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The World Bank

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Report No: 20901

IMPLEMENTATION COMPLETION REPORT

ON A GRANT

FROM THE GLOBAL ENVIRONMENT FACILITY

IN THE AMOUNT OF SDR 2.2 MILLION

(US$3.2 MILLION EQUIVALENT)

TO THE

RUSSIAN FEDERATION

FOR A

GREENHOUSE GAS REDUCTION PROJECT

(GEF Grant No 28311-RU)

SEPTEMBER 18, 2000

Energy Sector Unit
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective September 18, 2000)

Currency Unit	=	Ruble
1 Ruble	=	US$ 0.036
US$ 1	=	27.77 Rubles

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CPPR	Country Portfolio Performance Review
EEP	Russia Energy Efficiency Project
FEPS	Final Executive Project Summary
GEF	Global Environment Facility
GHG	Greenhouse Gas
GOR	Government of Russia
ICB	International Competitive Bidding
ICR	Implementation Completion Report
JSC	Joint Stock Company
MoFE	Ministry of Fuel and Energy of the Russian Federation
NCB	National Competitive Bidding
OECD	Organization for Economic Cooperation and Development
PCD	Project Concept Document
PIU	Project Implementation Unit
PTD	Natural gas production, transmission and distribution
PTL	Program Team Leader
RF	Russian Federation
TA	Technical Assistance
TM	Task Manager
TTL	Task Team Leader
UN	United Nations

Vice President:	Johannes Linn
Country Director:	Michael Carter
Sector Manager:	David Craig
Task Team Leader:	Bjorn Hamso

Russian Federation
Greenhouse Gas Reduction Project
Implementation Completion Report

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Project ID: P008799 | *Project Name:* Greenhouse Gas Reduction Project
Team Leader: Bjorn Hamso | *TL Unit:* ECSEG
ICR Type: Core ICR | *Report Date:* September 18, 2000

1. Project Data

Name:	Greenhouse Gas Reduction Project	*L/C Number:* 28311
Country/Department:	Russian Federation	*Region:* Europe and Central Asia
Sector/subsector:	Oil & Gas, Energy Efficiency	

KEY DATES

	Original	*Revised/Actual*
PCD: 05/28/1993 (FEPS)	*Effective:* 12/12/1996	12/12/1996
Appraisal: 03/13/1994	*MTR:*	
Approval: 12/19/1995	*Closing:* 06/30/1999	06/30/1999

Recipient/Implementing Agency: Russian Federation, Ministry of Fuel and Energy / JSC Gazrekom, JSC Investenergoeffect

Other Partners: Gazprom, Volgogradgorgaz

STAFF	Current	At appraisal
Vice President:	Johannes Linn	Wilfried Thalwitz
Country Director:	Michael Carter	Russell J.Cheetham (EC3DR)
Sector Manager:	David Craig	Jonathan Brown (EC3IV)
Team Leader:	Bjorn Hamso*	Gary Stuggins
ICR Primary Author:	Serguei Milenin	

* since November 1999

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome:	U
Sustainability:	L (for the gas utilization sub-sector)
Institutional Development Impact:	M
Bank Performance:	S
Recipient Performance:	U
QAG (if available):	NA
Quality at Entry:	U
Project at Risk at Any Time:	Yes

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective: The Grant was established to identify and prioritize investment projects and changes in procedures in the natural gas supply and utilization system which would result in a reduction of the greenhouse gas (GHG) emissions and would be part of a cost-effective GHG mitigation program for the Russian Federation. The principal objectives of the project were (i) to assess the release of methane to the atmosphere and propose methods for its reduction; and (ii) to identify and appraise projects to decrease CO_2 emissions by increasing the efficiency of gas use.

The Russian Federation is one of the largest sources of GHG emissions in the world. Russia is a Party to the UN Framework Convention on Climate Change. It has also signed, but has not yet ratified the Kyoto Protocol, where a commitment is to be made by the Government to stabilize Russia's emissions in 2008-2012 at levels of 1990. In 1990 GHG emissions in Russia amounted to 3,039 mln tonnes of CO_2 equivalent. Emissions of carbon dioxide and methane accounted for 78 and 19 per cent of the total emissions, respectively, with other greenhouse gases accounting for 3% of emissions. Carbon dioxide is released to the atmosphere mostly as a result of the utilization of organic fuel. Although all types of fuel contribute to these emissions, the share coming from natural gas was the most significant – it exceeded 33% (845 mln tonnes) in 1990, and 45% (727.5 mln tonnes) in 1994. Russia is among the most inefficient users of energy; its energy intensity level is 3-12 times higher than that of the OECD countries. Although carbon dioxide emissions prevail overall, methane releases to the atmosphere have a particularly strong impact on global warming. Russia is the largest producer of gas in the world, delivering gas from Western Siberia to markets in Western Europe 5,000 km away, and is generally considered to be the largest source of methane releases in the gas industry.

This project was planned as an initial phase of support from the GEF to the Russian Federation in its efforts to reduce GHG emissions in the natural gas supply and utilization system. The project was closely linked to the Russia Energy Efficiency Project (EEP) designed to provide investments and TA support to increase the efficiency of energy use. The World Bank loan to finance the EEP was approved by the Board of Directors on May 2, 1995 (Report No. P-6352-RU). A portion of the Grant was to be used to identify and appraise investment projects which would increase the efficiency of gas use and would be financed under the EEP. Also, in support of the originally planned gas distribution component of the EEP, another portion of the Grant was expected to finance leak detection surveys in the city of Volgograd, so that methods for leak reduction could be proposed and a long term leak detection program could be developed. The GHG Project was also expected to complement the Environmental Management Project (Report No. 12838 dated October 19, 1994), which included a component to assess the air quality in the city of Volgograd and recommend methods for improvement.

In that context the project objectives were clear, realistic, and important for the Russian Federation. They were in line with CAS objectives for the environmental and energy sectors in Russia, particularly with respect to providing support to the mitigation of GHG

emissions and addressing issues of energy efficiency (Report No 14473-RU of May 15, 1995; Report No 16549-RU of May 6, 1997). The most recent CAS (Report No 19897-RU of December 1, 1999) also identified GHG emissions reduction, through improved energy efficiency, as a potential area for further Bank intervention.

The project did not aim at directly influencing sector policies. Its initial objective was more modest, aiming to help Russian authorities define the problem and to begin building institutional capacity to tackle the issue. From the outset it was recognized that such an effort would be difficult due to the large number of organizations and cities involved, and the geographic dispersion of field investigation sites. Given the Recipient's very limited previous experience in administering similar operations, the project was demanding in terms of building up implementation capacity.

Since the project was initiated, there were no changes in the Recipient's circumstances and development priorities, which would require revision of the project objectives.

*3.2 **Revised Objective:*** The original project objectives were not revised.

*3.3 **Original Components:*** The project program (total Grant budget - US$3.2 mln) consisted of two major parts involving field investigations and a part to summarize findings of the first two:

1. Assessment of the release of methane, and the development of mitigation programs for natural gas production, transmission, and distribution sub-sectors (PTD components). Russian gas production and transmission monopoly Gazprom was the main beneficiary and the local co-financier under the PTD program. This program was expected to address the following issues:

(i) Emissions from the producing/processing system (Grant budget – US$695,700). This task was designed to identify and evaluate potential sources of GHG emissions and develop reliable estimates of current and future levels of emissions from gas production and processing. Facilities, processing equipment, and changes in operational procedures which could reduce these emissions were to be identified.

(ii) Emissions from the transmission system (Grant budget – US$ 1,112,800). The purpose of this task was to estimate emissions from the transmission system and to identify the potential for reducing them. The scope was to include high pressure pipelines, compressor stations, and gas storage reservoirs. Based on the results of this study, investment projects to rehabilitate or replace transmission pipelines and fittings, compressors or other equipment were to be identified.

(iii) Emissions from the distribution network (Grant budget - US$567,800). This task was expected to identify and assess the potential for reducing emissions from the low pressure gas distribution system in the city of Volgograd. The distribution system audit was to start at the city gate and include the distribution mains, district heating stations, service lines, meters and regulating equipment installed at the consumer site. The Volgograd gas distribution company (Volgogradgorgaz) was the beneficiary of this activity.

2. Assessment of GHG emissions from gas utilization and development of mitigation programs for the utilization sub sector (Utilization component). The beneficiary for this

work (Grant budget – US$803,700) was the Ministry of Fuel and Energy of the Russian Federation. This part of the program was to focus on identifying larger point sources within the power generating, industrial, municipal, residential and commercial sectors which use gas inefficiently. The assessment was to define a series of possible investment projects which could improve the efficiency at the end-use level and thereby reduce carbon dioxide emissions. This activity was also to support preparation of financially viable investment projects, sound in terms of CO_2 emissions reduction to be funded under the EEP.

As a final stage, investment programs developed in each of the previous components were to be reviewed, evaluated in terms of their potential for reducing GHG emissions, and prioritized to prepare a final portfolio of investment proposals for the PTD and Utilization sub-sectors. No specific Grant budget, except for the US$20,000 allocation for the overall project management, was envisaged to support this activity.

Assessment of the design:
Project components were well designed technically and were reasonably related to the project objectives.

The Ministry of Fuel and Energy (MoFE) had the overall responsibility for implementation, both in terms of procedures and deliverables. At the level of individual tasks, the implementation of the program for the production and transmission sub-sectors called for support from Gazprom to administer and co-finance works in the field. The program for the distribution sub-sector required coordination with Rosgazifikacia (Association for the Gas Distribution Companies of Russia). The program for the utilization sub-sector to support the EEP was conceptually a key part of that operation under direct supervision of MoFE. The implementation and coordination of activities were expected to be assisted by a Coordinating Committee, consisting of experts from MoFE, Ministry of Environment and Natural Resources, Gazprom, and Rosgazifikacia. A project implementation unit (PIU) was to be established and funded by Gazprom to support the implementation of all tasks and deliver the final recommendations and investment proposals to MoFE.

Although, the Coordinating Committee was established in January 1997, it was never really functional. MoFE failed to put in place the needed implementation arrangements for the project as a whole and PTD components in particular. A PIU for the project was established by Gazprom as a separate legal entity (JSC Gazrekom) in October 1996, but it was not able to operate effectively due to inadequate staffing and insufficient operational resources. Implementation of PTD components was put on hold in August 1998 at the request of the Bank, when the project PIU repeatedly failed to manage the initiated activities.

Since then, attempts were made by MoFE to establish, with Gazprom, a functioning PIU, but without success. Although MoFE finally reached an agreement with Gazprom on co-financing of procurement and works in the field, the needed support from Gazprom to the PIU in terms of staffing, administration, and logistics was not provided. As a result, only the Utilization component, which was operationally independent from the PTD program

and implemented under direct supervision of MoFE was completed and has delivered against the corresponding project objective.

3.4 Revised Components: In June 1999 MoFE requested the Bank to extend the closing date of the Grant until December 31, 2000 and to restructure the project. MoFE proposed to revise the scope of work and the implementation scheme so that the project would address issues of flaring of gas that is produced in association with the oil production. It also requested to expand the program of the Utilization Component to include the development of an environmental monitoring system for the energy sector.

Given the poor implementation capacity in place, the program on gas flaring was unlikely to be successfully completed by the new proposed closing date. Therefore, the Bank in principle agreed only to expand the scope of work under the Utilization Component and agreed to extend the Grant for that component only, pending the receipt of a more detailed program outline. However, when an audit found that ineligible expenditures of $66,000 were funded from the Special Account, the Bank decided in February 2000 against the extension. The amount was ultimately refunded to the Bank from the Ministry of Finance.

3.5 Quality at Entry: The project was consistent with objectives of the CAS and governmental development priorities and complied with the applicable safeguard policies of the Bank. The technical design corresponded to the project objectives. Assumptions about the demand for the project output and the international commodity prices were reasonable. However, the implementation risks associated with the capacity of the Recipient to establish effective project implementation arrangements, including administrative and financial management capacity, were underestimated. Although the implementation scheme for the project was reviewed at appraisal, and the commitment of MoFE and Gazprom to establish coordination and single point responsibility for final deliverables and budget control was examined, no formal agreement between MoFE and Gazprom was put in place at this stage to secure coverage of expenses related to the PIU, works in the field, and the co-financing of procurement. In the project documentation, including the legal document, the implementation and co-financing arrangements were not laid out in sufficient detail and, eventually, Gazprom did not follow the agreement reached during appraisal.

Overall, for the purpose of ICR, the project is rated unsatisfactory for quality at entry. The project was not subject to a formal quality-at-entry review by QAG.

4. Achievement of Objective and Outputs

4.1 Outcome/Achievement of Objective: The project objective with respect to identification and appraisal of investment programs to decrease emissions of carbon dioxide from the gas utilization sub-sector was achieved in full. The outcome of this part of the project was satisfactory and is fully relevant to Russia's current policy objectives for the sector and is consistent with the objectives of the CAS for Russia.
However, the larger program related to methane emissions (PTD components) was not implemented. For that reason, the overall outcome of the project is rated unsatisfactory.

4.2 Output by Components: The physical outputs proposed for the project were delivered only under the Utilization Component. In accordance with the original program, the following activities were undertaken:

(a) Since the project was to provide support to the development of investment programs sound in terms of GHG emissions reduction to be funded under the EEP, this particular task was given the highest priority by MoFE. Nineteen city- and region-specific investment programs, aimed at increasing the efficiency of energy use and the reduction of GHG emissions from the heating systems were identified and appraised. The proposed total foreign investment cost of these programs amounted to US$ 115.6 mln and the total benefits in GHG emissions reduction were estimated at 1.28 mln tonne of CO_2 annually.

- Programs developed for the cities of Ryazan, Semenov, Archangelsk, Kaliningrad, and the Saratov region, for the overall amount of US$ 26.79 mln in foreign investment costs, are currently being funded under the EEP. The potential of these programs to reduce GHG emissions is estimated at 0.29 mln tonne of CO_2 per year.
- Programs proposed for the cities of Tobolsk, Samara, and the Rostov region for the overall amount of US$ 19.24 mln, which would result in GHG emissions reduction of 0.19 mln tonne of CO_2 annually, were reviewed by the Bank and accepted for funding under the EEP. However, at later stages, decisions were taken by the local authorities to withdraw from the EEP due to concerns about their inability to finance the loan and provide counterpart funds.
- Energy efficiency programs developed for the cities of Gorodets, Omsk, Cherepovetz, and the Kaluga region, with the total foreign investment cost of US$ 25.7 mln and benefits in CO_2 emissions reduction estimated at 0.43 mln tonne per year, were also reviewed by the Bank in the context of the EEP.
- Programs for the cities of Vladimir, Moscow, St.Petersburg, Appatity, Ufa, Onega, and Petropavlovsk-Kamchatsky, with a proposed foreign investment cost of US$ 43.84 mln and benefits in GHG emissions reduction of 0.37 mln tonne of CO_2 annually were also prepared. They were, to varying extent, discussed with the Bank and are now available for further review by investors.
- Field investigations and measurements were undertaken in Ryazan, Semenov, Archangelsk and Kaliningrad.

(b) The Grant funded two seminars on methods and equipment used to determine GHG emissions from industrial and other thermal processes in the cities of Rostov-on-Don and Kaliningrad. In addition to these seminars, the implementing agency for the Utilization Component, JSC Investenergoeffect, presented the experience gained during the preparation and implementation of the energy efficiency programs under the EEP, at five major conferences held in Russia and funded from other sources.

(c) Customer surveys were completed for entities from the residential and commercial sector (one heating company), industrial sector (24 enterprises), power generating sector (7 thermal power plants), and for combined heat and power and district heating systems (2 heat and power plants). Available statistical data on the GHG emissions in each consuming sector were analyzed. Sector-specific energy efficiency measures and

investments to reduce GHG emissions at the end-use level were identified. The results of these activities were reported to the Government.

(d) Final recommendations based on the outcome of the field investigations of the gas utilization facilities were developed and reported to the government.

4.3 Net Present Value/Economic Rate of Return: N/A

4.4 Financial Rate of Return: N/A

4.5 Institutional Development Impact: Although no formal deliverables with respect to institutional improvements were originally proposed for the project, the Utilization Component of the project had a substantial institutional impact, in particular:

- The project provided important technical and methodological support to regional and local authorities in developing commercially viable and environmentally sound investment programs for the heating sector. Based on assessments made as part of the project, local heating companies were active in building up their internal decisional, analytical and technical capacity, as well as in acquiring at their own cost, monitoring, metering, and control equipment which would lead to significant reductions in GHG emissions from their facilities.
- Dissemination of experience with preparing environmentally sound investment programs and presentation of completed studies brought the issue of GHG emissions reduction to the attention of a broad audience in the utilization sector, including decision-makers of heating enterprises and regional authorities.
- In the public sector, the project, through its completed analytical part, contributed to a legislative and regulatory capacity-building effort of the government to support the development of GHG mitigation strategies for Russia. Support was provided to the design of a GHG monitoring system for the energy sector.

However, the PTD program related to the assessment of methane emissions was not completed and recommendations with respect to changes in operational practices and procedures for the gas supply chain were not made. For that reason, the overall institutional development impact is viewed as modest compared to what could have been achieved.

5. Major Factors Affecting Implementation and Outcome

5.1 Factors Outside the Control of the Government or Implementing Agency: None.

5.2 Factors Generally Subject to Government Control: Overall project implementation, and of the PTD program in particular, required a high degree of coordination between MoFE, the other federal agencies concerned, and Gazprom. This coordination and the single-point responsibility for the project deliverables were not established. This resulted in implementation delays with PTD components and the eventual closure of the PTD program.

Governmental support to the implementation of the Utilization Component of the project was provided in full.

The financial crisis of August 1998 and the governmental response to it did not interfere with the project implementation.

5.3 Factors Generally Subject to the Implementing Agency Control: Although MoFE had the overall responsibility for the implementation, it was agreed at appraisal that Gazprom would provide support to the implementation of the PTD components for which it was the final beneficiary. Funds to be invested by Gasprom in support of the project activities, including work in the field and the establishing, staffing, and financing of the project implementation unit, were an essential part of the local costs of the project. The PIU financed by Gazprom was expected to administer the Special Account for the project, manage implementation of the PTD components, review the deliverables of the Utilization Component, and report to MoFE the results of the overall program. However, in 1997-1998 Gazprom did not put in place a workable implementation arrangement for the PTD components. Although a PIU/implementing agency for the project (JSC Gazrekom) was established by Gazprom, and an implementation agreement with MoFE assigning this PIU to administer project activities and the Special Account was signed, Gazrekom failed to become fully operational due to inadequate staffing and unavailability of counterpart funds to cover operating costs.

In parallel, a separate implementing agency, JSC Investenergoeffect, was established by MoFE to manage the Utilization Component of the project. This entity was also assigned by the government as a PIU for the EEP. Investenergoeffect operated effectively, and under direct supervision of MoFE. Funding for this purpose was provided by the Grant. Investenergoeffect was fully staffed, and the required procurement and financial management capacity was in place. The performance of the Investenergoeffect under the project was satisfactory. However, inadequate administration of the Special Account for the project on the part of Gazrekom also eventually resulted in disbursement delays under the Utilization Component as well.

5.4 Costs and Financing: The total project costs were estimated at the equivalent of US$3.7 mln. The foreign component to be covered by the GEF Grant amounted to the equivalent of US$ 3.2 mln. The local component, consisting mainly of services for conducting field investigations, transportation and other support services, including costs of the PIU, was estimated at US$0.5 mln. Grant allocations to specific project components were: US$2,376,300 for the PTD program, US$ 803,700 for the Utilization Component, and US$20,000 to procure equipment for the PIU.

As outlined in Sections 3.3 and 5.3, the project experienced significant operational problems, and eventually, only US$531,388.93, i.e. 17% of the Grant funds, was disbursed. The implementation of the PTD program was put on hold in August 1998 and never resumed. Disbursements under the Utilization Component to the Investenergoeffect were also delayed starting April 1999, as it was discovered that the operating costs of that entity were not part of the legal document, which provided funding only for TA and procurement of goods. In March 2000 it was agreed that costs of

Investenergoeffect from April 1999 would be covered retroactively from the loan for the EEP. Estimated project costs and actual disbursements are presented in *Annex 1.*

6. Sustainability

6.1 Rationale for Sustainability Rating: Overall, the project is likely to be sustainable with respect to its objectives related to the reduction of GHG emissions from gas utilization. Regional investment programs, prepared under the Utilization Component of the project and funded under the EEP, are ongoing. Since project's initiation, regional counterparts have maintained a strong commitment to the project objectives (recent actions of the Recipient at the policy level in support of energy efficiency are summarized in Section 10). Given a favorable sector policy environment in the country and the commitment on the part of the government, efforts are expected to be made by the Recipient to maintain the development capacity established under the Utilization Component of the project. The proposed Russia Municipal Heating Project, to be funded by the Bank, is under preparation. It is expected to address issues of energy efficiency in the context of overall reform of heating and communal services in Russia, and will allow GOR, participating municipalities, and heating companies to deploy investment programs with significant benefits in GHG emissions reduction. Therefore, activities initiated under the project are likely to be sustained and expanded.

6.2 Transition Arrangements to Regular Operation: The output of energy efficiency programs developed under the project and funded under the EEP is expected to be monitored on a regular basis. The initiated environmental audits are also planned to be continued in the cities participating in the EEP. Additional equipment for that purpose is being procured by participating heating companies as part of their investment programs. Mobile laboratory procured under the project is planned to be used by MoFE to undertake follow-up measurements, and a schedule for this activity is currently being prepared.

7. Bank and Recipient Performance

Bank

7.1 Lending: The Bank provided comprehensive support to GOR and MoFE in identifying key project activities. It has also ensured a high degree of participation on the part of GOR and MoFE in the appraisal process. The critical objectives of the project were fully consistent with the government development priorities and the Bank's assistance strategy for the country. The project's technical design was simple and effective. Components of the project were clearly defined and the respective technical requirements were laid out in appropriate detail. However, as outlined in Section 3.5, the Bank overestimated the Recipient's implementation capacity and the capacity of MoFE to effectively cooperate with Gazprom at the project level. No formal implementation agreement was put in place before the Board presentation to legally confirm the commitment on the part of Gazprom to provide operational resources for the project PIU, fund works in the field and co-finance the procurement. Commitments made by the

Recipient to administer implementation and to provide co-financing were not reflected in the legal document. The Bank's performance in lending is, therefore, rated unsatisfactory.

*7.2 **Supervision:*** The project implementation progress was reviewed and reported, and the progress performance ratings appropriately reflected the performance during the particular rating periods. Implementation problems were identified on a timely manner and adequately addressed. Advice to the Recipient and the follow-up on agreed actions were adequate. The project performance was also reviewed as part of the CPPRs beginning in 1998. The Bank maintained an Unsatisfactory implementation performance rating for the project, and the remedial actions were recommended to the Recipient to resolve implementation issues. Extensive support was provided to MoFE in establishing the required implementation capacity for the PTD components of the project, and later, in the attempt to restructure the project. The quality and quantity of Bank staff and consultants, their time in the field, the timing of supervision missions, and the support of the Bank management to staff at critical points were adequate. The Bank performance in supervision was satisfactory.

*7.3 **Overall Performance:*** The Bank provided as much support as GOR and MoFE were willing to accept. During supervision, the Bank's response to implementation risks was adequate. The project complied with the applicable Bank's policies and procedures. Overall, the Bank performance was satisfactory.

Recipient

*7.4 **Preparation:*** At the preparation stage, GOR and MoFE demonstrated a strong commitment to the project objectives. However, the government failed to secure the ownership of Gazprom with respect to the PTD program. No formal agreement was made between Gazprom and the government to specify Gazprom's obligations with respect to the PTD program and the overall administration of activities, which eventually resulted in the failure of the PTD components of the project. Repeated changes in Government and Ministry officials may have contributed to reduced commitment and resolve to solve the issues. Gazprom was apparently not particularly interested in this small grant as its focus was on much larger investments and on securing export markets for its gas. MoFE may have been too weak to influence more powerful Gazprom.

For that reason, the performance of the Recipient during project preparation is rated unsatisfactory.

*7.5 **Government Implementation Performance:*** During implementation, commitment to the project objectives on the part of the government at the policy level was reiterated by MoFE officials. However, at the project level, appointment of key managers was delayed, and counterpart funds to maintain an operational PIU were not provided in full. MoFE failed to maintain effective cooperation with Gazprom – the main beneficiary of the PTD components of the project – and the implementation arrangements agreed at appraisal were not put in place. This resulted in procurement and disbursement delays and the eventual closure of the PTD program. Although the project performance was regularly reviewed in the course of CPPRs by the representatives of the government, no

effective mitigation plan was implemented to address increasingly high project implementation risks. Through the end of 1998 and the year 1999, significant efforts were made by MoFE to restructure the project and seek agreement with Gazprom on strengthening the PIU Gazrekom and providing co-financing for the PTD program. However, these arrangements were not put in place by an agreed deadline and were unlikely to be finalized within a reasonable timeframe. Overall, the implementation performance of the government for the project is rated unsatisfactory.

7.6 Implementing Agency: As outlined in Section 5.3, two entities were formally authorized by MoFE to administer project activities: JSC Gazrekom and JSC Investenergoeffect. Both were legally and operationally independent from MoFE and Gazprom, and should be considered implementing agencies for ICR purposes.

JSC Gazrekom was established by Gazprom and assigned to manage on its behalf the PTD components, provide overall support to the implementation of the Grant program, and administer the project Special Account. However, funding for that PIU, required professional staff, and office space were not made available by Gazprom. Although in early 1998 the PTD program was initiated and procurement started, the PIU was not able to perform satisfactorily. Thus, implementation of the PTD components was eventually put on hold and did not resume.

JSC Investenergoeffect was established by MoFE to manage the Utilization Component of the project and administer implementation of the investment program under the EEP. Investenergoeffect operated effectively and delivered results in accordance with the original implementation plan. The performance of the JSC Investenergoeffect as implementation unit for the Utilization Component was satisfactory.

Although an important part of the project objective was achieved through the Utilization Component, and the required support to the EEP was provided in full, the overall administration of the GHG project, including PTD components and the administration of the project Special Account, was inadequate. For that reason the overall implementing agency performance is rated unsatisfactory.

7.7 Overall Recipient Performance: The Recipient failed to establish the required implementation arrangements, including administrative and financial management capacity agreed at appraisal, to fully achieve project objectives. The PTD program of the project, representing 3/4 of the original project costs, was not implemented. The Recipient's performance is rated unsatisfactory.

8. Lessons Learned

Although important results were delivered under the Utilization Component of the project, the original project objectives were not achieved in full. Examining the reasons why the implementation was successful with respect to the Utilization program and not effective for the PTD program leads to the following lessons learned:

1. *The project has demonstrated that for the gas utilization sector, there is a commitment on the part of the government, especially, at sub-national levels, to support implementation of policies and operational practices that would lead to the reduction of GHG emissions.* Energy efficiency measures are viewed as an important element of investment programs by local heating enterprises, which are willing to invest their own resources for advanced technologies and equipment.

2. The ability of the government to implement the PTD program was constrained by lack of coordination at the senior level between MoFE and Gazprom and by administrative inefficiency at the project level. Single-point responsibility for project deliverables and budget control should be given priority consideration at the preparation stage. This is especially important for projects where activities are split between multiple implementing agencies, and where the scope of work goes beyond the areas under direct control of the governmental counterpart. *It is recommended that the respective implementation agreements be discussed in detail and formally confirmed during appraisal.*

3. Timely availability of counterpart funding is key for ensuring the quality of project deliverables. Although at appraisal commitment was made to provide local co-financing to the Grant program, including co-financing on the part of Gazprom, the commitment of Gazprom to support the PTD program was not adequately secured by the Recipient. *Sufficient and timely co-financing of project activities should be assigned the highest priority at the preparation stage since it directly affects procurement and administrative efficiency during implementation. Secured availability of counterpart funds should have been also considered as up-front condition of effectiveness.*

4. In retrospect, it may be that the grant was too small to receive sufficient attention from Gazprom. At the same time, the government had relatively little leverage to influence the implementation of the PTD program. Unfortunately, the Ministry of Finance, which is the Bank's main official counterpart in the government, was not legally part of the operation. The Coordinating Committee, which should have been operative within MoFE and was supposed to include representative of the Ministry of Finance, was not functional. Moreover, the Coordinating Committee did not include other important governmental stakeholders, whose participation could have significantly strengthened the position of MoFE (like the Interministerial Commission on GHG Emissions Reduction and the State Committee on Hydrometeorology, which are primarily responsible for GHG emissions reduction in Russia, and the Ministry of Economy). *It is recommended that for the future such Grant Agreements be signed with the Ministry of Finance and that arrangements for the interministerial coordination be laid out in the project and legal documents in more detail. Establishing such arrangements should have been made effectiveness condition to insure full commitment and formal participation of all key parties concerned.*

5. Failure of PIU Gazrekom to provide effective administration of the project special account and its inability to exercise adequate financial management control have significantly increased implementation risks for a larger Bank operation, since the Utilization Component of the project was essential for administering the US$60 mln

component of the EEP. *It is recommended that no cross-financing be established between different projects for critical implementation activities.*

9. Partner Comments

Draft ICR was reviewed by the Ministry of Energy of the Russian Federation. The Ministry agrees in principle with findings of the Bank's report. English translation of the project completion report prepared by the Ministry is attached to this ICR as *Annex 5*.

10. Additional Information

Recipient's actions at the policy level to address project objectives

The development of a national institutional and legal framework to increase the efficiency of energy use in the country has been considered a priority by GOR in recent years. A set of laws, procedural requirements and technical standards were put in place at the federal level, including 2 federal laws, 8 resolutions of the government, and 2 decrees of the president. In particular, these are the federal law "On Energy Conservation" (1996); guidelines on the energy audit of enterprises (1999); government resolutions "On the urgent measures to promote energy conservation" (No 1087 of 10/02/95), "On increasing the efficiency of the use of energy resources and water by enterprises, institutions, and organizations funded from the federal budget" (No 832 of 07/08/97), and "On additional measures to provide incentives for energy conservation" (No 588 of 06/15/98). Twenty new regulatory acts are expected to be put in place within the next two years in support of the federal law "On Energy Conservation". In January 1998, GOR also adopted the Federal Program "Energy Conservation in Russia". Energy efficiency requirements are currently part of 314 federal standards (GOST) and 15 more federal standards are expected to be adopted soon. Existing construction standards (SNIP) are being revised to increase up to 1.5 – 2 times the requirements with respect to energy saving ability of residential and industrial buildings. They will also require more extensive use of heat metering and control equipment.

At the sub-national level, an institutional and legal framework to promote energy efficiency is also being put in place. Nine regions of the Russian Federation have adopted regional laws on energy efficiency. In 20 regions such laws are under preparation, and in 42 regions special resolutions on energy efficiency have been issued by the regional governments. 20 sub-national energy efficiency programs are currently operative, and 11 of them are supported by the regional budgets. Efforts are being made to establish entities to support and monitor energy efficiency activities and to ensure that energy service companies have access to advanced technologies and equipment as well as the best operational practices. More than 30 regions have established energy efficiency centers, agencies and associations for that purpose, which operate either on a commercial or non-profit basis. Ten regional foundations to support energy efficiency activities are currently operative.

Annex 1. Project Costs and Financing

Project Cost by Component
(US$ thousand equivalent)

Project Cost By Component	Appraisal Estimate (thousand US$)	Actual/Latest Estimate (thousand US$)	Percentage of Appraisal
Production	825.7		
Transmission	1,261.8		
Distribution	657.8		
Sub-total PTD	2,745.3	125.0	5
Utilization	934.7	434.9	47
Project management	20.0	0	0
Total Baseline Cost	3,700.0	559.9	15
Total Project Costs	3,700.0		
Total Financing Required	3,700.0	559.9	15

Project Costs by Procurement Arrangements: Appraisal Estimate
(US$ thousand equivalent)

Expenditure Category	**Procurement Method***			N.B.F.***	Total Cost
	ICB	NCB	**Other****		
1. Goods	(1,055.0)	—	(1,478.0)	130.0	2,663.0 (2,533.0)
2. Services	—	—	(667.0)	370.0	1,037.0 (667.00)
Total	(1,055.0)	—	(2,145.0)	500.0	3,700.0 (3,200.0)

Project Costs by Procurement Arrangements: Actual/Latest Estimate
(US$ thousand equivalent)

Expenditure Category	**Procurement Method***			N.B.F.***	Total Cost
	ICB	NCB	Other**		
1. Goods	(0.0)	—	(138.7)	28.2	166.9 (138.7)
2. Services	—	—	(392.7)	0.3	393.0 (392.7)
Total	0.0 (0.0)	—	(531.4)	28.5	559.9 (531.4)

For figures on previous page:

* Figures in parenthesis are the amounts financed by the GEF Grant.

** Includes consulting services and goods to be procured through international shopping.

*** Not Bank Financed

Project Financing by Component

(US$ thousand equivalent)

Component	Appraisal Estimate		Actual/Latest Estimate		Percentage of Appraisal	
	Bank	Govt.*	Bank	Govt.*	Bank	Govt.*
Production	695.7	130.0				
Transmission	1,112.8	149.0				
Distribution	567.8	90.0				
Sub-total	2,376.3	369.0	125.0	0.0	5	0
PTD Utilization	803.7	131.0	406.4	28.5	51	22
Project Management	20.0	___	0.0	___	0	___
Total	3,200.0	500.0	531.4**	28.5	17**	6

* Includes services for conducting field investigations and other implementation support services to be provided by Gazprom and Volgogradgorgaz, as well as taxes and customs duties.

** This amount does not include US$69,849.20 identified as ineligible expenditures and refunded by the Ministry of Finance of the Recipient.

Annex 2. Bank Inputs

(a) Missions:

Stage of Project Cycle Month/Year	No. of Persons and Specialty		Performance	Rating
	Count	Specialty	Implementation Progress	Development Objective
Identification/ Preparation				
03/1993	1	Senior Energy Economist (TM)		
	1	Consultant		
06/1993	1	Senior Energy Economist (TM)		
	1	Consultant		
Appraisal / Negotiations				
03/1994	1	Senior Energy Economist (TM)		
	1	Energy Economist		
	1	Heating Specialist		
07/1995	1	Senior Energy Economist (TM)		
	1	Energy Economist		
	1	Heating Specialist		
	1	Lawyer		
Supervision				
06/1996	1	Senior Energy Economist (TM)	U	S
	1	Energy Economist		
	1	Heating Specialist		
	1	Environmental Specialist		
	1	Operations Officer**		
	1	Disbursement Specialist**		
	1	Procurement Specialist**		
10/1996	1	Environmental Specialist	U	S
	1	Operations Officer**		
11/1996*	1	Senior Energy Economist (TM)	U	S
	1	Energy Economist		
	1	Heating Specialist		
	1	Financial Analyst		
	1	Operations Officer**		
	1	Disbursement Specialist**		
02/1997	1	Environmental Specialist	U	S
	1	Operations Officer**		

02/1997*	1 1 1	Senior Energy Economist (TM) Energy Economist Operations Officer**	U	S
06/1997	1 1 1	Senior Energy Economist (TM) Financial Analyst Operations Officer**	U	S
10/1997	1 1 1 1 1	Senior Oil & Gas Specialist (PTL) Gas Specialist (TTL) Senior Energy Economist Energy Economist Operations Officer**	U	S
01/1998*	1 1 1 1 1	Senior Energy Economist Energy Economist Heating Specialist Operations Officer** Operations Analyst	U	S
03/1998	1 1 1 1	Principal Oil & Gas Specialist (PTL) Gas Specialist (TTL) Operations Officer** Procurement Specialist**	U	S
06/1998	1 1 2	Gas Specialist (TTL) Operations Officer** Procurement Specialist **	U	S
10/1998	1 1	Principal Oil & Gas Specialist (PTL) Operations Officer**	U	S
11/1998*	1 1 1	Principal Energy Economist Heating Specialist Operations Officer**	U	S
12/1998	1 1 1	Gas Specialist (TTL) Operations Officer** Energy Specialist**	U	U

Missions marked (*) were focused on the supervision of the EEP and covered the Utilization component of the project only.

Staff marked (**) was based in Moscow.

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US$ (,000)
Identification/Preparation	12	34.6
Appraisal/Negotiation	52.9	152.7
Supervision	71.2	173.3
ICR	1	8.2
Total	137.1	368.8

Annex 3. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating
Macro policies	*NA*
Sector Policies	*NA*
Physical	*H (for the Utilization Component only)*
Financial	*NA*
Institutional Development	*NA*
Environmental	*NA*
Social	
Poverty Reduction	*NA*
Gender	*NA*
Other (Please specify)	*NA*
Private sector development	*NA*
Public sector management	*NA*
Other (Please specify)	*NA*

Annex 4. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

Bank performance	*Rating*
Lending	*U*
Supervision	*S*
Overall	*S*

Borrower performance	*Rating*
Preparation	*U*
Government implementation performance	*U*
Implementing agency performance	*U*
Overall	*U*

Annex 5. Project Completion Report Prepared by the Recipient

Translation

IMPLEMENTATION COMPLETION REPORT ON THE GREENHOUSE GAS REDUCTION PROJECT (GEF GRANT #28311)

1. Principal Goals and Components of the Project

The GEF Grant #28311 to finance the Greenhouse Gas Reduction Project was established on the basis of an Agreement between the Russian Federation and the International Bank for Reconstruction and Development (IBRD) signed on December 12, 1996.

The principal goals of the Project were to identify and prioritize investment projects aiming at achieving reduced methane emissions to the atmosphere and reduced carbon dioxide emissions by increasing the efficiency of gas use in the Russian economy.

The above two goals have governed the structure of the Project, organizational aspects of its implementation and areas of practical activities.

The Project is structured to include two parts. One part that comprises Components 1, 2, and 3 involves appraisal of potential sources of emissions, leaks and losses of greenhouse gases (GHG) and identification of measures for their reduction in gas production, transmission and distribution, correspondingly (the PTD Component).

The other part of the Project (Component 4) involves appraisal of potential sources of emission of greenhouse gases and identification of measures for their reduction by increasing the efficiency of equipment and technologies utilizing natural gas (Gas Utilization Component).

Component 5 includes preparation of a final consolidated report containing prioritization of the selected investment projects.

Thus, the Project comprises five components, implementation of which was to provide attaining the following objectives:

Component 1. Identification and appraisal of potential sources of emission of greenhouse gases, development of reliable quantitative estimates of greenhouse gas emissions related to production of natural gas and associated gas (including drilling, collection, and processing), identification of the relevant equipment, measures and procedures for reduction of such losses.

Component 2. Appraisal of:

- possibilities to reduce methane leaks from high–pressure main pipelines, compressor stations and storage facilities;

- amount of methane released from pipelines, compressors or other equipment types during shutdowns of pipelines for maintenance or blow-through with liquid;
- amount of gas released from pneumatic regulators or other control instrumentation on pipelines or municipal valve stations;
- carbon dioxide emissions from compressor stations, associated gas burners, and other sources along the main pipelines.

Component 3. Identification and appraisal of sources and development of reliable analyses of methane losses due to leaks from distribution station networks, as well as identification of means and procedures for successful reduction of such losses and mitigation of their impact.

Component 4. Identification and, to the maximum extent possible, quantitative evaluation of sources of greenhouse gas emissions from natural gas firing industrial enterprises, power plants, district thermal plants, as well as assessment of possibilities for reducing such emissions.

Component 5. Based on the above appraisals and evaluations, development of investment projects and revisions to be introduced in construction or operation procedures, which are needed to reduce greenhouse gas emissions.

The Ministry deems that the principal goals of the Project were defined correctly. Nearly the whole volume of greenhouse gas emissions in Russia is shared between carbon dioxide (78%) and methane (19%). Other greenhouse gases account for as little as 3% of the total emissions.

Anthropogenic emissions of methane relate mostly to production and transportation of fuels. Those amounted to 396.9 million tonnes of CO_2 equivalent, or 71.3% in 1990. The largest contribution — 336.0 million tonnes, or 60.9% — was made by the emissions from production and transportation of oil and gas.

Combustion of organic fuels is the main cause of anthropogenic emissions of carbon dioxide in Russia. The largest emission of CO_2 accounts for combustion of natural gas, whose share in the volume of fuel combustion–related emission exceeded one-third (845 million tonnes) in 1990 and 45% (727.5 million tonnes) in 1994.

Furthermore, overall implementation of the GEF Greenhouse Gas Reduction Project is especially important and topical because Russia, along with other industrialized countries, has signed the Kyoto Protocol to the UN Framework Convention on Climate Change.

2. Organizational Aspects of Project Preparation

Pursuant to #1253 dated October 19, 1996 RF Government Resolution, control over target use of the Grant proceeds was placed with the Ministry of Fuel and Energy of the Russian Federation (RF MoFE).

The RF Ministry of Fuel and Energy issued an Order on implementation of the above Resolution.

By #3 dated January 10, 1997 Order of the RF MoFE, Interagency Supervisory Council and Grant Implementation Control Unit were established.
The RF MoFE charged RAO "Gazprom" with implementation of Components 1, 2, and 3.

RAO "Gazprom" issued #83 dated June 4, 1997 Order, whereby a team of specialists was established for organization of carrying out of works, Team Manager thereof was appointed, and a detailed plan of organizational and technical measures for Grant implementation was approved.

Further on, for the purposes of overall Project management and carrying out of works under Components 1, 2, and 3, RAO "Gazprom" established a unit, namely JSC "Gazrekom", and appointed Mr. A. G. Bordyugov as Project Manager.

The PIU "Investenergoeffect" established for the implementation of the IBRD's Energy Efficiency Project (Loan 3876-RU) was charged by the Ministry with implementation of Component 4 of the Grant.

Specific rights and obligations of each PIU regarding the implementation of the GEF Grant were defined by a special Agreement signed between the RF MoFE, "Gazrekom", and "Investenergoeffect" on November 23, 1997.

Under the above Agreement, with a view of providing without fail fulfillment of commitments placed with the MoFE by the Grant Agreement, the Ministry has delegated to "Gazrekom" the rights and obligations for taking legal or other actions required for the implementation of the Project, management of the Special Account in compliance with IBRD procedures and procedures established by the RF Ministry of Finance.

Pursuant to the above Agreement, operating costs of the PIU "Gazrekom" were to be financed with allocations made by the Russian side, while the labor remuneration and travel costs for the personnel of the PIU "Investenergoeffect" were to be financed with the Grant proceeds.

As a result of an assessment of the preparatory stage of the Project and analysis of the reasons for unsatisfactory Grant administration by "Gazrekom", the Ministry deems it necessary to note the following.

The above Order issued by RAO "Gazprom" and signed by the Chairman of the company charged the Department for Scientific and Technological Progress and Environment (Mr. A. D. Sedykh) with providing the financing of the works under the Grant beginning in 1997, including the costs of the operative management team, costs of services delivered by the experts and working crews to carry out measurements of gas leaks at RAO "Gazprom" facilities. Actually, the Order has not been executed in that respect.

Inadequate personnel decisions were, in our opinion, another major reason for the failure to complete the works under the PTD component.

It follows from the analysis of the organizational activities for implementation of IBRD's GEF projects that obligations of the parties, terms and conditions of operation of various entities in the project implementation and the personnel decisions should be legally completed *prior to the commencement of project implementation.*

3. Grant Implementation Results

Unsatisfactory administration of the Grant by "Gazrekom" resulted in a failure to achieve the initial objectives of the PTD component under the Grant. At the same time, the Ministry appreciates the results of works achieved in the course of implementation of the Gas Utilization component.

Practically the whole package of works stipulated by the Grant Agreement has been completed in the implementation of the Gas Utilization component of the GEF Project, namely:

- diagnostic equipment has been procured to carry out environmental audits and energy audits of enterprises, rapid analysis of performance of main and auxiliary equipment, instrumentation and analytical determination of GHG leaks;
- analysis has been made of the results of energy audits of 43 budgetary entities and questioning of 34 enterprises in various sectors of the Russian economy;
- workshops have been organized and held in three cities in Russia on the methods of GHG emission control. With consideration of their results, specifications have been developed for creation of a pilot GHG environmental monitoring system, and its procurement and installation at a municipal boiler facility have been carried out;
- analytical studies have been carried out of the issues of improving the efficiency of the use of natural gas in the Russian economy with evaluating the potential capacity for reduction of GHG emissions. Based on the results of the studies, three intermediate and one final analytical reports have been issued;
- a database on the regulatory, methodological and instrumentation support of works for environment protection and energy conservation at thermal power facilities has been built;
- a package of investment proposals has been prepared, which aim at increasing efficiency of the use of natural gas in the national economy and reduction of GHG emissions. Based on the analysis of regional investment programs, 14 projects have been identified with best indicators, including the cost of GHG emission reduction per metric tonne of reduction of CO_2 emission. Most of those projects have been discussed with the Bank and can be recommended for preparation and implementation under inter-sectoral programs.

It should be specifically noted that environmental support to the Energy Efficiency Project was part of the efforts under Component 4. Throughout its stages, including the development of the feasibility study, preparation of the specifications for goods and services to be delivered, as well as during installation and commissioning of the

equipment, the PIU "Investenergoeffect" was observing or provided without fail observance of environmental requirements and constraints, inasmuch as compliance with those was one of the necessary conditions of implementation of the Project. In a number of cases, environmental indicators have determined the selection of a final version of implementation of the subproject.

The analytical report on the respective work contains the data on the potential capacity for energy conservation and reduction of GHG emissions by increasing the efficiency of use of natural gas in the Russian economy. Most thorough and detailed estimates of the potential for energy conservation in the Russian Federation have been produced in the development of the Russian Energy Strategy. Given the fact that over the last 10 years potential reserves for efficiency upgrade in the use of energy in the Russian economy have practically not been implemented and considering a possible reduction in the supplies of natural gas to the domestic market and replacement of natural gas with other organic fuels, forecasts given by experts limit the maximum potential for energy conservation in Russia at the 2010 level with approximately 300 million tonnes of fuel–equivalent.

Therefore, the environmental effect from implementation of the economically justified energy conservation potential at the 2010 level expressed in reduction of CO_2 emissions would amount to approximately 700 million tonnes.

Preliminary assessment of efficiency of the use of natural gas in various sectors of the Russian economy brings to the following conclusions:

- Mainly the fuel and energy complex, communal sector, as well as other industrial sectors, have the largest potential of saving of natural gas in Russia.
- Potential reduction of CO_2 emissions through gas saving in the Russian economy, considering electricity and heat saving at the end consumers level in 2010, is estimated at 260 million tonnes, including:
  - Fuel and energy complex — 115 million tonnes of CO_2 per year;
  - Communal sector — 50 million tonnes of CO_2 per year;
  - Other industrial sectors (including metallurgy) — 95 (37) million tonnes of CO_2 per year.
- The fuel and energy complex, including the power sector, is a priority investment area. Should the current pace of renewal of the stock of power generating units continue, 60 percent of equipment at thermal power plants will exhaust their service lives by 2010. Such a trend in the age structure of equipment is a threat to reliability of electricity supply to consumers and will result in reduced efficiency of use of energy resources.
- Investments in Russia's communal sector, municipal heat supply systems, in the first place, would produce a significant economic, environmental and social effects and have a wide range of investment possibilities and short payback periods. Projects involving efficiency upgrade in the use of natural gas would result in considerable reduction in GHG emissions.

Practical results of implementation of the GEF Project, such as building of the database on regulatory, methodological and instrumentation support of environmental and energy

conservation works, the outcome of the workshops, the use of the procured diagnostic equipment have found immediate application in the implementation of the IBRD funded Energy Efficiency Project.

The diverse technological solutions under the Energy Efficiency Project have been adopted as part of rehabilitation or replacement of boiler equipment and heat piping, upgrade of automatic control systems and provision of energy producers and energy consumers with instrumentation for metering and regulation of consumption of energy resources.

Low efficiency of the available low-capacity boilers, high degree of wear of piping and scarcity of metering and regulation equipment on heating and hot water supply systems, which are characteristic of the absolute majority of heat facilities in the Russian communal sector, cause excessive consumption of fuels and energy on a large scale in the amount of not less than 30-40 percent and a marked adverse impact on the human health and environment in Russian cities and other residential communities. All the above mentioned factors determine economic and environmental importance of the Project and high priority of investing in the respective sector of the economy.

Pursuant to the Russian legislation, fixed sources of emissions to the atmosphere should be equipped with continuously active automatic instruments for measuring the emissions, or should use mobile analyzers, or should employ analytical methods.

For a demonstration facility of approximately 200 Gcal/hr capacity in this Project, justification has been provided of necessity of a stationary system for control of pollutant emissions. Specifications for that system have been developed, including production and process control of emissions.

In line with the above specifications, equipment has been procured, installed and put into operation for production environmental control, which will provide continuous measurement of nitrogen oxide (NO) content, nitrogen dioxide (NO_2) content, carbon oxide (CO) content, oxygen (O_2) content and temperature of the flue gases, as well as analytical determination of gross emissions of sulphur dioxide (SO_2) and fuel oil ash for the whole station.

The system in question, which implements production environmental control, complies with all requirements of the Russian environmental legislation and is one of the first such systems created on a municipal boiler facility.

It should be particularly noted that in the course of implementation of the GEF Project, specific technological and organizational solutions have been developed that aim at creation of a system to monitor GHG emissions.

Equipment for creation of a pilot system to control GHG emissions for the demonstration facility has been procured and its delivery is under way. Experience to be gained in mastering the system will be used in the development of the model regulations on the system for monitoring of GHG emissions in Russia, to be coordinated with the respective international organizations.

A mobile diagnostic laboratory has been procured to attain a major objective of the GEF Project, namely carrying out of energy audits. The laboratory consists of 20 various types of instruments and means of measurement, which make possible to determine thermal engineering, electric engineering, mechanic and environmental parameters of performance of energy equipment.

Apart from the above mentioned scheduled works under Component 4, issues have been studied of creation of a national system for recording and metering of GHG emissions in the various sectors of the fuel and energy complex in Russia. For this purpose, a graphic workstation would be used that has been procured under the Energy Efficiency Project and has been turned over to the Ministry for temporary use. Based on that study, terms of reference will be prepared for design and creation of a fuel and energy complex subsystem as part of the national information system for inventory, recording and metering of GHG emissions.

Thus, a tangible backlog for the formation of an informational, methodological and instrumentation framework for the Ministry has been created in the course of implementation of the GEF funded Greenhouse Gas Reduction Project and IBRD funded Energy Efficiency Project, which would help develop organizational, methodological, financial and other mechanisms for international trade in quotas for GHG emissions and joint projects.

4. Priority Areas in the Use of the Results

Over the recent years, investment capacities have considerably declined in many sectors of the Russian economy, the energy sector included.

Given this fact, it is topical to master new mechanisms for attracting investments.

The use of the mechanisms provided by the Kyoto Protocol to the UN Framework Convention on Climate Change could result in a significant flow of investments coming to the Russian economy, because this country has a huge potential for energy conservation and features relatively low costs of implementation of energy conservation measures as compared with many industrially developed countries.

For practical implementation of the potential for energy conservation and attracting investment resources for this purpose, it is required to create internal conditions that would promote effective participation of the Russian Federation in joint projects and trade in GHG emission quotas. In particular, barriers should be removed to Russia's full participation in the use of mechanisms provided by the Kyoto Protocol for attracting investments in the real sector of the economy. The major barriers are of financial and organizational character, that is, the shortage of funds needed to build in Russia an infrastructure of a "carbon" market and establishment of organizations to coordinate and manage joint projects and other measures that would reduce GHG emissions, as well as the lack of an adequate regulatory and legal framework.

A number of regulatory acts on energy conservation have been adopted at the federal level over the recent years that have laid the foundation for the federal legal and regulatory framework in this area. The Federal law "On Energy Conservation" has been adopted and the Regulations "On Carrying Out Energy Audits of Enterprises" have been developed. RF Government resolutions on the respective issues have been issued, including: "On Increasing Efficiency of Use of Energy Resources and Water By Budgetary Enterprises, Institutions, and Organizations" (#832 dated July 8, 1997); "On Additional Measures to Provide Incentives for Energy Conservation in Russia" (#588 dated June 15, 1998). Construction Rules and Regulations (SNiP) have been developed with participation of the Ministry, which specify a 1.5 to 2-fold upgrade of the level of thermal protection of civic or industrial buildings and their equipping with instrumentation for metering and regulation of consumption of energy resources and water. An industrial base has been mostly completed for manufacturing of instruments for metering and regulation of consumption of energy resources.

The subjects of the Russian Federation are drafting region–level legislation on energy conservation, energy conservation funds are being established, energy service companies and centers are emerging that have available up-to-date instrumentation and equipment.

Creation of the Russian Carbon Fund to overcome financial obstacles is being considered, which would attract investments from abroad, provide support to domestic enterprises and address other topical issues in this area.

Using the backlog and potential developed in the course of implementation of the GEF funded Greenhouse Gas Reduction Project, the RF Ministry of Energy is currently working or providing for working, jointly with Center for Project Preparation and Implementation (CPPI) and other organizations, on a number of objectives aiming at effective participation of enterprises in Russia's energy sector in the implementation of flexible mechanisms provided by the Kyoto Protocol. Amongst those priority objectives, the following ones can be marked out:

- Creation of a regulatory, legal, methodological and informational framework that would provide effective participation of the energy enterprises in joint projects;
- Mastering the pilot systems for environmental monitoring of GHG emissions at enterprises in the energy sector in Russia;
- Selection, evaluation and preparation for financing of "carbon" investment projects in Russia's energy sector, including projects for recovery of associated gas, non-conventional or small–scale power generation, including utilization of geothermal energy sources, projects for upgrading efficiency of enterprises in their production and consumption of energy resources;
- Building of a database on investment projects of Russian energy companies that aim at reduction of GHG emissions;
- Creation of a fuel and energy complex subsystem as part of the national system for recording and metering of GHG emissions.

5. Costs and Financing

The total project costs were estimated at the equivalent of US$3.7 million. Out of that amount, US$3.2 million was provided to come from the GEF Grant proceeds. Part of the costs that was to be incurred in the Russian currency and mostly covered the costs of field study services, transport and other auxiliary services, including the PIU costs, was estimated at US$0.5 million. The breakdown of the Grant proceeds by the individual component of the Project was as follows: US$2376300.00 for the whole PTD program; US$803700.00 for the Gas Utilization component; and US$20000.00 for project management.

Implementation of the PTD program was put on hold in August 1998 to have never been resumed since then. Disbursements under the Gas Utilization component for JSC "Investenergoeffect" were stopped in March 1999.

6. Project Implementation Control

The Ministry and the Bank have conducted regular reviews of the progress of implementation of the Project. In May–June 1999, a project implementation audit was carried out.

Given the unsatisfactory status of the progress of implementation under the PTD component, the Ministry took specific steps for restructuring of the Project in late 1998 and in 1999. In June 1999, the RF MoFE requested an extension of the Grant closing date until December 31, 2000 and a restructuring of the Project. The Ministry proposed to revise the scope of work and implementation arrangement so as to re-focus the Project on the issues of recovery of associated gas and expand the Gas Utilization component of the program to include the development of a system for the energy sector environmental monitoring.

In September 1999, the Bank agreed to expand the scope of work under the Gas Utilization component and to extend the Grant closing date with respect to this component alone. Eventually, however, the Bank decided to close the Grant.

7. Conclusions

Looking at the results of carrying out of works under the Grant, the Ministry deems that the goals and objectives of the Grant were defined correctly. Practically all the tasks provided under Component 4 have been fulfilled.

The Ministry charged RAO "Gazprom" with implementation of the Components 1, 2, and 3 of the Project. The team established by RAO "Gazprom" has failed to implement these components. RAO "Gazprom" did not exercise proper control over the operation of the above team. To date, in view of facts of non-target spending by "Gazrekom" and its failure to submit to the Ministry disbursement vouchers on all of its costs, the Ministry has taken appropriate measures in compliance with the established procedure. The amount of US$69.8 thousand recognized by the World Bank as non-target costs has been refunded by the RF Ministry of Finance.

Experience gained in the carrying out of works shows that the agency agreements that would be concluded between the Ministry and project implementation teams should provide greater influence of and control by the Ministry over the progress of implementation and especially over disbursement under future projects that would be financed by international financial institutions and implemented by the Ministry. All procedures relating to project implementation should be reviewed and approved prior to the commencement of implementation.

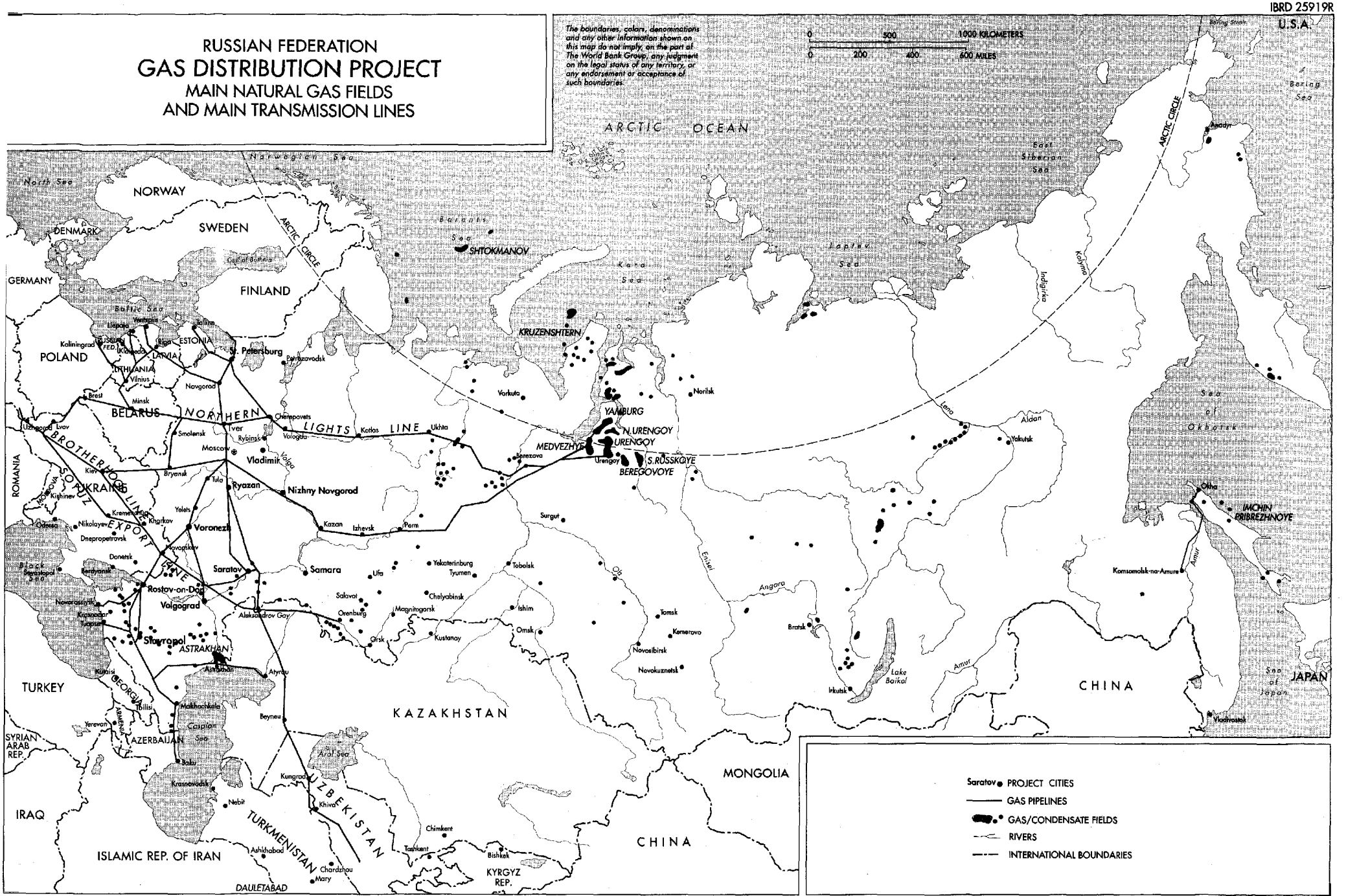
Provision of adequate and timely co-financing of measures to be taken under a project would be a decisive factor at the stage of project preparation inasmuch as co-financing has direct impact on efficiency of procurement and project management in the course of implementation.

IBRD 25919R

RUSSIAN FEDERATION

GAS DISTRIBUTION PROJECT

MAIN NATURAL GAS FIELDS AND MAIN TRANSMISSION LINES



APRIL 1995