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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
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PROJECT PROPOSALS: SUDAN

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

Aerosol

- Phasing out of CFCs at Tag Cosmetics Ltd. UNIDO

Refrigeration

- Refrigerant management plan: conversion of carbon dioxide Co.'s refrigeration system UNIDO
- Refrigerant management plan: training of customs officers and development criteria for ODS and ODS consuming equipment imports UNIDO
- Refrigerant management plan: recovery and recycling UNIDO
- Refrigerant management plan: training for good practices in refrigeration UNIDO

**PROJECT EVALUATION SHEET
SUDAN**

SECTOR: Aerosol ODS use in sector (1998): 350 ODP tonnes

Sub-sector cost-effectiveness thresholds: Hydrocarbon US \$4.40/kg

Project Titles:

(a) Phasing out of CFCs at Tag Cosmetics Ltd.

Project Data	Filling plant
	TAG
Enterprise consumption (ODP tonnes)	45.00
Project impact (ODP tonnes)	45.10
Project duration (months)	18
Initial amount requested (US \$)	179,218
Final project cost (US \$):	
Incremental capital cost (a)	322,500
Contingency cost (b)	27,500
Incremental operating cost (c)	-143,282
Total project cost (a+b+c)	206,718
Local ownership (%)	100%
Export component (%)	5%
Amount requested (US \$)	179,218
Cost effectiveness (US \$/kg.)	3.96
Counterpart funding confirmed?	
National coordinating agency	Higher Council Environment & National Resources
Implementing agency	UNIDO

Secretariat's Recommendations	
Amount recommended (US \$)	131,718
Project impact (ODP tonnes)	45.10
Cost effectiveness (US \$/kg)	2.92
Implementing agency support cost (US \$)	17,123
Total cost to Multilateral Fund (US \$)	148,841

PROJECT DESCRIPTION

(a) Phasing out of CFCs at Tag Cosmetics Ltd.

1. Technical assistance will be provided for performance and supervision of engineering designs, equipment installation and commissioning of the plant. Training in production, quality control and safety procedures will also be provided. The Sudan country programme identified only one enterprise (Sudanese Cosmetics & Household Product Ltd.) manufacturing aerosol products, with a total CFC consumption of 281.5 tonnes. The Executive Committee approved at its 18th Meeting an investment project for the conversion of this plant to hydrocarbon technology and allocated US \$497,613 for its implementation.
2. The progress report (as of December 1998) submitted by UNIDO to the 28th Meeting of the Executive Committee reported that the project has been completed, with a total phase out of 281.5 ODP tonnes, and US \$ 496,528 has been disbursed.
3. During the implementation of the project, a second enterprise, Tag Cosmetics, manufacturing aerosol products was identified using 45.1 ODP tonnes of CFC propellants. The progress report on the implementation of the country programme submitted by the Government of Sudan to the Fund Secretariat reported a consumption of 40 ODP tonnes of CFCs in the aerosol sector in 1998, similar to the CFC consumption in Tag Cosmetics.
4. Based on the CFC baseline for Sudan's compliance with the Montreal Protocol, the elimination of 45.1 ODP tonnes would represent 9.87 per cent of the baseline.
5. Tag Cosmetics is the only aerosol manufacturing enterprise remaining in the country. The company produces different-size presentations of deodorants (500,000 cans/year), perfumes (100,000 cans/year) and hair spray (100,000 cans/year).
6. The aerosol filling process under operation utilises a Pamasol machine for gas filling, liquid filling and crimping and a manual test bath.
7. The enterprises will convert to HAPs technology. Conversion entails installation of a gas filling machine to be located in open air filling rooms, water bath for testing filled cans, a HAP storage and purification system, gas detectors and fire control system. Conveyor systems, explosion-proof lighting and ventilation systems are also requested.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat discussed with UNIDO the increase in production capacity of the proposed filling machine compared to the baseline, as well as the level of funding requested for the gas storage tank, LPG purification and fire control systems and conveyors, which were higher than similar requests elsewhere. Thus, UNIDO agreed to adjust the capital cost of the proposal, accordingly (reduced by US \$25,000).

2. The adjusted capital costs and operational savings (NPV for four years) of the project were US \$275,000 and (US \$143,282), respectively.

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)	Phasing out of CFCs at Tag Cosmetics Ltd.	131,718	17,123	UNIDO

**PROJECT EVALUATION SHEET
SUDAN**

SECTOR: Refrigeration ODS use in sector (1997): 315.3 ODP tonnes
RMP
Sub-sector cost-effectiveness thresholds: n/a US \$/kg

Project Titles:

- (a) Refrigerant management plan: conversion of carbon dioxide Co.'s refrigeration system
- (b) Refrigerant management plan: training of customs officers and development criteria for ODS and ODS consuming equipment imports
- (c) Refrigerant management plan: recovery and recycling
- (d) Refrigerant management plan: training for good practices in refrigeration

Project Data	RMP	RMP	RMP	RMP
	(a)	(b)	(c)	(d)
Enterprise consumption (ODP tonnes)			50.00	
Project impact (ODP tonnes)			30	34
Project duration (months)	3	18		
Initial amount requested (US \$)	84,000	69,000	877,005	259,325
Final project cost (US \$):				
Incremental capital cost (a)	84,000	62,800	798,005	235,750
Contingency cost (b)		6,200	79,000	23,575
Incremental operating cost (c)				
Total project cost (a+b+c)	84,000	69,000	877,005	259,325
Local ownership (%)	100%	100%	100%	100%
Export component (%)	0%	0%	0%	0%
Amount requested (US \$)	Withdrawn	69,000	877,005	259,325
Cost effectiveness (US \$/kg.)				
Counterpart funding confirmed?				
National coordinating agency	Ozone Office - Ministry of Industry			
Implementing agency	UNIDO	UNIDO	UNIDO	UNIDO

Secretariat's Recommendations				
Amount recommended (US \$)	Withdrawn	38,250	350,000	70,000
Project impact (ODP tonnes)			50.00	
Cost effectiveness (US \$/kg)				
Implementing agency support cost (US \$)		4,973	45,500	9,100
Total cost to Multilateral Fund (US \$)		43,223	395,500	79,100

PROJECT DESCRIPTION

- (a) Refrigerant management plan: conversion of carbon dioxide Co.'s refrigeration system**
- (b) Refrigerant management plan: training of customs officers and development criteria for ODS and ODS consuming equipment imports**
- (c) Refrigerant management plan: recovery and recycling**
- (d) Refrigerant management plan: training for good practices in refrigeration**

Refrigerant Management Plan for Sudan

1. According to the country programme (approved in March 1994), the 1991 ODS consumption of Annex A and B substances was 606 ODP tonnes (out of this amount, CFCs counted for 600 tonnes). The 1997 ODS consumption was only 312 ODP tonnes, of which 306 tonnes were CFCs. Of the total CFC consumption, 249 ODP tonnes are for servicing refrigeration equipment.
2. The project proposal states that a reduction in CFC consumption in domestic and commercial refrigeration is associated with a voluntarily phase out of CFCs in Pepsi Cola dealers and dealers of one large dairy company; business fluctuations; a CFC-12 price increase of approximately 50 per cent; and new non-ODS based equipment entering in the market.
3. Sudan has approximately 1,000 commercially licensed refrigeration service workshops. The total number of technicians working on refrigeration maintenance is estimated at 4,000. The current maintenance standards of domestic and commercial refrigeration equipment are generally poor. Actual amount of refrigerants used during service operations is 2-3 times more than the actual charge volume. Cleaning and flushing systems are using CFCs.
4. The Government is starting to implement policies proposed in the country programme, including an increase in import duties or taxes on the ODSs in case the planned reductions in consumption are not reached; introduction of bans on foreign manufactured refrigeration and air-conditioning equipment if this equipment is obsolete or banned in the exporter's local markets; introduction of a licensing system; support of training and publicity campaigns and encourage different branches of the public administration to co-operate; and to encourage the participation of voluntary organizations and citizens' groups to support the training and awareness campaigns.
5. 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 allow the Customs Department to create a database on imported ODS; this programme includes a request in the amount of US \$4,800 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 the release of CFCs into the atmosphere, making it possible for refrigeration equipment to operate to the end of its useful life.

6. The RMP includes a subproject for the establishment of a recovery and recycling network comprising 300 recovery units (including units to be used in the training programme on good servicing practices) and 7 recycling centres for servicing commercial and industrial refrigeration equipment, at a total cost of US \$350,000.
7. The RMP also includes a subproject for converting the existing refrigeration systems from using ODS refrigerants to non-ODS refrigerants in the production of carbon dioxide at a cost of US \$84,000. The request is for the replacement of a CFC-12 based refrigeration unit by a new non-CFC unit.
8. Implementation of these projects will lead to recovery and recycling of 50.0 tonnes of CFC each year. This amount would be additional to the amount of refrigerant that might be saved from the teaching of good service and maintenance practices at the training seminars.
9. The Ozone Office at the Ministry of National Industries will implement the RMP and its components supported by the National Team for the Implementation of the Montreal Protocol. The Sudan University for Science and Technology and the Ministry of Labour and Social Welfare will be involved in the training programmes. The monitoring will be carried out by the Ozone Office, supported by the University, the Ministry of Labour and the Customs Department.
10. The component for conversion of carbon dioxide co-refrigeration systems was also discussed. Based on the minimal information included in the sub-project, the request is ineligible since it is for the replacement of a CFC-12-based refrigeration system with a non-CFC based one. Subsequently, UNIDO agreed to withdraw this sub-project component.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The project proposes to phase out the consumption of 200 tonnes of CFCs in the refrigeration servicing sub-sector by 2002. UNIDO indicated that this goal is "not unrealistic provided that all parties involved do their best and succeed". Upon a request by the Secretariat to provide CFC consumption data for 1998, UNIDO indicated that there was no marked change in the consumption structure from 1997 to 1998, but that the total consumption may have decreased by about 2 to 4 per cent.
2. The Secretariat requested additional information to justify the relatively large number of recovery equipment units requested. UNIDO informed the Secretariat that the number of workshops, 1,000 of which will receive this equipment, have an average consumption of some 250 kg per year. The business is very fragmented, thus the distribution of the equipment will be very closely tied to the training programme for servicing refrigeration technicians. The seven recycling centres proposed were selected so that they could cover a maximum number of workshops within a minimum radius.
3. UNIDO and the Secretariat also discussed issues related to the logistical arrangements for the training programmes and the level of funding requested. UNIDO agreed to adjust the level of funding accordingly.

RECOMMENDATIONS

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
(b)	Refrigerant management plan: training of customs officers and development criteria for ODS and ODS consuming equipment imports	38,250	4,973	UNIDO
(c)	Refrigerant management plan: recovery and recycling	350,000	45,500	UNIDO
(d)	Refrigerant management plan: training for good practices in refrigeration	70,000	9,100	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 Sudan are put into place.