

Proposal for Review

Project Title: Russian Federation: Phase-out of ODS: Phase I

GEF Focal Area: Phaseout of Ozone Depleting Substances

Country Eligibility: The Former Soviet Union (FSU) ratified the Montreal Protocol in November, 1988 as a developed country. The Russian Federation continues the FSU membership in the Protocol and ratified the London Amendments in January, 1992.
GEF eligibility on basis of IBRD eligibility.

Total Project Costs: \$90.1 million

GEF Financing: \$8.6 million*

Counterpart Enterprise Financing of GEF Component: \$3.4 million

Associated Project: None

GEF Implementing Agency: World Bank

Executing Agency: World Bank

Local Counterpart Agency: Ministry of Environment

Estimated Starting Date (Effectiveness): October, 1995

Project Duration: 2 years (Phase I)

GEF Preparation Costs: \$950,000 in Project Preparation Advance
\$300,000 from U.S. Trade and Development Agency

* Council's approval of the project, and of an allocation of US\$8.6 million to cover costs of Phase I activities, is sought. After Phase I disbursement commences, a project proposed for Phase II, including a work plan and budget, will be submitted to GEFOP for its review with a view to inclusion of the Phase II project proposal in a subsequent work program. Total GEF financing to be requested is \$60 million.

RUSSIAN FEDERATION**PHASEOUT OF OZONE DEPLETING SUBSTANCES****INTRODUCTION**

1. Russia recognizes its legal obligations as a developed country signatory to the Montreal Protocol respecting targeted ODS phase out schedules. However, the country's economic capability to complete this task has declined significantly, since ratifying the London Amendments in 1992. As a consequence, it has fallen behind in phase out activities and will not be able to meet its phase out schedule obligations. A number of steps have been initiated to ensure that its obligations are met. Responsibility for ODS phase out activities has been assigned to the Ministry of Environmental Protection and Natural Protection (MEPNR). A comprehensive Country Program as described below has been developed and adopted by the government. This Program acknowledges that Russia is out of compliance with its obligations and proposes a revised phase out schedule. Russia intends to present its Country Program to the Global Environmental Facility (GEF) Council and to the Parties to the Montreal Protocol in May 1995, formally acknowledging its non-compliance status and confirming its commitment to the revised phase out schedule. Similarly, Russia is expected to be a developed country contributor to the Multilateral Fund for the Implementation of the Montreal Protocol (Multilateral Fund), with in-kind contributions. While no contributions have been made to date, Russia has undertaken to resolve its arrears position when its economic conditions improve, and will discuss this matter with and the Montreal Protocol Implementation Committee in May 1995.

SECTOR AND COUNTRY BACKGROUND

2. General recognition of upper atmosphere ozone depletion in the mid-1980's has led to a substantial international effort to phase out Ozone Depleting Substances (ODS). These include chlorofluorocarbons (CFC's), halons, several halogenated solvents, and a class of transitional chemicals known as hydrochlorofluorocarbons (HCFC's). The basis of this effort is the 1987 Montreal Protocol, ratified by all developed and most developing countries. Further recognition that ozone depletion is occurring more rapidly than first anticipated has led to two protocol amendments which add materials and accelerate phase out. The first in June, 1990 (London Amendment) added the two solvents, methyl chloroform (MCF) and carbon tetrachloride (CTC), as well as tightening the phase out schedule. The Copenhagen Amendment in November, 1992 added HCFC's and methyl bromide as regulated substances, as well as further accelerating phase out. The current, developed country phase out date for CFC's, MCF, and CTC is January 1996 with halons being January 1994. Production levels of transitional HCFC's are frozen as of January 1996 with progressive reduction to phase out in 2030.

3. Russia is one of the world's largest producers and consumers of ODS. In 1990 when production peaked, it was estimated that 198,000 MT was produced, accounting for between 15 - 20% of world production. In 1992, Russian ODS production had fallen by 26% to 146,500 MT. This production supplies 100% of the domestic market, as well as the requirements of the countries of the FSU, and other export markets that continue to exist. Russian domestic consumption also

peaked in 1990 at approximately 70,000 MT and had fallen by 40% to 48,365 MT in 1992. Consumption continues to decrease primarily due to the economic downturn and, to a lesser extent, phase out action that has been taken. Five sectors account for Russia's ODS use: aerosols (46%), refrigeration and air-conditioning (27%), solvents (14%), foams (11%) and fire protection (2%).

4. The Former Soviet Union (FSU) ratified the Montreal Protocol in November, 1988 as a developed country. The Russian Federation continues the FSU membership in the Protocol and in January, 1992, Russia ratified the London Amendments. However, ratification of the Copenhagen Amendments has not occurred. Based on its ratification status as a developed country under the Montreal Protocol, Russia's obligations for ODS phase out are in accordance with the accelerated developed country schedule for halons (January 1994), and for CFC, CTC and MCF (January 1996).

5. Development of the ODS phase out Country Program was completed in August 1994 with Danish support and World Bank technical input. A position paper based on the Country Program has been prepared by MEPNR, describing an achievable phase out program which has been adopted by the Government. Assuming international financial assistance is available, it targets ODS phase out for 1999, somewhat ahead of the London Amendment schedule (January 2000), but slower than the Copenhagen Amendment schedule (January 1996). Production would be phased out consistent with domestic consumption phase out schedules, and phase out in countries of the FSU to which Russia is the sole supplier, particularly Ukraine and Belarus. For this reason, Russia's export of ODS to other countries after January, 1996 also would have to be accommodated on a transitional basis.

6. Russia has also established the basic institutional structure to support the administration of the proposed ODS phase out program. An Inter-Agency Commission has been created to coordinate ODS policy among all relevant government agencies with specific subcommissions dealing with legal, technical, economic/institutional, and monitoring aspects. An ODS Task Force has been established by ministerial decree within MEPNR. It has been assigned overall responsibility for implementing the national phase out strategy and to act as a secretariat for the Inter-Agency Commission. As documented in the Country Program, various policy and regulatory initiatives are currently under development within MEPNR including the issuing of production/import licenses, the introduction of sector specific bans, and allocation of economic support for ODS replacement projects at the industry level from Russian and international sources. These institutional strengthening initiatives specific to the phase out of ODS are consistent with Russia's overall commitment to increasing its overall institution capacity in environmental management. The country is currently investing US\$60 million in such strengthening related to various environmental problem areas through the World Bank Environmental Management Project Loan.

7. Because of its limited financial and technical capacity, Russia has made little progress to date with ODS phase out. Therefore, it has requested GEF assistance to accelerate this work. Provision has been made for the GEF to provide limited financial support to transitional economies that do not meet Multilateral Fund criteria on country grounds, but nevertheless need technical and financial assistance. In addition, it has requested the World Bank to assist it to mobilize donor funding for additional phase out initiatives covering both production and consumption.

PROJECT OBJECTIVES

8. As one of the World's largest producers and consumers of ODS, Russia's contribution to global ozone depletion is a major one. With the rapid phase out progress being made in other countries, Russia's relative contribution will further increase. For this reason, the implementation of the proposed Country Program, prepared along the same lines as country programs for the Multilateral Fund, is viewed as an international priority in addressing the overall global issue. Within the context of the country programming exercise, this project's main objective is to assist Russia with the rapid phase out of ODS consumption in a manner consistent with international efforts in the field, while ensuring that this is accomplished with a minimum of economic dislocation.

The project's more specific objectives are: i) to allow Russia to credibly meet its obligations under the Montreal Protocol within a realistic time frame; ii) to facilitate access to financial resources needed for ODS phase out from a range of international and domestic sources; iii) to provide modest technical assistance and institutional strengthening as required; iv) to fund enterprise specific investments in critical high consumption sectors; and v) to ensure that ODS phase out activities accommodate economic and social impacts that may result.

PROJECT DESIGN AND DESCRIPTION

9. The overall GEF project targets priority phase out activities in the aerosol and refrigeration sectors, along with the provision of modest technical assistance at both the institutional and enterprise levels to facilitate and accelerate Country Program implementation. It is structured as a framework project consisting of a series of sub-projects eligible for a total GEF funding amount of US\$60 million. The proposed sub-projects are listed in Annex 1 and account for a total incremental investment of US\$89 million. The sub-projects have been selected for appraisal by MEPNR with World Bank assistance, based on the project preparation work in the aerosol and refrigeration sectors, undertaken under a GEF Project Préparation Advance. They have been reviewed and approved by the Ozone Operations Resource Group (OORG) established by the World Bank to provide technical advice on technology selection under the Multilateral Fund. It is anticipated that the sub-projects will be processed in several tranches as funds are approved by the GEF Council. The first tranche request of US\$8.6 million applies specifically to two enterprise sub-projects in the aerosol sector, listed in Annex 1, as well as for technical assistance to strengthen project implementation capability and for preparation of future sub-projects.

10. Aerosol Sector ODS consumption in the form of CFC propellants in Russia likely represents the largest and most cost effective single consumption phase out opportunity in the world today. The Russian Federation has an established aerosol industry that continues to consume large quantities of CFC's. The CFC aerosols (78% of total aerosols) are strongly favored by the cosmetic industry and are selling readily even in a suppressed economy. In 1992, consumption of CFC's by the aerosol industry totaled 33,000 metric tons, approximately 46% of the total ODS consumed in Russia. The two sub-projects which are submitted for consideration by the GEF for this first tranche account for 14% of the ODS used by this important industry. In total, an estimated 4,579 MT will be phased out. Phase out in the aerosol sector is efficient and cost effective with low unit abatement costs. The effectiveness of the GEF grant is enhanced for the two sub-projects since the enterprises will

fund a significant portion of the costs, with the GEF grant serving as a key stimulus for enterprise investment. This phase out can be achieved relatively quickly, with a targeted completed date of late 1997. The two aerosol sub-projects all utilize hydrocarbon aerosol propellant (HAP) as a replacement for CFC propellant in common aerosol sprays. HAP is a purified form of liquid petroleum gas (LPG) and is available in limited quantities in Russia. The technology for use of HAP has developed globally since 1980 and is readily available. Current Russian capacity is estimated at 1,000 MT/year with potential existing for additional capacity to be added rapidly as demand develops. In addition, excess capacity exists in several neighboring European countries.

11. For each sub-project, unique features affect the estimates of incremental project costs. Arnest can reuse its can making facility but must replace its valve facility and convert filling to HAP. Halogen only needs to convert filling to HAP. Annex 2 provides a summary of these projects as proposed for the first tranche request. Novosibirsk is the largest CFC consumer, and in order to safely use HAP must upgrade its entire can and valve making facility plus convert its filling operation. Existing can manufacturing cannot produce aerosol cans strong enough to withstand the higher pressures required for HAP. Precision valves are required to minimize leakage during storage hence reduce fire hazards associated with use of HAP. This subproject has been approved by GEFOPS and will be presented in the next tranche.

12. Refrigeration Sector ODS consumption of refrigerant (CFC-12) and for foam insulation (CFC-11) in the manufacture of domestic, commercial and industrial refrigeration products, involves 4,028 MT/year of ODS material. In addition, the refrigeration servicing sector is estimated to account for an annual consumption of 4,500 MT/year. Project preparation work has identified thirteen sub-projects originating in seven of the largest manufacturers of domestic refrigerators, and two sub-projects in the commercial and industrial refrigeration sectors that are ready for appraisal. From these, six sub-projects in domestic refrigeration manufacturing enterprises and one sub-project in an industrial refrigeration compressor manufacturer have been selected based on OORG review recommendations for inclusion in the Project in latter tranches (Annex 1). These sub-projects provide 1567 MT/year of ODS phase out based on 1993 consumption and 2,212 MT/year of ODS phase out based on production capacity. They involve the replacement of CFC-12 refrigerant with HFC-134a or potentially hydrocarbons (isobutane), and the replacement of CFC-11 or CFC-12 insulating foam blowing agents with either cyclopentane or HFC-134a. Use of HFC-134a or hydrocarbons is a generally accepted choice for refrigerant replacement in many western countries, but requires redesign of refrigeration circuits and compressors. HFC-134a is not currently available in Russia, although this is anticipated within five years. Cyclopentane is a globally accepted foam blowing agent substitute in refrigeration applications, and offers equivalent long term properties to CFC-11 foams.

13. Technical assistance will supplement current resources, including those available through the World Bank's Environmental Management Project and will be directed to several key areas. Firstly, resources will be provided directly to MEPNR to support the regulatory and institutional actions proposed for the overall ODS phase out program as outlined in the Country Program. These actions include: a) development of an ODS production and consumption data reporting/monitoring system as recommended by the Scientific and Technical Panel (STAP) reviewer; b) implementation of ODS production import/export licenses and charges; c) introduction of sector specific bans; and d)

establishment of an ODS account in the Federal Environment Fund. Secondly, feasibility studies will be funded in the following areas: a) evaluation of supply options for hydrocarbon based substitutes including HAP's; b) investigation of drop-in ODS substitutes for existing refrigeration equipment; and c) development of effective organizational and training arrangements for refrigeration servicing.

KEY PROJECT DOCUMENTS

14. Several background reports were written as part of the Country Program exercise. In addition, detailed sub-project descriptions and the technical reviews of these sub-projects are on file in ENVGC. The above documents are available from R. Batstone (fax 202-477-3285) and from ENVGC (fax 202-522-3256).

RATIONALE FOR GEF FINANCING

15. Russia represents a major producer and consumer of ODS material, but lacks the financial capacity to undertake comprehensive phase out in accordance with its obligations under the Montreal Protocol. In excess of US \$220 million is estimated to be required for phasing out ODS production and consumption in Russia. As a developed country signatory to the Montreal Protocol, it is not eligible for support from the Multilateral Fund, but is eligible for GEF funding. The project is consistent with GEF Guidelines for ODS phase out. These guidelines have been carefully developed to reflect Montreal Protocol policies and procedures, thus ensuring consistency of approach between GEF and Montreal Protocol projects. These guidelines endorse working with a range of enterprise specific sub-projects that offer substantive ODS phase out gains, but require investments for which the beneficiary enterprise would not be able to obtain sufficient financing from commercial sources. Within these sub-projects, grant funding is limited to eligible incremental investment costs, while the enterprises are responsible for financing the balance from their own resources or loans. Integration of the project's implementation with other Bank initiatives in the Russian Federation, particularly the National Pollution Abatement Fund (NPAF), will facilitate additional financing as well as draw on the project management capability within MEPNR provided under the Environmental Management Project (EMP), of which the NPAF is a major component.

SUSTAINABILITY AND PARTICIPATION

16. The overall project's sustainability is based on Russian Federation's policy commitment to ultimately meeting the country's obligations under the Montreal Protocol, and to provide a sound institutional and policy framework for its overall ODS phase out program. This institutional and policy framework will be supported by the EMP, along with the provision of modest additional technical assistance to MEPNR for strengthening its ODS phase out implementation operations. Sustainability of enterprise specific sub-projects has been assured through a thorough evaluation of proposed technologies and their cost effectiveness in relation to other alternatives. Participating enterprises will be further subject to a financial viability evaluation as a prerequisite to sub-project appraisal and final selection. Assessment of domestic and export market potential will be included in this evaluation, as well as enterprise financial management and marketing plans.

17. As part of the development Country Program, the Ministry of Environment undertook consultations with a broad spectrum of enterprises and interested parties: other ministries--including industry, economics, finance--NGOs, industry associations and others. Enterprises were given the opportunity to participate in the project as long as they could provide the necessary data for project staff to evaluate their financial viability, technological capabilities and eligibility for financial assistance. Consultations with enterprises and other interested parties continued through a series of country workshops held under the aegis of the Montreal Protocol on identification, preparation and implementation, as well as during actual project design.

LESSONS LEARNED AND TECHNICAL REVIEW

18. The proposed project is only the second GEF funded ODS phase out project to be initiated and, therefore, direct World Bank experience and associated lessons are limited. However, as one of the Multilateral Fund Implementing Agency, the World Bank is now implementing ODS phase out projects in fifteen countries. A number of lessons have been learned from experience with these projects including: a) the importance of a national phase out policy or Country Program as a basis assuring commitment and ownership by the client country; b) the value of strong enterprise/government linkages to achieve phase out objectives; c) the need for institutional strengthening and training for local implementation units and financial intermediaries; d) the utility of using umbrella grant agreements with the Multilateral Fund supporting a pipeline of sub-projects subject to individual appraisal and approval; and e) the importance of technical support in the preparation and review of sub-projects. Additional lessons have been learned from other World Bank projects in Russia, including the importance of: a) identifying a consistent committed counterpart team with sufficient authority to move the project forward; b) coordinating among key interested parties at the federal, regional and enterprise levels; c) early detailed attention to procurement and other implementation issues; and d) involving local consultants and institutes in the process.

19. The design, preparation and structure of the project incorporates these lessons in a number of ways. Project preparation work has involved a well defined country program and identification of a wide selection of sub-projects. The umbrella grant agreement model, covering a sub-project pipeline, is being utilized. Technical assistance has been provided to strengthen institutional capacity within the government, implementing agency and enterprises has been provided for. Project processing procedures will parallel those used for Multilateral Fund projects, including the utilization of the technical review capability established for these projects. STAP and OORG technical reviewers were used to review the initial pipeline of nineteen sub-projects identified during project preparation. As a result of this initial review, nine were rejected or identified as requiring substantial additional preparation. In addition, modifications to those approved were identified for incorporation during appraisal. Finally, established local implementation organizations developed through other Bank initiatives will be utilized.

PROJECT FINANCING AND BUDGET

20. Under the proposed GEF ODS Phase Out Umbrella Program, the total project cost is estimated to be US\$90.1 million, including US\$72.8 million in eligible incremental investment costs and US\$15.4 million in incremental operating costs, net of operating cost savings. US\$38.3 million

will be financed by enterprises funds, commercial banking sources and an ODS sub-loan window established within the NPAF. The proposed GEF grant of US\$60.0 million will cover up to 100% of eligible incremental investment and one time costs for sub-projects, consistent with Multilateral Fund incremental costs eligibility criteria, but will exclude incremental operating costs where they apply. The proposed GEF grant includes US\$1.6 million for a financial agent charge (3% of grant).

21. For the two aerosol sub-projects proposed for the first tranche, the net direct total cost, allowing for operating cost savings is estimated to be US\$8.34 million. US\$10.88 million in incremental investment costs will be incurred with incremental cost savings of US\$2.53 being realized. US\$3.34 million will be financed by enterprises funds, commercial banking sources and an ODS sub-loan window established within the NPAF. The proposed GEF grant of US\$8.6 million will cover up to 100% of eligible incremental investment, net of incremental operating cost savings, plus US\$0.23 million in financial agency fees (3% of grant) and US\$0.83 million in technical assistance. Agreements will be drafted at appraisal on the arrangements for co-financing sub-projects and the use of the NPAF for project appraisal and supervision.

22. Project preparation costs have totaled US\$1,250,000. This includes US\$950,000 provided by GEF Project Preparation Advances and US\$300,000 was donor funded by the United States Trade and Development Agency for development of halon and solvent phase out sub-projects.

INCREMENTAL COSTS

23. This project funds only a portion of incremental investment costs, net of any incremental operating cost savings, that may apply. No funding is applied to incremental operating costs with these being borne entirely by participating enterprises. The project's cost effectiveness is defined by the unit abatement costs associated with each sub-project. These compare favorably to unit abatement costs for Multilateral Fund projects in other countries. In particular, the three aerosol sub-projects proposed for the first tranche offer unit abatement costs in the ranging from US\$0.19 to US\$0.30/kg./year based on 1992 production. These unit abatement costs remain relatively low (US\$0.35 to US\$0.60/kg./year) when discounted for lower current consumption levels.

ISSUES, ACTIONS AND RISKS

24. Risks associated with the project are generally comparable to other industrial and institutional development activities in Russia. These include: a) the fragmented decision making process on environmental and investment matters at the federal and regional levels; b) the limited enforcement capability to support environmental initiatives; c) conflicting mandates and lack of cooperation between government agencies; d) lack of familiarity with Bank procedures, investment planning, and project management; e) difficulties in arranging financing of local costs for environmental investments; and f) the general economic climate in the country. Project specific risks are primarily associated with the sustained financial viability of participating enterprises, and the need to support ODS consumption phase out with domestic supply of substitute materials and equipment.

25. The project has been designed to mitigate these risks to the maximum degree possible. The general institutional risks associated with activities in Russia are mitigated by the overall institutional strengthening provided by the EMP, and the direct policy and regulatory assistance provided to MEPNR for ODS phase out. Administrative and project management risks are mitigated by focusing the Project's implementation responsibility within the NPAF management unit, along with provision of modest ODS technical and project supervision resources. Risks associated with financing local costs are addressed by provision of co-financing assistance through the NPAF management unit. Project specific risks associated with enterprise viability and technical capability are mitigated by establishing a pipeline of candidate sub-projects from which the most viable and cost effective have been selected, use of commercially proven technology, and the provision of financial planning assistance as part of project implementation. The supply of HAP is expected to be met by private sector suppliers as it would be a commercially viable venture. Initial HAP supply capacity exists in Russia and Ukraine with scope for expansion. This expansion may offer a potential investment opportunity for the NPAF.

26. The project is not expected to cause any significant negative social or environmental impacts. It was prepared with the Russian aerosol and refrigeration sector enterprises to address ODS phase out in a comprehensive, equitable and efficient manner with minimal disruption of the industry, its workers and ultimately to consumers. Potential environmental impacts do exist, including those associated with the flammability and air emissions characteristic of hydrocarbon based non-ODS substitutes, and site specific impacts associated with manufacturing plant developments or modifications. Each sub-project will be subject to environmental assessment in accordance with the guidelines and procedures established by the NPAF management unit to meet both Russian Government and World Bank environmental assessment requirements.

27. The following outstanding issues will be addressed during the course of appraisal and negotiations:

- (a) assurance from MEPNR related to development of regulatory and policy action necessary to support ODS phase out, inclusive of availability of implementation and enforcement resources;
- (b) confirmation of financial viability of participating enterprises, inclusive of ability to support sub-project investments with required financial resources not supplied by the Project;
- (c) agreement on the criteria to be used for final sub-project selection for sub-projects beyond this tranche; and
- (d) development of the umbrella, sub-project, co-financing and NPAF implementation agreements during appraisal for finalization at negotiations.

INSTITUTIONAL FRAMEWORK AND PROJECT IMPLEMENTATION

28. MEPNR will be responsible for overall project implementation and administration, utilizing the NPAF management unit and Center for Project Preparation and Implementation (CPPI) established for the EMP. Enterprises will be responsible for sub-project preparation and implementation.

29. The NPAF management unit will be responsible for sub-project appraisal, disbursement approvals, approval of sub-loans from the NPAF, co-financing arrangements, progress reports, and ensuring compliance with GEF procedures. The NPAF management unit will also be responsible for managing consultants contracted to carry out feasibility studies under the Project's technical assistance component. The ODS Task Force within MEPNR will be responsible for managing the technical assistance components related to regulatory and institutional activities proposed under the project. The CPPI will be provide procurement services, approved under each tranche.

30. Monitoring and evaluation of project implementation will be carried out by a unit in the Center for Project Preparation and Implementation (CPPI) that has been set up for the EMP. MEPNR is currently implementing a regulatory program which will provide the legal basis for enforcement of the revised phase out schedule as adopted by the Government. Funds for technical assistance to help develop an ODS production and consumption data reporting system are included in the project as the basis of the regulatory program.

31. The project will be covered by an umbrella financial agreement with MEPNR for GEF grant funds to be disbursed to the enterprise specific sub-projects finalized during appraisal, and key elements of technical assistance. Criteria for finalizing sub-project selection for sub-projects beyond this tranche will be agreed at appraisal but would include cost effectiveness, expected impact, and financial viability, consistent with procedures and practices of the Multilateral Fund of the Montreal Protocol. Individual sub-projects will be covered by agreements between MEPNR and the participating enterprises. Both the umbrella agreement and sub-project agreements are to be patterned after those utilized by the Multilateral Fund in other countries. Sub-projects will be approved in accordance with the World Bank's trustee obligations to GEF. Drafts of the umbrella agreement and sub-project agreements will be developed at appraisal and finalized at negotiations.

32. Key implementation activities, dates and milestones for the first tranche covered by this Proposal are:

GEF Council Approval	May/95
Completion of Enterprise Financial Evaluation	June/95
Completion of Detailed Sub-Project Scope	June//95
Sub-Project Appraisal	July/95
Negotiations	August/95
Date of Grant Effectiveness	October/95
Expected Date of Completion	October/97

SUMMARY OF SUBJECT DATA AND COSTS

SUB-PROJECT/ ENTERPRISE	SECTOR	SUB-PROJECT DESCRIPTION	ANNUAL ODS USE (MT/YR.)	UNIT ABATEMENT COST (US\$/kg/YR.)	INCREMENTAL CAPITAL COST (US\$)	INCREMENTAL OPERATING COST (SAVINGS) (US\$)	TOTAL SUB-PROJECT COST (US\$)	ENTERPRISE FINANCING REQUIREMENT (US\$)	REQUESTED GEF GRANT (US\$)
JSC Arnest	Aerosol	CFC to HAP Propellant Conversion	3,016MT	\$0.30/kg. CFC	8,050,000	(1,894,000)	6,156,000	2,485,000	5,565,000
Halogen	Aerosol	CFC to HAP Propellant Conversion	1,563MT	\$0.19/kg. CFC	2,826,000	(640,900)	2,185,100	850,000	1,976,000
Financial Intermediary Fee									226,000
Technical Assistance	Institutional	Country Program Implementation, Feasibility Studies, Investment Assistance					833,000		833,000
FIRST TRANCHE SUB-TOTAL									
					10,876,000	(2,534,900)	9,174,100	3,335,000	8,600,000
Novosibirsk (NDCP)	Aerosol	CFC to HAP Propellant Conversion	4,482MT	\$0.33/kg CFC	16,300,000	(4,020,000)	12,280,000	5,100,000	11,200,000
POLUS (Zlatoust)	Domestic Refrigeration	Replace CFC-12 with HFC-134a in Refrigerant and Foam, Replace CFC-113 with Non-ODS Solvent	CFC-11 - 290 MT CFC-12 - 76MT CFC-113 - 79MT	\$6.06/ kg. ODP	1,949,443	8,201,000	10,150,443	8,520,443	1,630,000
SEPO (Saratov EPO)	Domestic Refrigeration	Replace CFC-12 with HFC-134a in Refrigerant	CFC-12 - 100MT CFC-113 - 160MT	\$11.7/kg. ODP	1,960,000	2,349,000	4,309,000	2,579,000	1,730,000
NLMK ("Sintal")	Domestic Refrigeration	Replace CFC-11 Foaming Agent with Cyclopentane	CFC-11 - 570MT	\$5.16/kg. ODP	4,000,000	7,965,000	11,965,000	8,665,000	3,320,000
KRP Biryusa (Krasnoyarsk)	Domestic Refrigeration	Replace CFC-11 Foaming Agent with Cyclopentane	CFC-11 - 359MT	\$11.88/kg. ODP	13,000,000	1,897,000	14,997,000	3,997,000	11,000,000
Zevod (Zelenodolsk)	Domestic Refrigeration	Replace CFC-11 Foaming Agent with Cyclopentane	CFC-11 - 206MT	\$10.16/kg. ODP	8,565,800	698,640	9,264,440	1,964,440	7,300,000
Orsk	Domestic Refrigeration	Replace CFC-11 Foaming Agent with Cyclopentane	CFC-11 - 202MT	\$10.54/kg. ODP	7,872,720	848,415	8,721,135	2,519,135	6,204,000
Kazan	Commercial Refrigeration	Convert Large CFC-12 Compressor Designs to HFC-134a Refrigerant	CFC-12 - 200MT	\$4.80/kg. CFC	8,267,000	NIL	8,267,000	1,587,000	6,680,000
Financial Intermediary Fee							967,000		1,389,000
Technical Assistance	Institutional	Country Program Implementation, Feasibility Studies, Investment Assistance							987,000
SUB-TOTAL FOR LATER TRANCHEES					61,514,963	17,959,055	80,941,018	34,932,018	51,400,000
PROJECT TOTALS					72,790,963	15,424,155	90,115,118	38,267,018	60,000,000

Note: The total financing requirement (requested GEF grant + enterprise financing requirement) is the sum of the incremental capital costs, the incremental operating costs (without netting out operating savings), technical assistance costs and FI fees.

ANNEX 2

PROJECT COVER SHEET

COUNTRY: Russian Federation

SUB-PROJECT TITLE: JSC Arnest: Conversion of aerosol production to HAP

SECTOR: Aerosols

ODS USE IN SECTOR: 33,910 MT. CFC per yr. - 1992

PROJECT IMPACT: 3,016 MT CFC per yr. - 1992

PROJECT DURATION: 2 years

PROJECT ECONOMIC LIFE: 10 years

SUB-PROJECT COSTS:

Incremental Capital Cost	\$ 8,050,000
Incremental Operating Cost(Savings)	\$ (1,894,000)
Project Cost (Net of Savings)	\$ 6,156,000
GEF Funding Requested	\$ 5,565,000

UNIT ABATEMENT COST: 0.30 \$/kg. CFC

IMPLEMENTING ENTERPRISE: JSC Arnest

IMPLEMENTING AGENCY: The World Bank

COORDINATING NATIONAL BODY: Ministry of Environmental Protection and Natural Resources

PROJECT SUMMARY

The use of CFC's at JSC Arnest will be eliminated through the conversion to hydrocarbon aerosol propellant (HAP). Arnest produced 33 million aerosol cans in 1992, corresponding to 16% of Russian aerosol can production. CFC usage was 3,016 MT in 1992, corresponding to 9% of CFC use in the aerosol sector. The project will contain two components: 1) plant conversion including propellant delivery and storage, can filling, and finished product storage, and 2) personnel training to assure safe operation of facilities and storage of products. HAP was selected as the most cost effective alternative evaluated.

ANNEX 2

PROJECT COVER SHEET

COUNTRY: Russian Federation

SUB-PROJECT TITLE: Halogen: Conversion of aerosol production to HAP

SECTOR: Aerosols

ODS USE IN SECTOR: 33,910 MT CFC per yr. - 1992

PROJECT IMPACT: 1,563 MT CFC per yr. - 1991

PROJECT DURATION: 2 years

PROJECT ECONOMIC LIFE: 10 years

SUB-PROJECT COSTS:

Incremental Capital Cost	\$ 2,826,000
Incremental Operating Cost/Savings	\$ (640,900)
Project Cost (Net of Savings)	\$ 2,185,100
GEF Funding Requested	\$ 1,976,000

UNIT ABATEMENT COST: 0.19 \$/kg. CFC

IMPLEMENTING ENTERPRISE: Halogen Joint Stock Company

IMPLEMENTING AGENCY: The World Bank

COORDINATING NATIONAL BODY: Ministry of Environmental Protection and Natural Resources

PROJECT SUMMARY

The use of CFC's at Halogen will be eliminated through the conversion to hydrocarbon aerosol propellant (HAP). Halogen produced 16.5 million aerosol cans in 1991, corresponding to 5% of Russian aerosol can production. CFC usage was 1,565 MT in 1991, corresponding to 5% of CFC use in the aerosol sector. The project will contain two components: 1) plant conversion including propellant delivery and storage, can filling, and finished product storage, and 2) personnel training to assure safe operation of facilities and storage of products. HAP was selected as the most cost effective alternative evaluated.

ANNEX 3

SUMMARY AND RECOMMENDATIONS
OF THE TECHNICAL REVIEW

1. The technical review for the Russia 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 is an urgent priority for ODS phase out in Eastern Europe, and with the revisions suggested, it should be funded as soon as possible. The 2 aerosol subprojects alone will lead to a reduction in annual consumption of as much as 4500 tons of ODS. Their unit abatement costs range from \$0.18 to \$0.37/kg ODP, which is extraordinarily low compared to all other ODS phase out interventions in any sector in any country.
3. At the time of this technical review, the OORG had reviewed the subprojects at least once. Some have been approved by OORG, and as for the remainder, revisions are under discussion with the enterprises and the subprojects will be revised at appraisal, taking into consideration OORG recommendations. The issues raised by OORG related principally to ensuring safety standards for the use of hydrocarbon aerosol propellants after phasing out chlorofluorocarbon propellants and to justifying certain costs (aerosol sector), and to licensing/technology transfer arrangements and the details of the testing and equipment to be used (refrigeration sector).
4. In addition, the reviewer emphasized the need for institutional strengthening, technical assistance and other support necessary to carry out the project successfully.

RECOMMENDATIONS

5. The OORG comments have already been or are being incorporated into subproject design, with due emphasis on the necessary strengthening and other support to execute the activities. Given the cost-effectiveness and technical feasibility of these interventions, the project should move ahead as rapidly as possible.