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

Twentieth Meeting
Montreal, 16-18 October 1996

PROJECT PROPOSALS: ARGENTINA

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

Foam

- Conversion to non-CFC technology in the manufacture of flexible foam (slabstocks) at FPV S.A. — UNDP
- Conversion to non-CFC technology in the manufacture of flexible foam (slabstocks) at Suavestar S.A. — UNDP
- Umbrella project for phasing out CFC-12 at Mallol Saic and Multiespuma Saic — UNIDO

PROJECT EVALUATION SHEET
ARGENTINA

SECTOR: FOAM ODS use in sector (1995): 1,485 ODP tonnes

Sub-sector cost-effectiveness thresholds: Extruded polyethylene US $8.22/kg
Flexible slabstock polyethylene US $6.23/kg

Project Titles:
(a) Umbrella project for phasing out CFC-12 at Mallol SAIC and Multiespuma SAIC
(b) Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at FPV S.A.
(c) Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at Suavestar S. A.

Project Data	**Extruded polyethylene**	**Flexible slabstock**	
	Mallol and Multiespuma	**FPV**	**Suavestar**
ODS phase-out (ODP tonnes)	97	16	92
Proposed project duration (Yrs)	1.5	1	2
Incremental capital cost (US$)	892,100	0	941,074
Contingency (%)	10	0	10
Incremental operational cost (US$)	(194,105)	97,000	327,560
Total project cost (US$)	697,995	97,000	1,268,634
Local ownership (%)	100	100	100
Export component (%)	9	0	0
Amount requested (US$) {Original	697,995	97,000	570,000
{Revised	581,782	97,000	561,000
Cost effectiveness (US$/kg)	7.19	6.06	6.19
National Coordinating Agency	OPROZ-INTI	OPROZ-INTI	OPROZ-INTI
Implementing Agency	UNIDO	UNDP	UNDP
Technical review completed?	Yes	Yes	Yes

Secretariat's Recommendations			
Amount recommended (US $)	581,782	0	561,000
Project impact (ODP tonnes)	96.45	0	92
Cost effectiveness (US $/kg)	6.03	N/A	6.09
Implementing Agency support cost (US$)	75,632	0	72,930
Total cost to Multilateral Fund	657,414	0	633,930

PROJECT DESCRIPTION

Extruded Polyethylene Foam Project

(a) Umbrella project for phasing out CFC-12 at Mallol SAIC and Multiespuma SAIC.

1. This is an umbrella project covering two remaining extruded polyethylene foam manufacturers in Argentina - Mallol SAIC and Multiespuma SAIC. Following approval of this project the country will not submit any more requests for funding in the sub-sector.

2. The CFC-12 consumption of Mallol SAIC is 36.45 tonnes per year. It produces 136 tonnes (about 24% of its installed capacity) of extruded polyethylene foam products - insulating tubes and thin sheets. The company operates on LMP Model RC27/T extruder.

3. The items of capital costs are retrofit of the LMP extruder at US $170,000, ventilation (US $33,000), fire protection and better security systems costing a total of US $60,500, including gas detectors (US $10,000), antistatic equipment on extrusion line (US $12,000), smoke detectors in reel store (US $6,000), fire alarm system (US $7,500), sprinklers (US $40,000), security system interlocks (US $15,000) loss of pressure interlock in high pressure pipe line (US $3,500). The project will realize some incremental operational savings (US $31,696).

Multiespuma SAIC

4. Multiespuma produces polyethylene sheets on a Taiwanese extruder of 100 kg/hr output. It produced 300 tonnes of extruded polyethylene foam products (about 50% of its installed capacity) using 60 tonnes of CFC-12.

5. The items of capital costs are similar to those of Mallol SAIC except that the extruder retrofit is much cheaper (at US $40,000). In addition the existing piston will be replaced with a triplex pump at US $95,000. The project will also realize incremental operational savings of US $133,912.

Flexible Slabstock Polyurethane Foam

(b) Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at FPV S.A.

(c) Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at Suavestar S. A.

Suavestar S.A.

6. Suavestar manufactured about 3,300 tonnes of polyurethane slabstock foam of densities 14 kg/m^3 to 45 kg/m^3 in 1995. It operates one Hennecke UBT machine, capacity 350 and one Uretech machine for round blocks.

7. Having considered the constraints posed by existing national regulations limiting the emission of methylene chloride in a way which makes its industrial use impractical and constraints posed to the production process and product quality, the company selected liquid CO_2 technology. This project is one of two projects in the flexible polyurethane slabstock foam sub-sector submitted to the 20th Meeting with a request for approval and funding for the use of LCD technology. The other project is that for Urosan Kimiya Sanayii.

8. The items of capital cost included the LCD system (US $339,702), polyol and TDI boost pump bypass and manually operated blocking valves (US $49,220), CO_2 transfer/pressure control system (US $33,600), support platform for LCD system (US $18,000) and license (US $75,000). The items also included looper for peeling (US $310,000) building modifications (US $15,000) and technology transfer (US $15,000). The capital cost was assessed to be US $944,074. The incremental operational cost amounted to US $377,560. Thus, the total project cost amounted to US $1,268,634 and cost-effectiveness US $13.78/kg. However, an amount equivalent to cost-effectiveness of US $6.2/kg was requested.

FPV S.A.

9. FPV is located in San Luis, approximately 700 km from Buenos Aires. It also manufactures flexible slabstock polyurethane foam of densities 15 kg/m^3 and 26 kg/m^3 using a LaaderBerg foam machine. Total output for 1995 was 545.2 tonnes of which 288.6 tonnes (62%) was blown with CFC-11.

10. FPV is in some form of commercial arrangement with Piero SAIC, an enterprise which had a foam conversion project already approved by the Executive Committee, but is seeking approval at the 20th Meeting to change the approved technology to LCD technology.

11. FPV has investigated the cost of converting its San Luis plant to LCD technology, but in view of its low CFC-11 consumption, has concluded that the conversion to LCD will not be economic. As an alternative, the company proposes to transfer its production of the low density foam to the Piero SAIC plant in Buenos Aires.

12. Low density foam for the manufacture of mattresses and other furniture products will then be transported back to the factory at San Luis from Buenos Aires in trucks. Estimates for the transportation costs have been calculated and are being requested as the incremental operational cost. No incremental capital cost is involved. The transportation cost is calculated as follows:

• Cost of transport per truck	US $1.0/km
• Distance between plants	700 km
• Total cost per truck	US $700
Quantity of foam transported per truck	2 tonnes
Production to be transported	288.58 tonnes
• No. of journeys required	145
Total Amount (145 x700)	**US $101,500**

13. Based on the amount of US $101,500 the NPV for two years incremental operational cost will be US $176,880. Consequently, the total project cost will be US $176,880. The company requested US $97,000, equivalent to cost-effectiveness of US $6.06/kg.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Extruded Polyethylene Foam Project

1. The Fund Secretariat and UNIDO had discussions on the incremental capital cost items and the assumptions made in the calculation of incremental operational cost as they relate to the requirements as well as the costs of similar conversion projects in the sub-sector. Following these discussions the capital cost items as well as the incremental operational costs were reviewed resulting in the following cost adjustments:

- Triplex pump for Multiespuma from US $120,000 to US $95,000
- Water sprinklers for each project from US $80,000 to US $40,000
- NPV of Incremental Operational Costs (2 years):
  Mallol SAIC: from the cost of US $13,622 to savings of US $64,756
  Multiespuma: from savings of US $53,580 to savings of US $133,912

The breakdown of the cost of retrofit of the LMP extruder of Mallol (US $170,000) showed a reasonable cost estimate.

2. These cost adjustments resulted in the total project cost of US $581,782 instead of US $697,995 with cost-effectiveness of US $6.03/kg instead of US $7.19/kg, while each of the projects fell within the cost-effectiveness threshold, i.e. Mallol SAIC from US $13.59/kg to US $8.21/kg and Multiespuma from US $5.6/kg to US $4.71. These costs have been agreed between the Secretariat and the implementing agency (UNIDO).

Flexible Slabstock Polyurethane Foam

Suavestar

3. The selected LCD technology has recently progressed in its development and it is now being used in several flexible slabstock plants in Europe and USA. The implementing agencies and the Secretariat had an opportunity during a technology assessment tour of plants in an Article 2 country, to visit plants which were applying this technology. Analysis showed that with inherently high capital cost, funding of enterprises with ODS consumption less than 80 tonnes would not be appropriate. The Fund Secretariat consulted with two of the three companies currently supplying the liquid carbon dioxide (LCD) technology as proprietary technology for manufacturing low density polyurethane flexible slabstock foam, in order to clarify some of the issues relating to the technology and its costs. The Secretariat also discussed with the implementing agencies as part of the ongoing process to determine appropriate costs of the technology.

4. On the basis of the discussions and consultations the capital costs were agreed. However, with regard to incremental operational costs the implementing agencies and the Secretariat agreed that further examination of the issues involved was needed.

5. The capital cost that was agreed included the cost of LCD system (US $340,000), polyol and TDI transfer boost pump bypass (US $5,000), carbon dioxide transfer and pressure control unit (US $40,000), support frame (US $18,000), license (US $50,000), building modifications (US $15,000), technology transfer (US $15,000), trials (US $27,000). The total capital cost including contingency amounted to US $561,000. The incremental operational costs were not considered.

FPV

6. This is the first time that transportation costs have been sought as operating costs and as the sole project costs in a Multilateral Fund project.

7. The relationship of the FPV company to Piero SAIC is not clear. In the FPV project document it is stated that 'FPV is an independent company, with a centralized administration by Piero SAIC jointly with Nuvel Corp. S.A." However, in the project document of Piero SAIC submitted for approval for a change of technology to use liquid carbon dioxide (LCD), it is stated that " Piero SAIC also **owns** FPV factory in San Luis, where there is a special tax exemption regime, building a group with centralized management in Piero SAIC." It may be noted that a third company, Nuvel Corp. S.A., for which a project was submitted by UNDP at the 18th Meeting and approved with a level of funding of US $313,500 (for conversion using acetone), is reported to have been acquired by Piero SAIC after the approval of the project. Thus, the overall situation appears to be that one combined project (for Piero SAIC and Nuvel Corp., already approved) is being used to phase-out foam production in three plants (FPV, San Luis, Piero SAIC and Nuvel Corp., Buenos Aires) through a change to LCD technology and the rationalization of

production of low density foam. The true relationship of FPV and Piero SAIC would provide information on the level of costs or benefits gained from transferring the production to Piero SAIC's plant.

8. Since the costs and benefits of producing the foam at Piero SAIC's plant in Buenos Aires, and Nuvel Corp. in Buenos Aires, have not been determined, the net incremental operational cost or savings of the FPV operation could not be ascertained.

9. Additionally, transportation costs do not appear to be a direct or eligible incremental operational cost of the use of ODS or its substitute in manufacturing as an intermediate good. In any event, costing of transportation is affected by several variables, including market conditions, none of which can be assessed with any degree of confidence.

10. In the light of the above, the Secretariat could not recommend approval of the project and the requested funding as eligible incremental cost.

RECOMMENDATIONS

1. The Fund Secretariat recommends:

(i) blanket approval of the umbrella project and the Suavestar S.A. project with the associated support costs at the level of funding indicated below.

(ii) not to approve the project of FPV S.A.

		Project Cost US $	Support Cost US $	Implementing Agency
(a)	Umbrella project for phasing out CFC-12 at Mallol SAIC and Multiespuma SAIC	581,782	75,632	UNIDO
(b)	Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at FPV S.A.	0	0	UNDP
(c)	Conversion to non-CFC technology in the manufacture of flexible foam (slabstock) at Suavestar S. A.	561,000	72,930	UNDP

2. To note that the approval of the umbrella project for Mallol SAIC and Multiespuma completes the phase out of ODS in the polyethylene/polystyrene foam sub-sector and that the Government of Argentina will not in the future submit any projects in the sub-sector for funding.