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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
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PROJECT PROPOSALS: LEBANON

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

Aerosol

- Group SME's project for the conversion to CFC-free technology in manufacturer of aerosol at Zahreddine Trad & Manuf. Est. Sarl (ZTME), at Societe Nouvelle pour le Commerce et l'Industrie (SNCI) and at Societe Libanaise de Fabrication Sarl (SOLF) UNDP

Refrigeration

- Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Farjallah Co. UNDP
- Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in the manufacture of commercial refrigeration at the first group of Lebanese Commercial Refrigerator Manufacturers UNIDO

**PROJECT EVALUATION SHEET
LEBANON**

SECTOR: Aerosol ODS use in sector (199): ODP tonnes

Sub-sector cost-effectiveness thresholds: 4.4 US \$/kg

Project Titles:

- (a) Group SME's project for the conversion to CFC-free technology in manufacturer of aerosol at Zahreddine Trad & Manuf. Est. Sarl (ZTME), at Societe Nouvelle pour le Commerce et l'Industrie (SNCI) and at Societe Libanaise de Fabrication Sarl (SOLF)

Project Data	Contract filler
	Group SMEs
Enterprise consumption (ODP tonnes)	50.70
Project impact (ODP tonnes)	50.70
Project duration (months)	36
Initial amount requested (US \$)	314,092
Final project cost (US \$):	
Incremental capital cost (a)	378,500
Contingency cost (b)	37,850
Incremental operating cost (c)	-102,258
Total project cost (a+b+c)	314,092
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US \$)	314,092
Cost effectiveness (US \$/kg.)	6.19
Counterpart funding confirmed?	
National coordinating agency	Ministry of Environment
Implementing agency	UNDP

Secretariat's Recommendations	
Amount recommended (US \$)	314,092
Project impact (ODP tonnes)	50.70
Cost effectiveness (US \$/kg)	6.19
Implementing agency support cost (US \$)	40,832
Total cost to Multilateral Fund (US \$)	354,924

PROJECT DESCRIPTION

Group SME's project for the conversion to CFC-free technology in manufacturer of aerosol at Zahreddine Trade and Manufacturing Est. Sarl (ZTME), at Societe Nouvelle pour le Commerce et l'Industrie (SNCI) and at Societe Libanaise de Fabrication Sarl (SOLF)

1. The Executive Committee has approved four investment projects for the phase out of 407 tonnes of CFCs used in the manufacturing of aerosol products and has allocated US \$880,300 for their implementation. The progress report (as of December 1998) submitted by the implementing agencies to the 28th Meeting of the Executive Committee reported that the two projects have been completed with 300 ODP tonnes already phased out and US \$559,874 disbursed.

2. The Government of Lebanon is submitting a project covering three small-size aerosol filling enterprises which would lead to elimination of 50.7 tonnes of CFCs and the complete phase out of CFCs in this sector. The projects are for the replacement of CFCs with hydrocarbon propellant (HAP) used in manufacturing different types and sizes of aerosol products, as shown below

<u>Enterprise</u>	<u>Cans/year</u>	<u>CFCs (ton)</u>	<u>Products</u>
ZTME	400,000	20.0	Deodorants
SNCI	314,000	19.3	Deodorants, perfumes, shaving cream
SOLF	87,000	10.8	Spray shoe care

3. The present aerosol filling operations are performed at each enterprise with semi-automatic filling machines (SNCI plant has two machines).

4. Conversion to HAPs technology entails installation of semi-automatic aerosol filling machines, manual-operated water baths for testing filled cans, LPG storage and purification systems and equipment for fire control, portable gas detectors, explosion proof fans and electrical connections. The filling lines for ZTME and SNCI will be located in a filling room with gas detectors and a control panel. The size of the replacement equipment is related to the production capacity of the plants.

5. Technical assistance will be provided for developing new formulations, technology transfer and plant safety training.

6. Within six months after approval of this project, the Government of Lebanon will implement regulations to ban the use of ODS in the production of aerosol cans. The Government is also committed not to request any further funding from the Multilateral Fund for aerosol manufacturing enterprises.

7. Each company has provided a letter of commitment stating that the project could be submitted by UNDP to the Executive Committee; each accepts the project as proposed in the project document; it will completely phase out the use of CFCs upon project completion; dispose of any equipment that has been replaced; provide funds for items that are included in the project

but are specifically excluded from funding by the Multilateral Fund, and will allow monitoring inspections by UNDP during project implementation.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The project is submitted under the window designed to facilitate pilot conversion of a group of small enterprises (decision 25/56). The project complies with the conditions established in the decision: the projects are for conversion of aerosol plants; the CFC consumption in each enterprise is below 20 ODP tonnes, the cost effectiveness value is equivalent to 150 per cent of the threshold value for the aerosol sector (US \$4.4/kg); the most cost-effective technology has been selected; and the Government will enact legislation banning the use of CFCs in this sector.
2. Implementation of this project will lead to the complete phase out of the aerosol sector in Lebanon.
3. Operating savings realized for the conversion to HAP technology (NPV for four years) were estimated as follows:

ZTME	(US \$40,560)
SNCI	(US \$39-624)
SOLF	(US \$22,074)

RECOMMENDATION

1. The Fund Secretariat recommends blanket approval of the project at the funding level indicated below:

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Group SME's project for the conversion to CFC-free technology in manufacturer of aerosol at Zahreddine Trad & Manuf. Est. Sarl (ZTME), at Societe Nouvelle pour le Commerce et l'Industrie (SNCI) and at Societe Libanaise de Fabrication Sarl (SOLF)	314,092	40,832	UNDP

**PROJECT EVALUATION SHEET
LEBANON**

SECTOR: Refrigeration ODS use in sector (1998): 251.92 ODP tonnes

Sub-sector cost-effectiveness thresholds: US \$15.21/kg

Project Titles:

- (a) Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Farjallah Co.
- (b) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in the manufacture of commercial refrigeration at the first group of Lebanese Commercial Refrigerator Manufacturers

Project Data	Commercial	Commercial
	Farjallah	1st group
Enterprise consumption (ODP tonnes)	21.16	19.42
Project impact (ODP tonnes)	20.08	18.55
Project duration (months)	36	24
Initial amount requested (US \$)	200,046	259,006
Final project cost (US \$):		
Incremental capital cost (a)	150,500	126,800
Contingency cost (b)	15,050	7,630
Incremental operating cost (c)	84,397	123,576
Total project cost (a+b+c)	249,947	258,006
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US \$)	200,046	258,006
Cost effectiveness (US \$/kg.)	9.96	13.90
Counterpart funding confirmed?	Yes	Yes
National coordinating agency	Ministry of Environment	Ministry of Environment
Implementing agency	UNDP	UNIDO

Secretariat's Recommendations		
Amount recommended (US \$)	200,046	258,006
Project impact (ODP tonnes)	20.08	18.55
Cost effectiveness (US \$/kg)	9.96	13.90
Implementing agency support cost (US \$)	26,006	33,541
Total cost to Multilateral Fund (US \$)	226,052	291,547

PROJECT DESCRIPTION

Sector Background

- Latest available total ODS consumption (1998)	646.82	ODP tonnes
- Baseline consumption* of Annex A Group I substances (CFCs)	725.5	ODP tonnes
- 1998 consumption of Annex A Group I substances	536.82	ODP tonnes
- Baseline consumption of CFCs in refrigeration sector	359.97	ODP tonnes
- 1998 consumption of CFCs in refrigeration sector	251.92	ODP tonnes
- Funds approved for investment projects in refrigeration sector as of July 1999	US \$ 1,905,015	
- Quantity of CFC to be phased out in refrigeration sector as of July 1999 (28 th Meeting)	207.40	ODP tonnes

*Baseline consumption of Annex A controlled substances refers to average of the consumption for the years 1995-1997 inclusive.

1. Original equipment manufacturers in the refrigeration sector in Lebanon are comprised of one manufacturer of domestic refrigeration appliances which has received assistance from the Multilateral Fund with consumption of 135 ODP tonnes and a number of small and medium sized commercial refrigeration enterprises, fifteen of which with a consumption of about 11 ODP tonnes, have received assistance from the Multilateral Fund.

2. The project proposal is submitted by UNDP, Farjallah Co. is a medium size commercial refrigeration enterprise. In 1998, Farjallah consumed a total of 15.36 ODP tonnes of CFC-11 and 5.8 ODP tonnes of CFC-12 in the production of commercial refrigeration equipment such as walk-in coolers and freezers based on CFC-12 hermetic and semi-hermetic compressors and foam sandwich insulation panels. In addition, the enterprise is engaged in the installation of site-assembled refrigeration systems for larger cold stores, based on HCFC-22 and ammonia compressors. The enterprise will convert its foam operations from CFC-11 to HCFC-141b as the blowing agent (as the interim technology, with a later conversion to an ODS-free technology) and refrigerant operations from CFC-12 to HFC-134a resulting in a total phase out of 20.08 ODP tonnes. The enterprise possesses a low pressure foaming machine, refrigerant charging equipment, leak detectors and vacuum pumps. The project will include incremental capital costs covering replacement of a low pressure foam dispenser with a high pressure dispenser, replacement/retrofit of vacuum pumps, replacement of refrigerant charging units and leak detectors, re-design, testing, trials, technical assistance and training. Incremental operating costs are sought for the higher cost of chemicals, capillary, dryers, condensers and for HFC-134a compressors.

3. The cost-effectiveness of conversion of sandwich panel production at Farjallah is calculated using the cost-effectiveness threshold established for the rigid foam sector.

4. The proposal submitted by UNIDO covers 6 small commercial refrigeration companies in Lebanon (Ets. Merhi Ind.; Sleem Modern Ind.; Uni Kitchen Co.; Hassan Brothers Co.; M. Traboulsi and International Center for Equipment and Promotion (IPEC)). All the companies under this proposal are producing similar refrigeration equipment (freezers, water coolers and display cabinets) using similar manufacturing techniques. The combined annual ODS consumption is 7.19 ODP tonnes of CFC-11 and 12.3 ODP tonnes of CFC-12. Four enterprises (Uni Kitchen; Hassan Brothers; M. Traboulsi and IPEC) will convert their foam operations from CFC-11 to HCFC-141b as the blowing agent (as the interim technology, with a later conversion to an ODS-free technology). Ets Merhi and Sleem Modern are using polystyrene panels for insulation of their product and do not need to convert. All six companies will convert their refrigerant operations from CFC-12 to HFC-134a. The total impact of the projects will be the phase out of 18.55 ODP tonnes.

5. All the six enterprises have refrigerant charging equipment, leak detectors and vacuum pumps in the baseline for refrigerant operations. The project will include incremental capital costs covering replacement of refrigerant charging equipment and leak detectors, and replacement/retrofits of vacuum pumps to handle HFC-134a refrigerant. The projects also include re-design, testing, trials, technical assistance and training. Uni Kitchen; Hassan Brothers; M. Traboulsi and IPEC currently operate low pressure foaming machines. The four enterprises have not requested replacement of the low pressure foam machines and have not sought any other capital costs for conversion of their foam blowing operations. They have indicated that it is necessary to install heating elements in the foaming jigs but that costs for this will be low and will be paid for by the companies themselves. Incremental operating costs are proposed for 12 to 15 months to cover the higher cost of chemicals, including an increase in foam density, filter/dryers and HFC-134a compressors.

Justification for the Use of HCFC-141b

6. The enterprises have selected HCFC-141b technology to replace CFC-11 in foam blowing operations. A letter advising of the Government decision to use HCFC technology has been received by the Secretariat in accordance with Executive Committee decision 27/13 and is attached to this evaluation together with the justification and undertakings from the enterprises.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Farjallah

1. The Secretariat discussed with UNDP the implications for the projects of the new sub-sector on the assembly, installation and charging of refrigeration systems. Because the "walk-in coolers" are manufactured and charged with refrigerant in the factory, the proposal is qualified as a commercial refrigeration project.

2. The Secretariat has discussed with UNDP the provision of equivalent refrigerant charging equipment, the prevailing prices of chemicals on the market. As a result, the relevant cost items have been adjusted and the eligible level of grant has been recalculated accordingly.

First Group of Lebanese Commercial Refrigerator Manufacturers

3. The Secretariat has discussed with UNIDO the calculation of incremental operating costs, in particular prices of chemicals and incremental cost of compressors. UNIDO provided additional information on these matters.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the two commercial refrigeration projects from UNIDO and UNDP with the funding levels and associated support costs as indicated below.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Farjallah Co.	200,046	26,006	UNDP
(b)	Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in the manufacture of commercial refrigeration at the first group of Lebanese Commercial Refrigerator Manufacturers	258,006	33,541	UNIDO