

Proposal for Review

Project Title:	Hungary: Project for the Phaseout of Ozone Depleting Substances
GEF Focal Area:	Ozone Depletion
Country Eligibility:	Acceded to the Montreal Protocol in 1989; GEF eligibility on basis of IBRD eligibility.
Total Project Cost:	US\$9.4 million
GEF Financing:	US\$6.9 million
Counterpart Financing:	US\$2.5 million
Cofinancing/Parallel Financing:	None
Associated Project:	None
GEF Implementing Agency:	World Bank
Executing Agency:	World Bank
Local Counterpart Agency:	Hungarian Ministry for Environment and Regional Policy and Investment Sub-Project beneficiaries
Estimated Starting Date:	September 1995
Project Duration:	Two Years
GEF Preparation Costs:	No PRIF or PPA resources were used

12 and CFC-11); and (iii) through institutional strengthening improve the capability of the Ministry for Environment and Regional Policy (MERP) to manage and oversee the phaseout of ODS in Hungary.

6. By focussing on the key sectors and enterprises, the project will phase out 1156.9 tons of ODP per year, or roughly 52% of ODP-weighted ODS consumption in Hungary. Approximately 39% of the phaseout under the Project will be accomplished through a recovery, reclamation, and recycling scheme in the refrigeration subsector, and an additional 23% in the halons subsector.

PROJECT DESCRIPTION

7. The proposed project will consist of (i) an Institutional Strengthening Component; (ii) a Recovery, Reclamation, and Recycling Component (3R Component) for ODS used as refrigerants; and (iii) an Investment Component comprising thirteen Sub-Projects. These Components were designed in close cooperation between the Government of Hungary, Participating Enterprises, the World Bank, and international consultants. The Ministry for Environment and Regional Policy (MERP) will be primarily responsible for the implementation of the Institutional Strengthening Component, while the Hungarian Association of Air-Conditioning and Refrigeration Enterprises will be primarily responsible for the 3R Component, and the Participating Enterprises for the Sub-Projects which will comprise the Investment Component.

8. **Institutional Strengthening Component.** This component will set up an ODS Phaseout Project Implementation Unit (PIU) to be supported by a Technical Advisory Group (TAG). The PIU will coordinate the implementation of the Project, oversee procurement and disbursement for the investment Sub-Projects compliance with World Bank guidelines, and in close cooperation with the Financial Intermediary, supervise project activities according to the requirements of the World Bank and MERP. As necessary, the PIU will arrange for technical assistance and consultants to assist in project implementation, and provide support to facilitate cooperation among government institutions and the consumers of ODS. Funding for this Sub-Project will be US\$244,500 to cover salaries for three staff, office equipment, and the cost of hiring international consultants for supervision and monitoring during implementation of the Sub-Projects.

9. **3R Component.** This component will cost approximately \$2.04 million, of which \$1.42 million is proposed to be financed by the GEF. The Association of Refrigerating and Air-Conditioning Enterprises which will be responsible for implementing the project will establish a national network to remove ODS from refrigerators and recycle them, through the training of approximately 1500-1600 refrigerator service technicians (75-80% of the total number of technicians). This component will lead to the annual phaseout of 450 tons of ODP weighted ODS consumption, or approximately 39% of the total under the project.

10. **Investment Component.** This component covers 13 investment Sub-Projects -- 6 solvents, 3 foams, 2 aerosols, 1 halons, and 1 refrigeration and foams -- for a total of \$6.19 million, of which \$5.04 million is proposed to be financed by the GEF. A variety of ODS-phaseout technologies will be implemented, but three Sub-Projects (HIM (Foams), MMG-AM (Solvents), and Metalucon

15. The Project will be implemented within a limited time-frame. ODS phaseout projects which are successfully implemented will have a permanent ODS phaseout effect, and be in compliance with the requirements of the Montreal Protocol to completely phase out by 1996. In order to ensure long-term sustainability of the various project components (especially the 3R scheme), training and policy and regulatory measures, already under consideration by the MERP, will be introduced early in the project implementation period.

16. Furthermore, a careful review of the financial mechanism supporting the 3R-project will be undertaken to further establish the project structures required to ensure Sub-Project sustainability. Part of the funds will be earmarked to cover some of the expected financial shortfall of the recycling center during its first two years of operation. It is essential, for long-term sustainability of this Sub-Project, that the incentive to the service sector (the front line in the 3R field) be strong enough for them to undertake the recovery process.

LESSONS FROM PREVIOUS BANK INVOLVEMENT AND TECHNICAL REVIEW

17. ODS Phaseout Projects utilizing GEF resources are being developed concurrently in the Slovakia, Slovenia, and other countries. Implementation arrangements based on environment ministry implementation with local financial agent assistance in fund administration have been established for most ODS phaseout operations, and these have been used in the design of the Project. With respect to the 3R Component, the Czech Republic is just beginning to initiate its recycling and recovery program. Implementation will be closely watched to cull lessons learned, and meetings of the Hungarian and Czech counterparts will be encouraged.

18. **Technical Review.** The project was reviewed by technical specialists from the STAP roster as well as experts who serve on the Ozone Operations Research Group (OORG). The OORG was initially set up by the World Bank to review sub-project proposals for funding by the Multilateral Fund of the Montreal Protocol. The 13 investment sub-projects have been cleared by the reviewers, as has the 3-R component. The institutional strengthening sub-components is being revised by the Ministry to conform to recommendations made by both OORG reviews and ENVGC's Montreal Protocol staff.

PROJECT FINANCING, BUDGET AND INCREMENTAL COSTS

19. It is proposed that the Project cost of \$9.4 million be funded in the amount of \$6.9 million by the Global Environment Facility (GEF). Funds would be provided as a grant from the GEF to the Government of Hungary (for the Institutional Strengthening Component), and a financial institution with demonstrated capabilities in handling investment projects for transfer to Sub-Project beneficiaries under the 3R and Investment Components. The Financial Intermediary will receive a fee of 2-3% on all money it disburses for its services.

20. Each Sub-Project involves incremental costs (i.e., those capital and operating costs which would not have occurred in the absence of the Montreal Protocol) and non-incremental costs (i.e.,

26. Other issues and actions which will need to be addressed includes project implementation procedures. Specifically, the PIU will need to be up and running by the time the project is approved, and a Project Administration Agreement (PAA) governing the working relationship between the Corvin Bank and the MERP is needed. For the PAA, the model used in the Czech Republic will be followed and has already been shared with the relevant authorities.

27. Finally, it will be important to ensure that an adequate framework has been developed by the MERP governing the incentives for the 3R Component. The services sector will need to have adequate economic and financial incentives through both recycling credits and penalties. The 3R Component for the Czech ODS Phaseout Project will be used as a model for developing the incentives framework. Most of the regulatory and incentives framework has already been developed by the Economics Department of the MERP in consultation with the World Bank's consultants.

INSTITUTIONAL FRAMEWORK AND PROJECT IMPLEMENTATION

28. **Project Implementation.** The Ministry for Environment and Regional Policy (MERP), through its Project Implementation Unit (PIU), will act as general program coordinator for the Project. The MERP will liaise with other ministries on policies and industrial strategy issues, and, through its PIU, be responsible for day-to-day management of project implementation.

29. The Corvin Bank (CB) was selected to be the Financial Intermediary (FI) on December 15, 1994, by the National Bank of Hungary (NBH). It will have the responsibility to manage the local funds administration for the 3R and Investment Components. A Project Administration Agreement (subject to Bank review) will be established between the CB and the MERP. For each Sub-Project a Sub-Grant Agreement between the CB and each of the Participating Enterprises will be prepared. The Sub-Grant Agreement will include reporting provisions, annexes on disbursement, and provisions related to environmental protection and worker safety. Standard Bank disbursement procedures will be followed, with established limits on initial deposit and replenishment levels, statements of expenditures, and Bank review levels.

30. To ensure smooth disbursement, early involvement of the Corvin Bank in supervision will be required. The emphasis in selection of the CB by the NBH was based on its ability to disburse and administrate project funds. A Project Implementation Manual (PIM) has been provided, and includes the relevant Bank guidelines on procurement, disbursements, use of consultants, financial reporting, auditing, sample bidding documents, and other project-specific documents, such as the Terms-of-Reference for the Financial Intermediary. In addition, a one week training course on project implementation and management was held in Budapest in mid-January 1995.

31. **Environmental Aspects.** Each project sub-component was subject to local environmental regulations and Bank project environmental review procedure. The Project consists of light industrial projects which have been classified as category B on the basis of the Bank's project environmental classification system (OD 4.01) and based on previous classification of similar projects. For each sub-project, an annex on environmental and safety procedures was attached to the sub-project document which was reviewed by the technical reviewers.

Table 1
Hungary ODS Phaseout - Summary of Sub-Project Data and Costs

Sub-Project	Sector	Types of ODS Used	Annual ODS Use (Tons of ODS)	Annual ODS Use (Tons of ODP) ¹	Annual ODP Phaseout ¹	Incremental Capital Cost ²	Incremental Operating Cost ²	Eligible Project Cost	Requested GEF Grant
Project Implementation Unit	Institutional	-	-	-	-	\$167,090	\$77,410	\$273,000	\$244,500
Refrigeration Association	Refrigeration	CFC-11/12 CFC-502	450.00	450.00	450.00	\$2,042,670	\$0	\$2,042,670	\$1,415,495
Frigolux	Refrigeration and Foam	CFC-11/12 CFC-502	15.65	15.00	13.15	\$572,864	\$0	\$572,864	\$476,064
Hajdusagi Iparmuevek Company	Foam	CFC-11	63.00	63.00	63.00	\$1,071,000	\$335,000	\$1,406,000	\$1,051,000
Metalucon	Foam	CFC-11	45.60	45.60	45.60	\$698,562	\$186,046	\$884,608	\$724,319
Metisol	Foam	CFC-11	80.00	80.00	79.00	\$441,207	\$0	\$441,207	\$346,022
Mediroll	Aerosol-Propellant	CFC-12	107.00	107.00	107.00	\$15,379	\$42,874	\$58,253	\$53,399
Auto-mobil	Aerosol-Propellant	CFC-11 TCE	92.00 47.60	96.76	96.76	\$69,901	\$13,611	\$83,512	\$83,512
MMG-AM	Solvent	TCE CFC-113	87.00 3.50	12.20	12.20	\$1,506,100	(\$272,921)	\$1,233,179	\$1,220,000
Hitelap	Solvent	TCE	32.00	3.20	3.20	\$193,940	(\$14,151)	\$179,789	\$179,789
Tisza Shoe	Solvent	CFC-11 TCE	3.70 19.86	5.69	5.69	\$211,390	(\$35,432)	\$175,958	\$175,958
Finommechanikai	Solvent	CFC-113	1.45	1.16	1.16	\$33,570	\$0	\$33,570	\$33,570
BRG Radiotechnikai	Solvent	CFC-113	1.50	1.20	1.20	\$0	\$22,845	\$22,845	\$22,845
Rutitex	Solvent	CFC-11 CFC-113	7.61 0.33	6.42	6.42	\$355,120	(\$14,720)	\$340,400	\$340,400
Fire Protection Association	Fire Extinguisher	H-1211 H-1301	85.13 1.43	269.70	269.70	\$417,700	\$0	\$417,700	\$321,000
Financial Intermediary ¹									
Contingency ¹									
Total			1,144.36	1,156.93	1154.08	\$7,796,493	\$340,562	\$8,165,555²	\$6,687,873²

^{1/} Ozone-Depleting-Potential (ODP) is a concept which has been developed to aggregate the impacts of all ozone depleting substances (ODS) on the ozone layer. Since not all ODS are equally damaging to the ozone layer, their effects on the ozone layer must be weighted by the appropriate damage factor. For example, CFCs are ten times as damaging as 1,1,1-Trichloroethane (TCE), so TCE only receives a weight of 0.10.

^{2/} Incremental costs are defined as those costs of ODS phaseout which would not have been incurred in the absence of the Montreal Protocol. Estimates of incremental capital and operating costs are based on the methodology developed by the Multilateral Fund of the Montreal Protocol.

Financial Intermediary Fee (expected to be 2-3%) and Contingency (expected to be 5-10%) to be determined during Appraisal to ensure that total project cost does not exceed \$9.4 million and GEF Grant does not exceed \$6.9 million. It is expected that the amount to be included under Contingencies (5-10%) will be offset by an equivalent reduction in project financing which will be attributable to excluding exports to non-GEF countries from eligibility for GEF financing under the Project. This reduction due to the exclusion of exports has not yet been calculated and included/reflected in the table above.

the R-22 and R-134a cooling material. The choice of alternate technologies and materials is based on several criteria, including costs and the experience of the enterprise and the foreign technology partner with the chosen alternatives. For these changes new filling equipments, vacuum pumps, gas detectors, and temperature control units are to be procured and put into service. The Sub-Project includes training, which is necessary for the implementation of the new technologies, and some elements of servicing. The first phase of the Sub-Project was carried out between June 1994 and December 1994. In the first phase, the phaseout of the ODS was not complete, since the emission of ozone depleting substances equivalent to about 1.8 tons of ODP will continue. By the end of the second phase (through 1996), ozone depleting substances will not be used. The total cost of the Sub-Project is estimated at \$572,864. Frigolux Ltd. will cover US\$96,800 of the total incremental cost of the Sub-Project from its own sources, while the remaining incremental costs of the Sub-Project (US\$476,064) are to be financed by the GEF grant.

5. **Sub-Project 4 -- CFC-11 free polyurethane foam processing for the heat-insulation of hot water storage tanks at the Hajdusagi Iparmuvek Company.** The objective of the Sub-Project is to phase out annual consumption of 63 tons of CFC-11 PU-blowing-agent propellant through construction alterations, the establishment of a storing park, and the installation of a foaming machine which uses high pressure water/CO₂ as propellant. During the first ten months (January-October 1994), the high pressure foaming machine using water/CO₂ as propellant (which is necessary for the new process which will not use foams with CFC-11) was put into operation. In the first phase, technological experiments and heat loss tests were also carried out with the foams which do not contain CFC-11. In the second project phase from November 1994 to December 1995, the foaming in form or pillory is to be worked out and inaugurated, and the construction modifications are to be planned and carried out depending on the results of heat loss tests. In the third phase between January and December 1996, the transportation and storage system of the polyurethane base are to be rationalized. The total cost of the Sub-Project is estimated at \$1,406,000. Hajdusagi Iparmuvek Company will cover US\$355,000 of the total incremental cost of the Sub-Project from its own sources, while the remaining incremental costs of the Sub-Project (US\$1,051,000) are to be financed by the GEF grant.

6. **Sub-Project 5 -- Phaseout of ozone depleting CFC-11 freon in sandwich panel production at Metalucon Ltd.** The objective of the Sub-Project is to phase out annual consumption of 45.6 tons of CFC-11 freon blowing agent. In the first phase of the Sub-Project the CFC-11 freon will be substituted with the much lower ozone depleting HCFC-141b blowing agent. To carry out this change, new foaming equipment which uses the new blowing agent will be procured, and the temperature adjustment of the electric heating of the foaming frames will be assessed. In the second phase of the Sub-Project, cyclopentane will be substituted for HCFC-141b blowing agent. The first phase of the Sub-Project is planned to be executed in 1995-1996, and the second phase in 1997. The most important parts of the first phase are the procuring and putting into service of the foaming equipment, the stirrer, the tanks, and the injection device, and the realization of the electric heating and temperature adjustment of the foaming frames. In the second phase of the Sub-Project the implementation of the cyclopentane blowing agent will be possible without any investment cost because the equipment installed under the first phase can be converted to use cyclopentane. The total cost of the Sub-Project is estimated at \$884,608. Metalucon Ltd. will cover US\$160,289 of the total

ordering will be executed. The second phase consists of the installation and of the new appliances. In the third phase of the Sub-Project the operating parameters of the new appliances will be set. The total cost of the Sub-Project is estimated at \$1,506,100, of which \$1,233,179 will be financed by the GEF Grant.

11. **Sub-Project 10 -- Phaseout of 1,1,1-Trichloroethane photoresistant developer with alkalic solution in the manufacturing of printed circuit panels at Hitelap Ltd.** The objective of the Sub-Project is to phase out the annual consumption of 32 tons of 1,1,1-Trichloroethane, by developing products in water based solutions, and washing with water. The Sub-Project will substitute for the old developer and washer by procuring and putting into service modern equipment. A new sewage cleaning plant is to be installed to make it possible to treat the sewage water. The execution of the Sub-Project will take ten months. It will consist of planning, and putting into operation the alkalic developer, the washer, and the coagulant filter -- including the introductory operation. The total cost of the Sub-Project is estimated at \$193,940, of which \$179,789 will be financed by the GEF Grant.

12. **Sub-Project 11 -- Conversion from release agent solvent to solvent free release agent substance, and from the consumption of 1,1,1-Trichloroethane to water based cleaning in polyurethane sole producing at Tisza Shoe Company.** The objective of the Sub-Project is to phase out annual consumption of 3.7 tons of CFC-11 solvent, 16.78 tons of 1,1,1-Trichloroethane washing liquid, and 5.6 tons release agent which contains 1,1,1-Trichloroethane through the application of a new release agent, installation of a new sprinkler device, and use of a water-solution washer. The new release agent is completely solvent free, and consists of a mixture of waxes and silicon oils. A sewage treatment facility must be installed and the ventilation system updated. The execution of the Sub-Project will take ten months. In the first phase of the Sub-Project (April 1-June 30, 1995) the alternative substances, technologies, and equipments are to be chosen, tests are to be carried out, and permits are to be obtained. In the second phase of the Sub-Project the old equipments are to be detached, the new strewing equipment, water-using washer, and water treatment facility are to be installed, the ventilation is to be up-dated; and the staff is to be trained (July 1-September 30, 1995). In the final phase, the new technologies are to be installed and checked (October 1- December 31, 1995). The total cost of the Sub-Project is estimated at \$211,390 of which \$175,958 will be financed by the GEF Grant.

13. **Sub-Project 12 -- Conversion from open system vapor phase washing with CFC-113 to closed system washing with perchloroethylene at Fovarosi Finommechanikai Ltd.** The objective of the Sub-Project is to phase out annual consumption of 1.50 tons of CFC-113 ozone depleting substances by switching over from an open freon system using washing to a closed perchloroethylene system based on washing. The Sub-Project will be realized in three phases. During the first phase, the alternative cleaning technologies and cleaning substances will be evaluated, and experimental production will be done with the selected substances. In the second phase of the Sub-Project, the freon-using washer will be detached, the two renewed closed system perchloroethylene-using washers will be installed and put into service, the staff will be trained in the new technology, and the operating parameters of the new washing technology will be set. In the third phase a closed system of perchloroethylene-based washing will be applied and the technology will be tested. The total cost of the Sub-Project is estimated at \$33,570, of which the entire amount will be financed by the GEF Grant.

**SUMMARY AND RECOMMENDATIONS
OF THE TECHNICAL REVIEW**

**HUNGARY: PROJECT FOR THE PHASEOUT
OF OZONE DEPLETING SUBSTANCES**

1. The technical review for the Hungary Ozone-Depleting Substances (ODS) Phase-Out Project, as for all ODS projects, consists of two parts: (a) the overall analysis of project and program integrity, priority of subprojects, and consistency with other ODS projects financed by the Multilateral Fund for the Implementation of the Montreal Protocol; and (b) technical analysis of individual subprojects, undertaken by the Ozone Operations Resource Group (OORG). The OORG was established by the World Bank to undertake the analysis of proposed subprojects for funding under the Multilateral Fund. It uses standard criteria against which it judges the technical viability and cost-effectiveness of a given subproject. These criteria include appropriateness of the technology, environmental impact, project costs, implementation time frame, lessons from past experience, safety issues and final recommendations.

2. The STAP technical reviewer felt the project as a whole is well planned, and with the revisions suggested, it should be funded. The overall project will lead to a reduction of about 50% in Hungary's ODS consumption. Although the recycling-reclamation-recovery component will reduce ODS by only a modest amount, this component is deemed important to establish operational procedures for long-term ODS savings.

3. At the time of this technical review, the OORG had reviewed the 15 subprojects at least once, and the six subprojects still needing revisions were in the process of resubmitting proposals to incorporate the design modifications recommended by OORG. The issues raised by OORG related to technology transfer guarantees from the supplier and use of HFCs (refrigeration sector), use of undesirable substances (solvents sector), and capital and operating costs (halon sector). These 6 subprojects have subsequently been revised and approved by OORG.

4. The reviewer questioned the costs of the institutional strengthening and monitoring components, given the short life of the project, and recommended that the life and budget of the Project Implementation Unit (PIU) be reduced to appropriately lower levels. Likewise, the data control and information system and the monitoring office would not have time to contribute meaningfully to the project, so the reviewer recommended that some of these functions be taken on by the PIU. The institutional network strengthening activities are very important, but their budget could be reduced and tasks more clearly defined. A long-term UV-B monitoring component should be added to the project to follow future changes in UV-B. At present, no country in Eastern Europe is monitoring UV-B.