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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Thirty-first Meeting
Geneva, 5-7 July 2000

PROJECT PROPOSALS: COLOMBIA

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

Foam

- Retroactive funding for the conversion from CFC-11 to water-based technology in the manufacture of flexible molded polyurethane foam at Espumlatex-Promicolda UNDP
- Conversion from CFC-11 to HCFC-141b and water-based technology in the manufacture of various polyurethane foam applications at 25 small enterprises and 7 distributors centered around their systems house at Espumlatex System House Group Project UNDP

Solvent

- Replacement of CFC-113 as solvent in the silicone coating process of needles and catheters at Laboratorios Rymco World Bank

PROJECT EVALUATION SHEET COLOMBIA

SECTOR:	Foam	ODS use in sector (1999):	986.16 ODP tonnes
Sub-sector cost-effectiveness thresholds:	Integral skin		US \$16.86/kg
	Rigid		US \$7.83/kg

Project Titles:

- (a) Retroactive funding for the conversion from CFC-11 to water-based technology in the manufacture of flexible molded polyurethane foam at Espumlatex-Promicolda
- (b) Conversion from CFC-11 to HCFC-141b and water-based technology in the manufacture of various polyurethane foam applications at 25 small enterprises and 7 distributors centered around their systems house at Espumlatex System House Group Project

Project Data	Integral skin	Multiple-subsectors
	Promicolda	Espumlatex
Enterprise consumption (ODP tonnes)	11.50	41.50
Project impact (ODP tonnes)	11.50	38.40
Project duration (months)		36
Initial amount requested (US \$)	184,500	637,421
Final project cost (US \$):		
Incremental capital cost (a)	40,000	584,750
Contingency cost (b)		58,475
Incremental operating cost (c)	139,500	164,979
Total project cost (a+b+c)	179,500	808,204
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US \$)	40,000	334,021
Cost effectiveness (US \$/kg.)	3.48	8.27
Counterpart funding confirmed?		Yes
National coordinating agency	Unidad Tecnica de Ozono	Unidad Tecnica de Ozono
Implementing agency	UNDP	UNDP

<i>Secretariat's Recommendations</i>		
Amount recommended (US \$)		334,021
Project impact (ODP tonnes)		38.40
Cost effectiveness (US \$/kg)		8.27*
Implementing agency support cost (US \$)		43,423
Total cost to Multilateral Fund (US \$)		377,444

* Composite cost-effectiveness: US \$8.27/kg. Cost effectiveness of RPF component: US \$7.77/kg; cost effectiveness for ISF component: US \$9.67. The amount recommended for the Systems House (US \$16,500) is not subject to the calculation of the cost-effectiveness.

PROJECT DESCRIPTION

Sector Background

- Latest available total ODS consumption (1999)	997.13 ODP tonnes
- Baseline consumption of Annex A Group I substances (CFCs)	2,208.20 ODP tonnes
- Consumption of Annex A Group I substances for the year 1999	986.16 ODP tonnes
- Baseline consumption of CFCs in foam sector	414.20 ODP tonnes
- Consumption of CFCs in foam sector in 1999	352.73 ODP tonnes
- Funds approved for investment projects in foam sector as of end of 1999	US \$2,391,808.00
- Quantity of CFC to be phased out in investment projects in foam sector as of end of 1999	474.7 ODP tonnes
- Quantity of CFC phased out in investment projects in foam sector as of end of 1999	190.00 ODP tonnes
- Quantity of CFC to be phased out in investment projects in foam sector approved in 1999	105.20 ODP tonnes
- Funds approved for investment projects in the foam sector in 1999	US \$907,238.00

Integral Skin Foam

Espumlatex-Promicollda (Retroactive Funding)

1. ESPUMLATEX-PROMICOLDA is reported to have phased out the use of 11.5 tonnes of CFC-11 (average July 1991-June 1994) in the manufacture of flexible molded foam for automotive applications. The production was converted to water based formulations in mid-1994. The enterprise requests retroactive funding covering the costs it incurred for adjustment to the premixing system (\$15,000), as well as trials (\$20,000) and verification testing (\$5,000). The company also reported that incremental operating costs were also incurred.

Multiple Sub-Sector

Espumalatex System House Group Project

2. Espumlatex System House is one of three indigenous systems houses in Colombia supplying systems to the medium sized market. A group project to be assisted by one of the other two systems houses (GNP) was approved at the 29th Meeting. Espumlatex was established in 1954. Many of the large customers of the company are said to have already participated in ODS phase out projects. In this project 25 small regular customers with CFC consumption of 1 - 7.5 tonnes per year are to convert their production through the assistance of Espumlatex. All the enterprises were established before 25 July 1995. 22 enterprises produce rigid sprayfoam and other insulation products, while one produces flexible molded foam and two others produce integral skin foam products. The enterprises consumed a total of 41.5 tonnes of CFC-11 made

up of 31.1 tonnes by the rigid foam producers and 10.4 tonnes by the flexible molded and integral skin foam producers. The production is to be converted to HCFC-141b as an interim step for the rigid insulating foam and flexible integral skin foam applications. For the flexible molded foam, water-based formulations are to be used. Of the 22 enterprises in the rigid foam group, five currently use high pressure dispensers, four use low pressure dispensers and the rest (13 enterprises) have no dispensers and use manual techniques. Among the integral skin producers one has a machine, while the other two do not.

3. It is proposed to replace existing low pressure dispensers by high pressure dispensers at US \$30,000 each for the rigid foam thermal applications, and purchase small high pressure dispensers at US \$25,000 for the enterprises which do not currently use equipment, with a 25% enterprise contribution. The existing high pressure dispensers will be retrofitted at US \$10,000 each. For the flexible integral skin foam applications, the low pressure dispenser will be retrofitted for use with HCFC-141b. For the two flexible molded foam (FMF) customers without machines, two low pressure dispensers will be procured for US \$75,000 and a K-factor tester (US \$6,000) for Espumlatex. Other costs include trials, technology transfer and training for US \$20,000 for the system house and US \$90,000 for the downstream customers. Incremental operating costs amount to US \$164,979. The grant requested is calculated individually per enterprise applying the applicable category threshold. Table 1 below provides relevant information on the 25 customer enterprises.

4. In addition to the 25 enterprises it has been proposed that an amount of US \$292,400 be paid to seven distributors of chemicals for supply of systems to very small-scale producers with consumption of 0.1-1 tonne/year and for whom it would not be possible to provide dispensing equipment.

Table 1: Profile of the Enterprises in the Espumlatex Group Project.

COMPANY	CFC Used ODP Tonnes	SYSTEM (t/y)	Impact ODP eliminated (t/y)	ICC	IOC	Total project costs	Amount requested	Cost-Effectiveness
GROUP IA - RIGID FOAM CUSTOMERS								
GARCIA EDUARDO	2.3	15.5	2.1	31,060	9,775	36,835	16,443	7.83
CHACON Y GOMEZ IND TACK	2.0	13.5	1.6	14,960	8,500	23,460	12,528	7.83
IMUSA	1.8	12	1.6	14,960	8,500	23,460	12,528	7.83
PLASTIHOGAR	1.8	12	1.6	36,210	8,500	37,210	12,528	7.83
SUTRAK	1.7	11.575	1.5	36,210	7,225	35,935	11,745	7.83
CASTILLO GUTIERREZ	1.6	10.5	1.5	3,960	6,800	10,760	10,760	7.17
WALSOM	1.5	10	1.4	14,960	6,375	21,335	10,962	7.83
FERMAT COMERCIAL	1.4	10	1.3	14,960	5,950	20,910	10,179	7.83
ACABADOS ACUSTICOS Y TERMICOS	1.4	9.5	1.3	31,060	5,950	37,010	10,179	7.83
REFRIG.IND.ROJAS CEPERONOS CIA	1.4	9	1.2	36,210	5,950	34,660	9,396	7.83

INORGA – ORLANDO GARCIA	1.3	8.739	1.2	36,210	5,525	34,235	9,396	7.83
A.B.C. POLIURETANOS Y MONTAJES	1.3	8.5	1.2	31,060	5,525	36,585	9,396	7.83
CARLOS ROJAS Y/O FRIGOTHER	1.2	8	1.1	36,210	5,100	33,810	8,613	7.83
CARVAN S.A.	1.2	8	1.1	36,210	5,100	33,810	8,613	7.83
ESPUMADOS INDUSTRIALES LTDA	1.2	8	1.1	36,210	5,100	33,810	8,613	7.83
VILLEGAS & SANCHEZ LTDA	1.2	8	1.1	36,210	5,100	33,810	8,613	7.83
FRIGOCOL LTDA	1.1	7.25	1.0	36,210	4,675	33,385	7,830	7.83
INDUSTRIAS DONSSON LTDA	1.1	7.2	1.0	36,210	4,675	33,385	7,830	7.83
INGETECNICA	1.1	7.125	1.0	14,960	4,675	19,635	7,830	7.83
TERMEC LTDA	1.1	7	1.0	36,210	4,675	33,385	7,830	7.83
FRIOCOL LTDA	1.0	6.75	1.0	36,210	4,675	33,385	7,830	7.83
WESTON LTDA	1.4	9.2	1.3	36,210	5,950	34,660	10,179	7.83
SUB-TOTAL		207.339	28.2	642,670	134,300	675,470	219,821	7.83
GROUP IB – FMF/ISF CUSTOMERS								
ELECTROLUJOS	7.5	50	7.5	46,960	23,490	60,450	60,450	8.06
POLYDISEÑO-NORBAPARTES	1.8	12	1.6	14,960	3,744	18,704	18,704	11.69
ROMOPLAC LTDA	1.1	7	1.1	41,585	3,445	36,280	18,546	16.86
		69	10.2	103,505	30,679	115,434	97,700	9.58

Justification for the use of HCFC-141b

5. UNDP indicated that the companies were briefed during appraisal prior to project preparation about available conversion technologies and their “techno-economic”, health and environmental impacts, and that the enterprises will be responsible for conversion to zero ODP technology. The companies selected the HCFC-141b option against the background of these discussions.

6. UNDP has also provided a letter from the Government of Colombia supporting the company’s choice of the HCFC-141b technology. The justification from UNDP and the Government’s letter are attached to this document.

Impact of the project

7. 38.4 ODP tonnes will be phased out when the project is implemented. This will eliminate 3.9% of Colombia’s 1999 consumption of Annex A Group I substances. There will be residual consumption of 3.1 ODP tonnes as a result of the use of HCFC-141b. The impact of the Espumlatex Primocolda (retroactive funding) project was not taken into account since it was phased out in 1994 and does not impact Colombia’s baseline consumption of Annex A CFCs.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Flexible Molded/Integral Skin Foam (FMF/ISF)

Espumlatex-Promicolda

1. Colombia became a party to the Montreal Protocol in March 1994. Its country programme was approved at the 12th Meeting at the same time (March 1994). The country programme indicated that in the flexible molded foam industry no CFC-11 was used prior to 1990 and about 3 tonnes per year was used in the period 1991-1994 in the sub-sector comprising about six companies including this company.
2. The project document however claimed that Promicolda consumed 4.4 tonnes, 10.4 tonnes and 13.1 tonnes of CFC-11 in 1991, 1992 and 1993 respectively and that the average of 11.5 tonnes of CFC-11 in the period July 1991 to July 1994 was phased out by the company in mid-1994. With regard to the baseline equipment UNDP stated that a list of equipment had been requested from the company but had not been provided.
3. The Secretariat informed UNDP that the date of conversion is very difficult to confirm in order to ascertain whether it pre-dated Colombia's ratification of the Montreal Protocol. Additionally, given the time that had elapsed since the conversion was completed (about 6 years), the discrepancies between the consumption claimed by the company to have been phased out and the difficulty in ascertaining the baseline equipment, it was difficult to determine the eligible incremental costs of the project with reasonable level of certainty.
4. The Secretariat and UNDP had a discussion of the project during which the consultant who visited the company informed the Secretariat that based on his observations and the information received from the company, the company could have incurred an amount of US \$40,000 in incremental capital cost. With regard to the incremental operating cost it was agreed that verification of the claimed costs would be difficult. Furthermore, since the conversion predated Multilateral Fund investment activities in Colombia it was not certain how much of the operational cost incurred was recovered through the market mechanism.
5. On account of the background information provided above, the request by Promicolda for retroactive funding in the amount of US \$40,000 has been submitted for individual consideration.

Multiple sector

Espumlatex Systems House Group

6. The Fund Secretariat and UNDP discussed the project and agreed that the amount requested for systems distributors in the original project document is not eligible incremental cost. Therefore, the project was revised to exclude this component. The Fund Secretariat and

UNDP further agreed that the cost associated with the participation of Espumlatex Systems House in the project should be US \$16,500 (including 10% contingency). This is made up of:

Field K-value tester	US \$5,000
Trials, technology transfer and training	US \$10,000

7. All the downstream enterprises were found to be eligible for funding. The basis for calculating the incremental costs was agreed consistent with the applicable decisions on project cost calculations and umbrella projects. The following were agreed as the incremental costs for the downstream enterprises in the project.

	<u>US \$</u>
Total incremental capital cost:	690,000
Deduction due to age or lack of baseline equipment:	(120,250)
Contingency:	56,975
Incremental operational cost:	164,979
Total project cost:	791,704
Eligible grant to RPF enterprises:	219,821
Eligible grant to FMF/ISF enterprises:	<u>97,700</u>
Total grant:	<u>317,521</u>

8. The cost-effectiveness of each individual project in the rigid foam as well as flexible molded and integral skin foam groups does not exceed the applicable threshold funding level, while the total funds for each group also met the threshold funding limit.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the Espumlatex Systems House Group Project with the level of funding and associated support cost indicated below:

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(b)	Conversion from CFC-11 to HCFC-141b and water-based technology in the manufacture of various polyurethane foam applications at 25 small enterprises and 7 distributors centered around their systems house at Espumlatex System House Group Project	334,021	43,423	UNDP

ANNEX I

Additional Justification For Using HCFC-141b Technology

The UNDP technical expert appraised the systems house in 1999 and again in early 2000, prior to the preparation of this project document, and had discussions with the enterprise' representatives about the choice of technology for replacing the existing CFC-based technology. The enterprise was briefed in detail about the following:

- (a) An overview of the available interim (low ODP) and permanent (zero ODP) replacement technologies.
- (b) The "techno-economic impact" of each technology on the products manufactured, and the processes and practices employed.
- (c) Possible implications of each technology, in terms of its known impact on environment, health and safety, such as ozone depleting potential, global warming potential, occupational health, etc.
- (d) It was emphasized to the enterprise that HCFC technologies are interim technologies due to their residual ODP and therefore may continue to adversely affect the environment, although at a lower rate than CFCs.
- (e) It was further explained that HCFCs may become controlled substances under present or future international conventions and will therefore also need to be phased out at a future date, and any investments required for their phase-out and for conversion to a permanent technology will have to be borne by the enterprises themselves.

The main conclusions reached by the enterprise through discussions with UNDP technical expert were:

1. For some of the applications (flexible molded, rigid integral skin foam), water-based formulations are available and applicable.
2. For the rigid insulating foam applications, permanent technologies providing adequate physical properties are not yet available in Brasil; therefore, use of HCFC-141b is necessary in the interim.
3. Water based formulations do not produce foam with adequate insulating capability for the thermal applications.
4. Hydrocarbons are a technology that can only be applied to individual enterprises, and must take into consideration the physical location and layout of the plant, as well as relevant economic and safety implications for the enterprise itself. Hydrocarbon technology is not appropriate for this group approach.

In view of the above, the technology selected for the rigid insulating applications is HCFC-141b based systems in the interim, until permanent technology (either water based or HFC-based systems) is available and can provide the required physical properties.

Projected Techno-Economic Impact of Zero-ODP Technologies

The projected impact of applying various zero-ODP technologies with respect to the selected technology (HCFC-141b) in this project is summarized as below:

Water based technologies are not available locally, and even if available, would not provide adequate insulating values of the finished product. Therefore, the costs associated with water-based technology are not considered.

HFC-134a based systems are not offered in the applicable regional area and are not a feasible zero-ODP option.

Liquid HFC based systems do not meet requirements on maturity and availability at the present time.

Hydrocarbons are not applicable for this group project, as the small enterprises are not in a position to make the financial commitment to the investments necessary for a safe operation. Therefore, the costs associated with hydrocarbon based technology are not considered.

Thus, the selection of HCFC-141b based systems, as the preferred conversion technology, is justified taking into account all the technical, commercial and cost factors.

Santafé de Bogotá, 10 de Mayo de 2000

Dr.
OMAR E. EL-ARINI
Oficial en Jefe
Secretaría del Fondo Multilateral
Montreal

URGENTE



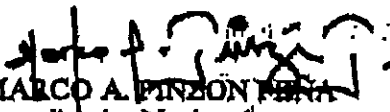
Apreciado Dr. El-Arini:

La Unidad Técnica Ozono del Ministerio del Medio Ambiente siguiendo la decisión 27/13 del Comité Ejecutivo, relacionada con el proyecto de la empresa ESPUMLÁTEX, que optó por tecnología con HCFC, se permite informar:

- Que conoce los compromisos con HCFC estipulados en el Artículo 2F del Protocolo de Montreal y la situación de los proyectos con dicha sustancia.
- Que la selección de tecnologías con HCFC se sabe que es interina.
- Que se entiende que no habrá recursos adicionales para reconversiones a tecnologías definitivas por parte del Fondo, para este proyecto.

Esperamos que esta comunicación sea aceptable a la Secretaría del Fondo y permita el trámite del proyecto en cuestión.

Cordialmente,


MARCO A. PINZON PEÑA
Coordinador Nacional

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**PROJECT EVALUATION SHEET
COLOMBIA**

SECTOR: Solvent ODS use in sector (1998): 42.4 ODP tonnes

Sub-sector cost-effectiveness thresholds: CFC-113 US \$19.73/kg

Project Titles:

- (a) Replacement of CFC-113 as solvent in the silicone coating process of needles and catheters at Laboratorios Rymco

Project Data	CFC-113	
	Rymco	
Enterprise consumption (ODP tonnes)		8.80
Project impact (ODP tonnes)		7.60
Project duration (months)		24
Initial amount requested (US \$)		150,000
Final project cost (US \$):		
Incremental capital cost (a)		131,220
Contingency cost (b)		13,122
Incremental operating cost (c)		-62,763
Total project cost (a+b+c)		81,579
Local ownership (%)		100%
Export component (%)		0%
Amount requested (US \$)		81,579
Cost effectiveness (US \$/kg.)		10.73
Counterpart funding confirmed?		Yes
National coordinating agency	Ozone Technical Unit	
Implementing agency	IBRD	

Secretariat's Recommendations		
Amount recommended (US \$)		81,579
Project impact (ODP tonnes)		7.60
Cost effectiveness (US \$/kg)		10.73
Implementing agency support cost (US \$)		10,605
Total cost to Multilateral Fund (US \$)		92,184

PROJECT DESCRIPTION

Replacement of CFC-113 as solvent in the silicone coating process of needles and catheters at Laboratorios Rymco

2. Laboratorios Rymco in Barranquilla is the largest producer of needles and syringes in the Republic of Colombia. In 1998 Rymco consumed 8.8 ODP tonnes of CFC-113 in the production of needles and catheters. The CFC-113 is used as a solvent to deposit a silicone coating on the needles and catheters. It will be replaced in the deposition process by HCFC-141b. The process remains the same, but new equipment is required to provide the necessary level of operator safety when using HCFC-141b.
3. The company is requesting funding for equipment change and retrofit (US\$ 101,100), design assistance (US\$ 10,000), technical assistance (US\$ 10,000), trials (US\$ 10,000) and training (US\$ 5,000). US\$ 18,040 has been requested as incremental operating costs for a period of four years.
4. Current (1998) ODS use in the sector in Colombia is quoted in the project as 42.3 ODP tonnes. This project will therefore phase out around 18 percent of the remaining solvent consumption in Colombia.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat discussed with the World Bank the replacement of manual equipment with new, higher technology automated equipment. Agreement was reached that in accordance with Decision 26/37, technical upgrade would represent a reduction of 5 percent in the eligible cost of the mixing equipment and the two automatic coating tanks.
2. The World bank also re-examined CFC-113 prices used in the incremental operating costs calculations in the project, which were quoted at US \$1.86 per kg in the project document. Prices of CFC-113 are rising world-wide. The World Bank established through the supplier, Allied Signal, that the current price in Colombia is US \$5.50 per kg. The quantities of chemicals needed after conversion were also revised to take account of reduced losses for the new low emission equipment to be provided. The IOC were recalculated using this figure and the resulting savings incorporated in the calculation of the level of grant.

RECOMMENDATIONS

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

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Replacement of CFC-113 as solvent in the silicone coating process of needles and catheters at Laboratorios Rymco	81,579	10,605	IBRD