $)	40,550
Total cost to Multilateral Fund (US $)	352,472

PROJECT DESCRIPTION

Conversion of metal cleaning process from ODS solvents to vapour degreasing at Unsan Tools Factory (UTF)

1. This project will phase-out the use of 110 ODP tonnes of carbon tetrachloride, CTC, annually (1996 consumption) in metal-cleaning operations.

2. The baseline equipment consists of cold-dip baths containing the CTC, in which the parts to be cleaned are immersed. At present there are no protective measures to prevent worker exposure to the CTC which is a carcinogen. The cold-dip baths will be replaced by three low-emission solvent cleaning machines using trichloroethylene, TCE, as the solvent. Although TCE is also hazardous, the cleaning machines are self contained and designed to prevent exposure levels exceeding the prescribed limits. The total volume of TCE to be consumed will be five times less than the volume of CTC currently used, reducing the waste disposal problem. There are no hazardous waste handling facilities in the baseline.

3. The proposed technology is commercially available. The project is intended to create a focal/learning point for the other factories in this sector.

4. The newly approved country programme (1997) states that the solvents sector accounts for 29 percent of the total annual consumption of 1220 ODP tonnes. This amounts to some 355 ODP tonnes, 275 ODP tonnes of which is said to be CTC. However the implementing agency was advised by the enterprise, UTF, that the machinery industry in DPRK has a total of 72 factories which consume about 750 metric tonnes of CTC per year for metal cleaning.

5. The project document contains a statement that as this is one of the first investment projects for DPRK, the projects is needed to assist DPRK to meet its freeze objectives. The project duration is 18 months.

6. The proposal does not involve the use of transitional substances.

7. The major capital costs components are three closed vapour degreasing machines at US $90,000 each. Transportation and insurance, installation, engineering and training costs are also included. Total capital costs are US $337,000, including 10 percent contingency.

8. Incremental operating savings of US $25,778 arise from a reduction in solvent costs partially offset by increases in electricity consumption.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The eligibility and cost of some equipment items were discussed with the implementing agency. A proposal for an optical surface cleanliness tester at US $30,000 was deleted as the equipment does not exist in the baseline and is not essential for conversion. Similarly proposed funding of US $50,000 to upgrade waste handling facilities was deleted as there are no such facilities in the baseline and the volume of waste solvents will be reduced by a factor of 5 when the project is implemented.

2. The cost effectiveness of the project is US $2.83 per kg. CTC has an ODP of 1.1. This contributes to achievement of a good cost-effectiveness value, compared to TCA, the more common solvent which has an ODP of only 0.1. There is no threshold for CTC in the solvent sector. Its use is rare because of the high level of hazard associated with the chemical.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the project with the funding and associated support costs as indicated below:

Project Title	Project Cost US $	Support Cost US $	Implementing Agency
Conversion of metal cleaning process from ODS solvents to vapour degreasing at Unsan Tools Factory (UTF)	311,922	40,550	UNIDO

2. The Fund Secretariat also recommends that the country programme for DPRK be re-examined by UNEP, the agency which prepared it, to resolve the apparent inconsistencies between stated and actual consumption in the solvent sector.