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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-eighth Meeting
Montreal, 14-16 July 1999

PROJECT PROPOSALS: SYRIA

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

Refrigeration

• Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Ihsan Co.	UNDP
• Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Alaman Co.	UNIDO
• Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.	UNIDO

PROJECT EVALUATION SHEET
SYRIA

SECTOR: Refrigeration ODS use in sector (Baseline): 775.17 ODP tonnes

Sub-sector cost-effectiveness thresholds: Commercial US $15.21/kg
Domestic US $13.76/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 Al-Ihsan Co.
(b) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Alaman Co.
(c) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.

Project Data	**Commercial**	**Domestic**	**Domestic**
	Al-Ihsan	**Alaman**	**Golden Penguin**
Enterprise consumption (ODP tonnes)	40.05	16.70	19.20
Project impact (ODP tonnes)	37.47	15.90	18.40
Project duration (months)	30	18	18
Initial amount requested (US $)	569,843	215,910	247,481
Final project cost (US $):			
Incremental capital cost (a)	273,900	178,918	198,528
Contingency cost (b)	27,390	16,992	18,953
Incremental operating cost (c)	196,369	20,000	30,000
Total project cost (a+b+c)	497,659	215,910	247,481
Local ownership (%)	100%	100%	100%
Export component (%)	0%	0%	0%
Amount requested (US $)	497,250	215,910	247,481
Cost effectiveness (US $/kg.)	13.27	13.58	13.45
Counterpart funding confirmed?	Yes	Yes	Yes
National coordinating agency	Ministry of State for Environmental Affairs	Ministry of Environment	Ministry of Environment
Implementing agency	UNDP	UNIDO	UNIDO

Secretariat's Recommendations			
Amount recommended (US $)	497,250	215,910	247,481
Project impact (ODP tonnes)	37.47	15.90	18.40
Cost effectiveness (US $/kg)	13.27	13.58	13.45
Implementing agency support cost (US $)	64,643	28,068	32,173
Total cost to Multilateral Fund (US $)	561,893	243,978	279,654

PROJECT DESCRIPTION

(a) Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Ihsan Co.

(b) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Alaman Co.

(c) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.

Sector Background

– Latest available total ODS consumption (1998)	1,464 ODP tonnes
– Baseline consumption* of Annex A Group I substances (CFCs)	1,991.3 ODP tonnes
– 1998 consumption of Annex A Group I substances	1,204 ODP tonnes
– Baseline consumption of CFCs in refrigeration sector	775.17 ODP tonnes
– 1998 consumption of CFCs in refrigeration sector	1,014 ODP tonnes
– Funds approved for investment projects in refrigeration sector **as of March 1999**	US $7,508,770
– Quantity of CFC to be phased out in refrigeration sector **as of March 1999**	
– Quantity of CFC phased out in refrigeration sector **as of March 1999**	484.4 ODP tonnes

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

1. The refrigeration sector consist of four large enterprises (all have received assistance from the Multilateral Fund) with a consumption of about 298 ODP tonnes, and several medium-sized enterprises (three of which have received assistance from the Multilateral Fund) with a consumption of about 105 ODP tonnes . Additionally, there are estimated more than 70 small-sized commercial refrigeration enterprises.

2. The approval of the three proposed projects will assist Syria in phasing out a total of 71.77 ODP tonnes. Since the project duration for project (a) is 2.5 years and for project (b) and (c) is 1.5 years, each, the expected ODP phase out would not impact on the 1999 freeze target of the country; however, it will assist the country to meet the 50% ODS reduction target.

(a) Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Ihsan Co.

3. This project will phase out 32.55 ODP tonnes of CFC-11 and 7.50 ODP tonnes of CFC-12 consumption annually (total of 37.47 ODP tonnes) in the production of commercial refrigeration equipment at Al-Ihsan Co. A portion of refrigeration equipment produced by A1-

Ihsam is manufactured using compressors below 250 WT. The phase out will be achieved by converting foam operations to HCFC-141b as the blowing agent and refrigeration operations to HFC-134a as the refrigerant. The enterprise operates two low-pressure foam dispensers. There are also one CFC-12 charging unit, three charging kits, four CFC-12 vacuum pumps, and two CFC-12 leak detectors. All of the above will be replaced and scrapped, except three CFC-12 vacuum pumps will be retrofitted. The project will include incremental capital costs covering two high pressure foam dispensers (US $180,000), two refrigerant charging units (US $30,000), vacuum pumps (US $3,900), redesign, testing, and trials (US $15,000), technical assistance (US $20,000) and training (US $10,000). The total incremental operating costs amount to US $269,216 based on 2 years duration.

(b) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134A in the production of refrigerators and freezers at Alaman Co.

4. This project will phase out a total of 15.9 ODP tonnes in the production of domestic refrigeration equipment at Alama Co. It will be achieved by converting foam operations to HCFC-141b as the blowing agent and refrigeration operations to HFC-134a as the refrigerant. The enterprise operates one low pressure foaming machine (80 kg/min), one CFC-12 charging unit, and one open premixer; they will be replaced and scrapped. The project will include incremental capital costs covering one high pressure foaming machine (US $90,000), a closed mixing unit and refrigerant charging and evacuating systems (US $55,300), redesign and trials (US $15,000), training and consultancy (US $9,000), and engineering (US $9,618). The incremental operating cost is requested for US $20,000 which is the eligible portion of total IOC calculated for six months (US $31,255) due to the limitations of the cost effectiveness threshold figure.

(c) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.

5. This project will phase out a total of 18.4 ODP tonnes in the production of domestic refrigeration equipment at Golden Penguin Co. It will be achieved by converting foam operations to HCFC-141b as the blowing agent and refrigeration operations to HFC-134a as the refrigerant. The enterprise operates two low pressure foaming machines (60 kg/min), one refrigerant charging machine, and a premixer; they will be replaced and scrapped. The project will include incremental capital costs covering one high pressure foaming machine (US $90,000), a closed mixing unit and refrigerant charging and evacuating systems (US $61,800), redesign and trials (US $12,000), training and consultancy (US $9,000), and engineering (US $10,728). The incremental operating cost is requested for US $30,000 which is the eligible portion of total IOC calculated for six months (US $43,653) due to the limitations of the cost effectiveness threshold figure

Justification for the Use of HCFC-141b

6. HCFC-141b will be used as substitute blowing agent by the three companies. Justification for the use of the HCFC-141b has been provided in the project document, including technical and economic analysis of the use of other alternative technologies in comparison with HCFC technology with the attached calculations. The Government's concurrence of the use of

HCFC technology has been provided in accordance with Executive Committee Decision 27/13 and is also attached to this evaluation.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

(a) Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Ihsan Co.

1. The Secretariat has discussed with UNDP the issue of application of the boundary between domestic and commercial refrigeration applications established by the Executive Committee in its Decision 26/36. It has implications for the calculation of incremental operating costs, due to the applications of the cost-effectiveness threshold established for the domestic refrigeration sector. UNDP has revised the calculations of IOC and the eligible level of the grant.

(b) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Alaman Co.

(c) Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.

2. The Secretariat has discussed with UNIDO the high consumption of foam used for insulation of refrigeration units by Alaman and Golden Penguin enterprises. Additional justification was provided by UNIDO.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the three projects submitted by UNDP and UNIDO with the funding level and associated support cost as indicated below:

	Project Title	Project Cost (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 Al-Ihsan Co.	497,250	64,643	UNDP
(b)	Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134A in the production of refrigerators and freezers at Alaman Co.	215,910	28,068	UNIDO
(c)	Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a in the production of refrigerators and freezers at Golden Penguin Co.	247,481	32,173	UNIDO