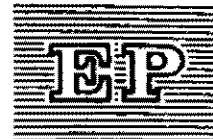




United Nations Environment Programme



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Executive Committee of
the Interim Multilateral Fund for the
Implementation of the Montreal Protocol

Eighth Meeting
Montreal, 19-21 October 1992

Addendum

PROJECT PROPOSAL: VENEZUELA

Fund Secretariat's Comments

PROJECT EVALUATION SHEET

COUNTRY OR REGION: Venezuela

PROJECT TITLE: Substitution of CFC by HFC-134a as a Coolant in Central Air Conditioning Equipment

BUDGET: US \$2,115,000 - Total Budget
US \$1,539,932 - Request

INCREMENTAL COST: US \$1,100,000¹

COST EFFECTIVENESS: US \$78.57/Kg.²

PROJECT DURATION: 18 months for installation phase; 20-year project life.

IMPLEMENTING AGENCY: World Bank

NAT. COORDINATING AGENCY: Fundación Fondo Venezolano para la Protección de la Capa de Ozono (FONDOZONO)

TECHNICAL REVIEW COMPLETED: YES X NO

SECRETARIAT'S COMMENTS

1. Following the project's submission to the Fund Secretariat, the World Bank prepared an excellent "Initial Executive Project Summary" (IEPS) which was supported by a technical review and an excellent review that was prepared by an OORG member (see Addendum 1).
2. The project will result in an estimated average annual phase-out of 14 tonnes of CFC-12 including 2 tonnes per year resulting from preventative leakage.³
3. Although the total project budget was estimated at US \$2,145,176, only US \$1,539,932 was requested from the Fund for the following components:
 - a. Retrofitting 27 air conditioning units from CFC-12 to HFC-134a;
 - b. Replacement of four CFC-12 air conditioning units with new HFC-134a units;
 - c. Installation of three new HFC-134a air conditioning units in new buildings;
 - d. Technical and financial feasibility studies in five institutions to retrofit or replace CFC-based system with HFC-134a.
4. The project is aimed at substituting CFC-12 with HFC-134a as a coolant in central air conditioning systems in public and private institutions, especially in the health area.

5. The OORG review of this project recommended adjustments to the incremental costs for retrofits, as follows:

- . 75 percent of generic parts and labour costs to account for normal replacement;
- . No funding of condensers and evaporators costs which are independent of the type of coolant used; and,
- . A deduction for the savings resulting from the value of the recovered CFC-12.⁴

Based on this recommendation, the incremental cost of retrofitting 27 units is estimated at US \$1 million.

6. The OORG review stated that other HFC-134a chillers are commercially available as well as chillers using ammonia. In fact, other brands of HFC-134a have already been installed in Venezuela. This suggests that a sole source contract may not be justified.

7. Since alternative HFC-134a units are available, the OORG review suggests that the cost differential between HFC-134a and CFC-based units should be reviewed. A 10 percent price differential was considered more representative since this is the current prevailing differential in the United States market. The incremental cost of the seven units is estimated at US \$100,000.

8. The World Bank suggested that the cost for the planned feasibility studies (US \$30,000) should not be included since terms of reference were not available.

9. The Bank does not plan to appraise this project until the third or fourth quarter of 1993.

10. Three of the replacement chillers are already installed or being installed. Thus, part of this request is for retroactive payment.

11. It should be noted that this is the first ODS phase-out for central air conditioners for which Montreal Protocol funding is requested.

12. The cost of retrofitting chillers per unit is over four times higher than the incremental costs of chiller replacement for comparable or increased cooling capacity.⁵ While the incremental costs of replacement may be less for the Fund, the costs to the country for replacement are higher than for retrofitting. Therefore, from the perspective of the Article 5 country, it is unlikely that replacement would be preferable to retrofitting unless the equipment were new or needed to be replaced.

13. The Indicative List of Categories of Incremental Costs does not categorically provide for the funding of new equipment as incremental costs. It does, however, provide for funding the most cost effective and efficient option and for providing incentive for early adoption of ozone protecting technologies.

SECRETARIAT'S RECOMMENDATIONS

14. The Fund Secretariat recommends Final Approval funding in the amount of US \$1.1 million.

Endnotes:

1. This includes US \$1 million for retrofitting 27 units and US \$100,000 for the purchase of seven new HFC-134a chillers.
2. Determined as the ratio of incremental cost to the estimated annual saving of ODP (\$/ODP Kg.). Unit abatement costs are: US \$3.84/kg ODP for retrofits; US \$7.48/kg ODP for new units.
3. This is based on the claim that an additional 38 tonnes of CFC-12 would be saved over the 20-year project lifetime, i.e., 2 tonnes per year, as a result of leakage prevention. Leakage is assumed at 15 percent annually.
4. The value of recovered CFC-12 is estimated at 80 percent of the market price for new coolant.
5. This is based on the assumption that incremental costs of replacement equal 10 percent of the cost of the new equipment.