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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: BAHRAIN

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

Refrigeration

- Conversion from CFC-11 to HCFC-141b technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Jazira Cooling & Heating Factory — UNDP
- Conversion from CFC-11 to HCFC-141b technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Awal Refrigeration & Airconditioning — UNDP

PROJECT EVALUATION SHEET
BAHRAIN

SECTOR: Refrigeration ODS use in sector (1998): 149.6 ODP tonnes

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

Project Titles:

(a) Conversion from CFC-11 to HCFC-141b technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Jazira Cooling & Heating Factory
(b) Conversion from CFC-11 to HCFC-141b technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Awal Refrigeration & Airconditioning

Project Data	**Commercial**	**Commercial**
	Al-Jazira	**Awal**
Enterprise consumption (ODP tonnes)	11.37	6.76
Project impact (ODP tonnes)	10.68	6.34
Project duration (months)	36	36
Initial amount requested (US $)	172,303	235,742
Final project cost (US $):		
Incremental capital cost (a)	60,900	150,500
Contingency cost (b)	6,090	15,050
Incremental operating cost (c)	106,845	58,928
Total project cost (a+b+c)	173,835	224,478
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US $)	173,835	224,478
Cost effectiveness (US $/kg.)	16.28	35.43
Counterpart funding confirmed?		
National coordinating agency	National Ozone Office	National Ozone Office
Implementing agency	UNDP	UNDP

Secretariat's Recommendations		
Amount recommended (US $)	173,835	224,478
Project impact (ODP tonnes)	10.68	6.34
Cost effectiveness (US $/kg)	16.28	35.43
Implementing agency support cost (US $)	22,599	29,182
Total cost to Multilateral Fund (US $)	196,434	253,660

PROJECT DESCRIPTION

Sector Background

- Latest available total ODS consumption (1997)	144.8	ODP tonnes
- Baseline consumption* of Annex A Group I substances (CFCs)	134.4	ODP tonnes
- 1998 consumption of Annex A Group I substances	149.5	ODP tonnes
- Baseline consumption of CFCs in refrigeration sector	133.2	ODP tonnes
- 1998 consumption of CFCs in refrigeration sector	149.6	ODP tonnes
- Funds approved for investment projects in refrigeration sector as of March 1999	US $ 317,000	
- Quantity of CFC to be phased out in refrigeration sector as of March 1999 (27th Meeting)	20.5	ODP tonnes

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

1. The Awal and Al-Jazira companies are the only two manufacturers of commercial refrigeration equipment in Bahrain. There are no manufacturers of domestic refrigerators in Bahrain. The remainder of the ODS consumption in this sector occurs in repairs and servicing. In this regard, a refrigerant recovery and recycling project and a refrigeration management plan were approved by the Executive Committee at its 22nd Meeting.

Project description

2. In 1998, these two companies consumed a total of 14.86 ODP tonnes of CFC-11 and 3.26 ODP tonnes of CFC-12 in the production of commercial refrigeration equipment such as commercial refrigerators, chest freezers, display cabinets, reach-in freezers and foam sandwich insulation panels. 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 17.02 ODP tonnes. The enterprises possess low pressure and high-pressure foaming machines, refrigerant charging equipment, leak detectors and vacuum pumps. The project will include incremental capital costs covering replacement/retrofitting of foam dispensers and 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 including an increase in density, and for HFC-134a compressors.

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

Justification for the Use of HCFC-141b

4. The two companies 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 each enterprise.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat has discussed with UNDP the provision of equivalent refrigerant charging equipment, cost of trials, the prevailing prices of chemicals on the market and the justification for increase in foam density. As a result, the relevant cost items have been adjusted and the eligible level of grant has been recalculated accordingly for both companies.

RECOMMENDATION

1. The Fund Secretariat recommends blanket approval of the two commercial refrigeration projects from 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 technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Al-Jazira Cooling & Heating Factory	173,835	22,599	UNDP
(b)	Conversion from CFC-11 to HCFC-141b technology and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Awal Refrigeration & Airconditioning	224,478	29,182	UNDP