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

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Vienna, 22-24 November 1995

PROJECT PROPOSALS: ARGENTINA

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

Foam

- Conversion to non CFC technology in the manufacture of flexible foam (slabstock) at Belmo Buenos Aires and Belmo San Luis UNDP
- Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at Nuvel Corp. S.A. UNDP
- Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at Mentvil S.A. UNDP
- Elimination of the use of CFC's in the manufacture of sandwich panels and spray foams at Montisol Argentina S.A.C.I.F. and Art Nouveau Puntana S.A. UNDP

Refrigeration

- Elimination of the use of CFC's in the manufacture of display cabinets and polyurethane panels for cold stores at Market Costan UNDP
- Elimination of CFCs in domestic refrigerator production plants in Aurora S.A. World Bank
- Elimination of CFCs in two manufacturing plants of domestic refrigerators of enterprises Piragua S.A. and Piragua San Luis World Bank
- Elimination of CFC in the manufacturing plant of domestic refrigeration Adzen S.A. C.I.F. World Bank

PROJECT EVALUATION SHEET ARGENTINA

SECTOR: FOAM ODS use in sector (1992): 1,585 ODP tonnes

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

Project Titles:

- (a) Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) (at three enterprises)
- (b) Elimination of use of CFCs in the manufacture of sandwich panels and spray foam (rigid Foam) at Montisol Arg. and Art Nouveau Puntana

Project Data	Flexible Foam			Rigid Foam
	Belmo Buenos Aires and Belmo San Luis	Mentvil S.A.	Nuvel Corp. S.A.	Montisol Arg. and Art Nouveau Puntana
ODS phase-out (ODP tonnes)	145	18.5	53	36.5
Proposed project duration (Yrs)	1	1	1	1
Incremental capital cost (US\$)	715,000	115,000	313,500	330,000
Contingency (%)	10	10	10	10
Incremental operational cost (US\$)	105,000	64,300	60,790	29,300
Total project cost (US\$)	820,000	179,300	374,290	359,300
Local ownership (%)	100	100	100	100
Export component (%)	0	less than 10	0	0
Amount requested (US\$) { Original	902,000	115,000	429,000	396,148
{ Revised	715,000	115,000	313,500	285,000
Cost effectiveness (US\$/kg)	4.93	6.22	5.92	7.81
National Coordinating Agency	OPROZ-INTI	OPROZ-INTI	OPROZ-INTI	OPROZ-INTI
Implementing Agency	UNDP	UNDP	UNDP	UNDP
Technical review completed?	Yes	Yes	Yes	Yes
Secretariat's Recommendations				
Amount recommended (US \$)	715,000	115,000	313,500	285,000
Project impact (ODP tonnes)	145	18.5	53	36.5
Cost effectiveness (US \$/kg)	4.93	6.22	5.92	7.81
Implementing Agency support cost (US\$)	92,950	14,950	40,755	37,050
Total cost to Multilateral Fund	807,950	129,950	354,255	322,050

PROJECT DESCRIPTION

(a) Flexible Foam: Belmo Buenos Aires/Belmo San Luis, Mentvil S.A. and Nuvel Corp. S.A.

1. Belmo, Mentvil and Nuvel are flexible foam (slabstock) manufacturing enterprises. The conversion of the manufacturing process to non-ODS technologies by these enterprises is influenced by Argentinean air quality regulations which severely restrict the concentration of methylene chloride in exhaust gases. Consequently, Belmo and Nuvel have chosen the technology which employs acetone as auxiliary blowing agent and Mentvil the smallest of the three enterprises has chosen “low index” technology, since the acetone technology will be highly cost ineffective for it. Nuvel’s range of products apparently also constraint the use of technologies utilizing methylene chloride or combination of water and forced cooling. The acetone technology is a proprietary technology and Belmo and Nuvel are expected to pay royalties of US \$100 per tonne to the technology supplier. This cost has been included in the operational cost calculation. However, all four companies are not claiming the incremental operational costs.

2. The projects have been reviewed by a sector expert and all pertinent issues raised resolved.

3. Belmo operates two maxfoam units, each with capacity of 250 kg/min, while Nuvel operates a Hennecke UBT 350 of 350 kg/min. capacity. The capital cost of conversion of Belmo and Nuvel plants relate to the conversion of the production line, installation of blowdown fans, start up and trials, technology transfer, training and safety audit. The conversion of the production line includes explosion proofing of foaming unit and saw, extension of ventilation to the saw, grounding, acetone tank, booster pump and fire protection, and gas monitoring/alarm system.

4. Mentvil operates a maxfoam and a boxfoam unit built in-house. It produces foam for mattresses, pillows, furniture and some specialty applications. Less than 10% of the foam is exported to neighbouring countries (Chile, Brazil, Uruguay). The “low index” technology which requires the introduction of a cross-linking additive and an additional polyol will be introduced in phases and will require considerable level of technical assistance. The capital costs include the cost of metering system for additives including one tank and two pumps for two foaming units, metering system for polyol including one tank and two pumps, start-up and trial materials and technology transfer.

(b) Rigid Foam: Montisol Argentina S.A.C.I.F. and Art Nouveau Puntana S.A.

5. The Montisol plant produces spray foam insulation on site at customers’ end. It also manufactures rectangular blocks and cylindrical blocks for pipe insulation. Three Gussmer H-11 machines are used for production of both the spray foam and block foam. CFC-11 at this plant will be phased out through initial use of HCFC-141b and subsequently the use of water blown formulations since pentane cannot be used safely for this type of production involving movement of equipment from site to site. The three foaming machines will be retrofitted at the cost of US \$7,000.

6. The Art Nouveau Puntana plant produces sandwich panels and blocks using the same injection machine, a Cannon C-250 with capacity of 3kg/sec. (180kg/min.). A Mannie type press, 10.3m long and 2.2m wide is also used in the panel production. The production of the panels and blocks will be converted to use pentane as blowing agent.

7. The capital cost of conversion includes elements identified as direct safety cost and indirect safety cost. The high pressure foaming unit (39% of whose cost is indicated as indirect safety cost), tests and trials and direct safety costs: explosion proof storage tanks, pump, piping, polyol buffer tank, ventilation for injector and press, gas and leak detectors, monitoring system, technology transfer, training and safety audit.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The four project proposals were first submitted for consideration at the 17th Meeting of the Executive Committee. However, due to a number of issues relating to the calculation of their cost effectiveness, the projects were deferred and included in Annex 1 to UNEP/OzL.Pro/ExCom/17/3/Rev.1.

2. UNDP and the government have reviewed the four projects and addressed the issues involved. All the recommended amounts are below the cost-effectiveness thresholds of the relevant sub-sectors.

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) <u>Flexible (Slabstock) Foam</u>			
Belmo Buenos Aires and Belmo San Luis conversion to non CFC technology in the manufacture of flexible foam (slabstock)	715,000	92,950	UNDP
Mentvil S.A. conversion to non CFC technology in the manufacture of flexible foam (slabstock)	115,000	14,950	UNDP
Nuvel Corp. S.A. conversion to non CFC technology in the manufacture of flexible foam (slabstock)	313,500	40,755	UNDP
(b) <u>Rigid Foam</u>			
Montisol Argentina S.A.C.I.F. and Art Nouveau Puntana S.A. elimination of the use of CFC's in the manufacture of sandwich panels and spray foams	285,000	37,050	UNDP

2. The Fund Secretariat further recommends that the projects be included in the Consolidated List.

PROJECT EVALUATION SHEET ARGENTINA

SECTOR: REFRIGERATION ODS use in sector (1992): 1,441 ODP tonnes

Sub-sector cost-effectiveness thresholds: Domestic refrigeration US \$13.76/kg
Commercial refrigeration US \$15.21/kg

Project Titles:

- (a) Elimination of CFCs in two domestic refrigerator manufacturing plants Piragua S.A. and Piragua San Luis
- (b) Elimination of CFCs in domestic refrigerator production plant Aurora
- (c) Elimination of CFC in the domestic refrigerator manufacturing plant Adzen*
- (d) Market Costan elimination of the use of CFCs in the manufacture of display cabinets and polyurethane panels for cold stores

Project Data	Domestic Refrigeration			Commercial Refrigeration
	Piragua	Aurora	Adzen	Market Costan
ODS phase-out (ODP tonnes)	49.4	27	12	28.1
Proposed project duration (Yrs)	2	2	1	1.5
Incremental capital cost (US\$)	1,040,264	567,590	356,970	423,000
Contingency (%)	0	5	5	10
Incremental operational cost (US\$)	0	0	0	0
Total project cost (US\$)	1,040,264	567,590	356,970	423,000
Local ownership (%)	100	90	100	100
Export component (%)	0	0	0	0
Amount requested (US\$) {Original	1,040,264	567,590	356,970	620,400
{Revised	1,040,264	567,590	356,970	423,000
Cost effectiveness (US\$/kg)	8.36	4.66	13.64	15.05
National Coordinating Agency	OPROZ-INTI	OPROZ-INTI	OPROZ-INTI	OPROZ-INTI
Implementing Agency	WB	WB	WB	UNDP
Technical review completed?	Yes	Yes	Yes	Yes

Secretariat's Recommendations				
Amount recommended (US \$)	1,040,264	567,590	356,970	423,000
Project impact (ODP tonnes)	49.4	27	12	28.1
Cost effectiveness (US \$/kg)	8.36	4.66	13.64	15.05
Implementing Agency support cost (US\$)	135,234	73,786	46,406	54,990
Total cost to Multilateral Fund	1,175,498	641,376	403,376	477,990

* New proposal to 18th Meeting

PROJECT DESCRIPTION

Domestic Refrigeration

- (a) Elimination of CFCs in two domestic refrigerator manufacturing plants Piragua S.A. and Piragua San Luis
- (b) Elimination of CFCs in domestic refrigerator production plant Aurora
- (c) Elimination of CFC in the domestic refrigerator manufacturing plant Adzen

1. There are fifteen major manufacturers of domestic appliances in Argentina. The Executive Committee approved seven projects in this sector for Argentina.

2. The current annual production is: Piragua - 52,000 units (two plants); Aurora - 53,000 units (two plants); and Adzen - 32,000 units. All of the current production is sold in Argentina and in other Article 5 countries. Under the projects submitted, three companies will eliminate a total consumption of 88.4 MT of CFC-12 and CFC-11 by converting to HFC-134a and isobutane as refrigerants and to cyclopentane as the blowing agent.

3. Conversion to HFC-134a and isobutane refrigerant 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 existing high pressure machines, modifying fixtures, providing storage for cyclopentane storage and delivery systems, and replacing premixing stations. Conversion to cyclopentane and isobutane will necessitate also implementing a stringent safety programme to ensure personnel and plant safety owing to the flammable nature of cyclopentane and isobutane.

5. The supplier of compressors will provide technical assistance for model redesign and the modification of the production process. A reputable European company will assist in the adaptation of hydrocarbon technology including installation, start-up and compliance with safety regulations.

6. The enterprises are not requesting incremental operational costs.

Commercial Refrigeration

- (d) Market Costan elimination of the use of CFCs in the manufacture of display cabinets and polyurethane panels for cold stores

7. Under this project, Market Costan will eliminate the use of 28.1 MT of CFC-11 and CFC-12 in the manufacture of display cabinets, walk-in-freezers and polyurethane panels, through formulations and procedures for foam injection based on the use of cyclopentane as blowing agent for foam and HFC-134a as refrigerant. Additional fringe benefits include those derived from the elimination of solvents due to the use of self-cleaning mix heads. The project includes equipment replacement, safety related investments and procedures, technology transfer, production trials and training.

8. Market Costan will not request incremental operational costs.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The chosen technologies are proven.
2. The Secretariat discussed with the World Bank and UNDP the eligibility and incrementality of all cost items. The project budgets have been adjusted accordingly.

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) Elimination of CFCs in two domestic refrigerator manufacturing plants Piragua S.A. and Piragua San Luis	1,040,264	135,234	World Bank
(b) Elimination of CFCs in domestic refrigerator production plant Aurora	567,590	73,786	World Bank
(c) Elimination of CFC in the domestic refrigerator manufacturing plant Adzen	356,970	46,406	World Bank
(d) Market Costan elimination of the use of CFCs in the manufacture of display cabinets and polyurethane panels for cold stores	423,000	54,990	UNDP

2. The Fund Secretariat further recommends that projects (a), (b), and (d) be included in the Consolidated List