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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-fifth Meeting
Montreal, 29-31 July 1998

PROJECT PROPOSALS: MOROCCO

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

Foam

- Conversion to LCD technology in the manufacture of flexible foam (Slabstock) to replace CFC-11 at Bonbino Confort UNDP
- Conversion to HCFC-141b/ water technology in the manufacture of rigid polyurethane spray foam at Batcomar S.A. UNDP

Refrigeration

- Replacement of CFC-12 with HFC-134a for commercial refrigeration at Alom Du Nord UNIDO
- Replacement of CFC-12 with HFC-134a for commercial refrigeration at Batinox UNIDO

PROJECT EVALUATION SHEET MOROCCO

SECTOR: FOAM ODS use in sector (1994): 417 ODP tonnes

Sub-sector cost-effectiveness thresholds: Flexible Slabstock US \$6.23/kg
Rigid US \$7.83/kg

Project Titles:

- (a) Conversion to LCD technology in the manufacture of flexible foam (slabstock) to replace CFC-11 at Bonbino Confort.
- (b) Conversion to HCFC-141b/Water technology in the manufacture of rigid polyurethane spray foam at Batcomar S.A.

Project Data	Flexible Slabstock	Rigid
	Bonbino Confort	Batcomar S.A.
ODS phase-out (ODP tonnes)	90	9.2
Proposed project duration (months)	24	24
Incremental capital cost (US \$)	569,200	104,500
- including contingency (%)		
Incremental operational cost (US \$)	(39,800)	14,800
Total project cost (US \$)	529,400	119,300
Local ownership (%)	100	100
Export component (%)	0	0
Amount requested (US \$) {Original}	529,400	72,000
{Revised}		
Cost effectiveness (US \$/kg)	5.88	7.83
National Coordinating Agency	Ministry of Trade, Industry and Crafts	
Implementing Agency	UNDP	
Technical review completed?	Yes	Yes

Secretariat's Recommendations:		
Amount recommended (US \$)		72,000
Project impact (ODP tonnes)		9.2
Cost effectiveness (US \$/kg)		7.83
Implementing Agency support cost (US \$)		9,360
Total cost to Multilateral Fund (US \$)		81,360

PROJECT DESCRIPTION

- (a) Conversion to LCD technology in the manufacture of flexible foam (slabstock) to replace CFC-11 at Bonbino Confort.
- (b) Conversion to HCFC-141b/Water technology in the manufacture of rigid polyurethane spray foam at Batcomar S.A.

1. Morocco's 1994 ODS consumption was 758 ODP tonnes based on its country programme. 417 ODP tonnes were used in the foam sector (excluding estimated 63 tonnes used for refrigeration foam). However surveys have revealed consumption in the foam sector of 599 ODP tonnes. 589 tonnes are attributed to 12 foam companies. The reported 1996 CFC consumption of CFCs is 814 tonnes. Nine projects to phase out 538 ODP tonnes have been approved for the country, including 7 flexible slabstock foam projects to phase out 517 ODP tonnes.

2. With regard to compliance with the 1999 freeze, UNDP states as follows: "The foam sector represents at least 55% of the total ODP being consumed in Morocco. In order for Morocco to meet the 1999 freeze, it is therefore considered extremely important to approve the foam projects being presented at the 25th Executive Committee Meeting, especially considering the fact that the growth rate in the foam sector is closely linked with the population growth rate which is 3% per year."

3. Letters from the Ministry of Industries and the company endorsing the project and giving commitment on phase out of CFC and provision of necessary counterpart funding are included in the project document.

Flexible Slabstock

- (a) **Conversion to LCD technology in the manufacture of flexible foam (slabstock) to replace CFC-11 at Bonbino Confort.**

- 1. The company is 100% Moroccan owned, established in 1980. It produced 900 tonnes foam in 1997 for furnishings consuming 90 tonnes CFC-11. The company operates a flat top system (OMS Top Foam 180) low pressure machine.
- 2. Bonbino-Confort will phase out the use of CFC in its production of flexible foam (slabstock) through replacement by liquid carbon dioxide technology (LCD). The project cost includes the cost of LCD system, and other related equipment, license fee, technology transfer, trials and training for a total of US \$569,200. There are incremental operational savings of US \$59,800.

Rigid Foam

- (b) **Conversion to HCFC-141b/Water technology in the manufacture of rigid polyurethane spray foam at Batcomar S.A.**

- 3. Batcomar S.A. is reported to be one of the largest manufacturers of spray insulation rigid polyurethane foam in Morocco. It is a 100% Moroccan company established in 1985 to

produce sandwich, panel, spray and molded rigid foam. It produced 70 tonnes of foam using 10 tonnes of CFC-11.

4. The company operates one 7 kg/min Gusmer FF-1600 for rigid foam production and one Gusmer H2000 for spray foam. The company will convert its production to a combination of water and HCFC-141b as interim technology. It is proposed to replace the two dispensers with new 10 kg/min and 20 kg/min dispensers at the cost of US \$70,000. Other costs include trials, technology transfer, training for US \$25,000. The two-year incremental operating cost amount to US \$14,800.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Flexible Slabstock: Bonbino

1. The item CO₂ base frame was removed from the capital cost resulting in the amount of US \$558,200 instead of US \$569,200. The incremental operating cost was recalculated to be consistent with the approved guidelines. The Secretariat and UNDP are still discussing the project costs. The final project cost will be communicated to the Sub-Committee on project review.

Rigid Foam: Batcomar S.A.

2. It was agreed that the company would retrofit the H-2000 to be able to work with HCFC-141b and use it to replace the Gusmer FF-1600 and a new Gusmer machine to replace the H-2000. This would not exceed US \$55,000.

RECOMMENDATION

1. The Fund Secretariat recommends approval of the project Batcomar with the level of funding and associated support cost as indicated below:

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Conversion to LCD technology in the manufacture of flexible foam (slabstock) to replace CFC-11 at Bonbino Confort	Pending	Pending	UNDP
Conversion to HCFC-141b/Water technology in the manufacture of rigid polyurethane spray foam at Batcomar S.A.	72,000	9,360	UNDP

PROJECT EVALUATION SHEET **MOROCCO**

SECTOR: Refrigeration ODS use in sector (1996): 35 ODP tonnes

Sub-sector cost-effectiveness thresholds: Commercial 15.21 US \$/kg

Project Titles:

(a) Replacement of CFC-12 with HFC-134a for commercial refrigeration at Alom du Nord

(b) Replacement of CFC-12 with HFC-134a for commercial refrigeration at Batinox

Project data	Commercial	
	Alom du Nord	Batinox
ODS phase-out (ODP tonnes)	7.7	4.5
Proposed project duration (months)	12	12
Incremental capital cost (US \$)	115,319	66,774
- including contingency (%)	10	10
Incremental operational cost (US \$)	not requested	not requested
Total project cost (US \$)	115,319	66,774
Local ownership (%)	100	100
Export component (%)	0	0
Amount requested (US \$) {Original}	115,319	66,774
{Revised}		
Cost effectiveness (US \$/kg)	14.97	14.83
National Coordinating Agency	Ministere de l'Industrie du Commerce et de l'Artisanat	
Implementing Agency	UNIDO	UNIDO
Technical review completed?	Yes	Yes

Secretariat's Recommendations:		
Amount recommended (US \$)	99,402	32,920
Project impact (ODP tonnes)	7.7	4.5
Cost effectiveness (US \$/kg)	12.9	7.31
Implementing Agency support cost (US \$)	12,922	4,279
Total cost to Multilateral Fund (US \$)	112,324	37,199

PROJECT DESCRIPTION

Sector background

1. The number of enterprises in the refrigeration sector can not be confirmed from the information provided in the country programme of Morocco and the project documents submitted to this meeting. Nonetheless, CFC consumption in the domestic and commercial refrigeration sub-sectors amounts to 280 MT and 35 MT, respectively.
2. The Kingdom of Morocco is submitting two project proposals for the phase out of a total of 12.2 ODP tonnes of CFC-12 in the commercial refrigeration sub-sector.
3. UNIDO characterized the use of CFC-12 in the commercial refrigeration sub-sector as mainly for charging and maintenance of appliances.

1999 Freeze

4. The Kingdom of Morocco has received assistance from the Multilateral Fund to phase out 569 ODP tonnes of its CFC consumption which was reported to be 814 ODP tonnes in 1996. Implementation of the two projects will enable Morocco to meet the freeze target.
- (a) **Replacement of CFC-12 with HFC-134a for commercial refrigeration at Alom du Nord**
- (b) **Replacement of CFC-12 with HFC-134a for commercial refrigeration at Batinox**
1. Alom du Nord and Batinox manufacture commercial refrigeration units. They will phase out 7.7 MT and 4.5 MT respectively, of CFC-12 used in the refrigeration circuit will be replaced with HFC-134a on all models produced. The capital cost includes, charging boards, charging units, leak detectors, vacuum pumps, testing equipment, prototyping materials and general consultancy & engineering design services. No claim is made for incremental operating cost.
 2. Both companies agreed that the old equipment to be replaced under these two projects will have to be destroyed or rendered unusable. Certification by the Ozone Office will be provided.
 3. Both companies agreed that all expenses not covered by the approved projects will be provided by them.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The baselines of the two companies are similar and are characterized by old vacuum pumps, simple charging equipment and leak detectors.
2. Since the two companies only charge the refrigerant into pre-assembled units, they may not fit in the commercial refrigeration sub-sector.
3. However, since the two enterprises are not requesting operating costs, the eligible costs of replacement equipment are not affected by sector-classification.
4. UNIDO agreed to delete costs of equipment that are not replacing similar equipment in the baseline.
5. UNIDO also agreed that the incremental cost of vacuum pumps in the two companies should consist of the cost of one new vacuum pump per company and the cost of retrofits of the remaining vacuum pumps in each.
6. It was agreed to establish one testing facility, at Alom du Nord which will serve the two companies for prototyping and model redesign. The costs of laboratory testing equipment and general consultancy were reduced subsequently.

RECOMMENDATION

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

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
(a) Replacement of CFC-12 with HFC-134a for commercial refrigeration at Alom du Nord	99,402	12,922	UNIDO
(b) Replacement of CFC-12 with HFC-134a for commercial refrigeration at Batinox	32,920	4,279	UNIDO