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Programme**



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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: MOZAMBIQUE**

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

Refrigeration

- Implementation of a national programme for recovery and recycling of refrigerant UNDP

# **PROJECT EVALUATION SHEET MOZAMBIQUE**

SECTOR: REFRIGERATION ODS use in sector (1993): 21.46 ODP tonnes

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

***Project Title:***

Implementation of a national programme for recovery and recycling of refrigerant

| Project Data                         | CFC Recovery & Recycling                                  |
|--------------------------------------|-----------------------------------------------------------|
| ODS phase-out (ODP tonnes)           | 6.92                                                      |
| Proposed project duration (Yrs)      | 2                                                         |
| Incremental capital cost (US \$)     | 115,809                                                   |
| Contingency (%)                      | 10                                                        |
| Incremental operational cost (US \$) | -                                                         |
| Total project cost (US \$)           | 115,809                                                   |
| Local ownership (%)                  | -                                                         |
| Export component (%)                 | -                                                         |
| Amount requested (US \$) {Original}  | 121,292                                                   |
| {Revised}                            | 115,809                                                   |
| Cost effectiveness (US \$/kg)        | 16.73                                                     |
| National Coordinating Agency         | Ministério para la Coordenação de Acção Ambiental (MICOA) |
| Implementing Agency                  | UNDP                                                      |
| Technical review completed?          | N/A                                                       |

| <b><i>Secretariat's Recommendations:</i></b> |         |
|----------------------------------------------|---------|
| Amount recommended (US \$)                   | 115,809 |
| Project impact (ODP tonnes)                  | 6.92    |
| Cost effectiveness (US \$/kg)                | 16.73   |
| Implementing Agency support cost (US \$)     | 15,055  |
| Total cost to Multilateral Fund (US \$)      | 130,864 |

## PROJECT DESCRIPTION

1. The project will implement a comprehensive national programme for recovery and recycling of refrigerants in the refrigeration and air conditioning sector. This programme will be part of a National Refrigerant Management Plan.
2. The basic data used in the preparation of the project was compiled by the Ministry for Coordination of Environmental Action (MICOA) and a national consultant under the supervision of UNDP. Questionnaires were sent to 60 service workshops and companies known to maintain their own installations. Replies were received from 40 shops, 87.5% of which are using CFC-12 refrigerant.
3. The first priority in this programme is to stop CFC discharge into the atmosphere by repairing leaks and controlling unnecessary emissions from refrigeration equipment, followed by CFC recovery from existing installations during maintenance and prior to retrofits or dismantlement.
4. A recovery and recycling nation-wide network comprising 26 recovery units and 3 recycling centres will be established, at a cost of US \$99,809. Any CFC-recovered by companies or workshops not included in the recovery network will also be treated in the recycling centres.
5. Three training workshops for service technicians of refrigeration and air conditioning equipment, at a cost of US \$16,000 are envisioned, which will include a practical demonstration on recovery and recycling equipment; good service practices and safety in the handling of refrigerants during installation, servicing, retrofitting and dismantlement of refrigeration and/or air conditioning equipment; and detection of CFC leaks and prevention of emissions. The seminars will utilize some of the training documentation and materials used in previous seminars held elsewhere, as well as those prepared by UNEP.
6. In total, 6.92 tonnes of CFC could be recovered and recycled each year. 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. To assist the programme, the Government will introduce a monitoring system to check the amount of CFC being recovered and recycled by each piece of recovery equipment and assure the quality of the recycled refrigerant. Since the ozone unit will be responsible for monitoring the programme, UNDP agreed not to request additional funding for this activity, and the project cost was adjusted accordingly.

## SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

### COMMENTS

1. The Executive Committee at its 21st Meeting allocated US \$20,000 to UNDP to prepare a CFC recovery and recycling project to be integrated into a refrigerant management plan.
2. During the project preparation mission, UNDP assisted the Government of Mozambique in developing a draft National Refrigerant Management Plan to address the 1999 freeze and subsequent phase-out of CFCs in the refrigeration and air-conditioning sector. The strategy proposed in the Refrigerant Management Plan is to contain, recover and recycle refrigerant, making provision for the critical stocks for the service tail through internal conservation techniques as well as external suppliers if necessary.
3. The Secretariat advised UNDP that the quantity of refrigerant recovered is likely to remain low in the absence of shortage in the supply and/or increase in the cost of the refrigerant coupled with effective regulatory measures. The quantities of refrigerant recovered in this project are likely to remain low until these conditions prevail in the country.
4. The Secretariat and UNDP discussed the issue of refrigerant management plans in general, in the light of decisions adopted by the Executive Committee on this matter and the preparation of similar activities by other implementing agencies and bilateral parties. As a result of the discussions UNDP will defer the draft Refrigerant Management Plan contained in the project proposal pending further discussion between the implementing agencies and other interested stakeholders on the content of refrigeration management plans, the modalities and timing of implementation, and their relationship to other activities supported by the Multilateral Fund.

### 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><br><u>US \$</u> | <u>Support</u><br><u>Cost US \$</u> | <u>Implementing</u><br><u>Agency</u> |
|----------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|
| Implementation of a national programme for recovery and recycling of refrigerant | 115,809                             | 15,055                              | UNDP                                 |