



**United Nations
Environment
Programme**



Distr.
LIMITED

UNEP/OzL.Pro/ExCom/23/30
21 October 1997

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-third Meeting
Montreal, 12-14 November 1997

PROJECT PROPOSALS: GUATEMALA

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

Foam

- Terminal Umbrella - Conversion to CFC-free technology in the manufacture of rigid polyurethane foam UNDP

Refrigeration

- Conversion to CFC-free technology in the manufacture of commercial refrigeration equipment at Four enterprises UNDP

PROJECT EVALUATION SHEET **GUATEMALA**

SECTOR: FOAMS ODS use in sector (1996): 14 ODP tonnes

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

Project Title:

TERMINAL UMBRELLA - Conversion to CFC-free Technology in the Manufacture of Rigid Polyurethane Foam

Project Data	Rigid
	Terminal Umbrella
ODS phase-out (ODP tonnes)	12.6
Proposed project duration (months)	24
Incremental capital cost (US \$)	93,500
- including contingency (%)	10
Incremental operational cost (US \$)	35,000
Total project cost (US \$)	128,500
Local ownership (%)	100
Export component (%)	
Amount requested (US \$) {Original}	128,500
{Revised}	
Cost effectiveness (US \$/kg)	n/a
National Coordinating Agency	CONAMA / PROYECTO OZONO
Implementing Agency	UNDP
Technical review completed?	Yes

Secretariat's Recommendations:	
Amount recommended (US \$)	128,500
Project impact (ODP tonnes)	12.6
Cost effectiveness (US \$/kg)	10.20
Implementing Agency support cost (US \$)	16,705
Total cost to Multilateral Fund (US \$)	145,205

PROJECT DESCRIPTION

Foam Sector Profile

Sector ODS consumption (1996) reported in country programme	14 tonnes ODP
Most recent consumption data	not available
ODS to be phased out in approved projects (as at July 1997)	0
ODS phased out (as at July 1997)	0
ODS to be phased out in current proposed project	13 tonnes ODP
Latest (1995) CFC-11 consumption reported according to Art.7	44 tonnes ODP

TERMINAL UMBRELLA - Conversion to CFC-free Technology in the Manufacture of Rigid Polyurethane Foam

1. This Terminal Umbrella comprises three foam enterprises: Construservicios; Aplitex, and Fiberglas & Plasticos, which will phaseout the use of CFC-11 in the manufacture of rigid polyurethane foams. The different enterprises will be replacing the following existing equipment:

<u>Plant</u>	<u>Qty</u>	<u>Year</u>	<u>Make and Model</u>
Fiberglas & Plasticos		unknown	Venus
Construservicios	1	1983	Gusmer FF Proportioning
Aplitex	1	unknown	Gusmer FF 1600

2. The manufacturing operations are to be converted to HCFC-141b based system as an interim step to a final solution. The capital costs include: the retrofit of the existing dispensers at Construservicios (US \$5,000) and Aplitex (US \$5,000); and the replacement of the existing dispenser at Fiberglas & Plasticos by a high pressure one (US \$30,000). Trials, technology transfer and training for each company amounts to US \$15,000. The contingency costs per company are: Construservicios (US \$2,000); Aplitex (US \$2,000); and Fiberglas & Plasticos (US \$4,500). Total incremental operating costs per company are expected: Construservicios US \$14,100; Aplitex US \$20,600; and Fiberglas & Plasticos US \$300, based on the use of the following chemicals: CFC-11 @ US \$2.20/kg; HCFC-141b @ US \$2.70/kg and additional system for Construservicios and Aplitex @ US \$2.50/kg.

Justification for the Use of HCFCs

3. Based mainly on availability, the three rigid polyurethane foam enterprises have chosen replacement by HCFC-141b as an interim step.

Equipment or Components to be Destroyed or Rendered Unusable

4. For all the above projects, the fate of the replaced equipment is not indicated.

Impact of Project on 1999 Freeze

5. In view of economic growth considerations, additional projects are urgently needed at this time to assist the Government in meeting the 1999 freeze requirements of the Montreal Protocol.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The projects costs were agreed. The cost-effectiveness of the project is US \$10.20/kg which exceeds the sector cost-effectiveness threshold. However, since Guatemala is a low volume ODS-consuming country the cost-effectiveness may not apply.

RECOMMENDATION(S)

1. The Fund Secretariat recommends blanket approval of the project with funding levels and associated support costs as indicated below:

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
TERMINAL UMBRELLA - Conversion to CFC-free Technology in the Manufacture of Rigid Polyurethane Foam	128,500	16,705	UNDP

PROJECT EVALUATION SHEET GUATEMALA

SECTOR: REFRIGERATION ODS use in sector (1992): 2096 ODP tonnes
 AIR CONDITIONING

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

Project Titles:

Four enterprises - conversion to CFC-free technology in the manufacture of commercial refrigeration equipment:
 (Exea SA, Productos American Vitas SA, Termomecanica SA, Unirefri SA)

Project Data	Refrigeration & Air Conditioning
	Four Enterprises
ODS phase-out (ODP tonnes)	14
Proposed project duration (months)	24
Incremental capital cost (US \$)	180,000
- including contingency (%)	10
Incremental operational cost (US \$)	32,000
Total project cost (US \$)	212,000
Local ownership (%)	100
Export component (%)	
Amount requested (US \$) {Original}	212,000
{Revised}	
Cost effectiveness (US \$/kg)	16.11
National Coordinating Agency	Comision nacional del Medio Ambiente (CONAMA)
Implementing Agency	UNDP
Technical review completed?	Yes

Secretariat's Recommendations:	
Amount recommended (US \$)	
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing Agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

PROJECT DESCRIPTION

Four enterprises - conversion to CFC-free technology in the manufacture of commercial refrigeration equipment (Exea SA, Productos American Vitas SA, Termomecanica SA, Unirefri SA).

1. ODS consumption in the refrigeration sector is estimated at about 224 MT (1991) which represents 79% of the total ODS consumption in the country. The Executive Committee has approved two commercial refrigeration projects and two recovery/recycling projects , phasing out 64 ODP tons.
2. The proposal states that "In view of economic growth considerations, additional projects are urgently needed at this time to assist the Government in meeting the 1999 freeze requirements of the Montreal Protocol."
3. The ODS consumption in the manufacture of new equipment in the commercial refrigeration sub-sector is about 37 ODP tonnes. The four companies manufacture coolers, freezers, and refrigerators serving the food and beverage industry.
4. The companies will convert from CFC-11 to water or HFC based system as a permanent technology in the future. Until the commercial introduction of mature systems which is expected in 3 to 5 years, HCFC-141b based systems will need to be used as an interim technology.
5. Four new high pressure foam dispensing machines at US \$ 37,000 per unit are requested to replace the current use of one low pressure dispenser and three hand-mixing systems.
6. Justification for HCFC-141b technology

This technology provides the best energy efficiency, and the lowest investment and operational costs. It is technically mature and commercially viable. No major changes in auxiliary equipment/tooling are needed. Additional investments required to convert to CFC-free systems will be at the company's expense.
7. This project selected HFC 134a to replace CFC-12 use. New compressors and lubricants, evacuation/charging equipment, modification of the refrigeration system, and leak detectors are required.
8. Incremental operating costs are for chemicals and components and are requested for two years.
9. The replaced equipment will be destroyed after completion of conversion to ODS -free technologies.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The implementation of the project will contribute to meeting the 1999 freeze in Guatemala.
2. The chosen technologies are proven. The choice of an interim HCFC technology in foaming operations is justified.
3. The project includes the replacement of the current use of one low pressure dispenser and three hand-mixing systems by four new high pressure foam dispensing machines at US \$ 37,000 per unit. The approval of this proposal as submitted would represent a technological upgrade.
4. A discussion paper on the baseline equipment is submitted for the consideration of the Executive Committee which might facilitate a decision on how to proceed with this project.