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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Thirty-fourth Meeting  
Montreal, 18-20 July 2001

### **PROJECT PROPOSAL: COLOMBIA**

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

#### Refrigeration:

- Conversion of CFC-12 to R-134a technology in the production of mobile air conditioning (MAC) systems at Thermo-coil, Calaires, Auto Aires, and Servi Aires World Bank

**PROJECT EVALUATION SHEET  
COLOMBIA**

SECTOR: Refrigeration ODS use in sector (2000): 563.2 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

**Project Title:**

- (a) Conversion of CFC-12 to R-134a technology in the production of mobile air conditioning (MAC) systems at Thermo-coil, Calaires, Auto Aires, and Servi Aires

Project Data	MAC	
	Thermo-coil	
Enterprise consumption (ODP tonnes)*		137.00
Project impact (ODP tonnes)*		137.00
Project duration (months)		24
Initial amount requested (US \$)		2,119,497
Final project cost (US \$):		
Incremental capital cost (a)		1,235,134
Contingency cost (b)		123,513
Incremental operating cost (c)		
Total project cost (a+b+c)		1,358,647
Local ownership (%)		100%
Export component (%)		0%
<b>Amount requested (US \$)</b>		1,358,647
Cost effectiveness (US \$/kg.)		
Counterpart funding confirmed?		Yes
National coordinating agency	Ozone Technical Unit (UTO)	
Implementing agency	IBRD	

<b>Secretariat's Recommendations</b>	
Amount recommended (US \$)	1,358,647
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing agency support cost (US \$)	159,451
Total cost to Multilateral Fund (US \$)	1,518,098

\* Indirect phaseout.

## **PROJECT DESCRIPTION**

### Conversion of CFC-12 to R-134a technology in the production of mobile air conditioning (MAC) systems at Thermo-coil, Calaires, Auto Aires, and Servi Aires

1. Thermo-coil is the main supplier of tube and fin condensers for CFC-12 based MAC units in Colombia (about 84 per cent of the total market). The remaining 16 per cent is produced by a small enterprise totally owned by non-Article 5 capital (Mitchel). The total annual production of condensers by Thermo-coil is estimated at 44,300 units (average production for the 1997-1999 period) .
2. Part of the production of condensers and evaporators of Thermo-coil are supplied to four companies (Calaires, Mitchel, ServiAires and Auto Aires) who assemble the final MAC units installed in the vehicles. Excluding Mitchel, the other three companies are included in the Thermo-coil project proposal in order to convert all MAC system components in Colombia.
3. The project proposal is to convert the tube and fin condenser and evaporator designs to parallel flow designs for MAC units using HFC-134a refrigerants at Thermo-coil. The total capital cost for the conversion has been estimated at US \$1.8 million, including a furnace brazing oven (US \$502,150), fin machine (US \$107,203), a tube cutting machine (US \$124,795), a core builder (US \$279,087), a mass spectrophotometer (US \$125,000), miscellaneous items (i.e., fixtures, material handling, storage racks, quality measuring equipment at US \$148,500), datapack (US \$26,000), and installation (US\$238,000).
4. The project proposal also includes a retroactive request for tooling, assembling machinery, recovery and recycling units and training for the three companies who are assembling MAC systems (US \$ 38,762 for Calaires, US \$36,700 for ServiAires, and US \$39,156 for Auto Aires).
5. The project proposal includes a list with description of the baseline equipment that would be replaced when switching to HFC-134a refrigerant. This equipment will be removed from the plant and destroyed.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATION**

### **COMMENTS**

6. The Secretariat pointed out that some pieces of equipment being requested for the production of condensers could also be used for the production of evaporators which are also produced at the plant, which are not eligible for funding since they are not related to the change in refrigerant. In most of the MAC projects so far approved, the enterprises share part of the cost of the equipment (up to has 50 per cent of the cost of the brazing system and partial funding for other equipment items), since it could be used also for the production of evaporators.

7. The Secretariat and the World Bank also discussed the eligibility of a conveyor, mass spectrometer, safety line curtains and datapack at Thermo-coil, and the request for retroactive payment for three recovery and recycling units, turret lathe and piping (at Calaires and ServiAires) and ferrule swage machine (at Auto Aires) as they are not a direct requirement for HFC-134a systems. The World Bank agreed that this equipment will be funded by the enterprise.

8. Based on the above observations, the World Bank agreed to adjust the cost of the project to US \$1,358,647.

9. This project is included in the World Bank's Business Plan, approved at the 33<sup>rd</sup> Meeting, but at a total value of US \$500,000.

### RECOMMENDATION

10. The Fund Secretariat recommends blanket approval of the project at the funding levels indicated below:

	<b>Project Title</b>	<b>Project Funding (US\$)</b>	<b>Support Cost (US\$)</b>	<b>Implementing Agency</b>
(a)	Conversion of CFC-12 to R-134a technology in the production of mobile air conditioning (MAC) systems at Thermo-coil, Calaires, Auto Aires, and Servi Aires	1,358,647	159,451	IBRD

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