



**United Nations
Environment
Programme**



Distr.
LIMITED

UNEP/OzL.Pro/ExCom/19/24
14 April 1996

ORIGINAL: ENGLISH

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

Nineteenth Meeting
Montreal, 8-10 May 1996

PROJECT PROPOSALS: MALAYSIA

This document includes the Comments and Recommendations from the Fund Secretariat on the following projects:

Aerosol

- Umbrella project to phase out ODS at SMEs in the aerosol sector UNDP

Foam

- Conversion to CFC -free technology for the manufacture of flexible polyurethane foam at Far East Foam Industries and Nite Beauty Industries UNDP
- Elimination of CFC-11 in the manufacture of polyurethane cold-room insulation panels/truck container panels at Kejuruteraan Transfreeze Sdn Bhd World Bank
- Elimination of CFC-11 in the manufacture of polyurethane refrigerator panels at Penang Trading Co. World Bank

SECTOR: **AEROSOL** ODS use in sector (1994) 260 tonnes

US \$4.4/kg

Project Title: Umbrella project to phase out ODS at SMEs in the aerosol sector in Malaysia

Project Data	Umbrella project (SMEs)
ODS phase-out (ODP tonnes)	250
Proposed project duration (Yrs)	2
Incremental capital cost (US \$)	2,058,100
Contingency (%)	10
Incremental operational cost (US \$)	(111,000)
Total project cost (US \$)	1,947,100
Local ownership (%)	100
Export component (%)	0
Amount requested (US\$) {Original	2,028,400
{Revised	1,947,100
Cost effectiveness (US \$/kg)	7.79
National Coordinating Agency	Department of Environment
Implementing Agency	UNDP
Technical review completed?	Yes

Secretariat's Recommendations

Amount recommended (US \$)	
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing Agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

PROJECT DESCRIPTION

1. The Government of Malaysia, through UNDP, has submitted for consideration by the Executive Committee this project proposal to phase out 250 tonnes of CFCs used by 35 small and medium-size enterprises (SMEs). Implementation of this project will lead to complete phase out of the aerosol sector in Malaysia.
2. The Government of Malaysia has requested the Fund Secretariat to give special attention to this project proposal since it is crucial to complete the ODS phase out in the aerosol sector.
3. This is the first project proposal dealing with SMEs that has been submitted for the consideration by the Executive Committee. The Executive Committee may wish to carefully review this project, taking into account future investment projects addressing the needs of SMEs to convert to non-ODS technologies, and in the light of the policy paper on 'approaches to ODS phase-out in small- and medium-sized enterprises (UNEP/OzL.Pro/ExCom/19/54) submitted to the 19th Meeting.
4. The Government of Malaysia is committed to a complete ODS phase out by the year 2000. The Environmental Quality Order 1993 (issued on 23 October 1993), prohibits the use of ODS as propellant in the aerosol industry effective 1 June 1994, and in pharmaceutical products from 1 January 1999. The Government has granted a two-year grace period to those plants which have indicated their intention to phase out CFCs.
5. In 1995, UNDP carried out a survey of aerosol fillers. The survey revealed that there are still 30 small-size fillers, each using 5 to 8 tonnes of CFCs and 5 medium-size fillers, each using 10 to 29 tonnes of CFCs.
6. The enterprises are characterized by low-capital investments, moderate production volume, and located in heavily populated areas. The main production is for personal care products, car care and industrial products.
7. The project consists of replacing the existing filling machines with manual, low-volume capacity units, and providing a water bath, fire safety and protection systems, and LPG deodorizing columns to each enterprise. UNDP stated that "any technological upgrade and/or increase in capacity is inherent and unintentional due to the manufacturer's existing machine specifications and design".
8. The capital costs are estimated at US \$51,150 for a small-size filler and US \$58,320 for a medium-size filler. The filling units and crimper costs were reduced to take account of a 5% rebate on bulk purchase. US \$45,000 is included for technical support, safety training programme and commissioning, covering the 35 enterprises.
9. Incremental operating savings expected from the use of a cheaper propellant are estimated at US \$111,000.
10. The total incremental cost of the umbrella project amounts to US \$1,947,000, including 10% contingency. The cost effectiveness of the project is US \$7.79/kg, which is above the threshold value of US \$4.40/kg for this sector.

11. UNDP indicated that the 35 aerosol enterprises had agreed to adhere to all safety regulations, and to cover the costs for relocation to a more suitable location, and additional safety-related works needed (estimated at US \$401,300 per plant).

12. At its 15th Meeting, the Executive Committee approved an investment project for the conversion Kontrak Manufacturing Services plant to HAPs technology. The project included installation of a filling line to service small fillers who could not convert to HAP technology cost-effectively. From information provided by the World Bank, none of the fillers under the UNDP umbrella project will be using Kontrak's filling facility.

13. After extensive discussions with UNDP which amounted to a proposal from the Secretariat to reduce the cost through a more cost effective approach, UNDP requested the Secretariat to submit the project in its current form for consideration of the Sub-Committee on Project Review for a decision. UNDP further informed the Secretariat that it will submit the new proposal to the Government of Malaysia for review and decision, and report to the Sub-Committee on Project Review the results of the negotiations with the Government.

PROJECT EVALUATION SHEET MALAYSIA

SECTOR: FOAM ODS use in sector (1991): 600 ODP tonnes

Sub-sector cost-effectiveness thresholds: General Foam US \$9.53/kg
Flexible (slabstock) Foam US \$/6.23kg
Rigid Foam US \$/7.83kg

Project Titles:

- (a) Conversion to CFC-free technology for the manufacture of flexible polyurethane foam at (i) Far East Foam Industries and (ii) Nite Beauty Industries
- (b) Elimination of CFC-11 in the manufacture of polyurethane refrigerator panels at Penang Trading Co.
- (c) Elimination of CFC-11 in the manufacture of polyurethane cold-room insulation panels/truck container panels at Kejuruteraan Transfreeze Sdn.

Project Data	Flexible		Panels	
	Far East	Nite Beauty	Penang	Transfreeze
ODS phase-out (ODP tonnes)	41	10 (implied)	10.5	11.4
Proposed project duration (Yrs)	1	1	4	4
Incremental capital cost (US\$)	190,000	40,000	209,400	206,900
Contingency (%)	10.53	0	15	15
Incremental operational cost (US\$)	Not calculated	Not calculated	29,384 ¹	12,800 ¹
Total project cost (US\$)	210,000	40,000	248,000	245,000
Local ownership (%)	100	100	100	100
Export component (%)	30	0	0	0
Amount requested (US\$) { Original	426,250	426,250	248,000	245,000
{ Revised	210,000	40,000	71,500	71,500
Cost effectiveness (US\$/kg)	5.1	4	22.93	20.87
National Coordinating Agency	Department of Environment			
Implementing Agency	UNDP	UNDP	World Bank	World Bank
Technical review completed?	Yes	Yes	Yes	Yes

<i>Secretariat's Recommendations</i>				
Amount recommended (US \$)	Pending	30,000	71,500	71,500
Project impact (ODP tonnes)	41	10	10.5	11.4
Cost effectiveness (US \$/kg)	Pending	3.0	6.81	6.27
Implementing Agency support cost (US\$)	Pending	3,900	9,295	9,295
Total cost to Multilateral Fund	Pending	33,900	80,795	80,795

¹ Calculated for a 4-year transitional period.

PROJECT DESCRIPTION

(a) Conversion to CFC-free technology for the manufacture of flexible polyurethane foam at
(i) Far East Foam Industries

1. Far East Foam manufactures flexible polyurethane foam, both slabstock and integral skin, for the furniture and bedding industries catering for contract buyers, hotel and condominium projects, furniture wholesalers, etc. in both Malaysian and international markets, with 30% of the production going to export.

2. The company is said to have consumed 750 tonnes of chemicals in 1994 of which 41.16 tonnes was CFC-11 to produce the flexible slabstock foam using a Viking 500 foaming machine purchased in the same year (1994). Integral skin foam was apparently unsuccessfully converted to the use of methylene chloride. The company proposes to change the integral skin foam production over to water blown technology using an already acquired high pressure machine.

3. Capital cost of the project includes provision of metering systems for methylene chloride and softener and ventilation for the flexible slabstock foam production, curing oven for the molded foam production and technology transfer and training for both production activities.

4. Incremental operational costs/savings are not calculated for either component of the project, contrary to the decision of the Executive Committee on foam projects, although the company consumes substantial quantities of CFC-11.

(a) (ii) Nite Beauty

5. The company manufactures polyurethane foam of various grades for the furniture and bedding industry. The company commissioned its continuous foaming machine in 1995. The consumption for the enterprise is not provided although this is implied in the calculation of cost-effectiveness (as 10 tonnes).

(b) Elimination of CFC-11 in the manufacture of polyurethane refrigerator panels at Penang Trading Co.

6. Penang Trading manufactures rigid polyurethane foam insulated cold room panels. The feedstock - polyol, isocyanate and TDI are mixed in the required proportions by means of a mechanical stirrer and the resultant mixture poured manually into horizontal molds. The foam cures within an extended curing time.

7. The company consumes 11 tonnes CFC-11 which it proposes to phase out through the use of HCFC-141b initially. For this purpose, one high pressure premixing machine and one high pressure foaming dispenser are being requested.

8. Operating costs were calculated over four years, while 15% was charged as contingency.

- (c) Elimination of CFC-11 in the manufacture of polyurethane cold-room insulation panels/truck container panels at Kejuruteraan Transfreeze Sdn.

9. Transfreeze also manufactures polyurethane foam insulated cold room panels and truck container panels using similar technology as Penang Trading above. Its consumption of CFC-11 is 12 tonnes/year and its requirements for conversion and the design of the project are similar to those of Penang Trading.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

(a) (i) Far East Foam Industries

1. The project has been classified as general foam since two types of foam (flexible slabstock and integral skin foam) are produced. The incremental operating cost ought to be calculated as was pointed by the Technical Reviewer in order to be able to assess the net grant due to the company.
2. The destinations of the exports were not indicated in the project document, hence the eligibility of that component of production for funding could not be ascertained.
3. The cost of technology transfer for the two components of production of the company at US \$10,000 each should be rationalized. Therefore an amount of US \$15,000 was proposed.
4. Recommendations on the project have been reserved pending the resolution of the above issue by the implementing agency (UNDP). The appropriate recommendation will therefore be communicated to the Sub-Committee on Project Review.

(a) (ii) Nite Beauty

5. US \$20,000 allocated for trials is extremely high. In spite of the company's concentration on fire retardant products, cost of trials which is four times as much as Far East Industries and similar projects cannot be justified, hence the amount of US \$10,000 has been recommended.

(b) and (c) Penang Trading and Transfreeze

6. These projects were among a group of projects submitted by UNDP and the World Bank for small rigid foam enterprises in Malaysia at the 17th meeting of the Executive Committee. These two projects could not meet the cost-effectiveness threshold for rigid foam and were therefore deferred. At the 18th Meeting the beneficiary companies agreed to absorb part of the project costs themselves and therefore those projects that were presented to the Executive Committee were approved. However, the communication of the agreement of these two companies to absorb part of the project cost reached the Fund Secretariat too late to be included in the documentation of the 18th Meeting. The World Bank, the implementing agency, has therefore submitted the projects to the 19th Meeting with the agreed funding for each company as follows:

Equipment (high pressure dispenser and pouring auxiliary) US \$ 55,000

Start-up, trials and training US \$ 10,000

Contingency US \$ 6,500

TOTAL: US \$ 71,500

RECOMMENDATIONS

1. The Fund Secretariat recommends approval of the project costs of Beauty Enterprises, Penang Trading and Transfreeze with the associated support cost as shown in the table below. The recommendation on far East Industries will be communicated in due course.

	Project Cost US \$	Support Cost US \$	Cost Effectiveness US \$/kg.
(a) Conversion to CFC-free technology for the manufacture of flexible polyurethane foam at: (i) Far East Industries (ii) Nite Beauty Industries	Pending 30,000	Pending 3,900	Pending 3.0
(b) Elimination of CFC-11 in the manufacture of polyurethane refrigerator panels at Penang Trading Co.	71,500	9,292	80,795
(c) Elimination of CFC-11 in the manufacture of polyurethane cold-room insulation panels/truck container panels at Kejuruteraan Transfreeze Sdn.	71,500	9,292	80,795