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Executive Committee of
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PROJECT PROPOSALS: INDONESIA

This document includes the comments and recommendations from the Fund Secretariat on the following projects:

Aerosol

- Conversion and aerosol filling center at PT Candi Swadaya Sentosa World Bank

Foam

- Conversion to CFC free technology in the manufacture of integral skin molded polyurethane foam at Pim UNDP
- Phasing out CFC-11 at PT Panca Duta Foam Industry UNIDO
- Phasing out CFC-11 at PT Winnerfoam Abadi UNIDO
- Phasing out CFC-11 at PT Elastino Satyajaya flexible polyurethane foam plant UNIDO

Refrigeration

- Phasing out ODS at P.T. Jalur Sejuk UNIDO

SECTOR:	AEROSOL	ODS use in sector (1996)	1,500 tonnes
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Sub-sector cost-effectiveness threshold: 4.4 US \$/kg

PT Candi Conversion and Aerosol Filling Center

Project Data	AEROSOL	
	PT Candi Conversion and Aerosol Filling Center	
ODS phase-out (ODP tonnes)		460
Proposed project duration (Yrs)		2
Incremental capital cost (US \$)		1,848,440
Contingency (%)		10
Incremental operational cost (US \$)		(314,594)
Total project cost (US \$)		
Local ownership (%)		100
Export component (%)		-
Amount requested (US \$) {Original}		1,533,846
{Revised}		
Cost effectiveness (US \$/kg)		3.33
National Coordinating Agency	Ministry of Environment	
Implementing Agency	World Bank	
Technical review completed?		Yes

<i>Secretariat's Recommendations:</i>	
Amount recommended (US \$)	1,175,340
Project impact (ODP tonnes)	460
Cost effectiveness (US \$/kg)	2.55
Implementing Agency support cost (US \$)	152,794
Total cost to Multilateral Fund (US \$)	1,328,134

PROJECT DESCRIPTION

1. The Indonesia country programme (approved in March 1994) reported that in 1992 consumption of CFC in the aerosol sector amounted to 2,000 tonnes. In 1990 the Ministry of Health issued a decree to ban the use of CFCs, which entered into force in 1993.
2. A safety and technical programme to assist manufacturers of hydrocarbon propelled aerosol products in Indonesia was approved by the Executive Committee in November 1993. The project reported that in 1991 CFC consumption in aerosols was 1,500 tonnes, and by 1993 this amount was reduced to approximately 400 tonnes, due to ban of the use of CFCs in aerosol products.
3. However, data gathered during implementation of the technical assistance programme estimated that in 1996 CFC consumption in the aerosol sector was between 1,200 and 1,500 tonnes, largely used for the production of room deodorants; personal care products and industrial, automotive, and medical aerosols. Four large-sized and 25 small-sized contract fillers and 45 self-fillers (six are large, 15 are moderate in size, and the balance are small) were identified.
4. The proposed project seeks to convert the existing CFC line and to establish a new filling centre at PT Candi to HAP technology to satisfy the needs of about 20 smaller companies to fill with HAPs. The Ministry of Environment, recognizing that it will not be economically feasible to convert all of the many small fillers to HAPs, supports the installation of the filling service centre.
5. PT Candi has four production lines to fill the company's brands (equivalent to 20% of the business) and contract package aerosols for other companies (80% of the business), using propane-butane propellant. It also has a production line to fill 167,000 aerosol cans, mainly deodorants, using 60 tonnes of CFCs as propellant (50 tonnes are for services provided as a contract filler).
6. Conversion of the filling line at PT Candi entails installation of a semi-automatic filling machine and a hand-operated water bath for testing filled cans. Operating savings (NPV) for four years are US \$17,830.
7. The establishment of the filling centre entails installation of four filling lines using three explosion-proof automatic and one explosion-proof semi-automatic filling machines and four water baths to be located in four open air filling rooms, compressors, hydrocarbon storage tanks, quality control instruments and equipment, and gas detection and fire control systems.
8. PT Candi proposes to provide the land for the filling service center and will build the required plant modules, warehouse and offices. The cost of these combined with other equipment and installation not being claimed from the Multilateral Fund are estimated at US \$1,500,000.
9. The services provided by the filling centre will phase out approximately 400 tons of CFCs per year, currently used by the 20 companies to fill about 20 million aerosol cans per year.

10. The project proposal states that the World Bank consultant met with a delegation of the small fillers, and was assured that they would accept such a filling service as long as costs did not increase, and the confidentiality concerning formulations and the types and amounts of products filled was protected. It further stated that it is virtually certain that this 30% conversion will drive the remainder of the small fillers to HAPs; some companies will convert to HAP technology with their own capital, while other fillers could require a future expansion of the filling service center, which PT Candi has pledged to do without further financial assistance from the Multilateral Fund.

11. The project proposes to rent the new filling lines to the small fillers at US \$500/day for the automatic filling lines and US \$200/day for the semi-automatic filling line. Considering operations during 300 days per year and equipment utilization at 80% of the production capacity, the total gross income would be US \$336,000/year. The annual operating costs are related to salaries for new staff (e.g., General Manager, technicians, chemist, laboratory technician, maintenance personnel, administrator and accountant), utilities, insurance, and transportation, estimated at US \$259,800. Thus, net operating savings (NPV) for four years are US \$259,374.

12. The project states that the Government of Indonesia proposes to vigorously enforce the ban of CFCs for all aerosol uses by December 31st, 1997.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The CFC consumption in the aerosol sector in Indonesia is uncertain. The Secretariat encountered discrepancies in the CFC consumption data in the aerosol sector as reported in the country programme, the progress report on the implementation of the country programme submitted by the Government of Indonesia to the Fund Secretariat (the ODS consumption in the country in 1995 was 908.73 ODP tonnes), and the technical assistance programme under the World Bank work programme. The Bank's consultant indicated that, based on information gathered during implementation of the technical assistance programme, CFC consumption in the aerosol sector is between 1,200 and 1,500 tonnes.

2. The aerosol technical assistance programme approved in November 1993 was to provide safety training, safety audits and some investment in safety equipment (fire extinguishers, crimp gauges, portable gas detectors and manual gassing adapters) to 18 aerosol fillers that had partially or totally switched to HAP technology. None of these elements is included in the project being submitted to the 22nd meeting of the Executive Committee.

3. Upon a request by the Fund Secretariat, the World Bank included a statement on how the project will help the country to meet the 1999 freeze.

4. The project proposes to replace the existing CFC filling equipment at PT Candi with an automatic filling machine and a magnetic water bath. Based on additional basic information on the

filling operations performed at PT Candi provided by the World Bank, and information from aerosol fillers that have converted to HAP technology and aerosol equipment manufacturers, the Secretariat and the World Bank agreed that a semi-automatic filling machine and a hand-operated water bath would be sufficient to perform the filling operations at PT Candi.

5. During the project review process, the World Bank provided data on production capacity and CFC consumption by small fillers that would be served at the filling centre. Based on this information, the Secretariat and the World Bank discussed the eligibility and level of costs of several pieces of the equipment requested for the establishment of the new filling centre. An agreement was reached to reduce the number and/or capacity of the water baths, LPG storage tanks and related equipment, piping, compressors and quality control instruments and equipment. It was also agreed to adjust the costs associated with the construction of the new open-air filling rooms and related works.

6. The World Bank and the Secretariat discussed the "rent a line" concept and its related operating costs/savings for the filling centre. The Secretariat indicated that most of the operational costs of the new enterprise have not been counted before in similar projects. The World Bank re-calculated the operating costs/savings accordingly.

RECOMMENDATION

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

<u>Project Title</u>	<u>Project Cost</u> <u>US \$</u>	<u>Support Cost</u> <u>US \$</u>	<u>Implementing</u> <u>Agency</u>
PT Candi Conversion and Aerosol Filling Center	1,175,340	152,794	World Bank

SECTOR:	Foams	ODS use in sector (1992):	1,215 ODP tonnes
Sub-sector cost-effectiveness thresholds:	Flexible		6.23 US \$/kg
	Integral skin	16.86 US \$/kg	

- (a) Phasing out CFC-11 at PT Elastino Satyajaya flexible polyurethane foam plant.
- (b) Phasing out CFC-11 at PT Panca Duta Foam Industry.
- (c) Phasing out CFC-11 at PT Winnerfoam Abadi.
- (d) Conversion to CFC free technology in the manufacture of integral skin molded polyurethane foam at PIM

Project Data	Flexible			Integral Skin
	Elastino	Panca Duta	Winnerfoam	PIM
ODS phase-out (ODP tonnes)	18	45	40	4.5
Proposed project duration (Yrs)	1.3	1.3	1.3	2
Incremental capital cost (US \$)	76,950	102,000	102,000	104,500
Contingency (%)	10	10	10	10
Incremental operational cost (US \$)	(1,007)	(15,045)	(22,528)	11,000
Total project cost (US \$)	75,943	86,955	79,472	115,500
Local ownership (%)	100	100	100	100
Export component (%)				
Amount requested (US \$) {Original}	76,397	88,452	81,499	76,000
{Revised}	75,943	86,955	79,472	76,000
Cost effectiveness (US \$/kg)	4.22	1.93	1.99	16.86
National Coordinating Agency	Indonesian Ministry of Environment (LH)			
Implementing Agency	UNIDO	UNIDO	UNIDO	UNDP
Technical review completed?	Yes	Yes	Yes	Yes

Amount recommended (US \$)	75,943	86,955	79,472	75,870
Project impact (ODP tonnes)	18	45	40	4.5
Cost effectiveness (US \$/kg)	4.22	1.93	1.99	16.86
Implementing Agency support cost (US \$)	9,873	11,304	10,331	9,863
Total cost to Multilateral Fund (US \$)	85,816	98,259	89,803	85,733

PROJECT DESCRIPTION

Flexible Slabstocks

- (a) Phasing out CFC-11 at PT Elastino Satyajaya flexible polyurethane foam plant.
- (b) Phasing out CFC-11 at PT Panca Duta Foam Industry.
- (c) Phasing out CFC-11 at PT Winnerfoam Abadi.

1. The three companies produce flexible polyurethane foam blocks for the furniture industry. Elastino Satyajaya and Panca Duta have installed capacities of 400 tonnes each, while Winnerfoam Abadi has installed capacity of about 1000 tonnes. All three operate box foam molds. The chemicals are mixed manually (except at Winnerfoam where some components are mixed automatically) and poured by hand into the box molds.

2. All three companies will phase-out the use of CFC-11 through replacement with methylene chloride. Conversion at the three companies will involve upgrading of the ventilation systems for efficient extraction of methylene chloride fumes and general improvement in the process, cure and storage areas in order to ensure occupational safety (US \$62,500 each) and provision of safety devices (airflow meter and methylene chloride monitor) at US \$7,000. Commissioning and start-up, technology transfer and training amount to US \$19,000 in each case.

Integral Skin

- (d) Conversion to CFC free technology in the manufacture of integral skin molded polyurethane foam at PIM

1. Plysindo Inter Mouldi (PIM) manufactures foam parts for the automotive industry. It currently has one Chyun HEH LP30 low pressure machine (1992). The company will convert from the use of CFC-11 to all water blown formulations with transitional use of HCFC-141b. The capital costs include replacement of the low pressure machine with a 30 kg/min. high pressure machine for US \$90,000 and trials, technology transfer and training for US \$15,000.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Flexible Slabstock

1. The three projects were discussed taking into account the pipeline project of the World Bank in this sector in the country and the need to avoid any possible duplication. There were two companies Winnerfoam Abadi and Vinna Foam (in the World Bank pipeline project) whose identities must be verified to establish whether they are one and the same company.

2. The occupational safety measures to be implemented in the projects were reviewed in the light of the process characteristics, plant configurations and efficiency of the measures proposed. The review of these measures resulted in only marginal changes in the project costs.

Integral Skin

3. PIM: The Fund Secretariat and UNDP agreed on the project concept and costs.

Impact of Projects on Meeting the 1999 Freeze

4. The project documents indicate as follows:

"It is the Government's stated intention in the Country Programme to achieve complete phaseout in the use of CFC's in new products in 1997. The recent shortfall in MLF Funds as well as the large number of scattered small production centers make this goal difficult to achieve but it is intended at least to prepare all required investment projects. There is a large, fast growing, service sector that will continue to use CFCs as long as CFC- containing equipment has to be serviced. Only the phaseout of CFCs in new products will therefore contain this sector and provide the Government with the control needed to assure the 1999 freeze in Indonesia's usage of ozone depleting substances."

RECOMMENDATIONS

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

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
(a) Phasing out CFC-11 at PT Elastino Satyajaya flexible polyurethane foam plant.	75,943	9,873	UNIDO
(b) Phasing out CFC-11 at PT Panca Duta Foam Industry.	86,955	11,304	UNIDO
(c) Phasing out CFC-11 at PT Winnerfoam Abadi.	79,472	10,331	UNIDO
(d) Conversion to CFC free technology in the manufacture of integral skin molded polyurethane foam at PIM	75,870	9,863	UNDP

2. UNIDO should clarify the identity of Winnerfoam Abadi during implementation of the project in order to avoid overlap of activities with the other implementing agencies.

PROJECT EVALUATION SHEET INDONESIA

SECTOR: Refrigeration ODS use in sector (1992): 1,025 ODP tonnes

Sub-sector cost-effectiveness thresholds: Commercial US 15.21/kg

Project Titles:

Phasing out ODS at P.T. Jalur Sejuk

Project Data	Commercial
	P.T. Jalur Sejuk
ODS phase-out (ODP tonnes)	30.85
Proposed project duration (Yrs)	1.5
Incremental capital cost (US\$)	156,020
Contingency (%)	10
Incremental operational cost (US\$)	15,450
Total project cost (US\$)	171,470
Local ownership (%)	100
Export component (%)	-
Amount requested (US\$) { Original	322,410
{ Revised	171,470
Cost effectiveness (US\$/kg)	5.56
National Coordinating Agency	Ministry of Environment
Implementing Agency	UNIDO
Technical review completed?	Yes

<i>Secretariat's Recommendations</i>	
Amount recommended (US \$)	171,470
Project impact (ODP tonnes)	30.85
Cost effectiveness (US \$/kg)	5.56
Implementing Agency support cost (US\$)	22,291
Total cost to Multilateral Fund	193,761

PROJECT DESCRIPTION

Phasing out ODS at P.T. Jalur Sejuk

1. There are about 100 enterprises in the refrigeration sector in Indonesia which consume about 1,025 ODP tonnes.
2. This project will phase out 20.85 ODP tonnes in the production of insulating panels and refrigerant systems at P.T. Jalur Sejuk. The chosen replacement alternatives are HCFC-141b as foam blowing agent and HCFC-22 as refrigerant. The project includes the replacement of traditional cooling equipment using R-502 refrigerant blend with cooling equipment operating with HCFC-22. The conversion of the insulating panel production lines includes replacement of the foam blowing system with high-pressure machines suitable for use of HCFC-141b.
3. The replacement alternatives and the time frame for phasing out ODS will be in line with the programme for phasing-out ODS of the Government of Indonesia.
4. Whilst recognizing the environmental benefits of cyclopentane versus HCFC-141b, the company selected HCFC-141b as a first stage, interim, replacement of CFC-11 as it provides the best energy efficiency and the lowest levels of the work-force at P.T. Jalur Sejuk. The enterprise understands that HCFC-141b is an interim solution which will require a change to an appropriate zero-ODP technology (water-blown technology) when this technology becomes available to it. The enterprise will bear any costs associated with that eventual technology change.
5. The conversion to HCFC-141b based foam formulation involves the replacement of low pressure foaming machines. New foam equipment will enable implementation of subsequent ODS-free technologies.
6. Conversion to HCFC-22 refrigerant entails model redesign and training. Many manufacturers have chosen HCFC-22 as an intermediate replacement for R-502 and CFC-12. This is a viable and commercially available option for P.T. Jalur Sejuk in Indonesia. The enterprise will consider conversion to zero-ODP refrigerant blends at a later stage.
7. Operating costs are requested for one year of operation.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The project proposal contains a statement that "The Government of Indonesia intends to phase out ODS by the end of 1997 provided adequate financial resources are available from the Multilateral Fund and appropriate technologies are made available".
2. The chosen technologies are proven. The choice of an interim HCFC technology in foaming and refrigerant operations are justified.
3. The Secretariat discussed with UNIDO the eligibility and incrementality of all cost items. The costs of a foaming machine was adjusted in accordance with recent quotations. Cost of a chiller was recognized as ineligible. Operating costs have been adjusted in accordance with international prices for chemicals. The project budget has been adjusted accordingly.

RECOMMENDATION

- 1 The Fund Secretariat recommends that the projects be given blanket approval at the funding level indicated in the table below.

	<u>Project Cost</u> <u>US \$</u>	<u>Support Cost</u> <u>US \$</u>	<u>Implementing</u> <u>Agency</u>
Phasing out ODS at P.T. Jalur Sejuk	171,470	22,291	UNIDO