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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Twenty-ninth Meeting  
Beijing, 24-26 November 1999

### PROJECT PROPOSALS: JORDAN

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

#### Halon

- Halon management program for Jordan, halon recovery, recycling and banking IBRD

#### Refrigeration

- Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at Al-Arglawi & Marka commercial refrigerator manufacturers UNIDO

**PROJECT EVALUATION SHEET  
JORDAN**

SECTOR: Halon ODS use in sector (1998): 220 ODP tonnes

Sub-sector cost-effectiveness thresholds: General US \$1.48/kg

**Project Titles:**

(a) Halon management program for Jordan, halon recovery, recycling and banking

<b>Project Data</b>	<b>Banking</b>
Enterprise consumption (ODP tonnes)	
Project impact (ODP tonnes)	
Project duration (months)	48
Initial amount requested (US \$)	428,250
Final project cost (US \$):	
Incremental capital cost (a)	347,500
Contingency cost (b)	34,750
Incremental operating cost (c)	
Total project cost (a+b+c)	382,250
Local ownership (%)	100%
Export component (%)	0%
<b>Amount requested (US \$)</b>	<b>382,250</b>
Cost effectiveness (US \$/kg.)	
Counterpart funding confirmed?	
National coordinating agency	Civil Defence Directorate
Implementing agency	IBRD
<b>Secretariat's Recommendations</b>	
Amount recommended (US \$)	
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

## **PROJECT DESCRIPTION**

### **(a) Halon management program for Jordan, halon recovery, recycling and banking**

1. This project will lead to a comprehensive national halon management program for Thailand and support the phase-out achieved through the proposed halon manufacturing conversion projects. The project aims at eliminating use and recovering halons from non essential halon fire protection applications, limit the phase-out costs to users and promote the use of non ODS fire protection alternatives. The project will also assist critical and essential halon users in developing their halon phase-out programmes and ensure supply to halons to remaining essential uses. The project will provide reclamation equipment and storage tanks for a central facility and smaller recycling equipment for regional workshops. Technical assistance is requested to support national capacity building.
2. Meeting the 2002 Freeze requirement for halons: The project is supported by national regulations, which will control import of new halons and prevent new uses. The project will ensure that Thailand is able to meet the 2002 freeze target.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**

### **COMMENTS**

1. The timing of the halon banking project should be co-ordinated with the timing of the phase-out of the primary halon consumers which are the fire extinguisher manufacturers. The proposal indicates that an umbrella phase-out projects will be submitted for Jordan to the 30<sup>th</sup> Meeting of the Executive Committee. As with CFC recycling, it is best to phase-out the users to ensure that the recycling activity will be successful.
2. The World Bank indicated that the schedule for implementing the halon banking is consistent with the expected umbrella phase-out project.
3. The World Bank and the Secretariat have agreed to the requested costs, as revised.

### **RECOMMENDATIONS**

1. The Executive Committee may wish to consider if the projects should be approved prior to the conversion of fire-fighting equipment manufacturers to non-ODS alternatives.

## PROJECT EVALUATION SHEET JORDAN

SECTOR: Refrigeration ODS use in sector (1998): 190 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 Al-Arghawi and Marka commercial refrigerator manufacturers

Project Data	Commercial
	Al-Arghawi & Marka
Enterprise consumption (ODP tonnes)	29.59
Project impact (ODP tonnes)	27.35
Project duration (months)	24
Initial amount requested (US \$)	289,925
Final project cost (US \$):	
Incremental capital cost (a)	182,800
Contingency cost (b)	13,360
Incremental operating cost (c)	59,043
Total project cost (a+b+c)	255,203
Local ownership (%)	100%
Export component (%)	0%
<b>Amount requested (US \$)</b>	<b>255,203</b>
Cost effectiveness (US \$/kg.)	9.33
Counterpart funding confirmed?	
National coordinating agency	Ministry of Municipal, Rural Affairs and Environment
Implementing agency	UNIDO

<b>Secretariat's Recommendations</b>	
Amount recommended (US \$)	255,203
Project impact (ODP tonnes)	27.35
Cost effectiveness (US \$/kg)	9.33
Implementing agency support cost (US \$)	33,176
Total cost to Multilateral Fund (US \$)	288,379

## PROJECT DESCRIPTION

### Sector Background

- Latest available total ODS consumption (1998)	1,129	metric tonnes
- Baseline consumption* of Annex A Group I substances (CFCs)	673.3	ODP tonnes
- 1998 consumption of Annex A Group I substances	649.0	ODP tonnes
- Baseline consumption of CFCs in refrigeration sector	132.0	ODP tonnes
- 1998 consumption of CFCs in refrigeration sector	190.0	ODP tonnes
- Funds approved for investment projects in refrigeration sector as of July 1999	US \$ 4,611,334	
- Quantity of CFC to be phased out in refrigeration sector as of July 1999 (28 <sup>th</sup> Meeting)	251.2	ODP tonnes

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

1. Three manufacturers of domestic refrigeration appliances in Jordan with a total consumption of 52.1 ODP tonnes have received assistance from the Multilateral Fund. The remainder of the original equipment manufacturers in the refrigeration sector is comprised of a total of 42 small and medium sized commercial refrigeration enterprises. Fifteen of the enterprises, with a consumption of about 180 ODP tonnes, have received assistance from the Multilateral Fund. In regard to repairs and servicing in the sector, a refrigeration management plan, including a refrigerant recovery and recycling project was approved by the Executive Committee at its 28<sup>nd</sup> Meeting.

### Project description

2. In 1998, Al-Argawi and Marka consumed a total of 18.51 ODP tonnes of CFC-11 and 11.08 ODP tonnes of CFC-12 in the production of commercial refrigeration equipment such as commercial refrigerators, chest freezers and water coolers. The enterprises also produced foam sandwich insulation panels for the installation of 15 cold stores outside of the factory. The two enterprises 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) and refrigerant operations from CFC-12 to HFC-134a resulting in a total phase out of 27.35 ODP tonnes. The enterprises each possess two low pressure foam machines, refrigerant charging equipment, leak detectors and vacuum pumps. The project includes incremental capital costs covering replacement of a foam dispenser at Marka. The existing low pressure machine at Al-Argawi can be used with HCFC-141b with little modification, the cost of which will be covered by the enterprise. Capital costs are also sought for 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 and for HFC-134a compressors.

Justification for the Use of HCFC-141b

3. 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**

1. The Secretariat discussed with UNIDO the implications for the projects of the new sub-sector on the assembly, installation and charging of refrigeration systems. Because the refrigeration systems for cold stores have been installed by Al-Arghawi and Marka on-site no incremental operating costs have been included in the cold store component. The cost-effectiveness of conversion of sandwich panel production at Al-Arghawi and Marka has been calculated using the cost-effectiveness threshold established for the rigid foam sector. The revised project proposal reflects the above.

**RECOMMENDATIONS**

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

	<b>Project Title</b>	<b>Project Funding (US\$)</b>	<b>Support Cost (US\$)</b>	<b>Implementing Agency</b>
(a)	Phasing out of CFC-11 by conversion to HCFC-141b and CFC-12 to HFC-134a in manufacture of commercial refrigeration equipment at Al-Arghawi and Marka commercial refrigerator manufacturers	255,203	33,176	UNIDO