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Executive Committee of
the Multilateral Fund for the
Implementation of the Montreal Protocol

Eighteenth Meeting
Vienna, 22-24 November 1995

**PROJECT PROPOSALS: PAKISTAN**

This document includes the Comments and Recommendation from the Fund Secretariat on the following projects:

- Phasing Out ODS at the Refrigerator and Chest Freezer Plants of Pak Elektron Ltd. — UNIDO
- Phasing Out ODS at the Chest Freezer Factory of Riaz Electric Co. Ltd. — UNIDO

**PROJECT EVALUATION SHEET**
**PAKISTAN**

SECTOR: REFRIGERATION ODS use in sector (1992): 500 ODP tonnes

Sub-sector cost-effectiveness thresholds: Domestic refrigeration US $13.76/kg

***Project Titles***:
(a) Phasing out ODS at the chest Freezer Plants of Pak Elecktron Ltd (PEL) *
(b) Phasing out ODS at Chest Freezer Factory of Riaz Electric Co. Ltd.*

| **Project Data** | **Domestic Refrigeration** | |
|---|---|---|
| | **Riaz** | **PEL** |
| ODS phase-out (ODP tonnes) | 48.2 | 68 |
| Proposed project duration (Yrs) | 1.5 | 1.5 |
| Incremental capital cost (US$) | 703,550 | 1,028,591 |
| Contingency (%) | 10 | 10 |
| Incremental operational cost (US$) | 119,437 | 181,704 |
| Total project cost (US$) | 822,987 | 1,210,295 |
| Local ownership (%) | 100 | 100 |
| Export component (%) | 0 | 0 |
| Amount requested (US$) {Original | 873,430 | 1,257,309 |
| {Revised | 822,987 | 1,210,295 |
| Cost effectiveness (US$/kg) | 11.09 | 11.56 |
| National Coordinating Agency | EUAD | EUAD |
| Implementing Agency | UNIDO | UNIDO |
| Technical review completed? | Yes | Yes |

| ***Secretariat's Recommendations*** | | |
|---|---|---|
| Amount recommended (US $) | 822,987 | 1,210,295 |
| Project impact (ODP tonnes) | 48.2 | 68 |
| Cost effectiveness (US $/kg) | 11.09 | 11.58 |
| Implementing Agency support cost (US$) | 119,437 | 157,338 |
| Total cost to Multilateral Fund | 942,424 | 1,367,633 |

* New proposals to 18th Meeting

## PROJECT DESCRIPTION

Domestic Refrigeration

(a) Phasing out ODS at the chest Freezer Plants of Pak Elecktron Ltd (PEL)
(b) Phasing out ODS at Chest Freezer Factory of Riaz Electric Co. Ltd.

1. There are ten major domestic refrigerator and freezer producers in Pakistan. These two projects are the first submitted in the domestic refrigerator sub-sector by Pakistan.

2. The current annual production at the two companies is: PEL - 45,200 units; Riaz - 25,000 units. All the current production is sold in Pakistan. Under the projects submitted, two companies will eliminate a total consumption of 116.2 MT of CFC-12 and CFC-11 by converting to HFC-134a as the refrigerant and to cyclopentane as the blowing agent.

3. Conversion to HFC-134a involves the replacement of refrigerant charging boards, leak detectors, refitting existing vacuum system, model redesign and testing.

4. Conversion to cyclopentane entails the replacement of existing low pressure foam machines with high pressure machines, retrofitting of existing high pressure machines, modifying fixtures, providing cyclopentane storage and delivery systems, and replacement of premixing stations. Conversion to cyclopentane will necessitate also implementing a stringent safety programme to ensure personnel and plant safety owing to the flammable nature of cyclopentane.

5. Refrigerator model redesign and the technical aspects of the conversion including safety measures associated with cyclopentane application, will be supervised by a specialized consultants appointed and fielded by UNIDO. A General Contractor will also be appointed by UNIDO for the implementation of the major project components (foaming system, refrigeration system, fire protection system, exhausting and ventilation system, on-the-job training, etc.). These arrangements would ensure a proper technology transfer and safe operations.

6. Incremental operational costs are associated with new HFC-134a compressor, refrigeration system optimization, higher cost of the refrigerant and extra polyurethane foam due to increased density. Incremental operational costs are calculated for six months of operation.

## SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

### COMMENTS

1. The chosen technologies are proven.

2. The Secretariat discussed with UNIDO the eligibility and incrementality of all cost items. The project budget has been adjusted accordingly. All the recommended amounts are below the cost-effectiveness thresholds of the sub-sector.

### RECOMMENDATIONS

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

| Project | Project Cost US $ | Support Cost US $ | Implementing Agency |
|---|---|---|---|
| (a) Phasing out ODS at the chest Freezer Plants of Pak Elecktron Ltd (PEL) | 822,987 | 119,437 | UNIDO |
| (b) Phasing out ODS at Chest Freezer Factory of Riaz Electric Co. Ltd. | 1,210,295 | 157,338 | UNIDO |