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EXECUTIVE COMMITTEE
OF THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
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PROJECT PROPOSALS: VENEZUELA

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

Foam

• Phasing out of CFC-11 by a 100% water blown system in the production of moulded integral skin flexible PU foam at Fanesi	UNIDO
• Phasing out CFC-11 with HCFC-141b in the production of rigid PU panels at Fricava	

PROJECT EVALUATION SHEET
VENEZUELA

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

Sub-sector cost-effectiveness thresholds: Integral Skin US $16.86/kg
Rigid US $7.83/kg

Project Titles:
(a) Phasing out CFC-11 by a 100% water blown system in the production of moulded integral skin flexible P.U. foam at Fanesi.
(b) Phasing out CFC-11 with HCFC-141b in the production of rigid P.U. panels at Fricava.

Project Data	**Integral Skin**	**Rigid**
	Fanesi	Fricava
ODS phase-out (ODP tonnes)	11.4	17.2
Proposed project duration (months)	16	16
Incremental capital cost (US $)	148,000	37,400
- including contingency (%)	9	10
Incremental operational cost (US $)	45,978	77,982
Total project cost (US $)	193,978	115,382
Local ownership (%)	100	100
Export component (%)	0	0
Amount requested (US $) {Original}	193,978	115,382
{Revised}		
Cost effectiveness (US $/kg)	16.79	7.55
National Coordinating Agency	FONDOIN	
Implementing Agency	UNIDO	
Technical review completed?	Yes	

Secretariat s Recommendations:		
Amount recommended (US $)	157,882	115,382
Project impact (ODP tonnes)	11.4	15.3
Cost effectiveness (US $/kg)	13.85	7.54
Implementing Agency support cost (US $)	20,525	15,000
Total cost to Multilateral Fund (US $)	178,407	130,382

PROJECT DESCRIPTION

(a) Phasing out CFC-11 by a 100% water blown system in the production of moulded integral skin flexible P.U. foam at Fanesi.

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

Sector Information

1. Venezuela's baseline consumption (average 1995-1997) of Annex A Group I controlled substances (CFCs) reported to Ozone Secretariat: 3,321.6 ODP tonnes.

2. The inventory of approved projects indicates that as of November 1998 US $2.05 million had been approved for projects in the foam sector to phase out 355.5 ODP tonnes. US $1.29 million had been disbursed and 259 ODP tonnes phased out.

3. UNIDO states in the project document that in the last decade economic activities that use ODS have developed significantly. It reports that the average consumption of CFC-11 and CFC-12 in 1995-1997 was 527.4 ODP tonnes and 2,677.3 ODP tonnes respectively. However this is about 117 ODP tonnes short of Venezuela's reported baseline consumption of these substances (3,321.6 ODP tonnes)

4. It also indicates that in 1994 ODS production reached 6,150.3 ODP tonnes, of which about 60% was CFC-12 and about 25% was HCFC-22. About 1,817.5 tonnes (about 30%) of the ODS produced was exported to countries in the region.

Impact of Projects on the Country's Montreal Protocol Obligations

5. UNIDO states that, when the project is implemented as scheduled, CFC consumption eliminated from the foam sector, currently 17% of the country's consumption, will contribute to the country's 2005 CFC reduction.

6. However based on the reported baseline consumption the total consumption of 26.4 ODP to be phased out in the projects will eliminate 0.8% of Venezuela's baseline consumption. There will be residual ODP of 1.9 tonnes after implementation of the projects.

Integral Skin Foam

(a) Phasing out CFC-11 by a 100% water blown system in the production of moulded integral skin flexible P.U. foam at Fanesi.

7. This project is designed to phase out the use of CFC-11 in the production of moulded P.U. integral skin flexible foams at Fanesi S.A. in Barquisimeto (Venezuela). The chosen replacement is a 100% water blown system. The conversion to this 100% water blown system includes the purchase of a two component high pressure PU foam dispensing machines, water based heating system for mould temperature control and modifying moulds for temperature

control. The replacement alternative and the time frame for phasing out ODS will be in line with the programme for phasing out ODS of the Government of Venezuela.

Equipment to be destroyed or rendered unusable

8. No equipment is required to be destroyed or rendered unusable.

Rigid Foam

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

9. This project is designed to phase out the use of CFC-11 in the production of insulating panels at Fricava C.A. The chosen replacement alternative is HCFC-141b as foam blowing agent. The conversion of the insulating panel production lines includes the modification of two low-pressure machines (US $20,000) to enable replacement of R-11 with HCFC-141b. Consultancy services, commissioning, start up and trials amount to US $14,000. The replacement alternative and the time frame for phasing out ODS will be in line with the programme for phasing out ODS of the Government of Venezuela. Incremental operational cost for one year amounts to US $77,982.

Justification for the Use of HCFC-141b

10. The above mentioned technology was selected taking into consideration the following major arguments.

(a) Location of the building and layout of the production line and supporting sections in the building make it difficult to situate a pentane storage tank, related systems and polyol-pentane premixing station in a safe way. A total reconstruction of the factory would be required if pentane technology is selected.

(b) The company is not prepared to operate with inflammable and explosive materials. Their industrial safety, alarm, monitoring and training systems has been established in accordance with the relevant requirements of the existing production programme.

(c) many types of mechanical works, including welding, are carried out in this building restricting application of flammable blowing chemicals.

(d) Due to limited area of the factory, the final products (panels) are also stored in this building and this will not be possible for pentane blown foams due to the gas emissions to the atmosphere.

(e) Because of limited project fund to be eventually provided by the Multilateral Fund and caused by the criteria of cost effectiveness vis-a-vis the relatively small consumption of CFC-11 for rigid foams manufacturing by Fricava, the investment part to be contributed by the company itself will be too high and not economically feasible in case of pentane technology.

11. Because of the transitional nature of the selected technology, the company agreed for further conversion to zero ODP technology, most probably to water/CO_2 blowing, as soon as this technology is matured, commercially available and required parameters of the foam are guaranteed.

12. The technologies for application of HFC-356 and other new foaming agents (e.g. fluorinated ethers) are not yet mature.

13. Among all the solutions mentioned, HCFC-141b is the technically and economically most acceptable one, even as a transitional solution. This technology is widely used in the USA, Japan and many other developed and developing countries and is recommended for both sandwich panels and insulation boards by the OORG Refrigerator/freezer Foam Working Group (May 1994) and UNEP (Protecting the Ozone Layer, Vol. 4, Foams) both for sandwich panels and insulation boards.

Equipment to be destroyed or rendered unusable

14. No equipment is required to be destroyed or rendered unusable.

SECRETARIAT S COMMENTS AND RECOMMENDATIONS

COMMENTS

Integral Skin Foam: Fanesi

1. The high pressure dispenser was not considered as a requirement for such activity and therefore an ineligible incremental capital cost. Consequently the capital cost resulted in the amount of US $57,000 instead of US $148,000. The incremental operational costs were calculated based on NPV for two years as provided by the guidelines instead of one year originally used by UNIDO, resulting in the amount of US $100,882 instead of US $45,978. Following the adjustments in the capital and operational costs the amount of US $157,882 was agreed as the eligible project cost. Consequently the US $157,882 is recommended for approval as the eligible grant.

Rigid Foam: Fricava

2. All the costs of the project have been agreed between UNIDO and the Secretariat.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the Fanesi and Fricava projects with the levels of funding and associated support costs indicated below.

Project Title	Project Cost US $	Support Cost US $	Implementing Agency
Phasing out CFC-11 by a 100% water blown system in the production of moulded integral skin flexible P.U. foam at Fanesi.	157,882	20,525	UNIDO
Phasing out CFC-11 with HCFC-141b in the production of rigid P.U. panels at Fricava.	115,382	15,000	UNIDO