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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Thirty-fourth Meeting
Montreal, 18-20 July 2001

PROJECT PROPOSALS: MALAYSIA

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

Foam:

• Phase out of CFC-11 by conversion to HCFC-141b technology at Composites Truck Body Sdn. Bhd. in the manufacture of rigid polyurethane foam for insulating purposes	UNIDO

Refrigeration:

• Replacement of CFC-12 refrigerant with HFC 134a in the manufacturing of mobile air-conditioning system at Sanden International (M) Sdn. Bhd.	World Bank

PROJECT EVALUATION SHEET
MALAYSIA

SECTOR: Foam ODS use in sector (1999): 236 ODP tonnes

Sub-sector cost-effectiveness thresholds: Rigid US $7.83/kg

Project Titles:

(a) Phase out of CFC-11 by conversion to HCFC-141b technology at Composites Truck Body Sdn. Bhd. in the manufacture of rigid polyurethane foam for insulating purposes

Project Data	**Rigid**
	Truck Body
Enterprise consumption (ODP tonnes)	8.90
Project impact (ODP tonnes)	8.11
Project duration (months)	30
Initial amount requested (US $)	63,280
Final project cost (US $):	
Incremental capital cost (a)	53,000
Contingency cost (b)	5,300
Incremental operating cost (c)	28,460
Total project cost (a+b+c)	86,760
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US $)	63,280
Cost effectiveness (US $/kg.)	7.80
Counterpart funding confirmed?	Yes
National coordinating agency	Department of Environment
Implementing agency	UNIDO

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

Sector background

- Latest available total ODS consumption (1999)	2,364.30 ODP tonnes
- Baseline consumption of Annex A Group I substances (CFCs)	3,271.10 ODP tonnes
- Consumption of Annex A Group I substances for the year 2000	1,648.92 ODP tonnes
- Baseline consumption of CFCs in foam sector	698.96 ODP tonnes
- Consumption of CFCs in foam sector in 1999	236.00 ODP tonnes*
- Funds approved for investment projects in foam sector as of end of 2000	US $12,603,146.00
- Quantity of CFC approved to be phased out in investment projects in foam sector as of end of 2000	1,791.99 ODP tonnes
- Quantity of CFC phased out in investment projects in foam sector as of end of 2000	1,614.53 ODP tonnes
- Quantity of CFCs in approved investment projects in foam sector not yet completed as of end of 2000	176.40 ODP tonnes
- Quantity of CFCs remaining to be phased out in the foam sector as of end of 2000	59.60 ODP tonnes**

* Based on information provided by UNIDO in the project document

** Estimate based on 1999 consumption data

1. In the letter endorsing the use of HCFC-141b by Composite Truck Body, the Government of Malaysia stated that it had introduced a regulation prohibiting usage of CFC as blowing agent in foam production that had come into force on 1 January 1999. This was in line with the Government objective of total phase out of CFC in the manufacturing sector by year 2000. Malaysia has not reported its sector-based consumption data for 1999 and 2000. The Government as well as UNIDO which submitted the project have been reminded of the absence of these data.

Rigid Foam

Composites Truck Body SDN. BHD.

2. Composites Truck Body SDN. BHD. (founded in 1994) consumed 8.9 tonnes of CFC-11 in 1999 in the manufacturing of rigid polyurethane insulating panels for thermal insulated truck bodies. The chosen conversion process of HCFC-141b technology (no time limit was provided for this interim solution) will phase out 8.113 tonnes of CFC-11 with residual ODS of 0.787 ODP tonnes per year. This interim technology will be used until a full water-blown system becomes available in the future.

3. The baseline equipment of the company includes a mechanical press with a capacity of up to 160 m^2 per day and a foaming machinery set consisting of metering, dosing, mixing, and

pouring elements with a capacity of 500-800 kg/day. Both types of equipment were installed and commissioned in 1994.

4. The claimed cost for new equipment (low-pressure dispenser including chiller) is US $40,000, and technology transfer, consultancy services, and training amount to a total US $13,000. The total project cost amounts to US $86,760 made up of US $58,300 incremental capital cost and US $28,460 incremental operating cost.

Justification for conversion to HCFC-141b technology

5. UNIDO provided the following justification for the selection of HCFC-141b technology:

> When weighing all of the conversion options, the HCFC-141b based system is preferred from a technical and economic point of view. The following are other factors which influenced this decision: HCFC-141b technology is adopted by most of the company's existing or potential competitors in Malaysia; product availability; HCFC-based technologies are still eligible for Multilateral Fund assistance; the Malaysian Ministry of the Environment supports the selection of HCFC-141b as an interim solution; and concern over introducing flammable blowing agent technology into the factory.

6. The Government of Malaysia has endorsed the use of HCFC-141b by the company as interim conversion technology.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

7. The components of the project are compatible with similar projects approved and implemented in Malaysia and other Article 5 countries. Thus the project's eligible grant has been agreed as US $63,280.

8. UNIDO originally prepared the project in September 2000, based on 1999 CFC consumption of the company. Malaysia has not reported sector-based data for 1999 or 2000 in spite of reminders by the Secretariat. In the absence of such latest information and in the circumstances of the regulatory measures taken by the Government to control CFC use the current consumption of the company could not be ascertained.

9. The project is submitted for individual consideration.

PROJECT EVALUATION SHEET
MALAYSIA

SECTOR: Refrigeration ODS use in sector (1998): 2342 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

(a) Replacement of CFC-12 refrigerant with HFC 134a in the manufacturing of mobile air-conditioning system at Sanden International (M) Sdn. Bhd.

Project Data	**MAC**
	Sanden
Enterprise consumption (ODP tonnes)	
Project impact (ODP tonnes)	120.00
Project duration (months)	18
Initial amount requested (US $)	807,280
Final project cost (US $):	
Incremental capital cost (a)	1,323,255
Contingency cost (b)	28,208
Incremental operating cost (c)	
Total project cost (a+b+c)	1,351,463
Local ownership (%)	60%
Export component (%)	0%
Amount requested (US $)	810,877
Cost effectiveness (US $/kg.)	
Counterpart funding confirmed?	Yes
National coordinating agency	Department of Environment
Implementing agency	IBRD

Secretariat's Recommendations	
Amount recommended (US $)	807,280
Project impact (ODP tonnes)	120.00
Cost effectiveness (US $/kg)	
Implementing agency support cost (US $)	48,440
Total cost to Multilateral Fund (US $)	855,720

PROJECT DESCRIPTION

Replacement of CFC-12 refrigerant with HFC 134a in the manufacturing of mobile air-conditioning system at Sanden International (M) Sdn. Bhd.

10. There are six major manufacturers of MAC systems in Malaysia; four enterprises have already converted to HFC-134a technology, three of them (Denso Bhd., UCM Industrial Corporation Bhd and APM Air Conditioning Sdn) with the assistance from the Fund and the other (Patco) with its own resources. The Government of Malaysia is submitting a project proposal from Sanden International Sdn. Bhd for the conversion of CFC-12 based MAC compressors to HFC-134a refrigerant, and is preparing a national CFC phase out project (for consideration by the Committee at its 35th Meeting) that will include a request for conversion of the remaining MAC enterprise (Seasonair Sdn. Bhd.) to non-CFC refrigerant.

11. Sanden International was established in 1992; it is a 60 per cent Malaysian owned company, the remaining 40 per cent of the shareholders are under Sanden Corporation Japan. The company manufactures compressors for the local MAC original equipment market (OEM) and for the replacement equipment market (REM). Since 1997, the company started assembling HFC-134a MAC systems using components imported from Singapore and Japan.

12. Prior to 1997, the company was manufacturing 74,000 units per year. To introduce HFC-134a MAC systems in the Malaysian market, the company decided to reduce production level of CFC-12-based systems and increase sales of HFC-134a systems that were imported. Based on an increase in the demand for HFC-134a MAC systems by its customers and in support of the ODS phase out policy established by the Government, the enterprise decided to reduce production of CFC-12 MAC compressors to a level required for the after-sales market and increase production of HFC-134a compressors. The enterprise is proposing to close the production line for CFC-12 MAC compressors in 2002.

13. Conversion to non CFC-technology entails installation of new equipment including pneumatic press, oil charging equipment, refrigerant charging system leak and moisture testing equipment, jigs and tooling. The total capital cost is estimated at US $1,966,144. However, the total cost requested is US $1,345,463, taking into consideration relevant decisions by the Executive Committee, cost adjustments related to modernisation, increase in production capacity, and technology changes to satisfy customer requirements which are not related to change in refrigerant. Procurement of major equipment items has been completed (the equipment has not been delivered and technology transfer have not commenced), therefore, contingency costs (at 10 per cent) are not applied to equipment items needed for the conversion. Incremental operating costs are not requested. The total project cost has also been adjusted to deduct the foreign ownership share (at 40 per cent).

14. Sanden International has a technical agreement with its principal shareholder, Sanden Corporation Japan, which covers the various technical aspects of the conversion to HFC-134a technology, including technical assistance, training and royalty payment.

SECRETARIAT'S COMMENT AND RECOMMENDATION

COMMENT

15. The Secretariat discussed with the World Bank issues related to the current production level at the enterprise and the salvage value of the equipment to be replaced and the level of the agency support cost considering that the equipment has already been procured. The Bank indicated that the current production is 350 units/day (92 per cent of installed capacity); the salvage value of the equipment was estimated at US $1,050 while the cost for dismantling it was US $3,320.

RECOMMENDATION

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

	Project Title	Project Funding (US$)	Support Cost (US$)	Implementing Agency
(a)	Replacement of CFC-12 refrigerant with HFC 134a in the manufacturing of mobile air-conditioning system at Sanden International (M) Sdn. Bhd.	807,280	48,440	IBRD