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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 PROPOSAL: ISLAMIC REPUBLIC OF IRAN

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

- Conversion of Domestic Refrigerator Production Facilities to Phase Out CFC-12 and CFC-11 (six enterprises).

UNIDO

PROJECT EVALUATION SHEET **ISLAMIC REPUBLIC OF IRAN**

SECTOR: REFRIGERATION ODS use in sector (1993): 1050 ODP tonnes

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

Project Title:

Conversion of domestic refrigerator production facilities to phase out CFC-12 and CFC-11 (6 enterprises)*

Project Data	
ODS phase-out (ODP tonnes)	372
Proposed project duration (Yrs)	2
Incremental capital cost (US\$)	2,965,467
Contingency (%)	10
Incremental operational cost (US\$)	222,169
Total project cost (US\$)	3,187,636
Local ownership (%)	100
Export component (%)	0
Amount requested (US\$) { Original	3,214,015
{ Revised	3,187,636
Cost effectiveness (US\$/kg)	4.99
National Coordinating Agency	Department of the Environment
Implementing Agency	UNIDO
Technical review completed?	Yes

Secretariat's Recommendations	
Amount recommended (US \$)	3,187,636
Project impact (ODP tonnes)	372
Cost effectiveness (US \$/kg)	(average) 4.99
Implementing Agency support cost (US\$)	414,394
Total cost to Multilateral Fund (US \$)	3,602,030

* New proposal to 18th Meeting

PROJECT DESCRIPTION

1. The project will phase out the use of CFC-12 and CFC-11 in the manufacture of domestic refrigerators and freezers in six Iranian companies (Fariz Iran, Gadook Industries Co., Lorestan Refrigerator MFG Industries, Movalled Home Appliances Co., Pars Machine MFG Co., and Pars Monark Co.).
2. The total annual production capacity of the companies is 700,000 units of refrigerators and freezers.
3. All six companies have selected cyclopentane and HFC-134a as the alternative foam blowing agent and refrigerant, respectively.
4. The companies will redesign existing refrigerator models through prototyping, testing, trial manufacturing and adaptation as well as reliability testing.
5. Both the refrigerant and foam systems in each company will be converted.
6. Refrigerant chargers for HFC-134a, new vacuum pumps and retrofit of existing vacuum pumps as well as leak detectors are required for conversion of the refrigerant system.
7. High pressure foam machines as well as storage for cyclopentane with the necessary safety associated with the flammable cyclopentane will be provided for conversion of the foam system.
8. Training of personnel as well as consultancy are included as part of the capital cost.
9. All six companies will bear the cost of design, prototyping, testing, jigs and fixtures. Gadook and Monark will not request operating costs. The other four companies are requesting operating costs amounting to about 10 per cent of their capital costs.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Executive Committee approved at its Eleventh and Sixteenth Meetings a project covering five Iranian domestic refrigerator manufacturers.
2. UNIDO indicated that approval of this project will constitute the last phase out project in the domestic refrigeration sub-sector in Iran.
3. The technologies chosen by the companies are well proven and have been approved in many domestic refrigeration projects.
4. The cost savings in this project in comparison with approved projects and projects under consideration is due to the fact that the companies are willing to accept cost sharing and that cost could be further rationalized through cooperation between them. This will be done with the assistance of the Research Centre for Home Appliances. The Ministry of Industry will coordinate the conversion efforts of the companies.

RECOMMENDATIONS

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

Project Conversion of domestic refrigerator production facilities to phase out CFC-12 and CFC-11 (6 enterprises):	Project Cost US \$	Support Cost US \$	Implementing Agency
- Fariz Iran	612,504	79,626	UNIDO
- Gadook Industries Co.	373,838	48,600	UNIDO
- Lorestan Refrigerator Mfg. Industries	615,018	79,952	UNIDO
- Movalled Home Appliances Co.	607,732	79,005	UNIDO
- Pars Machine Mfg. Co.	608,605	79,119	UNIDO
- Pars Monark Co.	369,939	48,092	UNIDO
Total:	3,187,636	414,394	