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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Thirty-fifth Meeting  
Montreal, 5-7 December 2001

### PROJECT PROPOSALS: YEMEN

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

#### Refrigeration

- Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the Nagman Co. UNIDO
- Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the Styrco UNIDO

**PROJECT EVALUATION SHEET  
YEMEN**

SECTOR: Refrigeration ODS use in sector (2000): 867.6 ODP tonnes  
 Sub-sector cost-effectiveness thresholds: Commercial US \$15.21/kg

**Project Titles:**

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

Project Data	Commercial	Commercial
	Nagman	Styrco
Enterprise consumption (ODP tonnes)	7.55	6.32
Project impact (ODP tonnes)	7.25	6.08
Project duration (months)	18	17
Initial amount requested (US \$)	105,641	90,231
Final project cost (US \$):		
Incremental capital cost (a)	69,000	69,000
Contingency cost (b)	5,900	5,900
Incremental operating cost (c)	30,741	15,331
Total project cost (a+b+c)	105,641	90,231
Local ownership (%)	100%	100%
Export component (%)	0%	0%
<b>Amount requested (US \$)</b>	105,641	90,231
Cost effectiveness (US \$/kg.)	14.58	14.85
Counterpart funding confirmed?	Yes	Yes
National coordinating agency	Department of Environment, Ozone Layer Protection	
Implementing agency	UNIDO	

<b>Secretariat's Recommendations</b>		
Amount recommended (US \$)	105,641	90,231
Project impact (ODP tonnes)	7.25	6.08
Cost effectiveness (US \$/kg)	14.58	14.85
Implementing agency support cost (US \$)	13,733	11,730
Total cost to Multilateral Fund (US \$)	119,374	101,961

## PROJECT DESCRIPTION

### Sector Background

Latest available total ODS consumption (2000)	1,253.4 ODP tonnes
Baseline consumption of Annex A Group I substances (CFCs)*	1,796.0 ODP tonnes
Consumption of Annex A Group I substances for the year 2000	1.045.0 ODP tonnes
Baseline consumption of CFCs in refrigeration sector*	777.2 ODP tonnes
Consumption of CFCs in refrigeration sector in 2000	867.6 ODP tonnes
Funds approved for investment projects in refrigeration sector as of end of 2000	US\$0.00
Quantity of CFC to be phased out in investment projects in refrigeration sector as of end of 2000	0.00 ODP tonnes

\* All ODP consumption data reported previously to the Ozone and Multilateral Fund Secretariats including CFC baseline consumption (349.1 ODP tonnes) have been substantially revised in May 2001 by NOU. Sector background provides these revised data

1. The total ODS consumption in the refrigeration sector for the year 2000, according to the Government of Yemen, was 867.6 ODP tonnes, including 39.3 ODP tonnes used for manufacturing new equipment and 828.3 ODP tonnes used for servicing.
2. Four companies manufacturing refrigeration equipment have been identified by UNIDO. Two projects for enterprises in the commercial refrigeration sub-sector in Yemen have been submitted for consideration at the 35<sup>th</sup> Meeting of the Executive Committee.
3. The two enterprises (Nagman and Styrco) consume 9.24 ODP tonnes of CFC-11 and 4.63 ODP tonnes of CFC-12 (average of 1998-2000) in the manufacture of commercial refrigeration equipment. The enterprises manufacture similar equipment (display cabinets and commercial refrigerators) and operate low-pressure foam dispensers, production and portable refrigerant charging machines, vacuum pumps and leak detectors in the baseline.
4. The total phase out of 13.87 ODP tonnes of CFC-11 and CFC-12 will be achieved by converting CFC-11 based technology to HCFC-141b as the foam blowing agent and CFC-12 to HFC-134a as the refrigerant. Under the current projects, new low-pressure foam dispensers will replace the existing locally made low-pressure foaming machines. Both enterprises will require provision of industrial or portable charging units, vacuum pumps and leak detectors suitable for HFC-134a duty. Other costs include re-design, testing, trials, technical assistance and training. Incremental operating costs are requested by the enterprises for one year reflecting the higher cost of chemicals and components.
5. In accordance with decisions of the Executive Committee on the use of HCFCs, a letter of transmittal from the Government of Yemen endorsing the use of HCFC-141b by the companies is attached.

## SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

### COMMENTS

6. The Secretariat discussed with UNIDO replacement of low-pressure foaming machine at Nagman and Styrco with new low-pressure dispensers. UNIDO provided adequate explanations.

### RECOMMENDATIONS

7. The Secretariat recommends blanket approval of the projects at the funding level indicated below.

	<b>Project Title</b>	<b>Project Funding (US\$)</b>	<b>Support Cost (US\$)</b>	<b>Implementing Agency</b>
(a)	Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the Nagman Co.	105,641	13,733	UNIDO
(b)	Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the Styrco	90,231	11,730	UNIDO

REPUBLIC OF YEMEN  
Ministry of  
Tourism And Environment  
Environment  
Protection Authority



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GOVERNMENT NOTE OF TRANSMITTAL OF INVESTMENT PROJECTS TO THE  
EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL

PROJECT(S) OF THE GOVERNMENT OF YEMEN

11 SEP 2001

The Government of the Yemen requests UNIDO to submit the project(s) listed in Table I below to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol for consideration at its 35<sup>th</sup> Meeting.

Section I: ODS Consumption Data

- The ODS consumption figures of the projects has/have been validated by the National Ozone Unit (NOU).
- The consumption data have been retained in the records of the NOU for reference and/or future verification.
- The Government has been advised by the NOU that the agreement to the projects indicates a commitment to ensure that the validated phase out figures were realized and yielded a sustained reduction from the 2000 consumption of 13.87 ODP tonnes for the refrigeration sector.

**Table I: Projects Submitted to the 35<sup>th</sup> Meeting of the Executive Committee by UNIDO**

Project Title/Sector	Type of ODS	Consumption (ODP Tonnes) (2000)	Amount to be Phased Out (ODP Tonnes), (2003)
<b>Refrigeration Sector</b>			
Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the STYRSCO, Yemen.	CFC-11 & CFC-12	6.32	6.08
Conversion from CFC-11 to HCFC-141b and CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at the Nagman Co., Yemen.	CFC-11 & CFC-12	7.55	7.25
<b>Total</b>		<b>13.87</b>	<b>13.33</b>

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#### Section II: Other Relevant Actions Arising from Decision 33/2

1. It is understood that, in accordance with the relevant guidelines, the funding received for a project would be partly or fully returned to the Multilateral Fund in cases where technology was changed during implementation of the project without informing the Fund Secretariat and without approval by the Executive Committee;
2. The National Ozone Unit undertakes to monitor closely, in cooperation with customs authorities and the environmental protection authorities, the importation and use of CFCs and to combine this monitoring with occasional unscheduled visits to importers and recipient manufacturing companies to check invoices and storage areas for unauthorized use of CFCs.
3. The National Ozone Unit will cooperate with the relevant implementing agencies to conduct safety inspections where applicable and keep reports on incidences of fires resulting from conversion projects.

#### Section III: Projects Requiring the Use of HCFCs for Conversion

4. In line with Decision 27/13 of the Executive Committee and in recognition of Article 2F of the Montreal Protocol, the Government has reviewed the specific situations involved with the projects; *STYRSCO and Nagman Co.* as well as its HCFC commitments under Article 2F; and has nonetheless determined that, at the present time, the projects needed to use HCFCs for an interim period with the understanding that no funding would be available for the future conversion from HCFCs for the companies involved.

Name and signature of responsible Officer:

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