

Annexes

Annex 1: Project Design Summary (Logical Framework)

| Hierarchy of Objectives | Key Performance Indicators | M&E / Data Collection Methodology | Critical Assumptions |
|---|--|---|--|
| <u>GEF Strategic Priorities:</u> CC2 – Increased access to local sources of financing for renewable energy and energy efficiency | Volume of lending by financial institutions for energy efficiency projects Volume of business undertaken by suppliers of energy efficiency goods and services | 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 | |
| <u>Global Objective:</u> | <u>Outcome/ Impact indicators :</u> | <u>Project Reports:</u> | <u>(from Objectives to GEF Strategic Priorities)</u> |
| 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 | <ul style="list-style-type: none"> • Increase in the number of FIs (incl. partner¹ and non-partner) providing dedicated financing for EE projects • Amount of financing for EE projects provided by FIs • Number of FIs stating intention to continue financing beyond the program timeframe • Increase in the number and size (in annual revenues) of EE project developers • kW of energy savings per unit produced achieved by implemented transactions • Total CO2 emissions reduction achieved by implemented transactions | Baseline assessments of FIs, ESCOs and of other EE market players Mid-term and final evaluations by external evaluator Reports on energy savings from EE project developers | 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. |

¹ '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 ² : | | (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"> • 3-5 Russian FIs will offer financing for EE projects in each program region • Increase in EE pipeline of participating FIs (at least 10 transactions and \$2 million of transactions per FI.) • 50% increase in the number of financing applications that FIs receive³ • At least two employees per FI know how to assess, structure and monitor loans to EE transactions • At least 3 specialized financial products are adopted by participating FIs targeting EE market niches. | <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> | 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. |
| (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"> • Number of transactions supported by the Program's TA services • At least 30 EE transactions will be financed by partner and non-partner FIs⁴ • Value of transactions financed (from all capital sources) • Portfolio of EE transactions has a satisfactory repayment rate • Indicators of the relevance and efficiency of TA services whose cost exceeds a certain (TBD) threshold⁵ | <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"> • # of people from # of companies attending seminars etc supported by the program | Event attendance lists and feedback questionnaires | With effective M&E and dissemination, the Program can 'make the business case' for investing in EE, thus |

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

³ 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.

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

⁵ 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"> • #of stakeholders reached with Program publications • # of unique visitors to Program's Web site • Feedback on quality and relevance of Program's materials & tools • % of project clients reporting use of project materials | <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"> • Number of ESCOs and vendors receiving tailored advice or training • Number of vendors relationships facilitated with FIs • Value of additional sales attributed to learning from the Program | 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"> • Regular legal updates produced • EPC model documents produced and/or other legal issues clarified • # of new EE schemes implemented due to changing legislation or materials developed by the Project • # of ESCOs/other market participants using model EPC and other model documents • # and seniority of government officials attending the Program's Steering Committee meetings | <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><u>Input into each Program Component:</u></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 & 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> | USD |
| STAFF COSTS (1) | 530,000 | 620, 000 | 660,000 | 690,000 | 750,000 | 3,250,000 |
| | | | | | | |
| Consultants (2) | 235,000 | 255,000 | 264,000 | 358,000 | 388,000 | 1,500,000 |
| | | | | | | |
| Operational Costs | 260,000 | 220,000 | 260,000 | 360,000 | 400,000 | 1,500,000 |
| Travel (3) | 60,000 | 50,000 | 50,000 | 50,000 | 65,000 | 250,000 |
| Event management and media (4) | 21,000 | 22,000 | 36,000 | 170,000 | 187,000 | 450,000 |
| Equipment and Building (5) | 96,000 | 70,000 | 70,000 | 65,000 | 70,000 | 400,000 |
| Communications (6) | 38,000 | 40,000 | 40,000 | 40,000 | 50,000 | 200,000 |
| Other Indirect Costs (7) | 45,000 | 38,000 | 35,000 | 35,000 | 35,000 | 200,000 |
| TOTAL COSTS | 1,055,000 | 1,095,000 | 1,184,000 | 1,408,000 | 1,538,000 | 6,250,000 |

(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 dealfow 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) | 0.65 |
| Share of fuel savings of total energy savings (kWh equivalent) (3) | 0.35 |
| | 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)

| | Best Case Scenario | Most likely Case Scenario |
|---|---------------------------|----------------------------------|
| 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 |
| GEF/IFC funds available for credit lines and guarantees (1) | 22 |
| Amount of Bank loans (excl. gearing/partial recycling of funds) (2) | 25 |
| Project Sponsor equity | 5 |
| Value of total EE investments supported (3) | 30 |
| Cost savings | |
| Assumed cost saving revenues per annum (4) | 10.03 |
| O&M plus management and overhead cost per annum (5) | 3 |
| Total revenue requirements (6) | 13.03 |
| | US\$ |
| 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 |
| Direct Total life time CO2 savings-million tons | 6.5 |

(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

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

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

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

(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) | 0.65 |
| Share of fuel savings of total energy savings (kWh equivalent) (3) | 0.35 |
| | USD million |
| 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)

| | Best Case Scenario | Most likely Case Scenario | Worst Case Scenario |
|---|--------------------|---------------------------|---------------------|
| 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

| | US\$million |
|---|--------------|
| Total IFC funds | 32.25 |
| Total GEF Contribution | 7 |
| Total IFC/GEF funds | 39.25 |
| GEF/IFC funds available for credit lines and guarantees (1) | 32 |
| Amount of Bank loans (excl. gearing/partial recycling of funds) (2) | 37.5 |
| Project Sponsor equity | 7.5 |
| Value of total EE investments supported (3) | 45 |
| Cost savings | |
| Assumed cost saving revenues per annum (4) | 15.05 |
| O&M plus management and overhead cost per annum (5) | 4.5 |
| Total revenue requirements (6) | 19.55 |
| | US\$ |
| 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 |
| Total life time CO2 savings-million tons Direct from Program | 9.8 |

(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

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

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

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

(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 corporate 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. |
| Energy Sector | | |
| <p>The energy sector in Hungary looks as follows:</p> <ol style="list-style-type: none"> 1. Hungary is an energy importer with stable gas and oil supplies. 2. Unstable electricity supplies and the need for investments forced the government towards price increases and early privatization and liberalization of the electricity sector. 3. Heat prices are liberalized. 4. There has been an economic need that created political will to implement energy reforms 5. Energy prices are now close to the Western European levels. 6. Rational Pricing policies including cost of energy carriers, generation, distribution and margin and inflation indexation. | <p>Russia has one of the largest energy sectors in the world and has the following characteristics:</p> <ol style="list-style-type: none"> 1. Russia has large fuel reserves and a big potential for energy production and exports. Russia is an exporter of oil, gas and electricity. 2. The Russian electricity market is regulated by the government and is not liberalized. 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. 4. A lack of investments in the energy sector is a reason for price increases and liberalization. 5. Political will for EE is not supported by adequate and sufficient government financing. | <ol style="list-style-type: none"> 1. Trends for energy prices show sustained tariff increases. 2. Legislation is already before the Duma to reform tariffs. 3. There is pressure for reform from the WTO. 4. Gas utilities are eager to reduce domestic consumption to provide increased volume for export. |
| 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"> 1. Increase of prices. 2. Availability of financing. 3. Industry liberalization. 4. Government incentives. 5. International aid programs. | <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"> 1. Increasing energy prices. 2. High energy bills in the industrial sector. | <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/HEECF'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 HEECF/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 HEECF 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. HEECF 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 HEECF. 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:

HEECF has an impact on increasing the ability of domestic ESCOs to raise equity: through providing the guarantee HEECF 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. HEECF 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.

HEECF helps very small project developers to have access to financing: through developing special project structures HEECF 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 HEECF guarantee and a second with Bank A implemented 5 projects with HEECF guarantee. The companies were not creditworthy based on their financials, but the projects were structured relying upon the end-user municipality's creditworthiness.

HEECF helps ESCOs to negotiate financing terms with FIs, to achieve better conditions for EE projects: HEECF'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. HEECF 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 HEECF 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 ₂ (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 Keszthely 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 Karancsbeszi 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 |
| AVERAGE | 17,826,740 Ft 64,526 | 47.0% | \$30,201 | 41.42% | 153,693.8 | 103.6 | 15,984.3 | 5.9 | 29.9780 |

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: lmz@lmz.ru URL: http://www.lmz.frinet.org | 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: market@ztl.ru http://www.ztl.ru | <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 ktz_market@kaluga.ru http://www.ktz.kaluga.ru/ | <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: office@main.ijora.spb.ru http://www.izhora.ru | <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: info@krsormovo.nnov.ru | <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

| № | Country | Company | Contact person | Contact information | Services and equipment |
|----------|----------------|--------------------------------|---------------------------------|--|--|
| 1 | USA | Caterpillar | | Peoria, Illinois Tel.: (309) 675-1000 Fax: (309) 578-2559 Rep. office in Moscow: 103006, Krasnoproletarskaya 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 http://www.abb.com Rep. office in Moscow: 117859, Profsoyuznaya str, 23 Tel.: +7-095-960200 Fax: +7-095-9602201 http://www.abb.com/ru | <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 |

| | | | | | |
|---|--------|--------------------------------|---|--|---|
| | | | | +49 89 636 32474 (Investor Relations) Rep. office in Russia: 113093, Moskau, Ul. Dubininskaja, 98A Tel.: +7-095-7371000 Fax: +7-095-7371001 | plants; <input type="checkbox"/> Hydroelectric power plants and generators; <input type="checkbox"/> Industrial power plants and turbines; <input type="checkbox"/> I&C equipment and systems; <input type="checkbox"/> Fuel cells, electrical equipment for wind power plants; <input type="checkbox"/> Repowering and rehabilitation of existing plants. |
| 6 | France | Alstom (Power Generation) | Robert Mahler, Country President France | Paris, 7511625, avenue Klüber Tel.: 01 47 55 26 87 Fax: 01 47 55 34 97 Rep. office in Russia: 17335, 91 Vavilova Street, Build. 2 Tel.: +7-095-2312949 Fax: +7-095-2312945 | <input type="checkbox"/> Boilers; <input type="checkbox"/> Generators; <input type="checkbox"/> Gas, steam and hydro turbines; <input type="checkbox"/> Turnkey gas, steam and hydro power plants; <input type="checkbox"/> Pre-insulated pipes; <input type="checkbox"/> Pumps; <input type="checkbox"/> Energy efficient heat exchangers; <input type="checkbox"/> Control systems; <input type="checkbox"/> Energy recovery systems. |
| 7 | USA | General electric (GE Lighting) | | Rep. office in Russia: 113054, Moscow, Kosmodamianskaya naberezhnaya, 52/1 Tel.: +7-095-935-7211, 935-7232. Fax: +7-095-935-7210. | Energy efficient illuminating equipment. |
| 8 | Japan | Marubeni | | 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 http://www.marubeni.co.jp/english/ | The company is trading in Russia with different type of industrial equipment, including: <input type="checkbox"/> Chemical production; <input type="checkbox"/> Iron and steel production; <input type="checkbox"/> Oil and gas equipment; <input type="checkbox"/> Energy generation equipment. Marubeni is interested to supply on the Russian market different types of the EE equipment (for example, the frequency adjustment driven motors). |

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|----|---------|---------------------------|--|---|---|
| 9 | Japan | Mitsui & Co., LTD | | <p>Rep. office in Moscow:</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: info@mitsui.ru</p> <p>http://www.mitsui.ru/</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"> <input type="checkbox"/> Power plants; <input type="checkbox"/> Power transmission and substation facilities; <input type="checkbox"/> Oil refineries; <input type="checkbox"/> LNG manufacturing facilities; <input type="checkbox"/> Pipelines; <input type="checkbox"/> Iron, non-ferrous metals <input type="checkbox"/> Chemical plants; <input type="checkbox"/> Water and sewer facilities. <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</p> <p>Tel.: +7-8312-342607 Fax: +7-8312-759043</p> <p>E-mail yterm@kis.ru</p> <p>www.kromschroeder.ru</p> | <p>The company produces:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gas meters; <input type="checkbox"/> Gas equipment and automatic control facilities for furnace-building industry; <input type="checkbox"/> Equipment for gas burners; <input type="checkbox"/> Gas transmission systems for boilers and heat-generators; <input type="checkbox"/> Automation facilities for heating supply systems. |
| 11 | Germany | Intereng messtechnik GmbH | | <p>Radeburger Str. 7, D-01561 Zschorna/Dresden</p> <p>Tel.: +49-35208/3404-0 Fax: +49-35208/340416</p> <p>E-mail: mail@intereng.de</p> <p>URL: www.intereng.de</p> <p>Rep. office in Moscow:</p> <p>Tel.: +7-095-7192120 Fax: +7-095-7192290</p> <p>E-mail: mail.ru@intereng.de</p> | <p>Development, production and supply of mobile laboratories and measuring instruments for:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Testing and diagnostics of electrotechnical equipment; <input type="checkbox"/> Leakage detection in gas and water pipelines; <input type="checkbox"/> Testing and diagnostics of heat engineering |

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|--|--|--|--|--|--|
| | | | | | equipment; <input type="checkbox"/> Environmental monitoring. |
|--|--|--|--|--|--|

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: teplorossii@inbox.ru http://www.teplorossii.narod.ru |
| 3 | | Teplosistemi | Sazonov Gennady Anatolievich | Tel.: +7-095-165-5462 Verhniaya Pervomayskaya str., 49/1 |
| 4 | | Negawatt | Elensky Valeriy L'vovich, project manager | negawatt@bk.ru http://negawatt.energy.ru/ |
| 5 | | RUSDEM | Pyzhov Igor Nikolaevich, vice president | +7-095-362-7271, 362-7864 rusdem@ucit.orbita.ru ; Arbuzov@ucit.orbita.ru Moscow 111250, Krasnokazarmennaya str., 14 |
| 6 | | ZAO "Service company Energyefficient industrial technologies" | | Tel.: +7-095-933-1344 Fax: +7-095-933-1348 goldex1@yandex.ru |
| 7 | | ZAO "METR" | Vedernikov Aleksandr Anatolyevich, president Inozemtsev Aleksandr Mikhaylovich, vice-president | Tel.: +7-095-962-9440 Fax: +7-095-964-1900 www.energetica.ru mepev@online.ru 105318, Tkatskaya str., 1 |
| 8 | | Energy Agency "East-West" | | Tel./Fax: +7-095-165-0491 105043, Chetvertaya parkovaya str., 27/1 mec@com2com.ru |
| 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 |

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|----|------------------------------------|---|---|---|
| 11 | <u>Kaliningrad</u> | Energy Efficiency Center of the Kaliningrad region | Medvedev Gennadiy Vasilievich | Tel.: +7-0112-550-051 Fax: +7-0112-550-032 ensave@baltnet.ru 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 | <u>Novosibirsk</u> | 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 nec@online.cns.ru ecsibir@online.sib.ru http://www.eastern-centres.sib.ru |
| 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 moeec@online.ru 180310 Murmansk Sportivnaya St., 13 |
| 16 | <u>Kirov, Kolskaya area</u> | KCEE, Kolskyi Centre of Energy Efficiency | Kotomkin Viktor Nikolaevich | Tel: +7-81531-54761, Fax: +7-81531-94436 keec@com.mels.ru 184250 Murmanskaya area, Prospekt Lenina, 7 |
| 17 | <u>Samara</u> | OAo Regionenergoeff ect | | Tel. +7-8462-42-03-85, 42-03-86 Fax: +7-8462-42-03-85, 42-03-86 regeneff@hippo.ru 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 scenef@transit.samara.ru ; www.samara.ru/~scenef.ru 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 |

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|----|--------------------------------------|---|---|---|
| 20 | <u>Tomsk</u> | 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 | <u>Petrozavodsk (Karelia)</u> | Karelskaya Assotiation «Centre of Energy Efficiency» (KACEE) | Smirnov Aleksey | Tel.: +7-8142-769391 Fax: +7-8142-769391 kaeec@onego.ru 185035, Anokhina str., 20-412 |
| 22 | <u>Ekaterinburg</u> | Ural Center of Energy savings and Ecology | Anufriev Valeryi Pavlovich, | Tel.: +7-3432-513382 Fax: +7-3432-512967 tacis@ecenergy.ural.ru 620077 Lenina str., 27-42 |
| 23 | | International Assotiation of Energy Centers | E.V. Nagornyh, coordinator | Tel.: +7-3432-24-40-84 Fax: +7-3432-24-35-42 tacis@ecenergy.ural.ru 620026 Kuybisheva str., 109 |
| 24 | <u>Nizhniy Novgorod</u> | Nizhny Novgorod Regional Innovation Energy Saving Center (NICE) | Zenyutich Evgeniy Arkadieovich, managing director | Tel.: +7-8312-36-3486 Minina str., 24. nice@k8.innov.ru http://www.nice.nnov.ru/ |
| 25 | <u>Krasnoyarsk</u> | Enegy Savyngs Center of Krasnoyarsk | | Tel.: +7-3912-44-69-44 Fax: +7-3912-21-7003 Kirenskogo str., 89 |
| 26 | <u>Orel</u> | Orel region's Energy Efficiency Center | Kachanov Alexander Nikolaevich, managing director | Tel.: +7-0862-41-98-53 Fax: +7-0862-41-66-84 kan@ostu.ru , orelrce@ostu.ru 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 |

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|----|---|---|---|---|
| 28 | <u>Cheboksary</u> <u>(Chyvashia)</u> | "ZEIM-ESKO" | Maksimchuk Ivan Dmitrievich, general director | Tel.: +7-8352-62-6557 Fax: +7-8352-20-2443 esco@cbx.ru 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 | <u>Tula</u> | 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 | <u>Kazan</u> | 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 | <u>Izhevsk</u> | Republican coordinating center "Udmurtiya engineering" | Tolstuhin V.U. | Tel.: +7-3412-78-55-51 Fax: +7-3412-78-55-51 ue@ue.udm.ru 426007, Pushkinskaya str., 214, а/я 204. |
| 34 | <u>Biysk (Altai Territory)</u> | AOZT "Editus" | Matveev Petr Grigoryevich | Tel.: +7-3854-22-66-52 Fax: +7-3854-22-66-52 659300, Pochtoviy pereulok, 12 |
| 35 | <u>Barnaul</u> | Altaiskiy regional center of off-centre | Fedyanin B.Ya. | Tel.: 23-67-29 Fax: 23-67-29 |

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|----|--|--|------------------------------------|---|
| | | energy and energy conservation | | 656038, Barnaul-38, p.o. box 42. |
| 36 | <u>Zheleznogorsk (Krasnoyarsk 26)</u> | 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 | <u>Stavropol</u> | Stavropolsky energy saving centre | Filippov Sergey Al'binovich | Tel.: +7-8652-35-23-50 Fax: +7-8652-35-23-50 |
| 38 | <u>Habarovsk</u> | Habarovsky energy saving centre | Gluhov Aleksandr Pavlovich | Tel.: +7-4212-72-91-70; 35-89-42 Fax: +7-4212-33-97-58 680035, Tihoookeanskaya str., 136. |
| 39 | | Dalnevostochnaya energy association "DEKA" | Klimakhin Anatoliy Yakovlevich | Tel.: +7-4210-21-67-61 Fax: +7-4210-21-48-76 |
| 40 | <u>Vladimir</u> | 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 | <u>Volgograd</u> | 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 | <u>Novgorod</u> | Novgorodsky energy saving centre | Savinov Eduard Georgievich | Tel.: +7-8162-7-62-87 |
| 43 | <u>Ivanovo</u> | 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 office@ien.ru 153002, Kalinina str., 5 |
| 44 | <u>Irkutsk</u> | 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 | <u>Petropavlovsk-Kamchatski</u> | Energy saving center "KOMES" | Vornovitsky Vyacheslav Yakovlevich | Tel.: +7-4152-11-00-34 Fax: +7-4152-11-00-34 |
| 46 | <u>Kirovsk</u> | 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 | <u>Kursk</u> | Energy efficiency center of Kursk | Kuzshel' Igor Semenovich | Tel.: +7-0712-56-24-68; 22-06-50 Fax: +7-0712-56-24-68 |
| 48 | <u>Omsk</u> | Omsky center for efficient use of energy | Volodin Aleksandr Ivanovich | Tel.: +7-3812-33-41-69 644070, Lermontova str., 81 |
| 49 | <u>Penza</u> | Penzensky regional fund of energy conservation | Kruglov Sergey Evgen'evich | Tel.: +7-8412-69-98-28 440061, P.O. box 2081 |
| 50 | <u>Perm</u> | Energy center of the administration of Perm | | Tel.: +7-3422-33-47-38 Fax: +7-3422-33-47-38 614600, Popova str., 11. |
| 51 | <u>St. Petersburg</u> | 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: pva38@online.ru 193012, Atamanskaya str., 3/6, P.O. box №9. |
| 53 | <u>Tumen</u> | 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 pntces@sbtx.tmn.ru 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 | Yuzshno-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 | НПБП "Турбокон" | Fedorov Vladimir Alekseevich, director general | Tel.: +7-0842-167193 Fax: +7-0842- 551751 turbocon@kaluga.ru |

| | | | | |
|----|-------------|---|--------------------------|--|
| 58 | Archangelsk | Archangelsky regional center of energy efficiency | Aleksandr Pitukhin | Tel.: +7-8182-65-39-21 aoeec@dvinaland.ru |
| 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

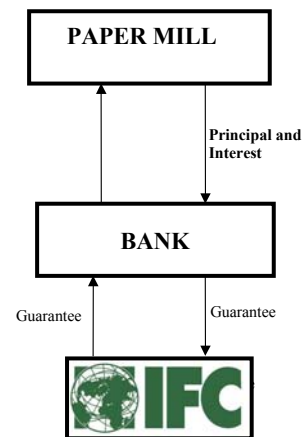
Project Structure for Industry (Paper Mill in Latvia)

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

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

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| 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 | LVL 240 000 (US\$ 441 988) |
| 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"> ○ Commercial pledge on the paper mill's assets (double size of the loan) ○ IFC guarantee (50%) |
| 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 |

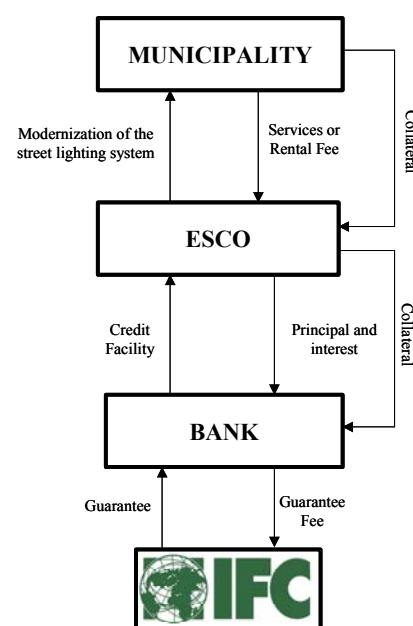
Project Structures for Municipal Street Lighting

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

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

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

Example from Hungarian Guarantee Program

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

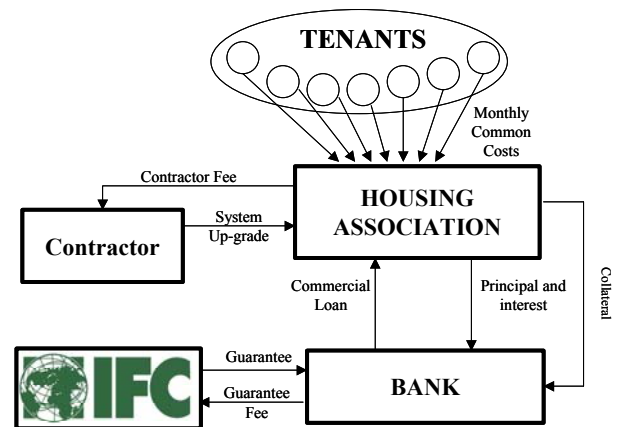
Project Structures for Block House heating

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

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| For tenants | <ul style="list-style-type: none"> • Energy cost savings can finance the investment • Better heating system, improved level of comfort, increased value of real estate • 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 |
| For bank | <ul style="list-style-type: none"> • One borrower as opposed to very small loans for several tenants • Stable margin since pricing is indexed to BUBOR • Very strong collateral structure makes investment secure • Huge market |
| For contractor | <ul style="list-style-type: none"> • Direct payment, no need for long pre-financing period • Huge market |

HEECP Project Sample

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| 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 |
| Borrower | Y Housing Association |
| End-Users | 82 tenants of the Y block house |
| Project Costs Non-refundable state grant Non-refundable municipal grant Commercial Loan | HUF 41,046,500 (US\$ 164,965) 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> |
| Project Cost per Tenant | HUF 500,567 (US\$2,012) |
| Loan Maturity | 5 years |
| Interest | 3-month BUBOR + 7% risk margin. With the 70% state interest subsidy the net interest rate for the HA is 5.007% |
| Repayment Schedule (interest) | Quarterly |
| Repayment Schedule (principal) | 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 make the eligible for a 30% state grant. |
| Energy Savings | 63.13% |
| Energy Cost Savings | HUF 4,055,231 (US\$16,298) / year |

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

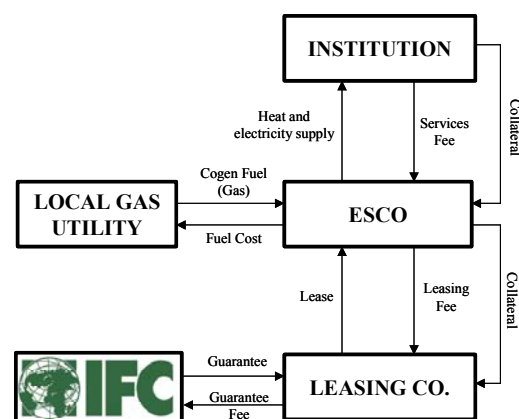
Project Structures for Co-generation

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

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

HEECP project sample

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| 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. |
| Borrower | Y ESCO |
| End-Users | Z Hospital |
| Total Project Costs | HUF 372,000,000 (US\$ 1,488,000) |
| Downpayment from the Hospital | 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> |
| Lease Period | 66 months |
| Interest | 16% |
| Repayment Schedule | Monthly in arrears |
| Monthly Lease Payments | HUF 4,800,000 (US\$ 19,200) |
| Monthly Services Fee to ESCO | HUF 6,894,000 (US\$ 27,576) in summer period HUF 11,539,000 (US\$ 46,156) in winter period |
| Energy Cost Savings | HUF 52,000,000 (US\$ 208,000) / year |
| Simple Payback | 7.1 years |
| DSCR of ESCO | 1.4 |
| Collaterals | <ul style="list-style-type: none"> • 50% IFC guarantee • The Leasing Co. has a preferred drawing right on the account of the ESCO • The ESCO has a preferred drawing right on the account of the Hospital • All project revenues of the ESCO are assigned to the Leasing Co. • Insurance Bond of the equipment is assigned to the Leasing Co. |

Project Structures for District heating boiler change

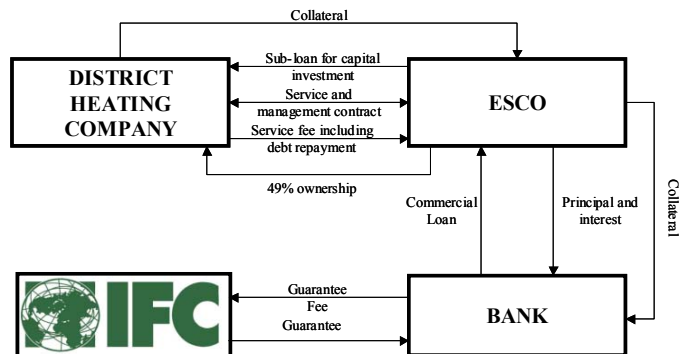
Market Environment

- 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

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

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| | morale of the DHC is high • Strong collateral structure • As the Bank finances environmentally friendly investment, it creates reputational value for the FI • Growing demand for DH up-grade projects in Hungary |
| For the ESCO | • ESCO makes profit on the investment • Successful projects are good references for the ESCO |

HEECP project sample

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| Project Description | 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. |
| Lender | X Bank |
| Borrower | Y ESCO |
| End-Users | Z DHC |
| Total Project Costs | HUF 235,293,000 (US\$ 1,001,245) |
| Government grant | HUF 48,388,000 (US\$ 205,906) – 20.6% |
| Own Equity from ESCO | <i>HUF 46,905,000 (US\$ 99,595) – 19.9%</i> |
| Interest subsidized loan amount | <i>HUF 80,000,000 (US\$ 40,425) – 34.0%</i> |
| Commercial loan | <i>HUF 60,000,000 (US\$ 255,320) – 25.5%</i> |
| IFC Guarantee Liability (35%) | <i>HUF 21,000,000 (US\$ 88,727)</i> |
| Loan Period | 5 years |
| Interest | 3-month BUBOR + 0.5% risk margin. The interest rate is 10.1% |
| Repayment Schedule | Monthly interest and quarterly principal payment |
| Energy Cost Savings | HUF 56,573,000 (US\$ 240,736) / year – 55% |
| Simple Payback | 4.1 years |
| IRR | 22% in 12 years |
| DSCR of the project | 1.3 |
| Collaterals | • 35% IFC guarantee • The Bank has preferred drawing right on the bank account of the DHC • Project revenue assignment of the ESCO to the Bank • Mortgage on the newly installed equipments |

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 CO₂ 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 CO₂ 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" \f C \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" \f C \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 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).

IFC Response: IFC has revised the evaluation of CO2 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 CO2 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:

| GEFSEC Comment | IFC Initial Response |
|--|--|
| Country Drivenness | |
| 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"> • 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. • 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. |
| 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> |
| Endorsement | |
| 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

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

| Program Design | |
|---|--|
| 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> |

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| | <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> |
| A5.Financing for renewable energy projects | <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> |
| B1 Administration of the credit lines | <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> |
| B2 Complementarity of credit lines and guarantees | <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> |

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| | <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 |

| | |
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| | <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> |
|--|---|

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) 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> |

| | |
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| | <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> |
|--|--|

IA Fees

| GEFSEC Comment | IFC Initial Response |
|--------------------------------------|--|
| 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

| GEFSEC Comment | IFC Initial Response |
|-----------------------------------|--|
| 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

| GEF Secretariat Comment | IFC Response |
|---|---|
| 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"> • 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. • 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. • IFC's strategy in the area of EE finance is very |

| | |
|---|--|
| | <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"> • 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. • 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. |
| More documentation on lessons from CEEF and HEECP | Lessons are referenced throughout the text and specifically listed in Annex 7. |

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 keep 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**

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e-mail: admin@mnr.gov.ru

19.03.2004

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

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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. Франсиски,

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{ TC "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

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

03.03.04 № 21-04-01/47

На № _____ от _____

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

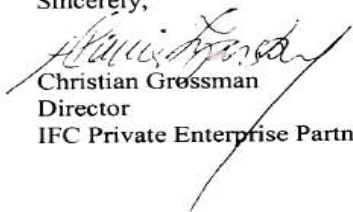
Re: Donor co-financing for IFC/GEF Program: "Russia Energy Efficiency Financing"

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 SFMF 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 SFMF; 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. FI's 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.