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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: JORDAN

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

Refrigeration

• Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the second group of Jordanian Commercial Refrigerator Manufacturers	UNIDO
• Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the Third Group of Jordanian Commercial Refrigerator Manufacturers	UNIDO
• Refrigerant management plan: national recovery and recycling project	UNIDO
• Refrigerant management plan: customs training	UNIDO
• Refrigerant management plan: phase I: training of trainers in good refrigerant management practices, phase II: national technicians training project	UNIDO
• Refrigerant management plan: technical assistance and support to develop regulations for ODS to implement the Environment law of 1995	UNIDO

PROJECT EVALUATION SHEET
JORDAN

SECTOR: Refrigeration ODS use in sector (Baseline): 154 ODP tonnes

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

Project Titles:

(a) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the second group of Jordanian Commercial Refrigerator Manufacturers
(b) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the Third Group of Jordanian Commercial Refrigerator Manufacturers

Project Data	**Commercial**	**Commercial**
	Second Group	**Third Group**
Enterprise consumption (ODP tonnes)	30.00	29.00
Project impact (ODP tonnes)	25.81	26.52
Project duration (months)	24	24
Initial amount requested (US $)	299,708	277,042
Final project cost (US $):		
Incremental capital cost (a)	130,800	103,800
Contingency cost (b)	13,080	10,380
Incremental operating cost (c)	135,070	129,584
Total project cost (a+b+c)	278,950	243,764
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US $)	278,950	243,764
Cost effectiveness (US $/kg.)	10.80	9.20
Counterpart funding confirmed?	Yes	Yes
National coordinating agency	Ministry of Municial, Rural Affairs & Environment	
Implementing agency	UNIDO	UNIDO

Secretariat's Recommendations		
Amount recommended (US $)	278,950	243,764
Project impact (ODP tonnes)	25.81	26.52
Cost effectiveness (US $/kg)	10.80	9.20
Implementing agency support cost (US $)	36,264	31,689
Total cost to Multilateral Fund (US $)	315,214	275,453

PROJECT DESCRIPTION

(a) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the second group of Jordanian Commercial Refrigerator Manufacturers

(b) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the Third Group of Jordanian Commercial Refrigerator Manufacturers

Sector Background

– Latest available total ODS consumption (1997)	857.4 ODP tonnes
– Baseline consumption* of Annex A Group I substances (CFCs)	673.3 ODP tonnes
– 1998 consumption of Annex A Group I substances	Not reported
– Baseline consumption of CFCs in refrigeration sector	Not reported
– 1998 consumption of CFCs in refrigeration sector	Not reported
– Funds approved for investment projects in refrigeration sector **as of March 1999**	US $4,990,950
– Quantity of CFC to be phased out in refrigeration sector **as of March 1999**	299.8 ODP tonnes
– Quantity of CFC phased out in refrigeration sector **as of March 1999**	10.4 ODP tonnes

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

Sector Information

1. Jordan's baseline consumption for Annex A Group I controlled substances (average of 1995-1997) was 673.3 ODP tonnes. According to the 1993 country programme, the ODS consumption in the refrigeration sector was 206.5 OPD tonnes.

2. A total of 42 small and medium commercial refrigeration manufacturers were identified and recognized by the Ozone unit.

3. The approval of the two proposed projects will help Jordan to phase out a total of 53.4 ODP tonnes. Since project duration is 2 years, the expected ODP phase out would not be reflected on the 1999 freeze target of the country; however, it will assist the country to meet the country's obligations with the Montreal Protocol.

(a) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the second group of Jordanian Commercial Refrigerator Manufacturers

4. This umbrella project comprises six companies (Jamal Yussef, Al-Amal, Emad Hdjawi, Al-Besani, Aqaba Al-Eslah, and Lebanon) and will phase out a total of 26.89 ODP tonnes (17.25 MT CFC-11 and 9.64 MT CFC-12, annually) in the manufacture of commercial refrigeration equipment. It will be achieved by converting foam operations to HCFC-141b as the blowing agent and refrigeration operations to HFC-134a as the refrigerant.

5. The project will include incremental capital costs covering refrigerant evacuation and charging equipment (US $46,800), technical assistance/implementation/training (US $87,080). The eligible incremental operating cost is requested at US $155,828 for two years duration. The cost of converting foaming machine to use HCFC-141b and elements including testing, trial, and reliability tests will be covered by the counterpart organizations.

(b) Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the Third Group of Jordanian Commercial Refrigerator Manufacturers

6. This umbrella project comprises six companies (Al-Shark, Dahbour, Riad Hedjawi, Aqaba, Yajouz, and Industrial and Comm.) and will phase out a total of 26.5 ODP tonnes (15.5 MT CFC-11 and 11.0 MT CFC-12, annually) in the manufacture of commercial refrigeration equipment. It will be achieved by converting foam operations to HCFC-141b as the blowing agent and refrigeration operations to HFC-134a as the refrigerant.

7. The project will include incremental capital costs covering refrigerant evacuation and charging equipment (US $40,800), technical assistance/implementation/training (US $63,000). The eligible incremental operating cost is requested at US $162,836 for two years duration. The cost of converting foaming machine to use HCFC-141b and elements including testing, trial, and reliability tests will be covered by the counterpart organizations.

Justification for the Use of HCFC-141b

8. The companies under two umbrella projects have selected HCFC-141b technology to replace CFC-11 in foam blowing operations. The justification for the use of HCFCs have been provided for each of the two groups of companies. The Government's concurrence of the use of HCFC technology has been also received by the Secretariat in accordance with Executive Committee decision 27/13 and is attached to this evaluation.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat has discussed with UNIDO the implications of Decision 26/36 regarding the boundary between domestic and commercial refrigeration sector and production of polyurethane panels for cold rooms. As a result, the respective cost-effectiveness thresholds

have been applied for the relevant portion of production. The duration of six months was applied to the calculation of incremental operating costs for the portion of production under domestic refrigeration sector. The eligible level of grant has been recalculated accordingly.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the two projects with the funding level and associated support cost as indicated below:

	Project Title	Project Cost (US$)	Support Cost (US$)	Implementing Agency
(a)	Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the second group of Jordanian Commercial Refrigerator Manufacturers	278,950	36,264	UNIDO
(b)	Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at the Third Group of Jordanian Commercial Refrigerator Manufacturers	243,764	31,689	UNIDO

PROJECT EVALUATION SHEET
JORDAN

SECTOR: Refrigeration RMP — ODS use in sector (1997): 1,073.9 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a — US $/kg

Project Titles:

(a) Refrigerant management plan: national recovery and recycling project
(b) Refrigerant management plan: customs training
(c) Refrigerant management plan: phase I: training of trainers in good refrigerant management practices, phase II: national technicians training project
(d) Refrigerant management plan: technical assistance and support to develop regulations for ODS to implement the Environment law of 1995

Project Data	**RMP**	**RMP**	**RMP**	**RMP**
	(a)	**(b)**	**(c)**	**(d)**
Enterprise consumption (ODP tonnes)				
Project impact (ODP tonnes)	19.10			
Project duration (months)	24	24	24	24
Initial amount requested (US $)	759,000	56,000	165,000	45,000
Final project cost (US $):				
Incremental capital cost (a)	690,300	51,350	152,000	42,000
Contingency cost (b)	68,700	5,650	15,000	4,000
Incremental operating cost (c)			0	
Total project cost (a+b+c)	759,000	57,000	167,000	46,000
Local ownership (%)	100%	100%	100%	100%
Export component (%)	0%	0%	0%	0%
Amount requested (US $)	759,000	56,000	165,000	45,000
Cost effectiveness (US $/kg.)				
Counterpart funding confirmed?				
National coordinating agency	National Ozone Unit			
Implementing agency	UNIDO	UNIDO	UNIDO	UNIDO

Secretariat's Recommendations				
Amount recommended (US $)	311,950	38,250	70,000	20,000
Project impact (ODP tonnes)	19.10	n/a	n/a	n/a
Cost effectiveness (US $/kg)	n/a	n/a	n/a	n/a
Implementing agency support cost (US $)	40,554	4,973	9,100	2,600
Total cost to Multilateral Fund (US $)	352,504	43,223	79,100	22,600

PROJECT DESCRIPTION

(a) Refrigerant management plan: national recovery and recycling project
(b) Refrigerant management plan: customs training
(c) Refrigerant management plan: phase I: training of trainers in good refrigerant management practices, phase II: national technicians training project
(d) Refrigerant management plan: technical assistance and support to develop regulations for ODS to implement the Environment law of 1995

Refrigerant Management Plan for Jordan

1. In 1997, the total ODS consumption in the refrigeration sector in Jordan was estimated at 327.7 ODP tonnes out of which 169.5 tonnes were for servicing refrigeration, air-conditioning and MAC systems. The Executive Committee has approved seven investment projects for the conversion of domestic and commercial refrigeration manufacturing enterprises and allocated US $3.78 million for their implementation. In total 180 ODP tonnes of CFCs will be phased out.

2. Based on data gathered during a survey completed in 1998, there are about 1,000 refrigeration technicians with varying levels of skill. Thus, the industrial users and large service organizations have reasonably well trained technicians while there are a large number of (over 500) small service workshops with semi-skilled/untrained technicians, who service household refrigerators. The annual CFCs consumption ranges from 100 kg to 250 kg each.

3. Since 1993 the General Corporation for Environment Protection has been responsible for clearing licenses for import of ODS; in 1993 the Prime Minister handed down a decision that all equipment funded by the Multilateral Fund would be tax-free; in 1994 the Government banned installation of new enterprises for production of ODS-based equipment or goods. An Environmental Law for Jordan was promulgated in 1995, and standards and regulations are under preparation to encourage the use of ozone friendly substances. In 1999, a ban on imports of new and used ODS based equipment has been adopted and a recommendation has been sent to the Prime Minister to remove taxes on ozone friendly substances and increase taxes on ODS (to be implemented by 2000).

4. The RMP identified two basic training programmes: (i) training for customs officers to identify and develop techniques for collecting and reporting consumption of ODS import and ODS-based equipment and to ensure the proper enforcement of the 1999 Regulation; this programme includes a request in the amount of US $15,600 for ODS identification kits; and (ii) a “train the trainers” programme for refrigeration technicians in good management practices, aimed at improving service practices to prevent release of CFCs into the atmosphere, provides information on the new regulations; and stimulates development of a network for information sharing throughout the sector.

5. The RMP includes a subproject for the establishment of a recovery and recycling network comprising 85 recovery units (including units to be used in the training programme on good servicing practices) and 6 recycling centres for servicing commercial and industrial refrigeration equipment, at a total cost of US $311,950. This activity also provides for 4 one and a half-day workshops for service technicians on practical demonstrations on recovery operations.

6. The RMP also includes a subproject for providing technical assistance to develop regulations for ODS to implement the Environment Law of 1995. The expected outcome of the activity is to implement regulations to decrease the imports of ODS, ban venting of ODS and making recovery and recycling operations mandatory, and to make certification of technicians and sales of ODS only by certified technicians.

7. Implementation of these projects will lead to recovery and recycling of 19.1 tonnes of CFC each year. This amount would be additional to the amount of refrigerant which might be saved from the teaching of good service and maintenance practices at the training seminars.

8. The Government and national stakeholders are committed to the freeze and phase out requirements of the Montreal Protocol. Early decisions will be taken to finalize and implement some or all of the action items that have been presented in the RMP. The Jordan Ozone Unit will be responsible for the monitoring, co-ordination and successful implementation of the phase-out activities proposed in the RMP.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat requested further justification for the request for establishing MAC servicing centres in each city taking into consideration that only 6 tonnes are used in this sub-sector. UNIDO informed the Secretariat that during field visits conducted during project preparation it was found that technicians servicing MAC units were recharging HFC-134a systems with CFC-12. At this transitional stage when both refrigerants are being used, it is vital to provide a MAC recovery and recycling machine in the major cities.

2. UNIDO and the Secretariat also discussed issues related to the logistical arrangements for the training programmes and the level of funding requested, as well as the size of the recovery and recycling programme in relation to CFC consumption level and its sectoral distribution. UNIDO agreed to revise some of the requests and adjusted the level of funding, 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:

	Project Title	Project Cost (US$)	Support Cost (US$)	Implementing Agency
(a)	Refrigerant management plan: national recovery and recycling project	311,950	40,554	UNIDO
(b)	Refrigerant management plan: customs training	38,250	4,973	UNIDO
(c)	Refrigerant management plan: phase I: training of trainers in good refrigerant management practices, phase II: national technicians training project	70,000	9,100	UNIDO
(d)	Refrigerant management plan: technical assistance and support to develop regulations for ODS to implement the Environment law of 1995	20,000	2,600	UNIDO

2. To request UNIDO not to proceed with the disbursement of funds approved for the customs training programme and the recovery and recycling programme until the regulatory and legislative requirements and fiscal steps proposed by the Government of Jordan are put into place.