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Executive Committee of
the Multilateral Fund for the
Implementation of the Montreal Protocol
Twenty-sixth Meeting
Cairo, 11-13 November 1998

PROJECT PROPOSALS: MALAYSIA

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

Foam

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|---|-------|
| • Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Gorich | UNDP |
| • Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Minply | UNDP |
| • The replacement of CFC-11 foam blowing agent by HCFC 141b in the insulation of GRP fish boxes and flotation buoys at C.C. Chong Co. | UNIDO |
| • The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Ming Soon Enterprise Sdn. Bhd. | UNIDO |
| • The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Yong Tuck Refrigeration Trading Co | UNIDO |

PROJECT EVALUATION SHEET MALAYSIA

SECTOR: FOAM ODS use in sector (1993): 1,360 ODP tonnes

Sub-sector cost-effectiveness thresholds: Integral Skin US \$16.86/kg
Rigid US \$7.83/kg

Project Titles:

- (a) Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Grorich
- (b) Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Minply
- (c) The replacement of CFC-11 foam blowing agent by HCFC-141b in the insulation of GRP fish boxes and flotation buoys at C.C. Chong Co.
- (d) The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Ming Soon Enterprise Sdn. Bhd.
- (e) The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Yong Tuck Refrigeration Trading Co.

Project Data	Integral Skin/Rigid		Rigid		
	Grorich	Minply	C.C. Chong	Ming Soon	Yong Tuck
ODS phase-out (ODP tonnes)	34	17.0	5.0	7.0	8.0
Proposed project duration (months)	24	24	18	18	18
Incremental capital cost (US \$)	136,400	139,150	24,200	35,200	44,000
- including contingency (%)	10	10	10	10	10
Incremental operational cost (US \$)	37,750	18,900	10,383	13,599	17,735
Total project cost (US \$)	174,150	158,050	34,583	48,799	61,735
Local ownership (%)	100	100	100	100	100
Export component (%)	0	0	0	0	0
Amount requested (US \$) {Original}	219,250	203,150	34,583	48,799	61,735
{Revised}	174,150	158,050			
Cost effectiveness (US \$/kg)	65.29	9.58	7.77	7.83	7.72
National Coordinating Agency	Department of Environment (DOE)		Ministry of Science, Technology and Environment		
Implementing Agency	UNDP		UNIDO		
Technical review completed?	Yes		Yes		

Secretariat's Recommendations:					
Amount recommended (US \$)	174,150	158,050	34,583	48,799	Not Eligible
Project impact (ODP tonnes)	32.9	16.5	4.45	6.23	
Cost effectiveness (US \$/kg)	5.29	9.58	7.77	7.83	
Implementing Agency support cost (US \$)	22,640	20,466	4,496	6,344	
Total cost to Multilateral Fund (US \$)	196,790	178,597	39,079	55,143	

PROJECT DESCRIPTION

- (a) **Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Grorich**
- (b) **Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Minply**
- (c) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the insulation of GRP fish boxes and flotation buoys at C.C. Chong Co.**
- (d) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Ming Soon Enterprise Sdn. Bhd.**
- (e) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Yong Tuck Refrigeration Trading Co.**

General

1. The use of ODS in the foam sector in Malaysia grew from 590 tonnes ODP in 1989 to 1360 tonnes ODP in 1993. The country programme update indicated the year 2000 as the phase out date for CFCs and halon. The most recent information provided by the Government as part of its report on the progress of implementation of Malaysia's Country Programme indicates the consumption in the foam sector for 1997 as 662 tonnes ODP.

2. It states that in the pursuit to meet the target phase out date of year 2000, Malaysia has outlined the strategy and policy to reduce consumption and to restrict the usage of CFCs in manufacturing sector such as in foam making and aerosol. The Application Permit System (AP) has been introduced since April 1994 with a reduced quota set every year.

3. Malaysia has received funding from the Multilateral Fund of the Montreal Protocol to implement projects and activities that would phase out over 4600 tonnes ODS by end of 1999. As of June 1998, 67 projects and activities had been completed that phased out more than 2,200 MT of CFCs. It is anticipated that Malaysia can achieve the targeted phase out date of year 2000 in the manufacturing sector provided that all investment projects will be completed in time by end of 1999. However, the present economic situation may have some adverse effects on the project implementation as many industries will have to slow down on capital investment and delay the project completion.

Integral Skin Foam

- (a) **Conversion to Water Based HCFC-141b Technology in the Manufacture of Polyurethane Foam at Grorich.**
- (b) **Conversion to Water Based and HCFC-141b Technology in the Manufacture of Polyurethane Foam at Minply.**

4. The two projects were submitted to the 25th Executive Committee Meeting by UNDP. The summary of the project data (CFC consumption and project costs) is provided in the evaluation sheet. The full description of the projects can be found in UNDP/OxL.Pro/ExCom/25/38 pages 4-5.

5. The Executive Committee decided to defer consideration of the above two projects pending determination of the cost of equipment necessary to implement the project, and pending provision of a more detailed justification for the use of HCFC technology, as shall be provided for each project based on HCFC's submitted to the Executive Committee. (Decision 25/38).

6. The two projects have been resubmitted in line with the above-mentioned Decision. Copies of justification letters for the use of HCFC-141b which were provided by UNDP have been attached as Annexes 1 and 2.

Rigid Foam

- (c) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the insulation of GRP fish boxes and flotation buoys at C.C. Chong Co.**
- (d) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Ming Soon Enterprise Sdn. Bhd.**
- (e) **The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Yong Tuck Refrigeration Trading Co.**

7. The three companies belong to the SME sector of industry. The CFC-11 consumption of the companies are C.C. Chong – 5 tonnes (average 1995-1997), Ming Soon - 7 tonnes (1997) and Yong Tuck – 9 tonnes (average 1995-1997). C.C. Chong manufactures glass reinforced polyester fish boxes insulated with rigid polyurethane foam. Ming Soon and Yong Tuck each manufactures metal faced rigid foam panels for cold rooms. The dates of establishment of C.C. Chong, Ming Soon and Yong Tuck are 1984, 1992 and 1996, respectively.

8. The companies use self-fabricated metering and dosing systems which are considered inefficient and unsuitable for handling the substitute technologies. The companies will convert to HCFC-141b. For this conversion C.C. Chong will be provided with a low output dispenser with impingement mixing at US \$30,000 while the other two companies will be provided low pressure foaming machines at US \$50,000 each. Technology transfer, training, and trial costs for the three companies range from US \$5,000 – US \$10,000. Incremental operational costs range from about US \$10,400 to US \$17,700.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Integral Skin Foam

1. Following the Secretariat's comments based on Decision 25/38 and subsequent discussion with UNDP, the issue which related to the cost of multi-component premixers for the companies at US \$85,000 each has been resolved. The amount of US \$44,000 has been agreed as the eligible incremental cost of such an item. Consequently, the projects are being recommended for approval.

Rigid Foam

2. The calculation of the costs of the projects is consistent with the guidelines. Therefore, the two projects, C.C. Chong and Ming Soon are recommended for approval.

3. With regard to Yong Tuck, since the company was established in 1996 (after July 1995) it is not eligible for funding.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the Gorrich, Minply, C.C. Chong and Ming Soon projects with the funding levels and associated support costs indicated in the table below.

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Gorrich	174,150	22,640	UNDP
Phaseout of CFC-11 by conversion to water and HCFC-141b technology in the manufacture of integral skin and rigid molded polyurethane foam at Minply	158,050	20,466	UNDP
The replacement of CFC-11 foam blowing agent by HCFC-141b in the insulation of GRP fish boxes and flotation buoys at C.C. Chong Co.	34,583	4,496	UNIDO
The replacement of CFC-11 foam blowing agent by HCFC-141b in the manufacture of insulation panels at Ming Soon Enterprise Sdn. Bhd.	48,799	6,344	UNIDO

2. The Fund Secretariat further recommends that the Yong Tuck project is not eligible for funding and should not be considered for approval.