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PROJECT PROPOSALS: CHILE

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

Refrigeration

- Implementation of the RMP: recovery and recycling program Canada
- Implementation of the RMP: training programme for technicians and establishment of refrigeration standards Canada
- Implementation of the RMP: users and public awareness UNEP
- Implementation of the RMP: enabling a control and regulatory network UNEP
- Implementation of the RMP: monitoring, evaluation and reporting UNEP

Sterilants:

- Terminal conversion of ethylene oxide/CFC 12 mixtures to alternative non ozone depleting technologies in 26 hospitals UNDP

**PROJECT EVALUATION SHEET
CHILE**

SECTOR: Refrigeration servicing ODS use in sector (2000): 219.10 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

- (a) Implementation of the RMP: recovery and recycling program
- (b) Implementation of the RMP: training programme for technicians and establishment of refrigeration standards
- (c) Implementation of the RMP: users and public awareness
- (d) Implementation of the RMP: enabling a control and regulatory network
- (e) Implementation of the RMP: monitoring, evaluation and reporting

Project Data	Refrigerant management plan				
	R & R	Training refrig.	Awareness	Control & regulatory network	Monitoring
Enterprise consumption (ODP tonnes)					
Project impact (ODP tonnes)	40.00				
Project duration (months)	30	24	24	24	36
Initial amount requested (US \$)	548,000	312,000	182,000	124,400	52,000
Final project cost (US \$):					
Incremental capital cost (a)					
Contingency cost (b)					
Incremental operating cost (c)					
Total project cost (a+b+c)				111,400	
Local ownership (%)	100%	100%	100%	100%	100%
Export component (%)	0%	0%	0%	0%	0%
Amount requested (US \$)	531,620	260,000	172,000	111,400	52,000
Cost effectiveness (US \$/kg.)					
Counterpart funding confirmed?					
National coordinating agency			CONAMA		
Implementing agency	Canada	Canada	UNEP	UNEP	UNEP

Secretariat's Recommendations					
Amount recommended (US \$)	531,620	260,000	172,000	111,400	52,000
Project impact (ODP tonnes)	40.00				
Cost effectiveness (US \$/kg)					
Implementing agency support cost (US \$)	53,162	33,800	22,360	14,482	6,760
Total cost to Multilateral Fund (US \$)	584,782	293,800	194,360	125,882	58,760

PROJECT DESCRIPTION

1. Through a national survey carried out in 1999-2000, CFC-12 consumption in the refrigeration and air conditioning sector was estimated at 197 ODP tonnes for servicing refrigeration equipment and 57 ODP tonnes for equipment production (of these amounts, 38 ODP tonnes are expected to be phased out through approved investment projects under current implementation). Consumption of CFC-11 for flushing purposes was estimated at 18 ODP tonnes and consumption of R-502 was estimated at 6.7 ODP tonnes (4.2 ODP tonnes for manufacturing new equipment and 2.5 ODP tonnes for servicing equipment).
2. According to the data gathered during the formulation of the RMP project, almost 2,000 refrigeration service workshops were identified. About 75% of the workshops were located in 4 geographical regions in the country (Metropolitan, the Vth, VIIIth and Xth Regions). Approximately 3,000 technicians work in the maintenance of refrigeration systems, mainly domestic and commercial refrigeration units. Only 500 technicians work for officially authorised workshops; the rest of the technicians have not received a formal training.
3. The current price of refrigerants per kilogram is as follows: US \$3 for CFC-12, US \$13 for R-502, US \$8 for HFC-134a and US \$16 for R-404.
4. The Ozone Unit is co-ordinating efforts with the National Customs Service and the Ministry of Health to implement an ODS import/export regulatory system. The National Commission on the Environment has drafted a legal text that will impose a maximum import limit for both CFCs and CFC-based equipment. It is expected that the legislation will be submitted to Parliament in early 2002.
5. The RMP project proposes to achieve a complete phase out of CFCs used in the servicing sector (CFC-11, CFC-12 and R-502) by the year 2010 or earlier. The action plan to achieve the objective of the RMP project consists of the following sub-projects:
 - (a) Enabling a control and regulatory network. The purpose of this sub-project is to set up a regulatory network in the country; to strengthen the national capacity of the institutions responsible for enforcing relevant regulations (the Customs Office and the Health Ministry), and to establish an information system to monitor the implementation of the sub-projects contained in the RMP project.
 - (b) Training programme for technicians and establishment of refrigeration standards. Under this sub-project, a combination of training and education activities will be undertaken, including a training programme for 2,000 technicians on good refrigeration service practices; installation of training equipment at 5 training centres; workshop with selected end-users to demonstrate procedures for retrofitting commercial refrigeration systems; introduction of good refrigeration practices in the curricula of universities and training centres; and development of technical standards for the management of CFCs in the refrigeration servicing sector.

- (c) Recovery and recycling network. Setting up a national recovery and recycling network (100 recovery machines, 30 recovery/recycling machines and ancillary equipment), and providing training to service technicians on recovery and recycling procedures. The sub-project will only be implemented once the appropriate conditions exist in the country to make recovery and recycling operations viable and profitable (i.e., legislation restricting CFCs will need to be in place and a significant rise in the price of CFCs must take place). To maximise the financial resources, it is proposed to assess the feasibility of establishing a revolving fund, through which recovery and recycling equipment will be loaned or sold at a reduced cost to technicians and end-users.
- (d) Promotional activities for end-users. This sub-project is to establish an extensive public and user communication campaign, mainly targeted at refrigeration technicians and end-users.
- (e) Monitoring, evaluation and reporting (on the overall RMP project).
- (f) Once the regulatory framework is in place, and implementation of the sub-projects in the RMP has commenced, a study will be carried out to determine the feasibility of an additional sub-project to finance retrofits of end users (to be implemented by the World Bank).

6. The Ozone Unit will co-ordinate the activities to be undertaken under the RMP project. The project components will be implemented with the assistance of the Government of Canada and UNEP.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

7. The Government of Chile submitted the RMP project proposal with an official letter stating that the RMP is based on a full survey of CFC consumption in all sub-sectors, and contains the government's phase-out strategy which has been developed on the basis of this information. The RMP will ensure the achievement of at least the 50% reduction step in 2005 and the 85% reduction step in 2007 in the consumption of CFCs. Imports will be restricted, if necessary to achieve compliance with the reduction steps and to support RMP activities. The RMP project includes a market-based study to investigate the technical and economic feasibility of implementing an investment module to convert the end-users sector in Chile (if feasible, Chile will request assistance from the Multilateral Fund to cover this sector in the future). The RMP project contains the current and forecast future consumption of CFCs in relation to the 1999 freeze, the 50% reduction in 2005, the 85% reduction in 2007 and the complete phase-out by 2010, and calculates the levels in the consumption of CFC in the refrigeration sector to be reduced to meet these targets.

8. The Secretariat pointed out that the implementation of the RMP will lead to a direct phase out of 85 ODP tonnes of CFCs (associated with better servicing practices and recovery and

recycling operations), and sought an explanation on how implementation of regulations will lead to the phase out of an additional 279 tonnes of CFCs. The Government of Canada and UNEP indicated that the Government of Chile has decided to establish a CFC import quota system (for example, for CFC-12 the maximum proposed quotas are: 250 tonnes by end-2005, 180 tonnes by end-2006; 54 tonnes by end-2009; and none by end-2010). The proposed aggregate national import limits could be revised, if it is determined that the phase-out schedule needs to be strengthened or accelerated. The Customs Office will be the enforcement institution responsible for controlling the imports of CFCs.

9. The Secretariat discussed issues related to eligibility of the pilot programme for the inclusion of good practices in the curriculum of training centres (US \$35,000), and the development of Chilean standards for refrigeration management (US \$35,000). The Secretariat pointed out that the proposed training programme will include a good practice certification scheme and standards for refrigeration management in Chile. In addition, through UNEP's clearinghouse a number of manuals and guidelines on good practices in the refrigeration sector have been developed and could easily be adopted to local conditions. In this regard, the Government of Canada and UNEP informed the Secretariat that during the preparation of the RMP proposal it was found that such institutions in Chile do not currently have adequate training programmes in place in the area of good practices; therefore, it would be useful if such a programme was developed and instituted in at least one or two training centres and/or universities. Subsequently, it was agreed to include the development of refrigeration standards within the training programme for refrigeration service technicians, and adjust the cost accordingly.

10. The Government of Canada and the Secretariat discussed issues related to the number of recovery and recycling machines requested and their costs. The Government of Canada informed the Secretariat that the level of CFC consumption in the commercial and industrial sectors justifies the request for more machines. Hence, the numbers were determined less by potential need but by the desire to be consistent with the budgets approved for recovery and recycling programmes under previous Multilateral Fund projects (as this requirement for consistency is implied within the RMP guidelines). The cost of the sub-project was revised considering the price of recovery and recycling machines and ancillary equipment used in similar projects so far approved.

11. The Secretariat also pointed out that most of the activities included in the promotional activities for end-users sub-project were overlapping with those proposed in the training programme for technicians and establishment of refrigeration standards sub-project. The Secretariat also noted that over US \$365,000 has already been approved for Chile for a public awareness programme. The Government of Canada and UNEP indicated that the public awareness campaign approved for Chile in 1992 was targeted at the general public. The promotional activities for end-users sub-project are targeted mostly at users of refrigeration equipment. Among the proposed activities are written and visual material to be distributed among users to promote the conversion of systems to non-CFC refrigerants (i.e., 6 types of posters, one video to show customers waiting at service shops, selling refrigerants points and cold storage and air conditioning installers; 6 types of brochures; and 5 types of stickers for retrofitted equipment). This sub-project was identified by the national refrigeration association

and many service technicians who see such promotional efforts as necessary to convince their customers to convert their equipment.

12. The Government of Canada and the Secretariat discussed the need to include a sub-project for monitoring the overall implementation of the RMP, rather than including a funding request for assistance and monitoring for each individual activity. Subsequently, the RMP project was amended accordingly.

RECOMMENDATIONS

13. The Fund Secretariat recommends blanket approval of the projects at the funding level indicated below on the understanding that the implementation of the recovery and recycling programme will not commence until the legislation controlling CFCs import will be in place and the price of CFCs increase to a level equivalent to the price of HFC-134a.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Implementation of the RMP: recovery and recycling program	531,620	53,162	Canada
(b)	Implementation of the RMP: training programme for technicians and establishment of refrigeration standards	260,000	33,800	Canada
(c)	Implementation of the RMP: users and public awareness	172,000	22,360	UNEP
(d)	Implementation of the RMP: enabling a control and regulatory network	111,400	14,482	UNEP
(e)	Implementation of the RMP: monitoring, evaluation and reporting	52,000	6,760	UNEP

**PROJECT EVALUATION SHEET
CHILE**

SECTOR: Sterilants ODS use in sector (199_): n/a ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

- (a) Terminal conversion of ethylene oxide/CFC 12 mixtures to alternative non ozone depleting technologies in 26 hospitals

Project Data	Ethylene oxide
	26 hospitals
Enterprise consumption (ODP tonnes)	20.50
Project impact (ODP tonnes)	19.77
Project duration (months)	30
Initial amount requested (US \$)	494,987
Final project cost (US \$):	
Incremental capital cost (a)	102,920
Contingency cost (b)	10,292
Incremental operating cost (c)	299,529
Total project cost (a+b+c)	412,741
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US \$)	412,741
Cost effectiveness (US \$/kg.)	20.88
Counterpart funding confirmed?	Yes
National coordinating agency	Ozone Program Office
Implementing agency	UNDP

Secretariat's Recommendations	
Amount recommended (US \$)	412,741
Project impact (ODP tonnes)	19.77
Cost effectiveness (US \$/kg)	20.88
Implementing agency support cost (US \$)	53,656
Total cost to Multilateral Fund (US \$)	466,397

SECTOR BACKGROUND

14. Sterilants is a small sector which uses CFC-12 only, as part of a pre-blended mixture of 88% CFC-12 and 12% ethylene oxide, used in sterilising machines. Consumption in the sterilants sector is not reported on separately in report on progress with implementation of country programmes. Chile's CFC-12 consumption in 2000 is reported as 218 ODP tonnes.

PROJECT DESCRIPTION

Terminal conversion of ethylene oxide/CFC-12 mixtures to alternative non ozone depleting technologies in 26 hospitals in Chile

15. The objective of the project is the complete elimination of CFC-12 used in combination with ethylene oxide (ETO) for sterilisation purposes at 26 hospitals in Chile, which comprises the remaining consumption in the sector. The project will phase out 19.77 ODP tons of CFC-12 in hospitals in the public and private sectors of Chile which are still consuming CFC-12. Chile is committed to phasing out the use of sterilants in the sector and will provide the appropriate regulations to do so. The remaining uses in this sterilants sub sector, primarily in the supply chain, will be converted without MLF assistance. CFC-12 is a major component in a world standard, 12% Ethylene oxide/88% CFC-12 sterilisation gas mixture ("12/88") that is used in hospital processes for cleaning, sterilisation, and re-use of medical equipment and utensils in Chile. The cost basis is a low cost retrofit of existing equipment to allow use of an HCFC/ethylene oxide or HFC/ethylene oxide "drop-in" blend. The Ministry of Health and private hospitals are evaluating costlier equipment replacements and some of the recipients are expected to choose more expensive technologies and pay the difference between any MLF allowance and the chosen technologies.

SECRETARIAT'S COMMENT AND RECOMMENDATION

COMMENT

16. Since the conversion will use a "drop-in" substitute, the incremental capital costs are very low and provide for minor equipment adjustments and training. The main project costs are incremental operating costs arising from an approximate 30% increase in the cost of the sterilising gas. UNDP provided confirmation of the cost of the gas. The quantities consumed were included in detail in the project. The duration for payment of incremental operating costs was adjusted to three years as required by the guidelines for sterilant projects.

RECOMMENDATION

17. Blanket approval of the project is recommended with project and support costs as indicated in the table below:

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Terminal conversion of ethylene oxide/CFC 12 mixtures to alternative non ozone depleting technologies in 26 hospitals	412,741	53,656	UNDP
