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Implementation of the Montreal Protocol

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PROJECT PROPOSALS: VENEZUELA

This document includes the comments and recommendations from the Fund Secretariat on the following projects:

Foam

•	Phasing out ODS at Decocar C.A.	UNIDO
•	Phasing out ODS at Daniven C.A.	UNIDO
•	Phasing out ODS at Veniber C.A.	UNIDO

Refrigeration

•	Implementation of a recovery and reclamation of refrigerants	UNDP
•	Implementation of a centralized reclamation plant for recovered refrigerants in the commercial refrigeration and air conditioning sector	Canada

PROJECT EVALUATION SHEET
VENEZUELA

SECTOR: Foams ODS use in sector (1994): 512.1 ODP tonnes

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

Project Titles:
(a) Phasing out ODS at Decocar C.A.
(b) Phasing out ODS at Daniven C.A.
(c) Phasing out ODS at Veniber C.A.

Project Data	Rigid		
	Decocar	Daniven	Veniber
ODS phase-out (ODP tonnes)	16.2	18	21.6
Proposed project duration (Yrs)	1.5	1.5	1.5
Incremental capital cost (US $)	67,200	47,900	118,400
Contingency (%)	10	10	10
Incremental operational cost (US $)	59,414	56,130	46,192
Total project cost (US $)	126,614	104,030	164,592
Local ownership (%)	100	100	100
Export component (%)	0	0	0
Amount requested (US $) {Original}	140,800	155,650	185,350
{Revised}	126,614	104,030	164,592
Cost effectiveness (US $/kg)	7.81	5.78	7.62
National Coordinating Agency		FONDOIN	
Implementing Agency		UNIDO	
Technical review completed?	Yes	Yes	Yes

Secretariat's Recommendations:			
Amount recommended (US $)	126,614	104,030	164,592
Project impact (ODP tonnes)	16.2	18	21.6
Cost effectiveness (US $/kg)	7.81	5.78	7.62
Implementing Agency support cost (US $)	16,460	13,524	21,397
Total cost to Multilateral Fund (US $)	143,074	117,554	185,989

PROJECT DESCRIPTION

1. At all the three enterprises (Decocar, Daniven and Veniber) production is to be converted to water blown formulations, preceded by HCFC-141b as an interim step. Each project includes equipment replacement, as well as trials, training, technology transfer, contingency and incremental operational costs.

(a) Phasing out ODS at Decocar C.A.

2. Decocar will phase out the use of 18 ODP tonnes of CFC-11 in the manufacture of rigid insulating foam for plastic cooling products as beverage coolers and ice chests. The company currently uses the following equipment: Decker 15-6 dispenser; output 7 kg/min., Decker 15-6 dispenser; output 12 kg/min.

3. The main costs of the project are as follows:

High pressure dispenser	US $90,000
Technology transfer, trials and training	23,000

(b) Phasing out ODS at Daniven C.A.

4. Daniven will phase out the use of 20 ODP tonnes of CFC-11 in the manufacture of rigid foam for insulating panels. The company currently uses Decker D-150 dispenser; output 70 kg/min.

5. The main costs of the project are as follows:

High pressure dispenser, 70 kg/min.	US $93,000
Chiller	15,000
Technology transfer, trials and training	19,000

(c) Phasing out ODS at Veniber C.A.

6. Veniber will phase out the use of 24 ODP tonnes of CFC-11 in the manufacture of rigid foam insulating panels. The company currently uses two non standard low pressure dispensers; total output 148 lt./min.

7. The main costs of the project are as follows:

High pressure dispenser, 150 kg/min.	US $135,000
Technology transfer, trials and training	19,000

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The three projects were discussed between the Fund Secretariat and UNIDO regarding the project costs as they relate to equipment baseline and product characteristics. The following conclusions were reached.

Decocar

2. To provide a high pressure machine at the cost of US $40,000. The total project cost at 10% contingency on the capital cost would slightly exceed the eligible grant to the company based on the project's ODS phase-out impact. The contingency on the capital cost component of the revised project cost is 8%.

Daniven

3. The current dispenser can process the new formulations and would therefore be retained with an amount of 20% of the equipment cost provided for any necessary refurbishment. The total capital cost was revised from US $155,650 to US $104,030.

Veniber

4. Veniber's products include thinner (less than 150mm) insulation panels (20% of output) and may require high pressure dispenser. The project cost including a high pressure machine of 140 kg/min. capacity would exceed the maximum amount eligible to be provided as grant to the company. UNIDO considered a counterpart contribution of 25% towards the purchase of the machine. The project costs were revised as necessary. The capital cost from US $185,350 to US $118,400 and the incremental operational cost of US $46,192 which was not originally requested was included in the revised project cost amounting to US $164,592.

Impact of Projects on Meeting the 1999 Freeze

5. The project documents indicate as follows:

"Since these projects are expected to be completed by end 1998, they are considered among the priorities of the country to meet the 1999 freeze".

RECOMMENDATION

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

	Project Title	Project Cost US $	Support Cost US $	Implementing Agency
(a)	Phasing out ODS at Decocar C.A.	126,614	16,460	UNIDO
(b)	Phasing out ODS at Daniven C.A.	104,030	13,524	UNIDO
(c)	Phasing out ODS at Veniber C.A.	164,592	21,397	UNIDO

PROJECT EVALUATION SHEET
VENEZUELA

SECTOR: REFRIGERATION ODS use in sector (1994): 2,585 ODP tonnes

Sub-sector cost-effectiveness thresholds: CFC Recovery and Recycling N/A

Project Title:

a) Implementation of a recovery and reclamation of refrigerants project in the commercial refrigeration and air conditioning sector
b) Implementation of a centralized reclamation plant for recovered refrigerants in the commercial refrigeration and air conditioning sector

Project Data	CFC Recovery and Recycling	Reclamation plant
ODS phase-out (ODP tonnes)	172	
Proposed project duration (Yrs)	1.5	1.5
Incremental capital cost (US $)	931,622	495,285
Contingency (%)	5	5
Incremental operational cost (US $)	-	-
Total project cost (US $)	931,622	495,285
Local ownership (%)	-	-
Export component (%)	-	-
Amount requested (US $) {Original}	1,198,135	495,285
{Revised}	931,622	
Cost effectiveness (US $/kg)	8.29	
National Coordinating Agency	FONDOIN	
Implementing Agency	UNDP	Government of Canada
Technical review completed?	N/A	N/A

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

(a) Implementation of a recovery and reclamation of refrigerants project in the commercial refrigeration and air conditioning sector.
(b) Implementation of a centralized reclamation plant for recovered refrigerants in the commercial refrigeration and air conditioning sector.

1. The project will implement a comprehensive national programme for recovery, recycling and reclamation of refrigerants in the refrigeration and air conditioning sector. The project will be implemented through UNDP and the Government of Canada as part of its 1997 bilateral contribution to the Multilateral Fund.

2. The project is part of an overall strategy by the Government of Venezuela for the refrigeration sector. The Government's priorities include, inter alia, reducing CFC emissions to the atmosphere due to leaks specially while servicing refrigeration equipment, and re-using spent refrigerants. Implementation of the project will also allow continuation of the use of the existing refrigeration and air-conditioning installations for a further period of time without having to retrofit.

3. The proposal states that implementation of the project is intended to the recovery, processing and recycling of 172 tonnes of CFC-12 every year and, therefore, a corresponding reduction in the production CFC-12. This amount does not take into account the amount of refrigerant that might be saved owing to the teaching of good service and maintenance practices at the training seminars. This project will help the country meet its obligations towards the 1999 freeze.

4. The basic data used for the preparation of the project was based on a feasibility study and survey carried out in 1996 by a national consulting firm under the coordination of FONDOIN and assisted by UNDP. Based on the survey, it was found that 942 recovery machines and 10 regional consolidated refrigerant centres strategically located in cities with major consumption of refrigerant, and a reclamation plant to process the recovered refrigerant, would be needed in the country.

5. The project submitted through UNDP is for the establishment of a national refrigerant recovery and recycling network comprising of 471 recovery machines and related components and eight regional consolidated refrigerant centres equipped with high-volume refrigerant transfer units, refrigerant identification kits and storage cylinders. Funding for the procurement of the other 471 recovery machines (50 per cent of the total), will not be requested from the Multilateral Fund.

6. The project submitted by the Government of Canada is for implementation of a centralized reclamation plant for processing the recovered refrigerants. It will be equipped to fully restore all the recovered refrigerant to the original purity specifications. Two recovery units for the recovery

of larger industrial and commercial systems, which would be impractical with the smaller units, are also included. The plant will also contain analytical equipment to identify the specific refrigerant, impurities and contaminants that it may contain, and to enable the testing of the finished batches to an internationally accepted purity standard.

7. The Government of Venezuela is proposing to retain ownership of the recovery equipment provided under the Multilateral Fund throughout the duration of the project and then transfer it to the users. The transfer will be subject to final evaluation of the activities carried out by the individual users.

8. Eleven training workshops for service technicians of refrigeration and air conditioning equipment, at a cost of US $60,030 are envisioned, which will include a practical demonstration on recovery equipment; good service practices and safety in the handling of refrigerants during installation, servicing, retrofitting and dismantlement of refrigeration and/or air conditioning equipment; and detection of CFC leaks and prevention of emissions. The seminars will utilize some of the training documentation and materials used in previous seminars held elsewhere, as well as those prepared by UNEP.

9. Training will also be provided to several technicians in the operation and maintenance of the reclamation machinery under varying input product conditions and to laboratory technicians on the specific equipment supplied and on testing procedures that will be required to conform to the ARI-700 or ISO equivalent purity standards.

10. The reclaimed refrigerant will be returned to the consolidation centres and the recovery network at a price that will cover the operational costs of the recovery and reclamation centres including; inter alia, collection of recovered refrigerant, staff salaries, liability insurance, equipment maintenance and filter media, transportation costs for distribution of recovered and reclaimed refrigerant, rental, and an incentive to technicians to recover refrigerants. This price will be agreed under the supervision of FONDOIN.

11. In its capacity as co-ordinator of all activities related to the Montreal Protocol in the country, FONDOIN will be the co-ordinator and supervisor of the project. It will keep records of the amounts of ODS that would be recovered and recycled and/or reclaimed by each centre. It will also ensure that effective use of the recovery and recycling equipment is attained and that the sale price of the reclaimed refrigerant is balanced in such a manner that neither financial loss nor unreasonable profit would be incurred by the operators of the reclamation centre.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. Based on the issues raised by the Fund Secretariat, UNDP included a statement on how the project will help the country to meet the 1999 freeze.

2. The Secretariat questioned the need for a reclamation centre in a country which produces CFCs. FONDOIN informed the Secretariat that the main reason for a reclamation facility instead of providing a large number of recycling machines, is that the processed refrigerant should have the same quality as, and lower in price than a virgin refrigerant, facilitating an accelerated phase out in the production of CFCs. This statement is based on the Venezuelan strategy regarding recovery, recycling and reclamation of ODS, contained in the country programme, which was approved at the 17th Meeting of the Executive Committee.

3. The Secretariat sought clarification on whether the reclamation of the refrigerant could be performed at Produven, the local CFC producer, taking into consideration the pilot programme in recovery and recycling of CFC-12 in domestic refrigeration approved at the 9th Meeting of the Executive Committee, where 50 recovery units were procured and the recovered refrigerant was to be sent to Produven, for reclamation and re-use. FONDOIN indicated that this operation was not feasible since the cost for processing the recovered CFCs in Produven would have been higher than the cost of virgin CFCs. The consultant to the Government of Canada also indicated limitations to reclamation of CFCs when these substances are sent to CFC production plants.

4. Upon a request by the Fund Secretariat, the consultant to the Government of Canada indicated that the reclamation facility was selected to process the CFC-11 and CFC-12 that would be recovered; he further indicated that the equipment would also be capable of processing other gases (CFC-114, HCFC-22, R500 and R502).

5. UNDP and the Fund Secretariat discussed the eligibility of the request for an awareness programme and institutional arrangements, and level of costs of several pieces of equipment and the training programme. UNDP agreed to adjust the costs of the equipment and the training programme according to costs approved in similar projects. UNDP also negotiated with equipment manufacturers for reduction in cost of some pieces of equipment when purchasing in bulk.

6. The reclamation facility will operate on a cost-recovery fee structure. The service fee for the reclamation service will be based on the costs associated with the recovery of the refrigerants, operating space, storage areas, labour and laboratory testing of the reclaimed products. This price will be agreed under the supervision of FONDOIN.

7. Regarding operating costs and savings, the project proposal stated that revenues associated with recovering and reclaiming operations would be used to offset the corresponding

operating costs. However, no calculations were provided to sustain this statement. Through a communication from FONDOIN, the Secretariat was informed that the price of the processed refrigerant will be lower than the price of virgin refrigerant in order to facilitate the reduction in the production of CFCs in the country. This price differential is intended to provide the market incentive to enable the project to achieve the proposed target for the quantity of refrigerant to be reclaimed.

8. On the issue of operating costs and savings, the consultant to the Government of Canada commented that most reclamation facilities in the United States and Canada purchase used refrigerants at approximately 25 per cent of the selling price, and resell the reclaimed product for approximately 75 per cent of the price of virgin material; and they also charge a fee for processing recovered refrigerants directly from users (40 per cent of the original cost).

9. The project proposal indicated that the 172 tonnes of CFCs to be recovered and processed was considered to be a conservative estimate with the potential for greater amounts to be recovered and processed.