

Document of  
The World Bank

Report No:

PROJECT BRIEF

ON A

PROPOSED GLOBAL ENVIRONMENT FACILITY GRANT

IN THE AMOUNT OF US\$10 MILLION

TO THE

RUSSIAN FEDERATION

FOR A

RENEWABLE ENERGY PROJECT

May 7, 2007

## CURRENCY EQUIVALENTS

(Exchange Rate Effective March 21, 2007)

Currency Units = Russian Ruble (RUB)

26.03 RUB = US\$1

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy	MW	Megawatt
CFAA	Country Financial Accountability Assessment	MWe	Megawatt electric
CLW	Contingent Loan Window	MWh	Megawatt per hour
CMM	Coal Mine Methane	MWt	Megawatt thermal
CO2	Carbon Dioxide	NEFCO	Nordic Environment Finance Corporation
CPS	Country Partnership Strategy	NGO	Nongovernmental Organization
DO	Development Objective	NOx	Nitrous Oxides
DH	District Heating	NPAF	National Pollution Abatement Facility
EBRD	European Bank for Reconstruction and Development	NPAF ED	NPAF Executive Directorate
ECA	Europe and Central Asia Region	NPAF OM	NPAF Operational Manual
EE	Energy Efficiency	NPAF SB	NPAF Supervisory Board
EIA	Environmental Impact Assessment	NPV	Net Present Value
EMP	Environmental Management Plan	OECD	Organization for Economic Cooperation and Development
ESCO	Energy Service Company	OJSC	Open Joint Stock Company
EU	European Union	PCF	Prototype Carbon Fund
FI	Financial Intermediary	PM10	Particle Matter less than 10 microns in diameter
FM	Financial Management	PMU	Project Management Unit
FMR	Financial Management Report	PPW	Project Preparation Window
FMS	Financial Management System	PSR	Project Status Report
FSU	Former Soviet Union	PV	Photovoltaic
FTP	Federal Target Programs (of Russia)	RAO "UESR"	Unified Energy System of Russia
GEF	Global Environment Facility	RE	Renewable Energy
GHG	Greenhouse gas	RER	Renewable Energy Resource
IBRD	International Bank for Reconstruction	REEEP	Renewable Energy & Energy Efficiency Partnership
IEA	International Energy Agency	REFF	Renewable Energy Financial Facility
IFC	International Finance Corporation	RF	The Russian Federation
IP	Implementation Progress	RREP	Russia – Renewable Energy Program
IRR	Internal Rate of Return	RSLW	Revolving Soft Loans Window
ISDS	Integrated Safeguards Data Sheet	SA	Special Account
ISO	International Standard Organization	SO2	Sulfur Dioxide
JSC	Joint Stock Company	SOE	Statement of Expenses
MEDT	Ministry of Economic Development and Trade	TA	Technical Assistance
MEST	Ministry of Education, Science & Technologies	TOR	Terms of Reference
MIE	Ministry of Industry and Energy	UNDP	United Nations Development Program
MNR	Ministry of Natural Resources	VAT	Value Added Tax
MOF	Ministry of Finance	WWF	World Wild Fund
MoU	Memorandum of Understanding		

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# RUSSIAN FEDERATION

## RENEWABLE ENERGY PROGRAM (RREP)

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RUSSIAN FEDERATION

RUSSIA – RENEWABLE ENERGY PROGRAM (RREP)

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSSD

Date: May 7, 2007 Country Director: Kristalina Georgieva/ Klaus Rohland Sector Manager/Director: Charles Feinstein Project ID: P079033 Lending instrument: GEF grant		Team Leader: Helmut Schreiber Sectors: Renewable energy (75%); District heating and energy efficiency services (25%) Themes: Climate change; Environment; Energy Environmental screening category: FI			
Project Financing Data:					
<input type="checkbox"/> Loan <input type="checkbox"/> Credit <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Guarantee <input type="checkbox"/> Other  For Loans/Credits/Others: Total GEF financing: US\$ 10.0 million Proposed terms: as per Grant Agreement					
Financing Plan (US\$m.)					
Source		Local	Foreign	Total	
Recipient		66.5		66.5	
Global Environment Facility			10.0	10.0	
Others (REEEP)		0.3		0.3	
Total		66.8	10.0	76.8	
Recipient: Russian Federation Responsible Agency: Ministry of Economic Development and Trade					
Estimated disbursements (Bank FY/US\$m)					
FY	2008	2009	2010	2011	2012
Annual	0.5	2.0	3.0	3.0	1.5
Cumulative	0.5	2.5	5.5	8.5	10
Project implementation period: FY08 – FY12 Expected effectiveness date: December 2007 Expected closing date: December 2012					
Does the project depart from the CAS in content or other significant respects?				<input type="radio"/> Yes <input checked="" type="radio"/> No	
Does the project require any exceptions from Bank policies? Have these been approved by Bank management?				<input type="radio"/> Yes <input checked="" type="radio"/> No	
Is approval for any policy exception sought from the Board?				<input type="radio"/> Yes <input checked="" type="radio"/> No	

Does the project include any critical risks rated “substantial” or “high”?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Does the project meet the Regional criteria for readiness for implementation?	<input type="radio"/> Yes <input checked="" type="radio"/> No
<p>Project development objective:  The development objective of the project is to facilitate a sustainable market for renewable energy in the Russian Federation by supporting the development of enabling policies and institutional capacity, and market oriented financing mechanisms.</p>	
<p>Project description:  The project design will include two components:</p> <p><b>Component A: Technical Assistance for Policy Development, Institutional Strengthening and Capacity Building.</b> This component has the following subcomponents:</p> <ul style="list-style-type: none"> <li>○ Development of Renewable Energy Policies;</li> <li>○ Market Infrastructure Development;</li> <li>○ Renewable Energy Program in Natural reserves and National parks; and in Special Tourist-Recreational Economic Zones;</li> <li>○ Partnership on Innovative Financing Mechanisms and Regulations;</li> <li>○ Knowledge and Information Collection and Dissemination;</li> <li>○ Program Management, Monitoring, and Evaluation.</li> </ul> <p><b>Component B: Renewable Energy Financial Facility.</b> This component will be a financing facility consisting of three instruments:</p> <ul style="list-style-type: none"> <li>○ Project Preparation Window for on-grid electricity generation subprojects</li> <li>○ Revolving Soft Loans Window</li> <li>○ Revolving RER Facilities in pilot regions</li> </ul>	
<p>Which safeguard policies are triggered, if any?  All subprojects are expected to trigger at least the Environmental Assessment (OP/BP/GP 4.01) safeguard policy.</p>	
<p>Significant, non-standard conditions, if any, for:  Board presentation: October 2007  Loan/credit effectiveness: December 2007  Covenants applicable to project implementation: TBD</p>	

## **A. STRATEGIC CONTEXT AND RATIONALE**

### **1. Country and Sector Issues**

The priorities of the state energy policy of the Russian Federation were formulated in the “Energy Strategy of Russia until 2020”. Since approval of the document by the Government on 28 August 2003, significant changes have taken place both in the external macroeconomic environment and in the Russian domestic market. First, today’s level of oil prices exceeding US\$70/barrel has not been envisaged in any of the scenarios discussed in the Strategy. Indeed, a price of only US\$30/barrel was considered as part of the optimistic scenario.<sup>1</sup> Given the high international energy prices, the state of the Russian energy sector has become a prominent issue for a number of energy-importing states, including many members of the EU. The benefits to Russia from exporting energy resources such as oil and gas have increased dramatically over the recent years. At the same time, domestic energy demand in Russia is increasing at a much higher rate than previously forecasted. In accordance with the extensive scenario of energy sector development the demand for investments in the sector will be about US\$250-300 billion during the period of 2006-2020. The recently developed investment program of RAO UESR has defined an investment demand of US\$118.3 billion during 2007-2011.

This market environment raises the importance of energy efficient and environmentally friendly technologies. There is a growing realization in Russia that energy saved by increasing deployment of energy efficient and renewable energy technologies can substantially contribute to the benefits from international trade in energy resources. In addition, given the uneven distribution of energy resources across Russia’s vast territory, there are many regions in Russia where energy is just as expensive as in its European neighbor-states.

In its efforts to increase the market penetration of renewable energy technologies, Russia faces many of the same challenges as other eastern European countries, including inefficient energy tariff structures inherited from the past.

Not more than 3.5% of the total primary energy supply is based on renewable energy, of which two-thirds are hydro and one-third all other forms. Renewable energy (without large hydro) accounts for 0.5% of total electricity generation. Experts estimate that heat use based on renewables amounts to about 4% of the total generated heat in Russia. At the same time, Russia’s potential for renewable energy development is quite large. In accordance with the OECD/IEA study (2003) the volume of renewable energy with economic potential corresponds to about 30% of the country’s actual total primary energy supply, while the technical potential is estimated to be more than five times greater than the energy supply. It includes biomass energy from the nation’s rich forest resources, wind, solar, hydro, and geothermal energy resources found in many regions. Additional triggers for Russia’s efforts to develop its renewable energy potential include the necessity to modernize the provision of housing and communal services in most Russian cities – a process in which energy saving and renewable energy technologies can play a prominent role.

The importance of developing Russia’s renewable energy resources (RER) has been recognized by its authorities based on the need to diversify fuel utilization and the need to protect the environment. The Russian Energy Strategy stipulates the development of new capacities for RER utilization, and at the same time the gradual reduction of subsidies. This will increase the incentives for investments in energy efficiency and the use of renewable energy resources. In particular, areas remote from fossil fuel resources and being served only by very high-priced energy are prime candidates for an enhanced development of local RER.

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<sup>1</sup> The optimistic scenario was marked by a 3.3 times GDP growth by 2020, as compared to 2000, seven-fold increase of investments, and continued high prices for oil (\$30 per barrel for Urals grade in 2020) and for gas (\$138 per thousand m3 in 2020). The moderate scenario envisaged a GDP growth of 2.3 times by 2020, investment growth of 3.6 times, and stable oil and gas prices (\$18.5 per barrel of oil and US\$118 per thousand m3 of gas).



While a federal law on renewable energy development has not yet been adopted, there are several regions that have adopted laws and regulations on renewable energy. Additionally, at the sub-national level exists a well developed institutional framework for energy efficiency improvements that can serve as well as umbrella for RER. 43 regional laws on energy saving, 24 energy saving funds and 75 energy efficiency centers have been established at the regional level. Regional and municipal authorities are the main driving force for renewable energy development in Russia. More than 650 energy efficiency programs are under implementation, including 45 programs at the sub-national level, and more than 537 municipal programs.

During the period 2002-2006, several programs<sup>2</sup> with components related to RER have been implemented with only little impact on their development. The main reasons for the slow development of renewable energy projects are systemic barriers, the removal of which requires special efforts from the government.

The following barriers impede the development of RER in Russia:

- **Financial Barriers:** lack of domestic and foreign investment capital; lack of longer-term affordable debt financing; high project preparation and transaction costs; high cost of special equipment; absence of federal financing mechanisms (such as environmental funds, etc.); un-competitiveness due to low fossil fuel energy prices.
- **Institutional and Ownership Barriers:** lack of legislative support; insufficient enforcement of environmental regulations; inflexibility of municipalities, lack of implementation capacity for renewable energy (RE) projects; mismatch between municipal ownership of district-heating systems and regulation of tariffs by federal/regional authorities; insufficient private sector presence in the power and heat generation sector.
- **Information Barriers** associated with a lack of information about RE technologies and opportunities and their potential.

For more details on barriers identified see [Annex 1](#).

## 2. Rationale for Bank Involvement

The concept and objectives of the Russia - Renewable Energy Program (RREP) support the Bank's strategy to assist the Russian Federation in the sustainable development of its energy resources.

One of the priorities of the Country Partnership Strategy (CPS), approved by the Board of Executive Directors on November 20, 2006, is to support Russia's increasing global role, and to assist the country in fulfilling its global commitments. The CPS refers to TA operations on the introduction of low-carbon technologies and climate change mitigation. Another priority area of cooperation between the Government and the Bank are diverse activities at the sub-national level. The design of the RREP, with a focus on proactive participation of regions, is fully consistent with this strategic priority.

Furthermore during an ongoing policy dialog between the Bank and Russia on energy security issues the importance of diversifying energy supplies are emphasized by accelerating the development of renewable energy and distributed energy. At the joint statement of Minister Kudrin and President Wolfowitz at the G8 Meeting in St. Petersburg on June 9, 2006 both agreed on the obligation to scale up access to affordable and clean energy to meet the Millennium Development Goals.

Currently, there are two World Bank Group/GEF projects under implementation, which are directly related to the development of renewable energy in Russia: The Geothermal Energy Development Program

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<sup>2</sup> "Energy-efficient Economy", "South Russia", "Ecology and Natural Resources of Russia", "Studies and Research under the Priority Directions of Science and Engineering", and "Economic and Social Development of the Far East and Transbaikalian Region"

for the ECA region (GeoFund), and the Russia – Sustainable Energy Finance Program, implemented by IFC. RREP is to be effectively coordinated with these projects to achieve the maximum combined impact.

Further is the pilot project under preparation by IFC - Sri Lanka “Portfolio Approach to Distributed Generation Opportunities (PADGO) “. The RREP project would be interested in a possible replication in RREP some positive outputs of the PADGO, when they become evident.

### **3. Higher level objectives to which the project contributes**

The Project’s *global environment objective* is to reduce greenhouse gas (GHG) emissions on a continuous basis by overcoming barriers to the development of renewable energy. The project directly supports the **GEF Operational Program #6: Promoting the adoption of renewable energy by removing barriers and reducing implementation costs.**

RREP supports the creation of a comprehensive framework for the development of renewable energy and addresses the following GEF 4 Replenishment priorities of the Climate Change focal area:

- Promotion of the supply and demand for grid electricity from renewable resources,
- Promotion of the use of renewable energy for the provision of rural energy services

## **B. PROJECT DESCRIPTION**

### **1. Financing instrument**

The proposed GEF Grant will be used to support:

- Technical Assistance (TA) for policy development, institutional strengthening and capacity building - US\$5.0 million, and
- The development of a long-term Renewable Energy Financial Facility (REFF) - US\$5.0 million, in particularly for capitalizing of:
  1. A Project Preparation Window for on-grid electricity generation subprojects (PPW) - US\$1.0 million;
  2. Revolving Soft Loans Window (RSLW) in the National Pollution Abatement Facility (NPAF) – US\$1.0 million. NPAF will allocate up to US\$20.0 million from its own lending resources to provide sub-loans for RER projects;
  3. Revolving RER Facilities in pilot regions - US\$3.0 million.

The grant will be allocated on the basis of a Grant Agreement between the World Bank and the Government of the Russian Federation. NPAF will implement the project in accordance with the provisions of the above mentioned agreement and will sign sub-grant/sub-loan agreements with final beneficiaries.

### **2. Project development objective and key indicators**

*The development objective* of the project is to facilitate a sustainable market for RER in the Russian Federation by supporting the development of enabling policies, institutional capacity, and self-sustaining, market-oriented financing mechanisms.

Specifically, the project’s aim is to change the current unfavorable investment and incentive conditions and create an enabling environment in Russia that fosters the development of biomass, solar, wind and other renewable energy utilization for heating and electricity generation applications by providing

financial, methodological, informational, and institutional support. It will help alleviate rural poverty caused in large part by an underdeveloped local economy and unaffordable energy costs in certain regions of Russia due to high fossil fuel prices which result from long distance distribution networks.

Improving the market framework for renewable energy based power and heat production and the implementation of a number of viable renewable energy projects by the NPAF will help accelerate the use of renewable energy and build competence in the private sector to invest into this resource. Key indicators are the change of the regulatory and incentive framework for RER leading to the implementation of viable RE projects and the installed capacity (MW) and the amount of electricity and heat generated (MWh) as a result of REFF support.

**The global objective** of the project is to reduce the emissions of GHG by removing barriers to the development of RER. Key indicators are GHG emission reductions (CO<sub>2</sub>e).

Detailed information are available in Annex 3.

### 3. Project components

The project design will include two major components and several subcomponents:

**Component A. Technical Assistance for Policy Development, Institutional Strengthening, and Capacity Building: US\$19.2 million, of which US\$5.0 million from GEF, and US\$14.2 million counterpart funds.** This component covers the following areas:

*A.1 The Development of Renewable Energy Policies subcomponent* will comprise technical assistance focused on supporting the Government in designing and implementing policies on renewable energy development, improving the legislation and regulatory and incentive framework, and preparing national and regional strategies, action plans and programs on the use of renewable energy resources.

*A.2 The Development of a Market Infrastructure subcomponent* will include: (i) support to the Government in designing feed-in tariffs, and a "green certificates" system, technical regulations and standards for RE installations; (ii) support to various governmental entities in establishing streamlined permitting procedures, and (iii) support to and strengthening of private sector companies that invest in RER development.

*A.3. The Renewable Energy Program in Natural Reserves and National Parks and in Special Tourist-Recreational Economic Zones subcomponent* will demonstrate innovative approaches to productive uses of renewable energy for biodiversity conservation and other essential services in natural reserves, national parks and other protected areas. The subcomponent will support the implementation of the following activities: (i) energy-environmental reviews of selected natural reserves and national parks; (ii) feasibility studies and technical design for the utilization of RER in selected national reserves and national parks; (iii) development of a model design packages for the construction of renewable energy installations in natural reserves, and national parks (iv) preparation of a long-term strategy on RER development in natural reserves, national parks and other protected areas, and (v) preparation of feasibility studies on RER development in seven Special Tourist-Recreational Economic Zones, established by the Government.

*A.4. The Partnership on Innovative Financing Mechanisms and Regulations subcomponent* will provide additional financial resources to extend the Renewable Energy and Energy Efficiency Partnership (REEEP) program in Russia, and in particular, to implement additional 5-6 projects selected in accordance with its procedures and criteria.

*A.5. The Knowledge and Information Collection and Dissemination subcomponent* will support the following activities:

- Creation and maintenance of an interactive web-portal on renewable energy;
- Establishment of a Network of National Biomass Centers, and
- Long-term educational and training capacity building.

A.6. The Program Management, Monitoring, and Evaluation sub-component will provide financial support for project monitoring and administration.

**Component B. Renewable Energy Financial Facility (REFF) (US\$5.0 million GEF and US\$52.6 million counterpart funds).** This component will be a financing facility consisting of three instruments: Project Preparation Window, Revolving Soft Loans Window, and Revolving RER Facilities in pilot regions.

B.1. The Project Preparation Window for on-grid electricity generation subprojects (PPW) (US\$1.0 million GEF, US\$ 4.6 million investment project sponsors) will focus on the development of a strong pipeline of mini-hydro and wind project that can provide deal flow for commercial banks and investors. Grant support will be provided in form of straight and contingent grants to project developers and sponsors to defray the costs of feasibility studies and other project preparatory activities. As a general rule, support will be provided on a cost-sharing basis with a 50% maximum coverage from GEF funds.

Contingent grants could be provided for the preparation of bankable projects in cases where high technical and other project risks are expected. Thresholds for the use of contingent grants will be detailed in an Operational Manual of the REFF. In the event that projects supported by PPW reach financial closure, the contingent grant must be repaid out of their proceeds. In the event that the feasibility studies and related work conducted with PPW funding demonstrate that the project is not economically feasible, and all efforts to seek financing for the project are to be terminated, the contingent grant can be forgiven. JSC "Hydro OGK", which is a daughter company of RAO UESR, indicated an interest to cooperate with the GEF in implementing this task.

B.2. Revolving Soft Loan Window (US\$ 1. 0 million GEF, US\$ 33.0 million are NPAF lending resources and funds of investment projects sponsors ) based on the institutional framework and financial resources of the NPAF will constitute a financial mechanism for provision of selective financial support to companies implementing renewable energy development projects. NPAF indicated a readiness to allocate up to US\$ 20 million of its resources (repayments from initial sub-borrowers and unutilized portion of the Bank's loan and Swiss grant) for cofinancing of RREP investment sub-projects. NPAF will provide long-term low-cost loans for project developers of renewable energy utilization in accordance to the following conditions: maximum amount of a sub-loan is US\$ 7 million for a period to 8 years with a grace period of 2-3 years for principal payment under sub-loans/final loans, which should make no more than 70 % from the sub-project total cost.

GEF support (US\$ 1.0 million) will allow NPAF to create a pipeline of RER subprojects. The same approach as in PPW will be applied for supporting of subproject developers and sponsors in the form of straight grants through cost sharing of feasibility studies and other project preparation activities. NPAF will also allocate up to US\$ 1.0 million for the RER pipeline creation.

B.3. The Revolving RER Facilities (US\$3.0 million GEF, US\$15.0 million counterpart funds) will be created in several pilot regions for the development of regional structures and testing of similar financial instruments (cost-sharing of project preparation and contingent grants and soft loans) at the sub-national level. Several regions were identified at the preparatory stage. Apparently, Krasnodar krai, the Republic of Karelia and the Komi Republic are the best prepared and committed to host Revolving RER Facilities. The final selection of pilot regions and design of the facilities will be done before the RREP start up.

Total project costs and the financing plan are shown below.

**Table 1: Financing Plan**

Component (according to financing mechanism)	Category	Indicative Costs		Financing Plan			
		Amount	% of Total	GEF	GoR, NPAF	Project sponsors	Total
Policy Development, Institutional Strengthening and Capacity Building	TA	19.2	25.0%	5.0	12.6	1.6	19.2
REFF	Investment	57.6	75.0%	5.0	21.0	31.6	57.6
Total		76.8	100.0%	10.0	33.6	33.2	76.8

#### 4. Lessons learned and reflected in the project design

There are numerous renewable energy projects and programs implemented in the Europe and Central Asia region and worldwide with the financial support of the World Bank, GEF and others. Examples of such projects include: *Armenia Renewable Energy Project, China Renewable Energy Scale-up Program, Croatia – Renewable Energy Resources Project; Sustainable Energy Project, Macedonia; Turkey Renewable Energy Project; Zakopane Geothermal Project, Poland; Geothermal Energy Development Program for the ECA region (GeoFund).*

Experience shows that relatively high transaction costs associated with RE project development and financing, the unfamiliar risk for banks and other financial institutions, and the lack of collateral value of RE equipment result in very cautious bank lending practices toward RE projects developers which are, in most cases, small or medium size companies. In addition, domestic financial institutions often lack relevant experience, expertise, and capacity with regard to project finance as well as an understanding of RE business potential and associated project risk assessment experience. These financial barriers will be addressed through the creation of a revolving contingent grant and soft loan mechanisms based on the experiences of the Croatia and Macedonia RE projects.

An important lesson is that the development of RER should be part of an integrated energy strategy that reflects the priority given to RER, e.g. by allowing different tariffs for RER reflecting their environmental benefits and contribution to energy security. The institutional structures should be in place and the policy framework should be clear and supportive of sustainable RER development. Government commitment is crucial, and should be reflected in consistent sectoral objectives at the regional and national level.

Renewable energy development involves a lot of “learning by doing”. That highlights the importance of good project monitoring systems and sufficient flexibility to learn and adjust financing and project implementation mechanisms.

Important lessons have been learned by the NPAF while implementing the Environmental Management Project. NPAF gained tremendous experience in project preparation, appraisal and supervision in accordance with international standards. The relatively low performance of the Environmental Management Project/NPAF was due to controversies within the Russian government with respect to the environmental policy in 1995-2006. Therefore, government commitment to renewable energy development is one of the main conditions for successful project preparation and implementation.

## 5. Alternatives considered and reasons for rejection

The following alternatives were considered:

- Stand-alone GEF grants for specific regional projects, namely *Karelia – Biomass Project* and a project *on Promotion of Renewable Energy Development in South Russia*. The Russian GEF Focal Point endorsed both projects. However, after consultations with the GEF Secretariat the project team suggested to the Government to place these activities in a more comprehensive country-wide RREP framework to better meet the key GEF objectives of removing barriers to the utilization of environmentally friendly fuels and to the improvement of energy efficiency.
- The following two alternative options for housing the REFF were identified and eventually rejected:
  - **Creation of a new institution** dedicated to provide financial support to the implementation of RE projects. This option was rejected because of organizational uncertainties and risks of delay in project implementation. Moreover, new institutions created on the basis of grant contributions often fail to sustain themselves after the grant support is discontinued.
  - **Private Bank:** Under this option the REFF would be placed at a local bank that would be selected through a competitive tender. The bank would enter into agreement with the World Bank and the Governmental ministries to access the REFF on an exclusive basis to provide loans to borrowers for eligible projects. This option was rejected because it would limit access to the REFF to the branch offices of just one bank. This can create a potential conflict of interest since a commercial bank may want to nurture own business objectives when considering applications of support. The Ministry of Economic Development and Trade (MEDT) suggested locating the REFF at the NPAF, which would create a program unit for managing not only the REFF, but the RREP as a whole.

## C. IMPLEMENTATION

### 1. Partnership arrangements

The main partners of the Bank in the RREP implementation are:

- The Ministry of Economic Development and Trade (MEDT);
- The Ministry of Finance (MOF);
- The Ministry of Industry and Energy (MIE);
- The Ministry of Natural Resources (MNR);
- The Ministry of Education, Science & Technologies (MEST), and
- The NPAF Executive Directorate (NPAF ED).

Financial management, disbursement and procurement functions for the REFF will be carried out by the NPAF ED in accordance with the Grant Agreement and the Agency Agreement to be signed between MEDT, MOF and the NPAF ED.

MEDT and the World Bank's Project Team have obtained written confirmation of interest from the Administrations of Krasnodar and Stavropol kraia, from the Governments of the Republics Karelia, Buryatia, and Komi and RAO "UESR" to participate in the preparation and implementation of the RREP.

The Secretariat of REEEP- Russia and the Former Soviet Union (FSU) will be the executing agency of the subcomponent A.4. "Partnership on Innovative Financing Mechanisms and Regulations". REEEP

International Secretariat, the Russian Environmental Center, the World Bank and MEDT will sign a Memorandum of Understanding (MoU) on the partnership in the RREP implementation.

Consultations with EBRD, IFC, NEFCO, the Deutsche Energie Agentur and the European Center for Renewable Energy on their participation in the RREP are also under way.

## **2. Institutional and implementation arrangements**

The project design and implementation arrangements have been developed in close consultation with the key stakeholders, namely MEDT, NPAF, regional administrations, existing and potential project developers and NGOs dealing with renewable energy, environmental and energy efficiency issues.

The project will be implemented by the NPAF which was established by the Government of the Russian Federation in 1995 to fund financially viable, high priority resource recovery/pollution abatement projects. The NPAF ED is the project implementation unit for the Bank's Environmental Management Project and some other international projects; therefore, its staff possesses the needed experience and skills. The NPAF ED will assume overall fiduciary responsibilities for the use of the GEF grant funds. To manage the project, the NPAF ED will establish a Project Management Unit (PMU).

NPAF is functioning in accordance with the Operating Instructions (NPAF OI) developed in 1996 and updated in 2002. In addition to maintenance of NPAF ED operating activities, the NPAF OI formalize the process of IP selection, preparation and implementation on the basis of requirements of the Russian legislation and the World Bank rules. The NPAF OI contain formats of documents used in all operations of the investment cycle.

MEDT, jointly with the Ministry of Finance will supervise activities of NPAF, including budget approvals, setting up of special accounts, authorizing payments and disbursements of GEF funds.

MEDT is the Ministry responsible for overall coordination of RREP. A project Steering Committee under the chairmanship of MEDT was established to provide overall policy guidance and to coordinate the implementation of the RREP with national and international programs on renewable energy development. The Steering Committee will also oversee operations of bilateral donors such as the EU, Austria, Denmark and other Nordic countries and programs of multilateral development agencies related to renewable energy development in Russia.

MIE, MNR, and MEST are the agencies responsible for supervision of the following technical assistance subcomponents (i) renewable energy policy, (ii) market infrastructure development, (iii) renewable energy program in natural reserves and national parks, and (iv) knowledge and information collection and dissemination. In their function they will ensure consistency of RREP operations with the Government strategy on energy, environmental and technological issues in the Russian Federation.

The exact amount of counterpart financing will be determined during project appraisal. At this stage the project team anticipates that substantial co-financing of the TA component will be available. In accordance with the program "Studies and Research under the Priority Directions of Science and Engineering for 2007-2010" financing of RER activities will be around US\$8-10 million per year, which is more than three times higher than envisaged government input in the TA component.

## **3. Financing Partners**

The, MEDT, the Ministry of Finance and NPAF will be the main partners of the Bank. MIE, MNR, and MEST will provide co-financing for relevant project tasks under the technical assistance component. NPAF and its clients (project investors) will be the main partners in financing RE projects under the Renewable Energy Financial Facility. The administrations of pilot regions will provide co-financing for the creation of regional Revolving RER Facilities.

REEEP indicated to allocate at least US\$300,000 in support of renewable energy development in Russia during 2007-2011.

Upcoming TACIS project "Renewable energy policy and the rehabilitation of small scale hydropower plants in the Russian Federation", with the budget 2.0 million EUR, will provide an important input in achieving of RREP objectives. The World Bank and TACIS intends to sign a document stipulating the relations between two operations on REP development in Russia.

It is envisaged that bilateral donors such as the EU, Austria, Denmark and other Nordic countries will also contribute to renewable energy development in Russia. The World Bank intends to deepen its cooperation with donors prior to effectiveness and in particular during the implementation phase.

#### **4. Monitoring and evaluation of outcomes/results**

A monitoring and evaluation system will be put in place to assess the project's effectiveness during implementation and after the project is completed. A results monitoring framework will be set up focusing on the global development objective to be achieved and the intermediate and/or final results expected from implementing each project component. The framework will include specific and monitorable performance indicators such as the number of subprojects supported by the REFF, the RE investments leveraged by REFF and the associated GHG emission reductions.

Project monitoring and evaluation activities will be carried out under the responsibility of the NPAF ED, which will submit semi-annual progress reports to the Bank. The NPAF OI should be updated with the aim to contain more detailed indicators, including those tailored to some specific types of investment subprojects supported by RREP.

A mid-term review will be carried out to assess overall project progress. This review will include an in-depth assessment of the institutional and financial sustainability of REFF, its initial impact on the broader RE landscape and the lessons learnt. Based on the outcome of the mid-term review, the Bank will advise the Government of the Russian Federation to take measures to ensure that the project is successfully completed.

On the subproject level, all beneficiaries of financial assistance (grants/loans) will establish an incremental cost analysis that includes a baseline scenario and a project scenario for energy performance and emissions, including CO<sub>2</sub>.

#### **5. Sustainability**

##### **(a) Sustainability (including financial sustainability)**

The project is expected to be financially and institutionally sustainable. Project activities are linked to long-term national programs on energy efficiency and renewable energy utilization and to the intention of the Government of the Russian Federation to diversify fuel utilization and to protect the environment.

To ensure sustainability beyond the implementation period, the project would:

- Assist with the development and implementation of long-term strategies and detailed operational action plans for nationwide activities on RE development;
- Influence the regulatory framework to ensure adequate federal/regional support in the form of effective funding mechanisms, electricity buyback policy, preferential taxation, etc. as well as enforcement of environmental regulations;
- Build capacity of federal/regional authorities and local communities through adequate training, technical advice, and critical infrastructure and equipment support;



- Strengthen the awareness and understanding of the benefits of indigenous renewable energy utilization by the local population, general public and key stakeholders, and their involvement in the above mentioned activities, and
- Create a long-term Renewable Energy Financial Facility to help overcome financial and institutional barriers for renewable energy development.

(b) Replicability

The Program’s replicability is ensured by its robust focus on removing barriers to the development of RER in Russia, which will finally lead to a change in the current unfavorable investment and incentive structure and create an enabling environment. Once the financial, information, institutional, ownership and implementation capacity barriers are removed, renewable energy development will become competitive and attract private financing to suitable resource bases throughout the country.

(c) Stakeholder Involvement

To ensure adequate development impact, the implementation of the Program will be based on broad stakeholder involvement, including actors in the relevant sectors, such as the electricity sector, DH sector, and the forestry sector in the case of biomass projects in Northwestern Russia. On the federal level, MEDT, MIE, MNR, and MEST as well as institutions and organizations under their administration will be project counterparts. On the local/regional levels the administrations of the oblasts will play a leading role. Strong interest and willingness to participate in project preparation and implementation was expressed by NGOs (WWF, several professional associations and other organizations) and the private sector (commercial banks, engineering and consulting companies, equipment producers, etc.).

(d) Exit Strategy

The final exit strategy for GEF funds will depend on the success of the project. The Government of the Russian Federation, the World Bank and GEF will finalize the exit strategy in year 4 of project implementation or when 75% of the combined REFF funds have been committed, whichever comes earlier.

If monitoring and evaluation reports indicate that program objectives are being met, remaining funds could be used to continue support for successful elements of the Program. If monitoring and evaluation reports indicate that program objectives are not being met, remaining funds could be (i) granted to the most successful REFF, (ii) granted to the GOR for the use of other GHG mitigation activities or (iii) returned to GEF. analysis of performance will determine which of the GEF modalities may still serve a useful function and which should be converted for better use in Russia.

**6. Critical risks and possible controversial aspects**

There are a number of risks which are highlighted in the table below, together with proposed or envisaged mitigation measures:

<b>Risks</b>	<b>Risk Mitigation Measures</b>	<b>Risk Rating with Mitigation</b>
REFF’s size and leverage may not be large enough to create a sustained market impact.	Obtain GOR, bilateral and multilateral donor contributions during project preparation and implementation. Use early successes and associated rise in the Fund’s credibility to mobilize additional donor contributions. Catalyze substantial commercial co-financing	Modest

	through both demonstration effects of successful projects and business partnerships.	
Government's commitment to national policy for RE and to streamline state/local decision-making fails over time	Build capacity in MEDT, MIE and other ministries, and develop procedures to streamline decisions affecting RE implementation within Government structures. Maintain policy dialog with all stakeholders to ensure commitment to reform.	Modest
The power sector restructuring will be slow and inadequate leaving investors without proper enabling framework	Build capacity with the new power sector entities in the RAO UESR, the tariff system regulators, and the MIE	Substantial
The private sector will not be willing to invest in RE projects	Support legislation to ensure adequate feed-in tariffs or similar price incentive. Technical assistance to NPAF and local FIs to enable optimal financial intermediation through appropriate financial support instruments	Modest
Lack of financial support for project preparation	Obtain firm commitment from partners to co-finance preparation of feasibility studies. Market REFF to local FIs early on. Conduct periodic workshops and disseminate early successes to encourage competitive co-financing.	Low
Negative outcome of feasibility studies	Well prepared RER assessments. Share risks among all project participants	Modest
Lack of funding for full project scope developed under the feasibility studies	Active soliciting of project finance.	Substantial
REFF does not operate effectively, does not disburse funds	Technical assistance support to the NPAF ED, especially with regard to providing additional internal capacity for RE investments. Lessons learned from numerous relevant projects (many in ECA) will be taken into account. Ensure adequate deal flow through project preparation activities.	Modest
Overall Risk Rating		Modest

Risk ratings:

High Risk (H)	Greater than 75% probability that the outcome/result will not be achieved
Substantial Risk (S)	Probability of 50 – 75% that the outcome/result will not be achieved
Modest Risk (M)	Probability of 25 - 50 % that the outcome/result will not be achieved
Low or Negligible Risk (N)	Probability of less than 25% that the outcome/result will not be achieved

## 7. Grant conditions and covenants

Conditions for effectiveness:

Signing of the Agency Agreement between MEDT, the Ministry of Finance and NPAF ED, satisfactory to the Bank, has been duly executed. Conditions for disbursement through REFF:

- NPAF will maintain a financial management system acceptable to the Bank.

- Approval by the NPAF Supervisory Board of the Operational Manual, adapted to the implementation of the RREP.

NPAF will maintain a financial management system acceptable to the Bank. Project financial statements, SOEs and Special Account will be audited by independent auditors acceptable to the Bank and on terms of reference acceptable to the Bank. The annual audited statements and audit report will be provided to the Bank within six months of the end of each fiscal year.

## **D. APPRAISAL SUMMARY**

### **1. Economic and financial analyses**

**Economic Analysis.** Economic analysis of each subproject will provide the primary basis for selection of projects. Primary renewable energy project outputs will typically include heat supply for DH systems and/or electricity. Economic benefits will include the avoided cost of baseline supplies of the same outputs as well as quantified values for reductions of CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>10</sub> emissions compared to baseline supplies. Baselines will be identified through determination of least-cost supplies with appropriate consideration of both operating margins and build margins. Subprojects selected for RREP support will be limited to those that demonstrate positive net economic benefits on this basis.

Proper quantification of environmental benefits can be difficult and subject to controversy. To provide a consistent basis for subproject selection and to expedite project evaluations, the RREP will establish standard estimates and methods for evaluation of these benefits that reasonably reflect established values that are currently being used.

The RREP will not have a detailed economic analysis ex ante. However, a pro-forma economic model of a renewable energy project will be developed to illustrate the interplay of local and global environmental benefits with traditional economic benefits. This model will also provide the justification for GEF support in terms of barrier removal and global benefits from reduced CO<sub>2</sub> emissions at a specified incremental cost.

All subprojects will be screened according to the criteria set out by the NPAF Supervisory Board and acceptable to the World Bank. Details of the economic justification for individual subprojects according to GEF criteria are contained in Annex 9 and the NPAF Operational Manual.

Consistent with GEF operational policy, the requested GEF funds would only be used to finance the incremental costs on barrier removal, financial support and technical assistance in project preparation and implementation to project developers.

For GEF purpose, the preparation of the project has included an incremental cost analysis. This analysis (Annex 15) provides a baseline and the incremental cost of achieving global benefits by using renewable energy sources.

**Financial Analysis.** In order to gauge the market potential for renewable projects that can be supported by the REFF in the early years, a preliminary assessment was carried out and an indicative project portfolio was developed based on technical and financial feasibility evaluation.

The key factor determining profitability prospects are the parameters of the underlying heat/power purchase agreements and level of tariff agreed with a consumer or the regulator. The actual purchase price for renewable energy will normally be linked to the market index for the fossil fuels that are being replaced, i.e., the higher the cost for the conventional energy sources that serve as a market reference, the more profitable the renewable energy investment will become. Other tariff schemes where preferential purchase is obligatory and that have a premium attached to them also influence the financial viability of the project.

All projects will be financed with private or municipal equity, GEF funds, commercial loans and donor contributions from international, bilateral and/or local sources. Financial due diligence of subprojects will include, among other requirements, creditworthiness of the developer (including track record); business plan (technical and financial *pro forma*); permitting and licensing, including status of privileged producer; heat- and/or power sales contract, rules of operation in the market.

**Fiscal Impact.** The project has no fiscal impact for the Government as there is no borrowing by the Government and the investment subprojects are financed mainly on a commercial basis. Taxation will be applied as a share of the gross income, or as a tax on the net profit.

## **2. Technical**

The project will employ proven, commercially viable RE equipment and technologies. To ensure that renewable energy projects are technically sound and commercially viable, a technical and economic due diligence review will be conducted according to the NPAF Operational Manual.

## **3. Fiduciary**

### (a) Country Issues

The last Country Financial Accountability Assessment (CFAA) of the Russian Federation was conducted in January 2001. Pending the graduation of the Government's financial management and procurement capacity and infrastructure to a level of performance that would allow the World Bank to rely on those systems, the CFAA recommended that fiduciary functions (disbursement, procurement, accounting and reporting, and operational reviews) continue to be outsourced to specialized agencies. Such agencies present the advantage of using skilled consultants and reliable, suitable, and stand-alone computerized information systems.

Based on the Bank's current audit policy, the CFAA recommends maintaining current arrangements for the annual audit of Bank-assisted projects, which involve audit by private sector audit firms competitively appointed among those pre-selected by the Bank, in consultation with the MOF.

### (b) Funds Flow

IBRD funds will be transferred by direct payment and Special Account (SA) replenishments. Letters of credit will also be used. There will be no FMR-based disbursements. The SA will be opened in a commercial bank acceptable to the Bank and to the Ministry of Finance.

### (c) Staffing

NPAF ED financial department staffing is described in the NPAF Operating Manual. At present, key financial positions are occupied (all people with experience in Bank-financed projects), and additional financial staff for the Project (if required) will be hired upon signing of the Agency Agreement.

### (d) Accounting Policies and Procedures

NPAF ED maintains its accounting books and records for the Bank-financed Projects using a computerized accounting system. It allows to prepare the records in accordance with Russian statutory reporting rules (for NPAF) and on cash basis (for Bank-financed projects). NPAF ED has a clear formal set of appropriate accounting procedures and internal controls including authorization and segregation of duties, described in the accounting manual, which has been reviewed by the Bank and found acceptable.

The NPAF had established criteria and procedures for the selection, design, appraisal, and supervision of investment projects, outlined in its Operating Instructions. NPAF is not subject to Russian taxation, including VAT and income and/or profit tax on interest income, nor is it subject to banking regulations.

(e) Internal Audit

No internal audit function.

(f) External Audit

The audit of the project will be conducted by independent private auditors acceptable to the Bank, on standard terms of reference acceptable to the Bank, and procured by NPAF ED in accordance with the Bank procurement guidelines, utilizing the right of prior review by the Bank. The audited financial statements will be sent to the Bank within six months of the end of the Government's fiscal year. The cost of the audit will be financed from the proceeds of the grant.

The first and final audits can cover up to 18 months. The contract for the audit awarded during the first year of project implementation and thereafter extended from year-to-year with the same auditor, subject to satisfactory performance.

(g) Reporting and Monitoring

NPAF ED will be responsible for producing all financial reports for the Bank. NPAF ED has demonstrated in other projects that it is able to report on project expenditures accurately and on time.

(h) Disbursement Arrangements

NPAF ED will be solely responsible for all disbursement aspects, including operation of the Special Account, preparation and submission to the World Bank of claims for Special Account replenishment, and claims for disbursements of loan proceeds directly from the World Bank. Supporting documentation for SOEs, including completion reports and certificates, will be retained by NPAF ED and made available to the Bank during project supervision. NPAF ED will also be solely responsible for operation of the Project Account in Rubles.

(i) Special Account

A Special Account will be opened in a commercial bank acceptable to the Bank, and managed by NPAF ED. Payments made from the Special Account are to cover eligible expenditures under the Project. Applications for replenishment will be supported by the necessary documentation, the Special Account bank statement, and a reconciliation of the bank statement.

(j) Supervision Plan

Bank-accredited Moscow-based Financial Management Specialist will carry out an FM supervision of the project at least once a year.

(k) Procurement

The NPAF ED will, with agreement from the Bank, use its own staff with significant experience in procurement and disbursement to supervise utilization of the Bank's funds by final recipients under the EMP.

This approach will significantly reduce both the costs to NPAF ED and the risks associated with problems with Bank procurement and disbursement procedures.

#### **4. Social (Stakeholder involvement)**

The primary impact of the project on the population of participating regions shall be the availability and use of a long term, competitive, local energy source which will help to keep heat prices in line or below the prices resulting from fossil fuel based conventional technology.

Secondary social impacts in the form of improved local environment are also expected. Appropriate stakeholder participation in project preparation, implementation, monitoring and evaluation is ensured through the application of World Bank guidelines for consultation and disclosure.

#### **5. Environment**

The project will facilitate improved and transparent management of natural resources through increased use of clean renewable energy (and the decreased use of the polluting and depleting fossil fuels). It directly reduces vulnerability of the poor to environmental change through the reduction of CO<sub>2</sub>, which mitigates climate change. Furthermore, the subprojects contribute towards protecting the health of the city population from pollution by reducing the emissions of such local pollutants as NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub>. Monitoring of the above environmental benefits will be achieved through the monitoring of the associated parameters: reductions in the emissions of CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub>.

#### **6. Safeguard policies**

The environmental screening category will be FI (Financial Intermediary). In an FI project, specific subprojects are identified during implementation and the responsibility for environmental due diligence lies with the FI, in this case the NPAF. Subprojects will have to follow the environmental safeguards adopted by the NPAF and agreed on by the World Bank. The NPAF OI include an Environmental Chapter describing the process for environmental assessment of the subprojects.

All subprojects are expected to trigger at least the Environmental Assessment (OP/BP/GP 4.01) safeguard policy.

The NPAF will finance only subprojects that have completed a comprehensive feasibility study prepared by the sponsors according to the NPAF guidelines. The studies would indicate, inter alia: (i) project design; (ii) equipment specifications; (iii) engineering cost estimates; (iv) implementation arrangements; (v) the proposed financing plan; (vi) detailed financial projections with appropriate sensitivity analyses; (vii) the proposed legal structure of the borrowing entity, and (viii) an environmental impact assessment.

Safeguard policy compliance assessment of subprojects will involve a social and environmental assessment with all its implications. This assessment will review the project sponsors' capacity to implement the safeguard policy recommendations and, if the capacity is insufficient, propose measures to bring this capacity to the required level. Thus, for all projects Integrated Safeguards Data Sheets (ISDSs) as well as Environmental Management Plans (EMPs) will be prepared by the project sponsors and will be reviewed in the Bank.

<b>Safeguard Policies Triggered</b>	<b>Yes</b>	<b>No</b>	<b>TBD</b>
<b>Environmental Assessment (OP/BP 4.01)</b>	<b>X</b>		
<b>Natural Habitats (OP/BP 4.04)</b>	<b>X</b>		
<b>Forests (OP/BP 4.36)</b>			<b>X</b>
<b>Pest Management (OP 4.09)</b>			<b>X</b>
<b>Cultural Property (OPN 11.03)</b>			<b>X</b>
<b>Indigenous Peoples (OD 4.20)</b>			<b>X</b>
<b>Involuntary Resettlement (OP/BP 4.12)</b>			<b>X</b>
<b>Safety of Dams (OP/BP 4.37)</b>			<b>X</b>
<b>Projects on International Waterways (OP/BP 7.50)</b>			<b>X</b>
<b>Projects in Disputed Areas (OP/BP 7.60)</b>		<b>X</b>	

Responsibility for the proper execution of subprojects will be with the NPAF ED. The Bank requires that each subproject is screened and that recipients carry out an appropriate Environmental Impact Assessment (EIA). After completion of the feasibility studies, the NPAF ED will verify that the projects meet the environmental requirements of relevant national and local legislation and are consistent with the environmental policies of the Bank.

#### **7. Policy Exceptions and Readiness**

The renewable energy projects identified in the Russian Federation require no Bank policy exceptions.

<b>ISSUES</b>	<b>STATUS</b>
Fiduciary	An Agency Agreement will stipulate FMS and Procurement capabilities of the NPAF with regard to investment funds administration and procurement.
Disclosure Requirements	All Environmental and Social Assessments will be done during project preparation.
Monitoring & Evaluation	M&E indicators will be incorporated into subprojects design and implementation arrangements.
Technical	NPAF OI will be adapted to the implementation of the RREP, and the changes will be agreed with the World Bank and approved by the NPAF Supervisory Board.

**ANNEX 1: Country and sector background**  
**RUSSIA - RENEWABLE ENERGY PROGRAM**

Energy Sector

Russia is the fourth largest generator of electricity in the world, after the US, China, and Japan. During the 1990's the consumption and generation of electricity fell dramatically. In fact, total generation is not expected to reach 1990 levels until 2010. The decrease in production can be attributed to a number of factors, including decreased demand due to the economic downturn, plants being retired and customers being disconnected from the system for non-payment.

Despite ongoing restructuring efforts to privatize the industry, the energy sector faces many of the same challenges as other Eastern European countries, including uneconomic tariff structures and aging electric systems.

Revision of the subsidy system of municipal services in ways that increase incentives for service providers to make investments in increased efficiency and in the use of local energy resources is also underway.

Renewable Energy Potential

There is a large potential for renewable energy development in Russia, in particular, due to countrywide biomass, wind, solar, hydro and geothermal resources explored and assessed in many regions. The following are important positive factors for utilizing Russia's renewable energy potential:

- Availability of qualified specialists, including those that have practical experience in project preparation, construction and operation of heat and electricity supply systems;
- Necessity of modernization and reconstruction of housing and communal services facilities in most cities of Russia and the possibility of increasing economic effectiveness of heat and electricity supply in many of them by increased utilization of renewable energy;
- Rise of world and domestic prices of traditional fuel types increases economic efficiency of local energy sources.

The potential for a RE project portfolio was confirmed at the preparatory stage of RREP. About 50 investment projects with total investment costs of more than US\$270 million were identified (see table 1).

**Table 1. Investment projects identified in priority regions at the preparatory stage**

№	Region and types of projects	Number of projects identified	Project costs (US\$ million)
1.	North-West region ( Karelia Republic, Komi Republic, Arkhangelsk oblast): Biomass utilization for heat generation	22	72.0
2.	Southern region (Adygeya, Dagestan, Ingushetia, Kabardino-Balkaria, Karachaevo-Cherkessia, North Osetia, Astrakhan, Krasnodar, Rostov, Stavropol): RER utilization for heat and power generation	Total 23 Of which -Mini hydro 7 -Solar 4 -Wind 3 -Biomass 2 -Biogas 1	184.1



		-Hybrid systems 6	
3.	Baikal territory (Republic Buryatia): RER utilization for heat and power generation	5	22.0
	Total for three priority regions	50	278.1

Despite the large potential of RER in Russia, currently not more than 3.5% of the total primary energy supply is based on renewable energy, of which two-thirds are large hydro and one-third all other forms. Renewable energy (without large hydro) accounts for only 0.5% of total electricity generation. Heat based on renewables amounts to about 4% of the total heat generation in Russia. This relatively low level of RER utilization is caused, among other reasons, by such factors as:

- The country's rich fossil fuel reserves, which give access to cheap energy in large areas around the sources of fossil fuel;
- An economy dominated by heavy industry that is best served by centralized power systems, and
- A distorting subsidy system that not only conceals the external costs of fossil fuel utilization associated with environmental damages but, especially in the residential heating sector, breaks the link between consumer prices and production costs.

#### Barriers for RE development

The development of RE in Russia is impeded by the following barriers:

##### Financial Barriers:

*Lack of domestic and foreign investment capital:* Domestic companies have limited own resources and insufficient access to project financing resources. Foreign sources of capital are discouraged partly by the perceived risky business climate and unstable political and economic conditions and partly by the lack of strong legal institutions and contract enforcement;

*Lack of longer-term affordable debt financing:* Domestic commercial banks are unwilling to lend because investment returns in the longer-term are risky (fuel price volatility, etc.). Financial institutions are unfamiliar with analyzing the financial aspects of RE investments;

*High project preparation and transaction costs:* Project preparation costs accrue prior to – and without the assurance of – obtaining financing for the actual implementation of the project. Lack of demonstration projects increase transaction costs associated with project preparation;

*High cost of special equipment:* The equipment needed for renewable energy utilization, often determined by small scale production, is costly even when commercially available;

*Absence of federal financing mechanisms (such as environmental funds, etc.):* If there are such mechanisms, their use is limited by unaffordable co-financing requirements;

*Uncompetitiveness due to low fossil fuel energy prices:* The currently existing, distorting subsidy system does not reflect the external costs of fossil fuel utilization associated with environmental damages and, especially in the residential heating sector, breaks the link between consumer prices and production costs.

##### Information Barriers:

*Lack of information about technologies and opportunities:* Lack of information on available technologies, such as conversion of existing large fossil fuel fired boilers to biomass use, knowledge of large-scale biomass co-generation systems, the establishment and operation of modern double-circuit geothermal heat supply systems and binary low-boiling geothermal power plants;

*Lack of information about benefits:* Lack of awareness about the potential benefits (financial, social and environmental) of renewable utilization, profitability of investments, lack of credible case studies;

*Lack of information for cost/benefit analysis:* Lack of heat meters in residential and service buildings and lack of historical heat consumption data for the preparation of baselines increase the costs of preparing credible projections about energy savings and investment and operational costs of RE investments;

*Lack of reliable information about Russia's companies:* Information about financial situation (earnings, profits, and debts) is often difficult to obtain. This increases transaction costs (outside independent auditor) and risks (again, costs) for banks considering loans, or potential joint-venture partners considering investments, and

*Lack of high quality information about renewable potential:* Only rough estimates exist on the potentially exploitable renewable resources.

#### Institutional Barriers

*Lack of legislative support:* Insufficient federal/regional support in the forms of funding mechanisms, electricity buyback policy, preferential taxation, etc.; this is compounded by the fact that fossil fuels are heavily subsidized directly as well as indirectly;

*Insufficient enforcement of environmental regulations:* Environmental regulations (emission standards) have become stricter over the past decade, enforcement (pollution fees, penalties) is still weak though, and

*Inflexibility of municipalities:* Local administrations are unwilling to make funding decisions for multi-year projects (long-term benefits are hard to monetize for shorter prospective lifetime of local administrations).

#### Ownership Barriers

*Mismatch between municipal ownership of district-heating systems and regulation of tariffs by federal/regional authorities.* No price signals for residential sector and, therefore, lack of economic interest and capability of municipalities to participate in investment projects on development of renewable energy.

*Insufficient private sector presence* in the power and heat generation sector.

#### Implementation Capacity Barriers

Undeveloped local project planning and implementing capacity; human resources only for routine operation, no high level human/technical resources, no energy managers; lack of capacity and guidelines for preparing feasibility studies, business plans and “bankable” project proposals.

#### Policy on climate change mitigation

In the Russian Federation issues related to emission reduction of five out of the six GHGs controlled by the Kyoto Protocol are regulated by environmental legislations. Russian legislation does not provide for direct regulation of CO<sub>2</sub> emissions. Instruments that primarily declare that GHG emissions should be reduced and their removal increased are indirectly present in different laws. These laws include the federal laws on environmental protection and energy conservation.

GHG emission estimates for 1999-2004 presented in the Fourth National Communication of the Russian Federation demonstrate that GHG emissions in 2004 reached 70.1% of the base year's level. An assessment of the possibility to meet Russia's quantified commitments during 2008-2012 based on development forecasts for the economy in general and for its specific industries demonstrates that the actual GHG emission level in the Russian Federation will be significantly less during the commitment period than the assigned amount (i.e. the 1990 emission level).

## Bank involvement

In 1998, the World Bank started an Energy-Environment Review of Russia, which was completed in 2000. In this work, a number of Russian institutions participated. Key results of the study showed considerable renewable energy resources in the Northwestern part, the Southern part, the Far East, and the Baikal area. From the Review it also became clear that the level of utilization does not meet the requirements of the country and the regions mentioned above. Renewable utilization in Russia on a national level is less than 1%, compared to the 8% level of utilization in the European Union.

Among the immediate follow up work of this review were two project proposals for a *Karelia – Biomass Project and Promotion of Renewable Energy Development in South Russia*. Both projects were envisaged to be supported by the Global Environment Facility (GEF). The Russian GEF Focal Point also endorsed both projects. The GEF evaluated the proposals and advised the project team to place them in a more comprehensive framework to better meet the key GEF objectives of removing barriers to the utilization of environmentally friendly fuels and to the improvement of energy efficiency. Based on the recommendations of GEF after the evaluation of the previous proposals, the concept of a program called Russia – Renewable Energy Program (RREP) has been laid out.

The concept and objectives of the RREP support the Bank's strategy to assist the Russian Federation in the sustainable development of its energy resources. The Russia FY03-05 CAS intended, inter alia, to assist Russia to develop the capacity to make effective use of, and benefit from global financing mechanisms related to climate change, such as GEF and the Prototype Carbon Fund. The CAS explicitly mentions RREP: "*A possible GEF/PCF renewable energy facility is also under discussion.*"

One of the priorities of recently developed the *Country Partnership Strategy (CPS)* is to support Russia's increasing global role, and to assist the country in fulfilling its global commitments. CPS refers to TA operations on the introduction of low-carbon technologies and climate change mitigation. Another priority area of cooperation between the Government and the Bank are diverse activities at the sub-national level. RREP design, with a focus on proactive participation of regions, is fully consistent with this strategic priority.

**ANNEX 2: Major related projects financed by the Bank and/or other agencies**  
**RUSSIA - RENEWABLE ENERGY PROGRAM**

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
<b>Bank-financed</b>			
Improve business environment and enterprise support through creation and strengthening of a financial mechanism (NPAF); incorporation of environmental and natural resources management concerns into the economic, social and political adjustment process.	Russia Environmental Management Project	Moderately Satisfactory	Moderately Satisfactory
Alleviation of the financial burden on municipal governments associated with the supply of district heating to the local population by (i) improving the operating efficiency of district heating systems through investments; (ii) promoting sound cost recovery policies and commercial practices; and (iii) supporting government efforts to improve the cost-effectiveness of subsidy programs.	Municipal Heating Project	Satisfactory	Satisfactory
Need for the electricity sector reform aimed to introduction of market relations and unbundling of potentially competitive parts of the generation and distribution systems from RAO UES.	Electricity Sector Reform Support Project	Satisfactory	Satisfactory
Development of a sustainable financing capacity for EE and RE projects in the Russian private sector through the integration of credit lines, partial guarantees, and technical assistance to financial institutions at different stages of market development.	IFC/GEF Russia: Sustainable Energy Finance Program	Active	Active
Lack of the necessary institutional procedures and capacity, supporting regulations, and a financing mechanism to provide commercial long-term financing for renewable energy projects.	Geothermal Energy Development Project for the ECA region (GeoFund)	Pipeline	Pipeline
Lack of legislative and normative regulation on wind power generation and supply	IFC/GEF medium-sized project on Developing the Legal and Regulatory Framework for Wind Power in Russia.	Completed	Completed
<b>Financed by other development agencies</b>			

Low demand, awareness and capacity for energy efficiency services in the municipal sector; Risk barriers in the financial markets inhibiting commercial bank participation in energy efficiency project financing.	UNDP/GEF project on Capacity Building to Reduce Key Barriers to Energy Efficiency in Russian Residential Buildings and Heating Systems	Completed
Institutional and financial barriers to the implementation and financing of coal mine methane recovery and utilization projects in Russia. As one of the key mechanisms in that regard, the project will support the establishment of a specialized ESCO-type "Coal Mine Methane Recovery and Utilization Company"	UNDP/GEF project on Removing Barriers to Coal Mine Methane Recovery and Utilization	n/a
Need for modernization of current system of relationships in covering municipal utility costs. The project creates new system of billing and paying for municipal utility services.	Reliable, Energy Efficient Municipal Utility Services	n/a

The project drew lessons learned from numerous projects and programs on renewables and energy efficiency, which have been implemented by the World Bank, GEF and others. Examples of such projects include:

- Armenia – Renewable Energy Project;
- China – Renewable Energy Scale-up Program;
- Croatia – Renewable Energy Resources Project;
- Macedonia – Sustainable Energy Project;
- Turkey – Renewable Energy Project;
- Poland – Zakopane Geothermal Project.

The proposed project and the GeoFund Program offer complementary support for Russia's renewable energy program. Both projects will use similar approaches to barrier removal and creation of financing mechanisms. The team preparing both projects is in close consultations and will look for opportunities for cooperation during the implementation of the projects.

## ANNEX 3: Results Framework and Monitoring

### RUSSIA - RENEWABLE ENERGY PROGRAM

#### Results Framework

Project Development Objectives	Program Outcome Indicators	Use of Outcome Information
<p>The project development objective is to facilitate a sustainable market for renewable energy in the Russian Federation by supporting the development of enabling policies and institutional capacity, and market oriented financing mechanisms.</p>	<p>Introduction of an enabling regulatory and incentive framework for RE based power and heat production</p> <p>Total number of renewable energy projects reaching financial closure as a result of REFF</p> <p>New RE power generation capacity installed (MWe)</p> <p>New RE heat generation capacity installed (MWt)</p> <p>Total amount of electricity and heat additionally generated (MWh) from new RE installations</p>	<p>Outcome Indicators will provide the Recipient, the World Bank, and the GEF with basic information on: 1) the achievement of an enabling framework for RE investments, and 2) whether the level of financing for RE projects is increasing.</p> <p>Unsatisfactory progress on outcome indicators may signal shortcomings in TA for removing barriers and reducing investment costs and capacity building activities, or indicate change in market conditions leading to the need for a revision of existing regulations and tariffs.</p>
<b>Global Environment Objective</b>		
<p>Reduce GHG emissions on a continuous basis</p>	<p>Reduction of CO<sub>2</sub> emissions at national and subproject levels.</p>	<p>Demonstrate that CO<sub>2</sub> reductions can be achieved by creating an enabling environment for RER</p>
Intermediate Results One per component	Results Indicators for each component	Use of Results Monitoring
<p>Component One: Increased in-country knowledge and improved framework and market for RE development</p>	<p>Improved laws, regulations, strategies and action plans on RER introduced.</p> <p>Feed-in tariffs for RE and of a “Green Certificate” established</p> <p>Streamlined permitting procedures established</p> <p>Private Sector companies are strengthened.</p> <p>Number of energy-environmental reviews of natural reserves and national parks, feasibility studies and technical design</p> <p>Implementation of replicable innovative models of policy, regulatory, or financial frameworks</p> <p>Creation of an interactive web portal on RER</p> <p>Establishment of a Network of National</p>	<p>Slow enactment of laws, regulations and strategies may indicate lack of support from stakeholders and require additional consultations with policy-makers and regulators.</p> <p>Determine whether the component is making progress towards establishing an enabling framework for RER development.</p> <p>Progress in implementation of reviews and feasibility studies will indicate a feasibility of RE introduction in natural reserves and national parks.</p> <p>Progress in implementing of innovative models will indicate</p>

	Biomass Centers	which approach needs further improvements to legislation and regulations.
Component Two:  Increased investment in RE projects	Number of feasibility studies supported by the REFF  Volume of additional co-financing to PPW and REFF in pilot regions  Total financing of RE by REFF in pilot regions	Determine whether the REFF is operating effectively and meeting expectations for financing deals including the attraction of leveraged finance.  Slow disbursement of funds may indicate either weak capacity of REFF to identify viable projects and leverage additional funds for project preparation purposes.

### Arrangements for results monitoring

							Data Collection and Reporting		
Outcome Indicators	Baseline (annual)	YR1	YR2	YR3	YR4	YR5	Frequency and Reports	Data Collection Instrum.	Responsibility for Collection
Introduction of an enabling regulatory and incentive framework for RE	n/a			Some evidence that framework in place		Substantial evidence that framework in place	Annual	PMU reports, midterm review, completion report, technical and social surveys	PMU
RER projects reaching financial closure as a result of REEP (number)	n/a	1	3	6	8	10	Annual	PMU reports, midterm review, completion report	PMU
Power generation capacity installed from new RE (MWe) (cumulative)	n/a	-	4	12	25	42.1	Annual	PMU reports, midterm review, completion report	PMU
Electricity generated from new RE installations MWh(e)/year	n/a	-	10800	32400	67500	113670	Annual	PMU reports, midterm review, completion report	PMU
Heat generation capacity installed from new RE (MWt) (cumulative)	n/a	-	6	20	35.0	66.0	Annual	PMU reports, midterm review, completion report	PMU
Heat generated from new RE installations MWh(t)	n/a	-	23820	79400	138950	262000	Annual	PMU reports, midterm review, completion report	PMU
Reduction of CO <sub>2</sub> emissions (th t/y) cumulative	n/a	-	22.7	72.1	137	248	Annual	PMU reports, midterm review, completion report	PMU
Results Indicators for Each Component	Baseline (annual)	YR1	YR2	YR3	YR4	YR5	Frequency and Reports	Data Collection Instrum.	Responsibility for Collection
Component One - Market Framework									
Laws, regulations, strategies and action plans are prepared and introduced	n/a	Study of economic feasibility of different RER	Strategies and action plans are prepared	The relevant packages on laws and regulations are prepared	The packages are introduced	-	Annual	PMU reports	PMU



Conferences and workshops for politicians and decision-makers (cumulative)		2	4	5	6	8	Annual	PMU reports	PMU
Energy-environmental reviews, feasibility studies in natural reserves and national parks	n/a	43 Energy-environmental reviews completed	5 feasibility studies prepared	10 feasibility studies prepared			Annual	Consultant reports	MNR
Implementation of replicable innovative models of policy, regulatory or financial frameworks	n/a	1	2	2	2	-	Annual	REEP Secretariat reports	PMU
<b>Component Two – Investment</b>									
PPW support to development of feasibility studies pipeline (US\$)	-	500,000	1,500,000	1,500,000	500,000	-	Annual	PMU reports	PMU
Volume of Additional Co-financing (US\$) to PPW and REFF in pilot regions	-	350,000	1,700,000	3,000,000	4,400,000	4,000,000	Annual	PMU reports	PMU
Total financing of RE projects supported by REFF in pilot regions (US\$)	-	2,500,000	4,000,000	6,000,000	7,000,000	8,000,000	Annual	Administrations of pilot regions reports	PMU

## **ANNEX 4: Detailed project description**

### **RUSSIA - RENEWABLE ENERGY PROGRAM**

The project consists of two main components: (A) TA for Policy Development, Institutional Strengthening and Capacity Building, (B) Support to the Establishment of a Renewable Energy Financial Facility.

#### **A. Technical Assistance for Policy Development and Institutional Strengthening and Capacity Building: US\$5.0 million GEF, US\$14.2 million counterpart funds.**

This component will provide technical assistance in policy development, institutional strengthening and capacity building. It consists of six subcomponents:

**A1. Development of Renewable Energy Policy subcomponent (US\$0.5 million GEF, US\$0.9 million counterpart funds):** i) Economic studies on different RER in different regions of Russia based on a comparison of RER with traditional fuels, taking into account the full costs for traditional fuel use; ii) preparation of national and regional strategies and action plans on the use of biomass, wind, solar and other renewable energy resources; iii) provision of policy advice to federal ministries and regional administrations in the fields of energy policy and institutional support of renewable energy development, improvement of legislation and regulatory and incentive framework; iv) coordination of preparation and implementation of renewable energy development projects and tasks of federal and regional programs, and v) Conferences and workshops for politicians and decision-makers.

Government co-financing from federal and regional budget will cover at least US\$1.5 million of component costs. These tasks and figures are included in the Draft Federal Target Program "Increase of Efficiency in Energy-Supply in the Russian Federation for the period 2008-2010 ", which is currently under preparation. The subcomponent will be supported by upcoming TACIS project "Renewable energy policy and the rehabilitation of small scale hydropower plants in the Russian Federation", with the budget 2.0 million EUR. The World Bank and TACIS intends to sign a document stipulating the relations between two operations on REP development in Russia.

#### **A2. Market Infrastructure Development subcomponent (US\$0.5 million GEF, US\$2.0 million counterpart funds) will include:**

*i) support to the Government in designing and introducing feed-in tariffs and a "green certificates" system.* Introduction of feed-in tariffs for electricity generators and creation of a "green certificates" system are required for the development of the renewable energy market in Russia. The proposed technical assistance would provide additional resources to MIE to design tariffs for different renewable energy resources.

*ii) support to regional authorities in regulation of heat prices as they related to renewable energy projects.* The current practice of heat price regulation does not provide needed incentives for investments in biomass and other RER in municipal district heating systems. This task will support the development of regulations and procedures stimulating the switch from fossil fuels to biomass resources in district heating systems.

*iii) support to development and adopting of technical regulations and standards for RE installations.* The absence of technical regulations and standards for RE installations in Russia is one of the most important barriers for a RE market development. The activity will support the development, adoption and harmonization of Russia's technical regulations and standards with ISO standards. The work on standards and certification will be applied to hybrid systems involving PV, wind, hydro, geothermal and/or diesel generators.

*iv) Support the development of a biomass fuel market.* There is no functioning market for collection, distribution and sale of biomass for fuel. This task will support market participants in developing

pricing guidelines, standard contracts and other necessary elements of a functioning biomass market. Supporting studies on the comparison of different biomass technology will be undertaken.

*v) support to various governmental entities on establishing streamlined permitting procedures, including providing fair and competitive grid access to renewable energy producers.* Sub-laws and detailed instructions for interconnection with grids, licensing criteria and procedures for obtaining land use rights and permits for projects are still to be developed. TA funds will be used to hire experienced consultants in these matters.

*vi) support to and strengthening of private sector companies with regard to RER development.* These activities would consist of support to the introduction of ESCO-models and to the development of business planning on RER development by private companies. Training courses on the mechanisms of public-private partnerships in RER development will be arranged for governmental officials and entrepreneurs.

### **A3. Renewable Energy Program in Natural Reserves, National Parks, and in Special Tourist-Recreational Economic Zones (US\$1.9 million GEF, US\$5.8 million counterpart funds).**

This subcomponent will demonstrate an innovative approach to the utilization of renewable energy for biodiversity conservation and other essential services in natural reserves, national parks and other specially protected areas.

The Russian Federation possesses a unique system of state natural reserves and national parks, which cover 1.98 % of the territory of Russia. Alternative, environmentally sound energy sources at these sites which are located in remote regions will allow the reserves to: i) reduce GHG emissions generated by traditionally consumed thermal and electric power (diesel fuel, gas and petroleum based), ii) ensure uninterrupted operation of computers and communication equipment which is an important condition for effective protection of reserved territories, and iii) essentially improve the living conditions of employees in settlements and on guard posts and on scientific bases during field works and inspection. Governmental co-financing from the federal budget will cover at least US\$6.1 million. These figures are included in the sector program implemented by the MNR.

The subcomponent will support the implementation of the following activities:

- Energy-environmental reviews of selected natural reserves and national parks, including renewable resources assessment and data base creation;
- Feasibility studies and technical design documentation for renewable energy introduction in at least 10 reserves,
- Development of model design documentation packages for construction of renewable energy installations in reserves.

The list of 34 natural reserves and 9 national parks preliminarily selected at the preparatory stage is presented in Attachment 1 of this Annex.

The subcomponent will also support the preparation of feasibility studies on RER development in seven Special Economic Zones, established by a Governmental resolution of February 3, 2007. These special economic zones are created in the following regions: Republic of Buryatia, Republic Gornyi Altai, Altai krai, Krasnodar krai, Stavropol krai, Irkutsk oblast, and Kaliningrad oblast. The Federal Agency on Special Economic Zones and MEDT will be responsible for commissioning this study and initiating RE project development in these zones.

**A4. Partnership on Innovative Financing Mechanisms and Regulations (US\$0.5 million GEF, US\$0.3 million donor contribution from REEEP, US\$1.3 million counterpart funds).**

This subcomponent will provide additional financial resources to extend the REEEP program in Russia, and in particular, to implement projects competitively selected in accordance with its procedures and criteria. REEEP is a Public-Private partnership and was launched by the United Kingdom along with other partners at the Johannesburg World Summit on Sustainable Development in August 2002. Its activities are focused on capturing the experiences, needs, ideas and action of REEEP partners that are working to increase investment through innovative approaches to financing and project development.

REEEP indicated its intention to allocate at least US\$300,000 for the support of renewable energy development in Russia in 2007-2011. The partnership of the WB/GEF with REEEP will allow supporting the implementation of RREP through the financing of additional 5-6 projects selected by REEEP.

The Russian Environmental Center, as a host of the REEEP Secretariat in Russia and FSU, will administer the execution of this subcomponent of RREP.

**A5. Knowledge and information collection and dissemination (US\$0.8 million GEF, US\$3.1 million counterpart funds).** The subcomponent will support the implementation of the following activities:

- Creation and maintenance of an interactive web-portal on renewable energy, which , will support: i) collection, assessment and updating of information about renewable energy resources in Russia, ii) generation of an up-to-date database containing current technologies and engineering knowledge on renewable energy utilization, iii) collection and dissemination of international and domestic project experience in the field of renewable energies. Federal State Enterprise "Rosinformresource" suggested hosting the web-portal. Rosinformresource could use its network of 69 regional offices for the implementation of this task;
- Establishment of a Network of biomass centers to provide advisory services to governmental authorities (on federal and regional level) on different aspects of renewable project development: resource assessment, technology selection and economic comparison, environmental assessment, business planning and training. It will also facilitate knowledge and best practice transfer on biomass energy projects. A focal point for the National Biomass Network will be identified during project start up;
- Support the implementation of information-educational projects selected by the Federal Agency on Science and Innovations for inclusion in the Federal Targeted Program "Studies and Research under the Priority Directions of Science and Engineering for the period 2007-2009". These projects will facilitate long-term capacity building in Russia through supporting the set-up of renewable energy educational and training courses, primarily focused on biomass, wind and solar energy utilization. Universities will be selected based on their track record and reputation for quality, on the relevance of the courses they propose, and on cost sharing arrangements. Support will also be provided to selected publications on renewable energy.

Governmental co-financing of this component from several Federal Target Programs will be granted in an amount of US\$3.1 million or more.

**A6. Program Management, Monitoring, and Evaluation (US\$0.8 million GEF, US\$0.5 million counterpart fund).**

Program management will include day-to-day procurement, financial and contract administration for all tasks carried out under the RREP. This subcomponent will ensure that all activities contribute to the Program's objectives and where necessary corrections and adjustments are made. This would require careful monitoring and evaluation of results by experienced staff.

**B. The long-term Renewable Energy Financial Facility (REFF) (US\$5.0 million GEF, US\$52.6 million counterpart funds)**

The long-term Renewable Energy Financial Facility (REFF) will be established to help overcome financial and institutional barriers for renewable energy development. The facility will consist of three instruments: Project Preparation Window for on-grid electricity generation subprojects, Revolving Soft Loans Window, and Revolving RER Facilities in pilot regions. A long list of projects to be co-funded by REFF has been identified during the preparatory stage.

**B1. Project Preparation Window for on-grid electricity generation subprojects (US\$1.0 million GEF, US\$ 4.6 million investment project sponsors)** will focus on the development of a strong pipeline of mini-hydro and wind subprojects that can provide deal flow for commercial banks and investors. JSC "HydroOGK", which is a daughter company of RAO UESR, indicated an interest to cooperate with the GEF on creating and operating of such mechanism.

Grant support will be provided to subproject developers and sponsors in the form of straight grants through cost sharing of feasibility studies and other project preparation activities. As a general rule, support will be provided on a cost-sharing basis, with a 50% maximum coverage from GEF funds. GEF funds could also be used for capitalizing a special fund to support the preparation of on-grid renewable projects

Contingent grants could also be provided under the PPW to support the preparation of bankable subprojects in cases where significant technical and other project risks are envisioned. In the event that the subproject supported by PPW reaches financial closure, the contingent grant must be repaid out of the proceeds of the subproject. The grant then becomes an unsecured interest-free loan.

In the event that the feasibility studies and related work conducted with PPW funding demonstrate that the subproject is not economically feasible and all efforts to seek financing for the subproject are to be terminated, the contingent grant can be forgiven.

The PPW is not intended to support basic research and/or technological or product development for which there is no clearly identified market or buyer. Rather, it will support the sponsor to pay for consultant services and cover laboratory analysis and data collection that are vital to securing investor participation and debt financing for a subproject.

**B2. Revolving Soft Loan Window (US\$ 1.0 million GEF, US\$ 21.0 million is NPAF lending resources, and US\$ 11.0 million are funds of investment projects sponsors )** will constitute a financial mechanism for provision of selective financial support to companies implementing renewable energy development projects.

The Revolving Soft Loan Window (RSLW) will be based on the institutional framework and financial resources of the National Pollution Abatement Facility (NPAF), which was established as a revolving fund by the Government of the Russian Federation with support of the World Bank and the Government of the Switzerland in 1995 .

The NPAF's mission is funding of financially viable, high priority resource recovery/pollution abatement projects. NPAF Executive Directorate experienced in project preparation, appraisal and supervision in accordance with international standards. It has a good record of quality of its services in project appraisal and preparation, which was confirmed by the World Bank's supervision missions.

The demand for environmental investments continues to be very high. Many enterprises expressed their willingness to undertake energy efficiency and pollution abatement projects assuming that financial conditions will be more favorable. Government representatives stressed that implementation of NPAF projects, besides important environmental improvements, leads to the modernization of core industrial sectors which is one of the government strategic priorities. In light of the above the MOEDT and MOF suggested to the World Bank to extend Environmental Management Project and to include renewable

energy development as one of three main project objectives of NPAF. With substantial governmental support NPAF is going to become a long-term financial mechanism even after completion of the Bank's project.

GEF support (US\$ 1.0 million) will allow NPAF to create a pipeline of RER subprojects. The same approach as in PPW will be applied for supporting of subproject developers and sponsors in the form of straight grants through cost sharing of feasibility studies and other project preparation activities. NPAF will also allocate up to US\$ 1.0 million for the RER pipeline creation.

NPAF is also committed to allocate up to US\$ 20 million of its resources (repayments from initial sub-borrowers and unutilized portion of the Bank's loan and Swiss grant) for cofinancing of RREP investment subprojects. NPAF will provide long-term low-cost loans for project developers of renewable energy utilization in accordance to the following conditions: maximum amount of a sub-loan is US\$ 7 million for a period to 8 years with a grace period of 2-3 years for principal payment under sub-loans/final loans, which should make no more than 70 % from the sub-project total cost.

NPAF applies two on-lending schemes:

- (1) direct on-lending by the Ministry of Finance to a project company (Sub-borrower) ;
- (2) on-lending through a financial intermediary (Sub-borrower) to a project company (Final Borrower).

The NPAF's support to a selected subproject could be provided only on a basis of detailed project appraisal, which includes evaluation of: i) technical feasibility of offered technical and technological solutions, procurement plan and project implementation schedule; ii) environmental effects of an investment project; iii) economic efficiency and risks of losses; and iv) financial sustainability of the enterprise-applicant. The list of priority subprojects for the NPAF financial support has been identified during the preparatory stage (Attachement 2 to this Annex).

**B3. Revolving RER Facilities in three pilot regions (US\$3.0 million GEF, US\$15.0 million counterpart funds)** will be created for the development of regional structures and the testing of similar financial instruments (cost-sharing of project preparation and contingent grants and loans) at the sub-national level. These funds will allow adjusting the flow of potential RER development investment projects in regions. The general conditions of granting funds under this subcomponent may include: i) conformity of financed investment subprojects to RREP eligibility criteria; ii) competitive selection process for the procurement of goods, works, and services; iii) ability of an applicant to provide co-financing of subprojects from their funds; iv) financing is carried out on fixed-term, irrevocable and gratuitous basis, and v) GEF's share in subproject financing shall not be more than 20 percent of the investment cost.

Several regions were identified at the preparatory stage. Apparently, Krasnodar krai, the Republic of Karelia and Komi Republic are the best prepared and committed to host the Revolving RER Facilities. The final selection of pilot regions and design of the facilities will be done before the RREP start up as one of the conditions for grant effectiveness. It is expected that NEFCO will be involved in supporting the creation and operations of Revolving RER Facilities in North-West Russia.

**Attachment 1 to Annex 4. List of Natural Reserves and National Parks, selected for participation in RREP**

**State nature reserves**

1. Altaisky
2. Astrakhansky
3. Baikalo-Lensky
4. Baikalsky
5. Barguzinsky
6. Bogdinsko-Baskunchaksky
7. Bolonsky
8. Bryansky Les
9. Bureynsky
10. Daursky
11. Zhigulevsky
12. Kavkazsky
13. Kandalakshsky
14. Katunsky
15. Kerzhensky
16. Kologrivsky les
17. Komandorsky
18. Kronotsky
19. Lazovsky
20. Laplandsky
21. Magadansky
22. Olekminsky
23. Orenburgsky
24. Ostrov Vrangelya
25. Pasvik
26. Pechoro-Ilychsky
27. Sayano-Shushensky
28. Sikhote-Alinsky
29. Sokhondinsky
30. Taimyrsky
31. Teberdinsky
32. Tigireksky
33. Ubsunurskaya Kotlovina
34. Chernyie Zemli

**National parks**

1. Zabaikalsky
2. Kenozersky
3. Kurskaya Kosa
4. Pribaikalsky
5. Sochinsky
6. Tunkinsky
7. Shorsky
8. Shushensky Bor
9. Yugyd Va

**List of state nature reserves and national parks, recommended as a priority objects of the RREP**

**State nature reserves**

1. Astrakhansky
2. Baikalsky
3. Daursky
4. Kavkazsky
5. Kologrivsky les
6. Kronotsky
7. Laplandsky
8. Ostrov Vrangelya
9. Sayano-Shushensky
10. Sikhote-Alinsky
11. Sokhondinsky

**National parks**

1. Zabaikalsky
2. Kenozersky
3. Sochinsky



**Attachment 2 to Annex 4: List of priority project candidates for RSLW financial support**

	<b>APPLICANT</b>	<b>PROJECT NAME AND PLACE OF IMPLEMENTATION</b>	<b>PROJECT DOCUMENTS AVAILABLE</b>	<b>PROJECT COSTS (\$mln)</b>	<b>REQUESTED RREP SUPPORT (\$mln)</b>	<b>PROJECT SPONSOR (\$mln)</b>
1	2	3	4	6	7	
1.	Government of Kabardin-Balkar Republic, Nalchik city (South of Russia)	Small Hydro Electric Station ADYRSU-2, power – 7.1 MW, capacity – 29.0 mln KWh/year. Terms of erection - 2008-2009.	Investment Proposal	4.4	3.6	0.8
2.	OJSC “Zelenchugskie HESS”	Ust-Djegutinskay small HES, power – 3.36 MW, capacity – 23.0 mln. kWh. Terms of erection 2008.	Feasibility Study	3.0	2.4	0.6
3.	“Teplonasosnye systems” Ltd. Moscow city	Energy complex in Novoshakhtinsk city (Rostov oblast, South of Russia). Power - 26 MW with using of waste-heat of mining waters of closed and flooded mine and hydro energy of small flows. Heat power – 88.200 GKal, electric power – 6.2 mln KWh. Terms of erection - 2008-2009.	Feasibility Study	14.8	7.0	7.8
4.	Administration of Arkhangelsk Oblast	Reconstruction of boiler for wood fuel use in Ochyabrskiy city of Ulianovskiy District (Arkhangelsk Oblast)	Investment Proposal	10.0	7.0	3.0
5.	Administration of Arkhangelsk Oblast	Modernization of electric power supply system in Solovetskiy habitation (Arkhangelsk Oblast)	Feasibility Study	7.5	3.0	4.5
6.	OJSC “Komi Heat Company”	Multiple purpose Project of creating of bioenergy infrastructure in Komi	Investment Proposal	12.4	3.5	8.9

	Komi Republic (North-West of Russia)	Republic. 7 subprojects: 1 – biomass fuel production, 6 – switch of 6 boilers of different capacity to biomass fuel.				
7.	Government of Buraytia Republic	Construction of autonomous electric supply systems of tourist complexes using solar, hydro and wind power resources in National Parks of PriBaikaliay (Republic of Buraytia)	Investment Proposal	5.3	3.6	1.7
8.	Government of Buraytia Republic	Construction of autonomic electric supply systems of environmental sound farm enterprises in PriBaikaliay (Republic of Buraytia).	Investment Proposal	5.0	3.3	1.7
9.	Stavropol Kray, Ministry of Industry, Transport and Communications	Construction of solar heat supply systems of sanatorium-resort and municipal facilities in Stavropol Kray. Heat power (50 MWt) with solar collectors (surface – 70.000 m <sup>2</sup> ). Terms of erection – 2007-2009.	Investment Proposal	4.5	2.0	2.0
<b>Total:</b>				<b>66.9</b>	<b>35.4</b>	<b>31.5</b>

**ANNEX 5: Project costs**  
**RUSSIA - RENEWABLE ENERGY PROGRAM**

Project Cost By Component and/or Activity	Local US\$ million	Foreign US\$ million	Total US\$ million
<b>1. Policy Development, Institutional Strengthening and Capacity Building Component</b>	<b>14.2</b>	<b>5.0</b>	<b>19.2</b>
1.1. Renewable Energy Policy	0.9	0.5	1.4
1.2. Market Infrastructure	2.0	0.5	2.5
1.3. Renewable Energy Program in Natural Reserves, National Parks, and in Special Tourist-recreational Economic Zones	5.8	1.9	7.7
1.4. Partnership on Innovative Financing Mechanisms and Regulations	1.6	0.5	2.1
1.5. Knowledge and Information <b>Collection</b> and Dissemination	3.1	0.8	3.9
1.6. Program Management, Monitoring, and Evaluation	0.8	0.8	1.6
<b>2. Renewable Energy Financial Facility</b>	<b>52.6</b>	<b>5.0</b>	<b>57.6</b>
2.1. Project Preparation Window for on-grid electricity generation subprojects	4.6	1.0	5.6
2.2. Revolving Soft Loan Window in the NPAF	33.0	1.0	34.0
2.3. Revolving RER Facilities in pilot regions	15.0	3.0	18.0
<b>Total Project Costs</b>	<b>66.8</b>	<b>10.0</b>	<b>76.8</b>
<b>Total Financing Required</b>	<b>66.8</b>	<b>10.0</b>	<b>76.8</b>

## **ANNEX 6: Implementation arrangements**

### **RUSSIA - RENEWABLE ENERGY PROGRAM**

#### ***Overview***

The National Pollution Abatement Facility will be the implementing agency of the Russian Renewable Energy Program (RREP). The NPAF ED will assume overall fiduciary responsibilities for the use of the GEF grant funds. To manage the project, the NPAF Executive Directorate will establish a Project Management Unit (PMU).

The relatively low performance of the Environmental Management Project/NPAF was due to controversies within the Russian government with respect to the environmental policy in 1995-2006. Therefore, government commitment to renewable energy development is one of the main conditions for successful project preparation and implementation. The demand for environmental investments continues to be very high. Many enterprises expressed their willingness to undertake energy efficiency and pollution abatement projects assuming that the financial conditions will be more favorable. Government representatives stressed that the implementation of NPAF projects leads, besides important environmental improvements, to the modernization of core industrial sectors which is one of the government's strategic priorities. Therefore, the MOEDT and the MOF suggested to the World Bank to extend the Environmental Management Project and to include renewable energy development as one of three main project objectives of NPAF. With substantial government support NPAF is going to become a long-term financial mechanism even after completion of the Bank's project.

The Ministry of Economic Development and Trade (MEDT) is the government agency responsible for overall RREP coordination.

A project Steering Committee has been established to provide overall policy guidance and to coordinate implementation of RREP and its connection to national and international programs on renewable energy development. The Steering Committee is chaired by MEDT and includes representatives of the Ministry of Finance (MoF), the Ministry of Industry and Energy (MIE), the Ministry of Natural Resources (MNR) and the Ministry of Education, Science and Technologies (MEST). The primary goals of the Steering Committee of the Project are:

- Coordination of actions of interested ministries on RREP implementation;
- Definition of priority directions of project implementation;
- Formation of eligibility criteria for RER development projects;
- Selection and formation of the list of priority investment projects on RER development;
- Decision-making on financing of priority investments on RER development projects under the RREP;
- Approval of the RREP Operating Instructions and other guidance/regulatory documents regulating the functioning of RREP and of Project Management Unit (PMU).

The Steering Committee will also oversee operations of bilateral donors such as the EU, Austria, Denmark and other Nordic countries and programs of multilateral development agencies related to renewable energy development in Russia.

#### ***The Policy Development, Institutional Strengthening, and Capacity Building Component***

MEDT will provide coordination of actions and general leadership in the subcomponent implementation, conformity of actions planned in the frame of the GEF project with directions and provisions of social and economic policy of the Government of the Russian Federation, and in particularly with the tasks of Federal Targeted Programs.

MIE is the main executing agency on the Renewable Energy Policy and on Market Infrastructure Development subcomponents. It will assure conformity of the RREP with directions and provisions of the Energy Strategy of the Russian Federation, and with the tasks of the Federal Target Program "Energy Efficient Economy".

RAO UESR, JSC Hydro OGC, and other daughter companies will support activities on improvement of legislation and the regulatory and incentive framework including design and introduction of feed-in tariff and work on standards setting.

The EBRD is commissioning a study on the rules and regulations of wind power development in Russia. The results of that study will make an important input to the further design of the subcomponent. It is expected that Wood Industries Confederation in North West Russia and other NGOs and business associations will actively participate in the execution of tasks related to the development of a biomass fuel market.

MNR and MEDT are the executing agencies for the subcomponent on renewable energy program in natural reserves and national parks, and in special tourist-recreational economic zones. MNR will provide linkage of RREP with the state policy on environmental protection and with the tasks of the Federal Target Program "Environment and Natural Sources". MNR is now preparing a sectoral program on improving the federal system of natural reserves and other environmental protection territories for 2007-2009, which should provide an institutional and financial basis for the implementation of this subcomponent. The World Wild Fund (WWF) and other environmental NGOs have indicated their interest to participate in supporting activities of the Program.

The REEEP Secretariat in Russia and the FSU will be the executing agency of the subcomponent on Partnership on Innovative Financing Mechanisms and Regulations. The REEEP International Secretariat, the Russian Environmental Center, the World Bank and MEDT will sign a Memorandum of Understanding (MoU) or a similar legal agreement on the partnership in the RREP implementation.

MEST is the executing agency for the subcomponent on knowledge and information collection and dissemination. It will provide linkage of RREP activities with tasks of the Federal Targeted Programme "Studies and Researches under the Priority Directions of Science and Technology". MEST will be also responsible for the selection and cofinancing of activities related to the creation of a renewable energy resources informational database and for the selection of priority pilot and demonstration technologies and installations on RER.

The PMU in the NPAF ED is responsible for overall project administration and implementation of monitoring, evaluation and reporting activities. Annual work programs on the implementation of the components will be prepared by the PMU and approved by the Steering Committee. In implementing work programs the PMU will be responsible for the selection of consultants, including the preparation of terms of reference (TORs), advertising, shortlisting, issuing requests for proposals, evaluation of proposals, negotiating with selected consultants and contracting with those who have been selected. The PMU will also be responsible for maintaining an accounting and management information system, for audits and progress reporting to both the Government of Russia and the World Bank.

The PMU will carry out donor coordination through active collection and dissemination of information about renewable energy activities in Russia and organizing regular meetings among donors and investors supporting renewable energy as well as federal and regional authorities and non-governmental organizations.

### ***The Renewable Energy Financial Facility***

The NPAF Supervisory Board (NPAF SB) carries out general management of NPAF activities, and will manage operations of the Renewable Energy Financial Facility (REFF).

NPAF SB is operating on the basis of the Regulations approved by the Ministry of Finance of the Russian Federation and MEDT. NPAF SB includes representatives of MEDT, MOF and other interested agencies and organizations.

The NPAF SB will be responsible for the following actions in relation to the REFF: i) it defines priority directions for REFF and reviews progress in its implementation; ii) it considers and approves revisions of the NPAF Operating Instructions and other regulatory documents providing REFF functioning; iii) it considers and approves lists of investment projects for further processing under the REFF; iv) it defines terms and conditions for IP funding and repayment, including guarantees; v) it approves IPs to be supported and drafts of sub-grant and sub-loan agreements, and vi) it approves the NPAF ED operating budget.

MEDT is responsible for the implementation of the Project Preparation Window and of the Revolving RER Facilities in pilot regions. Implementing this function the MEDT: i) participates in NPAF management through the NPAF SB; ii) together with MoF approves the NPAF Operating Instructions; iii) signs Sub-Grant Agreements with regional authorities and with project beneficiaries; iii) monitors compliance with the terms of sub-grant agreements, and iv) signs an Agency Agreement with NPAF ED.

The MOF is responsible for issuing all Sub-loans/Budgetary Credits under the NPAF. Implementing this function the MOF: i) participates in NPAF management through the NPAF SB; ii) together with MEDT approves the NPAF Operating Instructions; iii) signs Sub-loan/Budgetary Credit Agreements for financing investment projects; iii) monitors compliance with the terms of Sub-loan/Budgetary Credit Agreements, and iv) signs an Agency Agreement with NPAF ED.

Administrations of regions selected for the hosting of Revolving RER Facilities will be responsible for the creation and functioning of these facilities in accordance with procedures and criteria acceptable to the MEDT and the World Bank.

Financial management, disbursement and procurement functions for the REFF will be carried out by the NPAF ED in accordance with the Grant Agreement and the Agency Agreement to be signed among MEDT, the Ministry of Finance and the NPAF ED.

Implementing REFF, the NPAF ED manages the project investment cycle and carries out:

- i) selection and evaluation of project developers' applications, collection and analysis of information necessary for the appraisal of investment projects;
- ii) screening, selection and preparation of investment projects, their submission to NPAF SB, IBRD, MOEDT and MOF for consideration;
- iii) drafting of Sub-Grant, Sub-loan, Final Loan/Budgetary Credit, Project Implementation Agreements and other related legal documents and their submission to NPAF SB, MOEDT and MOF;
- iv) supervision of project implementation and compliance with the terms of Sub-grant/Sub-loan/Budgetary Credit, Final Loan and Project Implementation Agreements;
- v) assistance to Grant Beneficiaries/Sub-borrowers/Final Borrowers in handling procurements under the procedures stipulated by the Grant Agreement;
- vi) drafting of all necessary documents and preparation of applications for withdrawal of funds for financing under Sub-grants/Sub-loans/Budgetary Credits and their submission;
- vii) opening and maintenance of the special account for the accumulation and utilization of REFF repayment proceeds;
- viii) calculation of due payments of Sub-borrowers to the REFF under Contingent sub-grant/Sub-loan/Budgetary Credit Agreements, notification of Sub-grants beneficiaries/Sub-borrowers on

due payments and control of correctness and timeliness of entry of indicated payments to the REFF, and

- ix) regular submission of reports on REEF financial activities to NPAF SB, MOF, and MOEDT.

Regional energy efficiency centers will participate in creating of Revolving RER facilities. For example, the Energy Saving Center of Krasnodar krai empowered by the regional government, to operate regional program on energy saving and RER development. The Energy Saving Center, under the supervision of the Coordination council, which is comprised of representative of the Krai government, selects projects and allocates financing for them both on repayable and on gratuitous basis. As a rule, funds are allocated as interest-free sub-loans.

**ANNEX 7: Financial Management and Disbursement Arrangements**

**RUSSIA - RENEWABLE ENERGY PROGRAM**

[This Annex is under preparation and will be finalized during the appraisal as per Bank's requirements]



**ANNEX 8: Procurement Arrangements**  
**RUSSIA - RENEWABLE ENERGY PROGRAM**

[This Annex is under preparation and will be finalized during the appraisal as per Bank's requirements]

## **ANNEX 9: Economic and financial analyses**

### **RUSSIA - RENEWABLE ENERGY PROGRAM**

#### **Economic and Financial Analyses of subprojects**

The REFF support to a selected subproject could be provided only on a basis of detailed project appraisal, which includes, inter alia, an evaluation of: technical feasibility of offered technical and technological solutions and project implementation schedule; ii) environmental effects of the project; iii) economic efficiency and risks of losses, and iv) financial sustainability of the enterprise-applicant. This appraisal will be implemented by the NPAF ED in accordance with established practice and Operational Instructions.

Financial due diligence requires in the context of the individual subprojects that two distinct objectives are fulfilled: to ensure that the project owner is a financially sound and sustainable entity which will not go broke during the implementation of the project thereby putting the project at risk; and to ensure that the project itself is financially sound and feasible, given its financing plan and operational projections. This will mitigate the risk that the project may fail and/or add a major financial burden to the project owner entity.

The project owner analysis will normally be based on the last three to five years' financial results and evolving financial position to date, as well as three to five years of financial projections for the project owner. Thus, the owner will provide financial statements, including income statements, balance sheets and fund flow statements for the past three to five years. Further, it will provide a commentary about the financial performance and explanations as to unusual events in the financial performance. An audit report for each of the years under review will also be provided, if available.

The economic and financial analysis of subprojects will be based on estimated project investment costs, the envisaged financing plan as well as projections for project implementation, learning curve of project operations, costs of inputs and revenues from the sale of the outputs, debt schedules and depreciation plans. The time horizon for financial projections of the subproject will cover the life cycle of the envisaged project, including needed re-investments and possible scrap values at the end of the projection period.

The projections should be in real terms. The analysis will provide for calculations of net present values (NPVs), internal rates of return (IRRs) on the overall investment and on equity, before and after tax. The risk profile of the subproject will be discussed and documented by providing appropriate sensitivity and risk analyses. The impact of provision of grants on the projected ratios will also be documented by using appropriate sensitivity analyses.

#### **Financial Summary of REFF**

##### ***Project Preparation Window for on-grid electricity generation subprojects***

PPW will provide grant support to subproject developers and sponsors through cost sharing of feasibility studies and other project preparatory activities. As a general rule, support will be provided on a 50% cost-sharing basis to qualified projects. The initial amount of PPW will be US\$2.0 million, including US\$1.0 from Hydro OGK.. The assumed average grant size is US\$100,000 based on estimated feasibility study or business plan costs of US\$200,000 per project. It is assumed that 20% of PPW contingent grants will be repaid and then will be used for financing of additional project preparation. A total of 28 grants would be made resulting in about US\$ 5.6 million financing for feasibility studies and other project documentation.

### ***Revolving Soft Loan Window***

RSLW will be based on the institutional framework and financial resources of the NPAF and will provide long-term low-cost loans for project developers of renewable energy utilization. NPAF is committed to allocate up to US\$20 million of its resources (repayments from initial sub-borrowers and unutilized portion of the Bank's loan and Swiss grant) for co-financing of RREP investment subprojects.

The average share of NPAF sub-loans is assumed to be 66% of a project's costs and an average subproject size would be US\$5.0 million. Total investments for the initial six subprojects will be US\$30 million. The initial capital of RSLW (US\$20.0 million) will allow to generate a sustainable reflow of principal and interest payments. For 20 years RSLW would provide sub-loans of more than US\$110.0 million, which will result in project investments at the amount of US\$166.7 million.

**Table 9.1: Revolving Soft Loan Facility (REFF) Financial Structures**

	Share of PPW in project financing (%)	Financing (US\$)
<b>Project Preparation Window (PPW)</b>		
<b>Initial capitalization of PPW</b>		2,000,000
Costs of a feasibility study (in average)		200,000
Average PPW grant	50%	100,000
Contingent grants repaid and reinvested		800,000
Total number of deals		28
<b>Total costs of projects preparatory activities</b>	50%	5,600,000
<b>Total GEF's share in PPW activities</b>	13,8%	1,000,000
<b>RSLW/NPAF</b>		
<b>Grant support to RER subprojects preparation</b>		2,000,000
Total number of feasibility studies supported		20
Total costs of projects preparatory activities	50%	4,000,000
Average Project Size of an investment subproject		5,000,000
NPAF Sub loan	66%	3,300,000
Equity	34%	1,700,000
Number of deals (initial project portfolio)		6
<b>Total RSLW Financing</b>		34,000,000
<b>Total GEF</b>		1,000,000
Total NPAF		20,800,000
Total Equity		12,200,000

<b>Revolving RER Facilities in pilot regions</b>		
Average Project Size		1,500,000
Average contingent grant/soft loan share in project cost	50%	750,000
GEF share in contingent grant/soft loan	33%	250,000
Equity and other sources	40%	750,000
Number of deals		12
<b>Total Revolving RER Facilities Financing</b>		18,000,000
Total GEF in Revolving RER Facilities		3,000,000
Total Equity and other sources		18,000,000

***Revolving RER Facilities in pilot regions***

An average project size for financing is assumed as US\$1.5 million, with a 50% average share of contingent grant/soft loan in project cost. GEF share in contingent grant/soft loan should be not more than 33%. Based on the above assumptions, the GEF contribution of US\$ 3.0 million will allow to support investments for initially 12 subprojects in pilot regions at a total amount of US\$18 million. This initial capitalization of RER facilities in regions will generate a sustainable reflow of principal payments.

Because of the long-term nature of the financial mechanisms and proposed instruments (loans and contingent grants), financial projections have been developed showing income and expenses for the debt fund for 20 years. Cash flow statements for the RSLW are shown below in the table 9.2.

**Table 9.2: Renewable Energy Financial Facility Cash Model (US\$)**

1 year	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 year	ИТОГО
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**Revolving Soft Loans Window (NPAF funds)**

<b>Capital balance</b>	<b>20.00</b>	<b>19.51</b>	<b>17.13</b>	<b>12.95</b>	<b>7.65</b>	<b>0.81</b>	<b>0.71</b>	<b>0.87</b>	<b>0.69</b>	<b>0.59</b>	<b>0.74</b>	<b>0.57</b>	<b>0.48</b>	<b>0.09</b>	<b>0.56</b>	<b>0.71</b>	<b>0.17</b>	<b>0.14</b>	<b>0.39</b>	<b>0.16</b>	<b>0.63</b>	
<b>Initial projects portfolio</b>																						
Disbursements from RSLW/NPAF for sub loans	(0.50)	(2.50)	(4.50)	(6.50)	(6.00)																	<b>(20.00)</b>
Principal repayments				0.60	1.20	1.80	3.00	4.00	3.40	2.80	2.20	1.00										<b>20.00</b>
Interest earnings (5% per year)	0.01	0.12	0.32	0.60	0.85	0.84	0.71	0.52	0.34	0.20	0.08	0.01										<b>4.59</b>
<b>Refinancing</b>																						
Disbursements from RSLW for sub loans						(3.00)	(3.00)	(4.00)	(6.00)	(6.00)	(6.00)	(7.00)	(7.00)	(7.00)	(7.00)	(8.00)	(9.00)	(8.80)	(9.00)	(10.00)	(10.00)	<b>(110.80)</b>
Principal repayments								0.60	1.20	2.00	3.20	4.40	5.00	5.80	6.40	6.60	6.80	7.20	7.60	7.96		<b>64.76</b>
Interest earnings (5% per year)						0.11	0.26	0.45	0.70	0.95	1.16	1.35	1.50	1.61	1.68	1.75	1.86	1.97	2.06	2.17	2.28	<b>21.85</b>

**Project Preparation Window (PPW) and RSLW (GEF funds)**

<b>Balance</b>	<b>4.0</b>	<b>3,5</b>	<b>2,0</b>	<b>0,5</b>	<b>0,0</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Disbursements from GEF for grants	(0.5)	(1.5)	(1.5)	(0.5)	(0.0)																	<b>(4.0)</b>
Principal repayments		0.1	0.3	0.3	0.1																	<b>0.8</b>
<b>Refinancing</b>																						
Disbursements from repayments for grants				0.1	(0.3)	(0.4)																<b>(0.8)</b>

**Financial Summary for 20 years (US\$ million)**

Total amount of RSLW/NPAF sub-loans made	<b>(130.80)</b>
Total amount of RSLW/NPAF principal repayments	<b>84.76</b>
Interest earnings	<b>26,44</b>
Total amount of PPW grants given	<b>(4.80)</b>
Total amount of grant repayments	<b>0.80</b>

## **ANNEX 10: Safeguard Policy Issues**

[This Annex is under preparation and will be finalized during the appraisal as per Bank's requirements]

## **ANNEX 11: Project Preparation and Supervision**

[This Annex is under preparation and will be finalized during the appraisal as per Bank's requirements]



## **ANNEX 12: Documents in the Project File**

[This Annex is under preparation and will be finalized during the appraisal as per Bank's requirements]

## ANNEX 13: Statements of Loans and Credits

### RUSSIA – Renewable Energy Program

As of 04/26/2006 (In Millions of US Dollars)

Project ID	FY	Purpose	Original Amount in US\$ Millions				Cancel.	Undisb.	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P078420	2006	CADASTRE DEVT	100.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
P082239	2005	HYDROMETEO SYST MOD	80.00	0.00	0.00	0.00	0.00	80.00	1.26	0.00
P082018	2005	KAZAN MUNICIPAL DEVT	125.00	0.00	0.00	0.00	0.00	75.00	-50.00	0.00
P075387	2004	E-LRN SUPRT (APL #1)	100.00	0.00	0.00	0.00	0.00	71.18	-2.42	0.33
P046497	2003	HEALTH REF IMP	30.00	0.00	0.00	0.00	0.00	28.29	14.14	7.17
P072960	2003	CUSTOMS DEVT	140.00	0.00	0.00	0.00	0.00	118.39	43.29	33.67
P069063	2003	ST. PETERSBURG ECON DEVT	161.10	0.00	0.00	0.00	0.00	154.42	94.56	0.00
P066155	2003	TAX ADM 2	100.00	0.00	0.00	0.00	0.38	48.16	10.54	-4.46
P064237	2003	TB/AIDS CONTROL	150.00	0.00	0.00	0.00	0.00	142.34	70.24	25.14
P064508	2002	TREASURY DEVT	231.00	0.00	0.00	0.00	0.00	221.39	41.39	0.00
P064238	2001	N RESTRUCT	80.00	0.00	0.00	0.00	0.00	56.05	56.05	-3.95
P038551	2001	MUN HEATING	85.00	0.00	0.00	0.00	0.00	41.39	41.39	41.39
P050474	2001	EDUC REFORM	50.00	0.00	0.00	0.00	3.00	17.19	19.04	1.52
P046061	2001	MOSC URB TRANS	60.00	0.00	0.00	0.00	0.00	27.81	27.81	0.00
P008832	2001	MUN WATER & WW	122.50	0.00	0.00	0.00	0.00	101.11	98.66	55.81
P058587	2000	REG FISC TA	30.00	0.00	0.00	0.00	0.00	8.08	8.08	0.04
P053830	2000	SUST FORESTRY PILOT	60.00	0.00	0.00	0.00	0.00	44.24	44.24	-1.74
P050487	1999	STATE STATS SYST	30.00	0.00	0.00	0.00	0.00	3.26	3.26	0.97
P050891	1997	ELEC SECTR REF	40.00	0.00	0.00	0.00	1.86	6.60	8.45	8.45
P042622	1996	CAP MRKT DEV	89.00	0.00	0.00	0.00	34.09	13.77	47.86	14.11
P008821	1995	ENV MGMT	110.00	0.00	0.00	0.00	0.00	31.78	31.78	4.50
Total:			1,973.60	0.00	0.00	0.00	39.33	1,390.45	609.62	182.95

RUSSIAN FEDERATION  
STATEMENT OF IFC's  
Held and Disbursed Portfolio  
In Millions of US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2005	ABOLmed	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	Absolut Bank	15.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	AgroIndFinC	5.00	0.30	0.00	10.00	3.83	0.30	0.00	7.67
2003	BCEN Eurobank	75.00	0.00	0.00	0.00	75.00	0.00	0.00	0.00
2004	BSGV	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	BSGV Leasing	69.27	0.00	0.00	0.00	25.85	0.00	0.00	0.00

2001	BVF	0.00	3.31	0.00	0.00	0.00	0.00	0.00	0.00
2005	BVPEF III	0.00	12.50	0.00	0.00	0.00	2.14	0.00	0.00
2004	Bauxite Timana	45.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00
2005	Center-Invest	4.84	0.00	5.00	0.00	4.84	0.00	5.00	0.00
2006	Cinema Park	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	Delta Credit	16.47	0.00	0.00	0.00	16.47	0.00	0.00	0.00
2003	Delta Credit	30.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2004	Delta Leasing	3.50	0.00	0.00	0.00	3.50	0.00	0.00	0.00
2002	Egar Technology	0.00	0.81	0.00	0.00	0.00	0.31	0.00	0.00
2005	Esanna	15.00	0.00	0.00	50.00	13.28	0.00	0.00	44.23
2005	Eurosibtrans	30.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2002	IBS	0.00	0.00	8.00	0.00	0.00	0.00	8.00	0.00
2002	ICB	5.71	0.00	0.00	0.00	5.71	0.00	0.00	0.00
2004	INTH	0.00	3.50	7.00	0.00	0.00	0.00	7.00	0.00
2002	KMB Bank	4.86	0.00	0.00	0.00	4.86	0.00	0.00	0.00
2004	Krono Swiss	50.00	0.00	0.00	45.32	50.00	0.00	0.00	45.32
2005	Krono Swiss	45.00	0.00	0.00	0.00	45.00	0.00	0.00	0.00
2005	Kronospan Russia	81.98	0.00	0.00	0.00	51.53	0.00	0.00	0.00
2005	KuAz	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	Lebedyansky	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	Moscow Credit Bk	15.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
2003	Moscow Narodn...	57.14	0.00	0.00	0.00	57.14	0.00	0.00	0.00
1998	Mosenergo	8.99	0.00	0.00	0.00	8.99	0.00	0.00	0.00
2002	NBD	0.83	0.00	0.00	0.00	0.83	0.00	0.00	0.00
2003	NBD	4.17	0.00	2.00	0.00	4.17	0.00	2.00	0.00
2001	NMC	1.89	0.00	0.00	0.00	1.89	0.00	0.00	0.00
2004	NWSC	23.00	0.00	0.00	23.48	0.00	0.00	0.00	0.00
2005	Novatek	0.00	22.07	0.00	0.00	0.00	22.07	0.00	0.00
2005	Peter Hambro	0.00	15.00	0.00	0.00	0.00	14.99	0.00	0.00
2004	Pilkington Rus	49.77	0.00	0.00	0.00	49.77	0.00	0.00	0.00
2001	Probusiness Bank	0.00	0.00	5.00	0.00	0.00	0.00	5.00	0.00
	Promek	83.79	0.00	0.00	0.00	19.79	0.00	0.00	0.00
2003	Quadriga Capital	0.00	17.70	0.00	0.00	0.00	6.86	0.00	0.00
2005	RWMN	0.99	0.00	0.00	0.00	0.99	0.00	0.00	0.00
2004	RZB Leasing Russ	20.00	0.00	0.00	0.00	9.50	0.00	0.00	0.00
	RZB Russia	130.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2003	RZB Russia	24.44	0.00	0.00	44.44	24.44	0.00	0.00	44.44
2004	RZB Russia	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
1998	Ramstore	8.50	0.00	0.00	0.00	8.50	0.00	0.00	0.00
2001	Ramstore	14.99	0.00	0.00	0.00	14.99	0.00	0.00	0.00
2002	Ramstore	23.57	0.00	10.00	18.75	23.57	0.00	10.00	18.75
2003	Ru-Net	0.00	3.00	3.00	0.00	0.00	3.00	2.00	0.00
2001	Ruscam	4.50	0.00	4.50	0.00	4.50	0.00	4.50	0.00
2003	Ruscam	9.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00
2004	Ruscam	17.50	0.00	0.00	0.00	17.50	0.00	0.00	0.00
2002	Russ Standard Bnk	0.00	10.00	0.00	0.00	0.00	10.00	0.00	0.00
2004	Russ Standard Bnk	58.48	0.00	0.00	0.00	58.48	0.00	0.00	0.00
1995	Russ Tech Fnd	0.00	0.23	0.00	0.00	0.00	0.23	0.00	0.00
2005	RussiaPartnersII	0.00	10.00	0.00	0.00	0.00	0.80	0.00	0.00

	Russkiy Mir	24.52	0.00	0.00	29.97	2.47	0.00	0.00	3.02
2004	Russkiy Mir	12.86	0.00	0.00	0.00	12.86	0.00	0.00	0.00
2005	Russkiy Mir	20.48	0.00	0.00	25.03	2.03	0.00	0.00	2.48
	SCF Restructured	0.00	0.60	0.00	0.00	0.00	0.60	0.00	0.00
2004	Severstaltrans	23.21	0.00	13.93	0.00	23.21	0.00	13.93	0.00
2004	Sibakadembank	3.00	0.00	6.00	0.00	3.00	0.00	6.00	0.00
2002	Sonic Duo	0.00	0.00	6.00	0.00	0.00	0.00	6.00	0.00
2003	Stav. Broiler	14.25	0.00	0.00	0.00	11.75	0.00	0.00	0.00
2004	Sveza	40.50	0.00	0.00	0.00	28.10	0.00	0.00	0.00
2002	Swedwood Tichvin	5.07	0.00	0.00	0.00	5.07	0.00	0.00	0.00
2005	ToAz	30.00	0.00	0.00	45.00	0.00	0.00	0.00	0.00
2006	UralSib Bank	30.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
2003	UralTransBank	9.17	0.00	0.00	0.00	6.67	0.00	0.00	0.00
2004	Volga Shipping	25.18	0.00	0.00	17.25	15.05	0.00	0.00	0.00
2001	Volga-Dnepr	10.60	0.00	6.09	12.84	10.60	0.00	6.09	12.84
2002	ZAO Europlan	4.29	0.00	0.00	0.00	4.29	0.00	0.00	0.00
1998	ZAO Storaenso	0.60	0.00	0.00	0.00	0.60	0.00	0.00	0.00
2002	ZAO Storaenso	4.20	0.00	0.00	0.00	4.20	0.00	0.00	0.00
Total portfolio:		1,424.11	109.02	76.52	352.08	881.82	61.30	75.52	178.75

		<b>Approvals Pending Commitment</b>			
FY Approval	Company	Loan	Equity	Quasi	Partic.
1999	DLV	0.00	0.00	0.00	0.00
2002	RSB II	0.00	0.00	0.00	0.00
2006	RSB IV	0.00	0.00	0.03	0.00
2006	Forus Bank	0.01	0.00	0.00	0.00
2005	KMB Bank II	0.03	0.00	0.01	0.00
2005	Novatek Gas	0.05	0.00	0.00	0.07
2005	Ramstore IV	0.04	0.00	0.00	0.00
2006	CityMortgage	0.03	0.00	0.00	0.00
2003	DeltaCredit Bank	0.03	0.00	0.00	0.00
Total pending commitment:		0.19	0.00	0.04	0.07

## ANNEX 14: Country at a Glance

POVERTY and SOCIAL	Russian Federation	Europe & Central Asia	Upper-middle-income		
<b>2004</b>					
Population, mid-year (millions)	142.8	472	576		
GNI per capita (Atlas method, US\$)	3,420	3,290	4,770		
GNI (Atlas method, US\$ billions)	488.5	1,553	2,748		
<b>Average annual growth, 1998-04</b>					
Population (%)	-0.5	-0.1	0.8		
Labor force (%)	0.2	-0.5	-0.9		
<b>Most recent estimate (latest year available, 1998-04)</b>					
Poverty (% of population below national poverty line) /a	21	..	..		
Urban population (% of total population)	73	64	72		
Life expectancy at birth (years)	66	68	69		
Infant mortality (per 1,000 live births)	16	29	24		
Child malnutrition (% of children under 5)	6	..	..		
Access to an improved water source (% of population)	96	91	93		
Literacy (% of population age 15+)	99	97	91		
Gross primary enrollment (% of school-age population)	118	101	106		
Male	118	103	108		
Female	118	101	106		
<b>KEY ECONOMIC RATIOS and LONG-TERM TRENDS</b>					
	<b>1984</b>	<b>1994</b>	<b>2003</b>	<b>2004</b>	
GDP (US\$ billions)	..	395.1	431.5	581.4	
Gross capital formation/GDP	..	25.5	20.4	21.1	
Exports of goods and services/GDP	..	27.8	35.2	35.0	
Gross domestic savings/GDP	..	30.1	31.8	33.7	
Gross national savings/GDP	..	29.6	28.6	31.4	
Current account balance/GDP	..	2.0	8.3	10.3	
Interest payments/GDP	..	0.4	2.4	2.3	
Total debt/GDP	..	30.9	38.9	26.3	
Total debt service/exports	..	6.1	18.2	22.2	
Present value of debt/GDP	..	22.0	41.8	..	
Present value of debt/exports	..	109.5	110.5	..	
	<b>1984-94</b>	<b>1994-04</b>	<b>2003</b>	<b>2004</b>	<b>2004-08</b>
(average annual growth)					
GDP	-9.2	3.2	7.3	7.1	6.9
GDP per capita	-9.3	3.6	7.8	7.6	7.5

**Development diamond\***

Life

GNI per capita

Gross primary enrollment

Access to improved water source

— Russian Federation

— Upper-middle-income group

**Economic ratios\***

Trade

Domestic savings

Capital formation

Indebtedness

— Russian Federation

— Upper-middle-income group

STRUCTURE of the ECONOMY	1984	1994	2003	2004
<i>(% of GDP)</i>				
Agriculture	..	6.6	5.4	5.0
Industry	..	44.7	34.0	35.2
Manufacturing	..	..	..	..
Services	..	48.6	60.7	59.8
Household final consumption expenditure	..	50.8	50.6	49.8
General gov't final consumption expenditure	..	19.1	17.6	16.5
Imports of goods and services	..	23.2	23.8	22.3
	<b>1984-94</b>	<b>1994-04</b>	<b>2003</b>	<b>2004</b>
(average annual growth)				
Agriculture	..	2.9	5.7	2.9
Industry	..	3.7	8.7	6.9
Manufacturing	..	..	..	..
Services	..	3.0	6.9	7.8
Household final consumption expenditure	..	3.5	7.4	10.5
General gov't final consumption expenditure	..	1.2	2.2	2.3
Gross capital formation	..	0.1	13.2	13.6
Imports of goods and services	..	6.0	17.7	23.5

**Growth of capital and GDP (%)**

100

50

0

-50

-100

99 00 01 02 03 04

— GCF

— GDP

**Growth of exports and imports (%)**

40

20

0

-20

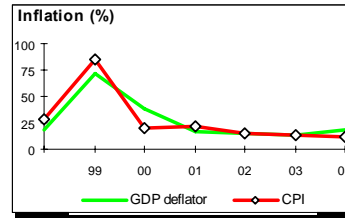
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— Exports

— Imports

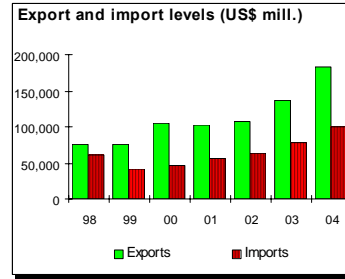
**PRICES and GOVERNMENT FINANCE**

	1984	1994	2003	2004
<b>Domestic prices</b>				
<i>(% change)</i>				
Consumer prices	..	307.6	13.7	10.9
Implicit GDP deflator	..	307.3	14.0	18.1
<b>Government finance</b>				
<i>(% of GDP, includes current grants)</i>				
Current revenue	..	36.7	37.4	32.5
Current budget balance	..	-1.9	4.6	7.0
Overall surplus/deficit	..	-9.2	2.1	4.7



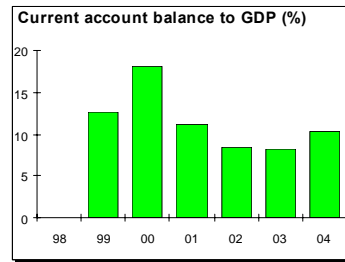
**TRADE**

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total exports (fob)	..	67,379	135,929	183,452
Crude oil	..	11,355	38,843	58,256
Natural gas	..	10,355	19,981	21,853
Manufactures	..	6,900	12,800	15,100
Total imports (cif)	..	53,480	78,539	100,193
Food	..	10,700	12,100	13,800
Fuel and energy	..	..	1,300	1,700
Capital goods	..	13,600	21,400	31,100
Export price index (2000=100)	..	70	113	140
Import price index (2000=100)	..	94	103	97
Terms of trade (2000=100)	..	75	110	145



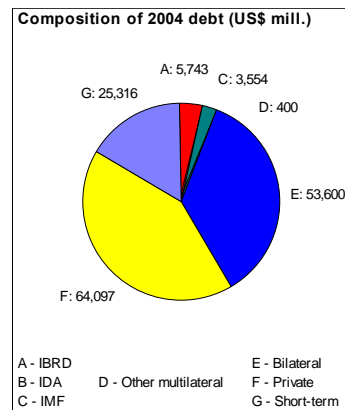
**BALANCE of PAYMENTS**

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Exports of goods and services	..	75,803	151,959	203,742
Imports of goods and services	..	65,887	102,558	130,007
Resource balance	..	9,916	49,401	73,735
Net income	..	-1,840	-13,171	-12,827
Net current transfers	..	-233	-364	-799
Current account balance	..	7,843	35,866	60,109
Financing items (net)	..	-11,788	-4,823	-10,850
Changes in net reserves	..	3,945	-31,043	-49,259
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	6,501	76,936	124,540
Conversion rate (DEC, local/US\$)	..	1.5	30.7	28.8



**EXTERNAL DEBT and RESOURCE FLOWS**

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	..	121,922	167,746	152,710
IBRD	..	684	6,289	5,743
IDA	..	0	0	0
Total debt service	..	4,802	29,791	47,530
IBRD	..	23	894	917
IDA	..	0	0	0
<b>Composition of net resource flows</b>				
Official grants	..	1,306	..	..
Official creditors	..	-1,297	-3,807	-3,539
Private creditors	..	1,218	20,500	5,224
Foreign direct investment (net inflows)	..	408	-2,408	-910
Portfolio equity (net inflows)	..	21	-5,045	-26
<b>World Bank program</b>				
Commitments	..	1,590	320	320
Disbursements	..	283	233	170
Principal repayments	..	0	719	780



Millennium Development Goals					
	1990	1994	1997	2000	2003
<b>Goal 1: Eradicate extreme poverty and hunger</b>					
Percentage share of income or consumption held by poorest 20%	..	..	..	..	8.2
Population below US\$1 a day (%)	..	6.1	12.7	6.1	2
Population below minimum level of dietary energy consumption (%)	..	4	..	..	4
Poverty gap ratio at US\$1 a day (incidence x depth of poverty)	..	1.2	3.5	1.2	0.5
Poverty headcount, national (% of population)	..	30.9	..	..	..
Prevalence of underweight in children (under five years of age)	..	3	..	5.5	..
<b>Goal 2: Achieve universal primary education</b>					
Net primary enrollment ratio (% of relevant age group)	98.6	..	..	..	89.7
Primary completion rate, total (% of relevant age group)	..	93	95	96	93
Proportion of pupils starting grade 1 who reach grade 5	..	..	..	..	..
Youth literacy rate (% ages 15-24)	..	..	..	..	99.7
<b>Goal 3: Promote gender equality and empower women</b>					
Proportion of seats held by women in national parliament (%)	..	..	10	8	8
Ratio of girls to boys in primary and secondary education (%)	103.9	..	..	..	..
Ratio of young literate females to males (% ages 15-24)	..	..	..	..	100.1
Share of women employed in the nonagricultural sector (%)	49.6	49.7	49.7	49.6	50.1
<b>Goal 4: Reduce child mortality</b>					
Immunization, measles (% of children ages 12-23 months)	..	81	91	97	96
Infant mortality rate (per 1,000 live births)	21	18	..	18	16
Under 5 mortality rate (per 1,000)	21	22	..	21	21
<b>Goal 5: Improve maternal health</b>					
Births attended by skilled health staff (% of total)	..	..	99.1	99.3	..
Maternal mortality ratio (modeled estimate, per 100,000 live births)	..	..	..	67	..
<b>Goal 6: Combat HIV/AIDS, malaria, and other diseases</b>					
Contraceptive prevalence rate (% of women ages 15-49)	..	34	..	..	..
Incidence of tuberculosis (per 100,000 people)	48.2	64.4	100.9	122	112.2
Number of children orphaned by HIV/AIDS	..	..	..	..	..

Prevalence of HIV, total (% of population aged 15-49)	..	..	..	0.7	1.1
Tuberculosis cases detected under DOTS (%)	..	..	1	4.6	8.8
<b>Goal 7: Ensure environmental sustainability</b>					
Access to an improved water source (% of population)	94	..	..	..	96
Access to improved sanitation (% of population)	87	..	..	..	87
Access to secure tenure (% of population)	..	..	..	..	..
CO2 emissions (metric tons per capita)	..	10.6	9.6	9.9	..
Forest area (% of total land area)	..	..	..	50.4	..
GDP per unit of energy use (2000 PPP US\$ per kg oil equivalent)	..	1.5	1.6	1.7	1.8
Nationally protected areas (% of total land area)	..	..	..	..	7.8
<b>Goal 8: Develop a global partnership for development</b>					
Aid per capita (current US\$)	1.7	12.5	5.4	10.8	8.7
Debt service (% of exports)	..	..	..	..	..
Fixed line and mobile phone subscribers (per 1,000 people)	139.9	163	194.9	240.5	362.3
Internet users (per 1,000 people)	..	0.5	4.7	19.7	..
Personal computers (per 1,000 people)	3.4	11.5	29.9	63.3	88.7
Unemployment, youth female (% of female labor force ages 15-24)	..	21.6	21.8	25.9	..
Unemployment, youth male (% of male labor force ages 15-24)	..	19.3	20	23.9	..
Unemployment, youth total (% of total labor force ages 15-24)	..	20.4	26.8	24.7	..
<b>Other</b>					
Fertility rate, total (births per woman)	1.9	1.4	1.2	1.2	1.3
GNI per capita, Atlas method (current US\$)	3420	2650	2660	1720	2610
GNI, Atlas method (current US\$) (billions)	508	393.2	391.6	250.3	373.9
Gross capital formation (% of GDP)	30.1	25.5	22	18.7	20.7
Life expectancy at birth, total (years)	68.9	64.5	67	65.3	65.7
Literacy rate, adult total (% of people ages 15 and above)	..	..	..	..	99.4
Population, total (millions)	148.3	148.3	147.3	145.6	143.4
Trade (% of GDP)	36.1	51	47.3	68.1	52.6
Source: World Development Indicators database, April 2005					



## **ANNEX 15: Incremental Cost Analysis**

### **RUSSIA - RENEWABLE ENERGY PROGRAM**

#### **Introduction**

The Russian Federation has significant renewable energy resources, but they play limited role in the country's energy balance. Not more than 3.5% of total primary energy supply is based on renewable energy.

Although the Energy Strategy until 2020 foresees that large new capacities for utilization of RER can be constructed, this will happen only if the energy policy, legislative base and the institutional framework are significantly improved and create the incentives for investments in increased energy efficiency and the use of renewable energy resources.

There was no serious progress in renewable energy resources development in 2000-2005. Annual electricity production from RER increased by 50% during this period, but its share in total electricity supply only reached 0.7%. Annual heat production from RER is about 4% of total supply, with 23% increase for five years.

As discussed in Annex 1, the main reasons for slow development of renewable energy projects are systemic barriers, most of which require special efforts from the government:

- Legal and regulatory barriers with gaps in regulations; long and often non-transparent process for obtaining the necessary permits, licenses and other required approvals; and tariffs for existing and newly constructed power and heat generating facilities;
- High capital outlay and preparation costs for small renewable projects;
- Limited access to long-term finance and unfamiliar risk for banks and other financial institutions, and related perception of high risk for renewable energy projects;
- Lack of experience of project sponsors, local FIs and engineering and consulting industry with renewable technologies and the appropriate project structures; management capacity constraints;
- Lack of reliable information about potential sites for renewable energy projects.

#### **Rationale for GEF involvement**

The justification of this project for GEF participation is based on the removal of barriers and enabling the mobilization of domestic financing from commercial and public sources. GEF funding (\$10 million) is directed to the removal of barriers to create a sustainable renewable energy market in Russia. Without GEF participation, private and municipal developers may not be able to develop and finance projects that benefit project partners and the country at large. Also, without GEF, there would be a lack of resources to build knowledge about renewable energy among private investors, FIs, policy makers, and other stakeholders. GEF support will lead to the creation of sustainable financial mechanisms for the support of renewables at the federal and regional levels resulting in long-term reductions of greenhouse gas emissions.

As a result of GEF participation, total funding of US\$76.8 million will be mobilized, including US\$57.6 million of investments. These investments will allow to create additional renewable energy capacity during five years of project implementation: 66,0 MW(t) and 42,13 MW(e).

## **The baseline scenario**

The baseline scenario describes the project without GEF support. As elaborated in Annex 1 of the PAD, presently Russia's energy sector relies on its rich fossil fuel reserves and on the use of thermal power.

While there are significant renewable energy resources available, most of them are not expected to be implemented due to the barriers stated above. Also, even if some of the renewable projects materialize without GEF support, they are expected to take longer to be implemented (relative to the alternative scenario below, with GEF intervention).

In the absence of state statistics on renewable energy and of real, verifiable data from the market, the project team has accepted the conservative expert forecast of renewable energy development in Russia to 2010 recently prepared by the Institute on Energy Researches (ENIN). This forecast assumes an additional 1 million MWh(t) production of heat from biomass, and 0.8 million MWh electricity from mini hydro, wind, solar and biomass resources by 2010.

Greenhouse gas reduction benefits: The greenhouse gas reductions resulting from the electricity and heat production under the baseline scenario (0.5 million tCO<sub>2</sub> from new RER heat generation and 0.8 million tCO<sub>2</sub> from electricity generation) would result in 20.8 million tons of CO<sub>2</sub> emission reductions over 20 years, including 19.5 million tons of CO<sub>2</sub> over 15 years after the project completion.

## **GEF Alternative Scenario**

Under the alternative scenario, GEF support (along with co-financing from the government and other sources) is expected to remove most of the existing barriers and reduce the impact of others; thereby making some of renewable projects viable and enhancing the sustainability of renewable energy development in the country.

The Project will include the following components:

***Component A. Policy Development, Institutional Strengthening and Capacity Building Component:*** US\$5.0 million GEF, US\$ 14.2 million counterpart funds. This component covers the following areas:

*A.1 Development of Renewable Energy Policy subcomponent* will comprise technical assistance focused on supporting the Government in designing and implementing policy on renewable energy development, improvement of legislation and normative - regulatory framework, preparation of national and regional strategies, action plans and programs on the use of renewable energy resources.

*A.2 Market Infrastructure Development subcomponent* will include: support to the Government on the feed-in tariff design, support to regional authorities in regulation of heat prices applicable to renewable energy projects, support to development and adoption of renewable energy system and component standards, support to development of a biomass fuel industry, support to various governmental entities in establishing streamlined permitting procedures.

*A.3. Renewable Energy Program in natural reserves, national parks, and in special tourist-recreational zones subcomponent* will demonstrate innovative approaches to productive uses of renewable energy for biodiversity conservation and other essential services in natural reserves, national parks and other protected areas. The subcomponent will support the implementation of the following activities: i) energy-environmental reviews of selected natural reserves and national parks, ii) feasibility studies and technical design documentation for renewable energy introduction in 14 reserves and national parks, iii) development of model design documentation packages for construction of renewable energy installations in reserves, and iv) preparation of a strategy on RER development in natural reserves, national parks and other protected areas for 2011-2015, v) preparation of the feasibility study on RER development in seven Special Tourist-Recreational Economic Zones, established by the Government of the RF.

*A.4. Partnership on Innovative Financing Mechanisms and Regulations subcomponent* will provide additional financial resources to extend the Renewable Energy and Energy Efficiency Partnership (REEEP) program in Russia, and in particular, implementation of additional 5-6 projects competitively selected in accordance with its procedures and criteria.

*A.5. Knowledge and information collection and dissemination subcomponent* will support implementation of the following activities: i) creation and maintenance of interactive web-portal on renewable energy, ii) establishment of a Network of National Biomass Centers; iii) support to implementation of the information-educational projects, selected by the Federal Agency on Science and Innovations.

*A.6. Program Management, Monitoring, and Evaluation sub-component* is included, along with financial support for project administration.

**Component B. Renewable Energy Financial Facility (REFF):** US\$5.0 million GEF, US\$ 52.6 million counterpart funds. This component will be a financing facility consisting of three instruments: Project Preparation Window for on-grid electricity generation subprojects, and Revolving RER Facilities in pilot regions as describe in the Annex 4.

As a result of GEF participation during the initial five years, approximately 66.0 MW(t) and 42.13 MW(e) renewable capacity will be built , accounting subprojects supported by PPW but financed from other than REEF sources. Direct REEF investment will be at least US\$ 57.6 million (US US\$ 39.6 million in projects supported by the PPW and RSLW loans ; US US\$18.0 million in projects supported by the Revolving RER Facilities in pilot regions) in addition to what is projected for the baseline. These investments are not expected to be made without the GEF involvement.

Greenhouse gas reduction benefits: Under the Alternative (with the GEF project) scenario, greenhouse gas emissions will be reduced (below the baseline level) by more than 4.89 million tons of CO<sub>2</sub> over a period of 20 years (247.7 tons CO<sub>2</sub>/yr) from the 66.0 MW(t) and 42.13 MW(e) built in the initial five years of the REEF operation.

Emission reductions due to new energy and heat generation were calculated in the following way:

*assumed investments / assumed capital unit cost of 1 MW(e) capacity= assumed capacity*  
*assumed capacity x assumed number of working hours per year = annual MWh production*  
*annual MWh production x emissions factor = annual emissions reductions*  
*annual emissions reductions x 20 years (project life) = project life emissions reductions*

Capital unit costs were assumed as follows:

Wind power generation	US\$1,475 /kW(e);
Mini hydro	US\$1,285/kW(e);
Biomass power generation	US\$1,500/kW(e);
Biomass heat production	US\$500/kW(t);
Solar heat production	US\$ 300/kW(t).

Number of working hours per year:

Wind installations	2,700 hrs ;
Mini hydro	2,700 hrs;
Biomass installation	4,500 hrs;
Solar heat collectors	1,000 hrs (South region);

1,500 hrs (Baikal region).

Average emission factors for replaced coal and mazut power plants and boilers:

- 1.0 tCO<sub>2</sub> for 1MWt(e) x hrs;
- 0.5 tCO<sub>2</sub> for 1MWt(t) x hrs.

*Local Benefits*: include: (i) reduction in local pollution; (ii) building of the institutional capacity and know-how in planning, assessing, and financing renewable projects, and (iii) contribution to the governmental policy to diversify energy sources, in particular, in remote regions.

Also, the project will have a positive impact on Russia's consulting and manufacturing industry. Finally, new financial instruments will become available, such as contingent grants and soft loans.

### Incremental Costs and Benefits

A summary of the costs and benefits is presented also in the following table. Since GEF will contribute US\$ 10.0 million, the unit incremental cost for GEF is US\$2.04 per ton of CO<sub>2</sub> removed.

**Table: GEF Incremental Cost Matrix**

	<b>Baseline</b>	<b>Alternative</b>	<b>Increment</b>
<b>Domestic Benefits</b>	Energy demand would be satisfied with conventional energy sources and pollution would remain high.	Local pollution with particulates, sulfur and nitrogen oxides and other residues resulting from the burning of fossil fuels will be reduced significantly by the use of clean renewable energy.	Reliability of the energy supply will be improved and economic risks associated with volatile pricing for fossil fuels reduced.
	Private sector and local FIs are reluctant to finance renewable energy projects due to the high risk and unfamiliar profile of the business	Investments in renewables by the private sector and local FIs	Increased investments in renewables by the private sector and local FIs
	Weak capacity of local organizations (e.g. consulting and engineering industry) to develop and finance renewable projects.	Competent and strong consulting and engineering industry results in lower cost of projects' preparation and implementation and utilization of more efficient technology	Increased capacity to develop renewable projects
<b>Global Benefits</b>	Renewable energy sources would remain underutilized; their use would increase very slowly. About 20.8 million tCO <sub>2</sub> reduction over life cycle.	Total emission reductions are 25,69 million tons of CO <sub>2</sub>	4.89 million tons CO <sub>2</sub> reductions as a direct result of RREP implementation
<b>Policy and Institutional Strengthening and Capacity Building</b>	Regulatory, institutional, and technical knowledge barriers that currently inhibit renewable investments would remain	By systematically addressing these constraints the component will facilitate Renewable Energy Policy and Market Infrastructure	

<b>Component</b>	un-addressed	Development. \$19.2 million, including \$5.0 million – GEF share	\$5.0 million
<b>Renewable Energy Financial Facility</b>	None of the identified renewable investment opportunities would be implemented. Existing conventional energy supplies would be used instead.	\$57.6 million investments: \$39.6 million in projects supported by the PPW and RSLW loans and contingent grants; \$18.0 million in projects supported by the Revolving RER Facilities in pilot regions, Including US\$5 million from GEF	\$5.0 million
<b>Total Cost Including the GEF's share</b>	\$486. 0 million -	\$562.8 million \$10 million	\$76.8 million \$10 million

## ANNEX 16: STAP Roster Review

### 1. Review

#### Russia-Renewable Energy Program (RREP)

(Appraisal of GEF proposal)

The document reviewed is the draft version of Project Brief for the "Russia-Renewable Energy Program (RREP)" dated 12 September 2006. The document in total consists of 78 pages: a cover page and a proposal of 21 pages with 24 Technical Annexes and a map. Annexes 7 (Financial Management and Disbursement Arrangements), 8 (Procurement Arrangements), 10 (Safeguard Policy Issues), 11 (Project Preparation and Supervision), 12 (Documents in the Project File) will be developed, in line with World Bank procedures, at a later stage.

The main objective of the proposal is to contribute to the Global Climate Change mitigation process through facilitation of sustainable development of Russia's energy sector and abatement of GHGs. Two key sectors of energy service: renewable energy (75%) and district heating and energy efficiency improvement (25%) are targeted in proposal through implementation of two main project components: **component A (US\$ 8.0 million, GEF)**-institutional and policy measures facilitating the sustainable marketing of RER and **component B (US\$ 12.0 million, GEF)** –investment mechanisms for support of renewable energy projects from the pilot regions and reducing the incremental costs of environmentally friendly projects.

**Final conclusion:** The proposal (at this stage) and the program as a final product for implementation is very important and timely activity for such country as Russia having unutilized renewable resources; serious institutional, market and other barriers typical for the countries in transition; being Annex I country to the UNFCCC and Annex B country to the Kyoto Protocol with the target stabilization of GHG emission at the 1990 level but oriented on rapid development of its industry including the energy sector and development of market economy. The program could significantly contribute to the facilitation of private sector involvement in sustainable marketing of RER which is vitally important for the increase of RER share in energy industry and the ensuring of the sustainability of whole process thus contributing in Global processes.

Some very important elements of the proposal should be highlighted which would facilitate the success of the Program:

- The standards setting element planned in the program which is really urgent and should be one of the priorities of the component A.
- Reduction of transaction costs of projects implementation. Certainly providing the assistance to project owners in assessment of technical and economical potential of renewable resources to be used

and in preparation of tender documentation for bankable project which is the most costly part of a project development process.

- Facilitation of increase participation of private entities which is quite weak in RER sector.
- Demonstration projects in pilot regions are vitally important for improvement the weak statistics existing in transition countries and thus reducing the project risk.
  
- Coordination of all programs and projects related to the utilization of RER and currently ongoing or planned in Russia. Russia has large territory with considerable renewable energy resources distributed over the country's administrative and territorial units and with inherited from Soviet time low efficiency. Therefore it is not surprising that several programs on promotion of renewable energy sources utilization and improvement of energy efficiency are listed in proposal. Strong cooperation among these programs is important element for successful implementation of program.
  
- Involvement of regions

**Below are listed some issues for improvement which could strengthen the environmental orientation of project and make clearer overall project idea for outside people not being involved at project preparation stage:**

**a) Barriers analysis**

As far as the proposal directly supports the GEF OP#06 **“Promoting the adoption of renewable energy by removing barriers and reducing implementation costs”** the proper identification of barriers to the increase of the renewable energy share in Russia's energy supply system, ensuring of sustainable marketing of RER and improvement of energy efficiency on the basis of cost-benefit analysis are the key points for the reaching of final target. Four types of barriers: financial, institutional and ownership, information and implementation capacity are correctly identified in proposal. Insufficient private sector presence in the sectors considered and weakness of their managerial skills are mentioned among others.

Main focus of the study should be done on this latest one and strengthening of the local private sector acting in renewable and energy efficiency fields could be priority target of the project aiming at the facilitation of sustainable market for RER.

**b) Assessment of resources**

The proposal mentions feasibility studies conducted in the framework of different programs but nothing is said whether economically and technically feasible potential have been assessed in these studies or it will be the element of the current program.

**c) Innovative financing mechanisms**

Along with the mechanisms (Renewable Energy Financial Facility-REFF, Revolving Soft Loan Window-RSLW, Contingent Loan-CL, etc) already considered by the proposal as innovative financial mechanism

the Kyoto Mechanisms (Joint Implementation and Emission Trading) could be considered from the point of view of capacity building, preparation of project pipeline and drawing of additional investments.

**d) Selection of projects for financing**

Making judgment only on the basis of the project titles the preliminary selected projects (listed in attachments 3 and 4 to the Annex 4) should be very interesting however 2/3 of them are submitted (and probably will be implemented) by Governmental and scientific structures. Focusing on the private sector participation as priority requirement in project selection process could improve the marketing elements of the program.

**e) Environmental benefit of the program**

It is clear that project will seriously contribute to the Global Climate Change problem and that's why it will be submitted to the GEF OP#06 serving the UNFCCC. However the environmental benefit of the project and particularly its contribution in reducing of GHGs is not appropriately reflected in the proposal though some preliminary estimations of reduced GHGs are presented in the matrix for incremental costs.. It would be more impressive if the amount of reduced GHGs will be added to the list of indicators (Technical Annex 3-in column for "outcome indicators" as well as in column "Use of Outcome Information") and accordingly to the appropriate sections and chapters of document. The proposal briefly reviews most of ongoing in Russia programs and National strategies related with RER. However the National Policy to the Climate Change and the role of this project in achievement of its targets is in lack. Nothing is said in Annex 14 (Country at a Glance) about country's GHGs emission, its share in global emission or share of energy sector in Russia's GHGs emissions trends.

**f) Local experience got from similar programs.**

It is plausible that the experience (particularly related to the barriers) got from the similar projects from neighboring countries has been overviewed and will be seriously taken into consideration during the project implementation stage. To make the critical analysis of the similar projects and programs ongoing in Russia and how the results will be incorporated in this program would be also very helpful.

**g) Project selection criteria**

Project selection criteria considered in Annex 9 are oriented only to the economical and financial parameters of a project. Environmental parameters along with others (technology transfer, lifetime of technology, etc) should be also considered at the project selection stage.

**h) Incremental costs**

I think that consideration of baseline scenario as "nothing will happen or be implemented in renewable sector without this program" is not correct. My understanding is that these other programs (National or International) against which the incrementality is considered are/will implementing something and the current GEF program will increase their efficiency. The matrix of incremental costs should be accordingly revised.

**i) Clarification Request**



- Cover page of document, the first right box under the sectors is identifying: Renewable energy (75%); District heating and energy efficiency services (25%). My reading of the proposal is that program doesn't cover energy efficiency issues (may be only at the level of general strategy or legislation). Some clarifications would be helpful
- PDO abbreviation from Technical Annex 3 is not in the list of abbreviations and acronyms.
- FSU –some information on the activity of this unit gives more clearness.

**Marina Shvangiradze**

Coordinator/manager of Georgia's SNC to the UNFCCC

GEF STAP Roster expert

## 2. Responses to the STAP Review

**Below are listed some issues for improvement which could strengthen the environmental orientation of project and make clearer overall project idea for outside people not being involved at project preparation stage:**

### a) **Barriers analysis**

As far as the proposal directly supports the GEF OP#06 **“Promoting the adoption of renewable energy by removing barriers and reducing implementation costs”** the proper identification of barriers to the increase of the renewable energy share in Russia’s energy supply system, ensuring of sustainable marketing of RER and improvement of energy efficiency on the basis of cost-benefit analysis are the key points for the reaching of final target. Four types of barriers: financial, institutional and ownership, information and implementation capacity are correctly identified in proposal. Insufficient private sector presence in the sectors considered and weakness of their managerial skills are mentioned among others.

Main focus of the study should be done on this latest one and strengthening of the local private sector acting in renewable and energy efficiency fields could be priority target of the project aiming at the facilitation of sustainable market for RER.

#### **Project Team response:**

The team agrees that this barrier is one of the most important for RER development in Russia as well as in many other countries of FSU. So fare, we put insufficient private sector presence in the power and heat generation sector in the group of “ownership barriers”.

Therefore, the team has added in the project design (para B3. and Annex 4) a new task to support and to strengthen the private sector with regard to RER development The activities would consist of support to an introduction of ESCO-models and to the development of business planning on RER development by private companies. Training courses on the mechanisms of public-private partnerships in RER development will be arranged for governmental officials and entrepreneurs.

### b) **Assessment of resources**

The proposal mentions feasibility studies conducted in the framework of different programs but nothing is said whether economically and technically feasible potential have been assessed in these studies or it will be the element of the current program.

#### **Project Team response:**

The OECD/IEA study on renewable energy potential in Russia, published in 2003, is the most comprehensive and professional work so far. In accordance with this study, the volume of renewable energy ( economic potential) corresponds to about 30% of the country's current total primary energy supply. Several other studies on the same topic came to similar conclusions. One of the priority tasks of the TA component will be the execution of a “study of economic feasibility of different renewable energy resources in different Russia's regions based on a comparison of RER with tradition fuels, taking into account of full cost for traditional fuels development”.

### **c) Innovative financing mechanisms**

Along with the mechanisms (Renewable Energy Financial Facility-REFF, Revolving Soft Loan Window-RSLW, Contingent Loan-CL, etc) already considered by the proposal as innovative financial mechanism the Kyoto Mechanisms (Joint Implementation and Emission Trading) could be considered from the point of view of capacity building, preparation of project pipeline and drawing of additional investments.

#### **Project Team response:**

Russia's potential for participation in the Kyoto mechanisms is large, and there are good opportunities for an attraction of additional investment resources in renewable energy projects. However, these resources were not considered by the team as the project co financing due to the absence of governmental procedures on JI project approval and selling of Emission Reductions Units or Assigned Amount Units to Parties of Kyoto Protocol. The issue should be considered in details during the project appraisal, when the above mentioned governmental procedures envision to be in place. Also, we would need guidance from GEF SEC if, and if yes, under which circumstances GEF and JI funds can complement each other. So far, GEF and JI funding of the same project is not possible.

### **d) Selection of projects for financing**

Making judgment only on the basis of the project titles the preliminary selected projects (listed in attachments 3 and 4 to the Annex 4) should be very interesting however 2/3 of them are submitted (and probably will be implemented) by Governmental and scientific structures. Focusing on the private sector participation as priority requirement in project selection process could improve the marketing elements of the program.

#### **Project Team response:**

The relatively low share of project ideas from private sector developers in the pipeline can be explained by the procedure of project identification. MEDT cooperated closely with regional administration in identifying of investment projects and in assessing the possible demand for investment support. While it is expected that private investors will participate in many of projects formally proposed by governmental entities and/or regional and municipal authorities, the share of projects initiated by private proponents will be increased at the later stage, when open competitive bidding process will be arrange for allocation of GEF support to RER projects.

### **e) Environmental benefit of the program**

It is clear that project will seriously contribute to the Global Climate Change problem and that's why it will be submitted to the GEF OP#06 serving the UNFCCC. However the environmental benefit of the project and particularly its contribution in reducing of GHGs is not appropriately reflected in the proposal though some preliminary estimations of reduced GHGs are presented in the matrix for incremental costs. It would be more impressive if the amount of reduced GHGs will be added to the list of indicators (Technical Annex 3-in column for "outcome indicators" as well as in column "Use of Outcome Information") and accordingly to the appropriate sections and chapters of document. The proposal briefly

review most of ongoing in Russia programs and National strategies related with RER. However the National Policy to the Climate Change and the role of this project in achievement of its targets is in lack. Nothing is said in Annex 14 (Country at a Glance) about country's GHGs emission, its share in global emission or share of energy sector in Russia's GHGs emissions trends.

**Project Team response:**

Agreed. Text and relevant data will be added.

**f) Local experience got from similar programs.**

It is plausible that the experience (particularly related to the barriers) got from the similar projects from neighboring countries has been overviewed and will be seriously taken into consideration during the project implementation stage. To make the critical analysis of the similar projects and programs ongoing in Russia and how the results will be incorporated in this program would be also very helpful.

**Project Team response:**

MEDT and other governmental counterparts are interested in the experience of similar project implementation in other countries. Some approaches and modalities applied in other WB/GEF projects were used by the team in the RREP project design. But, most of the projects in neighboring countries started quite recently (1-2 years ago), therefore, there are not yet many results, which could be directly incorporated in the project. The project team has reached an agreement with the governmental counterparts that certain resources from the GEF grant and from counterpart co-financing will be allocated for lessons learning.

**g) Project selection criteria**

Project selection criteria considered in Annex 9 are oriented only to the economical and financial parameters of a project. Environmental parameters along with others (technology transfer, lifetime of technology, etc) should be also considered at the project selection stage.

**Project Team response:**

Agreed. We will add relevant information.

**h) Incremental costs**

I think that consideration of baseline scenario as "nothing will happen or be implemented in renewable sector without this program" is not correct. My understanding is that these other programs (National or International) against which the incrementality is considered are/will implementing something and the current GEF program will increase their efficiency. The matrix of incremental costs should be accordingly revised.

**Project Team response:**

Agreed. The incremental project's GHG reductions took into account only those that were directly generated by investment projects supported. There are no calculations of emission reductions generated by activities of the Technical Assistance component. The team will make an assessment of environmental effects of the technical assistance and will discuss the issue with the counterparts in details during the formal project appraisal.

**i) Clarification Request**

- Cover page of document, the first right box under the sectors is identifying: Renewable energy (75%); District heating and energy efficiency services (25%). My reading of the proposal is that program doesn't cover energy efficiency issues (may be only at the level of general strategy or legislation). Some clarifications would be helpful

**Project Team response:** The indicated 25% are not related to energy efficiency services, but to “District heating and energy efficiency services”. As district heating will play an important role in the project, this is justified in our opinion.

- PDO abbreviation from Technical Annex 3 is not in the list of abbreviations and acronyms.

**Project Team response:** “PDO” stands for Project Development Objective. It has been spelt out in the text.

- FSU –some information on the activity of this unit gives more clearness.

**Project Team response:** FSU stands for “Former Soviet Union”.

## **ANNEX 17: Letter of Support: Ministry for Economic Development and Trade**

**Letter from Mr. V. Gavrilov, Deputy Director, Ministry of Economic Development and Trade**

September 13, 2006

To: Mr. Helmut Schreiber  
Lead Environmental Economist  
World Bank RM

Dear Mr. Schreiber,

With connection to the presentation of a set of documents regarding the project “Russian Program to Develop Renewable Energy Sources” (RREP) to the GEF Board, please find below some information on the project preparation progress.

Pursuant to instruction #5P-KA of the Ministry of Economic Development and Trade of the Russian Federation dated March 20, 2006, the Ministry coordinates activities of the Ministry of Industry and Energy of the Russian Federation, Ministry of Natural Resources of the Russian Federation, Ministry of Education and Science of the Russian Federation as well as consulting firms, aimed at implementing all project preparation components that shape up key tasks of the future Program.

Over the past period the Ministry of Industry and Energy of the Russian Federation has made several important decisions regarding the development of renewable energy sources (RER) - see minutes #45-АД/09 (annex 1) of the meeting held by Mr. A.Dementyev, Deputy Minister of Industry and Energy of the Russian Federation, on August 20, 2006. A set of measures of state support to developing RER and increasing their share in the national energy budget is to be put together. Proposals on RER facilities to be included into draft federal program aimed at improving energy efficiency in the Russian Federation that is being designed following assignment by the President of the Russian Federation, and to be considered in the designing of the Long-Term Program for Electric Power Industry Development up to 2020 and General Scheme of Electric Power Industry Facilities Location up to 2020, are under preparation.

Key measures include developing draft federal law “On Support of Renewable Energy Sources Use” initiated by the JSC RAO “UES of Russia”.

The Ministry of Education and Science of the Russian Federation under the framework of the “R&D in Priority Areas of Science and Technology Development (2007 – 2009)” federal targeted scientific and technological program selects proposals to finance awareness-raising and capacity-building projects in RER development.

The Ministry of Natural Resources of the Russian Federation under the “Improving Efficiency of Operation of Protected Natural Areas of Federal Importance (2007-2009)” sectoral targeted program designs activities to tap RER in state natural preserves and national parks, and determines the amount of funds needed to tap RER in natural preserves and national parks that are to be received from the national budget. Based on preliminary estimates, investment of 164.4 million RUR in energy equipment using various RER that is planned by the Ministry of Natural Resources of the Russian Federation will help to reduce CO2 emission by 60-70 thousand tons annually.

In the course of the Project preparation, many Russian regions (Krasnodarsky Krai, Stavropolsky Krai, Rostov oblast, Arkhangelsk oblast, Republic of Buryatia, Republic of Karelia, Republic of Komi, etc.) developed proposals to design and implement investment projects to tap RER (annex 2). Administrations of several regions (Krasnodarsky Krai, Arkhangelsk oblast, Republic of Komi) came up with initiatives to pilot implementation of the RREP.

The Ministry of Economic Development and Trade of the Russian Federation confirms the intention to use the National Pollution Abatement Facility (NPAF) and to direct some of available financial resources to the implementation of the investment component of the RPDRSE. Moreover, the Ministry seriously considers to review the Program and to add financial instruments which will help to make borrowed funds more attractive for end users.

The total need for financial resources to implement the identified investment projects exceeds the planned amount of US\$ 50-60 million substantially; with this in view, the Ministry of Economic Development and Trade of the Russian Federation together with the Ministry of Finance of the Russian Federation look into a possibility to use not only the US\$20M of the NPAF borrowed funds, but also to employ a portion of the unused proceeds of the WB loan and Swiss grant for the National Pollution Abatement Facility (NPAF) as well as other resources.

Attachment: 18 pages in 1 copy.

V.Gavrilov,  
Chair, Supervisory Board  
for the Preparation of the RPDRSE,  
Deputy Director,  
Department of Property and Land Relations,  
Environmental Economics  
Ministry of Economic Development and Trade

**ANNEX 18: Letter of /Request for Support: State Duma**  
Federal Assembly of the Russian Federation

STATE DUMA

DEPUTY of the STATE DUMA

(4-th Convocation)

2004—2007

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June 23, 2006

To: **I. N. Grechukhin**

Director  
Property and Land Relations,  
Environmental Management Economy  
Department  
Ministry of Economic Development and Trade

Dear Igor Nikolayevich:

Mandated by a consortium of 24 institutions and enterprises representing different regions of the Russian Federation together with the UNESCO Information Learning Network for Europe on renewable energy (EUTUNETRES) a non-profit making partnership “Renewable Energy Innovation Technology Development Center” has prepared a project proposal for establishing, piloting, and developing an information learning network for scaling up renewable energy use in the Russian Federation (RUSNETREPOWHR).

The establishing of the above network is a key task to create favorable conditions for sustainable use of renewable energy based on the best practices of Russia and many other countries in this area.

I believe that the project on establishing and development of the information learning network for the utilization of renewable energy in the Russian Federation deserves support. In this connection you are kindly requested to explore the possibility of entering the information learning network investment project on renewable energy in the Russian Federation (RUSNETREPOWFR) into the list of projects to be financed by the Global Environmental Facility (grant) under the “Russia - Renewable Energy” Program.

Enclosure: 30 pages

Deputy Chairman

State Duma Committee on Environment

L. N. Kosarikov



**ANNEX 19: Letter of /Request for Support: Altaisky Krai**

**ALTAISKY KRAI  
ADMINISTRATION  
ALTAISKY KRAI DEPARTMENT  
FOR INDUSTRY AND ENERGY**

Lenina Street, 59

Barnaul, 656035

Tel/fax 66-74-42

June 23, 2006

# 4b-1-32/990

To: I.N. Grechukhin

Director

Property and Land Relations, Environmental Management Economy

Department

Ministry of Economic Development and Trade

Dear Igor Nikolayevich:

You are kindly requested to enter the investment project on the use of renewable energy in the Altaisky Krai named “Altaisky Krai – Solving Energy and Ecological Problems of Large Livestock Husbandry Integrated Farms by Developing Energy Markets Through Biogas Utilization” into the list of demonstration projects to be implemented under the Global Environmental Facility grant in the context of the “Russia - Renewable Energy” Program.

Enclosure: one copy of 7 pages

Department Chief

V.A. Ryapolov

*Executed by Ilya Gennadievich Zotkin 667541*

**ANNEX 20: Letter of /Request for Support: Republic of Buryatia**

**Government of the Republic of Buryatia**

Lenina Str, 54,  
Government House  
670001 ,Ulan-Ude city,  
tel./ fax (301-2) 21-02-51  
URL: <http://gov.buryatia.ru>  
e-mail [buryatia@icm.buryatia.ru](mailto:buryatia@icm.buryatia.ru)

August 3, 2006 # i 097-000285

To: A.G. Ishkov  
Director  
Environmental Protection  
Public Policy Department  
Ministry of Natural Resources  
Russia

*On the participation in the preparation of projects under component 3 of RREP*

Dear Alexandr Gavrilovich:

In pursuance of your letter # 12-27/4321 (May 31, 2006) please find enclosed a revised list of projects on renewable energy of the Baikal Conservation Area presented at the International scientific and technological seminar “Russia - Renewable Energy” Program in Rybinsk on June 28-30, 2004 including the following information for each project: name, implementation site, amount of funding.

Enclosure: 3 pages

Sincerely,  
L.D.Turbyanov  
Deputy Chairman  
Government  
Republic of Buryatia

*Stamp: Ministry of Natural Resources of Russia,*

*August 9, 2006, incoming #017351/27*

**ANNEX 21: Letter of /Request for Support: Republic of Karelia**

**Russian Federation  
REPUBLIC OF KARELIA  
STATE COMMITTEE  
OF THE REPUBLIC OF KARELIA FOR HOUSING AND UTILITIES REFORM  
To: Igor Nikolaevich Grechukhin  
Director  
Property and Land Relations, Environmental Management Economy  
Department  
Ministry of Economic Development and Trade**

Meretskova Street, 8a  
Petrozavodsk 185003  
Tel. 571838, fax 560627 (814)  
e-mail: [gkhrk@onego.ru](mailto:gkhrk@onego.ru)

January 26, 2006

#06-22 / 906

*In pursuance of letter № D 08-42, January 13, 2006*

Dear Igor Nikolayevich:

In response to your request № D08 - 42 (January 13, 2006) please find enclosed a list of republican projects on renewable energy sent by the Government of the Republic of Karelia for co-financing with the Global Environmental Facility grant under the project “Russia - Renewable Energy” Program (RREP).

Sincerely,

V. K. Koryagin

Chairman

State Committee

*Executed by A.G. Fyodor  
tel. 560158*

**Russian Federation  
REPUBLIC OF KARELIA  
STATE COMMITTEE  
OF THE REPUBLIC OF KARELIA  
Economy  
FOR HOUSING  
AND UTILITIES REFORM**

Meretskova Street, 8 a  
Petrozavodsk, 185003,  
tel. 57-18-38, fax 55-86-36 (814)  
June 15, 2006, # 06 - 22/1014

**To: Igor Nikolayevich Grechukhin  
Director  
Property and Land Relations,  
Environmental Management  
Department  
Ministry of Economic Development  
and Trade  
Russia**

**Yu. M. Maximenko**

**RREP: Project Preparation Unit**

Dear Sirs:

In addition to the documents submitted earlier by the Government of the Republic of Karelia please find attached a specific list of projects recommended for entering into the priority list of projects on renewable energy to be co-financed with the Global Environmental Facility grant under the project "Russia- Renewable Energy" Program.

Enclosure: 1 page.

Sincerely yours,  
V.K. Koryagin  
Chairman  
State Committee

*Executed by Ye. V. Gruzdeva  
Tel. 56-01-58*

**ANNEX 22: Letter of /Request for Support: Komi Republic**

SERVICE ON TARIFFS  
KOMI REPUBLIC

**To: Yu. L. Maximenko**  
Director General  
Executive Directorate  
National Pollution Abatement Facility Program

Lenina Street, 73, Syktyvkar,  
Komi Republic, 67981  
Tel / fax: (8212) 29-15-71  
E-mail: [komirec@mail.ru](mailto:komirec@mail.ru)  
<http://www.komirec.ru>

June 9, 2006 #01-01/1379

*On entering the project into the list of demonstration projects*

Dear Yury Leonodovich:

An investment project is currently being prepared in the Komi Republic named “Application of Advanced Technologies for the Utilization of Woodland Management Biological Resources for the Decentralized Energy Supply of Social and Housing Facilities in the Areas of Intensive and Moderate Logging Activities of the Komi Republic”.

You are kindly requested to enter the above investment project (being a priority task for scaling-up the utilization of biological fuel in compliance with the Instruction of the President of the Russian Federation № Пп704 made in Syktyvkar on April 30, 2006) into the list of demonstration projects under the “Russia - Renewable Energy” Program implemented under the Global Environmental Facility grant.

Member of the Government

K.Yu. Romadanov

Komi Republic

Head of the Komi Republic Service for Tariffs

Chairman of the Board of Directors

Open Joint Stock Company

"Komi Heating Company"

## ANNEX 23: Letter of /Request for Support: Krasnodar Krai

HEAD OF THE ADMINISTRATION

To: G. O. Gref

KRASNODARSKY KRAI

Minister

Ministry of Economic Development and Trade

Krasnaya Street, 35,

Krasnodar city, 350014

Tel.: (861) 262-57-16, fax: (861) 268-35.42

November 29, 2005, #1-02/849

*On recommending Krasnodarsky Krai for the participation in the "Russia - Renewable Energy" Program*

Dear German Oskarovich:

The Krasnodarsky Krai has developed an action plan through 2015 aimed to satisfy 30% of its needs in the energy by using renewable energy sources including geothermal ones.

The preparation of the above program was a result of three-year cooperation of the Krasnodarsky Krai Administration with the Russian Association «Geothermal Energy Society» and the World Bank Global Environmental Facility (GEF). Within the context of this cooperation the Krasnodarsky Krai Administration has financed all joint development activities implemented in the above areas.

Currently a World Bank GEF project named "Russia - Renewable Energy" Program (RREP) is being prepared in accordance with Resolution #653 of the Government of the Russian Federation issued in November 1, 2005. In this connection you are kindly requested to consider the possibility of covering the Krasnodarsky Krai by the above project as a pilot region for the implementation of the program mentioned.

The Administration of the Krasnodarsky Krai would like to confirm its commitment to participate in the following areas under the RREP:

- a) regional legislation, delineation of powers for different authority levels;
- b) preparation of the strategy and the renewable energy program for the Krasnodarsky Krai, and introducing program implementation instruments;
- c) implementation of a number of investment projects for the utilization of different kinds of renewable energy in the Krasnodarsky Krai;
- d) establishing a demonstration and information center on renewable energy in the Krasnodarsky Krai based on the conception used for the European Renewable Energy Center ( Austria).

Dear German Oskarovich: You are kindly requested to support our initiative for covering the Krasnodarsky Krai by the World Bank GEF project.

Chief of the Administration

Krasnodarsky Krai

A. N. Tkachyov

**ANNEX 24: Letter of /Request for Support: Stavropol Krai**

MINISTRY OF INDUSTRY,  
TRANSPORT AND COMMUNICATIONS

Stavropolsky Krai  
National Pollution Abatement

Facility Program Tolstogo Street 39.

Stavropol 355003, tel. (8-865-2) 26-83-43

window 00091669

E-mail: [minprom@stavropol.net](mailto:minprom@stavropol.net)

February 7, 2006

# 08 - 182

Dear Yury Leonidovich:

The Ministry of Industry, Transport and Communications of the Stavropolsky Krai recommends the project “Integrated Use of Geothermal Resources of Kazminsky Deposit” representing the Stavropolski Krai to be entered into the list of projects for the “Russia - Renewable Energy” Program (RREP).

Please find enclosed the investment proposal with the draft technical and economic specifications.

Enclosure: 1. Investment Proposal for the project «Integrated Use of Geothermal Resources of the Kazminsky Deposit» - 6 pages

Minister of Industry, Transport and Communications

Stavropolky Krai

S.A. Berezin

*Executed by S.A. Filippov*

*tel. / факс: 35-63-63.*



**ANNEX 25: Map**

(see attached file)

**ANNEX 26: Minutes of the meeting of the Supervisory Board for the preparation of the project "Russian Renewable Energy Program"**

«APPROVE:»

Chairman of the Supervisory Board for the Preparation of the RREP,

Deputy Director, Department of Property and Land Relations and Environmental Management of the Ministry of Economic Development and Trade of the Russian Federation

V.Gavrilov.

March 19, 2007

**CHAIR** - O.Pluzhnikov

**ATTENDEES:**

Members of the Supervisory Board:

- O.Krever
- E.Meshkova (substituting for D.Levchenko)
- Ju.Maksimenco
- A.Pavlov
- B.Reutov
- M.Solovyev
- V.Ugrinovich

Invitees:

- A.Averchenkov (World Bank)
- Yu.Kozeikin (MoF)
- M.Saparov (RREP preparation coordinator)
- I.Gorkina. (ED NPAF)

AGENDA:

1. "On Completion of Main Activities to Implement the GEF Grant Agreement for the Preparation of the Project "Russian Renewable Energy Program"
2. On the Draft World Bank Project Document "Russian Renewable Energy Program"

3. On Approval of the NPAF ED Report Regarding Operating Costs for the RREP Preparation in 2006
4. On Interaction Between the Russian Renewable Energy Program and the GEF Project “Geothermal Energy Development Program in Europe and Central Asia (GeoFund)”.

**1. On Completion of Main Activities to Implement the Global Environmental Facility Grant Agreement for the Preparation of the Russian Federation Project “Russian Renewable Energy Program”**

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(O.Pluzhnikov, Ju.Maksimenko, A.Averchenkov, M.Solovyov, B.Reutov, B.Ugrinovich, A.Pavlov, E.Meshkova, M.Saparov)

1.1. Consider information from the NPAF ED on completion of main activities to implement the GEF Grant Agreement for the preparation of the project “Russian Renewable Energy Program”.

It should be stressed that outcomes of the preparation components were accepted in two stages. At the first stage the outcomes were accepted at the MEDT during working meetings chaired by representatives of beneficiary Ministries under the project components: MEDT, MNR, MIE, MoES. At the second stage revised materials related to the Project components were approved during working meetings held at the NPAF ED office and attended by representatives of beneficiary Ministries, members of the RREP SB. Outcomes of the work done with regard to the Project components were used by the World Bank in the development of the RREP Project Document. During the seminar held on February 9, 2007, amendments to the RREP project caused by a 50% reduction of the grant amount were discussed.

1.2. Approve report of the Project Preparation Unit – NPAF ED – On Completion of Activities for the Preparation of the Russian Renewable Energy Program, approved by Resolution #5P-KA of the MEDT dated March 20, 2006 (see attachment 1).

**2. “On Composition of the Russian Federation Project “Russian Renewable Energy Program” with Participation of the Global Environmental Facility and the World Bank“**

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(Ju.Maksimenko, O.Pluzhnikov, A.Averchenkov, A.Pavlov, M.Solovyov, E.Meshkova, M.Saparov, I.Gorkina)

2.1. Consider the information from the NPAF ED that based on the outcomes of activities under the RREP components, the WB together with Russian specialists drafted the Project Document for the RREP project to be submitted to the GEF. In the course of the Project Document development, following proposal from the GEF Secretariat, the amount of the grant co-financing intended for the RREP implementation was reduced from \$US 20 million to \$US 10 million.

2.2. Consider information on the decision taken by the NPAF SB at its meeting on December 21, 2007 (Minutes #20) to expand the scope of investment projects that receive soft financing from the Program to include investment projects aimed to promote renewable energy sources.

2.3. Approve the revised concept of the RREP project presented in the WB Program Document that has been developed for submission to the GEF (see attachment 2).

2.4. The NPAF ED together with the World Bank after tentative approval of the draft by the GEF Secretariat is to develop necessary documents for the MEDT to submit a request for a full-scale RREP project to the GOR in the 2<sup>nd</sup> quarter of 2007.

**3. On Approval of the Report of the NPAF ED on Expending the Grant Proceeds for the Preparation of the RREP Project.**

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(O.Pluzhnikov, Ju.Maksimenko, A.Averchenkov, M.Solovyov, E.Meshkova, M.Saparov, I.Gorkina, A.Pavlov)

3.1. Agree with the proposal of the NPAF ED supported by the MEDT (letter #Д08-4093 dated December 11, 2006) to reallocate a portion of the GEF grant proceeds intended to cover operating costs that had been released thanks to lower actual contract costs, to support the project audit for 2006.

3.2. Approve the Report of the NFAP ED on the operating costs incurred by the Project Preparation Unit in the course of the RREP project preparation activities in 2006 in the amount of US\$ 39,994 (see attachment 3).

3.3. Approve on the whole the Report of the NFAP ED on expending the grant proceeds for the preparation of the RREP project in the amount of US\$ 349,120 (see attachment 4).

**4. “On Interaction Between the Russian Renewable Energy Program and the GEF Project “Geothermal Energy Development Program in Europe and Central Asia (GeoFund)”.**

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(O.Pluzhnikov, Ju.Maksimenko, A.Averchenkov, E.Meshkova, A.Pavlov)

4.1. Consider information of the WB on establishment of the Geothermal Energy Development Program in Europe and Central Asia (GeoFund) and beginning of the implementation of respective GEF project (see attachment 5). Emphasize significant potential for the geothermal energy development in Russia, presence of identified investment projects portfolio and advisability of active cooperation between Russian agencies and firms with the WB GeoFund.

4.3. Suggest to the World Bank to expedite preparation of the Russian component (tranche) of the GeoFund ensuring its interconnection with, and complementarity to, the RREP project.

4.4. Request the RREP Project Preparation Unit (NFAP ED) to contribute to the preparation of the Project Document for the Russian component of the GeoFund and participate in its formal submission to the MEDT and MNR for approval.

The minutes were taken by

Ju.Maksimenko