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THE INTERNATIONAL FINANCE CORPORATION**

**FINANCING ENERGY EFFICIENCY IN THE  
RUSSIAN FEDERATION**

**GEF Project Brief**

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## Financing Energy Efficiency in the Russian Federation (FEER)

### GEF Project Brief

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## 1. Project Development Objective

### 1.1. GEF Strategic Priorities

In its program "A highly energy efficient economy" the Russian Ministry of Energy has identified investment needs of 274.5 billion Euro to decrease the energy intensity of the Russian economy while continuing to provide sufficient energy to meet the needs of its population and sustain economic growth. This amount is split into three sub-programs: energy efficiency of the energy sector (250 billion Euro), security and development of the nuclear industry (17 billion Euro) and energy efficiency of energy consumption (7.5 billion Euro).

The Russian Government expects that around 92% of the investment costs involved in this program will come from non-budgetary sources i.e. enterprises, financial sector and residential consumers. *To achieve this target it is essential that a market for energy efficiency products and services develops, and that Russian financial institutions provide long term lending for the energy efficiency projects that result from the market development.*

The proposed FEER program, is a pilot initiative to increase the flow of capital to energy efficiency projects from Russian financial institutions. The program the GEF strategic priority CC-2 Increased Access to Local Sources of Financing for Renewable Energy and Energy Efficiency.

#### **CC-2:Increased Access to Local Sources of Financing for Renewable Energy and Energy Efficiency**

The technical potential for energy efficiency in Russia is clearly substantial. However, when thinking of investment priorities, industrial managers typically focus on increasing production capacity and turnover. They often lack awareness concerning the benefits of energy efficiency. This information gap is matched in Russian financial institutions and has lead to them being unaware of the strong financial benefits inherent in this type of project, which, can in fact, make them a better credit risk than other production related projects.

There are three major factors that have contributed to this information barrier in Russia:

- (i) EE has never been an area of major priority in Russia until recently because of the low energy prices and inexperience in making realistic cost/benefit calculations.
- (ii) There has been limited effective dissemination of the results of demonstration projects undertaken to date.
- (iii) Those responsible for communicating the benefits of EE to different stakeholders are only now developing the skills needed to target specific messages in the right way to the people who matter.

By addressing the information barriers on both the financing and implementation sides of an energy efficiency transaction, the FEER program aims to transform both the financing market (see below) and the market for supplying energy efficient products and services. The FEER program of technical assistance will raise awareness among energy investment decision makers, thus, stimulating demand, while also building capacity among project developers and the finance sector to develop, structure and approve commercial EE transactions.

Up to now, the Russian financial community has not engaged in financing energy efficiency projects to any meaningful extent. The main barriers, described in more detail in Section 2.1, are:

- high transaction costs
- lack of project finance skills
- lack of long-term funds
- lack of information

Drawing on the TA support templates developed by IFC in Central Europe, the FEER program will undertake activities that build capacity in Russian financial institutions and transform their lending activities so that they: a) understand that energy efficiency projects are viable investments that improve the financial stability of their clients and reduce the banks' overall risk exposure; b) examine standard industry- related loans and leases from an energy efficiency perspective; c) actively build a portfolio of energy efficiency projects

In its Hungary Energy Efficiency Co-Financing Program (HEECP) and Commercializing Energy Efficiency Finance Program (CEEF) IFC has, with substantial GEF support, developed a model for engaging FIs with a package of TA and risk mitigation instruments in order to stimulate a self-sustaining EE financing market. IFC's diagnosis of the Russian market (see Annex 6 for a comparison of Russian and Hungarian market conditions for EE investment) is that, in Russia, the TA and risk instruments must be supplemented with a credit tool to achieve a similar transformational impact. The FEER program is therefore an important demonstration vehicle in its own right.

## **1.2. Project development objective and key performance indicators**

The Program's foremost goal is to establish a sustainable market capacity in Russia to develop and finance commercial investments which increase the efficient use of energy or enable the use of new energy resources (renewable and other) which emit a reduced level of greenhouse gases.

A study completed by IFC in 2003 on financing options for energy efficiency investments in Russia<sup>1</sup> concluded that despite the large potential in Russia for financially viable EE investments, only a few of those investments are actually being undertaken. The reason for the lack of development of EE investments in Russia is a combination of

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<sup>1</sup> See Annex 14 for the Executive Summary. Full report available on request from IFC.

the following three factors: lack of longer term capital for energy efficiency (and other) capital investments; lack of understanding of how to evaluate energy efficiency investments on the part of Russian financial institutions leading to a heightened perception of technical risks associated with these projects; lack of experience in structuring energy efficiency investment projects by Russian industry accompanied by limited experience among local consulting engineering organizations that can provide assistance.

The FEER Program addresses each of these barriers through targeted credit lines, which can only be used for financing energy efficiency projects, partial credit guarantees for financial institutions, intensive technical assistance to financial institutions to help them build an energy efficiency loan portfolio, and technical assistance to project developers to ensure that the FIs see adequate, well-prepared deal flow. IFC anticipates that the initial focus of the program will be on industry sectors where the FIs are already actively lending, and where the Program can build knowledge, experience and, crucially, confidence in the principals of energy efficiency finance. Subsequently, the FIs can expand the scope of their energy efficiency financing activities into other sectors such as municipal heating, residential blockhouse refurbishment or renewable energy projects. A fundamental principal of the program, however, is that the participating FIs will define the sector focus – not IFC.

In this Program, the provision of credit lines or issuance of transaction guarantees is not the principal objective, but the demand for the credit lines is one of several indicators of program success. The credit lines and guarantees are simply a means to an end, and one of the primary tools (along with TA) which IFC will utilize under the Program in order to build an experience base and capacity in the market to mobilize commercial financing for such investments.

Parallel objectives are to:

- (i) promote the entry of domestic FIs in the EE financing market, build greater experience and capacity of domestic FIs to provide EE project finance, provide more favorable credit conditions to borrowers, and promote financial innovation in this market;
- (ii) build capacities of the commercial EE/ESCO<sup>2</sup> industry and accelerate development of the EE market generally;
- (iii) continue development of non-grant contingent finance tools for the GEF, thus achieving greater levels of effective leverage of GEF funds and greater impact in less developed markets;
- (iv) continue to mainstream EE finance into the commercial operations of IFC by demonstrating viability, refining business models, and streamlining administrative and management procedures which leverage IFC's capacity




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<sup>2</sup> Throughout this proposal IFC takes the broad definition of Energy Service Company (ESCO) to any company that can be any third party energy efficiency project developer. This can include maintenance companies, boiler distributors, etc. as well as, but not restricted to, energy performance contracting companies or suppliers of third party finance for EE projects.

- and enable efficient processing of the relatively small individual transactions which comprise a typical EE project portfolio;
- (v) working with partner FIs to pioneer specialized financial products which address previously undeveloped market niches and are replicable by FIs in other markets.

The ultimate impact of the proposed investment/TA project will be the improved energy efficiency (EE) and profitability of Russian companies, leading to a reduction in greenhouse gas emissions. This will be accomplished by creating an awareness in Russian financial institutions that energy efficiency projects are (a) financially viable and (b) improve the risk profile of the client by reducing operating costs. The Project will work with the participating financial institutions to “deepen” the Russian financial markets, making longer term capital available for EE investment.

The immediate objective of the IFC/GEF investment project is to encourage private sector financing of energy efficiency projects in Russia in three pilot regions – Moscow surroundings, managed from a central team based in Moscow; the Urals, managed from a hub office in Ekaterinburg; and one other region, operating from a similar hub (to be identified during year one of operation). This will be accomplished using the three-pronged approach shown in Figure 1-1: IFC will provide select Russian financial institutions (FI) with long term finance required for on-lending to EE projects. The availability of long-term capital is a critical component of EE finance, yet since the Russian financial crisis of 1998 loan terms longer than one year have been scarce. The investment facility will be structured based on IFC/GEF extensive experience with setting up similar facilities in Central and Eastern Europe.

<b>Barrier</b>		<b>Program element</b>
Lack of Long Term Liquidity		Dedicated Credit Lines
High risk perception/lack of experience		Partial guarantee applied to portfolio of projects
Lack of Project Preparation skills		Technical assistance package

*Figure 1-1: Three pillars of the Investment/TA Project*

In Russia, however, the market for energy efficiency investments is still in a nascent stage of development. A more extensive technical assistance package than has been used in other IFC/GEF energy efficiency initiatives is therefore required to make the investment facility successful. This is the focus of the GEF investment. IFC has already leveraged substantial co-funding for this TA program, contingent upon the GEF support.

The success of the Program is defined by the level of sustainable commercial lending spurred by these three activities. The most important indicators of success are:

- Number and volume of EE projects financed by the participating FIs (with or without dedicated credit lines and guarantees)
- Number and volume of projects where EE aspects have been enhanced using TA
- Amount of long term credit being accessed from other sources and being used for EE projects
- Number of financial institutions applying to be included in credit line or guarantee facility
- Number of financial institutions who establish lending businesses or specialized EE finance products
- Growth of vendors of EE equipment who have relationships with partner FIs
- Growth in number and performance of ESCOs doing business with partner FIs

### **1.3. Expansion in scope of lending from industrial to municipal and residential EE projects: a multi-phased approach**

One of the Program's clear objectives is to examine whether the non-grant financing mechanisms promoted in FEER offer a viable solution to barriers that prevent financing of energy efficiency projects in countries where the commercial financial markets have previously not been mobilized because of perceived lack of development.

FEER, therefore, needs to be seen as a pilot program. In this first phase IFC assumes that under certain conditions (reasonable tariff structure, enforceability of contracts, presence of enthusiastic financial institutions, local competition between industrial enterprises) commercial financing can be used to fund energy efficiency projects. The applicability of these conditions varies greatly across the Russian Federation. IFC will therefore start in three regions (Moscow and its surroundings, the Urals and one other region to be defined during the first year of operation) where IFC's assessment indicates that conditions are adequate to enable commercial lending for EE projects. During this pilot IFC will document progress in these regions and continue to adapt and evolve IFC's FI market development model to the Russian market. The key indicators of success will be the increase in lending activities by partner banks in the selected regions and a voiced desire by them to expand their activities into other regions. IFC can then identify those other areas within Russia where the conditions are similar and where the approach can be replicated.

IFC already anticipates that in order to make a more substantial national impact in the Russian market IFC will need to implement a second phase. The second phase would look to expand the scheme into more frontier markets within Russia both in terms of geography (same types of project in new regions) and sectorally (new, more difficult types of project in the same region).

Once the pilot phase of FEER provides confirmation of the viability of the approach in Russia, IFC would seek funding from a wide range of donors, including the GEF, for a second phase of operations. IFC will undertake a substantial integrated monitoring and evaluation program in parallel with program implementation. This will provide real-time



information to enable better program management, as well as inform the development of expanded activities in the Russian market.

## 2. Strategic Context and Project Rationale

### 2.1. Country Drivenness–

#### Demand from the Financial Community

Recognizing the potential role for IFC in the emerging Russian energy efficiency market, in 2002 the IFC's Private Enterprise Partnership (PEP), a technical assistance program focused on small and medium-sized enterprise (SME) development in the CIS, commissioned a review of financing options for energy efficiency investments in Russia. The main findings were:

- Russia has a large potential for energy efficiency investments.
  - the energy consumption of Russian industry exceeds levels in analogous companies elsewhere in the world by 40-220%. As a result, potential EE savings for Russian industry have been estimated at \$24.2 billion annually.
  - Russia's energy sector is currently undergoing reform and energy prices are likely to continue rising in the future, making investments in EE increasingly more attractive and stimulating new interest in energy cost savings.
- EE investments in the industrial sectors will drive the market due to the system of cross-subsidization of the residential sector by industry.
- Although some EE investments are already taking place, the market is nascent.
- Significant regional differences in energy costs exist across Russia, thereby making EE investments in some regions more attractive than in others.
- Investments are mostly undertaken with companies' own funds rather than through the financial sector. This is in part due to the high cost of debt finance.
- Three further barriers to FI financing of EE projects are:
  - the lack of long-term funds in the financial sector to invest in EE projects;
  - the lack of understanding of how to evaluate EE investments on the part of the FIs and hence a heightened perception of risk; and
  - the lack of experience in structuring EE investment projects by local companies combined with a scarcity of competent local consultants and/or ESCOs who could assist potential clients.
- A IFC/GEF partial credit guarantee facility similar to those implemented in Central Europe would not by itself be a sufficient solution to encourage Russian FI investment in EE. Long term financing instruments and a significant TA package must be coupled with a guarantee product to drive the market development.

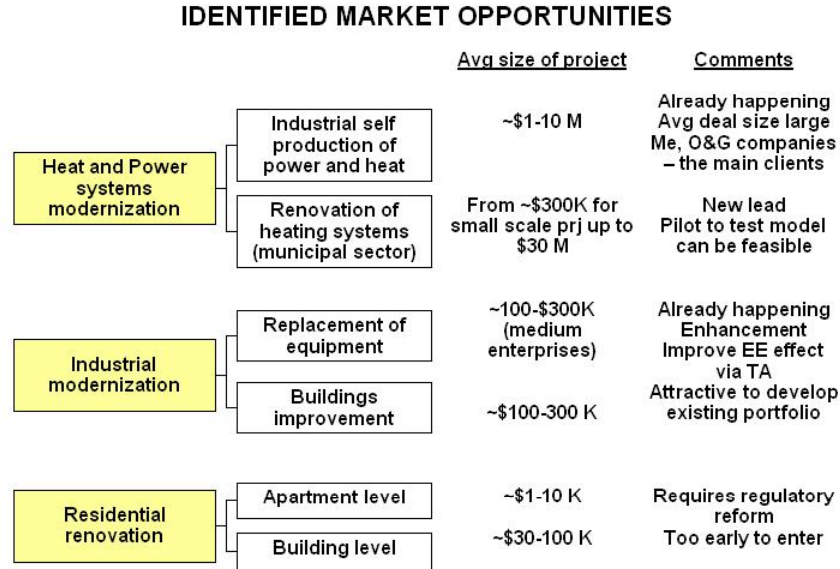
In preparing their report the consultants interviewed the Russian financial community which, already at that time, expressed interest in the approach that IFC had adopted in Central Europe. This message from the financial community was reinforced at a series of meetings between IFC and leading banks and leasing companies in Moscow, Nizhny Novgorod and Ekaterinburg in July 2003. However, at this time it became clear that an energy efficiency financing program in Russia had to address significantly different financing barriers than the programs in Central Europe. There was also an obvious confusion among FIs over what exactly energy efficiency investments could look like.

IFC's response to this confusion was to hold a one-day seminar for Russian financial institutions on energy efficiency financing. The training provided a description of EE projects and EE financing structures, emphasizing its practical financial benefits to the end-user, its commercial potential and explaining the profile of EE projects which are likely to be suitable for the particular FIs. The audience consisted on 46 people representing 13 financial institutions, 4 multilateral development agencies (EBRD, IFC, UNDP, EU), 4 energy efficiency project developers. There was a high degree of interaction between speakers and the audience leading to lively discussions. The feedback from the seminar, summarized in Table 2-1 below, shows a high level of interest from the financial community in an EE financing program.

Question (and scoring system)	Average Score
<b>Workshop Feedback</b>	
Appropriateness of Information (1 not relevant, 3 Highly Relevant)	2.8
Can you apply the received knowledge at work? (1 not relevant, 3 Highly Relevant)	2.2
Do you think the EE financing is an important business area for you? (1 not relevant, 3 Highly Relevant)	2.5
Would you be interested in more specific courses on the subject? (Max 1)	0.9
Is your financial institution interested in expanding financing of EE project during the next 3 years? (Max 1)	0.9
<b>Requests for tailored training for energy efficiency lending (1 least required, 5 most required)</b>	
Training of credit officers on EE project evaluation	4.0
Market reviews of the selected sectors	3.9
Available database of vendors of EE equipment	4.1
Tailored advice on selected issues related to EE lending	4.3
Test model deals on a pilot basis with partially subsidise energy audit etc	3.8
Partial guarantee of EE lending	4.4
Credit line from the IFC dedicated for EE lending	4.6

*Table 2-1: Feedback from IFC EE Training Seminar for FIs*

Subsequent to the workshop, IFC held a number of meetings with FIs to explore their interest in developing energy efficiency financing as a product line. The FIs with which IFC met – all of which were pre-screened as viable institutions with substantially well-developed credit practices – displayed a remarkable level of interest. Most demonstrated a market strategy based upon their individual comparative advantages which was impressive at this early stage of engagement. Figure 2-1 summarizes the range of interests indicated by the FIs:



-1-

*Figure 2-1: EE Sectors identified by FIs*

Subsequent to these meetings two FIs in particular have continued to correspond with IFC regarding project opportunities.

### **Russian Government Policy**

The “Main Provisions of the Russian Energy Strategy to 2020” describes the Russian government’s major targets and directions of energy sector development. It emphasizes reforming the energy price structure as a key to stimulating rational and efficient energy use. The strategy assumes the promotion of EE investments using the following measures:

- Administrative measures: energy audits, review and introduction of mandatory norms and standards of energy usage, obligatory certification of industrial equipment on energy usage level;
- Economic measures that turn EE into financially efficient area of investments: tax benefits for EE investments, accelerated depreciation of energy saving equipment, tax incentives.

At the Federal level the program “Energy Efficient Economy”, approved by the Russian government Decree № 796 of 18 November 2001, is designed as the main mechanism in the Energy Strategy to improve energy efficiency of the economy and ensure future sustainable energy supply to the market, in line with the goal of the Main Provisions of the Russian Energy Strategy to 2020. **This program maintains that EE is one of the main priorities for Russia. However, it is clear that the vast majority of funding for EE projects must come from private sector sources outside the Federal budget.**

The “Main Provisions of Energy Policy and Structural Reforming the Fuel-Energy Sector to 2010” sets priorities, goals and methods of implementation of energy policy in Russia. The priorities include sustainable energy supply, improving EE and creating necessary conditions for the transfer of the economy to energy saving development and reducing negative environmental impact of the power sector.

A main goal of the Russian energy policy is structural reform of the fuel-energy complex. This goal is to be achieved through: regulation at federal and regional levels of the energy tariffs, formation of a competitive market in a sphere of production and consumption of energy, realization of energy saving projects, etc.

The planned unbundling and partial deregulation of the electricity sector will definitely lead to the creation of an attractive market environment for strategic investors. **It will result in a substantial increase of both gas and power prices for industrial and residential consumers and lead to a more favorable investment climate for energy efficiency.** With the anticipated regulatory and tariff changes, the issue of EE will emerge as one of the top priorities for both energy sector players and energy consumers.

Energy efficiency is an increasingly important issue for regional authorities as they look for ways to cut regional expenditures, increase limited budget revenues and improve industrial competitiveness. Heat and power subsidies alone absorb presently 25-40% of regional and local budgets. Since 1995 many regions have developed legal, regulatory and institutional frameworks for energy efficiency. To date 35 regions have energy efficiency laws in force, 42 regions have special decrees for energy efficiency activity and 62 regions have energy saving programs for residential and social sectors.

The main priorities of the regional energy policy are:

- security energy supply at the federal and regional levels;
- development of regional programs, funds and energy efficiency centers;
- highest possible use of domestic fuel-energy sources;
- performance of the regional taxation policy including tax benefits and sanctions;
- regional EE management and financial provision for energy efficiency projects and programs.

The most active regions in the field of EE are Moscow, Novgorod, Chelyabinsk, Tula, Tomsk, Saratov, Kostroma, Ekaterinburg, Belogorod and Republic of Karelia. A number of regions support EE programs by local budget financing. Moscow City, Novgorod, Sakhalin and Khabarovsk regions and Republic of Karelia offer tax benefits promoting EE investments.

Regional laws propose a variety of EE measures and procedures, e.g., the Chelyabinsk Law is based on compulsory auditing and expert evaluation of projects. Many regional laws already include provisions for gathering and processing the energy consumption data, e.g., the Tula Regional Energy Efficiency Law contains a special clause on statistical reporting. Finally, the regional efficiency laws normally commit energy

conservation authorities to ensure that EE programs stipulate the education and popularization of energy saving.

The regulatory environment of energy efficiency is influenced by both federal and regional legislation. **Regional authorities, as a rule, are more active in implementing concrete incentive mechanisms for investments in energy efficiency that fully corresponds with the provisions of the federal programs .**

Energy efficiency and energy saving projects are regulated by the Federal Law of 03.04.1996 No. 28-FZ on Energy Conservation. The Law defines energy conservation as the realization of legal, organizational, scientific, production, technical and economic measures that support the efficient use of energy resources and the application of renewable energy sources in industrial practices.

The Energy Conservation Law makes a step forward by determining major principles of the state EE policy, calls for accountability of producers and consumers and incorporation of energy-efficiency requirements in the federal standards for equipment, material, buildings and vehicles. The Law is also innovative for introducing standardization and certification of energy-consuming equipment, making energy audits compulsory for large companies and providing basic financial and economic mechanisms and benefits to promote EE investments. All activities in the EE sphere are led by the Department for State Energy Supervision and Energy Conservation (Gosenergonadzor).

### **IFC/WB Country Assistance Strategies**

IFC has held a number of meetings with the Department for State Energy Supervision and Energy Conservation. They are very supportive of the FEER initiative and have sent a letter of endorsement to the GEF Focal Point in the Ministry of Natural Resources.

Promoting energy efficiency in Russia also meets a number of IFC's internal drivers: in its 2002 country impact assessment of Russia, IFC's Operations Evaluation Group recommended that IFC's strategy in Russia should focus on:

- (i) Development of efficient capital markets;
- (ii) Support for SMEs by coupling investment with TA;
- (iii) Increasing efforts to finance Russian sponsored business.

The proposed project fits perfectly with these recommendations, and is supportive of IFC's strategy in Russia. IFC's growing network of relationships with Russian FIs and its substantial operations in Russia provides an immediate opportunity to catalyze a Russian EE finance market.

FEER is also designed to contribute to the three pillars of the World Bank/IFC Country Assistance Strategy (CAS) for Russia published in May 2002:

- ***Improving the business environment and enhancing competition:*** FEER improves access to capital for business, in particular small and medium size enterprises (SMEs), and targets investments that improve the competitiveness of Russian industry;
- ***Strengthening public sector management:*** regular exchanges of information with government bodies on the positive and negative impact of Government policy on private sector investment may influence institutional and regulatory change. In the medium term, financial institutions participating in FEER may choose to invest in energy efficiency projects that improve district heating and energy use in public buildings;
- ***Mitigating social and environmental risks:*** FEER promotes investment in projects with significant environmental benefits. More importantly it encourages financial institutions to take a pro-active approach to investing in environmentally beneficial projects.

The FEER program represents the next evolution of IFC's efforts to develop innovative financing mechanisms that move private capital into energy efficiency projects. In drafts of the GEF Private Sector Review, as well as in a number of different meetings, GEF has urged IFC to develop energy efficiency financing programs in less developed markets – "to move further East". In seeking to respond to this direction IFC considered a number of different factors: large technical potential for energy efficiency, interest from IFC's Financial Markets investment department, interest from international donors to co-finance an initiative, and most importantly - demand from the financial institutions in the country itself in engaging in an IFC/GEF energy efficiency financing program.

### **Barriers preventing investment in Energy Efficiency in Russia**

The recently completed study commissioned by IFC on financing options for energy efficiency investments in Russia concluded that despite the large potential in Russia for financially viable EE investments, only a few of those investments are actually being undertaken. The reason for the lack of development of EE investments in Russia is a combination of the following three factors:

#### ***a) Lack of financing for EE projects:***

There are major financial barriers in Russia to EE investments:

- (i) The transaction costs of identifying, developing and financing EE projects are high. The development of a sound EE loan portfolio requires a level of specialization that entails high initial costs, given the lack of experience in the sector and the need to develop new institutional capacity to develop financial products for the EE sector and appraise EE project risk.

- (ii) Project financing is still not used on a wide scale by banks in Russia, although the trend is encouraging. EE projects, however, are in most cases based upon project financing.
- (iii) EE investments, in most cases, require financing for periods exceeding one year. Because of a lack of access to long-term capital, Russian banks rarely provide debt for periods exceeding one year, especially to SMEs. However, terms of 5 years are now becoming more common, and could be made more broadly available to borrowers with expanded FI access to longer term funding, as the market continues to mature and liquidity issues are resolved.

***b) Lack of bankable projects:***

FIs are not dedicating resources to developing and marketing specialized financial products, or appointing dedicated loan officers, with a focus on lending for energy efficiency projects. The inexperience in dealing with EE transactions and lack of an institutional “home” for appraising such transactions leads to EE projects sometimes being rejected out of hand, which in turn leads to disillusionment amongst project developers. As a result, the opportunity costs of developing EE projects are relatively high on the side of both the FI and the project developer, when compared to the more commonly encountered financing of working capital or expansion of production facilities based on the balance sheet of the borrower.

***c) Lack of awareness:***

Investment priorities of industrial managers are focused on increasing production capacity and turnover. They typically lack awareness concerning the benefits of EE. Lack of knowledge concerning EE financing within the banking sector leads to a strong reluctance on the part of the Russian banks to finance EE capital investments. There are three major factors that have contributed to this information barrier in Russia:

- (i) EE has never been an area of major priority in Russia until recently because of the low energy prices and inexperience in making realistic cost/benefit calculations.
- (ii) There has been limited effective dissemination of the results of demonstration projects undertaken to date.
- (iii) Those responsible (such as Regional energy efficiency centers) for communicating the benefits of EE to different stakeholders are only now developing the skills needed to target specific messages in the right way to the people who matter.

In order to address and overcome the above-described barriers to the development of EE investments in Russia it will not be sufficient only to address one or two of the identified barriers. Consequently, the FEER Program addresses the three identified barriers simultaneously. When integrating the financing, project development and information components, FEER will also draw on other complementary energy efficiency programs in Russia, using them as sources of deal flow, as sources of information on demonstration projects, as providers of complementary technical assistance, and as key information channels. Working collaboratively with these initiatives, FEER focuses directly on developing the market for energy efficiency finance.



## **2.2. Developing the market for energy efficiency finance**

Since 1997, IFC has gained a wealth of experience with EE credit enhancement facilities in Central and Eastern Europe through the Hungary Energy Efficiency Co-financing Program (HEECP), and more recently through the Commercialising Energy Efficiency Finance (CEEF) program. Both of these facilities involve partial credit guarantee schemes, which are funded jointly by IFC and the GEF. Both schemes also involve a technical assistance package tailored to the needs of local financial institutions. The success that IFC has achieved in HEECP is described in detail in Annex 7. It is important to note, however, that this success has been hard won; there have been setbacks and it has taken time to understand really what makes financial institutions take an interest in energy efficiency.

### **Understanding the business dynamic driving FIs**

One of the lessons from implementing the HEECP Program, reinforced by IFC's experience in the CEEF Program, is that the competition between FIs is a serious driver for entering the energy efficiency market. This driver reveals itself in different ways. In a market where there are a large number of financial institutions competing for a relatively small number of 'blue chip' clients, energy efficiency offers FIs an alternative of growing market share by moving 'down-market' to clients or projects with special needs. This is clearly reflected in the experience in Hungary. Signs of this competitive dynamic emerged in Latvia during the first year of CEEF. Also in Hungary, a small FI new to the market used the IFC guarantee scheme in an aggressive market entry strategy. The experience in Estonia is similar, as the initial interest was shown by smaller banks looking for niche market opportunities to compete with the two dominant players in the market. However, in Estonia IFC has also seen the disadvantage of the small number of FIs in that market, and therefore the relatively muted level of competitive pressures. The result is that the more dominant FIs appear more comfortable with their market position and do not feel the need to go down market. The focus in this case needs to be on developing the market, packaging/bundling projects in a sectoral portfolio, so that the EE market opportunity becomes attractive either for new market entrants or for the big players.

In Russia, there are over 1600 banks, most of which have limited capacity to lend, to develop innovative financial products, or establish a project finance business. Many are financially unstable with opaque business practices. It is a highly fragmented market with a wide range of risk profiles. However, a key business constraint for all FIs is a lack of liquidity. Perhaps perversely, IFC sees this as a significant opportunity for promoting energy efficiency finance.

IFC seeks to build upon its base of investment in the Russian financial market (investment to date in 15 financial institutions totaling US\$450 million commitments) in order to mobilize lending for EE projects. Russian FIs that are IFC clients are typically small, aggressive, often have some foreign ownership. They typically have good corporate governance structures, and prudent risk management processes. They also

have clients that are looking for longer term loans than have previously been available. The opportunity here is to provide longer term finance to the FIs on the condition that it is used for projects that have strong energy efficiency benefits. By supporting these credit lines with a package of extensive TA for the FIs and the project developer, IFC seeks to create a cultural change whereby FIs:

- recognize the improvement in risk profile of a project that has strong EE vs a “non-EE” investment
- understand EE financing structures
- actively build a portfolio of EE projects
- actively encourage their clients to improve EE aspects of projects they put forward
- develop a niche strategy for marketing EE finance, working with IFC to develop specialized financial products to support the strategy.

If IFC is successful in cultivating an appreciation of EE in industry, where IFC currently sees the most favorable investment climate for EE, IFC can then expand the range of TA and market development activities out into other sectors or regions, based upon FI interest and demand. This approach acknowledges that the market in Russia is highly dynamic and that sectors where investment is unattractive now, through a process of market, legal and regulatory reform, can become attractive within the lifetime of FEER.

### **Understanding the market development process**

IFC has made a significant impact on the Hungarian energy efficiency market by combining technical assistance with a financial product – a partial credit guarantee. HEECP has clearly created an appetite for EE lending among FIs by introducing EE business niches as new potential markets and then working with the FIs to develop and market specialized financial products to serve these market niches. The result is a competitive EE lending market among Hungarian FIs serving a broad range of niches, including the small residential, SME, municipal, institutional, and blockhouse markets. In this context, the IFC guarantees are used only to support the first few projects in each emerging product or client class. Thereafter, the FI builds upon its experience to originate similar loans without deploying (or paying for) IFC’s guarantee tool. Based on this use, the total amount of guarantee agreements with banks now stands at around \$12 million shared between four banks, with two more banks ready to join the program. The total estimated requirement for guarantees currently in the project pipeline is approximately \$9 million, even as actual EE lending by participating banks is expected to range as much as 10 times more than that.

HEECP thus helps FIs enter new markets and then builds their capacity to eventually develop a sustainable lending business without continued need for guarantees and TA support. For example, when Raiffeisen Leasing started to finance EE projects through domestic medium-size ESCOs, IFC/GEF provided the guarantee and TA to help them in this undertaking. Now, Raiffeisen Leasing finances EE projects in the amount of US\$8-10 million/year without guarantees or TA support.

Through developing special and innovative financial products HEECP has helped to improve the level of EE finance in Hungary. Comparing the situation in Hungary in the late 1990s with today:

- FIs now require a lower level of collateral behind the projects;
- FIs have started to finance projects relying on cash-flow to finance repayments;
- FIs have started to calculate energy cost savings as revenue for debt service;
- FIs require less down payment (down to 15%, in some cases 0%);
- At least one bank staff is focused on the EE business in each participating bank, and there are cases where a fully educated engineer sits in the bank's EE finance unit;
- There are cases where the bank has invested equity in ESCO operations;
- The financial market's culture has changed. Now banks are hunting for EE projects and are open to innovative approaches and products;
- Competition among FIs has developed the market for EE project financing and ESCOs are now able to bring a pipeline of transactions;
- Specialized portfolio-based credit lines have been developed for individual ESCOs, which has enabled rapid development of the participating ESCO businesses; and,
- Small homeowner loans for EE have become a viable and profitable business for FIs.

The key lessons emerging from HEECP, and CEEF are:

- Assistance in developing specialized products and in structuring transactions is at least as, if not more, important as the guarantee tool.
- It is essential to build a network of contacts across a wide range of stakeholders in order to achieve a sustained impact on the market.
- The positioning of the implementation team as an interface between project developer and the sources of finance enables a highly catalytic role.
- It is essential to maintain a flexible Program that can adapt to the needs of FIs in ever-changing markets. The Program focus must follow the lead of the FIs (including regulatory and legal frameworks) ensuring alignment between their business strategy and the market development strategy of the Program. TA support must be designed for each FI individually.

### **2.3. Regional and Sector Focus**

#### **An initial focus on energy efficiency in industry**

While IFC anticipates an initial focus on the industrial sector in the Program, the ultimate allocation of Program resources will be driven by FI interest and market demand. The combined industrial, residential and public sectors in Russia account for 70% of electric energy consumption and 76% of heat energy consumption. According to Ministry of Energy, these sectors also represent the highest technical potential for EE improvements (see Table 2-2 below).

**Table 2-2: Russian main Electricity and Heat consumers**

Consumers	Electricity consumption		Heat consumption		Total Energy Consumption	Value of potential savings
	%	Bln USD	%	Bln USD	USD, bln	Bln USD
Industry	49,7	12,2	29,3	6,5	18,8	3,17
Residential & Public	20,2	4,9	46,9	10,5	15,5	2,57
Transport	10,2	2,5	1,4	0,3	2,8	0,69
Agriculture	4,3	1,0	1,4	0,3	1,4	0,30
Other	15,6	3,8	21,0	4,7	8,5	0,10

Source: Russian Ministry of Energy, IEA, RAO UES

Note1: The industrial consumption does not include Fuel and Energy Generation industries figures.

Table 2-2 clearly shows that industry has the highest potential for the value of energy savings. Within industry sectors the following sectors have the largest potential for EE investments:

1. Fuel industry and Energy Generation
2. Chemical industry
3. Machinery construction and metal working
4. Non-ferrous metal
5. Wood processing and Pulp and Paper

Many current international initiatives in Russia focus on the public and residential sectors. Table 2-2 shows that these sectors indeed have significant energy savings potential. However, when considering an intervention through commercial financial organizations, industry projects are more attractive. Table 2-3 summarizes the reasons for this.

**Table 2-3: Rationale for projected initial focus of Program on industrial sector**

RESIDENTIAL & PUBLIC SECTORS	INDUSTRIAL SECTOR
<b>Cross subsidization</b>	
The Russian government policy of cross subsidization leads to a situation where tariffs for residential users are 20% to 40% lower compared to tariffs for industrial users, even though the cost of energy supply for industrial users is usually lower than for residential users.	Considering the economic and political situation, it is expected that cross subsidization will not be abolished in the coming 3-5 years. As such, the industrial energy tariffs will remain substantially higher compared to tariffs for the residential and the public sector.
<b>Development of demand</b>	
It is expected that energy consumption by the residential sector will not change significantly.	On the contrary, the Russian industry is expected to continue to grow (with an average rate of 6%) and will create similar increases in demand for energy.
<b>EE Measures</b>	
In the residential and the public sector EE investments are mostly required for heat consumption.	In the industrial sector energy efficiency could be achieved in both electricity and heat consumption. In addition, EE in the industry leads to savings of other resources such as raw materials and water.

<b>Incentives</b>	
Under the current conditions in the residential and the public sector energy consumers do not have an economic incentive for EE activities. The main targets for EE investment could be regional governments and municipalities. They pay huge subsidies for energy consumers, about 25%-40% of the total annual budgets.	Industrial consumers have a direct economic incentive for EE activities. Due to a lack of EE knowledge at the management level, very few measures have been implemented so far. Consequently, this creates the opportunity for large energy savings with relatively simple measures.
<b>Project complexity &amp; Contractual arrangements</b>	
The funding capacity of regional and municipal authorities is often limited to a single year and therefore difficult to forecast. Contractual relations with state organizations in Russia are complex.	Multi-year obligations are legally binding and easier to achieve with industrial companies. The contractual relations are less complex and include only two contracting parties.

*Source: Study of Financing Options for Energy Efficiency Investments in Russia, Lighthouse (2003) .*

### **Analysis of regions**

Russian Government policy stresses the importance of the regions in developing and implementing energy efficiency policy. The pilot nature of FEER and the economic conditions required for Program success also demand a regional approach. In their report on financing options for EE in Russia the IFC consultant (Lighthouse), also analyzed the most promising regions to pilot the FEER Program. They concluded that, though the demand for EE investments exists in every Russian region, the most attractive regions are the main Russian industrial regions being the Ural region, the Volga region and the Central region.

In addition to the macro-economic factors influencing regional choice, IFC's experience in launching CEEF indicated the need to focus resources early in the project development process on implementation, and seek to minimize logistical and administrative effort on mobilization. It is also essential to focus on working with those institutions which are willing collaborators – including both FIs and technical partners.

Given the focus on mobilizing commercial financial institutions it is paramount that the program works with keen and committed FIs. In selecting pilot regions IFC was looking for a convergence of four key criteria: (1) partner FIs with interest and willingness to participate in the program; (2) energy prices at levels which made EE projects commercially viable; (3) an industrial base with internal competition to drive cost-cutting investment plans; (4) an existing infrastructure of EE consultants or service providers. The Ural Region, Moscow Region, Volga Region and Northwest Russia meet these criteria. Our pre-selection of Moscow and the Urals was driven, all other things being equal, by the efficiency with which we can mobilize resources in these regions.

IFC currently has credit lines with 15 Russian banks and leasing companies and is actively seeking more partners in Russia's financial sector. Most of these institutions, when interviewed in July and October 2003, expressed interest in utilizing a dedicated EE investment/TA facility if it was created.

Following on from its pre-appraisal analysis and interviews with FIs, IFC proposes to start the Program with an office in Moscow and one regional office in Ekaterinburg. The Moscow office will liaise with FI headquarters and work with them on strategy, market assessment, pipeline generation. The Moscow office will also serve the Volga Region, at least initially. The Ekaterinburg office will serve the Urals liaising with project developers and regional banks.

IFC will then carry out a further market assessment and identify second regional office to start operations. This assessment is to be completed at end of year one.

#### **2.4. Proposed Investment Approach**

IFC's approach is to build on its existing relationships with selected Russian FIs in order to accelerate the process of setting up and implementing the EE investment facility. These institutions have already passed IFC's rigorous investment appraisal process and have a demonstrated performance track record. Given that EE will be a new market area for any participating Russian FI, working with an existing IFC partner mitigates a portion of the organizational risk involved in working with a previously unknown FI. This is especially important in the wildly diverse Russian banking market.

The planned investment will include dedicated EE credit lines for existing IFC FI clients, to be funded, initially, entirely with IFC capital. In the first phase of the Program, IFC will dedicate initially up to USD 20 million from its own resources for credit lines that may only be used to finance energy efficiency projects. IFC could make a further \$10 million available depending on the demand from the FIs but subject to individual FI credit limits.

IFC's talks with other international financial institutions indicate a potential opportunity to assist FIs in sourcing similar credit lines from other international FIs. IFC has received preliminary expressions of interest from EBRD and NEFCO to leverage IFC's TA and guarantee market development activities with additional capital for loans.

To address the barrier of perceived risk and lack of experience with EE transactions IFC proposes to offer a small first-loss guarantee to the FIs. This risk mitigation instrument will be applied on a portfolio basis. The level of the first loss guarantee will be up to 10%. The major reason for using a portfolio guarantee is to reduce transaction costs, which have proven to be a barrier to dealflow in both the CEEF and HEECP programs. The proposed relatively small first loss guarantee percentage avoids moral hazard, enabling IFC to streamline credit review procedures and guarantee approvals by deferring to the FI's credit procedures, subject to IFC's appraisal of the FI's credit procedures and IFC's approval of underwriting guidelines for each portfolio. In general, preliminary discussions with Russian FIs indicate that a pari-passu guarantee product would be of limited importance to them. Their primary interest lies in the IFC credit lines plus technical support for deal preparation, financial product development, and marketing in the EE sector. This balance reflects the fact that:

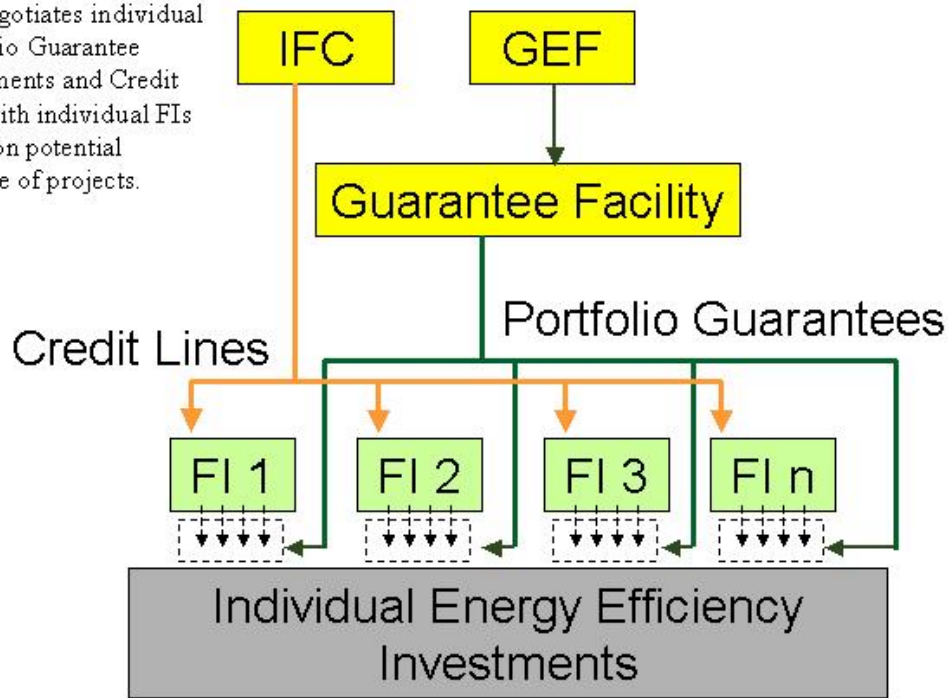
- Liquidity and especially lack of long term financing is the over-riding problem.
- FIs in Central Europe have utilized guarantees on a selective basis, primarily in support of first-of-a-kind transactions.
- Russian FIs have indicated a similar limited appetite for the guarantee product, although the selective use remains strategically important.
- In future Program phases, as the financial markets mature and FIs move down market with more innovative financial products, this balance is likely to change.

The relatively small projected guarantee facility (USD 2 million) might limit IFC's ability to provide substantial guarantees for larger loans because of the need to diversify risk within the guarantee portfolio when the projected portfolio is relatively small. However, the structure of the first loss portfolio guarantee which is envisioned (less than 10% of the portfolio amount) might prove to address this issue of diversification which is more relevant in the case of the CEEF/50% pari passu structure. IFC will further explore the significance of this issue and assess how to manage this limitation within the proposed portfolio approach during project appraisal.

The investment facility is expected to begin with 3-5 banks and/or leasing companies, and then expand to include other interested FIs over time. IFC has already identified a group of six financial institutions with a strong mutual interest in developing an energy efficiency finance program. IFC will commence negotiations with three of these FIs upon confirmation of GEF work program entry of the proposed Program.

The overall financing structure in Figure 2-2 below shows how the IFC and GEF Investment Facility would function. Section 3.1 describes this in more detail

IFC negotiates individual Portfolio Guarantee Agreements and Credit lines with individual FIs based on potential pipeline of projects.



IFC Implementation Team works with project developers and FIs to develop project proposals. Works with FIs to screen credit applications to determine eligibility and to enhance energy efficiency aspects of proposed investments. This helps to define the size of both credit lines and guarantee facility agreements for each FI on an individual basis

*Figure 2-2. Investment Structure and Operations*

## 2.5. Project Alternatives considered

IFC considered and rejected three basic alternatives to the integrated credit line/Guarantee/TA package:

- Investment Preparation Facility
- Revolving Fund plus TA
- Guarantee Facility plus TA

These are briefly described together with the reasons IFC rejected them.

### Investment Preparation Facility

An Investment Preparation Facility would essentially be a TA-only program that works with both project developers and the financial institutions.



A capacity building program, which is certainly needed, would train FIs to recognize and analyze EE projects. It would provide training for project developers, energy service providers, and consultants. It would provide targeted grants for performing energy audits and feasibility studies for EE projects.

Such a project has a number of drawbacks that IFC felt made such an initiative non-viable:

- it replicates other initiatives currently ongoing in Russia (although not in industry) and would therefore offer no new demonstration impact.
- it does not address the financing barrier (lack of long-term capital) and so could lead to expectations of project financing that could not be met. The disillusionment that this brings could damage the future development of the energy efficiency financing market.

### **Revolving Fund**

Revolving Funds have been widely promoted as tools for accelerating EE projects and establishing a sustainable EE industry in developing countries. Reasons often cited for their promotion<sup>3</sup> are:

1. EE Funds allow for bundling of projects that FIs may not be willing to fund because of the relatively high transaction costs. EE financing mechanisms with bundled projects create economies of scale that individual FIs cannot achieve.
2. EE funds are often combined with a TA program and as such allow for bringing the technical and the financial aspects (e.g. preparation, contracting and evaluation) together. In developing countries there is most often a gap between technical and financial organizations. EE financing mechanisms can provide an indispensable knowledge base of specialized knowledge, skills and expertise.
3. Funds can offer long term finance critical for the financing of energy efficiency projects and ESCOs.
4. FIs can obtain valuable experience in EE finance if they are tasked with administering the financing facility.
5. EE funds are often the catalysts of EE investment projects.
6. EE funds are often EE market makers by creating interest in EE investments on the sides of end users, project developers and FIs.
7. EE funds allow for spreading risks over many projects.

IFC reviewed these justifications for EE funds in the light of its experience managing energy efficiency finance programs in Central Europe and also in the light of extensive interviews it held with the Russian financial community. Its conclusion was that the proposed approach, using targeted credit lines can generate a more sustainable impact on market development by engaging competitive forces of the market, rather than competing with commercial banks. Among the significant advantages over revolving funds:

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<sup>3</sup> Source: Study of Financing Options for Energy Efficiency Investments in Russia, Lighthouse (2003)

1. Economies of scale are important to both FIs and project developers. Our experience in Hungary indicates that this can be achieved by individual FIs by taking a sectoral or financial product approach in their marketing strategies. For example, establishing a credit line between a single financial institution and a single project developer (ESCO) creates a natural platform for transactions. Streamlined credit appraisal procedures, eligibility criteria, etc. can all be pre-negotiated. Technical assistance to both FI and project developer can offset these initially high transaction costs and build capacity on the side of both the FI and the ESCO to replicate similar financial products with other clients or again with each other.
2. A TA program is an integral part of the FEER Program and will build capacity directly with interested FIs.
3. The credit lines that IFC proposes offer identical long-term financing possibilities and can be augmented by other financial sources.
4. FIs will gain better experience from originating deals and managing the credit line disbursement than from participating in a Fund.
5. IFC's experience in Hungary is that a well trained project implementation team working to bring FIs and projects together can also provide a similar catalyzing role.
6. IFC's experience in Hungary is that the FIs themselves can make the EE market if they are sufficiently motivated and innovative in developing financial products appropriate to market needs.
7. Targeted credit lines can also provide sufficient diversity in the portfolio if the individual project relative to credit line is monitored and if the risk is managed prudently by careful structuring and due diligence. This implies careful screening of FIs participating in a Program.

Additional reasons for adopting IFC's proposed approach are:

8. FEER builds capacity in the FIs that resides in their institutional memory through special products, procedures, manuals, checklists, etc.
9. Energy efficiency is an easy entry point to FIs adopting more pro-environmental lending policies. Mainstreaming EE into bank lending policies is one step to actively working for projects that have wider environmental and social benefits.

and most importantly,

10. Creating a Fund assumes that the local financial community is not interested or able to provide the same function. Its creation can hinder the development of a self-sustaining commercial lending market by competing with the private sector, thus crowding out commercial FIs. In Russia IFC has found a critical mass of FIs who are

ready, willing and able to fund EE projects if they are given the right tools and support.

### **Standalone Guarantee Facility**

Annex 6 shows a comparison of the investment climate for EE in Hungary and in Russia. While there are some similarities, the clear conclusion is that a guarantee scheme, on its own, cannot address the key limiting factor facing EE investment in Russia. It is essential therefore to address the liquidity barrier.

### **2.6. Complementary Energy Efficiency Initiatives in Russia**

This project stems directly from a study commissioned by IFC and completed in 2003 to assess options for commercial financing of energy efficiency projects in the Russian Federation. This study identified a number of promising industry sectors, technologies, technology and service providers that can play an important role in financing energy efficiency projects. It also highlighted the many encouraging policy developments in Russia that will contribute to improving the investment climate.

Whilst this is a Private Sector based financing initiative, its long-term success in substantially developing the national market is dependent on the Russian Government continuing to encourage energy sector reforms that will enable commercial EE investment in regions other than those IFC will focus on during the initial pilot. The project is complementary to other Russian and internationally funded energy efficiency initiatives, and should be a cornerstone of attempts to fill the financing gap identified in the Russian energy efficiency strategy to 2010 “A highly energy efficient economy”.

Other key linkages which IFC intends to leverage include:

- European Union TACIS Program. Between 1992 and 2000 TACIS supported the establishment of energy efficiency centers throughout Russia. Today they work as independent private companies and some have aspirations to become ESCOs. These organizations will be a key resource for both potential investments as well as for entities whose capacity the Project can enhance under Component 4: Strengthen the capacity of emerging local energy service providers (ESCOs).
- UN ECE Project “Energy Efficiency 2001”. This Project is assisting the Economic Commission of Europe (UN ECE) member states to develop and implement greenhouse gas mitigation strategies. It is expected to be a source of EE investment projects requiring commercial financing as well as a partner in the area of policy reforms.
- Russian-Norwegian Energy Efficiency Corporation. This program, implemented under the umbrella of the UN Economic Commission for Europe Energy Efficiency 21 Project, was involved in setting up 4 regional energy efficiency centers in Northwest Russia.

- Oblast governments in chosen regions. Given the varying industrial profiles and energy supply/pricing landscapes across Russia, a number of Russian regions have proactively designed their own energy efficiency programs. The Project will actively liaise with local government stakeholders in the chosen regions.
- German-Russian energy efficiency co-operation. The German Energy Agency has a number of initiatives aimed at providing investment opportunities in energy efficiency in Russia for German industry through building capacity in Russian institutions and developing collaborative programs. One such initiative with direct relevance for the FEER Program in the short term is the development of guidelines for increasing energy efficiency in the food industry. This would be a natural co-operation partner for the proposed FEER awareness raising activities.

Another key bilateral initiative comes from Finland. During pre-appraisal, IFC has been in active discussions with the Finnish Government regarding co-financing of the FEER Program. A by-product of these discussions is that the Finnish trade promotion agency FinPro is discussing with its members an energy efficiency trade promotion scheme that would complement the FEER Program. This would bring Finnish private sector capital into the EE promotion market in Russia. IFC is also in early stage discussions with the Danish Government and Danish trade promotion agency regarding similar private sector co-financing for FEER.

During Project Appraisal, IFC will engage with other energy efficiency initiatives in Russia to develop a co-ordination strategy to exploit synergies and avoid overlap between the different programs. This strategy will be presented at CEO Endorsement.

### **Consultation, Coordination and Collaboration**

- World Bank. IFC has held a number of meetings with the World Bank to discuss their GEF project Russia-Renewable Energy Program (RREP) currently under preparation. We see good opportunities for mutual co-operation, particularly in the area of project identification and helping to make RREP transition from – Fund-sourced investment to commercial FI-sourced investment. Our experience in Central Europe suggests that as the FIs engaged in FEER gain more experience in developing EE projects they will see very little difference in between EE and RE projects. There is, therefore, a possibility that RREP can provide a pipeline of commercially viable projects that FIs with FEER experience could finance.
- In addition to the RREP, the World Bank Municipal Heating Project for Russia supports a wide range of investments in municipal heating systems. The engineering companies involved in this effort could also be a source of local consulting expertise under Components 2 (Support the development of EE projects by FIs and their clients) and 4 (Strengthen the capacity of emerging local energy service providers (ESCOs)).
- IFC. IFC is currently implementing a GEF medium sized project (MSP) to develop the legal and regulatory framework for wind power in Russia. This project is being managed by the same unit within IFC as would supervise FEER.

- European Bank for Reconstruction and Development (EBRD). The EBRD is a key stakeholder in a number of areas: it has experience in developing energy efficiency projects; it has been an active developer of ESCOs in a number of Central European countries and is interested in setting up similar ventures in Russia; it is an investor in Russian financial institutions and could assist in the process of addressing the lack of liquidity in the Russian financial markets. We have held preliminary discussions with EBRD regarding co-operation on FEER but with no firm conclusion. EBRD is a critical supplemental provider of long term credit to Russian FIs.
- Nordic Environmental Finance Corporation (NEFCO). NEFCO has also shown interest in co-operating with FEER by providing both long term credit lines or individual loans for larger projects, as well as possible equity investments. Further discussions are planned.
- UNDP. IFC has met with UNDP to discuss their operations in Russia and to explore how to ensure that IFC and UNDP activities complement each other. UNDP has three specific programs under implementation that have direct relevance to the FEER Program. RUS/96/G31 “Capacity Building to Reduce key Barriers to Energy Efficiency in Russia Residential Buildings and Heating Systems” in collaboration with the Russian Demonstration Zones for Energy Efficiency. (RUSDEM) has been preparing the legal framework for consumption based metering and billing systems for residential consumers. This work is essential in preparing the ground for FIs to invest in building refurbishment projects. In this regard, the collaboration and utilization of results will be in the mid to long term. Of more immediate interest and importance is RUS/02/G35 “Cost Effective Energy Efficiency Measures in the Russian Educational Sector.” The training activities undertaken in this initiative will provide experts and institutions with the technical capabilities to work with project developers on transaction appraisals as well as monitoring and evaluation. These experts would be particularly relevant if the third FEER pilot region were Northwest Russia. Another potential linkage is that the UNDP program would be a source of projects for the FIs, should they see the education sector as an attractive market. There is in this case, though, a potential conflict between FIs wanting to finance the projects in a sector where UNDP’s revolving funds will operate. This is unlikely to be a short-term problem, but it is an issue to be discussed and monitored during project implementation and once more illustrates the potential retarding effect that revolving funds can have on the development of commercial lending markets in sectors where commercial lending might otherwise be viable.

The third UNDP initiative is “Building Capacity for Greenhouse Gases Emission Reduction in Russia. This program anticipates developing a monitoring system to support participation in emission trading. The immediate opportunity for collaboration is uncertain pending a decision by Russia on ratification of the Kyoto Protocol. However, in CEEF and HEECP IFC is already considering how monitored GHG reductions from projects can be aggregated and verified in such a way that they could be monetised. In the event that Russia ratifies Kyoto IFC

anticipate similar opportunities for trading GHG reductions, which could only be realized through co-operation with the UNDP work.

### 3. Project Description

#### 3.1. Project Components

The FEER project will have five closely inter-related components managed by a local implementation team based in Moscow and (eventually) two regional offices. The five components are:

1. Establish and monitor the operations of the IFC/GEF investment facility
2. Support the development of EE projects by FIs and their clients
3. Improve market awareness and understanding of energy efficiency
4. Strengthen the capacity of emerging local energy service providers (ESCOs)
5. Provide policy and legal support to EE investment projects given the evolving legislative landscape

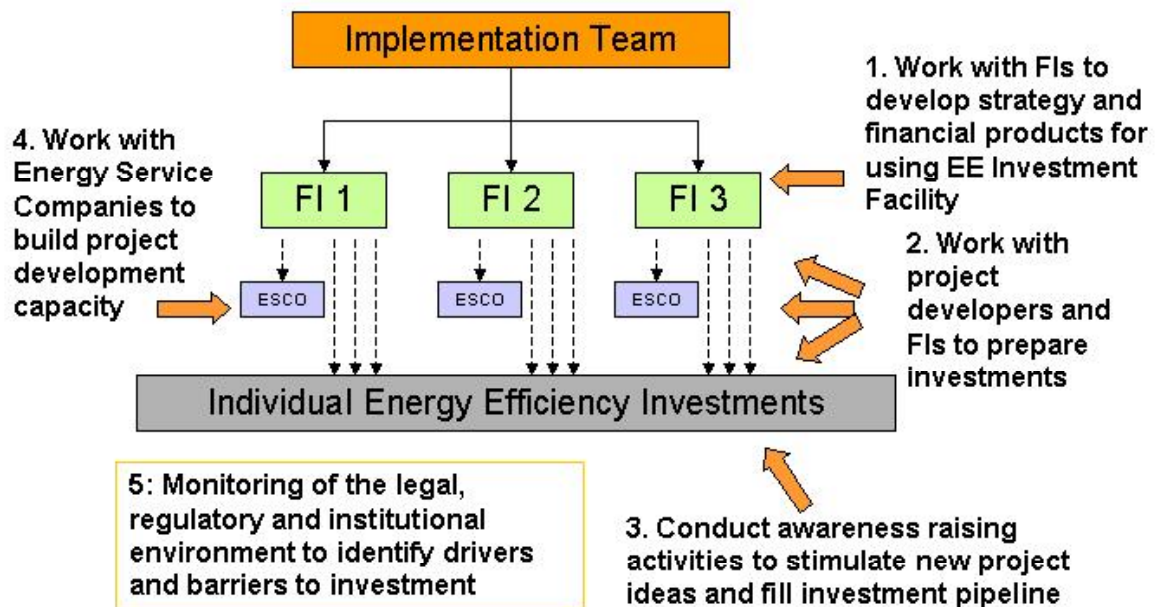


Figure 3-1. Investment/TA Operations

1. Global Financial Markets Group
2. Private Enterprise Partnership
3. Environmental Finance Group

#### Component 1: Establish and monitor the operation of the investment facility

In this component the Implementation team will establish the investment facility and carry out capacity building activities with the individual FIs to help them create business strategies for developing an EE lending business.

The local Implementation Team will work closely alongside the IFC investment team in the design and start-up phases of the investment facility to develop processes and procedures for the facility operation. IFC has already developed extensive program management procedures and project underwriting guidelines in the HEECP and CEEF Programs. However, IFC's experience is that these will need to be adapted to the conditions prevalent in Russia. IFC is convinced, though, that the start-up time necessary to get the Implementation Team actively engaged in the marketplace will be considerably reduced by utilizing IFC's existing offices and infrastructure in Russia.

IFC is currently initiating the investment process required to create the Investment Facility of initially \$20 million.. This is a nominal allocation of funds that can then be drawn down by individual financial institutions according to separate Financing Facility Agreements (FFA). This is shown in Table 3-1, below.

The process of negotiating and managing the FI relationships can be described as an iterative loop:	
Tasks	Activities
<ul style="list-style-type: none"> <li>Step 1: Develop/refine FI strategy for using the Investment Facility</li> </ul>	Implementation team work with FI to understand their current business strategy, staff/skill set, targets for business growth, objectives for participation in FEER
<ul style="list-style-type: none"> <li>Step 2: Identify pipeline</li> </ul>	Implementation team review FI portfolio to identify potential clients in energy intensive sectors, project pipeline to investigate investments that could be EE enhanced, vendors with interest in special product development etc
<ul style="list-style-type: none"> <li>Step 3: Negotiate credit line</li> </ul>	IFC Financial Markets team negotiates scope and terms of credit lines based on pipeline of EE projects identified
<ul style="list-style-type: none"> <li>Step 4: Disburse credit line</li> </ul>	Implementation team and TA providers engage with project developers and FIs to structure deals. FI draws down credit line in tranches for disbursement to deals.
<ul style="list-style-type: none"> <li>Step 5: Monitor portfolio</li> </ul>	FI monitors loan performance and reports to IFC.
<ul style="list-style-type: none"> <li>Return to step 1</li> </ul>	Based on loan performance and growth opportunities FI refines business targets

*Table 3-1: Management of FI relationships*

IFC will negotiate these FFAs on the basis of a clearly visible pipeline of deals that would be identified through the market development activities undertaken by the Implementation Team in tandem with the individual FIs. The process of identifying the projects and working with the FIs is described in more detail in Component 2: "Support the development of EE projects by FIs and their clients"



The Implementation Team will support the entry of the first Russian FIs into the Project. These FIs will take lending decisions themselves. Since IFC is relying on the FIs own staff to do credit reviews of projects it is essential that IFC has confidence in the FIs credit decision making processes. Hence, IFC will first undertake a due diligence exercise for each FI wishing to participate in the Program. This will be undertaken at IFC's own cost by its financial markets department staff. Once the FI has entered the Program, however, it will be responsible for originating and appraising projects by itself, albeit with extensive technical assistance provided by the implementation team. The implementation team will work with them to develop financial products and services that utilize the Investment Facility. This support is essential given the nascent nature of the EE financing in the country as the financial structure must be made sufficiently attractive to be met with demand from market players. Again, the experience from CEEF and HEECP is that the FIs need assistance to develop strategies and financial products for using the financial tools IFC are making available, which are aligned with their own business strategies.

As the FIs become more accustomed to the products and types of projects, they will start to innovate on their own with new products and services. The role of the Implementation Team here is to guide the FIs and (where appropriate) to amend the IFC/GEF products to ensure that they are responsive to the demands of the FIs and the Russian market. As the Program develops, the implementation team will promote the subsequent enrollment of other interested FIs.

Finally, the Implementation Team will be responsible for ensuring that projects financed/guaranteed by the Investment Facility are eligible as investments which improve the efficiency with which energy is used or which reduce GHG emissions. IFC thus approves each of the transactions proposed by a participating FI under their umbrella facility agreement. In the early stages of the program it is likely that the eligibility checks will take place during FI's credit approval process, however, as the FIs get more comfortable with the types of transaction and the rules on eligibility, they will be booking more assets more quickly, and to ensure that the eligibility checks do not act as a brake on lending, the IFC team will subsequently focus on ex-post checks of the portfolio.

However, IFC will defer credit decisions on individual transactions which utilize the credit line to the approved partner FIs, subject to procedures and guidelines established by IFC. Where FIs choose to take up the portfolio guarantee, IFC will perform ex-post checks of the guarantee portfolio.

IFC's exposure in the credit facility is to the FI, not the individual transaction. This would be less the case for transaction guarantees, where IFC/GEF would share transaction risk with the FI. However, the portfolio guarantee increases the separation of IFC's exposure, ensuring that the GEF is not guaranteeing IFC's risk. Another advantage of the portfolio guarantee is it could be, potentially, applied to portfolios of projects financed from sources other than IFC credit lines.

In order to maximize the cost-effectiveness of its Program operations, and further streamline the product's execution, IFC's credit procedures, product marketing, client services, and program management will be administered by field-based implementation team, with oversight by IFC's Moscow and Washington DC-based Supervisory Committee. In exceptional cases e.g. if a project value exceeds a certain value (to be determined) or is a particularly complex project, the Supervisory Committee will review the available documentation and make a decision on behalf of IFC/GEF, thus giving extra protection to the GEF.

Figure 3-2 shows, in outline, the process of appraising projects once they have been identified by the FI. The detailed underwriting guidelines and processes for approving transactions and managing the credit lines will be negotiated with individual FIs during project appraisal, and described in the Project Appraisal Document prior to GEF CEO and IFC Board endorsement.

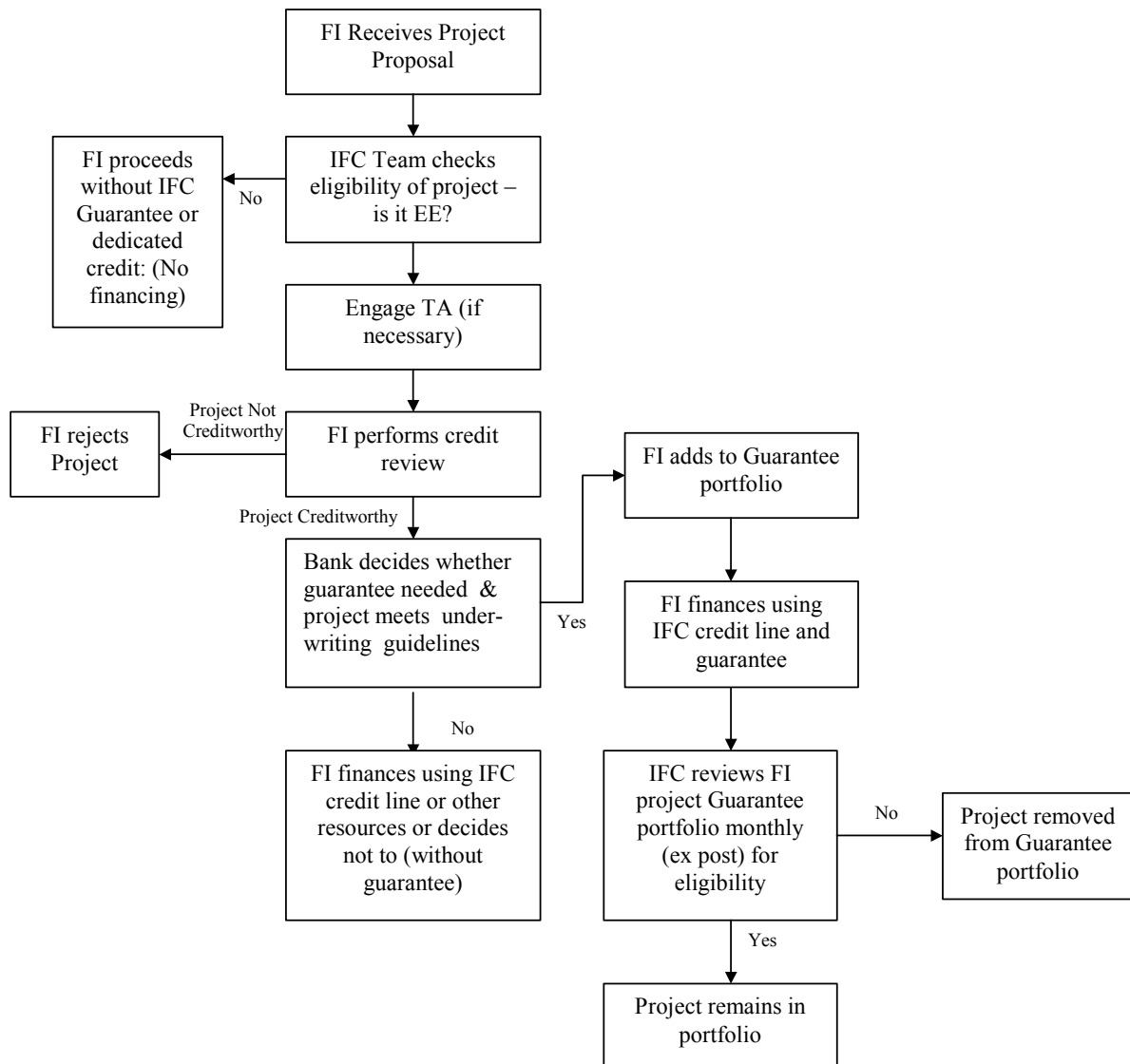


Figure 3-2: Flow chart for Transaction Decision Making

## **Component 2: Support development of EE investment projects by participating FIs and their clients**

In this component the Implementation Team will work with both FIs and Project Developers on appraising and structuring individual transactions. The team will pay particular attention to building capacity in the FIs to appraise transactions.

Given the early development stage of the EE investment market in Russia, there is a role for the Implementation Team and its consultants in EE investment transaction support. This could include: a) facilitating EE investment project generation through identifying projects, brokering multi-project ESCO finance facilities, developing specialized financial products; b) assisting the FIs in screening the projects to ensure that they meet the energy efficiency eligibility criteria; b) advising the FIs on how to improve the risk management and credit structures of each project.

Under this component, therefore, the Project team will conduct a detailed TA needs analysis at each participating FI and design a tailored support plan. The resulting TA activities can include in-depth training for loan officers, development of product materials, and review of potential client base. Table 3-2 below shows a variety of technical assistance activities that could be carried out.

*Table 3-2 Menu of Technical Assistance Activities to Support FIs*

Value of EE projects and characterization of EE industry and market	Definition of target sectors and EE finance products
EE finance structures	Definition of internal FI organization for EE finance marketing and origination;
Special features of credit analysis of EE projects	Training program for branch staff
Economics and financial evaluation of EE projects	Define Market Strategies
EE project development cycle	Segmenting customers by type of projects and organizations;
Security and structuring techniques	Evaluate attractiveness of each segment for financing,
Use of the IFC Credit Facilities	Strategic analysis of the FI's position relative to each segment.
Development of Niche EE Finance Products.	Create market strategy for each segment:
Promotion of the guarantee program and EE finance via branches of FI's	Define concrete action plan for transaction development and marketing;
Opportunities to market direct to end-users	Define appropriate measurements to follow up the success;
Establishing an EE finance unit marketing financial services for EE projects	

The EE investment projects that the FIs are most likely to focus on, and therefore which TA is likely to support, are those with relatively simple and proven technologies which

can easily be replicated across companies. Furthermore, the technology should be relatively easy to monitor and should allow for a payback period which ideally does not exceed three years. By focusing (though not exclusively) on this type of EE investment, the Project will improve its chances to promote lessons learned and replication.

The team will work together with the FIs to investigate its existing pipeline of projects. The aim is to identify potential energy efficiency projects and assist with their structuring. This is a key step in educating the FI and building a constituency of EE champions within the FI. This may require energy audits, feasibility studies, accounting assistance to investigate balance sheets and so on. In addition to ‘pure’ energy efficiency projects, the team will investigate investment proposals to see whether energy efficiency attributes can be enhanced or built in to other financing proposals. This analysis may lead to larger investments, but ones which will then improve the financial viability of the companies through reductions in production costs, increases in product quality and so forth.

IFC’s TA team will work with FIs to identify projects through several channels. First, the FI’s existing customer base will be assessed. Existing Customers with which the FI is willing to assume additional credit exposure will be identified and these can be screened further for their interest and economic potential for EE investments. Existing plant and equipment loans which the FIs have under preparation can also be screened for potential to add or deepen EE investment components. Qualified projects so identified can become the subjects of further project preparation TA work.

Second, IFC will assist FIs to establish relationships with qualified EE/ESCO companies who are developing projects needing financing. Vendor finance programs and master loan agreements which plan terms for financing multiple projects can be structured between FIs and EE/ESCO firms so as to generate a pipeline of projects for the FI.

Third, the TA program can undertake project development and strategic procurement activities in partnership with large end-users managing multiple facilities, e.g., regional and local governments, and with end-user associations. Through these programs projects can be aggregated for development and financing. An example of this type of activity is the program IFC has underway to procure financing to implement a series of projects with approximately 30 multi-family housing complexes, working in cooperation with the Estonian Union of Housing Cooperatives. IFC will assist FIs to structure financial products for target end-user sectors that can be replicated, thereby building a pipeline of projects by approaching the market systematically.

We have included a broader discussion of project eligibility, project types and project structures in Annex 9. In order to build FIs confidence in financing energy efficiency projects, these investments should typically (but not exclusively) have the following characteristics:

1. Low threshold (simple) technology.
2. Proven technology.
3. Technology that is replicable to other companies.

4. Technology that is relatively easy to measure and monitor.
5. Technology that allows for a payback period of the project that does not exceed 3 years.

For illustrative purposes, the energy saving potential of a number of generic energy efficiency technologies is given in Table 3-3

In addition to the investment advice offered to project developers it is essential to advise on low cost energy saving measures or so called “good housekeeping”. These would include:

- a. Personnel training on how to operate and maintain equipment and how to use energy resources efficiently;
- b. Monitoring and targeting of energy consumption including necessary metering and controls;
- c. Awareness raising
- d. Detection programs for steam and compressed air steam trap replacement program.

As a rule, these measures can be undertaken without substantial investments (less than USD 50,000) and usually have a payback period of less than one year. Experience shows that the implementation of such measures can often lead to energy savings from 5% to 25% of the total energy consumption. Measures that require investment can be bundled together as part of an investment for an ‘Energy Efficiency Programs’ or could form part of a package of work subcontracted to an Energy Services Provider (ESCO). Such “good housekeeping” initiatives can catalyze more capital-intensive investments by demonstrating benefits, building credibility, and freeing up cash. When working with ESCOs, the Implementation Team would work with them on developing business models that also incorporate energy management as well as investment needs. This will also be addressed through the more general EE awareness raising activities.

**Table 3-3: Energy saving potential per technology**

Type of EE activities	Technologies to be used	Energy saving potential %
<b>1. Recovery</b> Elimination of energy wastes	1. Waste heat recovery boilers and heat-exchangers	5-10
	2. Pipelines' thermal insulation improvement	5-20
	3. Elimination of leakage in water, steam and compressed air pipelines	5-10
	4. Secondary energy resources utilization (heat and combustible wastes)	5-20
	5. Improvement of thermal insulation in industrial and commercial buildings.	5-10
<b>2. Measure and control systems</b> Installation of automatic energy measuring and controlling systems	1. Energy Management Systems	15-25
	2. Technological process control	15-20
<b>3. Use optimisation</b> Optimisation (tuning) of energy equipment	1. Variable speed drives installation (for pumps, fans and compressors)	10-15
	2. Optimisation of burners, furnaces using automatic process parameters e.g. oxygen trim	10-15
	3. Load management	Up to 30
	4. Cleaning of heat exchanging surfaces	5-30
<b>4. Modernisation</b> Retrofit or replacement of energy equipment	1. Energy Efficient lighting	2-20
	2. Gas infrared heating	10-30
	3. Modernization or replacement of existing inefficient equipment	5-40
	4. High efficiency motors	10-15
<b>5. In-house energy generation</b> Installation of individual equipment for energy resources production (heat, electricity, compressed gas etc.)	1. Installation of cascade boiler systems	10-30
	Installation of co- independent co-generation Large Industrial Gas Turbines Gas TurbinesMicro Gas Turbines	10-40
<b>6. Renewable sources and alternative fuels</b>	2. Triple generation modules.	Up to 45
	1. Solar, wind, water and ground energy usage.	Up to 5
	2. Heat pumps (ground source)	Up to 15
	3. Utilization of local fuels (biomass, biogas, liquefied gas, gas received as by-product) to replace, partially or fully, existing fuel.	Up to 5

Source: Study of Financing Options for Energy Efficiency Investment in Russia, Lighthouse (2003)

\* Results/Savings strongly depend upon local situation, type of industry/building

### **Component 3: Improve market awareness and understanding of energy efficiency**

In this component the implementation team will co-ordinate with Russian Government and complementary energy efficiency initiatives to raise awareness of energy efficiency opportunities within targeted sectors.

As was made evident from the Lighthouse report, as well as subsequent meetings with companies and market players, there exists a vacuum of information about energy efficiency investments in Russia, available EE equipment, stories on successful EE investments, and the availability of local competent consultants. Therefore, IFC will address this vacuum in a targeted manner in order to support the development of project pipelines for the participating FIs. This component will have as its main goal the education of the market and the dissemination of best practices/lessons learned.

Some of the activities envisioned in this component include:

- Development and delivery of seminars to Russian companies on how to structure EE investments and examples of best practices
- Creating a publicly available database of international and Russian EE equipment vendors, with contact information
- Establishing contacts between Russian leasing companies and Finnish/international / Russian EE equipment vendors
- Conducting and disseminating sector-based detailed EE market studies for sectors such as wood processing, food processing, metals industry, construction materials and small scale district heating
- Development and dissemination of printed and electronic materials on EE issues, including the launch of a dedicated internet site as an outreach to stakeholders.

### **Component 4: Strengthen capacity of emerging local energy services providers**

In this component the Implementation Team will work directly with energy efficiency product/service providers to develop strategies for growing an energy efficiency business.

Having good local consulting capacity to undertake energy audits, EE project design, and manage the effective implementation of EE investments is an essential market driver for EE investments. Today there are approximately 60 so-called ESCOs in Russia, but few of them fully live up to the name. While technical capacity in Russia is high and a number of Russian companies are already willing to pay for their energy audits, neither FIs nor ESCOs have much experience working with each other to actually take an EE investment project through the entire funding and implementation cycle.

IFC's TA efforts in Russia and elsewhere in the region have always included a dedicated capacity building component with local consultants. In FEER, this can be accomplished by direct support to local ESCOs as well as through having international experts work alongside local consultants during actual client assessments that will take place under Component 2: "Support development of EE investment projects by participating FIs and their clients," outlined above. In the end, the Project can achieve better sustainability if

several competing ESCOs or energy consulting companies have been made stronger as a result of the Project's work.

Table 3-4 below shows a range of technical assistance activities that have proven successful in the HEECP and CEEF Programs.

*Table 3-4: TA Activities to Support Market Development*

Capacity Building and Training for EE/ESCO Companies	Review the energy savings and GHG emission reduction forecasts.
ESCO Business Planning and Equity Capital Raising.	Project development and finance structuring assistance to selected individual EE businesses and ESCO's
FI portfolio review and specialized financial product development assistance	Develop model procurement documentation for public sector acquisition of ESCO projects & services
Training FI branch staff in marketing EE finance products	Brokering ESCO_FI partnerships and structuring multi-project lending facilities
Energy Audits and Project Development	Engineering Reviews

### **Component 5: Provide policy and legal support to EE investment projects**

Given the quickly changing policy and legislative landscape in the Russian energy sector, this module will be essential in order for the Project and its FI and industrial clients to be on top of the rules and understand the market opportunities thus created. It is highly likely that the Project will encounter many "firsts" to work through. For instance, cases involving third-party energy sales and access to the public grid. The role of the TA team in this module will be to liaise with key policy makers, keep abreast of the changes, inform the stakeholders about the implications for the markets and disseminate pilot experience and lessons learned. For example, a possible role for this module will be to develop and disseminate model contracts for Energy Performance Contracting which can regulate ESCO work on EE investment implementation. The Program's Advisory Committee will provide an efficient vehicle for engaging policy-makers in the Program.



## 4. Stakeholder Participation and Implementation Arrangements

### 4.1. Stakeholder Participation

The list below indicates a number of likely project partners, both among FIs, as well as other stakeholders. This list is by no means exhaustive and simply serves to illustrate the profile of select interested parties. Relevant partners will be added as and when they are identified.

#### Russian Financial Institutions

We have held extensive meeting the financial institutions listed below. All have expressed interest in participating in an energy efficiency financing program.

- Probusinessbank (PBB). PBB is a medium sized Russian bank established in 1993 ranking among the top 30 Russian banks in terms of assets and in the top 15 in terms of equity. It is has recently acquired another bank in Ekaterinburg, a Russian region with significant energy efficiency potential given its large industrial sector.
- Nizhegorodsky Bankirsky Dom (NBD). NBD is a regional bank based in Nizhny Novgorod and has an SME lending focus. A significant percentage of NBD clients take out loans for new equipment purchases and thus are likely to qualify for energy efficiency savings.
- Uraltransbank (UTB). UTB is a regional bank based in Ekaterinburg and has recently become an IFC client. The bank is very interested in pursuing environmental opportunities and already has a pipeline of EE deals. However, these deals tend to be high cost and long term, which is a challenge for UTB.
- Raiffeisen Leasing. Raiffeisen Leasing has been active in Russia for almost 3 years and focuses on equipment leasing for industrial and construction sectors. Many clients of Raiffeisen Leasing in Russia are also clients of Raiffeisen Bank, one of IFC's partners in HEECP.
- KMB KMB-Bank (Bank for Small Business Lending) was founded by the EBRD and several outside investors. The Bank focuses on lending to very small businesses, many of which are sole entrepreneurs. It has offices and branches in approximately 15 regions. It also has a wholly-owned leasing subsidiary
- Delta Leasing have 27 offices in Russia and are currently working with 31 different industries. Delta predominantly leases equipment for process upgrades. Their average project size is \$100,000. They focus 100% on SMEs.

#### Russian Energy Service Companies

- Nizhny Novgorod Energy Savings Center (NNESC). NNESC was founded as an NGO in 1992 and is currently the largest ESCO in Russia, working on energy projects from design to implementation and maintenance. NNESC has about 180 people working in the NGO itself as well as in several private companies organized under their umbrella. Although headquartered in Nizhny, the center has

worked in a number of Russian regions and has experience with implementing World Bank and EU projects.

- The Ural Center for Energy Savings (UCES). UCES was created through the TACIS program in cooperation with the Administration of Ekaterinburg city, Sverdlovsk region, and German company MVV-Innotec. UCES has been focusing its activities on energy audits and energy passports of enterprises. In addition, it has participated in donor funded programs, related mostly to creating an inventory of greenhouse gases for the region.
- CENEF. The Center for Energy Efficiency is one of the most reputable consulting companies in Russia. They have carried out a wide range of assignments for international organisations and will be an important local consulting service provider.

### **Energy Efficiency Equipment Suppliers**

Annex 8 gives a list of Russian energy efficiency equipment suppliers and international suppliers active in the Russian market. These suppliers will be critical sources of deal flow.

### **MinEnerg**

The Russian Ministry of Energy is a crucial stakeholder through their active engagement in developing and implementing Russian energy efficiency policy. We will actively engage them through regular briefings and through their participation in the Advisory Committee.

### **Ministry of Economic Development and Trade**

The Russian Ministry of Economic Development and Trade is responsible for improving the competitiveness of Russia industry. They are therefore an obvious partner for delivering the message the energy efficiency can provide industry with a competitive edge.

### **Advisory Committee**

A proven technique IFC has employed in the HEECP Program and the Efficient Lighting Initiative to secure inter-stakeholder dialogue is to organize an Advisory Committee to consisting of representatives from relevant ministries, government agencies, NGOs, the EE industry, utilities and end-user associations with interest in EE project development and finance. The main role of the Advisory Committee will be to provide advice and feedback on the Program design and implementation to support Program operation. The Advisory Committee is also a potential forum for the advancement of EE finance as many of its participants play important roles in promoting and sustaining a favorable policy environment for EE investments.

The Advisory committee will be convened approximately annually or semiannually to advise the Program on operational issues and promote its coordination with other national initiatives and policies. Considering that the Program will have one central and two regional offices, the Program management may decide to organize the Advisory Committee regionally, holding meetings in different regions where the Program is active.

The first Advisory Committee meeting will be organized after launching the Program. The purpose of the first meeting will be to announce that the Program has started its operation, present Program strategies for the first year and discuss implementation plan. Potential interested FIs and other partners would be invited to the meeting as observers.

The purpose and the agenda of the following meetings will be to present Program activities of previous year and strategy for the upcoming year. The Committee members may provide comments and advise the Program implementation team on specific questions, and might provide information on policy, legal and government strategies related to the EE sector. The Advisory Committee can also serve as a lobbying body to support Program implementation by addressing critical EE business related policy and strategy issues at the government level. Beyond the annual Advisory Committee meetings, Program management and implementation team may contact the Committee members to seek advice on issues raised during day to day Program operation.

The Advisory Committee is also a potential forum to handle possible objections and questions coming on environmental and social issues related to sub-projects under the Program. These possible questions may come from the government and NGOs. In specific cases the Committee may issue official declarations on these issues to the public.

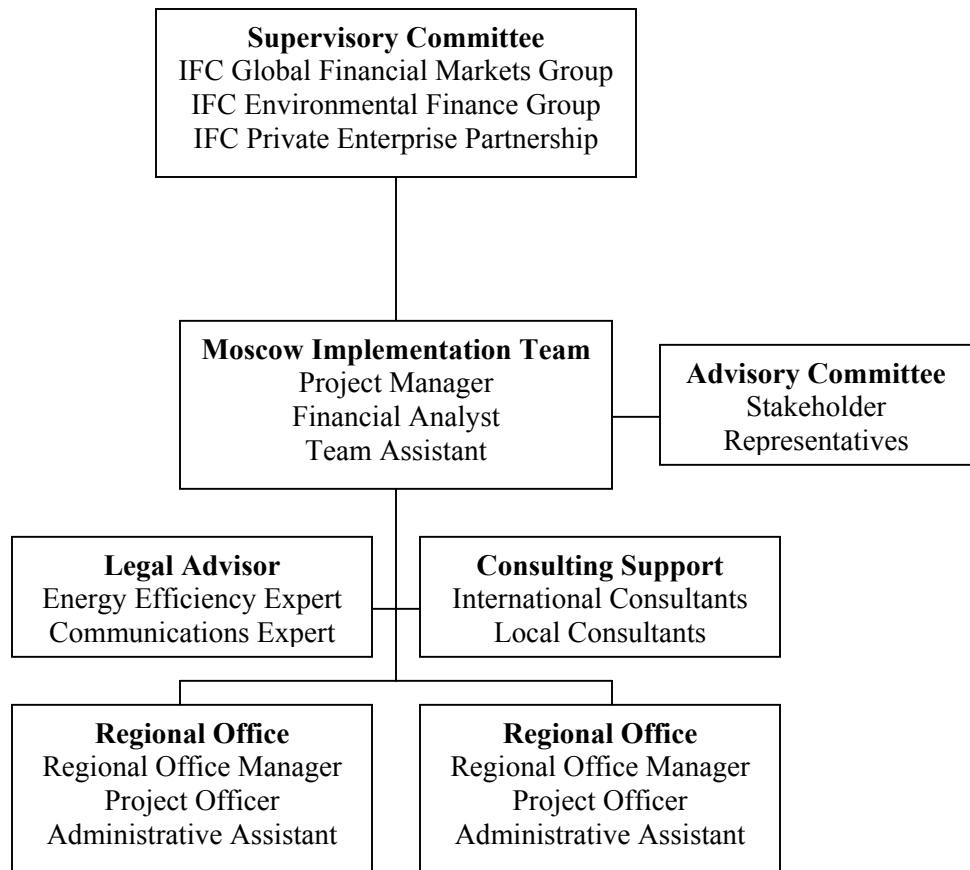
#### **4.2. Implementation Arrangements**

Because of the substantial capital exposure, as well as the potential moral hazard and reputational risks associated with IFC's investment in and execution of the Project, it remains essential for IFC to operate the Program directly through IFC staff. The field-based staff fully dedicated to the Program would be supported by the GEF resources. This is analogous to other IAs' use of government agencies or NGOs whose program teams are supported by GEF resources as direct implementation costs. They will be the primary TA providers, relationship managers, program leaders, and administrators of the Program.

IFC's headquarters staff, including legal, administrative, management, and credit committee staff would be fully supported by IFC's own resources, as well as by GEF supervision funds. The Implementation Team will be staffed as follows:

- An experienced Project Manager responsible for Project operations and coordination with the counterparts and stakeholders;
- Two regional team leaders and support staff in selected cities;

- A central team comprising a local legal specialist, finance specialist, communications specialist, technical specialists and local support staff, charged with the implementation of the Project's various components; and,
- International and local consultants, attracted on an as-needed basis to work on specific project components.
- A Supervisory Committee of IFC environmental and finance specialists to provide guidance to Program team on credit, structuring, legal, strategy, and policy issues. This team is comprised of senior IFC staff and managers based in both Washington and the Region. This team is not supported by GEF program funds.



*Figure 4-1. Implementation Team Structure*

### 4.3. IFC's comparative advantage

The development of solid local financial institutions and promotion of investments with sound environmental benefits is an integral part of IFC's overall strategy. The proposed TA/investment Project seeks to address both objectives. IFC has played a substantial role in the development of the Russian financial market. IFC investments and TA support for numerous Russian FIs through projects such as the Banking Sector Corporate Governance Study, Northwest Russia Leasing Project, has spurred the deepening of the

financial markets. The proposed Program represents a further extension of IFC's reach and is intended to build a sustainable Russian lending capacity in the EE sector.

Through its experience with HEECP and CEEF, IFC has developed a good understanding of the market conditions under which a partial guarantee scheme can, on its own, stimulate increased investment in energy efficiency. This proposed Program will build on the technology, procedures, and know-how from the current portfolio of IFC programs (including the participation of HEECP and CEEF staff in its development).

IFC is particularly well-positioned to deliver the proposed Project in Russia due to having:

- a dedicated TA facility with substantial operating experience and local capacity in Russia, **Private Enterprise Partnership (“PEP”)**, which is co-funded by IFC and donor partners to (i) promote private sector investment, (ii) support the growth of small and medium-sized enterprises (SMEs), and (iii) improve the business-enabling environment;
- more than a decade of hands-on TA experience in the region;
- over 200 mostly local staff currently delivering almost 30 TA programs;
- extensive local relationships with key stakeholders including local FIs; and,
- several projects already successfully implemented with FINPRO in Russia.

Since the PEP Partnership was created, its programs to link small businesses into supply chains of large producers, build financial markets, improve corporate governance, and strengthen business support services and the regulatory environment for small and medium enterprises have laid the foundation for increased investment and strengthened small businesses and the overall business enabling environment across the former Soviet Union. To highlight some results, in FY03 the PEP's programs have:

**Facilitated Direct Investment:** In the forestry sector, the Partnership worked to introduce sustainable forestry management practices, improve wood harvesting and transporting capabilities, improve the enabling environment to encourage investments in modern sawmills, and facilitate business partnerships between private Russian and Finnish firms. As a result, PEP facilitated \$26 million of foreign direct investment in the sector. In the Russian leasing sector, PEP facilitated several deals worth \$2 million between Finnish equipment producers and local leasing companies. Fifteen more transactions worth about \$20 million are currently under discussion. In Armenia and Uzbekistan, the Partnership's work to strengthen leasing legislation laid the groundwork for IFC's \$4.8 million in investments in the country's' first private leasing companies. PEP paved the way for a \$16.5 million investment, including \$5.5 million from IFC, to create the first private company to finance Russian farmers. The Agro-industrial Finance Company uses an innovative model, developed in part by the Partnership, to overcome high commercial risk in the agricultural sector and leases equipment to farms with long-term supply contracts to major food processors. This project builds on PEP's earlier technical assistance work with a dozen Russian milk farms, which resulted in the

construction of a \$50 million dairy processing plant by the Dutch company Campina with IFC's support.

**Increased Access to Financing for SMEs:** This year the Partnership developed a unique web portal, [www.vlasnasprava.info](http://www.vlasnasprava.info), for small businesses in Ukraine seeking finance and business advice. The new web site offers tools for enterprises to assess their financing needs, recommends customized financing options, links users to Ukraine's lending institutions, and offers on-line finance applications. If enterprises do not qualify for credit, the web site contains financial management training materials and links to consulting companies where enterprises can receive professional business advice. In its first six months the site has attracted over 1,000 registered users, over 13,000 unique visitors and over 250,000 hits. In July 2003, the site was ranked 32nd (of over 1,400 sites reviewed) among the most popular business and financial sites in Ukraine. This project builds on similar IFC initiatives managed by the joint IFC-World Bank SME Department in other parts of the world.

**Built Local Capacity:** To improve corporate governance practices by local enterprises, the Partnership has trained more than 1,400 companies across Russia and Ukraine. To ensure that future managers and lawyers understand the importance of good corporate governance and have the skills to practice it, the Partnership works with universities to introduce or improve their corporate governance curricula and train professors. In addition, we conduct public education campaigns to reach the broader shareholder community.

In Ukraine the Partnership advised the Government on 12 pieces of legislation, including the draft Joint Stock Company Law, three of which have been adopted. This legislation covers issues of information disclosure, Boards of Directors, and general regulations related to corporate governance. PEP also drafted Corporate Governance Principles, a voluntary code of conduct for Ukrainian companies, a model charter for corporations and two model by-laws. In Russia PEP assisted the Russian Institute of Directors to draft professional standards for corporate directors. As participants in working groups of the Russian parliament, Ministry of Economy, and the Central Bank, PEP provided recommendations on three pieces of legislation dealing with company reorganizations, holding structures, and the role of independent directors at financial institutions.

In Belarus IFC assisted local business associations in drafting 28 pieces of legislation regulating the small business sector. One third of these proposals are currently under consideration by Belarussian lawmakers.

## 5. Financial Analysis

### 5.1. Financing Mechanism

#### Credit Lines and Guarantees

IFC will invest through extending credit lines to stimulate the market for energy efficiency investments. IFC will make an initial allocation of \$20 million available for credit lines, increasing this up to \$30 million based on demand from the financial institutions. The size of the credit lines with individual FIs will be dependent on IFC's existing exposure with each FI and the FIs' financial strength. Eventually, dedicated lines of credit from other international FIs may be made available to Russian banks, however, discussions with both the EBRD and NEFCO are at too early a stage to realistically include a financing contribution in this proposal.

In addition to the credit lines (which address the short-term market liquidity issue), IFC will administer a guarantee facility financed through GEF funds (US\$2 million). The guarantee facility will support portfolios of transactions by sharing risk with FIs on loans they provide for EE investments. The guarantees will not support IFC's exposure in the credit lines extended to the FIs, but rather will support only the FIs' exposure to the individual loan transactions.

Following IFC's discussions with Russian FIs, IFC anticipates that the total volume of guarantees to be requested during the Program will be proportionately much lower than that estimated in the CEEF and HEECP programs. The projected small-sized guarantee facility will therefore limit the size of guarantee available per individual transaction because of issues of portfolio diversification for risk management purposes. The anticipated size of the total guarantee pool would therefore limit the size of the guarantee exposure amount on individual transactions. However, the proposed small first loss guarantee (limited to less than 10% exposure on a portfolio of projects) should still enable support for the larger transactions which might emerge from the market. The primary purpose of this first loss portfolio approach is that it allows streamlining of the project approvals, thus making the product more useful and attractive to the FIs.

During project appraisal we will examine in detail whether the credit lines and guarantees can be offered singly or in tandem, according to FI demand.

In IFC's current energy efficiency finance market development programs, where IFC has co-invested in guarantee facilities, IFC incurs transaction costs both in the field and in Washington because of the need to review each individual transaction. IFC is now reviewing these procedures to streamline and accelerate decision making in the CEEF and HEECP programs. The lessons of these experiences are embodied in the proposed approach for the FEER program. The proposed program in Russia offers an opportunity to take streamlining to a new level by relying largely on the local FI's credit approval processes (following stringent IFC review of their appraisal processes), and subject to underwriting guidelines derived for each sector. If IFC is not directly involved in the transaction level guarantee it can avoid time-consuming ex-ante project evaluations by IFC staff in Washington which significantly add to transaction costs for both IFC and the

FI. The risk for the GEF investment is still mitigated through: IFC's stringent appraisal of FI credit procedures; risk sharing structures (eg, <10% first loss guarantees) which ensure that the FI's interests are aligned with IFC/GEF, and through the use of TA to help with project structuring.

In this pilot program in Russia IFC proposes that the entire guarantee facility (\$2 million) be financed by the GEF. IFC believes this is justified for the following reasons: The small guarantee amount (less than 10%) is both adequate to make a difference in the credit profile of these projects, and small enough to avoid moral hazard in the FIs' credit decision process. Allied to this small guarantee percentage is a question of total volume of guarantees needed. In both CEEF and HEECP, IFC's experience is that the level of guarantees requested is below the initial estimates in program design. Feedback from FIs in Russia also suggests that demand for guarantees is uncertain.

**The combination of small volume and uncertain demand in this pilot phase means that it would be inefficient for IFC to invest in the guarantee facility. The guarantee facility of US\$ 2 million is, therefore, a true incremental cost best provided by the GEF.**

Participating FIs have an incentive to disburse the credit lines. They will pay a commitment fee to initiate their access to the financing facilities, as well as interest rates payable on the dedicated credit lines. They will also pay an annual fee associated with all guarantee liabilities obligated through the facility for specific EE investments. These fees will be set at "market rates" in accordance with IFC policy of not distorting markets. These fees are not set to substantially defray the costs of operating the Program, but rather based upon local capital market conditions. A full cost recovery pricing scheme is not feasible for a program with such substantial operational and TA requirements, given the early-stage development of these EE lending markets. However, IFC will encourage sharing of market development costs with the FIs, firstly through in-kind effort from FI staff, then subsequently, as the relationship develops, through co-financing of technical assistance. IFC is presently testing the viability of such a revenue-generation approach in HEECP and CEEF. The objective is to continue mainstreaming these market development efforts within IFC and the financial markets. Eventually, as the market continues to develop, it may be possible to move to a position of full cost recovery for certain TA activities from success fees based on the amount of business generated for each FI. However, such revenue generation is not likely to be possible in early-stage markets such as Russia.

The IFC Global Financial Markets Department will be responsible for managing the credit lines and the guarantee facility. IFC's Legal Department will support the facilities on contractual matters. The Environmental Finance Group will provide operational supervision of the Program team and technical support related to EE finance, technology, monitoring and evaluation, and EE market development.



## Technical Assistance and Implementation Costs

The technical assistance program and implementation costs will be co-funded through a combination of GEF and donor funds. The funds will be co-mingled to allow maximum flexibility in usage. However, IFC anticipates using donor funds extensively in the early stages of the Program even prior to CEO endorsement of the GEF Project. In this case the main donor funded activities will focus on capacity building in the first 2-3 FIs. This would be funded primarily through IFC's Sustainable Financial Markets Facility. IFC will – through its bilateral Trust Funds, its Private Enterprise Partnership and its Sustainable Financial Markets Facility – contribute funds to support the technical assistance component of the Program. IFC's Private Enterprise Partnership will manage the local implementation including all local payments. IFC's Environmental Finance Group will provide technical oversight of the overall Program.

### 5.2. Project Costs

Annex 2 shows a detailed breakdown of the costs of the Program. These are summarized in Table 5-1 below:

<b>Technical Assistance and Local Implementation Budget (all figures in USD)</b>	
STAFF COSTS (1)	3,250,000
OPERATIONAL COSTS	1,500,000
• Travel (2)	250,000
• Event management and media (3)	450,000
• Equipment and Building (4)	400,000
• Communications (5)	200,000
• Other Indirect Costs (6)	200,000
CONSULTANTS (7)	1,500,000
<b>Total</b>	<b>6,250,000</b>
<b>IFC – HQ Operational Costs</b>	
<b>IFC Contribution to legal, operational and management</b>	<b>2,000,000</b>
<b>Investment Facility Budget</b>	
IFC Credit lines	20,000,000 – 30,000,000
GEF Guarantee Facility Total	2,000,000
<b>Investment Facility Total</b>	<b>22,000,000 – 32,000,000</b>
<b>TOTAL PROGRAM COST</b>	<b>30,250,000 – 40,250,000</b>

*Table 5-1: Summary of Project Budget*

#### Notes to Table 5-1:

(1) includes salaries and benefits. Team comprises: Project Manager, Technical specialist, 2 Regional Team Leaders, Lawyer, Communications specialist, Financial specialist, 2 Project officers, 3 Team Assistants,

(2) Travel is mainly within Russia but also some international flights to Washington for training and to participate in international events to disseminate the results of the project more widely.

(3) Event management and media covers all training and awareness activities including: the salary of the communications specialists, press conferences, publications, seminars, market surveys.

(4) Equipment and Building: Office rent/lease for offices in Moscow, Ekaterinburg and 1 other region; furniture purchases for offices in Ekaterinburg; Office equipment purchase (computers, printers photocopyers, software etc

- (5) Communications (Postage, Telephone, Cables, Freight, FAX, Data communications)  
 (6) Other Indirect Costs (Local Transport Cost, Bank charges, Passport charges, Utilities, Office refurbishment, Office Security, Office Moves, General supplies, Contract printing, Other publishing costs, Books and periodicals, Recruitment/ Misc, Shipping and storage)  
 (7) Consultants include all fees and travel expenses

### 5.3. Co-Financing for technical assistance and operational costs

Co-financing will be provided from a number of different sources. IFC's PEP Program has a proven model of sourcing and mingling donor funds from a variety of countries and implementing programs that match the needs of all contributors. In this Program, IFC has already secured financing from the Governments of Finland and Denmark. Appendix 13 contains a statement from IFC PEP summarizing the state of negotiations with bilateral donors, as well as a statement from IFC's Sustainable Financial Markets Facility confirming its intent to co-finance capacity building activities in FIs.

In addition to national government support IFC is also working with industry promotional organizations in Finland and Denmark that utilize private capital from Finnish and Danish industry to develop energy efficiency promotional programs that are complementary to FEER, but which promote Finnish and Danish technology.

The current status of co-financing is shown in Table 5-2

**Table 5-2: Co-financing Sources**

Name of Co-financier (source)	Classification	Type	Amount (US\$)	Status*
IFC Sustainable Financial Markets Facility	Implementing agency	Donor funded Facility contribution to TA	150,000	Firm
Finland (Ministry of Trade and Industry, Ministry of Foreign Affairs))	Bilateral	Grant for operating costs and TA	600,000	Firm
Denmark	Bilateral	Grant for operating costs and TA	500,000	Firm
IFC Global Financial Markets Group	Implementing Agency	Contribution to supervision, management, training, IT, legal costs	2,000,000	Contingent on IFC credit line, guarantee facility and GEF grant
IFC Global Financial Markets Group	Implementing Agency	Credit lines	20,000,000 – 30,000,000	PDS-ER submitted, investment under appraisal
Sub-Total Co-financing			US\$ 23,250,000 – 33,250,000	

**Table 5-3: Leveraged financing Sources**

Name of Co-financier (source)	Classification	Type	Amount (US\$)	Status*
Russian Industry	Private Sector	Equity investment	5,000,000 – 7,500,000	Dependent on projects

International Financial Institutions	Bilateral Investors	Credit lines and Equity	5,000,000 – 7,500,000	Early stage negotiations
Total			10,000,000 – 15,000,000	

#### 5.4. Use of GEF Funds

The GEF funds would be used exclusively to address areas of needed “additionality” in order to leverage available co-financing (and private sector commercial investment) which is conditional on the GEF contribution. This primarily includes financing the operations of the project implementation team and co-financing the technical assistance to FIs and project developers, as well as providing the guarantee funds for the proposed first-loss portfolio-based guarantee facility. When IFC extends lines of credit to financial institutions they are not typically tied to specific investment types or sectors, as is proposed here. However, in the case of FEER, IFC seeks to mobilize FI investment in a highly developmental sector in non-traditional business areas encompassing types of projects with which the FIs are not familiar. This requires extensive assistance with strategy development, project appraisal, marketing etc.

IFC, itself, will provide co-financing to set up and manage the credit lines and administer the guarantees. It will also provide extensive training, coaching and mentoring for the implementation team, and help FIs with strategy development. This model has been proven in HEECP and CEEF. IFC has also identified significant donor funding for this program (\$1.250 million). However, a distinct and valuable aspect of GEF funds is that – unlike bilateral donor funds -- they are completely un-tied (to consultants from a particular nationality) and flexible. The GEF funds therefore serve a unique function in delivering the program effectively, ensuring IFC’s ability to be fully responsive to market needs. The allocation of GEF funds in the program is shown in Table 5-4:

**Table 5-4: Use of GEF Funds**

Technical assistance and implementation	5,000,000
Guarantee Facility	2,000,000
<b>TOTAL GEF COST</b>	<b>7,000,000</b>

Given this breakdown of costs (Tables 5-2, 5-3, and 5-4), the leverage of GEF funds to co-funding and direct investment leveraged would be 1:3 in the conservative case and 1:9 in the best case.

#### 5.5. Incremental Cost Analysis

This Program involves three distinct types of incremental costs to be met by GEF funds. They include:

- (i) the costs associated with the TA programs that cannot be met from other funding sources;

- (ii) the amount of guarantee funds required to persuade FIs to invest in EE projects and which is subsequently not returned to GEF at the end of the Program; and
- (iii) that portion of the Program's administrative and operating expenses that cannot be met by IFC nor can be offset by fees paid by FIs.

The first and last are typical incremental costs while the second is related to the incremental risk facing FIs. Addressing these costs is necessary in order to persuade them to move into a new business area. The major justification for GEF's involvement is that under the baseline situation Russia lacks a robust commercial financing capacity for private sector EE projects. Currently no (or very limited) long term financing is available for energy efficiency related investments. The specific use of GEF funds in the Program is limited to those areas where the Program co-funders and private sector investors are unable to pay the costs. The GEF contribution is thus truly incremental and additional, and is very highly leveraged in terms of both the resulting EE project investment generated, and the direct Program costs leveraged.

The TA and investment program operations is proposed for a period of 5 years. The estimated budget breakdown for technical assistance and operational costs over the five years is shown below and totals US\$6.250 million.

Over and above the US\$1.250 million donor contribution, IFC will provide a significant amount (approximately US\$2 million) of the Program implementation cost as an in-kind contribution. This will be done through its Central and Eastern Europe Department, the Legal Department, the Private Enterprise Partnership, and the Global Financial Markets Dept. In particular, this contribution will include functions such as project oversight, finance and accounting, human resources support, IT support, legal support, credit review, personnel management, and impact assessment management. Additionally, the Environmental Finance Group will provide extensive support and advice to the implementation team, in addition to performing its normal IA Supervision role.

This Program with GEF support is expected to significantly expand and deepen the market for commercial FIs' engagement in EE finance while also strengthening local EE firms. Implementation of this project will, in turn, yield a significant quantity of global environmental benefits in the form of reduced greenhouse gas emissions from the additional EE investments that will be financed. Although this Project Brief attempts only to estimate the "direct benefits" generated through transactions directly supported under the Program, in fact the primary benefits generated relate to the Program's objective of establishing a self-sustaining commercial lending market for EE by Russian FIs. These are the "indirect benefits" which will be measured by the Program's M&E program.

## Summary Incremental Cost Matrix

**Table 5-5: Incremental Cost Matrix**

	Baseline (1)	Alternative	Increment
Global Environmental Benefit	0 tons CO2 avoided	6.5 million – 9.8 million tons CO2 avoided (2)	6.5 million – 9.8 million tons CO2 avoided
Domestic Benefit	None	Energy cost savings of \$ 6.5 million – US\$9.8 million	Energy cost savings of \$ 6.5 million – US\$9.8 million
Expenditure items			
EE Investments(3)	None	US\$30 million– US\$45 million	US\$30– US\$45 million
TA/Operational costs	None	US\$8.250 million (4)	US\$8.250 million
Losses from Guarantee Facility (5)	0	US\$ 0.1 million – US\$2.0 million	US\$ 0.1 million – US\$2.0 million
Total Costs	None	US\$38.350 million – US\$55.250million	US\$38.350 million – US\$55.250million

Notes to Table 5-5

1 The baseline condition is that none of the investments supported through the Program are currently financed by commercial FIs since these EE projects cannot be financed without long term loans.

2 Based on most likely scenario for minimum expected IFC investment and maximum likely IFC investment

3 Based on discussions with interested FIs during pre-appraisal and the borrowing capacity of those FIs from IFC.

4 Includes costs for Implementation Team, TA consultants, IFC PEP Team supervision costs and IFC Investment Department supervision costs. Excludes costs incurred by IFC GEF Supervision team in IFC Environmental Finance Group.

5 Based on Best Case Scenario of 5% losses and Worst Case Scenario of 100% losses from the \$2 million guarantee facility

## Incremental Cost and Benefits Matrix

	Baseline	Alternative	Increment
<b>Domestic Benefits</b>	Heavy hydrocarbon based fuel usage in the industry electricity generation	Increased penetration of EE technology improves energy intensity of economy and yields lower environmental and health costs from an active economy.	Less local and regional air pollution
	Barriers to EE projects cause high fuel usage and inefficient industrial processes, hindering	Reduced national fuel consumption	Additional fuel available for export leads to economic growth
		Increased investment in EE enables capital preservation for investment in the	Higher competitiveness of the private sector through lower production costs.

	<p>economic development and investment in productive uses.</p> <p>Lack of readily available EE financing restricts EE investment to low level.</p> <p>High unemployment and low EE project development capacity by ESCOs and FIs.</p>	<p>productive economy and a more productive energy using sector, including, eventually, more comfortable housing.</p> <p>Local capacity building through technical assistance results in the development of domestic ESCO businesses and FI expertise with EE project financing. FIs more willing to finance EE.</p> <p>More productive jobs in the domestic service and manufacturing sectors, market development &amp; competitive markets for FIs and ESCOs</p>	<p>Increased EE investments and increased capacity for sustained EE investment in the future.</p> <p>Less unemployment and increased capacity to develop EE projects.</p>
<b>Global Benefits</b>	Current level of EE investments in Russia negligible.	EE investments financed yield at least 6.5 million tons CO <sub>2</sub> emissions reduction	EE investments financed yield at least 6.5 million tons CO <sub>2</sub> emissions reduction
<b>Costs</b>	Current level of EE investments in Russia financed by commercial FIs negligible.	Investment by commercial FIs in EE projects increases to at least US\$30 million as a result of IFC credit lines and additional IFI financing. This could increase to US\$45 million dependant on demand for IFC credit lines and could increase above this based on the participation of other IFIs attracted by Program success. Incremental costs of up to US\$0.5 million depending on the actual losses from the guarantee portfolio.	Investment costs of US\$30 million to US\$45 million  Incremental costs of US\$0.5 million maximum expected Guarantee losses plus \$5million GEF TA/Operational costs.

## **6. Sustainability and Replicability**

### **6.1. Sustainability**

IFC's program objective is to stimulate the development of a market for EE finance which does not rely on GEF support i.e. to institutionalize energy efficiency into FI lending processes. IFC's experience from implementing energy efficiency finance market development projects in Central and Eastern Europe is that this can be achieved by assessing market needs and then deploying a number of different tools in an integrated manner in direct response to the market needs. In this project IFC will employ three major interventions, each of which support the FIs in building a sustainable EE lending business.

Targeted credit lines with longer terms than are currently available would allow FIs to match finance terms to the payback period typical for EE projects. The resulting EE investments will support the development of a sustainable EE lending market in two ways: (1) by demonstrating that EE investments can improve the cash-flows of a company thus making them better credit risks, thus encouraging FIs to look for more investments with EE benefits; 2) by providing FIs with experience and confidence to move into new market niches, financing EE projects in more challenging sectors and eventually lending to EE projects using funds from non-dedicated (targeted) sources.

In other emerging markets where a lack of market liquidity is a barrier to financing EE projects, one method of addressing this barrier has been the creation of dedicated EE revolving funds. These funds are intended to fill the gap created by the reluctance of traditional FIs to enter the energy efficiency financing market. These funds are often managed by government agencies or fund managers, or sometimes by FIs who generate management fees but are usually not at risk for fund losses. However, a concern with revolving funds is that as financial markets mature, the 'EE Funds' can distort the market by crowding out private sector lenders. The use of IFC lines of credit extended to commercial FIs as an alternative to revolving fund structures ensures that there are no problems migrating from quasi-public funding for energy efficiency to full participation by local financial institutions.

The key benefits of the proposed approach to providing liquidity to the energy efficiency finance market are: long term sustainability of the EE investment market; retention of knowledge and skills within the financial community; an approach tailored to the specific market drivers of each participating FI. The current absence of liquidity in the financial markets presents IFC with a significant opportunity to achieve a lasting cultural change within the FIs' lending practices that can be sustained even if the overall market liquidity problem remains at the end of the Program implementation. By imposing eligibility rules on the FIs for lending using the credit lines the Program forces the FIs to review all potential projects from an EE perspective. If the FIs realize the business benefits to them of investing in EE, and if the EE review is institutionalized in their credit procedures, then the FIs will continue to look for projects with significant EE benefits even in the later absence of dedicated credit lines.

The objective of IFC's approach is to build a self-sustaining lending market for EE projects by supporting commercial FIs in developing new business in the sector. IFC's proposed Program integrates credit lines and guarantees to complement IFC's direct engagement of participating FIs in the development of new financial products and in the effective marketing of those products in the EE sector. The direct impact of this programmatic approach is reflected in the transactions which are directly supported by these tools. However, it is the indirect input, reflected in the lending business which participating FIs establish through the Program, which is the focus of the Program. This is the sustainable, post-program impact for which the Program has been developed.

## **6.2. Proposed Replicability**

The initiative builds heavily on IFC's experience to date in Central Europe. IFC's model in HEECP has proven to be replicable in multiple countries since its inception. Following IFC's adaptation of HEECP to five additional markets (in CEEF), FEER would represent a further adaptation of the IFC EE lending market development model to a substantially less-developed market where liquidity issues predominate. As such, FEER represents an important opportunity to innovate in the area of commercial market development for less developed markets where more distortionary interventions such as subsidies and stand-alone revolving funds have been the common approach taken by the GEF to date. If successful, FEER would represent an important model for less-developed market economies where commercial EE investment activity remains relatively insignificant.

Within Russia, there are currently over 1600 banks. FEER will target its activities on an initial group of 3-5 banks where IFC has existing relationships, and in 2-3 geographic regions where the investment climate is favorable for energy efficiency financing. As IFC continues its larger efforts to develop Russian financial markets, it is anticipated that other banks will become eligible for support from the Program during its lifetime. It is also anticipated that other international financial institutions will learn from the FEER experience and either join the FEER Program with complementary credit lines, or make separate provision of longer term credit to Russian FIs for energy efficiency projects. IFC has entered into discussions with three such international FIs regarding collaboration.

It is clear, however, that replication will not just happen on its own. We will therefore allocate a portion of the operational budget for public education activities and information dissemination both within Russia and in the other markets where similar instruments can be effective. To support replication, IFC will adopt the Program systems ("software") developed for its pioneering HEECP and CEEF Programs for use in Russia. IFC will make these systems, including due diligence checklists, model contracts, market assessments, appraisal guidelines, financial product models, TA menus, credit review procedures, monitoring systems, legal reviews, and lessons learned available to other EE finance programs which target the development of commercial finance markets.

These financing technologies and software fall into three categories: (1) general information, templates, model contracts, case studies etc that will be posted to a website



giving free access to all interested parties; (2) information on specific financial products developed with specific financial institutions that allow them to penetrate certain market niches. Information such as credit scoring mechanisms would be viewed as proprietary to the financial institution, although case studies on projects that use specific structures can be made publicly available, and marketing material promoting specific products will also be publicly available; (3) an Operating Manual for Program Management could be made available to other GEF funded EE finance initiatives.

## 7. Risk Management

### 7.1. Risk Analysis and IFC Risk Management Strategy

The TA program has been designed to support the IFC/GEF investment facility for Russian financial institutions and potential investment recipients. . Subsequent to IFC and GEF approval, the greatest risk is that the anticipated EE loans are not successfully placed. This risk is affected by a number of factors, including:

- The proposed credit line / guarantee mechanism fails to ultimately attract interested FIs
- FIs fail to generate a sufficient volume of bankable EE projects to utilize the facility
- Adverse macro-economic conditions which cause deteriorating borrowing conditions
- Adverse energy policy changes which negatively impact the economics of EE investments
- Emergence of new subsidized EE programs that distort the market and discourage commercial finance.

These risks are anticipated and will be fully addressed during the IFC appraisal period over the next 6 months, ideally with the support of the TA program beginning in the late-appraisal phase.

### 7.2. Individual Project Risk Factors

Program success is linked to a variety of risk factors, mostly related to economic conditions affecting investment. The following table describes the risk factors of EE in Russia and IFC's risk mitigation strategies:

**Table 7-1 EE risk factor and IFC's risk mitigation solutions applicable for Russia**

Type of risk	Mitigating factors
<b>Non project risks</b>	
<b>Political risk</b>	
The political risks in Russia are diminishing with the stabilization of the political situation. According to Russian policies for economic development, energy efficiency is considered as one of the top priorities in Russia.	<ul style="list-style-type: none"> <li>• Active public education activities.</li> <li>• Development of working contacts with Russian governmental agencies (Ministry of Energy, Energy Commissions) and Parliament.</li> <li>• Integration of Government officials in Advisory Committee. Representation by key Russian government officials on FEER Advisory Committee.</li> </ul>
<b>Economic risks</b>	
The Russian economy has continued to grow since the Russian economic crisis of 1998. The annual rate of economic growth is about 4% per year. However, it is perceived by many	<ul style="list-style-type: none"> <li>• Diversification of portfolio of projects in different industries. Development of projects with companies that have export potential.</li> <li>Investment in process-related projects that have</li> </ul>

experts as unstable due to a slow speed of structural reforms. The economic growth may continue in Russia, in the coming 5 years of the rate of 2-4% annually.	both energy efficiency and production- related benefits.
<b>Risk of decreasing – or slowly increasing - energy prices</b>	
Restructuring of RAO UES may bring competition to the market of energy suppliers. However, the risk of decreasing energy prices is low. The current situation of the energy market calls for higher fuel and energy prices to make the new investments in the energy market profitable.	<ul style="list-style-type: none"> <li>• Analysis of continuous monitoring of the local energy supply market will be tied to advisory support of FIs and ESCOs. Consultations with Ministry of Energy, federal and local energy commissions.</li> <li>• Project appraisals use conservative energy price assumptions.</li> </ul>
<b>Devaluation of the Rouble</b>	
Rouble devaluation may decrease the energy prices in relative terms as well as undermine capacity of borrowers to repay hard currency loans.	<ul style="list-style-type: none"> <li>• Deal structuring and project finance principals to be used to manage foreign exchange risk, including tying loan currency to borrower's source of capital. Pessimistic Rouble devaluation scenarios to be included into project appraisals.</li> <li>• IFC can offer Rouble credit lines to FIs, dependent upon FI interest. This is anticipated to be an important new product offering which mitigates rouble exposure issues for both FIs and borrowers.</li> </ul>
<b>Project related risks</b>	
<b>Risk of bad financial performance of the investee or borrower</b>	
The financial performance of the investee or borrower may pose a risk of repayment.	<ul style="list-style-type: none"> <li>• IFC screens FIs to participate based upon well-established credit procedures and strong balance sheet.</li> <li>• Guarantees subject to approval by IFC on a project approval basis.</li> <li>• Pari passu guarantee structure ensures that FI interests are aligned with GEF's from a credit review perspective.</li> </ul>
<b>Risk of technology choice</b>	
The chosen technology will not provide the expected savings, or will require additional financing.	<ul style="list-style-type: none"> <li>• Basic project finance principals employed: apportion risk in deal structure to those able to manage that risk – not the FI Required guarantees of performance from the equipment suppliers.</li> <li>• TA program provides technical appraisal support to FIs for projects with important technology performance issues.</li> </ul>
<b>The risk of equipment usage</b>	
Incorrect EE equipment usage may pose a risk on the performance of the equipment and results of energy saving.	Provision of training by the supplier of the equipment usage. Frequent monitoring of the usage of the complicated equipment.
<b>Lack of interest of local financial institutions to be involved in EE financing</b>	
FIs do not disburse credit lines or utilize	<ul style="list-style-type: none"> <li>• FIs pay a commitment fee to access the</li> </ul>

guarantees	credit lines and interest when they draw the money down. They will also pay commitment fees on the guarantees.
Local banks may have little interest in financing EE projects due to the limited knowledge of EE projects, and their perceived potential benefits and risks, based upon this inexperience.	<ul style="list-style-type: none"> <li>• Careful selection of participating FIs following initial discussions with 15 FIs.</li> <li>• Provision of credit lines only after preparation of a pipeline for FI.</li> <li>• TA support for FIs in developing high quality business plan for EE lending. Detailed description of the project technical parameters, investment requirements and financial outcomes. Education of the financial institutions in regard to the EE projects specifics, assistance in developing and marketing targeted financial products.</li> <li>• Substantial pre-program training of FIs initiated by IFC early in IFC's pre-appraisal process.</li> </ul>
<b>Market Liquidity</b>	
Once IFC credit lines are used up, no more long term credit available for EE – liquidity issues persist.	<ul style="list-style-type: none"> <li>• Russian market trends continue toward increased market liquidity with loan tenors reflecting this trend since 1998 crisis.</li> <li>• IFC credit lines are strategically important in the short term. FI appetite for capital enables IFC to focus FIs on EE sector with restrictive use credit lines. Complementary TA helps build FI capacity and EE pipeline with sustained impact on FI lending business.</li> <li>• IFC is not only source of capital. AS IFC works to strengthen Russian FIs, their access to capital (including deposits) improves.</li> </ul>

### 7.3. Clarifying IFC's approach: Q&A

#### *Is IFC guaranteeing its own credit lines?*

No. IFC's credit line risk is exclusively related to FI performance, of which EE lending supported by guarantees are an insignificant determinant. FI must repay IFC regardless of performance of loans enabled by the credit lines. In the unlikely event that all the loans defaulted, the FI would still have an obligation to repay IFC. The GEF guarantee, therefore offers IFC no protection. The IFC/GEF guarantees, by contrast, support a portfolio of specific FI loans. The risk exposure on the guarantees is project risk and borrower risk.

The terms and conditions of the guarantees and credit lines, and whether they can be used singly or in tandem can only be resolved during detailed discussions with the FIs. The guarantee will be applied to a portfolio of projects and so cannot form part of the

collateral structure of individual transactions. Its role is that of “comfort blanket” to help get the FI over the threshold of whether to invest in EE projects at all.

During Project Appraisal we will bear in mind the GEF request to keep as much separation as possible between the credit lines and the guarantees as practicable without incurring excessive additional transaction costs

*How is financial risk apportioned between IFC and GEF?*

On the credit lines, all risk is held by IFC. There is no GEF exposure to IFC’s credit risk of the participating FIs and their ability to pay back to IFC the funds made available to them through the IFC credit lines. On the relatively small guarantee facility, the GEF exposure to the project risk for transactions which the participating FIs finance is on a first loss (up to 10% of the loan principal amount) basis. The use of GEF funds in a first loss position has precedent in other GEF programs. Somewhat similarly, the guarantees in the HEECP/Hungary program have been first loss on recovery, vis a vis the FIs. In this case, the relatively small percentage guarantee provided (less than 10% of the FIs’ exposure on the guaranteed portfolio of projects) provides adequate incentive to avoid moral hazard associated with the FIs’ incentives to maintain good credit practices vis a vis the GEFs’ exposure.

*Is Russia ready for this type of intervention?*

Yes. IFC has been working in Russia in the SME and financial sectors intensively for the past five years. EBRD and IFC’s pioneering work in the Russian financial markets has provided an important foundation to enable this targeted “deepening” of several key FIs into the EE lending business at this time. The response of the participating Russian FIs during IFC’s EE finance workshop in October 2003, and during subsequent planning meeting with FIs interested in working with IFC on EE finance indicated institutional readiness and a viable project pipeline.

*Why is the facility executed by IFC, instead of by a local Russian institution? If the program is executed by IFC, how is the capacity sustained in the market?*

There are several reasons why it is important that IFC execute the Program. The first is from a risk-management perspective: IFC is placing between \$20-30 million of its own capital at risk in the credit lines. With the exception of fund investments – where the expected rate of return substantially reflects the risk equity investments undertaken by dedicated fund managers, IFC’s fiduciary management norms do not enable outsourcing of credit decisions associated with managing such a debt facility. Further, the expertise developed by IFC in HEECP and CEEF, and the financial market experience in Russia (and other analogous developing financial sectors) provides a unique capacity which will be instrumental in navigating the challenges of the highly transitional Russian market.

The capacity which FEER was conceived to build is not related to the execution of the Program, but rather to the development and execution of commercial financial products and, ultimately, the building of a sustainable lending business in competitive commercial FIs. The sustainability of the Program derives not from the perpetual delivery of credit lines, guarantees, and TA, but rather from the capacity developed in the financial markets

for delivering financial services providing debt and other instruments to support EE investment.

## 8. Monitoring and Evaluation

### 8.1. Overview

The monitoring and evaluation (M&E) will be designed as a participatory process integral to the Program's implementation. The goal is to assess the Program's progress and achievement of results, test key assumptions in design, and, at the same time, promote stakeholder ownership of the Program. FEER participants and stakeholders will monitor the Program outputs using data collection tools and will be interviewed regularly as an integral part of the process. This will enable capacity-building and rapid understanding and application of lessons learned during the course of the Program's operations. Thus, the Program's M&E framework will serve several purposes:

- Monitor progress towards Program and GEF objectives;
- Strengthen Program performance and management by providing feedback on implementation;
- Provide a base for technical and financial accountability.

The M&E framework will assess the Program's (i) impact on EE projects supported by credit lines, guarantees and TA and implemented by the EE/ESCO businesses, (ii) impact on participating FIs, (iii) impact on the Russian markets both regionally and nationally, and (iv) management and operations. Building on the LogFrame (see Annex 1), the M&E plan will identify appropriate indicators to assess the Program's financial/business, energy, and environmental outputs, as well as its outcomes. This should include measuring its market impact to assess whether or not it has achieved its primary objective of establishing a sustained market capability to develop EE projects and an expanded market for EE project finance. Additionally, the M&E process will also allow for an assessment of management and operations ("process evaluation") of both the investment and technical assistance programs.

IFC will collect data for the M&E through a combination of self-reporting by Program participants, implementation team record keeping, and third party investigations. IFC will employ a third party M&E contractor to provide independent verification, analysis and reporting of findings.

The key M&E deliverables are:

- Data collection tools and training to the project implementation team on using them
- Baseline data
- Annual, real-time feedback to management on Program implementation
- Midterm review during the third year of operation
- Final process and impact evaluation in 2009

The M&E workplan will be developed prior to CEO endorsement.

## **8.2. Specific Requirements for the monitoring and evaluation system**

### **Programs' impact on participating FIs**

We will evaluate the effect that the Program's financing facilities and TA have had on participating FIs. We will particularly monitor any changes that occur over the life of the Program in the FI's lending patterns, especially in the types of loans for which FIs use guaranteed versus non-guaranteed capital and the use of IFC (or other IFI) dedicated credit lines versus untied resources. Such a change will likely be evident both from an analysis of the FIs' self-reporting and from interviews with the FIs.

### **Program's impact on EE projects supported by the financing facility and implemented by participating EE/ESCO businesses**

IFC will introduce mechanisms for collecting and verifying data that provide evidence of emissions reductions, which will combine team efforts of records keeping and outsourcing several tasks to external M&E Contractor. Monitoring tasks will include:

- review the files and calculations of energy savings estimates that were made before the EE projects were approved for financing (and which will form a part of the loan documentation);
- train the ESCOs and local engineering firms on how to collect energy savings data during EE project development and implementation, and provide them with any templates and tools, if needed;
- define the methodology to confirm actual energy savings and GHG emissions reductions achieved by projects once they are implemented;
- train the ESCOs and local engineering firms on how to calculate the GHG emissions reductions achieved by their projects and provide them with any necessary templates and tools;
- use this post-implementation methodology to check all large or complex projects and a sample of smaller EE installations to see whether the expected savings were actually achieved; and,
- summarize results in periodic reports to IFC and maintain project files for ready access and review for GEF monitoring and evaluation purposes.

The methodology for post-implementation verifications will generally confirm the calculations made pre-installation for the projects. Key variables may include: combustion efficiency of new boiler systems, customer energy loads, generation output of boiler systems, efficiency of end-use equipment, production data, etc. Pre-installation calculations of the baseline, i.e., energy use of the existing system prior to the project, will be used and established in the pre-installation reviews. Participating FIs will assist in obtaining the cooperation of project participants including the implementing contractor, and the energy end-user; this will be accomplished through appropriate provisions and commitments in the loan documents and enforced through the Financing Facility Agreements (FFAs) that IFC signs with the FIs. Site visits to projects may be necessary. The M&E contractor will also evaluate the impact of the Programs' TA activities on participating ESCOs and engineering firms.



### **Programs' impact on the Russian markets (national and regional)**

The Program's objective is to accelerate the development of the commercial EE finance market by changing the behavior of key market players (FIs, ESCOs, some energy end-users, relevant government agencies, etc.). A key aspect of the M&E work program will be to gauge FEER's achievement of this goal. We expect that the EE projects FEER supports will have a demonstration effect in the market. We further expect that TA activities will build the capacity and interest of market players to implement EE projects. In some cases, the Program's activities may lead to changes in regional or national policy that will also have significant market impact. These may include the adoption of new procurement methods that allow private sector ESCOs to develop and implement EE projects for public sector entities, or the development of legally enforceable property ownership structures for cooperative housing that enable the use of commonly-owned property as security for bank loans (as happened in Lithuania). The M&E program will assess the Program's impact on the market by monitoring the indicators noted in the LogFrame and any other appropriate indicators of changed market behavior.

### **Programs' management and operations**

The FEER evaluation involves a review of, and an opportunity to update, the key theses underlying the Program design and structure. Is IFC effective in achieving its desired market impact and how is it doing it? How has a commercially sustainable EE/ESCO industry been fostered under the Program? Are the TA products well defined and effective in achieving their stated purpose? Are the Program's financing products effective in motivating FIs to increase their EE finance activity, or is something else needed? Is there continuing demand for the financial products? What is the continued relevance of the financial products to the various users? Are there other variations on or changes to the Program's structure that would make it more effective? What lessons for EE finance and EE project and business development are being gained? Is the Program effective in communicating and making available these lessons and experience to others? What strategies should the Program be considering to maximize its indirect impacts and demonstration value? Are the Program's environmental, economic, and social benefits likely to continue post-Program?

We will also review progress in Program implementation including management, administration and procedures in order to assess its effectiveness. Areas IFC will assess include: clarity and ease of procedures for processing transactions and TA grants by both IFC, FI partners and project participants; management and communications within IFC; record-keeping, communications and outreach to the market; budget status and cost control. These will all be key elements of the mid-term evaluation intended to enable mid-course programmatic improvements.

Methods used to conduct the evaluations will include review of the Program documents and structured interviews with the Program staff, management, participants and stakeholders. An external evaluator will conduct structured interviews with:

- Program staff and management;

- Staff from participating FIs;
- Staff from prospective partner FIs;
- Engineering consultants, ESCOs and EE businesses participating in projects supported by the guarantees, credit lines, and/or TA;
- Relevant Government officials and EE NGOs, including those participating in each country's Program Advisory Committee;
- Interviews with any prospective Program participants who have investigated the Program but for whatever reason, failed or declined to participate; and
- Interviews with any other stakeholders who are identified.

### **8.3. Management of Monitoring and Evaluation Activities**

Given the pilot nature of the FEER Program, M&E is even more of a priority than in other GEF-funded activities. The FEER Program is complex in the number of stakeholders that will be involved in developing the market for EE financing in Russia.

The monitoring and evaluation will be carried out by a combined team comprising:

- An independent M&E contractor responsible for annual surveys and midpoint/final evaluation.
- A staff member in the implementation team responsible for designing the M&E plan and tracking all available data on a regular basis, and maintaining all the files necessary for data verification and analysis.
- Engineering contractors responsible for confining GHG emission reductions at the project level.
- Financial institutions providing reports on their loan portfolios.

A budget of \$200 000 has been set aside for contracting external monitoring and evaluation contractors.

**Annexes**

### Annex 1: Project Design Summary (Logical Framework)

Hierarchy of Objectives	Key Performance Indicators	M&E / Data Collection Methodology	Critical Assumptions
<p><b><u>GEF Strategic Priorities:</u></b> CC2 – Increased access to local sources of financing for renewable energy and energy efficiency</p>	<p>Volume of lending by financial institutions for energy efficiency projects</p> <p>Volume of business undertaken by suppliers of energy efficiency goods and services</p>	<p>Participating FIs and EE product/service providers will report to Program mgmt; External evaluator will interview participating FIs and sample of EE product/service providers</p>	
<b><u>Global Objective:</u></b>	<b><u>Outcome/ Impact indicators :</u></b>	<b><u>Project Reports:</u></b>	<b><u>(from Objectives to GEF Strategic Priorities)</u></b>
<p>To build a sustainable capacity in the Russian market to develop and finance commercial transactions that use energy more efficiently and/or use new energy sources</p>	<ul style="list-style-type: none"> <li>• Increase in the number of FIs (incl. partner<sup>1</sup> and non-partner) providing dedicated financing for EE projects</li> <li>• Amount of financing for EE projects provided by FIs</li> <li>• Number of FIs stating intention to continue financing beyond the program timeframe</li> <li>• Increase in the number and size (in annual revenues) of EE project developers</li> <li>• kW of energy savings per unit produced achieved by implemented transactions</li> <li>• Total CO2 emissions reduction achieved by implemented transactions</li> </ul>	<p>Baseline assessments of FIs, ESCOs and of other EE market players</p> <p>Mid-term and final evaluations by external evaluator</p> <p>Reports on energy savings from EE project developers</p>	<p>The Program overcomes existing EE market barriers and builds a sustainable EE market capacity, thus contributing significantly to the GEF's strategic priorities and to the IFC's development mission.</p>

<sup>1</sup> 'Partner financial institution' is a bank or leasing company which utilized IFC credit lines or GEF/IFC guarantee facility and/or received tailored technical assistance. Non-partner FIs are financial institutions attending training and receiving ad-hoc consultations.

Output from each Program component:	Output Indicators <sup>2</sup> :		(from Outputs to Objective:)
(a) Participating FIs develop and implement new strategies and offer specialized financial products (such as longer-term credit lines and/or partial risk guarantees) to finance EE projects in Russia.	<ul style="list-style-type: none"> <li>• 3-5 Russian FIs will offer financing for EE projects in each program region</li> <li>• Increase in EE pipeline of participating FIs (at least 10 transactions and \$2 million of transactions per FI.)</li> <li>• 50% increase in the number of financing applications that FIs receive<sup>3</sup></li> <li>• At least two employees per FI know how to assess, structure and monitor loans to EE transactions</li> <li>• At least 3 specialized financial products are adopted by participating FIs targeting EE market niches.</li> </ul>	<p>Participating FIs' regular self-reporting to the Program as part of credit line monitoring.</p> <p>Mid-term and final evaluations by external evaluator</p>	<p>FIs will finance more EE projects if they are provided with long-term capital, a risk management tool, and training. Eventually, these FIs will no longer need the Program's support to continue financing EE transactions beyond the Program's term.</p>
(b) EE project developers (ESCOs, FIs, end-users, and others) bring more EE transactions to financial close by using transaction-specific TA	<ul style="list-style-type: none"> <li>• Number of transactions supported by the Program's TA services</li> <li>• At least 30 EE transactions will be financed by partner and non-partner FIs<sup>4</sup></li> <li>• Value of transactions financed (from all capital sources)</li> <li>• Portfolio of EE transactions has a satisfactory repayment rate</li> <li>• Indicators of the relevance and efficiency of TA services whose cost exceeds a certain (TBD) threshold<sup>5</sup></li> </ul>	<p>Participating FIs' regular self-reporting to the Program as part of credit line monitoring</p> <p>These figures will be reported to the GEF annually.</p> <p>Surveys of and interviews with a sample of EE project developers and FIs who received TA from the Program; TA performance evaluations</p>	<p>Through a process of 'on the job' training, FIs can learn to finance and project developers can learn how to obtain financing for EE transactions.</p> <p>Thanks to this training, they will remain active EE market players beyond the Program's term.</p>
(c) EE market players have greater awareness of and interest in implementing EE	<ul style="list-style-type: none"> <li>• # of people from # of companies attending seminars etc supported by the program</li> </ul>	<p>Event attendance lists and feedback questionnaires</p>	<p>With effective M&amp;E and dissemination, the Program can 'make the business case' for investing in EE, thus</p>

<sup>2</sup> For some activities, more specific performance indicators with timelines for their achievement will be developed during Program appraisal.

<sup>3</sup> The participating FIs do not necessarily have to finance and/or guarantee EE projects with funds from the Program; an increase in the # of applications is an indicator of increased **willingness and capacity** by the FIs to finance EE transactions.

<sup>4</sup> It should be noted that TA given to a project developer may result in a project being financed by a non-participating FI

<sup>5</sup> Program management will gauge the relevance and efficiency of the TA services provided on a 4-point scale. The score given will depend on an assessment of such issues as: the priority to the client of the TA topic covered; the appropriateness of the TA services; the cost vs. benefits of the TA services provided; and the % of cost recovery.

measures	<ul style="list-style-type: none"> <li>• #of stakeholders reached with Program publications</li> <li>• # of unique visitors to Program's Web site</li> <li>• Feedback on quality and relevance of Program's materials &amp; tools</li> <li>• % of project clients reporting use of project materials</li> </ul>	<p>Website hit reports, download reports</p> <p>Survey of project clients</p>	<p>increasing demand for EE products, and strengthening the EE market.</p> <p>Macro economic conditions are such that investment in EE continues to be attractive.</p>
(d) Local energy product/service providers strengthen their capacity through training events and Program's guidance in implementing select projects on a pilot basis	<ul style="list-style-type: none"> <li>• Number of ESCOs and vendors receiving tailored advice or training</li> <li>• Number of vendors relationships facilitated with FIs</li> <li>• Value of additional sales attributed to learning from the Program</li> </ul>	Interviews with ESCOs and vendors assisted by the Program	The one-on-one TA services successfully increase ESCOs and vendors' awareness of EE opportunities and ability to seize them, thus increasing the supply of EE services offered in the market, thereby contributing to its sustainability.
(e) Enabling environment (policies & laws) becomes more clear and transparent for EE project developers and other market players	<ul style="list-style-type: none"> <li>• Regular legal updates produced</li> <li>• EPC model documents produced and/or other legal issues clarified</li> <li>• # of new EE schemes implemented due to changing legislation or materials developed by the Project</li> <li>• # of ESCOs/other market participants using model EPC and other model documents</li> <li>• # and seniority of government officials attending the Program's Steering Committee meetings</li> </ul>	<p>The Program operational reports</p> <p>Minutes from Advisory Committee Meetings</p>	Macro economic conditions are such that investment in EE continues to be attractive for end-users
<p><b><u>Input into each Program Component:</u></b></p> <p>(a) TA and financial instruments to FIs</p> <p>(b) TA to individual EE transactions</p> <p>(c) Raising market awareness</p> <p>(d) TA to ESCOs</p> <p>(e) Policy &amp; legal support</p>	<p>US\$ 6.25 million for TA and local operations (US\$5 million GEF, US\$1.25 million donor funded)</p> <p>US\$2 million for IFC investment operations and support</p> <p>US\$ 20 – 30 million for investment facility (IFC)</p> <p>US\$ 2 for Guarantee facility (GEF)</p>	Annual PIR reporting	The program's inputs and timeframe are sufficient to achieve its objectives.

## Annex 2: Estimated Project Costs

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
	<i>USD</i>	<i>USD</i>	<i>USD</i>	<i>USD</i>	<i>USD</i>	<i>USD</i>
<b>STAFF COSTS (1)</b>	<b>530,000</b>	<b>620,000</b>	<b>660,000</b>	<b>690,000</b>	<b>750,000</b>	<b>3,250,000</b>
<b>Consultants (2)</b>	<b>235,000</b>	<b>255,000</b>	<b>264,000</b>	<b>358,000</b>	<b>388,000</b>	<b>1,500,000</b>
<b>Operational Costs</b>	<b>260,000</b>	<b>220,000</b>	<b>260,000</b>	<b>360,000</b>	<b>400,000</b>	<b>1,500,000</b>
<b>Travel (3)</b>	60,000	50,000	50,000	50,000	65,000	250,000
<b>Event management and media (4)</b>	21,000	22,000	36,000	170,000	187,000	450,000
<b>Equipment and Building (5)</b>	96,000	70,000	70,000	65,000	70,000	400,000
<b>Communications (6)</b>	38,000	40,000	40,000	40,000	50,000	200,000
<b>Other Indirect Costs (7)</b>	45,000	38,000	35,000	35,000	35,000	200,000
<b>TOTAL COSTS</b>	<b>1,055,000</b>	<b>1,095,000</b>	<b>1,184,000</b>	<b>1,408,000</b>	<b>1,538,000</b>	<b>6,250,000</b>

(1) includes salaries and benefits. Team comprises: Project Manager, Technical specialist, Team Leader, Region 3, 2 Regional Team Leaders, Technical specialist, Lawyer, Communications specialist, Financial specialist, 2 Project officers, 3 Team Assistants,

(2) Consultants include all fees and travel expenses

(3) Travel is mainly within Russia but also some international flights to Washington and to participate in international events to disseminate the results of the project more widely.

(4) Event management and media covers all training and awareness activities including: the salary of the communications specialists, press conferences, publications, seminars, market surveys. Increased budgets in Yrs 4 and 5 are due to extensive dissemination activities.

(5) Equipment and Building: Office rent/lease for offices in Moscow, Ekaterinburg and 1 other region; furniture purchases for offices in Ekaterinburg; Office equipment purchase (computers, printers photocopiers, software etc

(6) Communications (Postage, Telephone, Cables, Freight, FAX, Data communications

(7) Other Indirect Costs (Local Transport Cost, Bank charges, Passport charges, Utilities, Office refurbishment, Office Security, Office Moves, General supplies, Contract printing, Other publishing costs, Books and periodicals, Recruitment/ Misc, Shipping and storage

### Annex 3: Cost Benefit Analysis Summary and Incremental Analysis

#### Financing Energy Efficiency in the Russian Federation (FEER)

#### IFC/GEF Incremental Cost Analysis - minimum IFC investment in credit lines

Assumes a first phase GEF/IFC guarantee fund of US\$ 2 million funded by the GEF. IFC will invest separately into credit lines to the value of \$20 million. This could eventually expand to \$30 over the life of the first phase and potentially be supplemented by other IFI lines of credit.

#### Basic Assumptions

Equity (ratio) of total project cost	0.2
Average GEF/IFC transaction guarantee	0.5
Financial Rate of Return of EE projects undertaken	0.2
Average life-expectancy of EE investments	10
Average loan period	4
O&M plus management and overhead cost (1)	0.1
Energy Costs (US\$ per tce) (2)	28
Tons CO2 per tce electricity(3)	2.9
Tons CO2 per tce for fuel (4)	2.75

Energy savings - type of energy saved by sector (5)	Electricity savings	Thermal savings
Residential	0	0
District heating	0	1
Streetlighting	1	0
Industrial sector (6)	0.35	0.65
Industrial cogeneration	0.6	0.4
Industrial other	0.2	0.8

(1) Assumes O&M (Operations & Maintenance) plus management and overhead costs of 10% per annum of the total amount of EE investments supported by the program.

(2) Based on current energy/fuel prices and trends and assumes (Reference: CENEf)

(3) Based on IEA Survey that suggests that increased electricity generation would be coal based. (Reference figure CENEf)

(4) Reference figure from CENEf

(5) Electricity and thermal saving allocations may range from 0% to 100%, depending on the respective EE sector invested in. Assumptions made are based on estimates of energy type saved by sector and projected dealflow in each sector.

(6) Assumes 65% of savings from fuel and 35% savings from electricity (Source: CENEf)



**Assumptions: Russian Federation (1)**

Share of electricity in total energy savings (2)	<b>0.65</b>
Share of fuel savings of total energy savings (kWh equivalent) (3)	<b>0.35</b>
	USD Million
GEF Guarantee Facility	2
GEF TA contribution	2
GEF adminstr./mgmnt.	3
IFC Trust Funds	1.250
IFC in kind contribution	2
IFC Investment (Guarantees)	0
IFC Investment (Credit lines)	20

(1) We expect 100% of savings to be from industrial projects.

(2) Estimate based on assumed portfolio of common EE technologies

(3) Estimate based on assumed portfolio of common EE technologies

**Sensitivity Analysis (1)**

	<b>Best Case Scenario</b>	<b>Most likely Case Scenario</b>
Percentage of total GEF guarantee funds lost (2)	0.05	0.25
Percentage of potential energy savings realised (3)	1	0.75

(1) Assumes different levels of guarantee losses and different energy saving scenarios and calculates respective implications on costs per ton of CO2.

All three scenarios conservatively assume only a \$20 million facility.

(2) Best case: 5% GEF guarantee funds are called; Most likely case: 25% of GEF funds are called; Worst case: 100% of GEF guarantee funds are called.

(3) Best case: Achieved energy savings are 100% of those projected; Most likely case: Energy savings are 75% of those projected; Worst case: Energy savings are 35% of those projected.

## FEER - CO2 Savings – minimum IFC Investment

	US\$million
Total IFC funds	22.25
Total GEF Contribution	7
Total IFC/GEF funds	29.25
<b>GEF/IFC funds available for credit lines and guarantees (1)</b>	<b>22</b>
Amount of Bank loans (excl. gearing/partial recycling of funds) (2)	25
Project Sponsor equity	5
<b>Value of total EE investments supported (3)</b>	<b>30</b>
<b>Cost savings</b>	
Assumed cost saving revenues per annum (4)	10.03
O&M plus management and overhead cost per annum (5)	3
<b>Total revenue requirements (6)</b>	<b>13.03</b>
	<b>US\$</b>
Energy savings p.a.- tce (8)	232703
Tons CO2 from fuel savings p.a.(9)	415957
Tons CO2 from electricity p.a (10)	236194
Total life time CO2 savings-tons	6521513
<b>Direct Total life time CO2 savings-million tons</b>	<b>6.5</b>

(1) IFC investment (credit lines)+(GEF guarantee facility)

(2) EE Bank loans assume a 25% leverage from other IFI lines of credit and FI own resources

(3) Assumes EE project finance: 20% equity and 80% debt financing

(4) Required fuel savings over average loan period of five years assuming 50% of savings from EE:

(5) 10% of the total amount of EE investments supported by the program

(6) Annual gross revenue requirements from all project benefits: Assumes 50% of benefits from non-EE related improvements such as reduced material usage, improved productivity

(7) Total energy savings per year divided by assumed weighted cost of energy.

(8) (CO2 per tce) times total amount of energy savings times the share of fuel savings of total energy savings.(assume 65%)

(9) (CO2 per tce) times total amount of energy savings times share of thermal generation on respective total (assume 35%) electricity generation times one minus share of fuel savings of total energy savings.

## Sensitivity Analysis

<b>Best case scenario (1)</b>	<b>US\$ million</b>
Incremental costs (2)	5.0
GEF guarantee losses (3)	0.1
Total Incremental costs	5.1
<b>Cost per ton of CO2 (US\$) (4)</b>	<b>0.8</b>

<b>Most likely case scenario (5)</b>	
Incremental costs	5.0
GEF guarantee losses	0.5
Total Incremental costs	5.5
<b>Cost per ton of CO2 (US\$)</b>	<b>1.12</b>

<b>Worst case scenario (6)</b>	
Incremental costs	5.0
GEF guarantee losses	2.0
Total Incremental costs	7.0
<b>Cost per ton of CO2 (US\$)</b>	<b>3.07</b>

(1) Achieved energy savings are 100 % of those projected and no GEF guarantee funds are called.

(2) Sum of GEF TA contribution and GEF admin./mgmt.

(3) GEF guarantee funds times GEF Commercial losses (assumptions-sensitivity analysis)

(4) Total incremental costs divided by (CO2 savings in the Russia times achieved energy savings). The latter is outlined in the assumptions page.

(5) Achieved energy savings are 75 % of those projected and 25% of GEF guarantee funds are called.

(6) Achieved energy savings are 35 % of those projected and 100% of GEF guarantee funds are called.

## Financing Energy Efficiency in the Russian Federation (FEER)

### IFC/GEF Incremental Cost Analysis - maximum IFC investment in credit lines

Assumes a first phase GEF/IFC guarantee fund of US\$ 2 million funded by the GEF.. IFC will invest separately into credit lines to the value of \$20 million. This could eventually expand to \$30 over the life of the first phase and be supplemented by other IFI lines of credit.

#### Basic Assumptions

Equity (ratio) of total project cost	0.2	
Average GEF/IFC transaction guarantee	0.5	
Financial Rate of Return of EE projects undertaken	0.2	
Average life-expectancy of EE investments	10	
Average loan period	4	
O&M plus management and overhead cost (1)	0.1	
Energy Costs (US\$ per tce) (2)	28	
Tons CO2 per tce electricity(3)	2.9	
Tons CO2 per tce fuel (4)	2.75	

Energy savings - type of energy saved by sector (5)	Electricity savings	Thermal savings
Residential	0	0
District heating	0	1
Streetlighting	1	0
Industrial sector (6)	0.35	0.65
Industrial cogeneration	0.6	0.4
Industrial other	0.2	0.8

(1) Assumes O&M (Operations & Maintenance) plus management and overhead costs of 10% per annum of the total amount of EE investments supported by the program.

(2) Based on current energy/fuel prices and trends and assumes (Reference: CENEf)

(3) Based on IEA Survey that suggests that increased electricity generation would be coal based. (Reference figure CENEf)

(4) Reference figure from CENEf

(5) Electricity and thermal saving allocations may range from 0% to 100%, depending on the respective EE sector invested in.

Assumptions made are based on estimates of energy type saved by sector and projected dealflow in each sector.

## Country specific assumptions

### Russian Federation (1)

Share of electricity in total energy savings (2)	<b>0.65</b>
Share of fuel savings of total energy savings (kWh equivalent) (3)	<b>0.35</b>
	<b>USD million</b>
GEF Guarantee Facility	2
GEF TA contribution	2
GEF adminstr./mgmnt.	3
IFC Trust Funds	1.25
IFC in kind contribution	2
IFC Investment (Guarantees)	0
IFC Investment (Credit lines)	30

(1) We expect 100% of savings to be from industrial projects.

(2) Estimate based on assumed portfolio of common EE technologies

(3) Estimate based on assumed portfolio of common EE technologies

**Sensitivity Analysis (1)**

	<b>Best Case Scenario</b>	<b>Most likely Case Scenario</b>	<b>Worst Case Scenario</b>
Percentage of total GEF guarantee funds lost (2)	0.05	0.25	1
Percentage of potential energy savings realised (3)	1	0.75	0.35

(1) Assumes different levels of guarantee losses and different energy saving scenarios and calculates respective implications on costs per ton of CO2.

(2) Best case: 5% GEF guarantee funds are called; Most likely case: 25% of GEF funds are called; Worst case: 100% of GEF guarantee funds are called.

(3) Best case: Achieved energy savings are 100% of those projected; Most likely case: Energy savings are 75% of those projected; Worst case: Energy savings are 35% of those projected

**FEER - CO2 Savings**

	<b>US\$million</b>
Total IFC funds	32.25
Total GEF Contribution	7
Total IFC/GEF funds	39.25
<b>GEF/IFC funds available for credit lines and guarantees (1)</b>	<b>32</b>
Amount of Bank loans (excl. gearing/partial recycling of funds) (2)	37.5
Project Sponsor equity	7.5
<b>Value of total EE investments supported (3)</b>	<b>45</b>
<b>Cost savings</b>	
Assumed cost saving revenues per annum (4)	15.05
O&M plus management and overhead cost per annum (5)	4.5
<b>Total revenue requirements (6)</b>	<b>19.55</b>
	<b>US\$</b>
Energy savings p.a.- tce (8)	349 055

Tons CO2 savings from fuel p.a.(9)	623 936
Tons CO2 savings from electricity p.a (10)	354 290
Total life time CO2 savings-tons	9 782 270
<b>Total life time CO2 savings-million tons Direct from Program</b>	<b>9.8</b>

(1) IFC investment (credit lines)+(GEF guarantee facility)

(2) EE Bank loans assume a 25% leverage from other IFI lines of credit and FI own resources

(3) Assumes EE project finance: 20% equity and 80% debt financing

(4) Required fuel savings over average loan period of five years assuming 50% of savings from EE:

(5) 10% of the total amount of EE investments supported by the program

(6) Annual gross revenue requirements from energy savings: Assumes 50% of benefits from non-EE related improvements such as reduced material usage, improved productivity

(7) Total energy savings per year divided by assumed weighted cost of energy.

(8) (tons CO2 per tce) times total amount of energy savings times the share of fuel savings of total energy savings.(assume 65%)

(9) (tons CO2 per tce) times total amount of energy savings times share of thermal generation on respective total (assume 35%) electricity generation times one minus share of fuel savings of total energy savings.

## Sensitivity Analysis

<b>Best case scenario (1)</b>	<b>US\$ million</b>
Incremental costs (2)	5.0
GEF guarantee losses (3)	0.1
Total Incremental costs	5.1
<b>Cost per ton of CO2 (US\$) (4)</b>	<b>0.5</b>

<b>Most likely case scenario (5)</b>	
Incremental costs	5.0
GEF guarantee losses	0.5
Total Incremental costs	5.5
<b>Cost per ton of CO2 (US\$)</b>	<b>0.75</b>

<b>Worst case scenario (6)</b>	
Incremental costs	5.0
GEF guarantee losses	2.0
Total Incremental costs	7.0
<b>Cost per ton of CO2 (US\$)</b>	<b>2.04</b>

(1) Achieved energy savings are 100 % of those projected and no GEF guarantee funds are called.

(2) Sum of GEF TA contribution and GEF admin./mgmt.

(3) GEF guarantee funds times GEF Commercial losses (assumptions-sensitivity analysis)

(4) Total incremental costs divided by (CO2 savings in the Russia times achieved energy savings). The latter is outlined in the assumptions page.

(5) Achieved energy savings are 75 % of those projected and 25% of GEF guarantee funds are called.

(6) Achieved energy savings are 35 % of those projected and 100% of GEF guarantee funds are called.



## **Annex 4: Russian Financial Markets Analysis**

### **Economic Situation and Regulatory Environment**

Russia's economic recovery continues. The drastic ruble devaluation following the 1998 financial crisis combined with soaring world oil prices and internal political stability have fueled an impressive GDP growth: from a negative 4.9% in 1998 to 5.4% in 1999, 8.3% in 2000, 5% in 2001, and 4.3% in 2002. Furthermore, initial estimates show that the Russian economy grew by additional 6.8% at the end of 2003. Inflation continues to decrease and was at 15.8% in 2002, and 8% during the first half of 2003. The national currency has stabilized, and the Central Bank has built significant international reserves (over US\$60 billion). The current account surplus of the balance of payments was US\$44 billion in 2000, US\$34.6 billion in 2001, and US\$32.8 billion in 2002.

The economy continues to be inadequately diversified with most exports and investment occurring in the natural resource sectors, although there does seem to be a growing interest on the part of natural resource conglomerates to acquire and develop enterprises in consumer sectors. As such, the Russian economy is sensitive to oil price shocks, although the increasing foreign exchange reserves have decreased this price sensitivity, so that by most estimates, the government will continue to meet its obligations and maintain fiscal stability, so long as the price of oil does not go below US\$15 per barrel. Continued growth of the economy is predicated upon further improvements in the business environment in order to encourage both domestic and foreign investment (which is still hovering around only US\$1 billion per year), and the maintenance of a favorable exchange rate to enable Russian producers to compete.

- Economic growth forecast: 4% annually
- Inflation: progressive decrease from 16% in 2002 to 6% in 2007
- Exchange rate: gradual depreciation of the Ruble in contrast to US\$, from US\$1 = 32RR in 2002 to US\$1 = 38 RR in 2007
- Rate of ruble treasury bills: gradual decrease from 12.5% in 2002 to 8% in 2007

Moody's Investors Service upgraded Russia's sovereign debt rating by two notches to Baa3 (the lowest investment grade) in early October 2003. The upgrade was based on "a strengthening of the Russian government's commitment to prudent fiscal and debt management policies, significant improvements in debt and liquidity ratios, the creation of a "stabilization fund," and a reduction in sovereign risk" – all factors recognizing improvements in the government's financial policies and general economic environment.

### **RUSSIAN BANKING SECTOR**

There has been some recovery over the past years, and the financial situation of many of the banks which survived the crisis is improving. Bank lending more than doubled from the end of 2000 to the end of June 2003, reflecting increased financial intermediation. Many banks are now reporting positive net income, but overall profitability remains weak and over-reliant on earnings from fees and securities trading.

The Russian banking sector is at the same time over-concentrated and highly fragmented. Sberbank and several other state-owned banks (including indirect ownership and regionally-owned banks) dominate in several markets, particularly in private deposits, approximately

60% of which are held with Sberbank. Financial-industrial groups control a large number of banks, including some of the country's largest, and some of these effectively act as external treasury departments for the groups. The remainder of the sector is composed of a large number of very small banks, often regionally based and oriented, most of which have uncertain futures. Financial intermediation and financial markets in general are significantly and notably underdeveloped in the regions.

The industry's exciting prospects are drawing competitors. Russian private banks are investing and expanding their branch networks aggressively, and foreign banks are seriously starting to enter the market. Both sets are offering better services than Sberbank, drawing away corporates and the middle classes who typically are the more profitable clients. The range of banking products offered is slowly growing as Russian banks diversify away from their traditional corporate lending and search for new markets.

The regulatory environment continues to be weak, but the Government and the Central Bank have begun to make strides to reform and strengthen the supervision of the banking sector. Taking into consideration the latest developments in this area, the Russian banking sector going forward may evolve as follows:

- *Intense growth*: Russian banking sector must live through a fast expansion taking into account the market potential. In 2000, only 4% of the enterprise investments were financed by bank loans.
- *The process of consolidation*: small banks, for lack of the capital, will disappear.
- *A strong public sector*: Sberbank will probably remain under the control of government's authorities and will continue to play the key role in Russian banking sector.
- *The restructuring of Russian private banking sector*: financial-industrial groups will gradually disappear, leaving the place for a number of large "classic" private banks.
- *The reinforcement of foreign banks*: Taking into account their leading role in terms of trustworthiness, foreign banks must reinforce their positions to the detriment of Russian private banks.
- *The modernization of the sector*: the contribution in know-how of foreign banks will encourage the rapid modernization of Russian banking practices. Just as in Poland, the banks could make technological leaps forward and hit the highest point of progress in a few years.

## **Annex 5: Table of Candidate Financial Institutions**

IFC has been working with Russian FIs intensively for the past five years. At present, IFC has made equity investments or provided credit lines to twelve Russian FIs and is in discussion with several other FIs regarding IFC support. Through this process, IFC has identified a portfolio of FIs which are relatively stable financially, which embrace good credit practices, and which have capable and motivated management. In working with these FIs, IFC has sought to strengthen the long-term viability of these institutions, deepen their financial services capacity, and introduce greater levels of corporate governance and transparency.

From within IFC's pool of partner FIs, the EE Program development team has further identified those FIs capable – both financially and operationally—to successfully market new financial products which can support an EE lending business. The team has sought to identify an initial group of FIs able, in aggregate, to pursue a variety of market niches based upon their individual corporative advantage. Within this group, IFC also sought FIs with local presence in the two regions where the Program will focus initially.

The final selection of 3-5 FIs with which IFC will work during the initial stage of the Program will result from further discussions and negotiations during project appraisal.

The FIs identified below are the institutions with which IFC has been engaged to date during pre-appraisal. This does not represent a final or exclusive list of FIs which will ultimately participate in the Program.

- Probusinessbank (PBB). PBB is a medium sized Russian bank established in 1993 ranking among the top 30 Russian banks in terms of assets and in the top 15 in terms of equity. It has recently acquired another bank in Ekaterinburg, a Russian region with significant energy efficiency potential given its large industrial sector.
- Nizhegorodsky Bankirsky Dom (NBD). NBD is a regional bank based in Nizhny Novgorod and has an SME lending focus. A significant percentage of NBD clients take out loans for new equipment purchases and thus are likely to qualify for energy efficiency savings.
- Uraltransbank (UTB). UTB is a regional bank based in Ekaterinburg and has recently become an IFC client. The bank is very interested in pursuing environmental opportunities and already has a pipeline of EE deals. However, these deals tend to be high cost and long term, which is a challenge for UTB.
- Raiffeisen Leasing. Raiffeisen Leasing has been active in Russia for almost 3 years and focuses on equipment leasing for industrial and construction sectors. Many clients of Raiffeisen Leasing in Russia are also clients of Raiffeisen Bank, one of IFC's partners in HEECP.
- KMB KMB-Bank (Bank for Small Business Lending) was founded by the EBRD and several outside investors. The Bank focuses on lending to very small businesses, many of which are sole entrepreneurs. It has offices and branches in approximately 15 regions. It also has a wholly-owned leasing subsidiary

- Delta Leasing have 27 offices in Russia and are currently working with 31 different industries. Delta predominantly leases equipment for process upgrades. Their average project size is \$100,000. They focus 100% on SMEs.

## Annex 6: Comparison of Financing Conditions for Energy Efficiency Projects in Hungary and Russia

Comparison of Financing Conditions for EE projects in Hungary and Russia		
Hungary	Russia	Comments
Financial sector		
There is enough capital liquidity in the market.	There is low capital liquidity in the market.	Additional liquidity must be provided through IFC credit lines in the short term. Continued development of the financial markets will enhance Russian FIs' access to capital.
The banking system has easy access to foreign long-term funds, because most of the banks have been acquired by or merged with foreign banks.	The Russian banking system is still considered unstable and thus long-term money is difficult to obtain and its cost is high.	Foreign owned banks such as RZB are taking a greater interest in Russia. IFC has recently made significant investments in the Russian financial markets and will continue to do so.
Lending in national currency is more common than lending in foreign currencies. There are no perceived currency risks.	Lending is made both in national currency and foreign currency. For long term projects foreign currency is mainly used.	IFC is planning to start lending to FIs in Roubles in the near future.
The minimum long term lending term is 3 years. Normal lending terms range from 5 to 7 years.	Lending over 1 year is difficult. The long-term credit of 3 years is a maximum for SMEs. Terms of 5 years are becoming more common	Additional liquidity must be provided with terms of 3-5 years. This can be addressed through IFC credit lines.
Banking sector gained experience in EE financing as a result of involvement in the German Coal Aid program and EU Phare EE Fund. ESCO lending started in 1995.	The banking sector has very limited experience in EE financing.	Any proposed program must have additional capacity building for financial institutions to address this gap in experience.
The leasing sector has been active for 13 years. In 1997 leasing companies already applied leasing schemes for EE projects.	Leasing is in a stage of development. However it is gaining popularity as a financing mechanism for purchase of equipment. Additional tax advantages introduced in 2002 make leasing more attractive compared to Hungary.	Many of the immediate energy saving opportunities will be for low and medium cost investments in 'horizontal technologies' which lend themselves to lease financing.
In the mid 1990s the Interest Rates (IR) were about 20-24%, decreasing to 8-10% in the year 2003. State subsidies and other donor multilateral programs for reducing interest rates on EE lending were introduced in early 1990s and are functioning up to the current day.	The Irs range from 5%-20% for USD denominated loans and 9%-35% for Rouble loans. The State is claiming to support EE projects, however with limited financing. Promotion schemes are announced as possible mechanisms by regional authorities but are limited in practice.	The trend for interest rates is that they are decreasing. Presence of high interest rates will significantly impact dealflow. Continued development of the Russian banking sector and continued stabilization of the economy will continue to drive down interest rates.
Project and corporate financing is widely used	Mostly corporate financing is available	More project financing is being undertaken.

Macro Economic Factors		
Inflation decreased from double digits in mid-1990s (25%) to single digits in 2002 (4-5%).	Double-digit inflation, 15% in 2002.	The country is returning to stability with strong economic growth. However, macro-economic factors are outside the control of the proposed program.
Hungary's GDP has a relatively low energy intensity and is decreasing.	GDP in Russia is heavily energy intensive.	This will provide a wider range of investment opportunities in industry.
Municipalities and government organizations are perceived to be strong, creditworthy and reliable. They provide a lower credit risk and thus higher bankability than the private sector. Political risks exist but are considered to be manageable.	Most of the regional governments and municipalities do not have credit worthiness. Political risks are relatively high.	Where GEF money is used for Guarantees it is always on the basis that risk is being shared equally with the financial institution. IFC is currently working with 15 Russian banks, with loans totalling up to \$450 million. In the near future loans will be made available in Roubles.
<b>Energy Sector</b>		
<p>The energy sector in Hungary looks as follows:</p> <ol style="list-style-type: none"> <li>1. Hungary is an energy importer with stable gas and oil supplies.</li> <li>2. Unstable electricity supplies and the need for investments forced the government towards price increases and early privatization and liberalization of the electricity sector.</li> <li>3. Heat prices are liberalized.</li> <li>4. There has been an economic need that created political will to implement energy reforms</li> <li>5. Energy prices are now close to the Western European levels.</li> <li>6. Rational Pricing policies including cost of energy carriers, generation, distribution and margin and inflation indexation.</li> </ol>	<p>Russia has one of the largest energy sectors in the world and has the following characteristics:</p> <ol style="list-style-type: none"> <li>1. Russia has large fuel reserves and a big potential for energy production and exports. Russia is an exporter of oil, gas and electricity.</li> <li>2. The Russian electricity market is regulated by the government and is not liberalized.</li> <li>3. The Russian pricing mechanism is not economically rational. The pricing mechanism does not allow profitability of the energy generators. Cross-subsidization is rife. Prices are strongly dependent on the regional politics.</li> <li>4. A lack of investments in the energy sector is a reason for price increases and liberalization.</li> <li>5. Political will for EE is not supported by adequate and sufficient government financing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Trends for energy prices show sustained tariff increases.</li> <li>2. Legislation is already before the Duma to reform tariffs.</li> <li>3. There is pressure for reform from the WTO.</li> <li>4. Gas utilities are eager to reduce domestic consumption to provide increased volume for export.</li> </ol>
Government support for the EE funding, subsidies, grants. Current support to the CHP energy production.	The government supports EE strongly in their national energy policy paper for 2020, but doesn't have sufficient financing tools to implement the policy.	Development of private sector financing options relieves the pressure on Government budgets allowing them to better allocate resources for EE.
EU accession requires improvements in EE standards.	WTO negotiations are creating pressure for energy sector reform	

ESCO sector		
<p>Main factors supporting the establishment of ESCO activities in Hungary are:</p> <ol style="list-style-type: none"> <li>1. Increase of prices.</li> <li>2. Availability of financing.</li> <li>3. Industry liberalization.</li> <li>4. Government incentives.</li> <li>5. International aid programs.</li> </ol>	<p>The ESCO sector in Russia is in its early development stage. The following factors may support the ESCO development in Russia:</p> <ol style="list-style-type: none"> <li>1. Increasing energy prices.</li> <li>2. High energy bills in the industrial sector.</li> </ol>	<p>The definition of an ESCO to be used in the proposed project is “any company that can be a source of an energy efficiency transaction”. Under this definition equipment manufacturers, maintenance companies, plumbers, electricians etc are all potential ESCOS. The development of EE investment projects does not depend upon developers adopting the performance contracting model.</p>
<p>ESCO’s play an important role in improved communication within companies between energy staff and management and between end users and banks.</p>	<p>In Russia there are energy auditing and engineering companies that do not function as an arranger and possible buffer for the financing but only act as technical experts.</p>	<p>IFC has identified an initial list of 38 Russian EE equipment vendors, 11 international EE equipment vendors with operations in Russia and 60 energy efficiency organizations in Russia. All are potential sources of deals.</p>

## Annex 7: Lessons learnt from HEECP

### Overview of the Hungary Energy Efficiency Co-Financing Program (HEECP)

HEECP is an innovative, sustainable, highly leveraged, replicable and efficient program implemented by IFC in Hungary. HEECP is *innovative*, because the Program complements and catalyzes private sector activity by combining non-grant financing and targeted, limited grants; It is *sustainable*, because it creates self-sustaining market expansion that continues after GEF funding ends; The sustainability of HEECP is not linked to sustaining the guarantee services themselves, as they are just a means to an end and should become obsolete by design. HEECP is also *highly leveraged*, because the program catalyses up to 15x GEF funding in commercial financing; It is *replicable*, because the design can be – and already is – replicated elsewhere in similar market conditions and finally, it is *efficient*, because it encourages private sector to use latest technologies and management techniques.

The Program's Development Objective is to expand availability of commercial financing for energy efficiency (EE) projects in Hungary and through this to build a sustainable lending market for EE investments. These EE investments generate (i) *economic benefits* through decreased operating costs for companies and hence increased international competitiveness for Hungary and (ii) *environmental benefits* through decreased global (greenhouse gas) and local emissions from avoided power generation.

In mid-1990s in Hungary, local financial intermediaries (FIs) were not lending for much-needed EE improvements. Two *key barriers* were identified: (i) *perception of high credit risk by FIs*, because FIs had little experience with EE project finance or SMEs and (ii) *poor capacity to prepare projects* because of high preparation costs and weak preparation capacity by sponsors and ESCOs.

To break down the barriers HEECP uses *two main tools*: (i) *risk management tool* to share the risk by providing guarantees for loans from domestic FIs such as leasing companies and banks and (ii) *capacity building tool* through providing technical assistance (TA) support to FIs, ESCOs and SMEs using targeted, limited grants from GEF sources to help FIs and ESCOs to prepare projects and market services.

Pilot Phase Operations (97-01): The first guarantee by the Program for an EE project was completed in February 1998. Two other EE projects IFC completed by the end of 1998. During 1999 another three projects were implemented, including the Retail Gas Program, an innovative program to support financing of efficient gas heating systems for the residential sector undertaken by a gas utility. The retail gas program is based on an initial loss reserve account of US\$150,000, with an additional US\$100,000 reserve available for a second portfolio. The first portfolio has closed successfully. A second one, added during the summer of 2001, is nearly fully subscribed. In 2000 one large hospital co-generation project was completed and implemented and in 2001 21 efficient streetlighting retrofit projects were financed and completed.

HEECP2 (2001- ongoing): The original Program has reached its scheduled conclusion. After a fairly long lead time to establish a pipeline of deals under the guarantee facility, the project began generating substantial dealflow. The GEF CEO endorsed in November 2001 an additional MSP of \$700,000 to leverage an expanded \$ 1.1 million Technical Assistance and program administration effort for HEECP2. This new GEF funding supports program operations and



technical assistance under an expanded guarantee facility, representing: 1) extension of the existing \$4.25 million in GEF guarantee funds provided under HEECP2, and 2) addition of an IFC-provided US\$12 million in guarantee funds provided on a commercial basis to an expanded pool of participating Hungarian commercial banks. The resulting US\$16.25 million guarantee facility can leverage up to US\$91 million in commercial project finance.

The overall market transformation impacts of HEECP are contributing to the commercialization of EE finance and the growth of a local ESCO industry. The HEECP guarantee program has worked effectively at a pilot scale as intended to support and mobilize EE financing by commercial FIs. By addressing credit risk barriers, it enabled EE projects to be funded and implemented that otherwise would not be. In addition, due to the success of the pilot, HEECP has leveraged additional IFC investment to create HEECP2, as well as providing a model for potential replication in other GEF eligible countries with IFC rolling out the Commercializing Energy Efficiency Program (CEEF) in Czech Republic, Estonia, Latvia, Lithuania and Slovakia in March 2003. IFC is also evaluating additional markets in the Middle East, Asia and South America for similar program co-financing arrangements with the GEF.

**Project Goal, Objectives:**

The primary goals of HEECP are to build a sustainable commercial lending market for energy efficiency investments in Hungary. Specifically, HEECP intends to: (i) address lenders' inattention to energy efficiency (EE) lending opportunities and reduce their discomfort with lending for EE projects and lending to non-traditional clients (those other than "blue chip" corporate borrowers) on a project finance basis; (ii) assist capable FIs in developing specialized EE finance products which support their business strategies and assist the FIs in developing capacity to market and support these products (iii) provide targeted technical assistance to project developer to prepare bankable EE projects for investment; (iii) broker partnerships between FIs and project developers and assist in structuring multi-project facilities and marketing partnerships to stimulate EE deal flow (iv) assist multiple FIs in building sustainable businesses in various niche areas of EE finance.

With the extension of the original HEECP GEF funding availability by an additional five years, the expanded HEECP program is expected to generate up to US\$91 million in commercial bank financing of energy efficiency investments. There are several preliminary indications that HEECP is well on the way to realizing the goals of the program:

- There has been substantial uptake of the guarantee product by Hungarian financial institutions; institutions representing over 95% of the lending volume in the market have entered into guarantee facility agreements with IFC, and an additional two FIs (players in important EE niche markets) have requested guarantee allocations.
- Existing guarantee facility agreements signed, plus requests under consideration by IFC will fully commit the \$16.25 million in guarantee resources.
- FIs at the four participating FIs have established substantial pipelines (and portfolios) for EE project lending, yet they are no longer seeking guarantees for "medium-sized" projects (\$100K-\$500K loans) – instead opting to lend for these projects without incurring the guarantee fees. The market demand for IFC guarantees has moved instead into new lending areas where the FIs don't have experience (portfolio-type lending

- products for smaller transactions, larger transactions (> \$1million, typically), and blockhouse housing projects.
- Greatly accelerated dealflow has required IFC to establish streamlined credit approval processes with increased delegated authority to the HEECP field staff.
  - The HEECP field team has developed substantially enhanced capability to manage TA, process transactions, and provide high quality deal structuring support to FIs and complete complicated credit analyses consistent with IFC credit practices.
  - The HEECP TA program has developed a number of sophisticated tools which have stimulated development of a substantial level of capacity among participating FIs, and has led to successful replication of the program in the 5 countries where the IFC/GEF Commercializing Energy Efficiency Finance (CEEF) program is now operational.

**Achievements: Guarantee program:**

There are now four distinct financing products actively marketed in the Hungarian market by participating banks under the HEECP program:

1. cogeneration and industrial efficiency projects.
2. block house district heating upgrade programs – a groundbreaking commercial product enabling commercial lending from private sector sources to upgrade the problematic infrastructure of Soviet era block house cooperative housing which exists throughout Central and Eastern Europe. The HEECP block house program provides a compelling model to potentially address this problem throughout the region.
3. municipal streetlighting – with commercial lending to ESCOs and lighting contractors; revenues from the municipal clients assigned to the lending institutions as collateral. Again, this product provides a replicable model for private sector financing of long-neglected public facilities.
4. municipal heating projects – refurbishment of district heating networks and boilerhouses

There have been no actual defaults on the individual transactions for which HEECP has provided guarantees. An amount disbursed from the guarantee fees has gone into a loss-reserve at one bank to support a portfolio (totaling over \$1.5 million) of small “retail” consumer loans for residential EE investments. This up-front payment into a loss-reserve fund could be returned to HEECP in part (or whole) depending upon the eventual performance of the portfolio

**Achievements: Technical assistance (TA) program:**

In the pilot phase the HEECP TA program supported development of roughly 80 projects by providing small grants to 20 ESCOs and energy efficiency project development companies to perform: (i) marketing and administration of EE financing services by participating FIs; (ii) EE project identification, project development and preliminary technical assessments; (iii) general EE market promotion activities and (iv) Program monitoring and evaluation activities. The TA effort supports the development of bankable block house projects, an important model with replication potential across the region. The TA Program has provided technical support for the establishment of an energy service company (ESCO) by one participant FI and is supporting development of other Hungarian ESCOs in partnership with external partners – including the IFC/GEF ELI Hungary program -- and local Hungarian banks. In addition, the TA support enables

HEECP to verify GHG reductions and energy efficiency benefits from the investments supported under the program in support of the monitoring and evaluation program.

HEECP has undertaken EE finance promotion programs and established contacts with most major players in the EE market in Hungary. The availability of technical assistance funding to support development of EE projects for financing has proven to be a valuable tool to influence financing patterns of commercial banks and to establish substantial dealflow for the guarantee facility.

## **Conclusions**

HEECP created appetite for EE lending among FIs by introducing EE business as a new potential market. Competition for new business makes EE attractive to FIs. Between 1999 and 2001 competition between FIs has increased significantly, interest rates went down, blue-chip corporations were already captured by banks. The acquisition costs started to be very high comparing to the decreasing margins on blue-chip companies. The result was that FIs saw stronger opportunities in SME and EE lending.

Through creating competition among FIs in the EE lending sector HEECP encourages FIs to make strong effort to finance EE projects. IFC achieves this through making available our product through multiple banks in Hungary. How IFC does it: (i) engaging the most important market players from the very beginning. IFC currently has agreements signed with banks representing more than 90% of the banking sector in Hungary and they are the EE market drivers among domestic FIs; (ii) marketing the EE business opportunities for less experienced FIs; (iii) encouraging ESCOs and project developers to bring their bank contacts to us. We can easily reallocate funds from existing partners if they don't use a portion of their facility.

HEECP helps FIs enter new markets and then build capacity to develop the market themselves. The guarantees IFC offers are a tool for realizing this objective; however, issuing guarantees is not, in itself, the program goal. HEECP has a key role in introducing new market potentials for FIs, providing TA and guarantee tools to help them to enter new markets and IFC also have a role to transfer knowledge and build capacity within the bank in order to help them to continue financing similar projects in the future without HEECP. When the FI partner is ready to finance EE projects without IFC's support in one particular market segment, IFC has a role to find new market segments and provide support. With one bank the new area was to finance block houses (see details below).

Through developing special and innovative financial products HEECP helps to improve the level of EE finance in Hungary. In the late 1990s when HEECP has started its operations IFC realized that banks provide poor service for EE projects; they required over 150% collateral; financed EE projects relying on the ESCO's balance sheet not on the project cash-flows; required 25-30% down payment from the project developer; were reluctant to provide 7-year term financing; within the bank nobody understood the technical part of EE projects; FIs were not calculating with energy cost savings as revenue for the project etc. These created barriers to EE finance. For example, the potentially huge (and socially important) multi-unit residential blockhouse market was completely untouched by commercial bank lending. HEECP played a key role in educating banks through developing innovative EE finance products and structures. A variety of these special EE financial products are now available in the market by a range of FIs, each with a different market niche.

The impact of these special products include:

- FIs require lower level of collateral behind the projects versus Program start, and IFC also have cases where with the help of HEECP the FI restructured the collateral structure and requires only 20-50% collateral from the borrower directly.
- FIs have started to finance projects relying on cash-flow base, and IFC also have cases where FI calculates energy cost savings as revenue to serve debt service
- FIs require less down payment, went down to 15%, in some cases 0%.
- At least one bank staff is focused on the EE business in each participating bank, and there are cases where fully educated engineer sits in the bank's EE finance unit, and where the bank has invested equity in ESCO operations.
- The banks' culture has been changed and now banks are hunting for EE projects and are very much open to innovative approaches and products. Competition among FIs has developed in the market for EE project financing and ESCO clients are able to bring a pipeline of transactions.
- A major pipeline of blockhouse renovation projects has developed in the market, only a portion of which will require IFC's guarantee.
- Specialized portfolio-based credit lines have been developed for individual ESCOs, which has enabled rapid development of the participating ESCO businesses.
- Small homeowner loans for EE have become a viable and profitable business for FIs.
- As FIs become comfortable with a class of transactions, they move forward with the business without need for guarantees; If competition in the banking sector remains substantial (as in Hungary) the FIs continue then to move into new frontier sectors for which require HEECP risk management support.

#### **Examples of the Program's impact on specific FIs:**

Some examples where HEECP played a key role to introduce an innovative solution to the Hungary market:

Bank A and the Blockhouse Product: "Bank A" has been one of our key partners since 1997. They started to finance EE projects through domestic medium-size ESCOs and IFC provided the guarantee and TA to help them. By now, Bank A finances EE projects in the amount of US\$8-10 million/year without guarantee and TA support using the experience they gained from the early times when IFC provided the support for them.

HEECP jointly with Bank A has developed a very innovative EE finance product for the underdeveloped and underserved block house market. This product has significant social and developmental impact through mobilizing private sector capital into the blockhouse sector to enable much-needed modernizations. HEECP has a key role in demonstrating the commercial viability of this market.

Bank A will lend yearly US\$1.5 million for blockhouses for heating system reconstruction and related EE investments in its current pipeline. This is the first blockhouse EE finance product in Hungary where the lending is based on 100% debt financing and mainly relying on the cash flow from the blockhouse. IFC will provide an average 35% guarantee on the portfolio: (i) up to the first 7.5% default rate IFC and Bank A takes 50-50% of the risks (ii) on the second 7.5% of default (but max. up to 15% default) IFC takes 20% and Bank A takes 80% and (iii) above 15% default rate Bank A takes 100% of risk.

The leveraging effect is very important from IFC and GEF point of view, with maximum US\$52,500 exposure IFC supports an US\$ 1 million loan portfolio. IFC/HEECP's role is well reflected in the above mentioned risk sharing structure, because IFC offers higher level of support at the start up and decreases the guarantee % later.

Bank A Gas Retail Portfolio: This product helped 1500 home owners to buy efficient gas boiler to replace inefficient coal fired boiler. The retail guarantee is implemented by joint HEECP/FI funding of a loss reserve fund which is available to be drawn on by the FI to cover losses up to the amount of the reserve. The probability of losses is higher with this type of guarantee but it allows IFC to gain greater leverage of HEECP funds. With US\$150,000 commitment IFC supported a US\$1.5 million lease portfolio. This portfolio guarantee product is fully streamlined which enable IFC and FI to handle multiple very small transactions. Average size of the transactions was US\$ 1000.

Bank B and a local ESCO: Under this facility Bank B is providing a US\$ 8 million credit facility for an ESCO to implement multiple small EE projects for small and medium-size municipalities. HEECP has a key role in developing a viable guarantee facility to enable small and medium-size municipalities to implement EE investments. These municipalities would not have access to EE finance product without HEECP. Over 130 projects are in the pipeline and approx. 80% of these projects are from small and medium-sized municipalities.

These products are examples of important innovations which enable IFC and other replicating institutions to draw on this model for streamlining credit facility and guarantee facility operations to do multiple small transactions. It is an essential innovation for mobilizing large capital flows for small EE projects successfully and efficiently. These credit facilities enable streamlined and efficient development of a pipeline and also help to increase the ability to raise equity for a single ESCO.

### **The Program's impact on the ESCO market:**

HEECP has an impact on increasing the ability of domestic ESCOs to raise equity: through providing the guarantee HEECP helps ESCOs to implement more projects, more than what they are capable to implement without the guarantee. On a medium term medium size ESCOs became financially stronger and started to seek for equity. HEECP is focusing on identifying domestic medium size ESCOs to help them to raise equity. We supported 3 ESCOs with financial advisory work to prepare investment memorandum and introducing them potential investors.

HEECP helps very small project developers to have access to financing: through developing special project structures HEECP helped two very small ESCOs to implement EE streetlighting projects. One worked with Bank B to implement approx. 42 projects, of which 16 were supported with HEECP guarantee and a second with Bank A implemented 5 projects with HEECP guarantee. The companies were not creditworthy based on their financials, but the projects were structured relying upon the end-user municipality's creditworthiness.

HEECP helps ESCOs to negotiate financing terms with FIs, to achieve better conditions for EE projects: HEECP's role is to encourage FIs to use more innovative financial techniques and mechanisms for EE projects and also to take into consideration the specialties of this market in conducting their own due diligence. HEECP helped ESCOs to convince FIs to ask less collateral versus previous practice, increase the loan term from 5 to 7 years if the project cash flow requires it, etc. For example one FI asked 100% corporate guarantee from the ESCO for an EE project but HEECP helped the ESCO to negotiate down to 20% and involve other collateral in the project structure.

HEECP has brokered key specialized multi-project finance facilities with ESCOs to enable the ESCO to lower the transaction costs of raising capital to finance a pipeline of projects. HEECP has also adapted (and expanded its exposure) to enable extraordinary transactions involving outsourcing energy services for a large industry by an ESCO which otherwise would not have been able to access adequate debt to complete the transaction.

## CO2 Reductions from HEECP Portfolio

Project	Transaction Size (HUF - US\$)	Guarantee %	Liab Lim	Energy savings	CO <sub>2</sub> (kg/year)	CO (kg/year)	NOx (kg/year)	Useful Life	Efficiency (kg/\$)
1 Solvent - Kipszer	32,410,540 Ft \$115,340	50.0%	\$57,670	34.50%	450,000.0	-	327.2	10	78.0302
2 Pálháza Municipality	3,981,600 Ft \$14,225	35.0%	\$4,979	63.80%	69,509.7	42.4	129.7	5	69.8064
3 Semmelweis Medical – Kipcalor	145,661,689 Ft \$518,369	50.0%	\$259,185	36.10%	1,459,000.0	-	722.0	12	67.5503
4 Malyi Municipality	5,744,000 Ft \$19,784	50.0%	\$9,892	38.50%	114,162.3	69.7	213.0	5	57.7044
5 MÁV Győr - Kipszer	232,078,462 Ft \$825,902	50.0%	\$412,951	50.30%	2,307,000.0	2,006.0	2,500.0	10	55.8662
6 Gyöngyöshalász Municipality	2,600,000 Ft \$8,797	50.0%	\$4,399	57.60%	34,315.2	20.9	64.0	5	39.0079
7 Sarud Municipality	3,984,000 Ft \$13,639	50.0%	\$6,820	38.43%	50,900.6	31.1	95.0	5	37.3199
8 Tokodaltáró Municipality	6,100,000 Ft \$20,333	50.0%	\$10,167	56.60%	65,955.4	40.3	123.1	5	32.4376
9 Nyergesújfalu Municipality	21,569,400 Ft \$78,208	50.0%	\$39,104	56.81%	232,288.3	141.8	433.4	5	29.7014
10 Kesztlőc Municipality	7,050,000 Ft \$23,500	50.0%	\$11,750	57.60%	68,546.7	41.8	127.9	5	29.1688
11 Gyöngyöstarján Municipality	2,280,000 Ft \$7,714	50.0%	\$3,857	18.40%	20,218.8	12.3	37.7	5	26.2105
12 Bükkzsérc Municipality	4,115,200 Ft \$14,165	50.0%	\$7,083	48.90%	36,455.3	22.3	68.0	5	25.7362
13 Békés - Slant-Fin	19,230,235 Ft \$68,435	50.0%	\$34,218	32.60%	87,000.0	38.1	68.0	10	25.4256
14 Tokod Municipality	11,350,000 Ft \$37,833	50.0%	\$18,917	58.50%	93,306.1	57.0	174.1	5	24.6626
15 Cserépfalu Municipality	3,392,000 Ft \$11,471	50.0%	\$5,736	45.00%	28,025.3	17.1	52.3	5	24.4315
16 Bag Municipality	10,600,000 Ft \$36,552	50.0%	\$18,276	57.00%	87,881.6	53.6	164.0	5	24.0429
17 Piliscsév Municipality	8,073,000 Ft \$28,730	50.0%	\$14,365	64.24%	64,375.4	39.4	120.4	5	22.4074
18 Onga Municipality	2,160,000 Ft \$7,224	50.0%	\$3,612	43.80%	14,980.3	9.1	28.0	5	20.7369
19 Hollóháza Municipality	4,811,120 Ft \$17,048	50.0%	\$8,524	50.00%	34,882.8	21.3	65.1	5	20.4615
20 Alsótelkes Municipality	584,000 Ft \$1,948	50.0%	\$974	53.30%	3,721.8	2.3	6.9	5	19.1059
21 Vértesszőlős Municipality	6,166,844 Ft \$21,862	50.0%	\$10,931	29.00%	41,580.9	25.4	77.6	5	19.0197
22 Úny Municipality	2,800,000 Ft \$9,655	50.0%	\$4,828	45.70%	17,669.4	10.8	33.0	5	18.3007
23 Jászákóhalma Municipality	7,184,000 Ft \$25,708	35.0%	\$8,998	41.90%	32,333.3	19.7	60.3	5	17.9674
24 Hematology Institute – Kipszer	32,513,667 Ft \$115,707	50.0%	\$57,854	25.00%	97,300.0	274.0	187.0	10	16.8183
25 Hernádlak Municipality	3,614,400 Ft \$12,663	50.0%	\$6,332	41.80%	20,767.8	12.7	38.7	5	16.4004
26 Sárísáp Municipality	9,890,000 Ft \$37,321	50.0%	\$18,661	53.52%	60,619.2	37.0	113.1	5	16.2427
27 Karancseszi Municipality	8,035,200 Ft \$29,067	50.0%	\$14,534	35.80%	44,350.2	27.1	82.7	5	15.2579
28 Adács Municipality	8,464,000 Ft \$28,948	50.0%	\$14,474	32.40%	36,101.7	22.0	67.4	5	12.4712
29 Tibolddaróc Municipality	4,888,000 Ft \$16,904	50.0%	\$8,452	33.00%	15,887.5	9.7	29.6	5	9.3987
30 Tornaszentjakab Municipality	1,200,000 Ft \$4,176	50.0%	\$2,088	16.60%	2,037.7	1.2	3.8	5	4.8795
31 Dunaharaszti Municipality	3,586,000 Ft \$11,961	50.0%	\$5,981	20.00%	3,907.9	2.4	7.3	5	3.2672
32 DBK Tokodaltaro Boiler	100,000,000 Ft \$400,000	35.0%	\$140,000	25.00%	682,121.0	-	506,000.0	10	48.7229
<b>AVERAGE</b>	<b>17,826,740 Ft 64,526</b>	<b>47.0%</b>	<b>\$30,201</b>	<b>41.42%</b>	<b>153,693.8</b>	<b>103.6</b>	<b>15,984.3</b>	<b>5.9</b>	<b>29.9780</b>

**Annex 8: List of EE Equipment Suppliers**

**List of Russian vendors**



№	City	Company	Contact person	Contact information	Services and equipment
1	Perm	ZAO "Perm motors"	97	614016 Kuybisheva str., 47 Tel.: +7-3422-49-60-51 Fax: +7-3422-34-93-43	Production, development testing and turnkey installation of gas-turbine electric power stations.
2	St. Petersburg area	"Leningrad Metal Works"	Kadikova Irina Vasilyevna	195009, Sverdlovskaya naberezhnaya, 18 Tel.: +7-812-326-7469 Fax: +7-812-326-7000 E-mail: <a href="mailto:lmz@lmz.ru">lmz@lmz.ru</a>  URL: <a href="http://www.lmz.frinet.org">http://www.lmz.frinet.org</a>	One of the biggest Russian manufacturers of power turbines for heat, hydro and nuclear power stations.
3	St. Petersburg	AO "Electrosila"		196006, Moskovsky pr. 139 Tel.: +7-812-298-94-78 Fax: +7-812-294-12-92	Development, production and supply of electrotechnical equipment: <input type="checkbox"/> Electric generators; <input type="checkbox"/> Steam, gas and water turbines; <input type="checkbox"/> DC and AC electrical machines.
4	St. Petersburg	Turbine Blades Plant (ZTL)	Alexander P. Balashov, director general  Tel.: +7-812-567-57-58 Fax: +7-812-568-06-03	193019, Sedov str., 11  Tel: +7-812-567-46-52 Fax: +7-812-567-57-29 e-mail: <a href="mailto:market@ztl.ru">market@ztl.ru</a> <a href="http://www.ztl.ru">http://www.ztl.ru</a>	<input type="checkbox"/> Completely machined blades for steam and gas turbines; <input type="checkbox"/> Hot-forged and cast blanks of blades for steam and gas turbines; <input type="checkbox"/> Cast parts for gas turbine combustion chambers; <input type="checkbox"/> Forged and cast parts for general machine building purposes
5	Kaluga	OAO "Kaluga Turbine Plant"		248010, Moskovskaya str., 241,  Tel.: +7-0842-56-30-56 Fax: +7-0842-56-22-90  <a href="mailto:ktz_market@kaluga.ru">ktz_market@kaluga.ru</a>  <a href="http://www.ktz.kaluga.ru/">http://www.ktz.kaluga.ru/</a>	<input type="checkbox"/> Steam turbines and turbo generators; <input type="checkbox"/> Heat exchangers; <input type="checkbox"/> Environmental equipment; <input type="checkbox"/> General industrial products; <input type="checkbox"/> Equipment for oil and gas industries.
6	Ekaterinburg	OAO "Uralmash"		620012, Ploschad' pervoy pyatiletki.  Tel.: +7-3432-696010 Fax: +7-3432-696053	Among other equipment, the plant produces disks and rotors for the power turbines.
7	St. Petersburg	OAO "Izhora Plants"	Sergeev Evgeny Dmitrievich, director general	196651, Kolpino-1, Prospekt Lenina, 1  Tel.: +7-812-481-8102 Fax: +7-812-463-9269 E-mail: <a href="mailto:office@main.izhora.spb.ru">office@main.izhora.spb.ru</a>  <a href="http://www.izhora.ru">http://www.izhora.ru</a>	<input type="checkbox"/> Equipment for NPPs; <input type="checkbox"/> Pipeline installations.
8	Nizhny Novgorod	OAO "Krasnoye Sormovo"	N.S. Zharkov, General Director: +7-8312-730641  Mr I.M. Muchnik, Business Director: +7-8312-730995	603950, Barrikad str., 1  Fax: +7-8312-231940  E-mail: <a href="mailto:info@krsormovo.nnov.ru">info@krsormovo.nnov.ru</a>	<input type="checkbox"/> Oil & gas equipment for shore-based drilling rigs and marine drilling platforms; <input type="checkbox"/> Gas-fired heaters; <input type="checkbox"/> Hot-water boilers; <input type="checkbox"/> Pipeline fittings.
9	Chelkovo in	"Chelkovoenergo"			Pipeline installations

**List with foreign vendors**

<b>№</b>	<b>Country</b>	<b>Company</b>	<b>Contact person</b>	<b>Contact information</b>	<b>Services and equipment</b>
1	USA	Caterpillar		Peoria, Illinois Tel.: (309) 675-1000 Fax: (309) 578-2559 Rep. office in Moscow: 103006, Krasno proletarskaya str., 2/4. Tel.: +7-095-7556811 Fax: +7-095-785-5686	Development, design and production of: <input type="checkbox"/> Diesel and gas engines; Gas turbines (Solar turbines).
2	Austria	VADO Engineering	Adolph Vinter, director general	Rep. office in Moscow:  Krasnaya Presnya str., 28.  Tel.: +7-095-3639505 Fax: +7-095-3639509	Design, supply and turnkey installation of: <input type="checkbox"/> In-house power stations based on gas turbines (Turbomach); <input type="checkbox"/> In-house CHP based on gas engines (Jenbacher).
3	Switzerland	ABB		Affolternstr. 44 P.O. Box 8131 CH-8050 Zurich Switzerland Tel.: +41 43 317 7111 Fax: +41 43 317 7958 <a href="http://www.abb.com">http://www.abb.com</a>  Rep. office in Moscow: 117859, Profsoyuznaya str, 23 Tel.: +7-095-960200 Fax: +7-095-9602201 <a href="http://www.abb.com/ru">http://www.abb.com/ru</a>	<input type="checkbox"/> High voltage equipment; <input type="checkbox"/> Medium voltage equipment; <input type="checkbox"/> Low voltage equipment; <input type="checkbox"/> HVAC equipment; <input type="checkbox"/> Lighting systems; <input type="checkbox"/> Motors and drives; <input type="checkbox"/> Instrumentation; <input type="checkbox"/> Oil and gas equipment; <input type="checkbox"/> Robotics; <input type="checkbox"/> Energy efficient heat exchangers; <input type="checkbox"/> Transformers; <input type="checkbox"/> Valves and actuators.
4	Germany	GoGas Goch GmbH & Co		Zum Ihnedieck 18 D-44265 Dortmund Tel.: +49-231-46505 0 Fax: +49-231-46505 88  Rep. office in Russia: 600009, Vladimir, Usti-na-Labe str., 37 Tel.: +7-0922-231312 Fax: +7-0922-231312	<input type="checkbox"/> Infrared radiators for heating purposes; <input type="checkbox"/> Open-fired equipment for drying.
5	Germany	Siemens (Power Generation, PG)		Wittelsbacherplatz 2 D-80333 Munich  +49 89 636-00 (Central Office) +49 89 636 33032 (Press Office)	<input type="checkbox"/> Combined Cycle Plants; <input type="checkbox"/> Fossils power generation (fossil-fueled power plants, steam and gas turbine generators, catalytic converters), thermal waste recycling

				<p>+49 89 636 32474 (Investor Relations)</p> <p>Rep. office in Russia: 113093, Moskau, Ul. Dubininskaja, 98A</p> <p>Tel.: +7-095-7371000 Fax: +7-095-7371001</p>	<p>plants;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hydroelectric power plants and generators;</li> <li><input type="checkbox"/> Industrial power plants and turbines;</li> <li><input type="checkbox"/> I&amp;C equipment and systems;</li> <li><input type="checkbox"/> Fuel cells, electrical equipment for wind power plants;</li> <li><input type="checkbox"/> Repowering and rehabilitation of existing plants.</li> </ul>
6	France	Alstom (Power Generation)	<p>Robert Mahler, Country President France</p>	<p>Paris, 7511625, avenue Klüber</p> <p>Tel.: 01 47 55 26 87 Fax: 01 47 55 34 97</p> <p>Rep. office in Russia: 17335, 91 Vavilova Street, Build. 2</p> <p>Tel.: +7-095-2312949 Fax: +7-095-2312945</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Boilers;</li> <li><input type="checkbox"/> Generators;</li> <li><input type="checkbox"/> Gas, steam and hydro turbines;</li> <li><input type="checkbox"/> Turnkey gas, steam and hydro power plants;</li> <li><input type="checkbox"/> Pre-insulated pipes;</li> <li><input type="checkbox"/> Pumps;</li> <li><input type="checkbox"/> Energy efficient heat exchangers;</li> <li><input type="checkbox"/> Control systems;</li> <li><input type="checkbox"/> Energy recovery systems.</li> </ul>
7	USA	General electric (GE Lighting)		<p>Rep. office in Russia: 113054, Moscow, Kosmodamianskaya naberezhnaya, 52/1</p> <p>Tel.: +7-095-935-7211, 935-7232. Fax: +7-095-935-7210.</p>	<p>Energy efficient illuminating equipment.</p>
8	Japan	Marubeni		<p>Rep. office in Russia: Moscow 123610 Krasnopresnenskaya Nab., 12. World Trade Center Room 1908 (19F) Tel.: +7-095-258-18-17 Fax: +7-967-08-52</p> <p><a href="http://www.marubeni.co.jp/english/">http://www.marubeni.co.jp/english/</a></p>	<p>The company is trading in Russia with different type of industrial equipment, including:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Chemical production;</li> <li><input type="checkbox"/> Iron and steel production;</li> <li><input type="checkbox"/> Oil and gas equipment;</li> <li><input type="checkbox"/> Energy generation equipment.</li> </ul> <p>Marubeni is interested to supply on the Russian market different types of the EE equipment (for example, the frequency adjustment driven motors).</p>

9	Japan	Mitsui & Co., LTD		<p><b>Rep. office in Moscow:</b></p> <p>103009 Moscow, Gazetny per., 17/9 Fl. 2/3</p> <p>Tel.: +7-095-956-9600 Fax: +7-095-956-9610</p> <p>e-Mail: <a href="mailto:info@mitsui.ru">info@mitsui.ru</a></p> <p><a href="http://www.mitsui.ru/">http://www.mitsui.ru/</a></p> <p>Also has offices in Ekaterinburg, Khabarovsk and Vladivostok.</p>	<p>Mitsui's trading business activities cover a wide range of fields, including:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Power plants;</li> <li><input type="checkbox"/> Power transmission and substation facilities;</li> <li><input type="checkbox"/> Oil refineries;</li> <li><input type="checkbox"/> LNG manufacturing facilities;</li> <li><input type="checkbox"/> Pipelines;</li> <li><input type="checkbox"/> Iron, non-ferrous metals</li> <li><input type="checkbox"/> Chemical plants;</li> <li><input type="checkbox"/> Water and sewer facilities.</li> </ul> <p>Mitsui is undertaking a number of energy and industrial projects that will stimulate economic growth in developing countries and countries rich in natural resources.</p>
10	Germany	G. Kromschroeder AG		<p>Rep. office in Russia: OOO "Volgaterm", 603041, Nizhny Novgorod Tolbukhina str., 20 Tel.: +7-8312-342607 Fax: +7-8312-759043</p> <p>E-mail <a href="mailto:vterm@kis.ru">vterm@kis.ru</a></p> <p><a href="http://www.kromschroeder.ru">www.kromschroeder.ru</a></p>	<p>The company produces:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Gas meters;</li> <li><input type="checkbox"/> Gas equipment and automatic control facilities for furnace-building industry;</li> <li><input type="checkbox"/> Equipment for gas burners;</li> <li><input type="checkbox"/> Gas transmission systems for boilers and heat-generators;</li> <li><input type="checkbox"/> Automation facilities for heating supply systems.</li> </ul>
11	Germany	Intereng messtechnik GmbH		<p>Radeburger Str. 7, D-01561 Zschorna/Dresden Tel.: +49-35208/3404-0 Fax: +49-35208/340416 E-mail: <a href="mailto:mail@intereng.de">mail@intereng.de</a> URL: <a href="http://www.intereng.de">www.intereng.de</a></p> <p>Rep. office in Moscow:</p> <p>Tel.: +7-095-7192120 Fax: +7-095-7192290 E-mail: <a href="mailto:mail.ru@intereng.de">mail.ru@intereng.de</a></p>	<p>Development, production and supply of mobile laboratories and measuring instruments for:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Testing and diagnostics of electrotechnical equipment;</li> <li><input type="checkbox"/> Leakage detection in gas and water pipelines;</li> <li><input type="checkbox"/> Testing and diagnostics of heat engineering</li> </ul>

					equipment; <input type="checkbox"/> Environmental monitoring.
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## LIST WITH RUSSIAN EE COMPANIES

	City	Company	Contact person, position	Contact information
1	Moscow	Intehenergo M	Vakulko Anatoliy Georgievich, director general	Tel.: +7-095-362-7103, 273-5071 Fax: +7-095-918-1371 Krasnokazarmennaya str., 14
2		Teplo Rossii	Sheina Ludmila Sergeevna, top expert	Tel.: +7-095-214-7883 Fax: +7-095-214-7843 Petrovsko-Razumovsky proezd, 26. E-mail: <a href="mailto:teplorossii@inbox.ru">teplorossii@inbox.ru</a> <a href="http://www.teplorossii.narod.ru">http://www.teplorossii.narod.ru</a>
3		Teplosistemi	Sazonov Gennady Anatolievich	Tel.: +7-095-165-5462 Verhniaya Pervomayskaya str., 49/1
4		Negawatt	Elensky Valeriy L'vovich, project manager	<a href="mailto:negawatt@bk.ru">negawatt@bk.ru</a> <a href="http://negawatt.energy.ru/">http://negawatt.energy.ru/</a>
5		RUSDEM	Pyzhov Igor Nikolaevich, vice president	+7-095-362-7271, 362-7864 <a href="mailto:rusdem@ucit.orbita.ru">rusdem@ucit.orbita.ru</a> ; <a href="mailto:Arbuzov@ucit.orbita.ru">Arbuzov@ucit.orbita.ru</a> Moscow 111250, Krasnokazarmennaya str., 14
6		ZAO "Service company Energyefficient industrial technologies"		Tel.: +7-095-933-1344 Fax: +7-095-933-1348  <a href="mailto:goldex1@yandex.ru">goldex1@yandex.ru</a>
7		ZAO "METR"	Vedernikov Aleksandr Anatolyevich, president  Inozemtsev Aleksandr Mikhaylovich, vice-president	Tel.: +7-095-962-9440 Fax: +7-095-964-1900 <a href="http://www.energetica.ru">www.energetica.ru</a> <a href="mailto:mepev@online.ru">mepev@online.ru</a> 105318, Tkatskaya str., 1
8		Energy Agency "East-West"		Tel./Fax: +7-095-165-0491 105043, Chetvertaya parkovaya str., 27/1 <a href="mailto:mec@com2com.ru">mec@com2com.ru</a>
9		SOPROS, non-profit-making partnership	Ivanutin Leonid Andreevich	Tel.: +7-095-366-1074 Fax: +7-095-366-1074 105318, Scherbakovskaya str., 53
10		Moscow agency of energy efficiency	Yuriy Fedorovich, director	Tel.: +7-095-367-5536 Fax: +7-095-165-7474 105043, Chetvertaya parkovaya str. 27/1

11	<b><u>Kaliningrad</u></b>	Energy Efficiency Center of the Kaliningrad region	Medvedev Gennadiy Vasilievich	Tel.: +7-0112-550-051 Fax: +7-0112-550-032 <a href="mailto:ensave@baltnet.ru">ensave@baltnet.ru</a> Prospect pobedi, 61
12		Kaliningrad energy efficiency association	Gluhov Aleksandr Georgievich	Tel.: +7-0112-22-8140 Fax: +7-0112-21-1677 236000, Frunze str., 11
13	<b><u>Novosibirsk</u></b>	OAo Energy center of Novosibirsk	Sergey L'vovich Elistratov, director	Tel.: +7-3832-21-7001 Fax: +7-3832-21-8154 630132, Prospekt Dmitrova, 7, of. 302 <a href="mailto:nec@online.cns.ru">nec@online.cns.ru</a> <a href="mailto:ecsibir@online.sib.ru">ecsibir@online.sib.ru</a> <a href="http://www.eastern-centres.sib.ru">http://www.eastern-centres.sib.ru</a>
14		Sibenergouchet	Sudenko Boris Andreevich	Tel.: +7-383- 434-4942 Fax: 434-4942  633210, the Novosibirsk region, Iskitim, Sovetskaya str., 130
15	Murmansk	MOEEC - Murmansk Oblast Energy Efficiency Center	Gluhih Vadim Gennadievich	Tel.: +7-8152-239-357 Fax: +7-8152-234-982 <a href="mailto:moeec@online.ru">moeec@online.ru</a> 180310 Murmansk Sportivnaya St., 13
16	<b><u>Kirov, Kolskaya area</u></b>	KCEE, Kolskyi Centre of Energy Efficiency	Kotomkin Viktor Nikolaevich	Tel: +7-81531-54761, Fax: +7-81531-94436 <a href="mailto:keec@com.mels.ru">keec@com.mels.ru</a> 184250 Murmanskaya area, Prospekt Lenina, 7
17	<b><u>Samara</u></b>	OAo Regionenergoeff ect		Tel. +7-8462-42-03-85, 42-03-86 Fax: +7-8462-42-03-85, 42-03-86 <a href="mailto:regeneff@hippo.ru">regeneff@hippo.ru</a> 443010, г.Самара, ул. Самарская, 203-б
18		Samarsky regional energy efficiency center	Simonov Valeriy Aleksandrovich, Matemyanov Anatoliy Viktorovich	Tel.: +7-8462-42-30-68; 33-07-69; 32-49-71 Fax: +7-8462-42-03-86 <a href="mailto:scenef@transit.samara.ru">scenef@transit.samara.ru</a> ; <a href="http://www.samara.ru/~scenef.ru">www.samara.ru/~scenef.ru</a> 443006, Malogvardeyskaya str., 210
19		Energy efficiency and certification center of Samarskogo state technical university	Galina Pankova, executive director	Tel.: +7-8462-32-0200 Fax: +7-8462-32-4248  Galaktionovskaya str., 141

20	<b><u>Tomsk</u></b>	Nonprofit partnership "Regional Centre of the Energy savings management"	Yavorsky Mikhail Iosifovich, director	Tel.: +7-3822-210209, 2648 74 Fax: +7-3822-210209  634021, Prospekt Frunze, 115
21	<b><u>Petrozavodsk (Karelia)</u></b>	Karelskaya Assotiation «Centre of Energy Efficiency» (KACEE)	Smirnov Aleksey	Tel.: +7-8142-769391 Fax: +7-8142-769391  <a href="mailto:kaeec@onego.ru">kaeec@onego.ru</a>  185035, Anokhina str., 20-412
22	<b><u>Ekaterinburg</u></b>	Ural Center of Energy savings and Ecology	Anufriev Valeryi Pavlovich,	Tel.: +7-3432-513382 Fax: +7-3432-512967  <a href="mailto:tacis@ecenergy.ural.ru">tacis@ecenergy.ural.ru</a>  620077 Lenina str., 27-42
23		International Assotiation of Energy Centers	E.V. Nagomyh, coordinator	Tel.: +7-3432-24-40-84 Fax: +7-3432-24-35-42 <a href="mailto:tacis@ecenergy.ural.ru">tacis@ecenergy.ural.ru</a> 620026 Kuybisheva str., 109
24	<b><u>Nizhniy Novgorod</u></b>	Nizhny Novgorod Regional Innovation Energy Saving Center (NICE)	Zenyutich Evgeniy Arkadieovich, managing director	Tel.: +7-8312-36-3486 Minina str., 24. <a href="mailto:nice@k8.innov.ru">nice@k8.innov.ru</a>  <a href="http://www.nice.nnov.ru/">http://www.nice.nnov.ru/</a>
25	<b><u>Krasnoyarsk</u></b>	Eney Savyngs Center of Krasnoyarsk		Tel.: +7-3912-44-69-44 Fax: +7-3912-21-7003 Kirenskogo str., 89
26	<b><u>Orel</u></b>	Orel region's Energy Efficiency Center	Kachanov Alexander Nikolaevich, managing director	Tel.: +7-0862-41-98-53 Fax: +7-0862-41-66-84  <a href="mailto:kan@ostu.ru">kan@ostu.ru</a> , <a href="mailto:orelrce@ostu.ru">orelrce@ostu.ru</a>  302020, Naugorskoe shosse, 29
27		Orel's regional center "Energy conservation"	Trefilov Boris Nikolaevich	Tel.: +7-0862-41-91-68 Fax: +7-0862-41-46-65 302027, Leskova str., 19

28	<b><u>Cheboksary</u></b> <b><u>(Chyvashia)</u></b>	"ZEIM-ESKO"	Maksimchuk Ivan Dmitrievich, general director	Tel.: +7-8352-62-6557 Fax: +7-8352-20-2443 <a href="mailto:esco@cbx.ru">esco@cbx.ru</a> 428020 Prospekt Yakovleva,1
29		Chuvashsky republican scientific- research-and- production center "Energy conservation"	Pitersky V.G.	Tel.: +7-8352-21-3555, 21-9362 Fax: +7-8352-20-1549  428020, Prospekt Yakovleva,1
30	<b><u>Tula</u></b>	Energy savings center of Tula	Vorob'ev Vladimir Mikhailovich	Tel.: +7-9872-31-0681, 31-0856 Fax: +7-9872-31-8799  300012, M. Toreza str., 1a
31	<b><u>Kazan</u></b>	Tatar Republican center of energy- saving technologies	Martinov E.V.	Tel.: +7-8432-36-67-01 Fax: +7-8432-36-67-01  420011 Karla Marksa str., 10
32		Energy conservation laboratory at Economy and Industry Ministry of Tatar republic	Artamonov Anatoliy Timofeevich	Tel.: +7-8432-76-91-32 Fax: +7-8432-76-91-22  420029, Sibirsky trakt, 27.
33	<b><u>Izhevsk</u></b>	Republican coordinating center "Udmurtiya engineering"	Tolstuhin V.U.	Tel.: +7-3412-78-55-51 Fax: +7-3412-78-55-51  <a href="mailto:ue@ue.udm.ru">ue@ue.udm.ru</a>  426007, Pushkinskaya str., 214, а/я 204.
34	<b><u>Biysk (Altai Territory)</u></b>	AOZT "Editus"	Matveev Petr Grigoryevich	Tel.: +7-3854-22-66-52 Fax: +7-3854-22-66-52  659300, Pochtoviy pereulok, 12
35	<b><u>Barnaul</u></b>	Altaiskiy regional center of off-centre	Fedyanin B.Ya.	Tel.: 23-67-29 Fax: 23-67-29



		energy and energy conservation		656038, Barnaul-38, p.o. box 42.
36	<b><u>Zheleznogorsk (Krasnoyarsk 26)</u></b>	AO Eastern-Siberian regional center of energy conservation and technical expertise	Nesterov Robert Anatolyevich	Tel.: +7-39197-2-09-24, 4-80-69, 65-13-58 Fax: +7-39-197-2-26-35, 22-20-14  660026, Lenina str., 52
37	<b><u>Stavropol</u></b>	Stavropolsky energy saving centre	Filippov Sergey Al'binovich	Tel.: +7-8652-35-23-50 Fax: +7-8652-35-23-50
38	<b><u>Habarovsk</u></b>	Habarovsky energy saving centre	Gluhov Aleksandr Pavlovich	Tel.: +7-4212-72-91-70; 35-89-42 Fax: +7-4212-33-97-58  680035, Tihokeanskaya str., 136.
39		Dalnevostochnaya energy association "DEKA"	Klimakhin Anatoliy Yakovlevich	Tel.: +7-4210-21-67-61 Fax: +7-4210-21-48-76
40	<b><u>Vladimir</u></b>	Vladimirsky regional research-coordinating center "Vladrenako"	Stolbov Mikhail Sergeevich	Tel.: +7-09222-3-62-52 Fax: +7-09222-3-62-52  600029, Lakina str., 1a
41	<b><u>Volgograd</u></b>	Volgogradsky energy saving centre	Belousov Gennady Filippovich	Tel.: +7-8442-34-85-50, 34-80-75 Fax: +7-8442-34-33-21  400005, Sedmaya Gvardeyskaya str., 12
42	<b><u>Novgorod</u></b>	Novgorodsky energy saving centre	Savinov Eduard Georgievich	Tel.: +7-8162-7-62-87
43	<b><u>Ivanovo</u></b>	Regional research-educational center "ASU v energetike"	Zshuravlev Evgeny Konstantinovich	Tel.: +7-0932-37-44-26, 32-83-84 Fax: +7-0932-32-83-84, 32-83-84  <a href="mailto:office@ien.ru">office@ien.ru</a>  153002, Kalinina str., 5
44	<b><u>Irkutsk</u></b>	Irkutsky energy center	Nikitin Vyacheslav Mikhailovich	Tel.: +7-3952-46-54-12; 46-74-33; Fax: +7-3952-46-54-12; 46-74-33  664033, Lermontova str, 130
45	<b><u>Petropavlovsk-Kamchatski</u></b>	Energy saving center "KOMES"	Vornovitsky Vyacheslav Yakovlevich	Tel.: +7-4152-11-00-34 Fax: +7-4152-11-00-34
46	<b><u>Kirovsk</u></b>	Kirovsky regional energy saving center		Tel.: +7-8332-64-69-58, 67-87-23 Fax: +7-8332-67-97-98  610000, Oktyabrsky prospekt, 104

47	<b><u>Kursk</u></b>	Energy efficiency center of Kursk	Kuzshel' Igor Semenovich	Tel.: +7-0712-56-24-68; 22-06-50 Fax: +7-0712-56-24-68
48	<b><u>Omsk</u></b>	Omsky center for efficient use of energy	Volodin Aleksandr Ivanovich	Tel.: +7-3812-33-41-69 644070, Lermontova str., 81
49	<b><u>Penza</u></b>	Penzensky regional fund of energy conservation	Kruglov Sergey Evgen'evich	Tel.: +7-8412-69-98-28 440061, P.O. box 2081
50	<b><u>Perm</u></b>	Energy center of the administration of Perm		Tel.: +7-3422-33-47-38 Fax: +7-3422-33-47-38 614600, Popova str., 11.
51	<b><u>St. Petersburg</u></b>	Academic center of efficient heat-and-power engineering technologies	Sergey Chistovich, director general	Tel.: +7-812-275-65-50 Fax: +7-812-275-65-50 191194, P.O. box 349
52		Nevennergoprom	Kompaneets Vitaly Vasilyevich, director general	Tel.: +7-812-2672138 e-mail: <a href="mailto:pva38@online.ru">pva38@online.ru</a> 193012, Atamanskaya str., 3/6, P.O. box №9.
53	<b><u>Tumen</u></b>	Tumensky research and technical center "Energy conservation"	Cherdintsev E.F.	Tel.: +7-3452-29-67-53, 29-67-55 Fax: +7-3452-29-67-53 <a href="mailto:pntces@sbt.x.tmn.ru">pntces@sbt.x.tmn.ru</a> 625000, Glavpochtamt, P.O. box 5259 - for. Ulitsa vos'mogo Marta 1/57, of. 808
54	Ulianovsk	Research and technical energy saving center	Afonin Aleksandr Mikhailovich	Tel.: +7-8422-41-39-46; 43-26-01 Goncharove str., 3, P.O. box 5023
55	Chelyabinsk	Yuzhno-Uralsky center of energy saving technologies	Osipov Igor Vladimirovich	Tel.: +7-3512-66-66-91 Fax: +7-3512-66-66-91 454084, Prospekt Pobedi, 168
56	Yaroslavl	Energy saving agency of Yaroslavl	Smirnov Valery Aleksandrovich	Tel.: +7-0852-25-53-23 150054, Turgeneva str., 17
57	Kaluga	НПВП "Турбокон"	Fedorov Vladimir Alekseevich, director general	Tel.: +7-0842-167193 Fax: +7-0842- 551751 <a href="mailto:turbocon@kaluga.ru">turbocon@kaluga.ru</a>

58	Archangelsk	Archangelsky regional center of energy efficiency	Aleksandr Pitukhin	Tel.: +7-8182-65-39-21 <a href="mailto:aoeec@dvinaland.ru">aoeec@dvinaland.ru</a>
59		Arkhangelsky center for environmental investments	Mikhail Yulkin	Tel.: (8182) 64-64-52, (095) 299-15-09
60	Ryazan	Ryazansky center for energy conservation, non-profit-making partnership	Sinev Sergey Vasil'evich	Tel.: +7-0912-447-422; 445-273 390046, Elektrozavodskaya str., 63

## **Annex 9: Description of Project Eligibility Criteria**

### **Draft Guidance Note on Project Eligibility**

Eligible transactions are investments in projects and equipment aimed at improving efficiency of energy use in buildings, industrial processes, municipal facilities and other energy end-use applications, for example, lighting, boiler and cogeneration systems, energy management control systems, efficient and variable speed drive motors, power factor correction, waste heat recovery, etc. According to the “Energy Strategy of Russia to 2020” another priority sector is energy efficiency in the energy supply and distribution sector.

Investments must be for new projects, not refinancing existing projects, and for projects using proven technology which are developed with competent energy audit/feasibility studies and include energy savings monitoring plans.

The FI's borrower or lessee must be a private sector entity, consistent with IFC's private sector investment mandate. Financing for projects with public and governmental sector end-users can be supported with loans to EE service companies, contractors or equipment vendors.

For a project to be classed as ‘energy efficiency’ the investment must lead to a reduction in energy consumption per unit output of the factory, building, heating network etc. For industry projects, in particular, our aim is to fund projects which significantly close the gap in energy intensity between Russian industry and international competitors. We will therefore give priority to projects that achieve energy savings that the industries themselves consider to be significant; this will vary from industry to industry. Our approach to developing these project benchmarks is described in more detail later.

Finance terms of up to five years will be available for energy efficiency projects. Subsequently, longer terms may be necessary to finance certain types of transaction. Financing can be provided direct to the energy user or to the EE business or energy service company (ESCO) which contracts with the end-user.

The initial focus of the FEER program is likely to be on industrial energy efficiency projects, with the size of the initial projects being in the range \$50k to \$500k. This is not to ignore the fact that there are very significant investment needs in municipal and residential energy efficiency projects. Rather, it is key that IFC establish in the lending institutions the concept of energy efficiency as a sustainable lending segment. To do this IFC have to start with projects and project sponsors that are financially viable, have the capability to repay loans/leases and which operate in a legal framework that supports capital investment.

We will establish credit lines dedicated for energy efficiency projects with a small number (up to 4 in first phase) of IFC's current client financial institutions. These credit lines will be in the region of \$2-3 million per institution. The exact amounts will be

determined through negotiation with the FIs on the basis of their projected deal flow. By initially focusing on smaller projects IFC will build up the FIs' experience of EE financing through executing multiple transactions within this credit envelope. This also allows the FI to diversify its risk in EE lending across a broader portfolio of projects.

As the financial institutions gain more experience in lending to industrial energy efficiency projects, and as the legal and regulatory environment develops in municipal and residential sectors (e.g. street lighting, district heating, blockhouse refurbishment), IFC would expect to see the financial institutions asking us to work with them to develop strategies for penetrating these markets which use the dedicated credit lines and guarantees. Even in the early stages of the FEER Program IFC can use technical assistance to scope out in more detail project pipelines and establish viable frameworks for financing this type of project. Projects such as district heating refurbishments and some co-generation projects are likely to be much larger than \$500k. We will, therefore, need to work with the Russian FIs to identify alternative sources of long term lending needed to finance this type of larger project. This could well involve engaging with other international financial institutions.

In the next section IFC discuss guidelines for financing energy efficiency projects in industry (to be elaborated in further drafts with project examples). We also give examples of how street lighting, district heating, co-generation and blockhouse projects have been structured.

### **Guidelines for Energy Efficiency in Industry**

We can distinguish between two main types of industry project:

**Generic (or horizontal) technology** investments which are common to many industrial companies. These often have energy savings as the primary benefit of the investment. Examples are variable speed motors, cogeneration, heat recovery. Justifying providing guarantees to these projects is straightforward and IFC recommend that all acceptable generic energy saving projects, where they are the only investment proposed, will qualify to be guaranteed to the maximum allowed under FEER program rules. A list of typical generic technologies is given in Annex 1.

The second type is **process related investments** which are usually found in specific industries, and which relate to changes/upgrades in production facilities. In these projects the energy savings benefits are often only one of a range of production related benefits such as: reduced material usage, increased throughputs, better product quality. Process related projects that also have significant environmental benefits (aside from energy saving benefits) are known as cleaner production or eco-efficiency projects. These projects have significant "sustainability" impacts and are very desirable from the IFC internal standpoint. However, these industrial projects pose a number of problems when trying to define criteria to establish them as GEF eligible.

A particular consideration is the contribution of the energy cost savings (and associated greenhouse gas emission reduction) to the overall repayment of the loan. From the FI perspective, and from a purely practical viewpoint to speed project appraisal and avoid untidy arguments, it would be ideal to establish a set of rules under which the entire loan sum could be funded through the proposed IFC credit lines or guaranteed using the IFC/GEF Guarantee Facility. However, there is a possibility that the GEF may consider this an ill use of its funds if the potential cost per ton of carbon exceeds figures IFC have quoted in the Project Document approved by the GEF Council. A route to avoid this would be to somehow scale the loan and/or guarantee according to the relative contribution the energy savings make to debt service. Unfortunately, this approach could lead to the loans/guarantees offered not being sufficiently attractive to the FIs for them to finance the project. It could also be impossible to identify a discreet part of the investment (together with its associated costs) that is responsible for the energy savings.

It is clearly necessary to have an unambiguous set of decision making criteria which will allow the screening of the majority of projects. There will still be exceptions where IFC may consider projects on a case by case basis but the decision rules should hopefully keep these to a minimum.

Setting minimum energy savings criteria e.g. 10% or 20% is not an acceptable method since the achievable savings will differ according to industry sector. Reasons for this are:

- varying levels of energy savings made in different years by different companies,
- position in the investment cycle,
- different abatement costs per unit depending on the processes involved in each sector,
- large variations in the applicability of some technologies such as heat recovery or cogeneration,
- regulatory constraints and competing environmental (and production) priorities.

It therefore seems more appropriate to consider whether the energy savings or carbon emission reductions that result from the project are viewed as acceptable by the industry sector themselves. Further research is necessary to identify cost abatement curves for Russian industry. We therefore need to look for a set of proxy benchmarks that withstand international (GEF) scrutiny. This will be elaborated in further detail in the final submission to GEF as data on industry energy consumption in Russia becomes available. If a project can demonstrate this minimum pre-defined level of savings then the full loan amount may be financed from the IFC credit line or guaranteed from the IFC/GEF facility, assuming it fits in with the other relevant credit and project size criteria.

For projects which do not meet these requirements there is an opportunity for the FI to add value in advising how the projects could be improved (energy efficiency enhanced) to allow them to meet the loan/guarantee criteria – this could be achieved through using more efficient components e.g. high efficiency motors or variable speed drives rather than standard fixed speed, including heat recovery, re-designing a product etc. The benefits to the FI would be: another loan they could book (using the credit line or guarantee), a loan with lower risks (since the cash flows would be enhanced by energy

savings as well as other reduced operating costs), development of an additional advisory capability for which they could charge additional fees.

Furthermore, FIs should also urge project developers to build in cleaner production benefits to projects such as reduced material usage, reduced emissions of Volatile Organic Compounds, reduced water usage, reduced effluent discharge etc.

## Examples of Project Structures

### Project Structure for Industry (Paper Mill in Latvia)

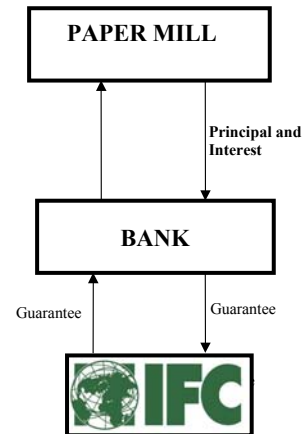
#### Market Environment

- Paper industry is energy intensive in its nature: both steam and electricity are needed in the process and the proportion of energy costs relative to total production costs ranges from 15% to 25%.
- The given paper mill in Latvia is the only one that survived the post-Soviet production crisis. The production volumes fell sharply in 1990s, but in 2000 the paper mill has been privatized and the new owners have been restructuring the operations. The largest effort has been directed to increasing the ever-low production levels and building a customer base (both local and international).
- Due to oversized and outdated equipment, energy costs in the paper mill are as high as 30% of production costs and the management decides to implement energy efficiency measures in the factory.
- Energy efficiency measures in the paper mill can be found in the process (upgrading of engine drives, motors, frequency exchangers, heat recuperation) and in the heat supply system (boiler upgrades, fuel change, sizing of heat distribution pipelines, etc). In some cases the installation of CHP (co-generation units) is economically viable, as both heat and electricity can be produced simultaneously and used in paper production.

#### **Project Structure**

- The loan is intended for a number of energy efficiency upgrades in the paper mill:

- Modernization of gas regulation point
- Changing of reduction –cooling equipment
- Boiler water feeding preparation equipment
- Repair of steam boiler
- Modernization of boiler automation equipment
- Steam and condensate pipeline replacement
- Water pipeline replacement
- Paper machine drive modernization
- Paper machine secondary equipment drive modernization



- The loan is provided directly to the paper mill (the end-user)  
The paper mill then subcontracts energy services providers that perform the intended tasks. Since the paper mill is a private entity, the selection subcontractors is done according to the management's own will – no tender or official solicitation is required. The disbursement of the loan is subject to invoices from subcontractors (equipment suppliers, service companies, etc.)
- According to the feasibility study performed by a technical expert, energy savings of at least 20% shall be realized after project implementation. The calculations showed



that the project can be self-financing from savings. The fact that the end user is a commercial entity with operational income from paper sales that can be directed to debt service adds to the credibility of the loan.

- Collateral structure: (i) commercial pledge on the paper mill's assets in the amount of double the loan. The equipment of the paper mill as well as the intended improvements are specific, often undetectable and difficult to realize in case of loan default. As the collateral value is low, the bank requests (ii) 50% IFC guarantee.

### Benefits for participants

For paper mill	<ul style="list-style-type: none"> <li>• Modernization of the factory</li> <li>• Loan is self-financing by energy savings</li> <li>• Increase of competitiveness due to lower energy costs</li> </ul>
For bank	<ul style="list-style-type: none"> <li>• Good chance of additional loans requested by the paper mill (for co-generation unit, further production upgrades)</li> <li>• The repayment of the loan can be from operational income – no energy savings risk</li> <li>• Simple structure of the project - lower transaction costs</li> </ul>

Project Description	A number of energy efficiency improvements at the paper mill (in production process as well as in heat supply system)
Lender	X Bank
Borrower	Paper Mill
End-User	Paper Mill
Project Costs	
Own equity	<b>LVL 240 000 (US\$ 441 988 )</b>
Commercial Loan	LVL 40 000 (US\$73 664) – 16%
	<i>LVL 200 000 ( US \$368 324) – 84%</i>
Loan Maturity	7 years
Interest	3-month RIGIBOR + 3.7% risk margin.
Repayment Schedule (interest)	Monthly
Repayment Schedule (principal)	Monthly Grace period 8 months
Collaterals:	<ul style="list-style-type: none"> <li>○ Commercial pledge on the paper mill's assets (double size of the loan)</li> <li>○ IFC guarantee (50%)</li> </ul>
IFC maximum guarantee liability	US\$ 184 162
Energy Savings	20-30%
Energy Cost Savings	LVL 38 100 (US\$ 70 165)
Simple Payback	6.2
DSCR	1.38 and upwards

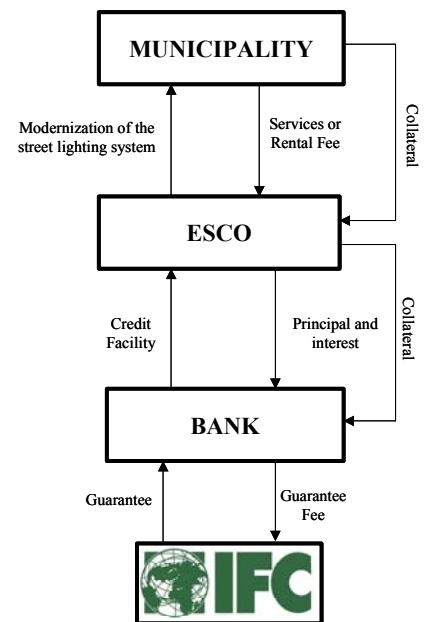
## Project Structures for Municipal Street Lighting

### Market Environment

- Municipal energy developments have long been neglected in Hungary. Except for the biggest and strongest, the energy systems of the majority of towns is out-dated, inefficient and costly
- Municipalities focus more on preserving the level of the energy system rather than up-grading it because of the lack of engineering expertise and, most importantly, financing capacity
- Street lighting replacements are relatively simple and cheap yet very effective ways of improving energy efficiency as the technology is widely available, energy savings can reach 30-65%, and because of the constant street lighting system load, cost savings represent a secure cash flow

### Project Structure

- The bank opens a credit facility for the ESCO under which projects can be originated. The terms of the individual transactions are pre-determined to support quick, streamlined execution
- The ESCO signs an Energy Services Agreement (ESA) with the municipality and finances the replacement of the street lamps from own equity and loan. No downpayment from the municipality is required.
- The new equipment constitutes property of the ESCO but it is used by the municipality. The city pays a periodical Services Fee to the ESCO during the course of the contract, which reimburses the ESCO's margin and the debt service obligation. The basis of the Services Fee is the energy cost saving that results from the modernization. At the end of the contract ownership of the equipment is transferred to the municipality.
- The main risk element is the solvency risk of the municipality. Typical collaterals to mitigate risks are: (i) both the ESCO and the bank having preferred drawing right on the account of the municipality, (ii) the bank having preferred drawing right on the account of the ESCO, (iii) assignment of all project revenues of the ESCO to the bank, (iv) assignment of the security bond of the equipment to the bank, (iv) IFC guarantee, (v) municipal guarantee.



### Benefits for participants

<b>For municipality</b>	<ul style="list-style-type: none"> <li>• Instant modernization of the system without any up-front financial commitment</li> <li>• Energy savings finance the investment</li> <li>• Improved street lighting level</li> <li>• Access to EE loans through the ESCO company</li> </ul>
<b>For bank</b>	<ul style="list-style-type: none"> <li>• Large number of very small projects bundled together by the ESCO creating volume for the bank</li> </ul>

	<ul style="list-style-type: none"> <li>• Exposure to one single company instead of several municipalities making execution and administration more effective</li> <li>• ESCOs know markets better and can gather and bring new projects to banks</li> <li>• Secure margin on the credit since pricing is usually indexed to BUBOR</li> <li>• The strong collateral structure and the traditionally good payment morale of municipalities provides security</li> </ul>
<b>For ESCO</b>	<ul style="list-style-type: none"> <li>• Access to one single credit facility instead of numerous small loans</li> <li>• ESCOs make profit on the equipment and on being the project developers</li> <li>• Successful projects create new markets for the ESCO</li> </ul>

### Example from Hungarian Guarantee Program

<b>Project Description</b>	Replacement of the light bulbs with energy efficient lamps and expansion of the street lighting system of a small Hungarian municipality. The project was supported by HEECP1 in 2000.
<b>Lender</b>	X Bank
<b>Borrower</b>	Y ESCO
<b>End-User</b>	Z Municipality
<b>Loan Amount</b>	HUF 8,464,000 (US\$ 29,186)
<b>Debt/Equity</b>	80/20
<b>Maturity</b>	5 years
<b>Interest</b>	BUBOR + 2% (then 13.5%)
<b>Repayment Schedule</b>	monthly in arrears
<b>Monthly Payment</b>	HUF 192,582 (US\$ 657)
<b>Disbursement</b>	against construction bills
<b>Energy Savings</b>	32.4%
<b>Energy Cost Savings</b>	HUF 885,555 (US\$ 2,920) / year
<b>Simple Payback</b>	9.9 years
<b>Municipal DSCR</b>	2,28
<b>Collaterals</b>	<ul style="list-style-type: none"> <li>• 50% IFC guarantee</li> <li>• The Bank has preferred drawing right on the ESCO's account</li> <li>• The Bank has a preferred drawing right on the municipality's account</li> <li>• The ESCO has a preferred drawing right on the municipality's account</li> <li>• All ESCO revenues are assigned to the Bank</li> <li>• The insurance bond of the equipment is assigned to the Bank</li> </ul>

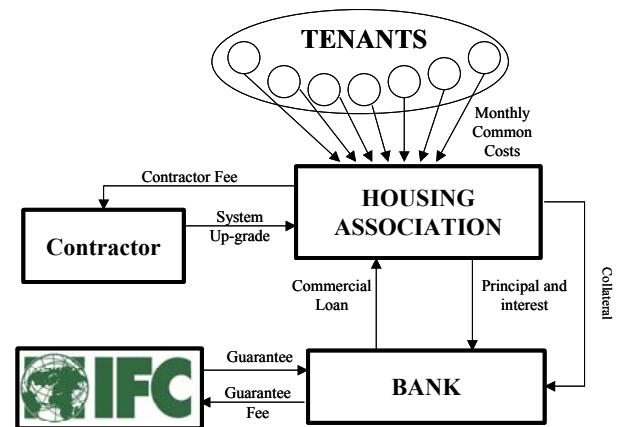
## Project Structures for Block House heating

### Market Environment

- The majority of block houses were built 20-40 years ago and represent old-fashioned, inefficient technologies.
- There's a number of different solutions available by which efficiency can be improved including boiler changes, insulation up-grades, renovation of heat distribution network (pipes, radiators, etc.), metering devices, window changes, etc.
- The increasing costs of heating, especially in district heated houses, is drawing attention on energy efficiency and there's a growing demand for cost reducing solutions
- Since being a key social issue, the Hungarian government is highly supportive towards block housing reconstruction initiatives and there are national programs, grants and other state subsidies available for such purposes
- Housing Associations, formed by the tenants, are legal entities that have revenues, can originate loans, buy stocks, etc, that is, they can act almost like any other market actor
- Real estate mortgage regulations allow banks to sell the property of non-paying borrowers without any restriction

### Project Structure

- The Housing Association (HA) is an independent legal entity owned by the tenants of the block house. The HA takes a commercial loan from the bank to reconstruct commonly owned areas or energy equipment of the block house. Approval of the majority (50%+1) of the tenants is required for such loan, but the decision is binding for non-approving tenants as well.
- The reconstruction is completed by a Contractor Company which gets paid directly by the HA after the loan is disbursed.
- The source of the debt repayment is the monthly common cost revenue of the HA, which is increased by the monthly debt service obligation of the HA divided between the tenants. Common cost are collected from tenants to pay for services the HA is providing tenants. The HA can have additional revenue sources, too, like e.g. rental of commonly owned areas, revenues for selling building surfaces to advertisement agencies, etc, which can all be channeled for debt service.
- Project financials can be enhanced by any available state grants or other subsidies that can serve as an initial downpayment from the HA reducing the loan amount or can take the form of a interest rate subsidy reducing interest cost for tenants.
- The main risk factor is the common cost payment morale of the tenants. The risk is mitigated by the following collaterals: (i) HA's all banking accounts must be kept at the bank, (ii) the bank has a preferred drawing right on all the accounts of the HA,



(iii) common cost and all other revenues of the HA are assigned to the bank, (iv) mortgage on marketable facilities of the block house, (v) all insurance policies, including the ones that are not related to the reconstruction, are assigned to the bank, (vi) IFC guarantee. It is also a very strong security element that the HA has the right to originate mortgage on the property of tenants that are not paying the common costs.

### Benefits for participants

For tenants	<ul style="list-style-type: none"> <li>• Energy cost savings can finance the investment</li> <li>• Better heating system, improved level of comfort, increased value of real estate</li> <li>• All sorts of energy efficient reconstructions can be executed all in one or step by step depending on the financial strength of tenants and the HA</li> </ul>
For bank	<ul style="list-style-type: none"> <li>• One borrower as opposed to very small loans for several tenants</li> <li>• Stable margin since pricing is indexed to BUBOR</li> <li>• Very strong collateral structure makes investment secure</li> <li>• Huge market</li> </ul>
For contractor	<ul style="list-style-type: none"> <li>• Direct payment, no need for long pre-financing period</li> <li>• Huge market</li> </ul>

### HEECP Project Sample

Project Description	Replacement of the windows and basement slab insulation reconstruction. The project is supported by a 1/3 state and a 1/3 municipal non-refundable grant and a 70% interest subsidy from the state.
Lender	X Bank
<b>Borrower</b>	Y Housing Association
<b>End-Users</b>	82 tenants of the Y block house
<b>Project Costs</b> Non-refundable state grant <b>Non-refundable municipal grant</b> <b>Commercial Loan</b>	<b>HUF 41,046,500 (US\$ 164,965)</b> HUF 13,682,167 (US\$ 54,988) <i>HUF 13,682,167 (US\$ 54,988)</i> <i>HUF 13,682,167 (US\$ 54,988)</i>
<b>Project Cost per Tenant</b>	HUF 500,567 (US\$2,012)
<b>Loan Maturity</b>	5 years
<b>Interest</b>	3-month BUBOR + 7% risk margin. With the 70% state interest subsidy the net interest rate for the HA is 5.007%
<b>Repayment Schedule (interest)</b>	Quarterly
<b>Repayment Schedule (principal)</b>	The HA collects savings from tenants through an institute called Building Society Fund (BSF). Tenants have a monthly payment obligation to the BSF all throughout the project. At the end of the term, the balance of the account equals the total principal payment obligation of the HA and it is transferred to the bank directly. Tenants collect money on BSF account because it makes them eligible for a 30% state grant.
<b>Energy Savings</b>	63.13%
<b>Energy Cost Savings</b>	HUF 4,055,231 (US\$16,298) / year

<b>Simple Payback</b>	10.1
<b>DSCR</b>	1.0
<b>Collaterals</b>	<ul style="list-style-type: none"> <li>• 35% IFC guarantee</li> <li>• The bank has a preferred drawing right on the account of the HA</li> <li>• The balance of the Building Society Fund account of the HA is assigned to the bank</li> <li>• HA provides a HUF 4,000,000 (US\$ 16,000) cash deposit collateral</li> <li>• All revenues of the HA are assigned to the bank</li> <li>• Mortgage on marketable real estates of the HA</li> <li>• Assignment of the Insurance Bond of the HA to the bank</li> </ul>

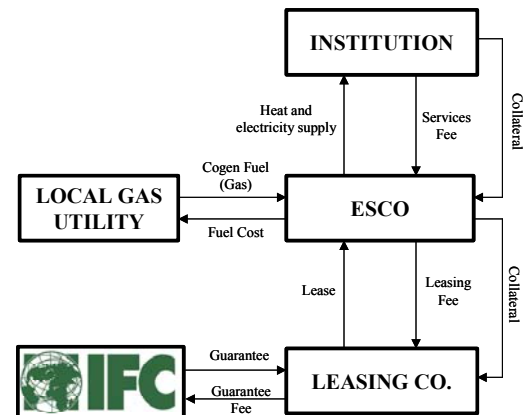
### *Project Structures for Co-generation*

#### **Market Environment**

- Most of the public buildings (schools, universities, hospitals, government offices, stations, prisons, etc.) that have their own boilers and heating systems use out-dated technologies that rely on inefficient coal or oil based heat production. Industrial companies using heat in the technology can also face inefficiency and growing heat bills, which opens a large market for cogenerations.
- Installation of cogeneration units (gas engines fueled by gas that produce heat and electricity at the same time) is an efficient way of rationalizing the energy supply of an independent large building or an industrial production facility. A cogeneration is especially suitable for medical institution where the continuous quality of the heat and electricity service is essential for secure operation. There's a growing demand for very large cogeneration units as municipal district heating retrofits, too.
- Currently the market conditions are very favorable for cogeneration installation in Hungary as the local electricity utility is mandated by law to take over the electricity produced by cogenerations at a preferential price, which means that cogenerations have a very stable and secure electricity sales market to rely on.

#### **Project Structure**

- The ESCO signs an Energy Services Agreement (ESA) with the Institution, based on which the ESCO replaces existing boilers with cogenerations, or detaches the institution from the district heating network by way of assembling a cogeneration unit at the facility of the Institution.
- After the reconstruction, the ESCO will have the exclusive right to supply electricity and heat to the Institution. Usually the ESA is for 10-15-20 years, depending on the useful life of the units. The gas engines are operated, serviced and maintained by the ESCO, and the ESCO purchases the gas that fuels the engines, too.
- The Institution pays periodical Services Fees to the ESCO which is designed to cover (i) the price of electricity and heat delivered to the institution, (ii) the costs of



maintenance and operation of the engines (including fuel costs), (iii) leasing fee obligations of the ESCO, and (iv) the ESCO's profit. Energy savings accomplished by the reconstruction usually are enough to cover the Services Fee.

- The gas engine is financed in a lease structure where the Leasing Co. purchases and owns the equipment specified by the ESCO and leases it to the ESCO for operations. The ESCO pays a fixed periodical leasing fee, and after the end of the leasing period the equipment's property rights automatically transfer to the ESCO. The leasing period is typically much shorter than the ESA period.
- The main risk element is the solvency risk of the Institution. The typical collaterals are: (i) the Leasing Co. has preferred drawing rights on the accounts of the ESCO and the Institution, (ii) the ESCO has a preferred drawing right on the account of the Institution, (iii) all project revenues of the ESCO are assigned to the Leasing Co., (iv) the Insurance Bond of the equipment is assigned to the Leasing Co., (v) payment guarantee from the owner(s) of the Institution (the state or a municipality), and (vi) IFC guarantee.
- To make advantage of the favorable market condition and the preferential electricity tariff of cogeneration-produced electricity, Hungarian project developers now sell the electricity directly to the local Electricity Company and not to the Institution. This means that the ESCO only delivers heat to the Institution and the Institution purchases electricity from the local Electricity Company, because the preferential selling price of electricity between the Utility and the ESCO is higher than the price the Institution can purchase the electricity from the Utility. In such cases, the local Electricity Utility is an important participant of the project.

### Benefits for participants

For Institution	<ul style="list-style-type: none"> <li>• Instant modernization of the energy system, use of up-to-date environmental friendly technology, improved quality of service, more dependable system</li> <li>• Energy services can be designed according to the exact specifications of the Institution</li> <li>• No or minimal up-front financial commitment as energy savings finance the investment</li> <li>• After the leasing period, savings are shared between the ESCO and the Institution</li> <li>• Access to EE loans through the ESCO</li> <li>• Highly qualified ESCO personal operates the system, no need for own capacity</li> </ul>
For Leasing Co.	<ul style="list-style-type: none"> <li>• Because of the essential everyday use of the equipment, payment morale of the Institutions is very high making the investment secure</li> <li>• The ownership of the equipment is a strong collateral element because gas engines have a stable second hand market value and they can be disassembled and put into operation elsewhere</li> <li>• Investment costs are relatively high so cogen project mean volume for FIs</li> <li>• There is a huge and growing demand for cogeneration projects under very favorable market conditions in Hungary</li> <li>• High expertise of project developers</li> </ul>
For ESCO	<ul style="list-style-type: none"> <li>• ESCO makes profit on the investment</li> <li>• Successful projects create new opportunities for the ESCO</li> <li>• Access to larger loans</li> </ul>

**HEECP project sample**

Project Description	The ESCO replaces out-dated boilers of the hospital with modern gas engines in a total of 330kW capacity. The engine is located within the facility of the hospital. Modernization of the heat and electricity distribution network is also part of the project. After the reconstruction the engines cover all the electricity and heat (heating, hot water, steam) needs of the hospital.
Lender	X Leasing Co.
<b>Borrower</b>	Y ESCO
<b>End-Users</b>	Z Hospital
Total Project Costs	HUF 372,000,000 (US\$ 1,488,000)
<b>Downpayment from the Hospital</b>	HUF 152,000,000 (US\$ 608,000) – 40.9%
Own Equity from ESCO	<i>HUF 30,000,000 (US\$ 120,000) – 8.0%</i>
Lease Amount	<i>HUF 190,000,000 (US\$ 760,000) – 51.1%</i>
IFC Guarantee Liability (50%)	<i>HUF 95,000,000 (US\$ 380,000)</i>
<b>Lease Period</b>	66 months
<b>Interest</b>	16%
<b>Repayment Schedule</b>	Monthly in arrears
<b>Monthly Lease Payments</b>	HUF 4,800,000 (US\$ 19,200)
<b>Monthly Services Fee to ESCO</b>	HUF 6,894,000 (US\$ 27,576) in summer period HUF 11,539,000 (US\$ 46,156) in winter period
<b>Energy Cost Savings</b>	HUF 52,000,000 (US\$ 208,000) / year
<b>Simple Payback</b>	7.1 years
<b>DSCR of ESCO</b>	1.4
<b>Collaterals</b>	<ul style="list-style-type: none"> <li>• 50% IFC guarantee</li> <li>• The Leasing Co. has a preferred drawing right on the account of the ESCO</li> <li>• The ESCO has a preferred drawing right on the account of the Hospital</li> <li>• All project revenues of the ESCO are assigned to the Leasing Co.</li> <li>• Insurance Bond of the equipment is assigned to the Leasing Co.</li> </ul>

*Project Structures for District heating boiler change***Market Environment**

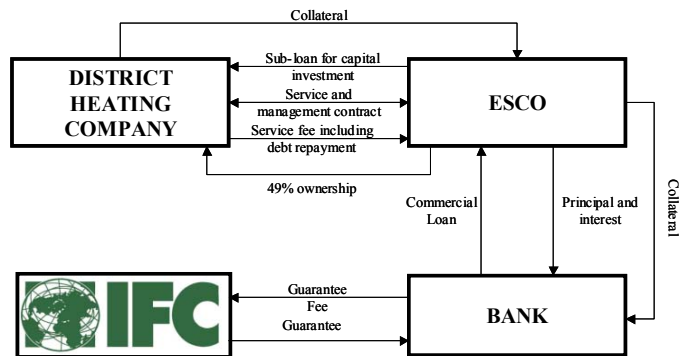
- 246 district heating systems were operated in 98 towns in Hungary in 2000, the number of homes connected to district heating was about 650,000. It represents 16% of the Hungarian homes. Other important heat markets for the district heating companies (DHC) are industrial facilities and municipal institutions.
- Most of the district heating systems would need technological up-grade to operate economically and to keep their competitiveness: either boiler replacement or cogeneration installation, and pipe network modernization.



- Historically the DHCs were reluctant to realize system up-grades, because these are typically high capital demand investments.
- Currently DHCs are pressed to initiate energy efficiency reconstructions resulting cost savings to keep their market, since many of the end users are intending to disconnect from the system due to significantly high district heating fees.

### Project Structure

- The ESCO signs a Service and Management Contract with the District Heating Company (DHC), based on which the ESCO replaces the existing boilers with energy efficient ones.
- The ESCO operates and maintains the boilers and organizes the financing of the reconstruction.
- The DHC pays an annual service fee to the ESCO, which covers the debt payment obligation and the ESCO management fee being the compensation of the ESCO activities.
- The boiler retrofit investment is financed in a loan structure, where the ESCO company takes the commercial loan and purchases the equipment. The owner of the equipment is the ESCO company during the loan period or until the end of the Service and Management Contract. In a classical ESCO structure, the main source of the ESCO profit is the service fees of the years following the loan/lease period until the end of the Service and Man. Contract. [The described example is irregular, because the ESCO is 49% shareholder of the DHC.]
- The energy cost savings of the DHC as an indirect cash flow finances the investment (the debt service and the ESCO margin).
- The main risk element is the solvency risk of the DHC. The collateral structure: Securities of the commercial loan functioning as a limited recourse loan: (i) sub-loan and all related assets, (ii) ESCO project revenue assignment to the Bank, (iii) IFC guarantee; Securities for the sub-loan: (i) the Bank has preferred drawing right on the bank account of the DHC, and (ii) mortgage on the newly installed equipments.



### Benefits for participants

For the DHC	<ul style="list-style-type: none"> <li>• Modernization of the energy system, use of environmental friendly technology</li> <li>• Better service quality offered to the end users</li> <li>• No need for financial contribution from the DHC, since the ESCO engages own capital into the project and has access to EE loans</li> <li>• Energy cost saving of the DHC finances the investment</li> <li>• Following the loan or the contract period, the DHC is directly benefiting from the energy cost saving</li> <li>• Professional O&amp;M service from the side of the ESCO</li> </ul>
For the Bank	<ul style="list-style-type: none"> <li>• Very low risk level associated to a strong ESCO</li> <li>• Possible credit line establishment for the ESCO company</li> <li>• As the district heating activity is a socially responsible task, the payment</li> </ul>

	<p>morale of the DHC is high</p> <ul style="list-style-type: none"> <li>• Strong collateral structure</li> <li>• As the Bank finances environmentally friendly investment, it creates reputational value for the FI</li> <li>• Growing demand for DH up-grade projects in Hungary</li> </ul>
For the ESCO	<ul style="list-style-type: none"> <li>• ESCO makes profit on the investment</li> <li>• Successful projects are good references for the ESCO</li> </ul>

### HEECP project sample

<b>Project Description</b>	Instead of purchased steam energy produced by oil fuelled boilers, the ESCO installs 2 modern gas fired boilers, and instead of primary steam pipelines, the ESCO constructs new hot water pipelines and heat centers. Further objectives of the reconstruction: establish measurement based heat service system, enlarge the district heating capacity by connecting several municipal institutions to the system.
<b>Lender</b>	X Bank
<b>Borrower</b>	Y ESCO
<b>End-Users</b>	Z DHC
<b>Total Project Costs</b>	HUF 235,293,000 (US\$ 1,001,245)
<b>Government grant</b>	HUF 48,388,000 (US\$ 205,906) – 20.6%
<b>Own Equity from ESCO</b>	<i>HUF 46,905,000 (US\$ 99,595) – 19.9%</i>
<b>Interest subsidized loan amount</b>	<i>HUF 80,000,000 (US\$ 40,425) – 34.0%</i>
<b>Commercial loan</b>	<i>HUF 60,000,000 (US\$ 255,320) – 25.5%</i>
<b>IFC Guarantee Liability (35%)</b>	<i>HUF 21,000,000 (US\$ 88,727)</i>
<b>Loan Period</b>	5 years
<b>Interest</b>	3-month BUBOR + 0.5% risk margin. The interest rate is 10.1%
<b>Repayment Schedule</b>	Monthly interest and quarterly principal payment
<b>Energy Cost Savings</b>	HUF 56,573,000 (US\$ 240,736) / year – 55%
<b>Simple Payback</b>	4.1 years
<b>IRR</b>	22% in 12 years
<b>DSCR of the project</b>	1.3
<b>Collaterals</b>	<ul style="list-style-type: none"> <li>• 35% IFC guarantee</li> <li>• The Bank has preferred drawing right on the bank account of the DHC</li> <li>• Project revenue assignment of the ESCO to the Bank</li> <li>• Mortgage on the newly installed equipments</li> </ul>

## Annex 9A Generic (horizontal) technologies

### Compressed air

- Heat recovery
- New compressors (correct sizing for volume and pressure)
- Automatic controls of compressors and distribution networks
- Cooling of compressors
- Leak management programmes
- Trigger valves for free compressed air hoses

### Boilers

- Fuel switching e.g. oil to gas, coal to biomass etc.
- New more efficient boilers (modular boilers allowing better load matching)
- Heat recovery
- Feed water preparation
- Pump controls
- Ventilation controls
- Combustion control (e.g. Oxygen trim)
- Conversion from steam to hot water
- Insulation
- Leak management programme
- Steam trap replacement programme

### Industrial Buildings

- Decentralising or centralizing local hot water supply (depending on which is more efficient)
- Efficient lighting systems
- Ventilation systems (including heat recovery)
- Infra-red heating
- Automatic doors and shutters
- Energy management software
- Space heating systems

### Motors and Drives

- Correct sizing
- Variable speed drives
- Soft starts
- High efficiency motors

### Lighting

- Lamps and luminaires
- Ballasts
- Controls
- Layout

## **Annex 9B Examples of Industry Specific Opportunities{ TC "Annex 9B Examples of Industry Specific Opportunities" \f C \l "1" }**

### Printing

- Mainly related to industrial buildings (see above)

### Food and Drink

- Refrigeration systems (insulation, compressor sizing, choice of refrigerant)
- Ovens
- Mixers
- Pasteurizers
- Sterilisers
- Membrane concentration
- Evaporators, spray dryers
- Washdown systems (triggers, re-use waste water)
- Bottle washing
- Compressed air (see above)
- Motors and drives (see above)
- Lighting (see above)
- Industrial buildings (see above)

### Production of packaging

- Compressed air (see above)
- Motors and drives (see above)
- Lighting (see above)
- Industrial buildings (see above)
- Boilers
- Co-generation
- Papermaking: vacuum pumps, refiners, pulping and slushing

### Manufacturing and Metal Finishing

- Compressed air (see above)
- Motors and drives (see above)
- Lighting (see above)
- Industrial buildings (see above)
- Improving foundry yields
- Melting and holding of metal
- Moulding
- Computer aided design
- Heat treatment
- Powder coating
- Reducing standby temperatures of furnaces

### Wood Processing

- Utilising wood waste for heating or supply to pellet producers

**Annex 10: STAP Review and Team's Response**

Igor Bashmakov

STAP Review

**Financing Energy Efficiency in the Russian Federation (FEER)  
GEF Project Document****1. General findings**

This proposal appears to be sound, reasonable, well-planned, and based on solid economic and technical experience and country knowledge. The proposed approach implies a thoughtful implementation of a set of instruments, is justified, and has been recommended in the environmental and economic literature. The reviewer strongly endorses this proposal with some small general and specific reservations and comments (presented below).

**2. Detailed comments****2.1. Scientific and technical soundness of the project{ TC "Scientific and technical soundness of the project" \f C \l "3" }**

Energy efficiency is Russia's primary unexploited resource. The country's economic growth depends not only on revenues from its vast supplies of natural resources, but also from their efficient use in industry, heat supply systems, buildings and transport throughout Russia. Specific energy consumption in Russia's industrial, residential and commercial sectors is among the highest in the world. According to the RF Ministry of Energy, nearly 1/3 of all energy in Russia is consumed inefficiently.

Historically, while energy efficiency was a subject of much federal government rhetoric, little concrete actions were taken. Nevertheless, in the last 10 years, due to the activities of NGOs, regional governments, and EE vendors, energy efficiency technologies penetrated the Russian market, and institutional and informational support for EE improvement policies and measures was developed. This is well illustrated by the proposal attachments with information from databases on technologies and institutions.

Presently, Russia is reforming power and housing sectors, and has set the target of doubling its GDP by 2010. None of these reforms, or the very ambitious GDP growth goal, can be accomplished without substantial progress in energy efficiency improvements, or without transition from the energy efficiency policy rhetoric to real and aggressive actions and policies. The federal government is not going to finance EE activities, and project developers are still lacking ability to raise funds for projects implementation.

Against the background of high and escalating energy prices, lack of project developers' ability to mobilize financing and lack of FIs' willingness to finance EE activities became a cutting edge, a bottleneck, which limits energy efficiency potential implementation

intensity to only 2-5% per year. Recent efforts taken by the federal government to make a step forward by making energy efficiency a centerpiece of energy policy were not supported through the development of effective financing mechanisms or financing technologies. While federal policy-makers, and even regular engineers in Russia, presently agree, that development of financing technologies is a key to launching large-scale EE improvement activities, they recognize their inability to provide such technologies and mitigate risk. Therefore, the proposed project is just on the target, and that is why the Russian government supports it.

FIs in Russia possess a lot of spare financial resources and are looking intensely for new financial products, and their interest in EE is growing. This project bridges the gap between a developer and a banker. If successful, it would release the brake of the FIs mistrust in energy efficiency projects and open the door to EE technologies. It will keep the EE project developers' enthusiasm from evaporation.

The project is fully in line with the Russian energy efficiency policy and is entirely complementary to other activities planned or under implementation. The departure point is that presently Russian FIs is not to any meaningful degree engaged in financing energy efficiency projects. Not only FIs' willingness to finance EE projects will be enhanced, but mere realizing that there are good possibilities to get project financing would inspire engineers to develop new projects.

Innovativeness of the project is determined by both its goals and selected approaches. Some efforts to establish revolving funds as a major vehicle for EE financing fail to generate large and sustainable EE financing mechanisms. The proposed approach allows it to build Russian financial institutions' trust and capacity to finance EE projects – to pave the road for other FIs and project developers – through the pilot test activities.

The project helps enlarge the absorptive capacity of the Russian EE market through transforming FIs lending activities. So the Russian “money tree” will be easier to shake for those who invest in EE.

Five project objectives selected allow accomplishing four major project goals:

- ⇒ convince FIs that energy efficiency projects are viable investments that improve the financial stability of their clients and reduce the banks' overall risk exposure;
- ⇒ examine industry-related capital investments from an energy efficiency perspective;
- ⇒ actively build a portfolio of energy efficiency projects;
- ⇒ develop specialized financial products which target niche markets for EE finance.

When such products and financing technologies are developed and tuned, lack of confidence within the financial community in EE projects would not be a hurdle breaking all EE initiatives anymore.

The soil for seeds of change proposed by this project is already cultivated by the EE activities conducted by the UN, World Bank, GEF, IFC, EBRD, US AID, US DOE, US EPA, TACIS, Norwegian, Finnish and German governments, Russian regional and municipal administrations, and some industrial companies. There are numerical linkages

of the proposed project with other EE activities already implemented or under way in Russia. However, none of these activities are targeted at the FIs' ability and willingness to finance EE projects specifically in industry.

The proposed FEER program is a pilot initiative to increase the flow of capital to energy efficiency projects from Russian financial institutions. This makes it innovative, most appropriate, and effective in removing the financial barrier to large-scale EE activities.

The program focuses on the development of financing tools for the industrial sector. The authors conducted a special analysis to support this approach. It is true that industrial energy efficiency potential is very large; competition is getting stronger. It is also true that Russian government provides no support to EE activities in the industrial sector. Therefore, selection of the target sector is correct, and cross-sector comparison provided in the project backs this conclusion.

Two selected regions are really among the most promising ones. At the same time, the table with factors weights applied to identify the regions is questionable. While low energy price was mentioned as a barrier, the selected regions have the lowest electricity price, but the largest industrial output scale. The reviewer agrees with the selection of regions, but the argumentation should be corrected. More focus should be made on the scale of banking activities in those regions, not just industries per se.

Project components selected are sufficient to accomplish the tasks.

Focus on relatively simple, replicable, and proven easy to monitor, with appropriate payback, technologies reduces the technological risk and enlarges the room for project replicability. In "good housekeeping" section of the proposal a special attention is to be given to coordination of planning activities between enterprise departments. The role of the energy department in decision-making should be enhanced, as well as energy considerations while developing enterprise business strategy. This problem is usually overlooked, so often the load schedule for energy equipment at the enterprise is developed without involvement of industrial energy manager or chief engineer.

Not all industrial enterprises, especially MSE, can afford having plenty of personnel in the chief energy manager department, but this function can be effectively performed by ESCOs. FEER program stimulates maturing of already existing small ESCOs, as well as appearance of new ones.

All project stakeholders – FIs, Russian ESCOs, EE vendors – are identified, so no extra time is needed to search for partners. Credit lines and guarantees are selected as financial mechanisms for the program. Comparison with other options makes believe that a correct financial tool set is selected. Credit lines, technical assistance, and guarantee facility would allow to leverage co-financing from different sources in the range of US\$ 27.65-59.15 million.

The statement about negligible investments in energy efficiency in the Incremental Cost and Benefits Matrix (section 5.5.1) does not seem to be correct. It is valid only for projects financed by the local FIs; budgets and own funds of industrial and municipal enterprises are used presently to finance projects. As to the Increment column in this matrix, one more item needs to be stressed: more energy would be available for export. So poor energy efficiency in the Russian industrial sector, against the background of

desired by the government economic growth, would not limit Russia's energy export potential.

The baseline is characterized by lack of awareness, lack of enterprise or FIs' readiness to purchase EE consulting services, lack of available financing technologies and tools for EE project financing. This Program involves three distinct types of incremental costs to be met with GEF funds:

- ⇒ costs associated with the TA programs that cannot be met from other funding sources;
- ⇒ amount of guarantee funds requested by IFC that are not returned to GEF at the end of the Program; and
- ⇒ that portion of the Program's administrative expenses that are not met by IFC.

## **2.2. Global environmental benefits and/or drawbacks of the project**{ TC "Global environmental benefits and/or drawbacks of the project" \f C \l "3" }

The conservative estimates of CO<sub>2</sub> emission reduction potentially directly generated by this program is in the range of 1.1- 2.2 million tons. Indirect effects are difficult to measure, but if proposed financial technologies prove to be sustainable and are replicated, indirect effect can be significant. Every energy unit saved at the end-use facility generates additional 0.2-0.5 units of reduction at the energy supply system. So there is a multiplier.

The project effectively addresses the CC1 (Transformation of markets for high volume products and processes) and CC-2 (Increased access to local sources of financing for renewable energy and energy efficiency) goals.

## **2.3. Replicability of the project**{ TC "Replicability of the project" \f C \l "3" }

The FEER proposal itself is partly based on the replication of Hungarian experience. It is described in the proposal. One thing is missing in this description: energy efficiency improvement effects and CO<sub>2</sub> emission reduction evaluations.

Replicability of FEER goes along several lines: from initially 4 FIs to a larger number; from industry to other sectors; from initially two Russian regions to more; from Russia to other countries with similar conditions. The replication potential will also be a function of the degree of stakeholders' involvement in the project. Clear guidelines and "comprehensive menu of actions" allowing to launch similar financial schemes by other FIs will make replication potential large. The issue of these financing technologies and software know-how ownership is not addressed in the proposal. So conditions, on which such technologies can be disseminated, are not clear.

## **2.4. Sustainability of the project**{ TC "Sustainability of the project" \f C \l "3" }

A program is sustainable when risks are minimized. Risk minimization strategies are considered in section 7.2 of the proposal. Project risks are properly identified and addressed in the proposal through corresponding risk mitigation strategies. To reduce the risk of failure, the proposed approach builds on already tested approaches in other countries, and promotes regional and FI diversification of activities and concentrates on industrial EE projects.



Today, for the Russian FIs community, all EE projects generate invisible products, and this determines a very high project risk perception. This is why there are loans to finance energy supply projects with much higher paybacks, but there is very limited experience in lending money for EE projects. From the industry side, the problem is to absorb project-based funds under given conditions, with a clear baseline setting and transparent monitoring procedures. This particular project is to lift a curtain to open the stage and to give FIs glasses (TA) to make actors (effects of EE projects) visible. So sustainability and continuity of this program originates from making EE project financing visible and attractive for both industrial enterprises and FIs.

Competition in the Russian industrial sector is growing. As a result, cost-reduction activities are to become more and more parts of companies' strategies. They would sustain demand for FEER financial instruments to reduce production costs, of which energy costs are an important part.

Importantly, addressing political and economic risks requires consulting with the Ministry of Economic Development and Trade, rather than with the Ministry of Energy.

Another comment to this section relates to the currency of loans to be provided. The experience of the World Bank EDHP is to be investigated. Mere term "hard currency", when Euro/US dollar exchange rate fluctuates so intensely, is not clear. Maybe a portfolio of currencies is to be used to reduce the risk of defaults.

When effective EE financing technologies are established, both huge energy efficiency potential and expected growth of energy prices will provide sustainability to the program. Sustainability is also a function of projects eligibility. There is a special section on this issue in the proposal. Selected criteria are: new projects (risk of poor project development is reduced); proven mainly generic technologies (fits better the present knowledge of Russian ESCOs and energy efficiency consulting companies, which would be involved in projects development); long-term credits, up to 5 years (hardly available at present, but so attractive for the borrower); relatively small-scale initial projects from US\$ 50,000 to 500,000 (reduced default risks and improved learning curve through applying the schemes to a wider variety of initial conditions).

Capacity building aspects are strongly addressed in the proposal through its TA component. Substantial investments are expected in the capacity building and built capacity loading. The project favors an approach that stresses continuity for the institutional logistics development. TA component targeted the development of stable procedures of EE project identification and development by industrial managers and ESCOs (formal formats would be required to make project proposals comparable and sufficiently comprehensive). Credit line and guarantee parts would reduce FIs risk perception and thus make EE lending process more simple and dynamic. So when the project implementation time expires, the institutional system would be set up and able to continue financing EE projects.

**2.5. Verification of data for energy savings and emission reduction potential for different energy consuming sectors**{ TC "Verification of data for energy savings and emission reduction potential for different energy consuming sectors" \fC\l "3" }

Clear monitoring and evaluation procedures allowing for timely identification of, and fixing, problems are important considerations for risks minimization. M&E problems arise at different levels, from the savings evaluation to the evaluation of the FEER impacts on the willingness of the financial community to lend for EE projects countywide.

M&E issues are well-addressed in the proposal, and there is only one comment. More attention should be given to monitoring industrial energy costs savings to be certain that they do pay for investments. Baseline issue becomes critical in savings evaluation and reporting. It is not easy to set up baselines in some industries. Even transition to specific energy consumption indicators often does not address the problem. A point should be made, that M&E section is to be a part of any feasibility study for EE project. Baseline setting should be a part of TA and regular part of scope of work for energy efficiency consulting companies working on project proposal preparation. Baseline provisions and M&E formats and provisions should be specified in the obligations of the borrower. Specific energy balances and simple models of production processes are to be developed to identify impacts of different factors on specific energy consumption.

## **2.6. Evaluation of FEER-driven GHG emissions reduction{ TC "Evaluation of FEER-driven GHG emissions reduction" \fC\l "3" }**

In the cost-benefit analysis section (Annex 3), evaluation of CO2 reduction potential needs improving. The structure of CO2 reductions originated in the Russian industry from electricity savings and fuel savings, would be reverse to what is shown in tables on pages 76 and 81. CENEF's experience shows that much more reduction would originate from fuel savings and from heat savings (translated finally to fuel inputs savings), than from electricity savings. Nevertheless, estimated range of cost per ton of CO2 emission reduction – 3-18 US\$/ton – seems reasonable.

Average weighted cost of energy in this table also requires clarification: it is much higher than even only electricity prices in both selected regions (compare with table 2.5 on p.22).

### Specific Issues to be Addressed and IFC Response:

1. FIs in Russia possess a lot of spare financial resources and are looking intensely for new financial products, and their interest in EE is growing

*IFC Response: IFC's engagement of Russian FIs in the design of the Program indicated that the clear lack of long term capital (loan terms in excess of one year) across the financial sector is a key barrier to commercial EE finance in Russia. This is especially an issue with regard to a lack of long term rouble lending. In the preliminary study on financing options for energy efficiency, in our interviews with Russian FIs during pre-appraisal, and discussions with IFC's Global Financial Markets department the conclusion was that there is a LACK of financial resources in the Russian financial markets. Thus, IFC has included credit lines as a key component of the Program.*

2. Two selected regions are really among the most promising ones. At the same time, the table with factors weights applied to identify the regions is questionable. While low energy price was mentioned as a barrier, the selected regions have the lowest electricity price, but the largest industrial output scale. The reviewer agrees with the selection of regions, but the argumentation should be corrected. More focus should be made on the scale of banking activities in those regions, not just industries per se.

*IFC Response: IFC agrees with the reviewer and has revised this section of the proposal. Given the focus on mobilizing commercial financial institutions it is paramount that the program works with keen and committed FIs. In selecting pilot regions, IFC was looking for a convergence of four key criteria: (1) partner FIs with interest and willingness to participate in the program; (2) energy prices at levels which make EE projects commercially viable; (3) an industrial base with internal competition to drive cost-cutting investment plans; (4) an existing infrastructure of EE consultants or service providers. The Ural Region, Moscow Region, Volga Region and Northwest Russia meet these criteria. Our pre-selection of Moscow and the Urals was driven, all other things being equal, by the efficiency with which we can mobilize resources in these regions.*

3. In "good housekeeping" section of the proposal a special attention is to be given to coordination of planning activities between enterprise departments. The role of the energy department in decision-making should be enhanced, as well as energy considerations while developing enterprise business strategy. This problem is usually overlooked, so often the load schedule for energy equipment at the enterprise is developed without involvement of industrial energy manager or chief engineer.

Not all industrial enterprises, especially MSE, can afford having plenty of personnel in the chief energy manager department, but this function can be effectively performed by ESCOs. FEER program stimulates maturing of already existing small ESCOs, as well as appearance of new ones.

*IFC Response: IFC agrees with the reviewer about the importance of addressing energy management issues. When working with ESCOs, the Implementation Team would work with them on developing business models that also incorporate energy management as*

*well as investment needs. This will also be addressed through the more general EE awareness raising activities.*

4. The statement about negligible investments in energy efficiency in the Incremental Cost and Benefits Matrix (section 5.5.1) does not seem to be correct. It is valid only for projects financed by the local FIs; budgets and own funds of industrial and municipal enterprises are used presently to finance projects. As to the Increment column in this matrix, one more item needs to be stressed: more energy would be available for export. So poor energy efficiency in the Russian industrial sector, against the background of desired by the government economic growth, would not limit Russia's energy export potential.

*IFC Response: IFC agrees that the original statement was misleading. The reviewer has correctly pointed out that the baseline should be the volume of commercial lending taking place rather than the total amount of investment including that from own resources. This has been amended in the Incremental Cost and Benefits Matrix. Similarly we have added in the Incremental Benefit of additional energy available for export.*

5. The FEER proposal itself is partly based on the replication of Hungarian experience. It is described in the proposal. One thing is missing in this description: energy efficiency improvement effects and CO2 emission reduction evaluations.

*IFC Response: The Hungary Program, like its successor CEEF and the proposed Program in Russia, is a market development initiative, in which the indirect impact – including commercially financed projects stimulated in the market, but not necessarily directly supported by IFC guarantees – is the objective of the Program. Thus, the transactions directly supported by the guarantees are simply a means to an end, not the result of the Program. However, in response to the reviewer's comments IFC has added a table in Annex 8 showing the investments guaranteed to date and their CO2 benefits. An evaluation of the remaining projects in the Hungarian portfolio is currently being undertaken and will be presented at CEO endorsement.*

6. Clear guidelines and “comprehensive menu of actions” allowing to launch similar financial schemes by other FIs will make replication potential large. The issue of these financing technologies and software know-how ownership is not addressed in the proposal. So conditions, on which such technologies can be disseminated, are not clear.

*IFC Response: This has now been elaborated in Section 6.2 “Proposed Replicability” the Project Brief. The financing technologies and software falls into three categories: (1) general information, templates, model contracts, case studies etc that will be posted to a website giving free access to all interested parties; (2) information on specific financial products developed with specific financial institutions that allow them to penetrate certain market niches. Information such as credit scoring mechanisms would be viewed as proprietary to the financial institution, although case studies on projects that use specific structures can be made publicly available, and marketing material promoting*

*specific products will also be publicly available; (3) an Operating Manual for Program Management could be made available to other GEF funded EE finance initiatives.*

7. Importantly, addressing political and economic risks requires consulting with the Ministry of Economic Development and Trade, rather than with the Ministry of Energy.

*IFC Response: The Ministry of Economic Development and Trade has been added to the list of key stakeholders in Section 4.1 to be engaged by IFC during implementation.*

8. More attention should be given to monitoring industrial energy costs savings to be certain that they do pay for investments. Baseline issue becomes critical in savings evaluation and reporting. It is not easy to set up baselines in some industries. Even transition to specific energy consumption indicators often does not address the problem. A point should be made, that M&E section is to be a part of any feasibility study for EE project. Baseline setting should be a part of TA and regular part of scope of work for energy efficiency consulting companies working on project proposal preparation. Baseline provisions and M&E formats and provisions should be specified in the obligations of the borrower. Specific energy balances and simple models of production processes are to be developed to identify impacts of different factors on specific energy consumption.

*IFC Response: Establishing the potential energy savings will be a pre-requisite of the FIs being allowed to use the credit lines for financing specific projects and will therefore be a component of the loan documentation to be supplied to the FI. This process is currently implemented in HEECP and CEEF. Post implementation verification checks will be made on a sample of the larger and more complex projects. Within the CEEF and HEECP programs FIs are required to report on loan performance on a regular basis during the life of the loan.*

9. In the cost-benefit analysis section (Annex 3), evaluation of CO<sub>2</sub> reduction potential needs improving. The structure of CO<sub>2</sub> reductions originated in the Russian industry from electricity savings and fuel savings, would be reverse to what is shown in tables on pages 76 and 81. CENef's experience shows that much more reduction would originate from fuel savings and from heat savings (translated finally to fuel inputs savings), than from electricity savings. Nevertheless, estimated range of cost per ton of CO<sub>2</sub> emission reduction – 3-18 US\$/ton – seems reasonable.

Average weighted cost of energy in this table also requires clarification: it is much higher than even only electricity prices in both selected regions (compare with table 2.5 on p.22).

*IFC Response: IFC has revised the evaluation of CO<sub>2</sub> reduction potential based on a different balance of electricity and heating use as suggested by the reviewer. In addition, the average weighted energy prices has been revised leading to an increase in the CO<sub>2</sub> reduction potential.*

**Annex 11 : Response to Secretariat and other Implementing Agencies**

**GEF Secretariat Project Brief Review for  
Financing Energy Efficiency in the Russian Federation (FEER).**

**IFC Response to GEFSEC Project Cover Sheet**

**Cover Sheet:**

Anticipated PDF financing given as \$0.03 million. No PDF financing has been requested for this project.

Please change IA Contact Person to Ian Crosby

**Country Ownership:**

<b>GEFSEC Comment</b>	<b>IFC Initial Response</b>
<b>Country Drivenness</b>	
No local co-financing	<p>Since this is a private sector initiative there is no Government co-financing available. Local co-financing will come in two forms:</p> <ul style="list-style-type: none"> <li>• At the FI level, there will be in-kind co-financing to develop EE financial products and services. These costs have not been estimated as there would be very little scope for monitoring these costs at the program level.</li> <li>• At the project level there will be sponsors' equity contributions to project costs, typically, of 20%. These costs have been included in the Incremental Cost analysis.</li> </ul>
No strong indication of country drivenness	<p>By definition, as a private sector program, the proposed program is market-driven, with country drivenness reflected by company demand; in this case, as indicated by the strong demand for IFC credit lines and TA by the 15 Russian banks with which IFC has met during pre-appraisal. A specific indicator of local interest has been the attendance 15 Russian FIs at a seminar on energy efficiency financing held in Moscow in October 2003, and the subsequent follow-up by 2 FIs with concrete investment proposals and a request to provide information on how to evaluate co-generation projects.</p>
<b>Endorsement</b>	
Endorsement letters	<p>These were included in Annexes 12 and 13 of the Project Brief, and were provided in the project tracking system.</p>

**Program Policy and Conformity**

<b>GEFSEC Comment</b>	<b>IFC Initial Response</b>
<b>Program Designation and Conformity</b>	
Focus description on CC2	<ul style="list-style-type: none"> <li>• We have re-written as directed</li> </ul>

<b>Program Design</b>	
A1. Choice of industrial sector	<p>The main driver behind the initial choice of working in industry was that the FIs will be more comfortable lending to industry because there is more transparency and better security available for loans. By focusing, initially, on transactions where the FIs are more comfortable we should be able to get quick wins that increase FI confidence and allow us then to tackle trickier markets. Ultimately, however, the market will determine where the deals will come from. Our expected focus on industrial sector projects is not restrictive, but rather reflects the results of our market assessment which indicated that the immediate opportunities reside in this sector.</p> <p>Referring the specific point raised by GEFSEC – yes, we do see potential for a product based approach, particularly for equipment such as cogeneration, air compressors, heat exchangers. IFC’s experience in CEEF is that many project proposals come from industry (7 out of 8 transactions approved to date), and we are now actively looking to systematize this approach along the lines of our blockhouse product in Hungary. This experience can then be transposed to Russia.</p>
A2. Role of municipalities as borrowers	<p>We don’t exclude municipalities as borrowers – it will be up to the individual FIs to decide where they want to focus. We have feedback from some FIs that they see municipal heating as a potentially attractive sector. In theory it would be possible to benefit from a GEF guarantee even if they do not want / cannot have an IFC credit line for this purpose. However, it is not yet clear whether the FIs would, in fact, want this.</p>
A3. Heat pumps	<p>We would consider ground source heat pumps (based on geothermal energy) as a renewable source. We have clarified this in the Project Brief.</p>
A4. Definition of an EE project	<p>We define an energy efficiency project as one that reduces the absolute emissions of GHG or which reduces the specific energy consumption of a process, per unit of production. However, IFC recognizes that this could potentially apply to any industrial project in Russia. We will, therefore, develop a detailed set of eligibility criteria during Project Appraisal to ensure that projects are selected from an EE perspective. We suggest the focus should be on three elements: the contribution that EE benefits make to the loan repayment stream; whether the technology used is generally accepted as being an energy efficiency improvement e.g. co-generation, waste heat</p>



	<p>recovery; and, the comparative importance of the energy savings to the particular industry sector e.g. a 5% reduction in energy costs in the metals sector would be significantly more important than a 5% reduction in the textiles sector. We will present the eligibility criteria at CEO endorsement.</p>
<p>A5.Financing for renewable energy projects</p>	<p>Our approach in CEEF is to follow the FIs' strategic lead. If a bank wants to finance a renewable energy project we would provide support. We have spoken with Helmut Schreiber at the WB and agree with him that it is unlikely that we would be chasing the same project opportunities, and certainly not during the first year of FEER operation. However, we will continue to ensure that there is good co-operation and co-ordination of the two programs (FEER and RREP) at the local level. [Note: we were advised by the Secretariat during upstream consultations that the strategic priority (SP2) broadly includes financing of both EE and RE projects, thus limiting the need to differentiate or limit the program's focus to one or the other.] We will also develop a co-ordination strategy for working with RREP and other initiatives targeting RE projects in Russia. This will be included in the submission for CEO endorsement.</p>
<p>B1 Administration of the credit lines</p>	<p>On the specific question of how IFC ensures its credit lines are attractive, our analysis of the market is that there are few other similar sources of finances at this moment in time. This also explains the enthusiastic reception to the project concept that we have had to date. As other sources of finance become available IFC may need to revise the credit line pricing for new loans. Commitment fees and interest payments will ensure that the FIs stay focused on disbursing the existing credit lines and maximizing the impact of the TA.</p> <p>The presence of alternative long term finance provides an opportunity for FIs to finance more EE projects than can be serviced using the IFC credit lines alone. These alternative sources of finance are, thus, an opportunity as well as a potential threat.</p>
<p>B2 Complementarity of credit lines and guarantees</p>	<p>The terms and conditions of the guarantees and credit lines, and whether they can be used singly or in tandem can only be resolved during detailed discussions with the FIs.</p> <p>We understand GEFSEC desire to increase the range of local financing sources, also available to the FIs, but</p>

	<p>increasing the availability of long term finance, in general, is outside the scope of this project. Our goal here, therefore, is to convince FIs that investing in EE projects is good business for them, wherever, the long term finance originates. As the need for IFC credit lines diminishes we expect, in the long term, that FIs continue to lend for EE projects.</p> <p>In the incremental cost analysis we have anticipated raising an additional \$5 million - \$7.5 million in long term financing from other IFIs or sources of long term financing.</p> <p>The guarantee will be applied to a portfolio of projects and so cannot form part of the collateral structure of individual transactions. Its role is that of “comfort blanket” to help get the FI over the threshold of whether to invest in EE projects at all.</p> <p>During Project Appraisal we will bear in mind the GEF request to keep as much separation as possible between the credit lines and the guarantees as practicable without incurring excessive additional transaction costs.</p>
B3 What incentives are there for the FI to create deal flow?	There are a number of incentives: the FI pays a commitment fee to get access to the credit lines; once the FI has drawn money down from the credit lines it pays interest on that amount; there is a cap on IFC’s exposure to individual FIs – if the FI is not using the credit lines, its ability to borrow more from IFC is impaired.
B4 Does the GEF Guarantee come with fees?	Yes, but the pricing formula will be developed on appraisal, and as an outcome of negotiations with participating FIs, as determined by local financial market conditions at the time.
C1 Hiring of local staff	Yes, we will hire local staff thus creating local capacity. We will also work extensively through local consulting organizations and NGOs to build their capacity to design and deliver projects.
C2 Incremental cost analysis	We have revised the incremental costs analysis.
C3 Additional region	It will be a third region

### Sustainability

GEFSEC Comment	IFC Initial Response
“Price Tag” of project services	We understand and fully endorse the GEF view of sustainability in this project, and we would like to stress that we have already seen this behavior demonstrated in

	<p>certain market sectors in Hungary.</p> <p>Following good experience in HEECP and CEEF, our intention is to work through local partners (consultants and NGOs), building capacity in them. We anticipate that during the project we will recover some of the costs of TA provided to FIs and other stakeholders through fees paid to these local partners. The level of cost recovery is still to be determined and will evolve over the course of the project, as we identify the willingness of parties to pay for different services. We do not see creating a new non-profit company as the right route, since there are existing organizations which we can strengthen, and who can play that same role.</p>
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### Replicability

GEFSEC Comment	IFC Initial Response
“GEF is not necessarily going to fund any follow-up and replication efforts ...”	We had guidance from GEFSEC during the discussion of the Concept Note and during upstream consultations that we should treat FEER as a pilot that could then be rolled out across Russia in a second phase (not tranche). We understand that if we were to seek GEF support for a second phase we would need to submit a separate project proposal, whose acceptance would be conditional on meeting a variety of criteria.

### Stakeholder Involvement

GEFSEC Comment	IFC Initial Response
Keep list of stakeholders open	We have included an appropriate comment in the text

### Monitoring and Evaluation

GEFSEC Comment	IFC Initial Response
M&E workplan is a requirement for CEO endorsement	We have amended the text
Please review logframe indicators	We have reviewed and amended the text. However, we believe a small number of FIs doing a larger amount of business is preferable since we need to build critical mass in an institution to have a sustainable impact. In fact, practicalities limit the number of FIs with which we will work. This is related both to the transaction costs (for both IFC and the FIs) of each credit line and TA support program, which requires bigger credit lines over multiple smaller lines, as well as the limited number of FIs in Russia which are able to meet IFC appraisal standards

	(based upon financial strength and credit procedures) and which are capable of taking on more debt.
M&E Budget	USD 200k external contract with a focus on evaluation with additional effort from project implementation team focused on generating monitoring data to feed into the evaluation. This approach reflects lessons learned in ELI, HEECP and CEEF.

## Financing

### Financing Plan

GEFSEC Comment	IFC Initial Response
IFC provides no cost sharing of the implementation cost	<p>IFC has done a poor job of representing the total costs of implementing this program and the sharing of implementation costs. In the original Brief we appear to have buried the fact that we have raised USD1.1 million from international donors for hiring the implementation team and USD 0.15 million from IFC's Sustainable Financial Markets Facility for providing TA. In addition, IFC would contribute USD 2 million (represented as \$1 million in the original submission) to creating and supervising the credit lines, and also providing advice and support to the implementation team and FIs. These supervision and TA costs provided by IFC's Global Financial Markets department are paid for entirely from fees raised on their investment. Our experience in CEEF is that this income does not adequately cover the IFC's internal implementation costs.</p> <p>Looking at the total implementation costs (excluding IA supervision)</p> <p>Costs  IFC implementation costs USD 2 million  Field Implementation costs 4.75 Million  TA costs USD 1.5 million  Total USD 8.25 million</p> <p>Funders  IFC Global Financial Markets USD 2 million  IFC SFMF USD 0.15 million  IFC donor funds USD 1.1 million  Total IFC USD 3.25 million  GEF USD 5 million</p> <p>Ratio IFC: GEF 1:1.54</p>

	<p>And in addition IFC is providing USD 20-30 million in credit lines</p> <p>The financing plan is different to that proposed at concept stage, but we feel that this not uncommon. The increase in costs reflects better intelligence of the need for project development services in Russia and also IFC's experience in CEEF and HEECP.</p>
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### IA Fees

<b>GEFSEC Comment</b>	<b>IFC Initial Response</b>
Do we need the full supervision fee?	Yes. The type of supervision provided by the Global Financial Markets Group is significantly different to the support provided by IFC's Environmental Finance Group, whose level of support and engagement with its field team, and whose support for GEF-required processes, reporting, oversight, budget management, and M&E in CEEF and HEECP is barely covered by IA fees.

### Institutional Coordination and Support

#### Core Commitments and linkages

<b>GEFSEC Comment</b>	<b>IFC Initial Response</b>
Agency commitment is questionable	IFC is fully committed to this project. In the project brief we have done a poor job of illustrating the costs associated with creating and supervising the credit lines, and providing strategic advice and guidance on how to deal with the FIs. IFC does take fees on its investment, but experience in CEEF and HEECP, to date, is that IFC does not make money on this type of project, but is interested to continue to develop the project model in order to establish a sustainable business line for IFC. IFC is, itself, developing the culture that we are trying to cultivate in local FIs to the extent that the Global Financial Markets Group has recently created its own Environmental Finance Team to further develop and market products piloted in CEEF and HEECP.

**Response to GEF Secretariat Concept Agreement Review, February 25 2004**

<b>GEF Secretariat Comment</b>	<b>IFC Response</b>
Replication: For further project preparation, exploration of GHG saving potential in sub-sectors would be helpful	We have included relevant data in Section 2.3
Financing Plan: Agreement is need between GEFSEC and IFC on appropriate implementation cost and their financing.	<p>IFC have had two upstream consultations with the GEFSEC to describe the proposed program and discuss the appropriate use of GEF funds. The appropriateness of using GEF funds to pay for operational costs incurred by IFC field team is discussed in Section 5. When IFC extended lines of credit to financial institutions they are not typically tied to specific investment types as is proposed here. There is therefore no need to provide additional support or assistance to the FIs. However, in the case of FEER IFC is trying to encourage the FIs to invest in non-traditional business areas or types of project. This requires extensive assistance with strategy development, project appraisal, marketing etc. These costs are additional to IFC's normal investment model and are therefore justifiable incremental costs. IFC has identified significant donor funding for this program, however, a valuable aspect of GEF funds is that they are completely un-tied and flexible. They can therefore be used for funding the work of the most appropriate experts, especially local experts, and the most diverse range of project expenditure.</p>
Co-ordination between WB and IFC on a strategic framework for EE financing projects	<ul style="list-style-type: none"> <li>• The review of World Bank Group energy efficiency programs was completed in January 2004, and included an assessment of the experience in Hungary. The review demonstrated that the approaches of the World Bank and IFC are different but complementary, reflecting the relative comparative advantages of each.</li> <li>• The proposed extension of the HEECP program integrates a structured learning function which would provide an information sharing infrastructure for the various EE finance facilities in the region. This function would facilitate sharing of program “technology” developments and support capacity building for the various facilities.</li> <li>• IFC's strategy in the area of EE finance is very</li> </ul>

	<p>closely linked to IFC's corporate commitment to mainstreaming environmental sustainability in its core business. IFC's financial markets business has grown to be the most important portion of the Corporation's portfolio. The expertise IFC has in developing emerging financial markets provides an important opportunity to mobilize local private capital through IFC's FI relationships and access to capital. FEER is the next step in this strategy, building on the experience in HEECP and CEEF.</p> <ul style="list-style-type: none"> <li>• The proposed use of GEF funds reflects the lessons IFC has learned in these previous efforts, as well as IFC's experience in the Russian financial markets. It also reflects IFC's efforts to refine a model for mainstreaming a sustainable business within IFC.</li> <li>• IFC's comparative advantage and role is different to that of the World Bank, thus indicating a distinctly different strategic approach to the sector. Information sharing between the two sister organizations will continue to inform the approaches taken by both.</li> </ul>
<p>More documentation on lessons from CEEF and HEECP</p>	<p>Lessons are referenced throughout the text and specifically listed in Annex 7.</p>

## UNDP Comments on World Bank's May 2004 WP Submission

### Russia: Financing Energy Efficiency in the Russian Federation (FEER)

1. While UNDP/GEF and other UNDP EE initiatives in Russia and their relevance for FEER are discussed in the Project Brief, they are omitted from the Executive Summary

#### 1.1. We have included the relevant references in the Executive Summary

2. GEF Focal Point endorsement: there is a letter of support from the Energy Efficiency Department of Ministry of Energy and a letter expressing interest in the project from a deputy Minister of Finance. Neither is the GEF FP endorsement. My guess is that this is due to recent restructuring of the Russian Government and continuing personnel and institutional uncertainties. Is there any indication who will be new GEF FP in Russia and when the endorsement is expected?

*An endorsement from the GEF Focal Point in the Ministry of Natural Resources has now been provided*

3. Description of barriers and regulatory context. Are there any regulatory barriers, in the area of financial sector regulations (both policies and practices), constraining the Russian FIs ability and interest to finance EE? Any elements of the taxation regime/policies that may discourage EE lending and leasing by Russian FIs?

*Our research to date has not highlighted any potential problems with regard to financial sector regulations. IFC is currently managing a very successful program to promote/support the leasing industry in Russia. Internal discussions with the IFC leasing team in St Petersburg suggest that leasing is a very attractive option for EE projects. Further research will be carried out during project appraisal.*

4. Project components description and scope. Description of the project components could be more detailed and specific. For example, Component 1 mentions but does not specify how the IFC Team will monitor eligibility of individual transactions, i.e. what documents and when should be received from FIs or project sponsors etc. Will this be addressed in preparation of IFC credit and guarantee lines? Components 2 and 4 could focus not only on fundamentals of bankable project preparation/development, business planning, and equity mobilization, but also on comprehensive EE project and ESCO business management. In general, TA components present menus of possible activities. Perhaps, they could be made more specific later. Also, by listing a fairly long list of the proposed TA activities, the project brief does not prioritize/focus them enough and risks spreading too thin.

*Project eligibility is a key concern. IFC has elaborated a set of eligibility criteria for industrial projects in the context of the CEEF program. These are continually being*



*refined, and a full set of decision making checklists will be prepared during project appraisal. Typically, IFC's field implementation team would be engaged early in the project lifecycle (as soon as the FI becomes aware of a project) to discuss eligibility, based on GEF criteria.*

*The menu of TA options has been kept deliberately broad in order to be as responsive as possible to market needs. We will select the most appropriate TA intervention to make deals happen. Where ESCOs are present we will be able to give targeted advice on ESCO business management, but we will not have the capacity or mandate to develop new ESCOs.*

5. Stakeholder participation. Federal Energy Commission and regional ECs are missing. These agencies are increasingly taking into account EE investment requirements in their tariff setting practices. Also, a mechanism to fine tune the project activities, particularly next phases, based on related activities of other IAs, donors, etc., could be introduced.

*We have added the FECs and RECs to the list of stakeholders.*

Annex 12: Focal Point Endorsement Letter { TC "Annex 11: Focal Point  
Endorsement Letter" \f C \l "1" }



**МИНИСТЕРСТВО  
ПРИРОДНЫХ РЕСУРСОВ  
РОССИЙСКОЙ ФЕДЕРАЦИИ**

123995, Москва, Д-242, ГСП-5  
ул. Б.Грузинская, 4 / 6  
Телефон: (7 095) 254 15 65  
Факс: (7 095) 254 82 83  
e-mail: [admin@mnr.gov.ru](mailto:admin@mnr.gov.ru)

*19.03.2004*

**MINISTRY  
OF NATURAL RESOURCES  
OF THE RUSSIAN FEDERATION**

4 / 6, B. Grouzinskaya str.  
Moscow D-242, GSP-5, 123995  
Telephone: (7 095) 254 15 65  
Fax: (7 095) 254 82 83  
e-mail: [admin@mnr.gov.ru](mailto:admin@mnr.gov.ru)

Г-ну Леонарду Гуд  
Главному исполнительному директору,  
Председателю правления  
Глобального экологического фонда  
Факс: (1 202) 522 32 40/45

марта 2004 г.

О поддержке программы МФК  
по стимулированию инвестиций  
в энергосберегающие технологии

Уважаемый г-н Гуд,

Министерство природных ресурсов Российской Федерации ознакомилось с концепцией программы по стимулированию инвестиций частного сектора в энергосберегающие технологии в России, подготовленной Международной Финансовой Корпорацией, и сообщает.

Принимая во внимание актуальность снижения энергоемкости российской экономики, а также необходимость внедрения энергосберегающих технологий частным сектором, что будет способствовать снижению выбросов парниковых газов в атмосферу, Министерство природных ресурсов Российской Федерации поддерживает инициативу Международной Финансовой Корпорации по реализации упомянутой программы.

Заместитель Министра

*с. Франциска*

*И.Е.Осокина*

И.Е.Осокина

MINISTRY OF NATURAL RESOURCES OF THE RUSSIAN FEDERATION

19.03.2004

To: Mr. Leonard Good  
Chief Executive Officer and Chairman  
Global Environment Facility  
Fax: (1 202) 522 32 40/45

Support to IFC program aimed  
at catalyzing investment  
in energy saving projects

Dear Mr. Good,

The Ministry of Natural Resources of the Russian Federation has reviewed the concept note of the program aimed to mobilize financing for energy saving projects in Russia, developed by the International Finance Corporation (IFC), and reports the following.

Given the high relevance of reducing the energy intensity of the Russian economy, as well as a strong need on the part of the private sector to adopt energy saving technologies, leading to a reduction in greenhouse gas emissions into the atmosphere, the Ministry of Natural Resources of the Russian Federation supports IFC's initiative to implement the above mentioned program.

Sincerely,

I.E. Osokina  
Deputy Minister

**Annex 13 : Letters of Support for Project from Russian Ministry of Energy and Russian Ministry of Finance** { **ТС "Annex 13 : Letters of Support for Project from Russian Ministry of Energy and Russian Ministry of Finance" \f C \l "1" }** }

МИНИСТЕРСТВО ЭНЕРГЕТИКИ  
РОССИЙСКОЙ ФЕДЕРАЦИИ

**ДЕПАРТАМЕНТ ЭКОЛОГИИ**

109074, г. Москва, Китайгородский пр., д.7  
Телефон 710-44-50, факс 710-54-68

*03.03.04 № 21-04-01/47*

На № \_\_\_\_\_ от \_\_\_\_\_

Г-ну Эдварду Нассиму  
Директору Департамента  
Центральной и Восточной Европы  
Международной Финансовой Корпорации  
Московское представительство

О поддержке программы МФК  
по стимулированию инвестиций  
в энергосберегающие технологии

Уважаемый г-н Нассим!

Департамент экологии Министерства энергетики Российской Федерации выражает признательность Международной Финансовой Корпорации (МФК) в связи с инициативой МФК по стимулированию инвестиций частного сектора в энергосберегающие технологии в России.

Представленная МФК программа была обсуждена в Минэнерго России. В свете реализации утвержденной Правительством России Энергетической стратегии указанная инициатива МФК представляется своевременной и актуальной.

Мы рассчитываем на плодотворное сотрудничество с МФК по реализации упомянутой программы, направленной на формирование условий для реализации проектной деятельности в области повышения энергоэффективности и снижения выбросов парниковых газов.

С уважением,

Заместитель руководителя Департамента



О.Б. Плужников

MINISTRY OF ENERGY OF RUSSIAN FEDERATION  
ENVIRONMENTAL DEPARTMENT

03/03/04  
#21-04-01/47

To: Mr. Edward Nassim  
Director  
Central and Eastern Europe  
International Finance Corporation

Re: Support to the program on catalyzing energy efficiency investment in Russia

Dear Mr. Nassim,

Environmental Department of the Ministry of Energy of the Russian Federation appreciates the International Finance Corporation's initiative aimed at catalyzing private sector investments in energy saving technologies in Russia.

The program, presented by the IFC, has been discussed in the Ministry of Energy of Russia. The reviewed IFC initiative is timely and relevant in respect to the execution of Energy strategy approved by the Government of Russia.

We are looking forward to effective cooperation with the IFC in implementation of the program, which will contribute to formation of the context for conducting projects enhancing energy efficiency and reducing greenhouse gas emissions.

Sincerely,

Deputy Chief of Department  
Pluzhnikov O.B.

**МИНИСТЕРСТВО ФИНАНСОВ****РОССИЙСКОЙ ФЕДЕРАЦИИ****ЗАМЕСТИТЕЛЬ МИНИСТРА**

109097, Москва, ул. Ильинка, 9  
телетайп: 112008  
телефакс: 925-08-89

01.03.04 № 26-04-03/1841


На № \_\_\_\_\_

Г-ну Эдварду Нассиму  
Директору Департамента  
Центральной и Восточной Европы  
Международной финансовой  
корпорации  
Московское представительство

103090, Москва, ул. Большая Дмитровка,  
д.7/5, стр.2, 4 эт.

Уважаемый г-н Нассим,

Министерство финансов Российской Федерации ознакомилось с подготовленной Международной Финансовой Корпорацией концепцией программы по стимулированию инвестиций частного сектора в энергосберегающие технологии в России и сообщает, что инициатива МФК по расширению финансирования проектов по повышению энергоэффективности заслуживает внимания.

  
А. Ю. Петров

THE MINISTRY OF FINANCE OF THE RUSSIAN FEDERATION

DEPUTY MINISTER  
1.03.04 # 26-04-09/1841

Edward Nassim,  
Director  
Central and Eastern Europe Department  
International Finance Corporation  
Moscow

Dear Mr Nassim,

The Ministry of Finance of the Russian Federation has reviewed concept note of the program aimed to mobilize financing for energy saving projects in Russia, developed by the International Finance Corporation, and confirms that IFC initiative for catalyzing financing for energy efficiency is worthy of consideration.

A.Y. Petrov

**Annex 14 : Endorsement letters from complementary donors { TC "Annex 14 :  
Endorsement letters from complementary donors" \f C \l "1" }**



June 22, 2004

Mr Russell Sturm  
International Finance Corporation  
Environmental Finance Group  
Environment and Social Development Department  
2121 Pennsylvania Avenue N.W.  
Washington DC 20433

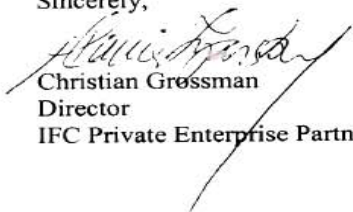
**Re: Donor co-financing for IFC/GEF Program: "Russia Energy Efficiency Financing"**

Dear Russell,

The IFC Private Enterprise Partnership (PEP) is pleased to let you know that two of our donors have now made firm commitments to co-finance the IFC/GEF Russia Energy Efficiency initiative in the amount of \$1.1 million USD over 5 years. These funds will shortly be made available to the Private Enterprise Partnership by the Danish Ministry of the Environment, the Finnish Ministry of Trade and Industry, and the Finnish Ministry of Foreign Affairs under their bilateral donor agreements with IFC PEP.

We look forward to continuing to work with you on this exciting initiative.

Sincerely,

  
Christian Grossman  
Director  
IFC Private Enterprise Partnership





2121 PENNSYLVANIA AVENUE, NW • WASHINGTON, DC 20433, USA  
 TELEPHONE (202) 477-1234 • FACSIMILE (202) 477-6391

February 27, 2004

Mr. Ian Crosby  
 International Finance Corporation  
 Environmental Finance Group  
 Environment and Social Development Department  
 2121 Pennsylvania Avenue N.W.  
 Washington DC 20433

Dear Ian,

**IFC Sustainable Financial Markets Facility (SFMF) support for IFC/GEF Project:  
 “Financing Energy Efficiency in the Russian Federation”**

As you know the SFFM was delighted to support your training event on energy efficiency financing held in Moscow in October 2003 and we are very pleased that it has led to this proposal for a joint IFC/GEF initiative.

This letter is to confirm our support for your continued work with Russian financial institutions to develop and market energy efficiency financial products.

We confirm that we have allocated a budget of US\$150,000, to be spent on capacity building activities with Russian FIs between July 1, 2004 and June 30, 2005. This is in addition to the US\$15,000 already committed and spent on the training event. The detailed program of work is still to be agreed and funding is conditional on you providing a detailed Program of Work and budget.

We further confirm that further funds may be available after this date for additional capacity building activities conditional on: satisfactory performance with this first allocation; Russian Federation continuing to be a focal area for SFFM; availability of funds.

We look forward to continuing to work with you on this exciting initiative

Sincerely

Hany Assaad  
 Manager

Sustainable Financial Markets Facility  
 Environment and Social Development Department

**Annex 15: Appraisal Guidelines** { **TC "Annex 15: Appraisal Guidelines" \f C**  
**\l "1" }**

**Appraisal of the FEER program will be conducted simultaneously for both the GEF grant and the IFC investment. The main business methods for FEER have been developed through HEECP and CEEF. Therefore, FEER appraisal activities can focus on final design and adaptation of these methods to country conditions and to developing relationships with the key cooperating partners -- FIs, EE/ESCO companies, government, energy and NGO agencies, TA contractors -- with whom IFC will work to make the program operational. Appraisal activities to be undertaken prior to preparing and submitting the IFC and GEF appraisal documents can be categorized as follows.**

1. Continued country EE market research
2. FI appraisal: financial, EE marketing and investment demand
3. Credit line structure issues
4. Guarantee structure issues and Finance Facility Agreement preparations
5. Technical assistance program design
6. Program operations and management planning
7. Further analysis of project and Program risks

1. *Continued EE Market Research.* The process of getting to know Russia's EE market will be advanced through continued research. Priority topics in the appraisal stage include:

- a) Complete inventory and assessment of EE/ESCO businesses operating in country, including current project pipeline, project economics and finance needs.
- b) Complete inventory and detailed assessment of all current and historic EE and EE-related (e.g., for SMEs, multi-family housing, municipal infrastructure) programs operated by government, international and NGO agencies.
- c) Complete research on energy sector background (power, thermal, and gas) including prices & tariffs (current and future outlook), energy sector structure & restructuring and regulatory factors.
- d) Gather further information on the economics of representative EE projects and integrate and assess key market background factors as they affect economics and commercial finance and development of specific EE project niche markets.
- e) Complete research on relevant country financial institution regulation, specifically on loss reserve/provisioning requirements and value of the guarantee to substitute for required reserves.
- f) Further research on background, legal and institutional factors, credit characteristics, energy use and EE potential in target end-user sectors including research on municipal finance, public sector procurement, district heating market, cogeneration and renewable energy market, and multi-family housing (blockhouse) ownerships and finances.

2. *FI Appraisal.* FI appraisal is a main task for appraisal and preparing the program to be operational. In pre-appraisal, many FIs have been interviewed and priority

candidates for participation in the guarantee program have been identified. In appraisal, selected FIs will make formal application on an invitation basis. Interviews will be conducted and FIs will be asked to complete applications requesting information on several topics: (i) financial condition of the FI, (ii) FI credit procedures, (iii) FI EE marketing and staffing plan, and (iv) EE finance investment and guarantee demand estimate. This information will be used for several purposes. FIs must be qualified as being in sound financial condition. The FI credit decision procedures must be understood to design the interface with the guarantee program. An initial investment and guarantee demand estimate is made to size the specific guarantee facility and characterize the specific EE markets, finance needs and characteristics of projects the FI will pursue. Finally, the FI appraisal information is used to begin development of the EE finance marketing plan and to identify TA needs of the FI. A complete EE finance marketing plan will be prepared by the FI with technical assistance from the program as a first step after a Guarantee Facility Agreement is signed. IFC has developed detailed questionnaires and selection criteria for conducting both the financial and EE marketing aspects of the FI appraisals.

3. Structure of Credit Lines. During appraisal, the structure of the credit lines will be further detailed through consultations with prospective banks and the IFC team including IFC Treasury. Credit line structure terms include: term (tenor), pricing (interest rate), fees, eligible Projects definition, sizing of credit line facilities for each FI, security, payment schedule, disbursement conditions and procedures, availability period, sub-loan origination requirements, reporting and other typical covenants. Analysis of currency options for the credit lines will be conducted, i.e., review of advantages and disadvantages of denominating the credit lines in Dollars or Euros versus Rubles. Further coordination between the GFA and the Credit Line agreements, structure and procedures will be developed, as applicable.

4. Guarantee Structure Issues and Guarantee Facility Agreement (GFA) Preparations. FI and EE market appraisal information will be used by IFC to address final issues in the structuring of the guarantee and GFA provisions. These issues include: (i) guarantee risk assessment, including estimates of base case default rates for key target markets and critical default rate analysis for IFC, and development of portfolio eligibility guidelines and individual transaction underwriting guidelines for use in the proposed first-loss guarantee facility; (ii) allocation plan for guarantee resources amongst initial set of FIs and between guarantee portfolio products; (iii) sizing of maximum transaction guarantee liability limits; (iv) pricing of guarantee fees, origination fee, and commitment fees; (v) legal review, with local counsel, of standard Guarantee Facility Agreement (GFA) language and local standard lease and loan documents; (vi) further research into local leasing and banking regulation; (vii) further research into credit issues associated with particular target priority EE niche markets; and, (viii) assessment and structuring for how the program guarantee may be combined with available concessional finance programs in ways consistent with IFC's private sector mandate. From this information, a country-specific GFA document and the plans for launching the guarantee program will be prepared. Continued further assessment estimating the demand and applications for the guarantee will be conducted.

In the later stages of FI appraisal, form GFA documents will be presented to selected FIs for FI legal review. Key issues will be identified at this stage for negotiation. Final negotiations and execution of the GFAs will be done after GEF and IFC approvals are obtained.

IFC will analyze the option of pooling GEF guarantee reserves between this Russia program and the existing CEEF and HEECP programs, to capture the advantages and build on the precedent established in the pooling of GEF reserves between CEEF and HEECP countries. Analysis and discussions will occur both within IFC and between IFC and the GEF.

5. *Technical Assistance Program Design.* Further assessment of capacities of specific EE/ESCO companies and their existing project pipelines will be conducted. Initial TA program activities will be designed, drawing on and adapting the menu of TA activities and methods already developed and tailored to the immediate needs of EE/ESCO businesses and their project opportunities. An initial project pipeline will be developed and the finance structure needs of these projects assessed. From this information, IFC will prepare budgets for the initial set of TA programs. The full menu of potential TA tools will be further detailed and adapted to the Russian context.

**Relationships with domestic government agencies and organizations will be further developed in this stage and terms for cooperation will be prepared. This work readies the program to become operational rapidly once final approvals from GEF and IFC are obtained. Formal agreements with cooperating partners and TA consultants will be executed after the program becomes operational.**

6. *Program Management.* Detailed plans for program management -- including staffing, hiring country program managers, detailed budgets, selection of IFC personnel to serve on relevant Supervisory Committees -- will be prepared. An upgraded transaction guarantee origination procedures and underwriting guidelines manual will be prepared. Office arrangements, including a final determination of location for the two subregional offices, will be concluded based on cost-effectiveness criteria. Internal coordination procedures for management of this program between the PEP, FMG and EFG units will be developed. Further detailing and planning of Project monitoring and evaluation will be done.

7. Further Analysis of Risks and Issues. Key risks and issues to be further assessed during appraisal include:

- a) pipeline risk,
- b) energy policy environment,
- c) status and activities of other EE programs operating in Russia,
- d) readiness of Russian FI's for this program,
- e) macro-economic and financial market factors.

**Annex 16: Study of Financing Options for Energy Efficiency Investments in Russia** { TC "Annex 16: Study of Financing Options for Energy Efficiency Investments in Russia" \f C \l "1" }

**EXECUTIVE SUMMARY**

Energy efficiency investments in Russia have an enormous potential. Stakeholders, like industrial end users, banks, leasing companies, central and regional governmental organizations, and international financial organizations are aware that energy efficiency projects are well worth to be undertaken, but at the same time barriers still exist to the development of energy efficiency investments in Russia. At this moment a lack of funds for energy efficiency projects, a lack of bankable energy efficiency projects and a lack of awareness and their economic benefits are the main barriers for EE investments in Russia. This study defines recommended financing strategies for addressing these barriers to energy efficiency investments in Russia.

This study is based upon the recognition that the recommended EE financing mechanisms must first address the following issues: the market conditions that are necessary to make energy efficiency an attractive investment, stakeholders who have an economic interest to be involved in EE projects, the financing mechanisms that are applicable to EE investments and concrete EE projects with attractive returns.

Russia is a country that combines an energy intensive industry and traditionally low energy efficiency in all areas of energy generation, distribution and consumption with yearly increasing energy tariffs. For example, in 2003 Gazprom is allowed to raise its tariffs by 20% on average whereas RAO UES is allowed to raise its tariffs with an average of 14%. Currently, energy prices do not reflect the real cost for generation and distribution. Cross subsidization between sectors is still practised in Russia, whereby the industry is subsidizing a major part of the energy tariffs for the residential and public sector.

Price reforms are essential for two main reasons. First the energy sector is not generating sufficient profits for investments necessary to substitute outdated assets. Almost 40% of Russian production assets date back more than 20 years ago. Second, in order to meet the growing energy demand in the future, energy investments for the improvement or expansion of the network and generating capacity are necessary.

This study identifies the industrial sector as the most attractive sector for energy efficiency investments as the industrial energy tariffs are substantially higher than energy tariffs in other sectors. Cross subsidization will not be abolished the coming 3-5 years and as such energy tariffs in this sector will also stay higher in the future. High energy tariffs mean a direct economic incentive for industrial consumers to save energy. Due to a lack of energy efficiency knowledge at management level, only a few measures have been implemented so far. The energy efficiency potential for large energy savings with relatively simple measures is enormous.

The energy consumption by the Russian industry exceeds worldwide levels of energy consumption in analogue industries with 40% to 220%, which amounts to 18 billion USD

annually. Russian energy consumption per USD of GDP is 3-4 times higher than energy consumption per USD of GDP in industrially developed countries. The saving potential for electricity consumption and heat consumption in the Russian industry is estimated at USD 24,2 bln annually.

In order to carry out energy efficiency investments it is important to have interested stakeholders with a strong motivation to be involved in energy efficiency projects. The study identifies industrial end users, banks, leasing companies, governmental organizations and international financial organizations as the major stakeholders in Russia.

The incentive for industrial end users to invest in energy efficiency projects is obvious. They want to reduce the use of fuel and energy in their industrial process. As energy tariffs started to increase the last years, the reduction of energy cost and cutting down the energy bill is a main focus point for Russian industries. One of the main barriers the industry is facing is a lack of available funds within banks and leasing companies.

Leasing and loans are still the largest source of financing for energy efficiency projects. But in Russia there are a number of obstacles to the application of loans and leasing agreements for energy efficiency investments. First, the perceived high risk of lending in Russia results in relatively high cost for debt finance. Second, the average interest rates offered to medium sized companies vary from 20% to 27% in roubles and from 12% to 18% in USD. Third, it is difficult in Russia to obtain loans over 1 year. Many banks are undercapitalised which makes them conservative about their lending practices.

Despite the commitment of the Russian Government to energy efficiency as expressed in its Federal Program for Energy Conservation in Russia for 1998-2005, the financial sources for energy efficiency programs are limited. The implementation of the Federal program mainly depends on the financial involvement of regional administrations, the private sector and other financing sources.

Until now international financial organizations and other donor institutions have been hesitant to be involved in energy efficiency projects in Russia. Only some minor donor-funded technical assistance and demonstration projects to improve energy efficiency have been carried out. Support like setting up energy efficiency funds, credit lines for energy efficiency projects, guarantee facilities, energy efficiency programs and technical assistance projects has been – so far – not initiated or implemented in Russia.

In order to demonstrate to interested stakeholders the commercial viability of energy efficiency investments, the study gives an overview of 33 energy efficiency project proposals. These project proposals were analyzed by the following characteristics: payback period, total investment volume, proven technology, replicability, measuring and monitoring simplicity. Nine out of the 33 projects were analyzed in more detail according to a preliminary energy audit, a preliminary financial analysis of the company and a preliminary technical energy efficiency solution. These demonstration projects should familiarize the most important stakeholders with ESCO-type of services, energy

performance contracting (EPC) as well as provide valuable case studies and lessons learned for future activities.

Taking into account the analysed pilot projects, the study concludes that even without current market based prices, the energy in-efficiency is so high that already low and medium cost energy efficiency measures will lead to huge cost reductions for the industrial sector in Russia.

There are three main barriers to the development of EE investments in Russia, the lack of funds, the lack of awareness and the lack of bankable projects. In order to overcome these barriers, the study describes different possible funding activities and technical assistance as the two main areas for future action.

In order to mobilize funding the study recommends different actions or combinations of actions that should be taken. Using a blend of commercial bank funds, co-financing and additional credits would provide affordable project financing for energy efficiency investments. Setting up an energy efficiency credit line or an energy efficiency revolving loan fund will make additional funds available necessary for energy efficiency investments. An energy efficiency revolving loan fund is a sustainable financing mechanism compared to the credit line as the income of the energy efficiency project will flow back to the fund and is earmarked for future energy efficiency investments. A guarantee facility might be useful in combination with a credit facility and co-financiers. The study sees valuable roles for local financial institutions when they do not have sufficient capital to lend from their own resources. They could act as guarantors, energy efficiency revolving loan fund or credit line administrators.

Support to assist in the development of the ESCO industry will facilitate the identification, analysis and development of commercially viable energy efficiency projects. ESCOs have the capability to bundle and implement several small energy efficiency investments on a turn-key basis which end users may be unwilling or unable to do themselves. ESCOs play multiple roles in EE projects as marketers, project developers, project engineers, operators, guarantors of performance, and arrangers of financing. Local ESCOs should be financially supported partly by technical assistance funds for training in writing bankable energy efficiency projects, corporate financing planning and business planning, partly by equity financing for marketing and project development.

In order to generate bankable projects and increase the awareness of energy efficiency, technical assistance is necessary. Without a structured technical assistance program, EE projects will not be developed and implemented in Russia. Technical assistance should address the following sub-programs, funding of project development, training of stakeholders and increase of public awareness and dissemination of results.

The study concludes that some demonstration projects should be further developed and implemented as soon as possible. These projects should be financed by soft loans, co-financing and donor-funded technical assistance support. After demonstrating the

commercial viability of energy efficiency investments, an energy efficiency financing mechanisms on a larger scale should be introduced and implemented. This financing mechanism could be either a credit line or an energy efficiency revolving loan fund or a guarantee facility. The choice for one of the financing mechanisms should be accompanied by an extensive technical assistance program in order to develop the Russian market for energy efficiency investments.