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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: SYRIA

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

- Umbrella investment project for phasing-out of CFCs at Krayem Int. Co.: UNIDO
  Sub-project I: Krayem Co.
  Krayem Brothers Co.
  Sub-project II: Krayem Cold Stores Co.

PROJECT EVALUATION SHEET
SYRIA

SECTOR:	**REFRIGERATION**	ODS use in sector (1991):	500 ODP tonnes
Sub-sector cost-effectiveness thresholds:		Domestic Commercial	3.76 US $/kg 15.21 US $/kg
SECTOR:	**FOAM**	ODS use in sector (1991)	500 ODP tonnes
Sub-sector cost-effectiveness threshold:		Rigid polyurethane	7.83 US $/kg

Project Title: Umbrella investment project for phasing-out of CFCs at Krayem Int. Co.*
Sub-project I: 1. Krayem Co.
2. Krayem Brothers Co.
Sub-project II: 3. Krayem Cold Stores Co.

Project Data		**Sub-Project I: Refrigeration**	**Sub-Project II: Foam**
		Domestic and Commercial	**Rigid Polyurethane**
ODS phase-out (ODP tonnes)		89	65
Proposed project duration (Yrs)		1 yr 4 mo	1 yr 4 mo
Incremental capital cost (US$)		953,975	644,600
Contingency (%)		10	10
Incremental operational cost (US$)		117,600	0
Total project cost (US$)		1,071,575	644,600
Local ownership (%)		100	100
Export component (%)		0	0
Amount requested (US$)	{Original	1,603,485	1,075,800
	{Revised	1,071,575	644,600
Cost effectiveness (US$/kg)		12.04	9.91
National Coordinating Agency		General Commission for Environmental Affairs	
Implementing Agency		UNIDO	UNIDO
Technical review completed?		Yes	Yes

Secretariat's Recommendations		
Amount recommended (US $)	1,071,575	644,600
Project impact (ODP tonnes)	89	65
Cost effectiveness (US $/kg)	7.83	6.45
Implementing Agency support cost (US$)	139,304	83,798
Total Cost to Multilateral Fund (US $)	1,210,879	728,398

* New proposal to 18th Meeting

PROJECT DESCRIPTION

1. This is an umbrella project to convert three plants at Krayem Int. Co.

<u>Sub-project I</u>

2. This project has been designed to phase out 100% of the use of CFC-11 as blowing agent and CFC-12 as a refrigerant at the 2 factories of Krayem Int. Co.: domestic refrigerators (Krayem Brothers Co.) and commercial refrigerators (Krayem Co.).

3. The chosen replacements are cyclopentane as foam blowing agent and HFC-134a as refrigerant. Apart from the replacement of some of the production equipment and related services, the project includes the redesign of the refrigeration system for all currently produced models and the conversion of the plant.

4. The redesign of the models covers activities like prototyping, performance testing, trial manufacturing and adaptation, as well as reliability tests.

5. The conversion of the production facilities covers the refrigeration system, insulation foam blowing system for refrigerators, and the refrigeration service sector of the company.

6. New production equipment for the refrigeration system include charging boards for HFC-134a, new vacuum pumps, leak detectors, testing equipment.

7. New production equipment for the foam system include high pressure foam machines, premixing station, modification of fixures and plugs, and safety system for the handling for cyclopentane.

8. The capital costs include costs of commissioning and start up as well as consultancy cost. Ten per cent contingency is applied to all capital cost.

9. The incremental operating costs are calculated for six months of actual production.

<u>Sub-project II</u>

10. This project will phase out 100% of the use of CFC-11 for the production of rigid polyurethane foam sandwich panels manufactured by the technique of discontinuous moulding. The chosen replacement alternative is <u>n-pentane</u> as a foaming blowing agent.

11. The conversion to pentane of the production line covers installation of discharge equipment for pentane from drums into accumulation tank, feeding pentane to metering system, a new metering system with a new press, safe ventilation and pentane emission monitoring system, as well as a fire protection system.

12. Capital costs include cost of commissioning and start up as well as consultancy cost. Ten per cent contingency is applied to all capital cost.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The chosen technologies are well proven and have been approved in similar projects.

2. The enterprise will share the costs of fixtures, plugs and Manni press.

3. UNIDO agreed to reduce/eliminate costs where applicable, and the level of eligible incremental costs was accordingly adjusted.

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
Umbrella investment project for phasing-out of CFCs at Krayem Int. Co.:			
Sub-project I: Krayem Co. and Krayem Brothers Co.	1,071,575	139,304	UNIDO
Sub-project II: Krayem Cold Stores Co.	644,600	83,798	UNIDO