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

Twentieth Meeting
Montreal, 16-18 October 1996

Addendum

PROJECT PROPOSAL: ROMANIA

This document includes the Comments and Recommendations from the Fund Secretariat on the following project:

Refrigeration

- Phasing out CFC-11 and CFC-12 in the production of domestic refrigerators and replacing them by cyclopentane and HFC-134a at Ratmil Bucharest, Uzina Mecanica Sadu

UNIDO

SECTOR: REFRIGERATION ODS use in sector (1993): 1,102 ODP tonnes

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

Phasing out CFC-11 and CFC-12 in the production of domestic refrigerators and replacing them by cyclopentane and HFC-134a at Ratmil Bucharest, Uzina Mecanica Sadu

Project Data	Domestic
	Ratmil Bucharest, Uzina Mecanica Sadu
ODS phase-out (ODP tonnes)	73.26
Proposed project duration (Yrs)	2
Incremental capital cost (US\$)	851,690
Contingency (%)	10
Incremental operational cost (US\$)	306,300
Total project cost (US\$)	1,243,159
Local ownership (%)	100
Export component (%)	0
Amount requested (US\$) {Original	1,243,159
{Revised	937,859
Cost effectiveness (US\$/kg)	8.32
National Coordinating Agency	Ministry of Environment
Implementing Agency	UNIDO
Technical review completed?	Yes

<i>Secretariat's Recommendations</i>	
Amount recommended (US \$)	937,859
Project impact (ODP tonnes)	73.26
Cost effectiveness (US \$/kg)	8.32
Implementing Agency support cost (US\$)	121,922
Total cost to Multilateral Fund	1,059,781

PROJECT DESCRIPTION

1. Uzina Mecanica Sadu (UMS) is a 100% state owned domestic refrigerator producer. It is the second largest enterprise in this sub-sector. The Executive Committee has already approved a project to phase out CFCs consumption at Arctic, the largest domestic refrigerator producer in Romania.
2. The enterprise produces refrigerators based on ammonia-water (24,000 units/year) and CFC-12 (84,000 units/year) as refrigerants. Both types of refrigerators are insulated with CFC-11 blown PUF.
3. The consumption of CFC-12 is 21.19 MT and that of CFC-11 is 52.07 MT.
4. The project proposes to replace CFC-11 with cyclopentane and requests the necessary equipment which will be compatible with cyclopentane use. The CFC-12 refrigeration system will be converted to HFC-134a, which necessitates replacement of the current charging equipment and retrofit of the existing vacuum pumps.
5. Baseline equipment include two foaming machines, one produced/assembled locally and the other was imported. It also includes refrigerant (CFC-12) charger vacuum pumps and leak detectors.
6. Replacement equipment include new high pressure machine and a replacement head for the other machine, one HFC-134a charger, retrofit of 17 vacuum pumps, modification of jigs and fixtures, and safety system. Design, prototyping and testing of new refrigerators are part of the incremental capital costs, as well as training and certification.
7. Capital cost included modification of the thermostat.
8. Operating costs are requested for 6 months for additional foaming material and for more expensive refrigerant.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The chosen technologies for both refrigerant and foaming systems are proven technologies.

2. The Secretariat discussed with UNIDO the eligibility of costs and their level. The project budget was adjusted accordingly.

RECOMMENDATIONS

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

	Project Cost US \$	Support Cost US \$	Implementing Agency
Phasing out CFC-11 and CFC-12 in the production of domestic refrigerators and replacing them by cyclopentane and HFC-134a at Ratmil, Bucharest, Uzina Mecanica Sadu	937,859	121,922	UNIDO