



**United Nations  
Environment  
Programme**

Distr.  
LIMITED

UNEP/OzL.Pro/ExCom/38/50  
26 October 2002

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Thirty-eighth Meeting  
Rome, 20-22 November 2002

**PROJECT PROPOSALS: TOGO**

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

Refrigeration

- Implementation of the refrigerant management plan: monitoring of the activities included in the RMP UNDP
- Implementation of the refrigerant management plan: incentive programme for the commercial and industrial end-user refrigeration sector UNDP
- Implementation of the refrigerant management plan: recovery and recycling UNDP
- Implementation of the refrigerant management plan: training of refrigeration technicians UNEP
- Implementation of the refrigerant management plan: training of customs officers UNEP

## PROJECT EVALUATION SHEET TOGO

SECTOR: Refrigeration                      ODS use in sector (2001): 35.3 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

**Project Titles:**

- (a) Implementation of the refrigerant management plan: monitoring of the activities included in the RMP
- (b) Implementation of the refrigerant management plan: incentive programme for the commercial and industrial end-user refrigeration sector
- (c) Implementation of the refrigerant management plan: recovery and recycling
- (d) Implementation of the refrigerant management plan: training of refrigeration technicians
- (e) Implementation of the refrigerant management plan: training of customs officers

| Project Data                        | Refrigerant management plan |                        |  |               |               |
|-------------------------------------|-----------------------------|------------------------|--|---------------|---------------|
|                                     | (a)                         | (b)                    | (c)  | (d)           | (e)           |
| Enterprise consumption (ODP tonnes) |                             |                        |  |               |               |
| Project impact (ODP tonnes)         | 0.00                        | 5.00                   | 8.32   | 0.00          | 0.00          |
| Project duration (months)           | 48                          | 48                     | 24   | 18            | 18            |
| Initial amount requested (US \$)    | 18,000                      | 185,956                | 213,870                                      | 64,000        | 43,500        |
| Final project cost (US \$):         |                             |                        |  |               |               |
| Incremental capital cost (a)        |                             |                        | 150,000                                      |               |               |
| Contingency cost (b)                |                             |                        |  |               |               |
| Incremental operating cost (c)      |                             |                        |  |               |               |
| Total project cost (a+b+c)          | 15,000                      | 110,000                | 150,000                                      | 64,000        | 43,500        |
| Local ownership (%)                 | 100%                        | 100%                   | 100%   | 100%          | 100%          |
| Export component (%)                | 0%                          | 0%                     | 0%   | 0%            | 0%            |
| <b>Amount requested (US \$)</b>     | <b>15,000</b>               | <b>110,000</b>         | <b>150,000</b>                               | <b>64,000</b> | <b>43,500</b> |
| Cost effectiveness (US \$/kg.)      |                             |                        |  |               |               |
| Counterpart funding confirmed?      |                             |                        |  |               |               |
| National coordinating agency        | Ozone Unit                  | Montreal Protocol Unit | Ministry of Environment and Forest Resources | Bureau Ozone  | Bureau Ozone  |
| Implementing agency                 | UNDP                        | UNDP                   | UNDP   | UNEP          | UNEP          |

| <i>Secretariat's Recommendations</i>     |        |         |         |        |        |
|--|--------|---------|---------|--------|--------|
| Amount recommended (US \$)               | 15,000 | 110,000 | 150,000 | 64,000 | 43,500 |
| Project impact (ODP tonnes)              |        | 5.00    | 8.32    |        |        |
| Cost effectiveness (US \$/kg)            |        |         |         |        |        |
| Implementing agency support cost (US \$) | 1,950  | 14,300  | 19,500  | 8,320  | 5,655  |
| Total cost to Multilateral Fund (US \$)  | 16,950 | 124,300 | 169,500 | 72,320 | 49,155 |

## PROJECT DESCRIPTION

1. In 2001, total CFC consumption in the refrigeration-servicing sector in Togo was estimated at 35.3 tonnes for servicing domestic refrigerators (25.1 tonnes), commercial refrigeration equipment (2.1 tonnes), industrial installations (5.3 tonnes) and MAC units (2.8 tonnes for servicing 3,000 vehicles).

2. It is indicated in the project document that the refrigeration equipment is serviced by 1,100 technicians working in 900 small workshops. According to the RMP project, the total amount of CFC-12 charged in all commercial and industrial refrigeration equipment in the country equipment is about 5 tonnes; however the total amount used for servicing this equipment is 12.8 tonnes per year, equivalent to 2.6 times the initial installed charge in the equipment. In a number of these units, the amount of refrigerant used for servicing is 5 to 10 times the amount of refrigerant in the system. The amount of refrigerant used to service a domestic refrigerator is 1.0 to 1.5 kg/service.

3. The current prices of refrigerants in Togo are as follows:

| Refrigerant | Price at a shop (US \$/kg) | Informal sector price (US \$/kg) |
|-------------|----------------------------|----------------------------------|
| CFC-11      | 4.80                       | 3.90                             |
| CFC-12      | 4.30                       | 2.90                             |
| HCFC-22     | 5.40                       | 2.90                             |
| HFC-134a    | 33.70                      | 11.20                            |

4. The Government of Togo has already drafted regulations related to the protection of the ozone layer, and include, *inter alia*, bans on the manufacturing of products based on ODSs, import controls on ODS and ODS-based equipment, establishment of a registry for stocks of ODSs.

5. The RMP includes the following sub-projects:

- (a) Training of customs officers in the identification and control of ODS imports (US \$43,500), to implement a regulatory framework including measures for identification and control of ODS and ODS-based equipment; and to develop a licensing system.
- (b) Training programme for refrigeration technicians (US \$64,000), to enhance the service skill of refrigeration technicians; to introduce good service practices related to new non-CFC refrigerants; to assist the existing refrigeration associations in the country;
- (c) Establishment of a recovery and recycling scheme (US \$241,300), comprising 30 recovery machines, 2 recycling machines and 2 MAC recovery and recycling units with ancillary equipment; and training workshops for service technicians in refrigerant recovery operations; and

- (d) Incentive programme for the commercial and industrial end-user refrigeration sector (US \$186,000) to encourage refrigeration end-users to replace or permanently retrofit their existing ODS based equipment to zero/low-ODP refrigerants.
- (e) Monitoring of the activities proposed in the RMP (US \$18,000), to collect ODS-related data from workshops with a refrigerant recovery unit.

6. The Togo RMP project was submitted with an official letter from the Government of Togo stating the Government's commitment to achieve, without further request for funding, at least 50% reduction in consumption of CFCs by 2005 and 85% reduction by 2007. Imports of CFCs and/or CFC-based equipment will be restricted, if necessary to achieve compliance with the reduction in the levels of CFC consumption and to support the sub-projects within the RMP.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**

### **COMMENTS**

7. The Secretariat sought a clarification on whether CFC-12 is currently used for servicing HFC-134a-based equipment, particularly MAC units, taking into consideration the large difference in price between HFC-134a and CFC-12 refrigerants. The Secretariat was informed that during the survey conducted for the preparation of the project, some workshops reported that some clients do request to use CFC-12 instead of HFC-134a even on HFC-134a systems, due to the price difference. Accompanying measures, enforcement of an import licensing system and all activities being proposed in this RMP (especially customs training) are meant to remedy this situation.

8. The Secretariat also pointed out that the total amount of CFC-12 charged in commercial refrigeration equipment identified was 5 tonnes while the total amount used for servicing this equipment was 12.8 tonnes (2.6 times the initial installed charge each year). Furthermore, in a number of units, the amount of refrigerant used for servicing is 5 to 10 times (or more) the amount of refrigerant in the system. UNDP and UNEP reported that in some cases when there is a leak of refrigerant, the owners of the equipment do not want to stop the operation of the unit to find and correct the leaks as this may take a long time and the contents of the refrigeration equipment will spoil. Therefore, they just top up the system with refrigerant and continue operating it as is. In other cases, high leakage rates are due to the poor installation of the equipment; the technicians who installed this equipment had not followed the training workshops in good practices in installation, repair and maintenance.

9. The project proposes the retrofit of refrigeration equipment consuming more than 135 kg of refrigerants. Taking into consideration the very high leakage rate of a large number of units in operation, the retrofit of the equipment per se, will not reduce leakage. In this regard, the Secretariat was informed that during the retrofitting of the refrigeration equipment, all the components that leak will be addressed either by changing such components or correcting the

problems. As the replacement refrigerants will probably be more expensive than CFCs, and the owners of such equipment will be disbursing relatively large sums of money to retrofit their installations, they will ensure that the renewed installation will not be leaking.

10. The Togo RMP project proposal was prepared following the various elements of Decision 31/48. The total level of funding requested by the Government for the implementation of the activities contained in the RMP are also in the range allowable under Decision 31/48. Also, Decision 31/48 gives flexibility to the countries in selecting and implementing RMP components most relevant to their phase out commitments. The Secretariat, however, questioned the long-term sustainability and cost-effectiveness of providing CFC recovery equipment (US \$241,300) and financial incentives for end-users (US \$186,000) proposed in the RMP project, taking into consideration that:

- (a) the total CFC consumption in commercial and industrial refrigeration is 8.4 tonnes and 3 tonnes for MACs;
- (b) the leakage rate of the equipment is very high, reducing the potential to recover a reasonable amount of refrigerant and the amount of CFC used to service one domestic refrigeration unit is between 1.0 and 1.5 kg (10 to 15 times the average charge);
- (c) the difference in price between CFC-12 (US \$4.30/kg in a registered store) and HFC-134a (US \$33.70/kg) is very large.

11. In this regard, UNDP and UNEP indicated that while the above challenges are recognised, the various actions being proposed in the RMP would improve the current situation. The legislative ODS measures in Togo (recently enacted) include import quota controls that would greatly impact the prices of the various refrigerants and should be conducive for a successful implementation of the recovery and recycling and end-user programmes included in the RMP. This in concert with the various training activities that UNEP will undertake should allow the country to achieve the phase out of CFC consumption.

12. The differentiation between CFC used for domestic or commercial/industrial refrigeration is difficult, since in many responses received from the survey CFC consumption was generally recorded under the domestic sector; it also appears that small-commercial refrigeration equipment was often considered under the domestic category. Furthermore, the activities proposed in the RMP will contribute to a decrease in refrigerant leakage rates (i.e., price increase for CFC refrigerant coupled with the quota system should discourage leakage, training activities should promote better practices, and the awareness component of the end-user project should further reduce leakage).

13. The Secretariat, UNDP and UNEP discussed issues related to the cost of the recovery and recycling and the awareness incentive programme which were higher than similar requests in other approved RMP projects. Subsequently, the project costs were adjusted.

**RECOMMENDATIONS**

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

|     | <b>Project Title</b>   | <b>Project Funding (US\$)</b> | <b>Support Cost (US\$)</b> | <b>Implementing Agency</b> |
|-----|--|-------------------------------|----------------------------|----------------------------|
| (a) | Implementation of the refrigerant management plan: monitoring of the activities included in the RMP                                    | 15,000                        | 1,950                      | UNDP                       |
| (b) | Implementation of the refrigerant management plan: incentive programme for the commercial and industrial end-user refrigeration sector | 110,000                       | 14,300                     | UNDP                       |
| (c) | Implementation of the refrigerant management plan: recovery and recycling  | 150,000                       | 19,500                     | UNDP                       |
| (d) | Implementation of the refrigerant management plan: training of refrigeration technicians   | 64,000                        | 8,320                      | UNEP                       |
| (e) | Implementation of the refrigerant management plan: training of customs officers  | 43,500                        | 5,655                      | UNEP                       |

-----