



**United Nations
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Executive Committee of
the Multilateral Fund for the
Implementation of the Montreal Protocol

Twenty-second Meeting
Nairobi, 28-30 May 1997

PROJECT PROPOSAL: BENIN

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

Refrigeration

- Refrigerant recovery and recycling scheme

UNIDO

PROJECT EVALUATION SHEET **BENIN**

SECTOR: REFRIGERATION ODS use in sector (1994): 30.6 tonnes

Sub-sector cost-effectiveness thresholds: CFC Recovery & Recycling N/A

Project Title:

Refrigerant recovery and recycling scheme

Project Data		CFC Recovery & Recycling	
ODS phase-out (ODP tonnes)		12.9	
Proposed project duration (Yrs)		2	
Incremental capital cost (US \$)		114,000	
Contingency (%)		0	
Incremental operational cost (US \$)		-	
Total project cost (US \$)		114,000	
Local ownership (%)		-	
Export component (%)		-	
Amount requested (US \$)	{Original}	137,700	
	{Revised}	114,000	
Cost effectiveness (US \$/kg)		8.83	
National Coordinating Agency		Ministry for Environment	
Implementing Agency		UNIDO	
Technical review completed?		Yes	

<i>Secretariat's Recommendations:</i>	
Amount recommended (US \$)	114,000
Project impact (ODP tonnes)	12.9
Cost effectiveness (US \$/kg)	8.83
Implementing Agency support cost (US \$)	14,820
Total cost to Multilateral Fund (US \$)	128,820

PROJECT DESCRIPTION

1. This project will reduce the amount of CFC refrigerant currently used for the servicing of domestic and commercial refrigeration equipment by implementing an organized system of refrigerant recovery and recycling and providing a training course on a "train the trainers" basis which will be attended by representatives of the majority of refrigeration service enterprises in the country. This programme will be part of a National Refrigerant Management Plan.
2. The basic data used in the preparation of the project was extracted from the Benin country programme and verified by UNIDO's consultant in the field during the project preparation mission. A simple CFC consumption model was designed by UNIDO to verify the consumption data reported in the country programme and adjusted according to the field work.
3. The objective of the project is to reduce the amount of CFCs used for the repair and servicing of domestic refrigerators, commercial refrigeration equipment and air conditioning systems. Refrigerant consumption constitutes over 70% of Benin's ODS usage, therefore, this project is a vital element in the government's ODS phaseout strategy.
4. A recovery and recycling nation-wide network comprising 50 recovery units and 6 recycling centers will be established, at a cost of US \$63,000. The project also includes 50 refrigeration servicing kits (vacuum pump, leak detector and set of tools) at a cost of US \$700 each. Fifty per cent of the cost will be requested from the Multilateral Fund, and the remaining will be borne by the workshops provided that easy payment terms can be arranged.
5. Forty 6-day courses will be provided to train technicians from each of the 400 service workshops in existence, at a cost of US \$51,000. Trainers for this project will be recruited from local refrigeration technicians and refrigeration engineers (some trainers were identified during the course of the mission). The training course will include, *inter alia*, issues regarding ozone depletion, good service practices and safety in the handling of refrigerants, refrigerant recovery and recycling procedures, techniques in retrofitting systems.
6. In total, 12.9 tonnes of CFC will be phased-out each year, equivalent to 34.7 per cent of the amount calculated as the freeze target. This amount does not take into account the amount of refrigerant that might be saved owing to the teaching of good service and maintenance practices at the training seminars.
7. The project will be implemented according to the rules and procedures of UNIDO, in close cooperation with the Ministry of the Environment who will provide the necessary local coordination and control. A consultant will be appointed and fielded by UNIDO to implement the "train the trainers" course.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Executive Committee at its 17th Meeting allocated US \$45,000 to UNIDO to prepare CFC recovery and recycling projects in Benin, Botswana, Burkina Faso, Gambia, Guinea, Namibia and Senegal.

2. A refrigerant management plan for Benin has not been developed. However, the project proposal states that most of the components of a refrigerant management plan have been included in the project: (i) an inventory of ODS-using equipment by sector and sub-sector has been made, (ii) basic policy instruments and economic instruments will be achieved through a series of Government measures to support the phase-out of ODS, (iii) control of CFC consumption according to the phase-out scenario given in the country programme by a combination of exemptions on CFC recovery and recycling equipment and rigorous border controls to prevent the entry of contraband refrigerant, (iv) introduction of a mandatory license for refrigeration technicians, (v) a comprehensive national training programme for refrigeration technicians for improving operations, service and maintenance practices, and (vi) establishment of a national refrigerant recovery and recycling programme.

3. Based on issues raised by the Fund Secretariat, UNIDO included a statement on how the project will help the country to meet the 1999 freeze, reviewed the calculation on the amount of CFC to be recovered and recycled, and reviewed the content of the training programme to focus on good servicing practices and recovery and recycling of refrigerants.

4. UNIDO and the Fund Secretariat discussed the eligibility and level of costs of several pieces of equipment requested (recovery machines, vacuum pumps, refrigerant storage tanks). UNIDO agreed to adjust the costs of this equipment according to costs approved in similar projects.

RECOMMENDATION

1. The Fund Secretariat recommends blanket approval of the project with associated support costs at the funding level shown in the table below:

<u>Project Title</u>	<u>Project Cost</u> <u>US \$</u>	<u>Support</u> <u>Cost US \$</u>	<u>Implementing</u> <u>Agency</u>
Refrigerant recovery and recycling scheme	114,000	14,820	UNIDO