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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 PROPOSAL: VENEZUELA

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

Foam

- Phasing out CFC-11 with HCFC-141b at Tecnofrigo in the production of rigid PU panels UNIDO

Refrigeration

- Phasing out CFC-11 and CFC-12 with HCFC-141b and HFC-134a at Invitrel in the manufacture of commercial refrigeration equipment UNIDO

PROJECT EVALUATION SHEET **VENEZUELA**

SECTOR: FOAM ODS use in sector (1997): 642 ODP tonnes

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

Project Titles:

(a) Phasing out CFC-11 with HCFC-141b in the production of rigid P.U. panels at Tecnofrigo.

Project Data	Rigid
	Tecnofrigo
ODS phase-out (ODP tonnes)	10.4
Proposed project duration (months)	12
Incremental capital cost (US \$)	11,000
- including contingency (%)	10
Incremental operational cost (US \$)	60,946
Total project cost (US \$)	71,946
Local ownership (%)	100
Export component (%)	0
Amount requested (US \$) {Original}	71,946
{Revised}	
Cost effectiveness (US \$/kg)	7.74
National Coordinating Agency	FONDOIN
Implementing Agency	UNIDO
Technical review completed?	Yes

Secretariat's Recommendations:	
Amount recommended (US \$)	71,946
Project impact (ODP tonnes)	9.3
Cost effectiveness (US \$/kg)	7.74
Implementing Agency support cost (US \$)	9,353
Total cost to Multilateral Fund (US \$)	81,299

PROJECT DESCRIPTION

- (a) **Phasing out CFC-11 with HCFC-141b in the production of rigid P.U. panels at Tecnofrigo.**
1. Venezuela's 1996 consumption of CFCs reported to the Ozone Secretariat was 3,041 ODP tonnes.
 3. Consumption of CFC-11 in 1997 was reported to be 658 ODP tonnes, 642 tonnes of which was used in the foam sector. 333 tonnes CFCs including 259 tonnes CFC-12 and 74 tonnes CFC-11 have been approved in five projects to be phased out. The 259 tonnes CFC-12 used by one company has been phased out.
 4. UNIDO reports that when Tecnofrigo project is implemented as scheduled, the elimination of CFC consumption in the foam sector, which currently constitutes 17% of the country's consumption will contribute to its 1999 CFC consumption freeze.
 5. The justification for the use of HCFC-141b is provided in the analysis of the technology selection. UNIDO also indicates that all equipment foaming which was operating with CFC-11 will be destroyed after conversion and evidence document will be provided by the counterpart in cooperation with the local ozone officer.
 6. Tecnofrigo is a 100% Venezuelan owned company established in 1992. It manufactures polyurethane metal faced, painted steel and aluminum sandwich panels and doors for cold stores and refrigerated rooms. The company used 10.4 tonnes CFC-11 in 1997. It operates a Decker D-70 low pressure machine installed in 1986. The company will phase out the use of CFC-11 by replacement with HCFC-141b.
 7. The company's existing low pressure machine will be retrofitted to be capable of using HCFC-141b. The capital cost includes a charge of 20%, the cost of the existing machine to compensate for lower output (US \$10,000). The company will bear the cost of trials and general consulting services commissioning and start-up. The incremental operational cost amounts to US \$60,946 for one year.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The project and its costs have been agreed.

RECOMMENDATION(S)

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

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Phasing out CFC-11 with HCFC-141b in the production of rigid P.U. panels at Tecnofrigo	71,946	9,353	UNIDO

SECTOR:	REFRIGERATION	ODS use in sector (1997):	2,863 ODP tonnes
Sub-sector cost-effectiveness thresholds:	Commercial		US \$15.21/kg

Phasing out CFC-11 and CFC-12 with HFC-141b and HFC-134a in the manufacture of commercial refrigeration equipment at Invitrel.

<i>Secretariat's Recommendations:</i>	
Amount recommended (US \$)	419,094
Project impact (ODP tonnes)	46.4
Cost effectiveness (US \$/kg)	9.03
Implementing Agency support cost (US \$)	54,482
Total cost to Multilateral Fund (US \$)	473,576

PROJECT DESCRIPTION

Phasing out CFC-11 and CFC-12 with HFC-141b and HFC-134a in the manufacture of commercial refrigeration equipment at Invitrel.

1. The 1994 ODS consumption in the refrigeration sector was identified to be 2,508 ODP tonnes in the Country Programme approved by the Executive Committee at its 17th Meeting. ODS consumption for the manufacture and installation of both unitary and non-unitary commercial refrigeration equipment was estimated at 107 MT by 14 manufacturers. Six conversion projects for major manufacturers have been approved by the Executive Committee in this sub-sector in Venezuela to phase out 85 ODP tonnes.
2. In 1996, the Government of Venezuela with assistance from UNIDO has prepared the strategy for ODS phase out in the commercial refrigeration manufacturing sub-sector. The proposal contains the following statement:
 " Approval of this project by MLF in 1998 would bring the implementation of this strategy well in line with the target of total elimination of CFC consumption in the manufacture of commercial refrigeration equipment in Venezuela by 2000. The implementation of this project will contribute to the country's 1999 freeze."
3. This project has been designed to phase-out the use of CFC-11 as blowing agent and CFC-12 as refrigerant in manufacturing commercial refrigeration equipment at the factory of Invitrel in Barquisimeto through the conversion to HFC-134a as refrigerant and HCFC-141b as blowing agent. The company started its production in 1972. The annual production capacity is 25,000 units. Invitrel manufactures equipment for supermarkets, food chains and the food industry, upright freezers, display cabinets and standard walk-ins.
4. The project includes the modification of existing equipment and the purchase of new machinery as well as the redesign of the refrigeration systems for all present models. Conversion from CFC-12 to HFC-134a refrigerant will require the replacement of three production evacuation and charging boards, and leak detectors. Vacuum pumps have to be retrofitted.
5. The project proposal requests incremental operating cost (IOC) calculated for two years duration. IOC for compressors are included in the calculated operating costs at US \$3.00 per unit.
6. Several available CFC-11 substitute technologies have been considered, including cyclopentane. The company will convert CFC-11 to HCFC-141b as an intermediate solution. The following justification was provided for the use of HCFC-141b technology.
 "Cyclopentane would be a suitable foaming agent but it would be avoided because of its acute flammability. Rigorous training in handling this dangerous substance has to be carried out to ensure that its introduction in a factory where no dangerous substances have hereto been used does not give rise to a tragic accident. The local authorities are reluctant

to issue license for storage and application of cyclopentane. However, Invitrel committed to bear the expenses of the conversion of the factory to zero-ODP solution when available in the market.”

7. All replaced equipment will be destroyed and an evidence document will be provided by the counterpart in cooperation with the local ozone officer.
6. The proposal describes the implementation procedure, including respective obligations of UNIDO and the enterprise.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat has discussed with UNIDO the requested incremental capital and operating costs. Several issues have been raised regarding the replacement of the charging boards, the acquisition of a high pressure machine, request for IOC associated with compressors, description of the product manufactured including the capacity of compressors used, and discrepancy in 1997 production data. The budget was adjusted accordingly.
2. IOC for compressors are included in the calculated operating costs at US \$3.00 per unit. Venezuela has been funded for conversion of its compressor manufacturing facility (Vecomesa) at the 17th Meeting of the Executive Committee. The Secretariat informed UNIDO that this cost cannot be considered in the absence of a decision of the Executive Committee on incremental operating cost for compressors. Subsequently, IOC for compressors were excluded from the requested incremental operating costs.

RECOMMENDATION

1. The Fund Secretariat recommends blanket approval of the project with associated support costs at the funding level shown in the table below:

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Phasing out CFC-11 and CFC-12 with HFC-141b and HFC-134a in the manufacture of commercial refrigeration equipment at Invitrel.	419,094	54,482	UNIDO