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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Forty first Meeting
Montreal, 17 -19 December 2003

PROJECT PROPOSALS: SIERRA LEONE

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

Refrigeration:

- Implementation of the refrigerant management plan: training of trainers in code of good refrigeration practices/establishment of national refrigeration demonstration centre UNEP
- Implementation of the refrigerant management plan: improved servicing and maintenance within the refrigeration sector - R&R project UNDP
- Implementation of the refrigerant management plan: incentive programme for the commercial and industrial refrigeration end-user sector UNDP
- Implementation of the refrigerant management plan: mobile air-conditioning recovery/recycling of CFC-12 UNDP
- Implementation of the refrigerant management plan: customs training UNEP
- Implementation of the refrigerant management plan: monitoring the activities UNEP

**PROJECT EVALUATION SHEET
SIERRA LEONE**

SECTOR: Refrigeration ODS use in sector (2002): 71.2 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

- (a) Implementation of the refrigerant management plan: training of trainers in code of good refrigeration practices/establishment of national refrigeration demonstration centre
- (b) Implementation of the refrigerant management plan: improved servicing and maintenance within the refrigeration sector - R&R project
- (c) Implementation of the refrigerant management plan: incentive programme for the commercial and industrial refrigeration end-user sector
- (d) Implementation of the refrigerant management plan: mobile air-conditioning recovery/recycling of CFC-12
- (e) Implementation of the refrigerant management plan: customs training
- (f) Implementation of the refrigerant management plan: monitoring activities

Project Data	Refrigerant management plan					
	(a)	(b)	(c)	(d)	(e)	(f)
Enterprise consumption (ODP tonnes)						
Project impact (ODP tonnes)			2.0	11.9		
Project duration (months)	36	36	60	36	24	36
Initial amount requested (US \$)	186,500	198,000	133,350	61,858	59,840	15,455
Final project cost (US \$):						
Incremental capital cost (a)	108,600	84,000		57,234		14,050
Contingency cost (b)	10,860	8,400		4,624		1,405
Incremental operating cost (c)						
Total project cost (a+b+c)	119,460	92,400	107,350	61,858	59,840	15,455
Local ownership (%)	100%	100%	100%	100%	100%	100%
Export component (%)	0%	0%	0%	0%	0%	0%
Amount requested (US \$)	119,460	92,400	107,350	61,858	41,840	15,455
Cost effectiveness (US \$/kg.)				5.20		
Counterpart funding confirmed?						
National coordinating agency			Department of Environment			
Implementing agency	UNEP	UNDP	UNDP	UNDP	UNEP	UNEP

Secretariat's Recommendations						
Amount recommended (US \$)	119,460	92,400	107,350	61,858	41,840	15,455
Project impact (ODP tonnes)			2.0	11.9		
Cost effectiveness (US \$/kg)				5.20		
Implementing agency support cost (US \$)	15,530	8,316	9,662	5,567	5,439	2,009
Total cost to Multilateral Fund (US \$)	135,990	100,716	117,012	67,425	47,279	17,464

PROJECT DESCRIPTION

Background

1. The Government of Sierra Leone has submitted a refrigerant management plan (RMP) project proposal for the consideration of the Executive Committee at its 41st Meeting.

ODS consumption

2. Based on a survey on the consumption of ODS conducted during the preparation of the Sierra Leone country programme/RMP, in 2002, about 71.7 ODP tonnes of CFCs (mainly CFC-12) were used in the country to service domestic refrigerators (39.0 ODP tonnes), commercial and industrial refrigerators (11.7 ODP tones) and MAC units (21.0 ODP tonnes).

3. The high consumption of CFC-12 for servicing the relatively small number of domestic refrigerators (400,000 units in total) and commercial refrigeration systems is due to poor servicing practices (the amount of refrigerant used in each service is often more than four times the actual charge of the unit).

4. The number of technicians employed for installation, maintenance and servicing of CFC-based refrigeration appliances and equipment has been estimated at 1,600. At present, no official certification is required for refrigeration technicians.

5. The refrigeration systems are serviced mainly due to the following frequent faults: partial leakage where about 0.1 kg of CFC-12 might be present in the circuit; complete leakage (one of the most frequent faults), where no refrigerant is left in the circuit; burnt compressor (most frequent fault), where CFC-12 is present but contaminated and, thus, cannot be used; and drier blockage (not very common) where CFCs can be recovered and recycled. CFCs are never used to service HFC-134a based MAC units. However it is common to replace the HFC-134a MAC units with CFC-12 based units because of the price differential (HFCs are more expensive than CFCs).

6. There is a refrigeration association in Sierra Leone, the Refrigeration Engineers and Technicians Association, with 1,600 members. The association is mainly based in Freetown; however, recently it agreed to expand its membership to other cities in order to assist in achieving the Montreal Protocol's ODS phase out targets.

7. The current prices of refrigerants per kg are: US \$6.84 for CFC-12, US \$8.00 for HFC-134a and US \$6.00 for HCFC-22.

Policy framework

8. The Government of Sierra Leone is proposing the establishment of legislation and a regulatory system to control imports of ODSs and ODS-based equipment. The licensing system, to be established under the Ministry of Lands, Country Planning and the Environment, will require that all importers obtain a license/permit to import ODS into the country.

9. The Department of Environment under the Ministry of Lands, Country Planning and Environment, the Customs Department and the Ministry of Justice, will be responsible for the enforcement of the import/export-licensing system. Penalties will be imposed to discourage persons from illegally importing ODS or ODS-based equipment.

Sub-projects in the RMP

10. The RMP project, as submitted, consists of the following sub-projects:

- (a) Training of trainers in good refrigeration practices and establishment of national refrigeration demonstration centre (US \$186,500): to train 30 refrigeration technicians and engineers as trainers and to establish a national refrigeration demonstration centre.
- (b) Improved servicing and maintenance within the refrigeration sector-recovery and recycling project (US \$198,000): to improve the maintenance and servicing procedures currently being employed for servicing refrigeration equipment. A total of 720 technicians are proposed to be trained. Implementation of this sub-project will lead to the phase out of 48 tonnes of CFCs;
- (c) Incentive programme for the commercial and industrial refrigeration end-user sector (US \$133,350): to provide a funding incentive for replacement or retrofit of existing CFC-based refrigeration systems to non-CFC refrigerant. Implementation of this sub-project will lead to the phase out of 2.0 tonnes of CFCs;
- (d) MAC recovery/recycling of CFC-12 (US \$61,858): to implement a national programme for recovery and recycling of refrigerants in the MAC sub-sector (8 recovery/recycling machines and ancillary equipment). Implementation of this sub-project will lead to the phase out of 11.9 tonnes of CFCs;
- (e) Training for customs officers (US \$59,840): to train 50 customs officers to ensure the proper enforcement of the import/export regulations in Sierra Leone, identification of ODS and ODS-based equipment, and techniques used in illegal importation of ODSs; and
- (f) Monitoring activities (US \$15,455): to monitor the activities proposed in the RMP.

11. The Sierra Leone RMP project was submitted with an official letter from the Government of Sierra Leone stating the Government's commitment to achieve, without further request for funding, at least the 50 per cent reduction in consumption of CFCs by 2005 and the 85 per cent reduction by 2007.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Issues related to baseline for compliance by Sierra Leone

12. The Secretariat noted that, at the time of the submission of the RMP project, the Government of Sierra Leone had not yet complied with Decisions XIV/14 and XIV/16 of the Parties (non-compliance with data reporting under Article 7). The Secretariat also noted that project proposals submitted to the Executive Committee for countries that did not have a compliance baseline should be considered in the light of the advice provided by the Implementation Committee (Decision 38/12). In this regard, the Secretariat suggested to UNDP and UNEP, as a matter of urgency, to request the Government of Sierra Leone send an official communication to the Ozone Secretariat reporting its ODS consumption according to the data collected during the preparation of the country programme.

13. Subsequently, UNEP informed the Fund Secretariat that the Government of Sierra Leone has submitted its 1986 - 2002 ODS consumption data to the Ozone Secretariat.

Issues related to CFC consumption

14. The Secretariat discussed with UNDP and UNEP issues related with calculation of the level of CFC consumption in Sierra Leone, including the number of CFC-based domestic refrigerators and MAC systems still in operation, the average amount of refrigerant used for servicing the equipment, whether CFC-12 is being used for servicing non-CFC based MAC systems, and the prices of refrigerants.

15. In this regard, UNDP and UNEP informed the Secretariat that since the cessation of hostilities CFC-12 based refrigerators and used CFC-12-based compressors have been imported into Sierra Leone. This has contributed to the high number of refrigeration units in the country. Currently, there are no records of importation of used HFC-134a-based refrigeration systems into the country. Over 75 per cent of refrigerators are CFC-12 based. As reported in the RMP project, refrigeration technicians use about 1 kg of CFC-12 to service a domestic refrigerators or a MAC unit.

Issues related to the activities proposed in the RMP

16. In the review of the sub-projects within the RMP proposal, the Secretariat noted several items were found to be more expensive than those requested in similar approved projects and/or their eligibility was in doubt (operational costs for training programme, demonstration shop preparation, study tours, miscellaneous expenses, project assistance, monitoring and evaluation for the training programmes).

17. The Secretariat also raised its reservations about committing over US \$260,000 for a recovery and recycling programme taking into consideration that ODS legislation will only be enforced in 2004, most of CFC consumption is for servicing domestic refrigerators where

recovery of CFC is not viable, and the amount of refrigerants used to service refrigeration equipment is excessive (four times the actual charge).

18. Subsequently, UNEP and submitted a revised project proposal, addressing the issues raised by the Secretariat. The costs associated with recovery and recycling operations and the incentive programme for end-users were reduced.

19. The Secretariat proposed that UNDP should have flexibility in utilizing the resources available under the recovery and recycling and the end-users incentive programmes when specific needs arise during project implementation (e.g., to provide more recycling machines in the event of a steep rise in the price of CFCs, or to purchase basic service tools should technicians experience difficulties in implementing good practices). Thus, the objective would be to continuously monitor and survey the needs of technicians and adapt the project accordingly.

RECOMMENDATIONS

20. The Fund Secretariat recommends blanket approval of the projects at the funding level indicated below, on the understanding that:

- (a) The Government of Sierra Leone would have flexibility in utilizing the resources available under the recovery and recycling and the end-users incentive programmes, to address specific needs that might arise during project implementation;
- (b) The recycling programme and the incentive programme for end-users would be funded in stages so that resources can be diverted to other activities, such as additional training or procurement of service tools, if the proposed results from the programme are not achieved;
- (c) The recovery and recycling programme and the incentive programme for end-users should not commence until the legislation controlling CFC imports is in place and measures have been taken to ensure that the local market prices of CFCs and non-ODS refrigerants are similar;
- (d) UNDP and UNEP would provide appropriate monitoring throughout project implementation; and
- (e) Approval of the projects would be without prejudice to the operation of the Montreal Protocol's mechanisms dealing with non-compliance issues.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
a)	Implementation of the refrigerant management plan: training of trainers in code of good refrigeration practices/establishment of national refrigeration demonstration centre	119,460	15,530	UNEP

b)	Implementation of the refrigerant management plan: improved servicing and maintenance within the refrigeration sector - R&R project	92,400	8,316	UNDP
c)	Implementation of the refrigerant management plan: incentive programme for the commercial and industrial refrigeration end-user sector	107,350	9,662	UNDP
d)	Implementation of the refrigerant management plan: mobile air-conditioning recovery/recycling of CFC-12	61,858	5,567	UNDP
e)	Implementation of the refrigerant management plan: customs training	41,840	5,439	UNEP
f)	Implementation of the refrigerant management plan: monitoring the activities	15,455	2,009	UNEP
