

# BULGARIA

## ENERGY EFFICIENCY

### GEF Project Brief

#### EUROPE AND CENTRAL ASIA INFRASTRUCTURE AND ENERGY DEPARTMENT

Date: April 9, 2004	Team Leader: Istvan Dobozi
Country Director: Anand K. Seth	Sectors: General energy sector (100%)
Sector Manager/Director: Hossein Razavi	Themes: Climate change (P)
Project ID: P084831	Environmental screening category: Financial
Focal Area: C - Climate change	Intermediary (FI)
	Safeguard screening category: S <sub>F</sub>

#### Project Financing Data

☐ Loan   ☐ Credit   ☒ Grant   ☐ Guarantee   ☐ Other: GEF

For Loans/Credits/Others:

Total GEF financing (US\$m.): 10.00

#### Financing Plan (US\$m)

Source	Local	Foreign	Total
RECIPIENT	1.80	0.00	1.80
GLOBAL ENVIRONMENT FACILITY	0.00	10.00	10.00
AUSTRIA, GOV. OF	0.00	1.80	1.80
EUROPEAN UNION/PHARE		0.25	0.25
BILATERAL/MULTILATERAL AGENCIES (TO BE CONFIRMED)	0.00	3.70	3.70
CO-FINANCING LEVERAGED FROM PRIVATE SECTOR	31.96	0.0	31.96
Total:	33.76	15.75	49.51

**Recipient:** Government of Bulgaria

**Responsible Agency:** Ministry of Energy and Energy Resources (MEER)

Address: 8, Triaditza Str., 1040 Sofia, Bulgaria.

Contact Person: Ms. Kostadinka Todorova, Director, Energy Strategy Directorate, MEER, Head of Project Preparation Unit. Tel/fax: (359-2) 988 3216, e-mail: [todorova@doe.bg](mailto:todorova@doe.bg).

#### Estimated disbursements (Bank FY/US\$m)

FY	2005	2006	2007	2008	2009				
Annual	9.0	0.5	0.5	0.0	0.0				
Cumulative	9.0	9.5	10.0	0.0	0.0				

Project implementation period: Start: February 1, 2005   End: January 31, 2010

Expected effectiveness date: November 30, 2004

Expected closing date: July 31, 2010

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

### **1. Country and sector issues**

#### ***1.1. Excessive energy intensity - vast potential for energy savings***

Compared with the vast majority of the European countries, Bulgaria is an outlier in terms of energy intensity of its economy. At 0.38 ton of oil equivalent per thousand US\$ of GDP (at the Purchasing Power Parity exchange rate), the country's energy intensity is more than twice the average value for the European Union. It also exceeds by a considerable margin the energy intensity of the transition economies in Europe. The extreme energy inefficiency is due in part to specific circumstances of Bulgaria, including over-stimulated electricity demand because of historically heavy reliance on grossly underpriced electricity for heating, the virtual lack of low-pressure natural gas market and delays in modernizing the district heating systems. Consumption of electricity is particularly wasteful. In 2001, Bulgaria's electricity intensity of GDP was seven times higher than the OECD average, four times higher than that of Hungary and Turkey, and 60% higher than that of Romania.

Mirroring the large energy inefficiency, the environmental impact of Bulgaria's economy is disproportionately high. In terms of CO<sub>2</sub> emissions per unit of GDP, Bulgaria is surpassed only by Russia and Ukraine among the European transition economies. Inefficient energy utilization is one of the reasons for the existence of environmental "hot spots" in the country (e.g., Devnya, Maritsa-Iztok, Galabovo-Radnevoia) where ambient air quality often does not meet national and World Health Organization standards.

Because of the current low efficiency base, Bulgaria has a vast potential to achieve significant energy efficiency (EE) gains in a cost-effective manner. The saving potential is as high as 50% for existing building stock, 40% for district heating and 30% for industry. The industrial sector accounts for more than half of the savings potential. The Government's *National Energy Saving Program to 2010* (adopted in 2001) identified a vast potential for energy saving and specified a large number of specific EE programs and measures for the various end-use sectors with combined energy savings amounting to 1.4 million tons of oil equivalent per year (or about 15% of total final energy consumption) and CO<sub>2</sub> emissions reduction of 5.6 million tons per year. The most promising low-cost energy saving projects (with payback time of less than 3 years) were included in the Government's medium-term *National Energy Saving Action Plan (2001-2003)*, but very few projects have actually been carried out. During 2001-2003, the commercially financed EE investments amounted to US\$13 million, which is only 5% of the annual requirements for EE investments included in the *National Energy Saving Program to 2010*. This discrepancy is a good indicator of the striking size of the EE finance gap in Bulgaria.

#### ***1.2 Barriers to energy efficiency***

Albeit opportunities for "win-win" projects (i.e., ones bringing environmental benefits and sufficient financial returns) are abundant given the disproportionately large scope for EE improvements, Bulgaria's EE market is still underdeveloped, failing to produce the needed

volume of investment capital. The most serious barriers to the uptake of commercial EE finance are:

**Difficult access to finance.** Commercial bank intermediation relative to the size of the Bulgarian economy is low by any standard, partly as a lingering consequence of the collapse of the banking system during the severe economic and financial crisis of 1996-1997. The corporate sector's access to credit is low by international standards and is still below the level reached before the 1996-97 banking crisis. Commercial banks have managed risks by limiting lending volume, demanding high collateralization (200% and higher), charging high interest rates (14%-18%, despite inflation being contained lately at 4%), focusing on short-term lending (with loan maturities of 1-2 years) and investing in low-risk government securities. Loans depend primarily on collateral and less so on proven cash flows. Weak competition allows banks to keep credit low while maintaining high margins. Instead of turning to bank borrowing, small- and medium-sized enterprises (SMEs) in Bulgaria rely primarily on cash. The loan portfolio of banks is still simple, consisting largely of working capital loans with short maturities and available mostly to well-established firms. The extreme inefficiency of the Bulgarian judicial system makes recovery of debt or seizure of collateral a long-winded process. The perceived high credit risk hurts especially strongly the SMEs, multi-family housing, municipalities, hospitals and other similar energy consumers, which may not have a significant credit history or lack suitable collateral values associated with EE projects.

**Perception of high risk for EE projects.** In Bulgaria, there is a considerable gap between the real and perceived risk by banks with respect to EE projects. Commercial banks are generally not familiar with commercial and technical issues involved in EE projects and perceive the risks and transaction costs of EE projects as too high. Benefits of these projects are often seen as "environmental" and "social" and there is skepticism about their financial profitability. The staff in many financial institutions has no experience in dealing with EE investments whose benefits are largely intangible (operating cost savings), favoring instead the more familiar energy supply projects that yield tangible output and revenue increases. Another barrier to the financing of EE projects is their generally small size relative to energy supply projects with which they often must compete for financing. Because of the proportionally higher transaction costs, a small EE project may be no interest to banks or it must have a higher rate of return for the size of the return to be high enough for the financial institution to outweigh the transaction costs. Clearly, a proven track record of commercially profitable EE projects is required to convince lenders that a number of risks are only perceived and can be managed, and that the initial costs of getting into this specialized business are worth incurring or can be partially avoided due to prior experience.

**Weak capacity to develop bankable EE projects.** The combination of financial and technical skills needed for the preparation of sound EE business plans are largely missing in Bulgaria. Typically there is weak commercial orientation among technical staff and a widespread lack of understanding of financial packaging of projects and isolation from financial institutions. An organization with a limited history of commercial borrowing will almost inevitably also have limited experience in developing compelling business plans. SMEs are too small to have specialist staff experienced in business plan preparation. A poorly constructed business plan is a frequent cause of an otherwise good project being rejected by financial institutions.

**Lack of innovative EE financing.** Innovative financing, such as energy performance contracting, is hardly used in Bulgaria albeit it can be effective in attracting the necessary capital, often for projects that are deemed too small or risky for financial institutions. This may require “project pooling” by a third party where projects that are individually too small to justify an energy performance contracting arrangement are bundled to make a financially viable package. However, there is no mature and competitive energy service industry in Bulgaria, with most of the private energy service companies (ESCOs) having small operations and balance sheets. They tend to suffer from insufficient credibility and trust by both the energy users and the financial institutions that they can deliver the promised energy/financial savings. There is a financing vicious circle, whereby the low credibility and reputation of small ESCOs prevent them from attracting financing partners, let alone receiving competitive financing terms from commercial banks. Modern project-finance concepts (e.g., off-balance sheet financing, equipment leasing) are not widespread. This results in typically higher cost of capital and in the inability to hedge the uncertainty of energy savings. The availability of credit guarantees for performance contracting could be a factor in reducing the credit risk profile of energy performance contracts and hence in assisting such projects to have access to commercial lending at market interest rates.

**Information gap.** Information on EE technologies, the effectiveness of EE measures, project development and financing techniques is largely lacking in Bulgaria, partly because of the lack of strong institutional focal point within the government for effective information dissemination, including “good practices.” The lack of good information to consumers, the energy service sector and the financial institutions means that many cost-effective opportunities for EE investments are missed.

**Weak financial incentives for end-users.** In Bulgaria, energy consumption has long been subsidized, with end-user prices kept below full cost-recovery levels for some consumer groups. This has encouraged inefficient or downright wasteful consumption patterns.

### ***1.3. Government strategy***

Historically, government energy policies in Bulgaria were heavily supply-oriented, emphasizing increased energy production and positioning the country as energy center of the Balkans. EE policies were largely based on top-down administrative and legal regulation (standards, consumption quotas, labels, etc.) and failed to tackle the country’s serious EE problems in a comprehensive manner. There was a virtual lack of central responsibility for EE policy and implementation with the state Energy Efficiency Agency (EEA) unequipped with adequate policy-making capacity and failing to act as a national center of excellence for EE. Furthermore, even most of the identified EE projects remained unimplemented due to serious shortage of funding and the lack of EE finance market. The reform-oriented government in office since 2001 is undertaking serious efforts to address this legacy by moving (i) from policy formulation to implementation; (ii) from a focus on supply side EE to the demand side; (iii) from isolated EE projects to coherent programs; (iv) from an ineffective central EEA to a national center of excellence in policy and implementation; and (v) from almost exclusive funding from the government and bilateral donors to an EE finance market.

The Government's Energy Strategy (adopted in July 2002), the National Energy Saving Action Plan (adopted in 2003) and the new EE Law (effective March 1, 2004) reflect these new priorities as follows:

- Assigning within the overall energy strategy a key priority to improved energy efficiency to (i) increase industrial competitiveness; (ii) meet European Union (EU) EE and environmental requirements<sup>1</sup>; and (iii) mitigate the environmental impact of energy use through market-based mechanisms and incentives.
- Strengthening the Government's policy-making and implementation capacity by restructuring the EEA under the Ministry of Energy and Energy Resources, moving it from project management to high level policy making and monitoring.
- Creating a supportive policy framework for EE, especially through addressing price distortions in the economy and adjusting energy prices to cost-recovery levels on the fast track, thereby strengthening the financial incentive for EE.<sup>2</sup> The move towards cost-recovery tariffs is critical for achieving market sustainability for the proposed project .
- Promoting the emergence of an EE finance market by the establishment of a commercially oriented revolving EE Fund to demonstrate the financial profitability of investments in the EE sector, thereby catalyzing the creation of a broad-based and sustainable commercial financing for EE projects. The proposed project will provide GEF support for this specific initiative of the GOB.
- Creating a suitable legal framework for improved EE through the adoption of EU consistent EE standards and provision of the legal basis for the establishment of a new financing framework for EE, including the EE Fund.

## **2. Rationale for GEF involvement**

The sector issues noted above, in particular the extreme energy inefficiency and strong financing barriers to EE, along with the Government's credible commitment to address them, provides a compelling case for a GEF-supported contingent finance investment operation<sup>3</sup> in Bulgaria for

---

<sup>1</sup> Bulgaria's EE-related obligations to be met for EU membership are specified under chapter 14 (energy) and chapter 22 (environment) of the EU *acquis*. Both chapters are closed by now. Under both chapters, the GOB undertook to align national legislation and regulation with the relevant environmental and EE directives of the EU.

<sup>2</sup> After a period of inaction, in recent years the GOB has embarked on an aggressive tariff rebalancing strategy under the Bank-supported Programmatic Adjustment Loan (PAL). Under the PAL, the GOB has undertaken to raise the residential electricity tariffs by more than 1.5-fold and residential heat tariffs by 1.3-fold over a three-year period (2002-2004). The bulk of the adjustment has already taken place with residential electricity tariffs now (March 2004) standing 15% higher than industrial tariffs. After another planned adjustment in July 2004, they will be about 30% higher (for comparison, in 2001 the average residential tariff was 10% lower than average industrial tariff). By mid-July 2004, residential tariffs are expected to reach cost-recovery levels.

<sup>3</sup> Contingent finance instruments such as partial credit risk guarantees and revolving loan funds allow for highly cost-effective approaches for overcoming financial barriers to otherwise viable projects benefiting the global environment, while at the same time leveraging mainstream private and/or public capital for investments in climate-

building a sustained market-based capacity to develop and finance EE projects on commercial terms under the proposed Bulgaria Energy Efficiency Fund (BEEF or Fund):

- GEF's lead participation is critical for the establishment of BEEF. Without GEF's significant contribution to the initial capitalization, the Fund project would not proceed in a reasonable time frame. Under this scenario, a certain degree of progress, e.g., on capacity building and some investments financed mostly from internal funds would occur, but broad-based and commercially viable EE investments would remain suppressed, as the basic problems (financiers' perception of high risk and high transaction costs, weak capacity to develop bankable projects, etc.) which have impeded investment in the past would remain largely unresolved. All previous attempts to address these barriers either failed (e.g., the grossly under-resourced and poorly designed state-directed National EE Fund established in 1998 and abolished in 1999) or have been unable to reach a "critical mass" of sustainability (e.g., the ongoing Municipal EE Project).
- GEF contribution to BEEF allows to leverage a high volume of additional financial resources. BEEF provides very high leverage (nearly five times over the first five years and 19 times over 15 years) for GEF funds via (i) direct involvement of commercial banks in profitable EE projects under co-financing and partial credit guarantee arrangements; (ii) building capacity for EE in the financial and energy services sectors; and (iii) the economy-wide demonstration value of financially viable EE projects.
- The underlying conceptual design of the project applies the principle of contingent finance promoted by GEF. The contingent finance modality of BEEF offers exceptionally high energy savings (and an associated reduction of GHG emissions) per dollar of BEEF's capitalization while preserving and possibly even increasing the initial capital value of the Fund. After successful implementation of the project, remaining GEF resources in BEEF could be made available for potential use in other priority GHG reduction efforts in Bulgaria.
- The concept of commercially oriented, revolving EE Fund is highly replicable regionally. Most of the transition economies face largely similar conditions, including high energy intensity, huge scope for "win-win" EE projects due to past under-investment and perverse incentives, and the severe financing gap constraining the implementation of these investments.

The project is proposed to the GEF under Operational Program No. 5 (OP-5): Removal of Barriers to Energy Efficiency and Energy Conservation. The specific strategic priorities supported by project in the context of the GEF Business Plan for FY04-06 are: S1 - transformation of markets for high-volume, commercial, low-GHG products or processes; and S2 - increased access to local sources of financing. The relevance of the proposed project for S2

---

friendly technologies. The bulk of the GEF contribution to BEEF will be used as seed capital to co-finance or guarantee commercially viable EE projects. In addition, a small TA portion of the GEF funds will provide support for covering the set-up and running costs of BEEF in the initial years when the facility is not yet financially self-sufficient.

is especially strong since it focuses on mobilizing the resources of local commercial banks and other private financiers by removing actual and perceived barriers to EE investments. Under S2, revolving funds are characterized as one of the proven mechanisms in addressing the financing barriers to EE.

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

#### ***3.1. Bulgaria's international obligations under climate protection***

The proposed project will help enable Bulgaria to meet its obligations under the United Nations Framework Convention on Climate Change (UNFCCC). Bulgaria ratified the UNFCCC in March 1995. Bulgaria signed a Host-Country Agreement with the Bank's Prototype Carbon Fund (PCF) and is implementing a biomass utilization project with PCF support. The GOB supports the Joint Implementation (JI) mechanisms under the UNFCCC. In 2000, a JI Unit for joint EE projects with Bulgarian and Dutch participation was established. In 2002, a similar agreement was signed with Austria.

The project will also contribute to achieving the Government's objectives under its Environmental Strategy and Action Plan (approved in 2001) in which the huge potential for EE improvement was identified as a key target area for GHG reduction. The Ministry of Environment and Water expressed strong support for the project and the GEF Focal Point endorsed it in March 2003.

#### ***3.2. Sector-related World Bank Country Assistance Strategy***

The Bank's Country Assistance Strategy (CAS, dated May 31, 2002) is designed to support Bulgaria with reforms that will assist the country meeting its European Union (EU) accession requirements concerning EE and environmental protection. The energy sector is considered a laggard in meeting the EE and environmental requirements of the EU. In its annual reports on Bulgaria's progress towards accession, the European Commission has repeatedly expressed serious concern about the very low level of EE and called for the development and implementation of a broad-based EE program in Bulgaria as a matter of strategic policy priority and a requirement of EU accession.

A recent Bank report, *Bulgaria: Energy-Environment Review* (November 2001), identified improved EE as a key policy challenge facing the Bulgarian economy in the years ahead. The *Review* demonstrated that efficient energy use is a viable alternative to the rampant expansion of energy supply. The CAS points out that energy utilization should be addressed as a matter of urgency and high priority in order to bring about the large efficiency gains and the associated environmental benefits. In this context, the CAS explicitly includes an EE project to be supported by the GEF. The CAS also has an environmental development objective to support Bulgaria in maintaining headroom for tradable carbon. Reduction of GHG emissions may be purchased by PCF and the OECD countries under separate trading arrangements with governments and/or private entities.

## **B. PROJECT DESCRIPTION**

### **1. Global Environmental Objective**

The global environmental objective of the project is to support a large increase in EE investments in Bulgaria through development of a self-sustaining, market-based financing mechanisms. The project's goal is focused on the development and implementation of financially profitable EE projects, which can provide sustainable and increasing reductions in GHG emissions without relying on public subsidy.

The project would achieve this objective by mitigating the perceived high risk and transaction costs of initial EE investments and overcoming the current barriers to investment through the creation of a revolving EE Fund for the development and financing of commercially viable projects and capacity building support. The Fund would directly support the implementation of a growing number of EE projects on fully commercial terms, demonstrating means to overcome current barriers and make profits on such projects. At least half of the benefits of BEEF-supported projects should come from measurable energy savings. The project will also foster, through both demonstration effects and explicit partnership, expanded investment by other market participants, such as commercial banks, ESCOs and leasing companies. Without the intervention of the project to overcome the financing barriers on a sustainable basis, it is likely that little progress would be made in EE investment in the years to come, just as has occurred in the past decade.<sup>4</sup>

Performance indicators with respect to the project objective include:

- Number of EE projects and associated investment volume with commercial banks participating in financing with BEEF.
- Measurable reduction of GHG emissions from participating sectors and sub-borrowers.
- Number of financial institutions engaged in EE project financing.
- Number of ESCOs engaged in EE project development and implementation.
- Development of a critical mass of commercial EE project development and financing and subsequent emergence of a competitive, self-sustainable national EE market - the pivotal long-term success indicator of BEEF.

---

<sup>4</sup> Very limited investment in EE projects is believed to be the main reason why in the 1990s the energy intensity of GDP fell only marginally in Bulgaria, in contrast with most of the transition economies where it declined considerably (e.g., 40% in Poland, 20% in the Czech Republic). (Source: *Energy Strategy of Bulgaria*, Ministry of Energy and Energy Resources, Sofia, March 2002.) This is despite the fact that Bulgaria's energy intensity is one of the highest among the transition economies (surpassed only by Russia and Ukraine), thus having a disproportionately large energy saving potential.



## 2. Project components

GEF financing of US\$10 million is being sought under Operational Program 5 to support the establishment and operation of BEEF as a profit-seeking finance facility in a public-private partnership. As a market facilitator, the Fund would combine both technical project development capacity and financial structuring capacity into one entity, thereby addressing the current weak capacity to develop bankable EE projects. Specifically, GEF funds will be used to (i) provide seed capital for BEEF; (ii) defray initial set-up and operating costs until BEEF reaches financial self-sufficiency; and (iii) partially defray initial costs of EE capacity building (project development, financial packaging, etc.).

Designed as a flexible, market demand-driven facility, BEEF would make available both loans and partial credit guarantees for EE projects.<sup>5</sup> As further discussed below (sections B.3 and B.4), at this time Bulgaria needs these financial products to address both liquidity and credit risk barriers to EE financing. There are indications of still-inadequate capital market liquidity in the country. Interest rates are still high (well over 10%) despite inflation being contained (at 4%). Commercial bank intermediation relative to the size of the economy is low by any standard, partly as a lingering consequence of the severe economic/financial crisis of 1996-97. The corporate sector's access to credit (other than short-term working capital credit) is still below the level reached before the crisis.

Therefore, BEEF's program structure is designed with built-in fungibility of funds between the two facilities in response to changing financial market conditions and early implementation experience. It is expected that over time, with gradually improving capital market liquidity especially in connection with Bulgaria's prospective accession to the EU, the demand for BEEF support will shift in favor of credit enhancement (guarantees). The split between the two windows in the financing plan is indicative only, the actual proportion will be largely market-determined and in favor of the guarantees over time.

In discussions with the project team, leading commercial banks expressed an interest in working with BEEF under loan co-financing as well in addition to guarantee transactions. Limited co-financing by BEEF is expected to have catalytic effect on commercial funding especially in the early years, thus attracting rather than "crowding out" private financing.

Flexible combinations of the two modes of financing are possible: direct loans accompanied by co-financing from other sources, including commercial banks, supported by a BEEF guarantee. The Fund Manager is expected to make rational choices about the appropriate financing instruments based on specific project circumstances, overall project portfolio management considerations, proper risk allocation among all partners, and evolution of the domestic financial market. Thus, BEEF's program structure should allow for procedures and financing mechanisms

---

<sup>5</sup> Other financial products to be offered may include contingent loans and subordinated loans. BEEF may invest equity in carefully selected projects and/or ESCOs. A contingent loan may be structured as a temporary liquidity back-stop facility. For example, when a borrower falls into a temporary cash deficiency, BEEF could provide a contingent loan to make up for the shortfall for the debt service to a commercial bank.

to be adjusted based on changing market conditions, demands and initial implementation experience.

Under the post-EU accession scenario of much improved capital liquidity, one possibility to be considered is the complete phase-out of the loan facility with a corresponding increase in the volume of guarantee transactions. The market demand trends for loan and guarantees are to be closely tracked under the project monitoring plan to allow for timely adjustments in BEEF's financing strategy.

Initially, the Fund would consist of three components:

- Partial Credit Guarantees: to share in the credit risk of EE finance transactions and to improve loan terms for sub-project sponsors.
- Investment Financing: to co-finance bankable EE projects on a commercial lending basis.
- Technical Assistance: to initially finance on a grant basis a portion of EE project development, capacity building and administration costs of the Fund.

The table below summarizes by component the indicative project cost estimates and related indicative financing plan.

***Component 1: Partial Credit Guarantees (indicative amount: US\$31.1 million, of which US\$4.50 million from GEF).***<sup>6</sup> Most commercial financiers in Bulgaria are reluctant to finance EE transactions due to their unfamiliarity with such projects and perceived weak client/project credit profiles. This facility would be used for credit enhancement purposes to share in the credit risk of EE finance transactions up to about 50% of the outstanding loan principal. A competitively priced guarantee fee would be charged to the financial institution involved based on the risk level, with higher risk projects being charged higher fees.

BEEF will act as the project guarantor, issuing guarantees based on predefined criteria and appraisal methods included in the Operations Manual. The guarantee *reserve account* will be held in a competitively selected commercial bank. The guarantee window will earn income through interest from the reserve account balance along with guarantee fees, which can help offset Fund administration costs and some defaults.

Conditions are ripe in Bulgaria for the guarantee instrument to be successful. Several banks are in process of improving liquidity and there is some, albeit still marginal, baseline market activity in guarantees (notably, the Municipal EE Program) serving as a positive reference.

---

<sup>6</sup> The size of the partial credit guarantee window is based on the assumption that initial contributions to the Fund by the GOB, bilateral donors and other financiers would be split in a roughly 60/40 proportion between the guarantee and loan windows. This is an indicative ratio.

### Indicative Costs and Financing Plan

Component	Category	Costs		Financing Plan					
		Amount (US\$M)	% of Total	GEF (US\$M)	% of GEF Finan- cing	GOB (US\$M)	Bi- and Multilateral Donors (to be confirmed)* (US\$M)	Leveraged Equity Financing by Sub- project Borrowers (US\$M)	Lever- aged Commer- cial Co- financing (US\$M)
1. Partial Risk Guarantee	Barrier Removal	31.12	62	4.50	45	1.00	2.80	4.06	18.76
2. Loan Financing	Barrier Removal	16.34	34	4.00	40	0.50	2.70	1.78	7.35
3. Technical Assistance	Barrier Removal and Capacity Building	2.05	4	1.50	15	0.30	0.25	0.00	0.00
<b>Total Project Costs</b>		49.51	100	10.00	100	1.80	5.75	5.84	26.12
<b>Total Financing Required</b>		49.51**	100	10.00	100	1.80	5.75	5.84	26.12

- Not all of these resources are expected to be available upfront at project start when the portfolio is relatively small by necessity. Some co-financing will be mobilized in years 2-4 in line with the build-up of BEEF's project portfolio.
- \*\* Includes leveraged co-financing (US\$5.84 million in own equity by sub-project sponsors and US\$26.12 by commercial financiers).

**Component 2: Investment Financing (indicative amount: US\$16.34 million, of which US\$4.00 million from GEF).** Loans will be made on a commercial basis to creditworthy customers that will revolve with interest and principal payments into BEEF for additional loans. Indicative lending guidelines are as follows:

- Typical projects are expected to be in the range of US\$100,000 to US\$2,000,000. Projects outside this range are not necessarily excluded, however, financing for projects with large contribution from the Fund would have to ensure adequate risk coverage, including sharing of risks with commercial financiers.
- BEEF loans would typically be made on a co-financing basis, i.e., in combination with commercial bank loans, and equity financing (minimum 10% of total project costs) by the sub-project sponsors.

- GEF funds can be placed in a *first-loss position* to the commercial funds in order to reduce risks to commercial co-financiers in the early years.
- A well-diversified portfolio of projects to assure a balanced risk/return to BEEF.
- Projects with relatively short payback time (generally not longer than three to four years).
- At least half of the project's benefits should come from measurable energy savings.
- The energy saving technology must be well proven in the proposed application.

In addition, project financial support may include equipment leasing, payment for services (e.g., bridge financing for ESCOs to support investment grade energy audit costs) and various combinations of these.

***Component 3: Technical Assistance (indicative amount: US\$2.05 million, of which US\$1.50 million from GEF).*** This component covers the following two broad areas:

- *Capacity Building*: to fund activities in initial project pipeline development (including partial support for audits) and project evaluation, workshops and seminars for potential co-financiers and clients, marketing and dissemination of information, training for Fund manager and partners of the Fund (banks, ESCOs, consultants, etc.) in EE project development and financing techniques.
- *Fund Administration*: to finance set-up and running costs of the Fund during the first four years, including the salaries of Fund staff, when the Fund is not yet self-financing. The TA financing of this component is on declining scale (as provided under the disbursement plan for the GEF funds). By year five, BEEF should be fully self-sufficient financially, including charging full fees for the preparation of business plans.

BEEF will manage a sufficiently diverse portfolio in terms of sectors and risks while ensuring that at least half of the benefits in every project comes from measurable energy savings. Likely eligible transactions would include investments in projects aimed at improving EE in buildings (e.g., through modernization of heat exchanger substations, heating insulation), industrial processes, municipal facilities (e.g., street lighting) and other energy end-use applications (e.g., lighting, boiler and cogeneration systems, energy management control systems, power factor correction measures, air compressors, steam traps, fuel switching).

### **3. Lessons learned and reflected in the project design**

#### ***3.1. General lessons***

Experience from GEF's overall EE portfolio suggests that even in countries where the local financial market has sufficient size and liquidity, consumers and investors may have limited access to local financial institutions due to perceptions of high risk, high transaction cost, lack of institutional infrastructure and project development capacity or lack of awareness regarding technologies and their technical/financial performance characteristics. Supporting financial intermediaries and providing risk-sharing instruments to financial institutions (credit risk guarantees and other contingent finance instruments) can be cost-effective ways of addressing

these barriers. Microcredit, commercial loan guarantees for ESCOs and revolving loan funds have all been successfully demonstrated in completed GEF projects. With the focus on local financial markets and institutions, such projects have a high likelihood of sustainability and replication.<sup>7</sup>

Apart from the GEF operations, lessons learned from EE Fund experiences worldwide highlight the importance of: (i) keeping the Fund design simple and allowing for some program flexibility to adjust to changing market conditions, demands and initial implementation experience; (ii) transparency of Fund management procedures; (iii) avoidance of political interference, government micro-management and subsidized interest rates; (iv) reliance on existing market participants in building strong partnerships and alliances with financial institutions, ESCOs, consultants and equipment vendors; (v) portfolio diversification; (vi) emphasis on projects with high rates of return; (vii) bundling of small projects; (viii) proactive Fund management incentivized in identifying new business and helping applicants improve the quality of their proposals; (ix) building a string pipeline of finance-ready projects early on; (x) sharing of risks and incentives among all project partners; and (xi) integration of financial and technical expertise for the development of a viable project portfolio. These good practice lessons have been accommodated to the maximum possible extent in the design of the proposed project.

### ***3.2. Lessons/experience from selected relevant EE projects***

*Bulgaria Municipal EE Program.* This USAID project provides partial credit guarantees in favor of the United Bulgarian Bank (UBB) small-scale EE projects. About two dozen projects (totaling US\$9.5 million) have been funded to date with an average payback time of three years. Although the Program has been successful in demonstrating the possibility of commercial EE financing in Bulgaria, it has failed to reach a critical mass for sustainability through developing or catalyzing a large number of additional projects at the national level. The non-revolving nature of the partial credit guarantee facility is a major shortcoming, soon exhausting the potential for additional EE financing under the Program. Another design problem is the virtual monopoly position of UBB in financing projects under the Program, which has kept its interest rate and collateral requirements at a high level. A better option is to work with multiple banks, forcing them to actively compete for bankable EE projects and offer the best possible financing terms to project sponsors. The TA component of the Program, used for project pipeline development, is to be phased out in 2004, leaving the Program with an uncertain future.

*Hungary EE Co-Financing Program (HEECP).* The IFC/GEF-supported HEECP is designed to overcome barriers to EE project finance and development via a partial guarantee program to share in the credit risk of EE operations undertaken by domestic financial institutions and a TA program to help prepare projects and aid general EE market development. HEECP has now a strong pipeline of projects with an average project size of US\$250,000. HEECP has been instrumental in establishing active competition between Hungarian banks to develop and market project financing products. The TA program is designed to be flexible and results-oriented

---

<sup>7</sup> Important good practice lessons from the World Bank's GEF EE portfolio were outlined in a recent Bank report "World Bank GEF Energy Efficiency Portfolio Review and Practitioners' Handbook" (January 2004).

responding to and directly supporting the specific needs of the individual ESCOs and financial institutions executing the transactions supported by the facility. Because of the wide range of end-user sectors, niche financial products have been developed. Another important lesson learnt under HEECP is the streamlined credit approval process which minimizes transaction costs. Building on the model successfully demonstrated under HEECP, IFC is implementing a new partial guarantee project with co-financing from GEF called *Commercializing EE Finance* (CEEf) for five EU accession countries (Czech Republic, Slovakia, Estonia, Latvia and Lithuania).

*Romania EE Project (GEF).* In some respects, BEEF is an application of the concept of the Romanian project. Both projects involve a revolving fund. Like in Romania (but unlike in Hungary), inadequate bank liquidity calls for the inclusion of a loan component in BEEF. However, BEEF will also provide partial credit guarantees, thus considerably enhancing the contingent finance nature of the project. Experience under the Municipal EE Program in Bulgaria, HEECP and CEEf confirms the need for a guarantee instrument in the current stage of development of Bulgaria's commercial banking sector characterized by highly risk-averse behavior. In discussions with the Project Team, Bulgarian commercial banks indicated a strong preference for credit risk coverage prior to shifting to non-guaranteed debt financing of EE projects.

#### **4. Alternatives considered and reasons for rejection**

Several alternative project approaches were considered, including:

- *Stand-alone IBRD loan or blend (IBRD loan/GEF grant).* This possibility was not pursued after receiving strong indications about the lack of willingness of the Ministry of Finance to provide sovereign guarantees to new projects in the energy sector.
- *Dedicated EE credit line administered through financial intermediaries.* Experiences with IBRD, IFC and EBRD credit lines indicate that they have suffered from slow disbursement or cancellation of funds.<sup>8</sup> Generally, commercial banks are not familiar with assessing the financial aspects of EE projects and lack trust that they can deliver the promised energy and financial savings. Lack of experience and expertise in EE efficiency lead to risk-averse lending, high transaction costs, excessive threshold rate of return requirements and over-collateralization. The fundamental problem with credit lines is that they do not address such key EE barriers as weak project development capacity and the perception of high project risk and transaction costs.

---

<sup>8</sup> For example, under IBRD's Hungary Industrial and Energy Conservation Project only a small fraction of the dedicated EE credit line was disbursed. In Romania, the EBRD/EU PHARE-funded credit line failed due to a lack of interest and lack of commitment to the project by the local bank partner in the scheme. The bank had little EE expertise and no strong incentive to develop this specialized business. A pilot EE credit line is under preparation by the EBRD for Bulgaria focusing on industrial and renewable energy projects.

- *Support solely for ESCOs.* Lack of ESCOs is not a major concern in Bulgaria as about two dozens exist. However, overall they perform a small volume EE business because of their limited ability to raise equity capital and secure sufficient project financing at affordable terms. The BEEF will help to strengthen Bulgaria' ESCO industry by mitigating the perceived high risk and transaction costs for EE operations.
- *Equity Funds.* This approach remains rather uncommon. In a couple of cases, GEF funds were provided as equity to ESCOs, but concerns arose over access to debt finance, divestment protocol and legal issues. The IFC/GEF Renewable Energy and EE Fund (REEF), a global private equity fund established in 1977, has been unable to perform as hoped. The Fund was closed in 2002 and the project is being restructured.
- *Direct funding for specific EE projects.* While some demonstration effect could be expected from extending loans to some Bulgarian business entities for selected high impact EE projects, this approach fails to address the broader systemic shortcoming: lack of functioning EE finance market in the country. Therefore, this approach would not develop sustainable EE financing, let alone bringing about a permanent market impact.
- *BEEF as loan facility only.* This approach was taken for the GEF-supported Romania EE Fund. This is justified if inadequate capital market liquidity is the key obstacle to EE financing. However, the Project Team concluded--in agreement with Bulgarian stakeholders, including commercial banks--that the loan window should be complemented by a guarantee component in view of weak client and project credit profiles of EE investments as perceived by the banks. Several major banks<sup>9</sup> signaled a strong preference for a specific risk management tool to allow EE projects to be funded that otherwise might not be funded because of credit concerns. In fact, it is expected that with prospective improvements in banking liquidity, the demand for BEEF support will increasingly shift in favor of the guarantees, which have a higher finance leveraging impact than loans.

## C. IMPLEMENTATION

### 1. Partnership arrangements

In accordance with the indicative project financing plan (see table above), a total of US\$5.50 million in donor support is being sought in contributions to BEEF's seed capital. Additionally, small TA (US\$0.25 million) is expected from EU/PHARE to support capacity building and training activities to be defined in detail. As not all co-financing resources are needed at project start-up (when the portfolio is small by necessity), some will be raised later in line with the build-up of the BEEF portfolio. The financing partnerships will be structured as parallel financing, with each donor concluding a separate contribution agreement with the responsible agency of the GOB for BEEF, the Ministry of Energy and Energy Resources, which will be in charge of coordinating the partnership arrangements. The nature of these agreements is expected

---

<sup>9</sup> United Bulgarian Bank, Raiffeisen Bank, Biochim.

to vary from donor to donor. For example, the Government of Austria, through the Ministry of Finance, has expressed a strong interest in contributing US\$1.8 million equivalent to BEEF's seed capital, which is to be linked to the Memorandum of Understanding between Austria and Bulgaria for the realization of JI projects. GEF funds per se will not be allowed to be used for the transfer of emission credits under a JI framework

Since GEF funds and co-financiers' funds will not be commingled, procurement and disbursements under the project will not be influenced by the specific co-financing arrangements.

The project will closely coordinate with other major development partners involved in advancing the EE agenda in Bulgaria. UNDP-GEF is working on a proposal (Public-Private Partnerships for EE Project) aimed at strengthening local capacity to develop bankable EE projects, which would could be made available for financing by BEEF. A limited indicative pipeline of EE projects developed under the completed UNDP-GEF Gabrovo pilot project was shared with the project team to inform of the key performance characteristics of an illustrative subset of "initial years" municipal EE portfolio. Furthermore, the project team will engage UNDP-GEF regarding the TA component, especially sharing experience in capacity building. Close collaboration has been established with the USAID Bulgaria Municipal EE Program under which a strong pipeline amounting to US\$10.6 million has been developed. A part of this pipeline is expected to be eligible for loan financing or partial credit guarantees under BEEF.

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

### ***2.1. Governance structure of BEEF***

The project beneficiary is the Bulgaria Energy Efficiency Fund to be established in public-private partnership pursuant to Article 22 of the Energy Efficiency Act (approval pending in Parliament). BEEF will be an autonomous legal entity; specialized in financing EE investments in Bulgaria on a fully commercial basis. BEEF will be the final-recipient of the GEF grant through the Ministry of Energy and Energy Resources (MEER) on the basis of a subsidiary grant agreement and an implementation agreement with the Bank. Details of the governance structure, including appointment and compensation arrangements for BEEF staff and the Board of Directors, are to be elaborated in the Statutes (or Operations Manual) of BEEF under the ongoing GEF PDF-B project preparation grant. A key design principle is to keep BEEF simple and flexible, avoiding complex procedures and structure. The following key features are expected to be included:

**Board of Directors.** BEEF is governed by a Board of Directors (Board), which determines, in association with key donors, BEEF's general strategy and policies, decides by majority vote on the proposals for project financing, appoints the Fund Manager, approves BEEF's annual operational budget, and oversees all BEEF operations. The Board consists of seven members from the public and private sectors as follows: (i) two representatives appointed by the Minister of MEER (one from the staff of the EEA); (ii) a representative appointed by the Minister of Environment and Water; and (iii) four representatives of the private sector with good reputation and professional training, including a representative of the environmental NGOs, two

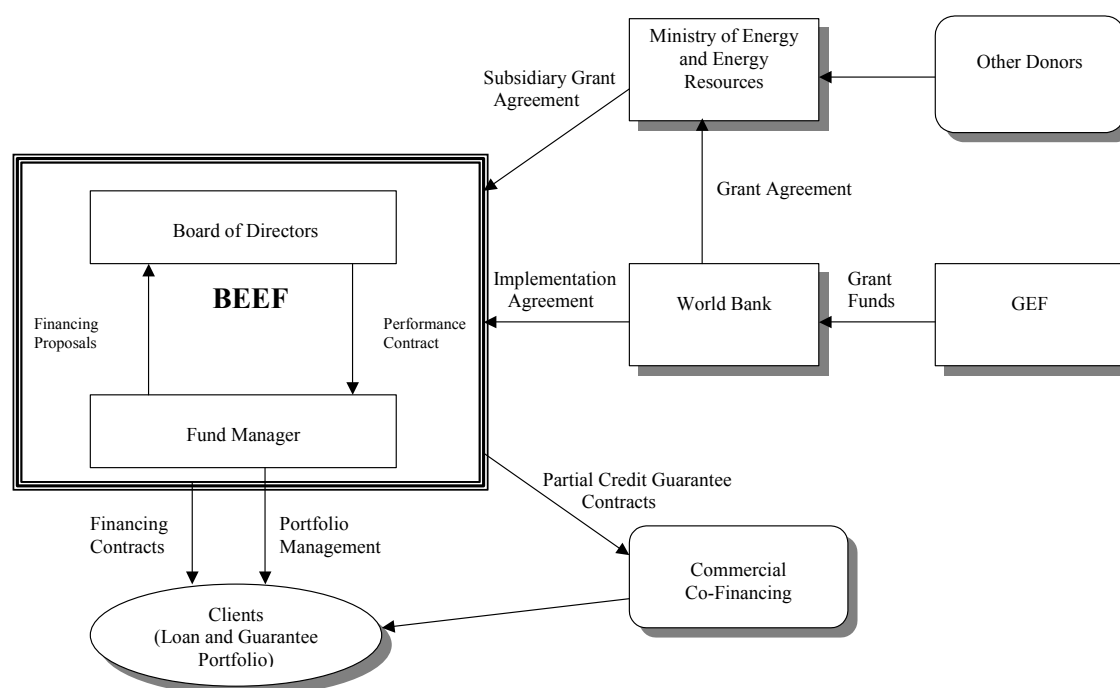


representatives with strong financial background, and one representative with proven technical skills in EE. The private sector members will be selected from a wide spectrum of stakeholders (including NGOs) in a special meeting to be convened the Chair of the Board.

The appointed representative of MEER is the first Chair of the Board, a mandate that he/she shall hold for one year. He/she shall have good reputation, strong management skills and a basic understanding of EE finance. Upon expiry of the first Chair's mandate, the members of the Board shall elect a new Chair from amongst the members of the Board for one year. The tenure of the members of the Board is two years. All appointments, including the Chair, are subject to prior consultations with the World Bank.

**Fund Manager.** The day-to-day activity of BEEF is administered by a professional Fund Manager (FM) appointed by the Board following a competitive selection process in compliance with Bank procurement rules. Appointment of the FM is subject to “no objection” from the World Bank, which will finance the salaries in Fund staff in the first four years when the Fund is not yet financially self-sufficient. The FM is the general legal representative of BEEF.

#### ORGANIZATIONAL STRUCTURE OF BEEF



The FM consists of a small core team of technical and financial experts in EE project development plus limited technical support staff. The FM will need to outsource some technical and financial services to consultants to minimize overhead costs. The FM is engaged under a five-year performance contract, which is subject to review and negotiations after three years, and may be extended beyond five years if required, and subject to successful performance. The FM should be properly incentivized to be proactive in identifying high volumes of successful projects and helping applicants improve the quality of their proposals. The FM remuneration

includes a retainer fee, deal origination (or closing) fee and a success fee. The retainer fee is partly fixed and partly depends on performance; it will be paid from the TA component during the first four years and thereafter from the Fund's income. The deal origination/closing fee will be paid by borrowers, in line with prevailing market norms and practices in Bulgaria. The success fee will be paid from the operating revenue of the Fund at the end of the contract period. The performance-based retainer fee includes incentives for expanding the client base of the Fund, while at the same time ensuring that defaults are minimized. After year 5, there is an option for BEEF negotiate an additional 3-year contract. The FM will be selected by, or reasonably soon after, effectiveness of the project.

It is expected that BEEF will administer GEF funds for about 15 years. According to the financial model developed for the project, this implementation time is sufficient to demonstrate successful operation. Thereafter, the private financial sector can fully take over funding for EE on a sustainable basis (for details of the proposed GEF exit strategy, see section C.4.3 below). The World Bank project implementation period will last 5 years, during which GEF funds will have been fully disbursed. After Bank project closure, MEER will conduct appropriate monitoring of BEEF's performance as provided under the subsidiary grant agreement.

## ***2.2. Client Relationship***

Reflecting international good practice, BEEF will be designed as a one-stop shop and client-friendly entity. Accordingly, its internal procedures will have to be streamlined, in order to provide efficient services in project development and financing. The two-tier governance structure should work as smoothly as possible. The FM will be the public face of BEEF for the clients (project sponsors) and co-financing partners. Co-financing agreements should provide clauses enabling the client to sign only one contract and having to deal only with one provider of financial services. In order to inform clients on services provided by BEEF a coherent communication strategy will be developed and implemented within six months after the selection of the FM. As part of the strategy, a website for BEEF promotion is to be put in place. The website will provide information enabling potential clients to quickly determine whether they are eligible for BEEF financial services. Through this medium and other more traditional means such as seminars, workshops, road shows, mass media, the potential clients and financing partners will be informed on the benefits of EE investments, eligibility criteria for projects to be supported by the Fund, loan/guarantee conditions (interest rate/guarantee fee, repayment time schedule, collateral, environmental and monitoring requirements), BEEF procedures for project development support (including energy audit, business plan preparation, training opportunities) and loan/guarantee approval.

Selected partners such as professional and employers associations, ESCOs and business advisory centers will be contacted and informed on BEEF services. During the initial implementation period of the project, these stakeholders and partners will be exposed, through workshops and seminars, to BEEF objectives and procedures so as to develop proposals targeted at the requirements of the Fund. The FM will also work with appropriate partners in the development of innovative financing techniques (e.g., pooling of small projects) to provide financing for less creditworthy clients. For the first projects, the Fund may cover the total cost of developing

bankable project proposals, thereafter, however the clients will have to contribute to the development, with their share of the cost rolled into the financing arrangements.

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

A monitoring and evaluation system will be put in place to assess the project's effectiveness during implementation and after the project is completed. A results monitoring framework was set up focusing on the global development objective to be achieved and the intermediate and/or final results expected from implementing each individual project component. The framework includes specific and monitorable performance indicators such as the number of ESCOs and financial institutions entering the EE market, EE investments leveraged by BEEF and the associated GHG emission reduction, and financial sustainability of BEEF.

In the early years, it is expected that a number of implementation issues will arise that need to be addressed quickly. Initial project proposals will test the robustness of the BEEF procedures and the FM's capacity to follow them. Therefore, intensive efforts must be made to closely monitor and assess these initial transactions and to adjust procedures as required and use early successes to further market the Fund. BEEF's credibility will depend on its ability to generate successful projects, which then should be widely disseminated.

Project monitoring and evaluation activities will be carried out under the responsibility of BEEF, which will submit semi-annual progress reports to the Bank. A simple management information system for project monitoring and evaluation will be developed by the FM, covering, *inter alia*, the project pipeline, amount invested, loans not requiring guarantees, cost-sharing with financing partners, cost-effectiveness of projects, defaults, fund reflows, energy saved, GHG reduction). BEEF will be required to continue reporting performance to GOB even after project closure. Over time, monitoring/evaluation reports should cover the broader market impact and indicators tracking the development of a sustainable national EE market based on periodic market surveys.

A significant Bank supervision effort will be required, particularly during the first two-three years when BEEF will establish itself and its operations and coordination with the co-financier will be developed. It is expected that about 15 staff-weeks of effort each year for the first three years and about 10 staff-weeks each year thereafter will be required for supervision by the Bank. A mid-term review will be carried out to assess overall project progress. This review will include an in-depth assessment of the institutional and financial sustainability of BEEF, its initial impact on the broader EE landscape and the lessons learnt. Based on the outcome of the mid-term review, the Bank will advise BEEF and GOB to take measures to ensure that the project is successfully completed.

### **4. Sustainability and Replicability**

#### **4.1. Sustainability**

The project is expected to yield sustainable EE and global environmental benefits through: (i) building capacity for EE in the financial and energy services sectors; (ii) establishing and demonstrating the financial profitability of EE investments; and (iii) catalyzing through explicit

business partnerships substantial commercial financing for EE projects. The project concept is based on the principles of commercially viable operation. After the initial GEF capitalization of the Fund is expensed, its further operation will be supported through repayments by the project borrowers.

The overarching objective of BEEF is to build a sustained market-based capacity to develop and finance EE operations on commercial terms. Therefore, the long-term success of BEEF is linked to the emergence of a competitive, self-sustainable national EE market in Bulgaria. This market is expected to grow and mature even when BEEF's guarantee and loan facilities are no longer available to support new transactions. BEEF will have fulfilled its role of introducing financial institutions to a sizable untapped business potential and helping both ESCOs and financial institutions to develop their capacity to exploit that potential.

The initial disproportionately large benefits expected from the project in terms of low cost of CO<sub>2</sub> emission reduction may not be possible to sustain for an extended period of time as the availability of cheap carbon reductions should gradually decline over time. However, this will occur only inasmuch as the available "early win" possibilities for GHG reductions are successfully utilized.

#### ***4.2. Replicability***

With its focus on local financial markets and institutions, the project has a significant potential for cross-country replication. Most of the transition economies face largely similar conditions, including high energy intensity, vast scope for "win-win" EE projects due to past under-investment and wasteful consumption patterns, and the severe financing gap constraining the implementation of viable EE investments. Innovative features of the project, including the range of financial products offered, built-in design flexibility and substantial co-financing of the seed capital (nearly doubling the GEF portion of BEEF's seed capital) may enhance the project's replicability.<sup>10</sup>

The potential for domestic scale-up is also considerable. A detailed scale-up strategy is to be developed at project appraisal.

#### ***4.3. GEF Exit Strategy***

The ultimate exit strategy for GEF funds should depend on the success of the project. The GOB, the World Bank and the GEF will finalize the exit strategy at mid-term review, in year 3 of project implementation. At that time, based on initial actual performance characteristics (deal flow, expected payback time, etc.) of the early years portfolio, longer term projections of BEEF's financial performance will be more robust, thus allowing to better estimate the amount of funds remaining in BEEF after a 15-year period, the expected life of the Fund. It is expected that the GEF funds will be disbursed over a period of five years, and then BEEF will administer the

---

<sup>10</sup> IFC's proposed Russia EE project follows BEEF's project design by including both loan and guarantee windows among the financial products offered.

funds for about ten years under GOB (grant recipient) oversight, after which the private financial sector can fully take over financing for EE on a sustainable basis. By this time, much improved liquidity and increased financial institution entry into the EE market will greatly reduce the demand for BEEF loans. The demand for credit enhancement is also expected to recede over the longer term as commercial financiers become more familiar with EE projects and the actual default risk proves to be smaller than initially perceived.<sup>11</sup> At this juncture, one possible exit strategy is to withdraw GEF shares in BEEF once a set of criteria indicating satisfactory outcome have been met, and for those funds to be used by the GOB for mutually agreed GHG mitigation projects that are in line with the GEF global objectives.

If monitoring and evaluation reports indicate that the program objectives are not being met and/or BEEF is not likely to reach self-financing in year 5, the following scenarios could be considered: (i) if there are reasonable prospects of reaching self-financing in the subsequent two-three years, then explore other sources of funding for meeting Fund operating costs, including adjusting operating costs to match the available resources; and (ii) close the project earlier than scheduled, especially if there is no strong possibility that the program objectives can be met within a reasonable period of time with appropriate remedial measures. In this case, any undisbursed funds will be returned to GEF at the close of the project and the funds recovered by BEEF will be allowed to be utilized for other GHG mitigation activities by GOB in consultation with the Bank and GEF.

## **5. Critical risks and possible controversial aspects**

BEEF will face several challenges in establishing itself as a self-sustaining commercial vehicle for EE financing and in achieving a broad-based market impact in the long run. Recognizing the existence of these risks, the project design incorporates corresponding mitigation measures to manage these risks to the extent possible. Weighing all key risk factors, the project was given an overall rating of “substantial risk.”

The following general good practice risk management tools were applied: (i) *Flexibility* of Fund operations and procedures. BEEF is designed with adequate built-in flexibility to adjust internal procedures, implementation capacity, business strategy, financial products offered, targeted clients and business partners to changing conditions; (ii) *Risk sharing*. BEEF’s design incorporates the principle of sharing risks among all project partners (i.e., commercial lenders, ESCOs, equipment suppliers, project sponsors) to avoid moral hazard, based on comparative advantages of the participants (i.e., technical risks to ESCOs, credit risks to banks, equipment performance risks to suppliers, operating risks to end-users); and (iii) *Incentives*. Recognizing that an effective proactive Fund Manager is key to success, BEEF includes a competitive remuneration package with incentives for successful performance.

---

<sup>11</sup> Hungary’s experience shows the gap between real risk versus perceived risk by financial institutions. In 1991-2000, the Hungarian EE Credit Fund made more than 450 loans and only 10 borrowers defaulted. Excellent payment performance has been demonstrated also under HEECP in Hungary (with total losses on the outstanding loans guaranteed representing less than 2% of the total loan value guaranteed).

The main risk factors and the propose mitigation measures are outlined below. One risk factor--deal flow--merits special attention. Based on international experience, having a sufficient deal flow is a key challenge for the proposed project. To address this risk, it is proposed to build a strong pipeline of finance-ready projects early on and intensively. Therefore, both the GEF PDF-B project preparation grant (which includes pipeline development as stand-alone task) and the TA component of this project were designed to support activities in initial pipeline development.

<b>Risk</b>	<b>Risk Rating</b>	<b>Risk Mitigation Measures</b>
Weak supportive macroeconomic Environment for EE projects.	M	<ul style="list-style-type: none"> <li>Adjust energy prices to cost-reflective levels (in progress under the Bank's ongoing PAL operation, GOB's District Heating Strategy and as part of EU accession preparation).</li> <li>Address legal, taxation and institutional EE issues under the new EE Act.</li> <li>Medium- and long-term country macroeconomic outlook is favorable.</li> </ul>
BEEF's size and leverage may not be large enough to create a sustained market impact.	S	<ul style="list-style-type: none"> <li>Obtain GOB, bilateral and multilateral donor contributions during project preparation and implementation. Use early successes and associated rise in the Fund's credibility to mobilize additional donor contributions, including in the framework of GHG emissions trading (especially JI mechanisms).</li> <li>Build capacity for EE in the financial and energy service sectors.</li> <li>Catalyze substantial commercial co-financing through both demonstration effects of successful projects and business partnerships.</li> </ul>
Inadequate governance structure negatively impacts on BEEF's commercial orientation.	S	<ul style="list-style-type: none"> <li>Establish BEEF as a public-private partnership to avoid politicization and potential GOB micromanagement.</li> <li>GOB-appointed members of the Board of Directors to be in minority.</li> <li>Board appointments by GOB to be subject to prior consultations with the Bank.</li> </ul>
Projected energy and GHG savings are not achieved.	M	<ul style="list-style-type: none"> <li>Ensure, as an eligibility criterion for BEEF support, that at least half of the sub-project benefits come from measurable energy savings. Monitor and evaluate actual compliance to enable quick corrective actions.</li> <li>Ensure that the energy saving technology is well proven in the proposed application.</li> <li>During project development, engage own engineering and financial staff and/or external consultants equipped with best practices.</li> <li>Share risks among equipment/technology suppliers, ESCOs and sub-project sponsors.</li> </ul>
Effective Fund Manager cannot be retained.	M	<ul style="list-style-type: none"> <li>Based on initial market soundings, there is a small pool of potential FM candidates with satisfactory qualifications.</li> <li>Hire the best qualified candidate competitively following Bank procurement rules.</li> <li>Properly incentivize the FM to act proactively, identifying high volumes of new business and helping applicants improve the quality of their proposals.</li> </ul>
Insufficient deal flow due to lack of sub-project client interest prevents BEEF from achieving self-financing in year 5 and profitability thereafter.	S	<ul style="list-style-type: none"> <li>Previous studies and preliminary pipeline development point to the availability of a large pool of bankable projects with short payback times.</li> <li>Market intensively Fund products to targeted clients and offer help in the packaging of bankable projects (initially under the GEF TA).</li> <li>Build a strong pipeline of finance-ready projects early on and intensively (including under the GEF PDF-B grant).</li> </ul>

Local financial institutions do not provide sufficient co-financing.	M	<ul style="list-style-type: none"> <li>• Market BEEF to local FIs early on.</li> <li>• Conduct periodic workshops and disseminate early successes to encourage competitive co-financing.</li> </ul>
Possible initial implementation difficulties may impair BEEF's credibility to generate successful projects.	M	<ul style="list-style-type: none"> <li>• Design BEEF with adequate built-in flexibility to adjust internal procedures, business strategy and implementation capacity to changing external conditions.</li> <li>• Continually and intensively monitor and evaluate Fund performance.</li> </ul>
Default rate of projects exceed anticipated level, potentially damaging BEEF's financial sustainability.	S	<ul style="list-style-type: none"> <li>• Incentivize the FM to develop high quality proposals having low repayment risks.</li> <li>• Allow Fund resources to be used strictly on a contingent (non-grant) basis to avoid "willful defaulters."</li> <li>• Share risks among all project participants (e.g., requiring co-funding from sub-project sponsors to weed out potential clients with solvency problems; provide only partial credit guarantees up to 50% of the banks' outstanding loan principal).</li> <li>• Avoid placing funds in a few large projects, spreading the risk through a diverse project portfolio.</li> </ul>
<b>Overall Risk Rating</b>	<b>S</b>	

Risk Ratings: H (High Risk), S (Substantial Risk), M (Moderate Risk), N (Negligible or Low Risk).

## 6. Grant conditions and covenants

### *Condition for Board presentation:*

- The initial project implementing agency, the Ministry of Energy and Energy Resources (MEER) prior to BEEF's establishment as a legal entity, should have financial management arrangements acceptable to the Bank, including system of accounting, reporting, auditing and internal controls.
- Evidence for availability of GOB co-financing in the amount of BGN 3 million (about US\$1.8 million equivalent).

### *Condition for effectiveness:*

- The subsidiary grant agreement between MEER and BEEF, satisfactory to the Bank, has been duly executed.

### *Condition for disbursement (partial credit guarantee and loan financing components):*

- The financial management system of BEEF should be satisfactory to the Bank.

### *During project implementation:*

- The project financial statements, Statement of Expenses and Special Account will be audited by independent auditors acceptable to the Bank and on terms of reference acceptable to the Bank. The annual audited statements and audit report will be provided to the Bank within six months of the end of each fiscal year.
- MEER, while acting as the initial implementing agency, and BEEF once established, will maintain a financial management system acceptable to the Bank.

- In the first year of operation, BEEF shall review with the Bank all proposals for co-financing and partial credit guarantees, and shall not enter into any financing agreement without obtaining no objection from the Bank.
- BEEF shall submit to the Bank for its review the Fund Manager's annual business plan and incorporate the agreed comments before it approved by BEEF's Board of Directors.
- BEEF shall submit, by October 31 of each year, its draft annual operational budget to the Bank for its review and adopt the agreed budget before December 31.
- BEEF shall achieve self-financing ratio of at least 10%, 25%, 50% and 100% in the second, third, fourth and fifth year of operation, respectively.
- BEEF shall submit to the Bank semi-annual implementation progress reports.
- BEEF shall at all times employ a qualified and competitively selected Fund Manager.
- Mid-term review of the project shall be undertaken in the third year operation.
- At mid-term review (in year 3 of operation), MEER, BEEF and the Bank shall agree on a long-term plan for the future operation of BEEF, i.e., for the period after Bank project closure in year five. The plan shall include an exist strategy for the GEF funds remaining in BEEF upon its closure (tentatively scheduled for year 15).
- BEEF shall not amend its Operations Manual and bylaws without prior approval of the Bank.

## **D. APPRAISAL SUMMARY**

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

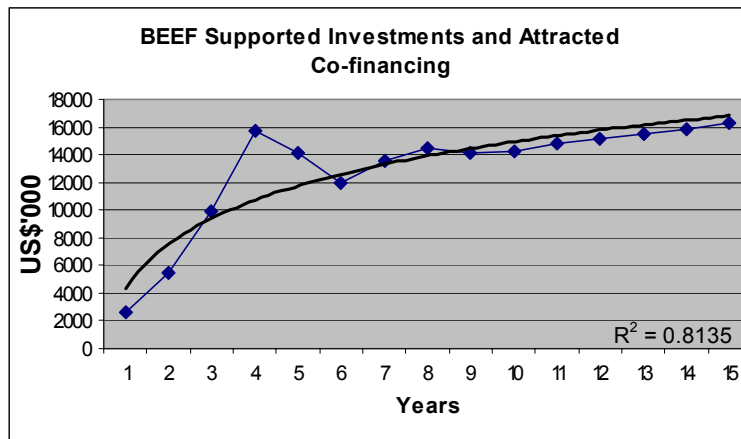
**Initial Years Project Pipeline.** In order to gauge the market potential for EE projects that can be supported by BEEF in the early years, a preliminary market assessment was carried out and an indicative project portfolio was developed based on technical and financial feasibility evaluation. The portfolio includes 44 projects with a total investment cost of about US\$29 million, covering a range of economic sectors.

The pipeline shows favorable financial and environmental characteristics based on high operating cost savings from the EE investments. The key summary indicators are as follows:

- Average simple payback time: 2.9 years
- Financial Internal Rate of Return: 33%
- Annual financial savings: about US\$10 million
- Energy savings (over projects' life, 11 years on average): 462,000 toe



- GHG emission reduction (over projects' life): 2.2 million tons of CO<sub>2</sub>



**Projected Performance of BEEF.** To estimate the potential impact of BEEF on EE investments and the resulting GHG reduction impact, a financial model was developed. BEEF will work in a revolving mode, meaning that loan repayments (including interest) are reinvested into new loans and guarantees. Since the guarantee facility will cover only 50% of any commercial loan it supports, the amount of financial resources mobilized by it would be twice the amount of the guarantee. The Fund is expected to attract additional co-financing in the form of equity contributions (minimum 10% of total investment costs) from the sub-project borrowers and non-guaranteed co-financing from commercial banks. Based on these assumptions, projections indicate that in the first five years (during which the GEF funds are to be disbursed) BEEF would mobilize co-financing in the amount of mobilized of US\$39.5 million, bringing the total available financing to US\$47.8 million (excluding the TA component). This corresponds to a leveraging ratio of 4.8. However, the leveraging impact of the GEF funds can be better evaluated over a 15-year period (BEEF's design lifetime) which includes the effect of cash re-flows from its lending and guarantee operations. With the repeated revolution of the funds, the total financing mobilized is forecast to reach US\$193.6 million over 15 years, yielding a leveraging ratio of 19.

**Asset Value of BEEF.** The initial asset value of BEEF is estimated at US\$17.55 million. The value of this asset can rise if the income from BEEF operations (comprised of interest income of the revolving loan facility, guarantee fees and interest earned on reserve funds in the guarantee facility) is greater than the costs of Fund administration and project defaults. The final year (year 15) Net Asset Value (NAV) of BEEF--a proxy measure of profitability--is projected to grow to US\$21.1 million, or 20%, under the base case scenario.

**Sensitivity Analysis.** Scenarios were run to test robustness of the Fund's performance and to identify key variables which impact on Fund performance. The sensitivity analysis was performed for the aggregate value of Fund transactions and the NAV with respect to the following variables: credit spread, default rate, guarantee fee and deal flow. The test results suggest that both the cumulative volume of BEEF transactions and the NAV are relatively robust. The credit spread is a relatively sensitive variable, but even assuming a 40% decrease in its level relative to the base case value (as under the realistic or reference scenario), the 15-year

cumulative value of BEEF transactions, at US\$95 million, is six times higher the Fund's initial capitalization (US\$15.8 million), standing only 10% lower than the reference value. Regarding the NAV, even under a 40% decrease in the credit spread, at US\$17.6 million, it is larger than the Fund's initial capitalization.

One of the main risk factors affecting the Fund is the failure to fully utilize its assets for lack of high quality bankable projects and/or insufficient attractiveness of the terms and conditions offered by the Fund. The Fund requires a large enough *deal flow* to generate sufficient revenues to cover overhead and operating costs as well as to generate sufficient momentum to ensure sustainability in the market for EE lending in Bulgaria. Clearly, a high initial deal flow considerably improves Fund performance and quickens sustainability, thus devoting sufficient TA to building a strong pipeline of finance-ready projects early on is of great importance. Equally important is to market intensively the Fund products to targeted clients and offer help in the packaging of bankable projects.

## 2. Technical

N/A

## 3. Fiduciary

**Financial Management.** The financial management arrangements of the project should be designed to meet the Bank's fiduciary requirements in accordance with OP 10.02 (Financial Management) prior to Board presentation. Therefore, during project appraisal the financial management system of the Ministry of Energy and Energy Resources, being initially the project implementing agency, should be assessed as acceptable by the Bank's financial management specialist.

A Country Financial Accountability Assessment (CFAA) for Bulgaria was carried out in 2003. The CFAA report concludes that Bulgaria has a well developed-system and structure of public financial management that relies heavily on information technology (such as in the area of cash management), and has independent external audits and parliamentary oversight committees. Sound legislation exists to prepare, implement and monitor the state budget. A major remaining issue, from the perspective of using government financial management systems in Bank-financed projects, is the implementation of a single unified Financial Management Information System, which is currently in progress. Given the current state of public financial management in Bulgaria, the CFAA assesses both the global fiduciary risk to the government and the overall fiduciary risk to Bank project funds as low. The BEEF implementing this project should develop a financial management system able to meet the requirements of both Bulgarian statutory legislation and the Bank.

## 4. Social

No negative social impact is anticipated to result from the project. The project is expected to facilitate the emergence and growth of a robust national EE industry. By investing in energy saving measures private sector SMEs will be able to reduce their operating costs and improve

competitiveness in domestic and external markets. Thus, the population will benefit through increase in employment. EE projects in the municipal and commercial sectors are expected to make basic public services more affordable and better quality, improving the comfort of the general population. Demand-side EE investments in the residential sector may bring significant social benefits by mitigating the impact of steep increases in residential energy prices while improving the comfort level.<sup>12</sup> The general population will benefit from the positive environmental impacts of the project. Overall, higher end-use efficiency creates a positive link between environmental and social outcomes.

Key project stakeholder groups are as follows: (i) SMEs mostly in the industrial and the service sector, municipalities and housing cooperatives/associations as potential subproject clients (project sponsors); (ii) equipment/materials manufacturers, building design and retrofit contractors, ESCOs and EE consultancies as business partners; (iii) companies in the financial sector, particularly banks, mortgage and leasing companies as co-financiers; and (iv) local environmental and EE advocacy groups and NGOs.

During project preparation, most of these stakeholders were consulted to seek their views on the objectives and design of BEEF and to generate larger public interest in the facility. In June 2002, the project concept was presented to the NGO community in a special workshop. Further outreach actions, including an investors' workshop, are envisaged during further stages of project preparation. Broad-based participation and public involvement are incorporated in the project design. Organized outreach and public information campaigns are included in the TA component. Primarily, the Fund Manager will be in charge of these activities. In addition, during the EE market assessment (funded from the GEF PDF-B project preparation grant), top management and energy managers of companies in the industrial, service and municipal sectors as well ESCOs will be engaged with the purpose of both information dissemination and initial project pipeline development.

## **5. Environment**

### ***5.1 Environmental Issues***

The environmental category assigned to the project is "Financial Intermediary." No significant negative environmental concerns are raised by this project, which is specifically designed to mitigate GHG emissions through energy savings. Only those projects are eligible for BEEF support for which at least half of the financial benefits come from measurable energy savings. Environmental benefits associated with these savings will be systematically monitored and reported by BEEF. The Fund will not support those projects where process changes may adversely impact the environment. There may be some minor adverse environmental effects during construction or replacement activities in the form of dust and noise emissions. Replacement of old insulation material may involve asbestos removal, and assurances must be

---

<sup>12</sup> The share of energy utilities in the expenditure budget of the average Bulgarian household is 12% and is expected to rise substantially under the ongoing tariff-rebalancing program of the Government supported by the Bank's Programmatic Adjustment Loan. This share is much higher for the poor. For example, more than one-third of pensioners' income should go towards energy/heating bills in the winter months.

provided that new insulation materials are acceptable under Bulgaria's commitment to the Montreal Protocol. No land acquisition is expected in the subprojects to be supported by BEEF.

## **5.2. Environmental Assessment System**

During project preparation, the project team carried out an evaluation regarding the adequacy of current Bulgarian Environmental Impact Assessment (EIA) system in the context of potential environmental issues associated with subprojects to be supported by BEEF. In recent years, Bulgaria has made considerable progress in adapting its EIA system to international norms. According to the European Commission's *2003 Regular Report on Bulgaria's Progress Towards Accession*, Bulgaria has attained a good degree of legislative alignment with the EU environment directive, and pre-accession negotiations on chapter 22 (environment) were closed. Provisions of the EU Environmental Directive on EIA have binding and mandatory power, which were found compatible with those under the Bank's OP 4.01 and in some respects, e.g., environmental assessment (EA)-related requirements, actually exceed the requirements of OP 4.01. However, full implementation and enforcement of the new environmental rules requires further improvements in administrative capacities.

Regarding the *screening* of projects with respect to the nature and magnitude of their potential environmental impacts, it is accomplished in Bulgaria by lists of types of projects or activities subject to different levels of EIA. These lists are similar to that included in the relevant EU directive. *Scoping* to identify in advance key environmental issues and impacts is applied in Bulgaria based on the preliminary assessment method.

BEEF's Operations Manual (OM) will include an environmental chapter describing the procedures and arrangements to assure subproject compliance with the national environmental regulations and Bank policy on EA. Concerning the procedures for screening of the subproject pipeline, the OM should clearly state whether the national EIA system or the Bank's environmental categorization will be followed. In view of the high degree of alignment of the national EIA system with the relevant EU EIA procedure, the project team proposes that the OM specify compliance with the national system. The environmental chapter of the OM will be sent to the Bank for review and disclosed in the country (in local language) and at the Bank's Infoshop.

The Fund Manager (FM) will be responsible for screening the subprojects and ensuring that necessary follow-up actions are taken. The screening and EIA procedures will apply to all subprojects supported by BEEF, and not just the ones financed or guaranteed through the initial capital provided by GEF. The staff of the FM will receive training for improved EIA preparation and implementation. A set of guidelines and screening mechanisms will be included in the OM which will enable BEEF staff to determine the environmental impacts of the candidate subprojects and identify those, expected to be in the minority, requiring a full-fledged EA. The targeted operations for BEEF support are small- and medium-sized projects for replacement of old energy-inefficient and polluting technologies and equipment and thus are expected to fall mostly under category C (under OP 4.01) not requiring EA or, occasionally, under category B requiring EA. In case of category B projects (or their equivalent under national procedures), the preparation of Environmental Management Plans (or equivalent) approved by the competent

local environmental authority will be a condition of BEEF support. Large projects under category A are not the target of this project. However, should such a project (e.g., cogeneration) be considered with shared financing under co-financing arrangements or a partial credit guarantee, the clients will have to prepare an EIA which will be reviewed and approved by the relevant local environmental authority.

After loan/guarantee approval, the FM is required to monitor the environmental compliance. Monitoring should be directed towards evaluating (and measuring if warranted) the changes brought about by a subproject and assessing the effectiveness of agreed-upon mitigation measures. Indications that compliance is not met will lead to consultation with the competent environmental authority that will pursue the necessary action.

## 6. Safeguard policies

<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>
<a href="#">Environmental Assessment</a> ( <a href="#">OP/BP/GP</a> 4.01)	[x]	[ ]
Natural Habitats ( <a href="#">OP/BP</a> 4.04)	[ ]	[x]
Pest Management ( <a href="#">OP 4.09</a> )	[ ]	[x]
Cultural Property ( <a href="#">OPN 11.03</a> , being revised as OP 4.11)	[ ]	[x]
Involuntary Resettlement ( <a href="#">OP/BP</a> 4.12)	[ ]	[x]
Indigenous Peoples ( <a href="#">OD 4.20</a> , being revised as OP 4.10)	[ ]	[x]
Forests ( <a href="#">OP/BP</a> 4.36)	[ ]	[x]
Safety of Dams ( <a href="#">OP/BP</a> 4.37)	[ ]	[x]
Projects in Disputed Areas ( <a href="#">OP/BP/GP</a> 7.60)*	[ ]	[x]
Projects on International Waterways ( <a href="#">OP/BP/GP</a> 7.50)	[ ]	[x]

## 7. Policy Exceptions and Readiness

This project complies with all applicable Bank policies, requires no policy exceptions and is ready for implementation.

---

\* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

**Annex 1: Results Framework and Monitoring**  
**BULGARIA: ENERGY EFFICIENCY PROJECT**

**Results Framework**

<b>Global Environmental Objective</b>	<b>Outcome Indicators</b>	<b>Use of Outcome Information</b>
To support a large increase in EE investments in Bulgaria through development of a self-sustaining, market-based financing mechanism, which can provide sustainable and increasing reductions in GHG emissions.	<p>1. Emergence of a competitive and sustainable national EE market in Bulgaria as indicated by (a) growing number of ESCOs engaged in EE project development and implementation; (b) growing number of FIs engaged in EE project financing; and (c) BEEF-supported EE investments made over first 5 years of project implementation, resulting in estimated GHG reduction of about 3.6 million tons of CO<sub>2</sub>.</p> <p>2. Financial sustainability of BEEF's operation as indicated by (a) its growing Net Asset Value; and (b) achievement of operational incomes sufficient for self-financing (without GEF support) by project completion.</p>	Unsatisfactory progress on outcome indicators may signal shortcomings (e.g., insufficient flexibility to respond to changing market conditions or problems in BEEF's governance structure) in the design and/or operational practices of BEEF, requiring appropriate remedial action(s) during project implementation.
<b>Intermediate Results One per Component</b>	<b>Results Indicators for Each Component</b>	<b>Use of Results Monitoring</b>
<p><b>Component 1:</b> Partial Credit Guarantees</p> <p>Growing number of EE projects and investment volume generated through sharing in the credit risk of EE finance transactions.</p>	BEEF's partial credit guarantees will leverage EE investments of about US\$31 million over first 5 years of project implementation, potentially taking over an increasing proportion of BEEF's project portfolio if improved commercial banking liquidity reduces the demand for the loan facility.	The degree of reliance on the credit guarantee facility is an essential indicator of the underlying risk perception of the commercial financial institutions for EE operations. For example, a possible combination of persistent high risk perceptions and low demand for the credit facility may signal design and/or operational problems with the credit component (e.g., rigid eligibility criteria, mispricing of the guarantee fee), requiring appropriate corrective actions during project implementation.

<p><b>Component 2: Investment Financing</b></p> <p>Growing number of EE projects and investment volume generated through co-financing on commercial basis.</p>	<p>BEEF's loan facility and leveraged commercial co-financing will enable implementation of EE projects totaling US\$17 million over first 5 years project implementation.</p>	<p>The level of demand for the loan facility is an important indicator of the evolution of overall capital market liquidity in the country. In addition to possible design problems with this component, possible weak demand for loan financing by BEEF may indicate improving capital market liquidity and a corresponding need for the Fund Manager to regroup Fund resources more actively in favor of the guarantee instrument.</p>
<p><b>Component 3: Technical Assistance</b></p> <p>Improved domestic capacity to develop finance-ready EE projects.</p>	<p>Fund Management generates a strong pipeline of profitable EE projects with a total investment cost of about US\$48 million over first 5 years of project implementation.</p>	<p>Smaller pipeline or project quality problems may signal a variety of problems, including, e.g., the need for (a) additional resources to strengthen project development and financial structuring capacity; (ii) improved financial incentives for the FM to generate new business; (iii) improved partnership arrangements; and (iv) more streamlined loan/guarantee approval procedure within BEEF.</p>

## Arrangements for Results Monitoring

Arrangements for Results Monitoring	Baseline	Target Values					Data Collection and Reporting		
		2005	2006	2007	2008	2009	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
1. Emergence of a competitive and sustainable national EE market as indicated by (a) growing number of ESCOs engaged in EE project development and implementation; (b) growing number of financial institutions (FI) engaged in EE project financing; (c) BEEF leveraging EE investments of US\$48m over first 5 years of project implementation; (d) associated energy savings (over life of EE investments); and (e) associated GHG reduction from EE investments (3.6 mt of CO <sub>2</sub> over life of investments).	(a) No. of ESCOs: 18	(a) No. of ESCOs: 20	(a) No. of ESCOs: 20	(a) No. of ESCOs: 25	(a) No. of ESCOs: 30	(a) No. of ESCOs: 40	Semi-annual implementation progress reports.	BEEF's own statistics; statistics of Energy Efficiency Agency.	BEEF Fund Manager and Energy Efficiency Agency.
	(b) No. of FIs in EE: 2	(b) No. of FIs in EE: 3	(b) No. of FIs in EE: 4	(b) No. of FIs in EE: 5	(b) No. of FIs in EE: 7	(b) No. of FIs in EE: 10			
	(c) ---	(c) ---	(c) Cumulative EE investments: US\$8m	(c) Cumulative EE investments: US\$18m	(c) Cumulative EE investments: US\$34m	(c) Cumulative EE investments: US\$48m			
	(d) ---	(d) ---	(d) Cumulative project life energy savings: 0.16 mtoe	(d) Cumulative project life energy savings: 0.36 mtoe	(d) Cumulative project life energy savings: 0.73 mtoe	(d) Cumulative project life energy savings: 1.03 mtoe			
	(e) ---	(e) ---	(e) Cumulative project life GHG reduction: 0.6 mt CO <sub>2</sub>	(e) Cumulative project life GHG reduction: 1.4 mt CO <sub>2</sub>	(e) Cumulative project life GHG reduction: 2.5 mt CO <sub>2</sub>	(e) Cumulative project life GHG reduction: 3.6 mt CO <sub>2</sub>			
2. Financial sustainability of BEEF.						BEEF achieves 100% self-financing.		BEEF's own statistics.	BEEF Fund Manager.



for Each Component											
<b>Component 1:</b> Partial Credit Guarantees – cumulative portfolio of BEEF projects.			EE projects of about US\$5m.	EE projects of about US\$12m.	EE projects of about US\$22m.	EE projects of about US\$31m.	Semi-annual implementation progress reports.	BEEF's own statistics.	BEEF Fund Manager.		
<b>Component 2:</b> Investment Financing – cumulative portfolio of BEEF projects.			EE projects of about US\$3m.	EE projects of about US\$6m.	EE projects of about US\$12m.	EE projects of about US\$17m.	Semi-annual implementation progress reports.	BEEF's own statistics.	BEEF Fund Manager.		
<b>Component 3:</b> Technical Assistance		Proposals developed for US\$15m worth of EE investments.	Proposals developed for additional US\$17m worth of EE investments.	Proposals developed for additional US\$18m worth of EE investments.	Proposals developed for additional US\$19m worth of EE investments.	Proposals developed for additional US\$20m worth of EE investments.	Semi-annual implementation progress reports.	BEEF's own statistics.	BEEF Fund Manager.		

## **Annex 2: Detailed Project Description**

### **BULGARIA: ENERGY EFFICIENCY PROJECT**

#### ***1. Project Scope***

The proposed project will support the establishment and initial operation of the Bulgaria Energy Efficiency Fund (BEEF) as a commercially oriented finance facility under public-private partnership. As a market facilitator, BEEF will combine both technical project development capacity, financial structuring capacity and market-based financing into one entity, thereby addressing both the current weak capacity to develop bankable EE projects and the severe lack of financing for EE investments. Specifically, GEF funds in the amount of US\$10 million will be used to (i) provide seed capital for BEEF; (ii) defray initial set-up and operating costs until BEEF reaches financial self-sufficiency; and (iii) partially defray initial costs of EE capacity building (project development, financial packaging, etc.).

Designed as a flexible, market demand-driven facility, BEEF would make available both loans and partial credit guarantees for EE projects. At this time, Bulgaria needs these financial products to address both liquidity and credit risk barriers to EE financing. Flexible combinations of the two financing modes are possible: direct loans accompanied by co-financing from other sources, including commercial banks, supported by a BEEF guarantee. The Fund Manager is expected to make rational choices about the appropriate financing instruments based on specific project circumstances, overall project portfolio management considerations, proper risk allocation among all partners, and evolution of the domestic financial market. Thus, BEEF's program structure should allow for procedures and financing mechanisms to be adjusted based on changing market conditions, demands and early implementation experience. In this context, it is expected that over time, with gradually improving capital market liquidity, the demand for BEEF support will shift in favor of credit enhancement (guarantees).

Initially, the Fund would consist of three components:

- Partial Credit Guarantees: to share in the credit risk of EE finance transactions and to improve loan terms for sub-project sponsors.
- Investment Financing: to co-finance bankable EE projects on a commercial lending basis.
- Technical Assistance: to initially finance on a grant basis a portion of EE project development, capacity building and administration costs of the Fund.

***Component 1: Partial Credit Guarantees (indicative amount: US\$31.12 million, of which US\$4.50 million from GEF).*** Most commercial financiers in Bulgaria are reluctant to finance EE transactions due to their unfamiliarity with such projects and perceived weak client/project credit profiles. This facility would be used for credit enhancement purposes to share in the credit risk of EE finance transactions up to half of the outstanding loan principal. A competitively priced guarantee fee would be charged to the financial institution involved based on the risk level, with higher risk projects being charged higher fees. Minimum 10% of the total project costs is expected to be borne by the sub-project sponsors.

BEEF will act as the project guarantor, issuing guarantees based on predefined criteria and appraisal methods included in the Operations Manual. The guarantee *reserve account* will be held in a competitively selected commercial bank. The guarantee window will earn income through interest from the reserve account balance along with guarantee fees, which can help offset Fund administration costs and some defaults.

Conditions are suitable in Bulgaria for the guarantee instrument to be successful. Several banks are in process of improving liquidity and there is some, albeit still marginal, baseline market activity in guarantees (notably, the Municipal EE Program, see section 3.2) serving as a positive reference.

***Component 2: Investment Financing (indicative amount: US\$16.34 million, of which US\$4.00 million from GEF).*** Loans will be made on a commercial basis to creditworthy customers that will revolve with interest and principal payments into BEEF for additional loans. Indicative lending guidelines are as follows:

- The projects are expected to be in the range of US\$100,000 to US\$2,000,000. Projects outside this range are not excluded, however, financing for projects with large contribution from the Fund would have to ensure adequate risk coverage, including sharing of risks with commercial financiers. While very small projects (much less than US\$100,000) are not excluded, BEEF and FIs may not be interested in them because of the high transaction costs. This situation may require “project pooling” by a third party where projects that are individually too small are bundled to make a financially viable package.
- BEEF loans would typically be made on a co-financing basis, i.e., in combination with commercial bank loans and equity financing (a minimum of 10% of the total project costs) by the sub-project sponsors.
- GEF funds can be placed in a *first-loss position* to the commercial funds in order to reduce risks and increase incentives for commercial co-financiers in the early years.
- A well-diversified portfolio of projects to assure a balanced risk/return to BEEF.
- Projects with relatively short payback time (generally not longer than three to four years).
- At least half of the project’s benefits should come from measurable energy savings.
- The energy saving technology must be well proven in the proposed application.

BEEF is expected to provide the following loan products:

- Cash-flow based term loans made directly to end-users.
- Cash-flow based loans made to ESCOs on a project-by-project basis.
- Performance loans where BEEF partners with a supplier consortium and offers a total project package including engineering, equipment and financing.

In addition, project financial support may include equipment leasing, payment for services (e.g., bridge financing for ESCOs to support investment grade energy audit costs) and various combinations of these.

Since GEF funds and co-financiers' funds will not be commingled, procurement and disbursements under the project will not be influenced by the specific co-financing arrangements. For example, in a *parallel* co-financing arrangement, each co-financier retains control of own funds and coordinates with the Fund Manager (FM) with respect to sharing the deal flow, due diligence, consultants and structuring concepts and harmonizing the terms of financing among different financing sources, so that the client signs only one financing contract and interfaces with a single point of contact, the FM. In a *direct* co-financing arrangement, the co-financier would establish a dedicated account over which the FM would have control. In this case, the FM is empowered to make disbursements from the account for any eligible transaction (within the context of the Fund Management Agreement between the co-financier and BEEF) without the express consent of the co-financier.

***Component 3: Technical Assistance (indicative amount: US\$2.05 million, of which US\$1.50 million from GEF).*** This component covers the following two broad areas:

- *Capacity Building*: to fund activities in initial project pipeline development (including partial support for audits) and project evaluation, workshops and seminars for potential co-financiers and clients, marketing and dissemination of information, training for the FM and partners of the Fund (banks, ESCOs, consultants, etc.) in EE project development and financing techniques.
- *Fund Administration*: to finance set-up and running costs of the Fund during the first four years, salaries of Fund staff (including the management fees [retainer] of the FM), when the Fund is not yet self-financing.

The TA activities will be carried out under the general responsibility of the FM. The annual business plan prepared by the FM will identify and specify the need for such activities.

BEEF will manage a sufficiently diverse portfolio in terms of sectors and risks while ensuring that at least half of the benefits in every project comes from measurable energy savings. Likely eligible transactions would include investments in projects aimed at improving EE efficiency in buildings (e.g., through modernization of heat exchanger substations, heating insulation), industrial processes, municipal facilities (e.g., street lighting) and other energy end-use applications (e.g., lighting, boiler and cogeneration systems, energy management control systems, power factor correction measures, air compressors, steam traps, fuel switching).

## **Country and Sector or Program Background**

### ***1. Country and Sector Context***

Compared with the vast majority of the European countries, Bulgaria is an outlier in terms of energy intensity of its economy (see table below). At 0.38 ton of oil equivalent per thousand US\$ of GDP (at the Purchase Power Parity exchange rate), the country's energy intensity is more than twice the average value for the European Union. It also exceeds by a considerable margin

the energy intensity of the transition economies in Europe. The extreme energy inefficiency is due in part to specific circumstances of Bulgaria, including over-stimulated electricity demand because of historically heavy reliance on grossly underpriced electricity for heating, the virtual lack of low-pressure natural gas market and delays in modernizing the district heating systems. Consumption of electricity is particularly wasteful. In 2001, Bulgaria's electricity intensity of GDP was seven times higher than the OECD average, four times higher than that of Hungary and Turkey, and 60% higher than that of Romania.

### Energy and Greenhouse Gas Intensity of GDP

	TPES/GDP (in 2001) (toe per thousand 1995 PPP US\$ of GDP)	CO <sub>2</sub> /GDP (in 1999) (kg per PPP US\$ of GDP)
<b>Bulgaria</b>	<b>0.38</b>	<b>0.9</b>
Romania	0.31	0.7
Croatia	0.23	0.6
Slovenia	0.22	0.5
Czech Republic	0.30	0.8
Slovakia	0.31	0.7
Hungary	0.22	0.5
Poland	0.26	0.9
Ukraine	0.72	2.1
Russia	0.67	1.6
Turkey	0.18	0.5
Spain	0.17	0.4
European Union (15)	0.18	0.4
United States	0.25	0.6

*Note:* TPES: Total Primary Energy Supply; PPP: Purchasing Power Parity; toe: ton of oil equivalent.

*Source:* International Energy Agency, *Energy Balances of OECD Countries 2001-2001* and *Energy Balances of Non-OECD Countries 2000-2001*, OECD, Paris, 2003; *2003 World Development Indicators*, World Bank, Washington, 2003.

Mirroring the large energy inefficiency, the environmental impact of Bulgaria's economy is disproportionately high. In terms of CO<sub>2</sub> emissions per unit of GDP, Bulgaria is surpassed only by Russia and Ukraine among the European transition economies. Inefficient energy utilization is one of the reasons for the existence of environmental "hot spots" in the country (e.g., Devnya, Maritsa-Iztok, Galabovo-Radnevoia) where ambient air quality often does not meet national and World Health Organization standards.

Because of the current low efficiency base, Bulgaria has a vast potential to achieve significant EE gains in a cost-effective manner. The saving potential is as high as 50% for existing building stock, 40% for district heating and 30% for industry. The industrial sector accounts for more than half of the savings potential. The Government's *National Energy Saving Program to 2010* identified a vast potential for energy saving and specified a large number of specific EE programs and measures for the various end-use sectors with combined energy savings amounting

to 1.4 million tons of oil equivalent per year (or about 15% of total final energy consumption) and CO<sub>2</sub> emissions reduction of 5.6 million tons per year. The most promising low-cost energy saving projects (with payback time of less than 3 years) were included in the medium-term *National Energy Saving Action Plan (2001-2003)*, but very few projects have actually been carried out. During 2001-2003, the commercially financed EE investments amounted to US\$13 million, which is only 5% of the annual requirements for EE investments included in the *National Energy Saving Program to 2010*. This discrepancy is a good indicator of the large size of the EE finance gap in Bulgaria.

## **2. Barriers to EE**

Albeit opportunities for “win-win” projects (i.e., ones bringing environmental benefits and adequate sufficient financial returns) are abundant given the disproportionately large scope for EE improvements, Bulgaria’s EE market is still underdeveloped, failing to produce the needed volume of investment capital. The most serious barriers to the uptake of commercial EE finance are:

**Difficult access to finance.** Commercial bank intermediation relative to the size of the Bulgarian economy is low by any standard, partly as a lingering consequence of the collapse of the banking system during the severe economic and financial crisis of 1996-1997. The corporate sector’s access to credit is low by international standards and is still below the level reached before the 1996-1997 banking crisis. Commercial banks have managed risks by limiting lending volume, demanding high collateralization (200% and higher), charging high interest rates (14%-18%, despite inflation being contained lately at 4%), focusing on short-term lending (with loan maturities of 1-2 years) and investing in low-risk government securities. Loans depend primarily on collateral and less so on proven cash flows. Weak competition allows banks to keep credit low while maintaining high margins. Instead of turning to bank borrowing, SMEs in Bulgaria rely primarily on cash. The loan portfolio of banks is still simple, consisting largely of working capital loans with short maturities and available mostly to well-established firms. The extreme inefficiency of the Bulgarian judicial system makes recovery of debt or seizure of collateral a long-winded process. The perceived high credit risk hurts especially strongly the SMEs, multi-family housing, municipalities, hospitals and other similar energy consumers, which may not have a significant credit history or lack suitable collateral values associated with EE projects.

**Perception of high risk for EE projects.** In Bulgaria, there is a considerable gap between the real and perceived risk by banks with respect to EE projects. Commercial banks are generally not familiar with commercial and technical issues involved in EE projects and perceive the risks and transaction costs of EE projects as too high. Benefits of these projects are often seen as “environmental” and “social” and there is skepticism about their financial profitability. The staff in many financial institutions has no experience in dealing with EE investments whose benefits are largely intangible (operating cost savings), favoring instead the more familiar energy supply projects that yield tangible output and revenue increases. Another barrier to the financing of EE projects is their generally small size relative to energy supply projects with which they often must compete for financing. Because of the proportionally higher transaction costs, a small EE project may be no interest to banks or it must have a higher rate of return for the size of the return to be high enough for the financial institution to outweigh the transaction costs. Clearly, a

proven track record of commercially profitable EE projects is required to convince lenders that a number of risks are only perceived and can be managed, and that the initial costs of getting into this specialized business are worth incurring or can be partially avoided due to prior experience.

**Weak capacity to develop bankable EE projects.** The combination of financial and technical skills needed for the preparation of sound EE business plans are largely missing in Bulgaria. Typically there is weak commercial orientation among technical staff and a widespread lack of understanding of financial packaging of projects and isolation from financial institutions. An organization with a limited history of commercial borrowing will almost inevitably also have limited experience in developing compelling business plans. SMEs are too small to have specialist staff experienced in business plan preparation. A poorly constructed business plan is a frequent cause of an otherwise good project being rejected by financial institutions.

**Lack of innovative EE financing.** Innovative financing, such as energy performance contracting, is hardly used in Bulgaria albeit it can be effective in attracting the necessary capital, often for projects that are deemed too small or risky for financial institutions. This may require “project pooling” by a third party where projects that are individually too small to justify an energy performance contracting arrangement are bundled to make a financially viable package. However, there is no mature and competitive energy service industry in Bulgaria, with most of the private ESCOs having small operations and balance sheets. They tend to suffer from insufficient credibility and trust by both the energy users and the financial institutions that they can deliver the promised energy/financial savings. There is a financing vicious circle, whereby the low credibility and reputation of small ESCOs prevent them from attracting financing partners, let alone receiving competitive financing terms from commercial banks. Modern project-finance concepts (e.g., off-balance sheet financing, equipment leasing) are not widespread. This results in typically higher cost of capital and in the inability to hedge the uncertainty of energy savings. The availability of credit guarantees for performance contracting could be a factor in reducing the credit risk profile of energy performance contracts and hence in assisting such projects to have access to commercial lending at market interest rates.

**Information gap.** Information on EE technologies, effectiveness of EE measures, project development and financing techniques is largely lacking in Bulgaria, partly because of the lack of strong institutional focal point within the government for effective information dissemination, including “good practices.” The lack of user-friendly information to consumers, the energy service sector and the financial institutions means that many cost-effective opportunities for EE investments are missed.

**Weak financial incentives for end-users.** In Bulgaria, energy consumption has long been subsidized, with end-user prices kept below full cost-recovery levels for some consumer groups. This has encouraged inefficient or downright wasteful consumption patterns.

The proposed project is addressing these barriers through (i) mobilizing the resources of local commercial banks and other private financiers by removing actual and perceived barriers to EE investments; and (ii) building capacity for EE project development and financing techniques.

## **Major Related Projects Financed by the Bank and/or other Agencies**

### ***1. Bank-supported***

The World Bank has been involved in the energy sector in Bulgaria through several activities, and the design of BEEF has benefited from the broad knowledge gained through these activities. The key activities include:

- Energy and Environment Review (October 2002). This study highlighted the policy importance of promoting EE, especially in the context of the associated environmental benefits, the EU environmental requirements and the Kyoto Protocol.
- District Heating (DH) Strategy (August 2000). The Bank assisted in the preparation of the government strategy which includes significant policy (tariff adjustments, subsidy removal, disconnection policy, etc.) and demand-side measures (metering, etc.) to improve the currently low EE performance of the DH sector.
- Water Companies Modernization and Restructuring Project (closed on December 31, 2002). Through the DH component of the loan, about 6,000 sub-stations (one-quarter of the total national stock) were rehabilitated resulting in better demand-side management and fuel savings.
- District Heating Project (under implementation). The rehabilitation and the demand-side management measures in Sofia and Pernik heating systems will result in substantial reduction in network heat losses and average household heat consumption. There will be significant associated environmental benefits.
- Programmatic Adjustment Loan (PAL, under implementation). The energy component of the PAL includes significant policy (including a three-year tariff adjustment schedule for residential electricity and district heat) and demand-side measures (under the DH component) leading to significant energy savings. These and other energy sector reforms are expected to reduce Bulgaria's energy intensity by 15% by end-2005 compared to the level at end-2001.
- Wood Residue to Energy Project (PCF project under implementation). The aims to reduce emissions of GHG generated in Svilosa through (i) substitution of coal with residual wood as a fuel for power and heat generation; and (ii) savings of methane emissions from residual wood waste.

### ***2. Other (non-Bank)***

**UNDP-implemented EE Program.** The UNDP has championed the EE agenda in Bulgaria through the Gabrovo pilot project and subsequent development of a network of demonstration zones for energy efficient municipalities that currently counts 39 municipalities and 6 regional municipal associations. This network was created following an education project funded by the UNDP and a small GEF grant. The project has demonstrated the usefulness of EE awareness within municipalities. Also, a number of business plans have been developed for bankable EE projects, focusing on street lighting and schools. Presently, the UNDP is planning a follow-on proposal (UNDP/GEF Public-Private Partnerships for EE Project) to further strengthen local



capacity to develop and finance the bankable projects originally identified. In this context, UNDP-GEF has indicated that it would welcome the opportunity created by BEEF to finance these bankable projects. In addition, UNDP-GEF will engage with the Bank in discussions regarding the TA component of the proposed project, especially concerning capacity building.

**The SAVE II Study.** The *Study on the Implementation of a Widespread Energy Saving Program in Bulgaria* (2001) provided an in-depth review of Bulgaria's energy conservation opportunities and identified a vast potential for energy savings. A Study's long-term energy-saving program include more than 80 EE measures in various end-use sectors with combined energy savings of 1.4 mtoe/year (or about 15% of total final energy consumption) and associated CO<sub>2</sub> emissions reduction of 5.6 million tons per year. The most promising low-cost energy saving projects (with payback time of less than 3 years) were included in the three-year (2001-2003) *National Energy Saving Action Plan*. However, very few of these projects (about 5 %) have materialized due to a lack of financing.

**USAID Municipal EE Program.** The US-based company Electrotek Concepts has been developing small-scale EE projects under the Program, which provides guarantees in favor of the United Bulgarian Bank for 50% of the loan principal for EE projects. Almost two dozens of projects (totaling US\$9.5 million) have been funded to date with an average payback time of three years. Although the Program has been successful in demonstrating the possibility of commercial EE financing in Bulgaria, it has failed to reach a critical mass for sustainability through developing a large number of additional projects at the national level. The non-revolving nature of the partial credit guarantee facility is a major shortcoming, soon exhausting the potential for additional EE financing under the Program. The TA component of the Program, used for project pipeline development, is to be phased out in 2004, leaving the whole project with a very uncertain future.<sup>13</sup> At present, Electrotek is developing an EE project pipeline to the year 2007, valued at US\$10.6 million (average payback time: 2.1 years). Potentially, a part of this portfolio could be eligible for loan financing or partial credit guarantees under the proposed project.

**IFC/GEF Hungary EE Co-Financing Program (HEECP).** HEECP (launched in 1997) was designed to overcome barriers to EE project finance and development via a partial guarantee program to share in the credit risk of EE undertaken by domestic financial institutions (FIs) and a TA program to help prepare EE projects and aid general EE market development. HEECP has now a strong pipeline of projects with an average project size of US\$250,000. HEECP has been instrumental in establishing active competition between Hungarian banks to develop and market EE project financing products in order to capture shares of the new EE segment in the financial sector. The TA program is designed to be flexible and results-oriented responding to and directly supporting the specific needs of the individual ESCOs and FIs which actually execute the transactions supported by the facility. Because of the wide range of end-user sectors, niche

---

<sup>13</sup> USAID is planning to develop a Balkans Infrastructure Development Facility (BIDfacility) as a project development mechanism to promote private sector participation in infrastructure in the Balkans region. It is basically a pre-feasibility or project preparation fund focusing on the water and transportation sectors. At this juncture, it is not clear whether the facility could be used to prepare EE projects in Bulgaria to be considered for potential financing under BEEF.

financial products have been developed under HEECP for EE financing for multi-family housing, municipal street-lighting, district heating, industrial cogeneration and hospitals, with financing offered both directly to end-users and to ESCOs. Another important lesson learnt under HEECP is the streamlined credit approval process which minimizes transaction costs associated with the FIs' participation. Building on the model successfully demonstrated under HEECP, IFC is implementing a new partial guarantee project with co-financing from GEF called *Commercializing EE Finance* for five transition countries (Czech Republic, Slovakia, Estonia, Latvia and Lithuania).

**Romania EE Project (GEF).** In some respects, the proposed project is an application of the same project concept in a country with a relatively larger energy saving potential and a somewhat stronger (but far from self-sustained) EE finance market to build on. Both projects involve a revolving fund. Like in Romania (but unlike in Hungary), inadequate bank liquidity calls for the inclusion of a loan window in the design of BEEF for Bulgaria. However, in addition to loans, BEEF will provide partial credit guarantees, thus considerably enhancing the contingent finance nature of the project. The limited experience under the USAID Program and HEECP in Hungary underscore the need for a guarantee instrument in the current stage of development of Bulgaria's banking sector characterized by highly risk-averse behavior. In discussions with Bank staff, several commercial banks indicated a strong preference for some form of credit risk coverage before shifting to straight loan financing of EE projects. BEEF's most salient improvement vis-à-vis the USAID Program is the engagement of multiple commercial banks to actively compete with one another for providing the best financial terms to the borrowers. This lesson is also drawn from HEECP in Hungary.

### ***3. General lessons/experience from EE projects worldwide***

Experience from GEF's overall EE portfolio suggests that even in countries where the local financial market has sufficient size and liquidity, consumers and investors may have limited access to local FIs due to perceptions of high risk, high transaction cost, lack of institutional infrastructure and project development capacity or lack of awareness regarding technologies and their technical and financial performance characteristics. Supporting financial intermediaries and providing risk-sharing instruments to FIs (i.e., credit risk guarantees and other contingent finance instruments) can be cost-effective ways of addressing these barriers. Microcredit, commercial loan guarantees for ESCOs and revolving loan funds have all been successfully demonstrated in completed GEF projects. With the focus on local financial markets and institutions, such projects have a high likelihood of sustainability and replicability.

Apart from the GEF, lessons learned from EE Fund experience worldwide highlight the importance of transparency of Fund management procedures, avoidance of political interference and subsidized interest rates, the need to rely on existing market participants, portfolio diversification, emphasis on projects with high rates of return, bundling of small projects, proactivity of Fund management, and integration of financial and technical expertise for the development of a sound project portfolio. These and the earlier-noted lessons were reflected in the project concept of BEEF and will be incorporated in the detailed design of the Fund's operational modality (to be developed under the ongoing GEF PDF-B project preparation grant).

### Annex 3: Incremental Cost Analysis

#### BULGARIA: ENERGY EFFICIENCY PROJECT

**Approach.** Estimating incremental costs of a project involving the creation of a financial facility and designed to address financing barriers requires an approach different from that suitable for a discrete investment project. First, under a financing barrier removal project, developing an approximate idea about the financial resources mobilized by the facility, in relation to the financing gap existing in the market, is more essential than knowing the incremental cost of any particular project supported by the facility. Second, the usual comparison of the project costs with those of the “without project” scenario will often yield a negative value in the case of a “win-win” project that has a high rate of financial and economic return along with GHG reduction benefits. This does not mean, however, that the project will be implemented without technical and financial assistance from the facility.

Considering the methodological complexity of a quantitative estimation of the costs of barrier removal, the practical solution applied here is to use the *cost to the GEF* as a proxy for the incremental costs involved. The cost and financing table (see section B.2 of the Project Brief) includes estimates of the indicative costs of the project components and the expected GEF financing contribution. The GEF contribution of US\$10m is linked to the estimated initial capital needs of BEEF and the size of the TA component. The GEF contribution is incremental in the sense that it covers the costs of each of these items over and above the available domestic, bilateral, and other non-GEF resources.

The estimates of the life-cycle GHG emission reduction and the unit abatement cost are derived by extrapolation of the indicative initial years project pipeline. To develop estimates of the potential financial resources mobilized by BEEF, a financial model was developed in which the leveraging ratios typical for similar financial facilities were applied.

**EE Market Assessment: Indicative Initial Years Project Pipeline.** In order to gauge the market potential for EE projects that can be supported by BEEF in the early years, a preliminary market assessment was carried out and an indicative project portfolio was developed based on technical and financial feasibility evaluation.<sup>14</sup> The portfolio includes 44 projects with a total investment cost of about US\$29 million. The following sectors and types of projects are represented in the portfolio:

#### BEEF: Indicative Initial Years Pipeline of EE Projects

Sector	Number of Projects	Investment Cost, US\$
Municipal Services	25	12,337,876
Iron and Steel Industry	6	8,247,273

---

<sup>14</sup> The consultant report *Financial, Economic and Environmental Assessment for Proposed Bulgarian Energy Efficiency Fund* (January 2004) is in the Project File. A more comprehensive EE market survey and project pipeline identification are being carried out under the GEF PDF-B project preparation grant in progress.

Food, Drink and Tobacco Industry	4	3,280,881
Chemical Industry	2	2,742,589
District Heating	1	1,178,187
Rubber and Plastic Products	1	593,939
Mining	3	490,909
Public Transport	1	219,152
Electrical and Optical Equipment	1	143,824
<b>Total</b>	<b>44</b>	<b>29,234,630</b>

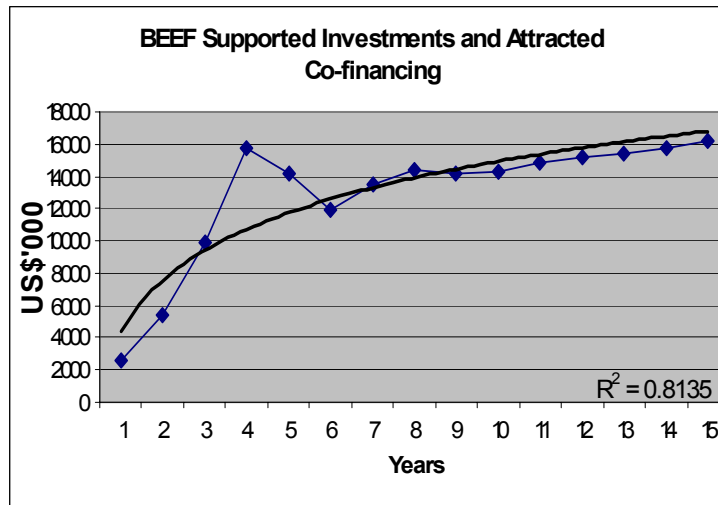
Type of Project	Number of Projects	Investment Cost, US\$
EE in Industrial Energy Systems and Processes	11	10,870,941
EE in Street Lighting and Municipal Buildings	16	7,591,908
Fuel Switching	11	6,131,948
EE in Transport	1	2,078,739
Combined Heat and Power Generation	2	1,938,171
EE in Municipal Waste Management	3	622,923
<b>Total</b>	<b>44</b>	<b>29,234,630</b>

**Financial Characteristics of Indicative Pipeline.** The initial years pipeline shows favorable financial and environmental characteristics based on high operating cost savings from the EE investments. The key summary indicators are as follows:

- Average simple payback time: 2.9 years
- Financial Internal Rate of Return: 33%
- Annual financial savings: US\$10 million
- Energy savings (over projects' life, 11 years on average): 462,000 toe
- GHG emission reduction (over projects' life): 2.2 million tons of CO<sub>2</sub>.

Apparently, it is not the incremental cost of the projects *per se* that prevents these projects from being implemented, but the severe barriers to EE finance.

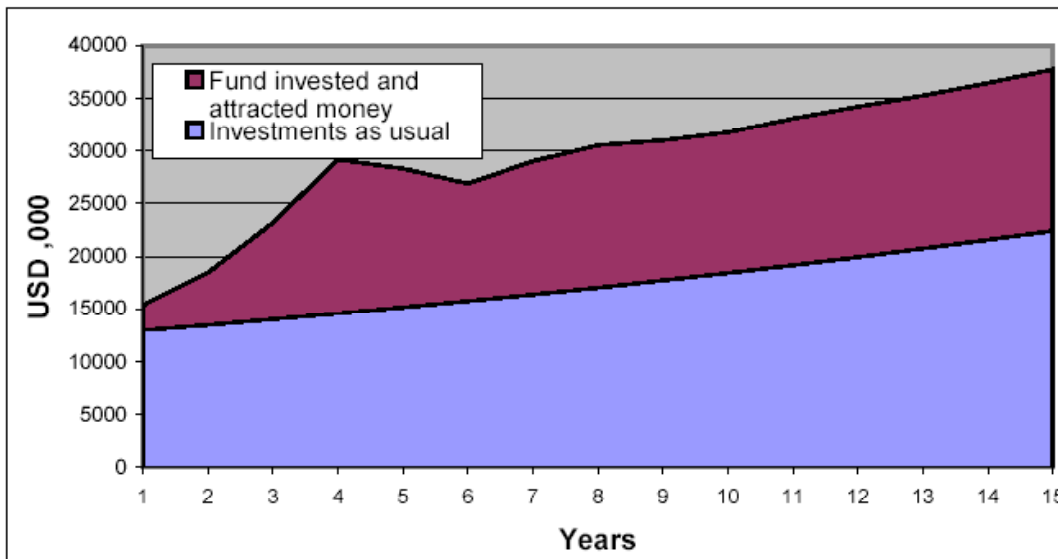
**Extrapolation of Indicative Pipeline Results to Full Pipeline Supported by BEEF.** To estimate the volume of financial resources leveraged by BEEF in order to support a larger volume of projects similar to those in the indicative pipeline, the operation of BEEF was modeled over a 15-year time horizon. BEEF-supported EE investments under the reference case are shown below:



**Baseline Scenario and Additionality.** During 2001-2003, EE investments amounted to only 5% of the annual EE investment requirements included in the National Energy Saving Program to 2010. This is a good indicator of the exceptionally large size of the EE finance gap in Bulgaria. The amount of financing mobilized by BEEF is considered additional to what would take place in the absence of the project. It is assumed that without the project Bulgaria would maintain a moderate level of EE investments. Based on historical data, EE investment of about US\$13 million per year could be expected, increasing annually by about 4% in the “without project” scenario. In the absence of the GEF project, Bulgarian businesses can be expected to make EE investments of about US\$245 million over a 15-year period. This represents annual energy savings of 16.2 million GJ and avoided life-cycle GHG emissions of 20.3 million tons of CO<sub>2</sub> (baseline scenario). As shown below, the proposed project is expected to bring an estimated net increase in EE investments of US\$193.6 million over a 15-year period, resulting in an additional cumulative reduction of 14.7 million tons of CO<sub>2</sub>. The key impact of BEEF is the mobilization of additional financial resources for EE investments on top of the baseline level. The degree to which this catalytic financing role will be achieved is key to the project’s success.

### Additionality of BEEF in Energy Efficiency Investments

#### *Impact of the Fund on the volume of investments in energy efficiency*



**Leveraging Effect.** The analysis of BEEF's financial performance includes a projection for the first five years during which the GEF funds (US\$10 million) will be fully disbursed. Co-financing mobilized during this period is projected at US\$39.5 million, bringing the total available financing to US\$47.8 million (excluding the TA component), which yields a leveraging ratio of 4.8.

The leveraging impact of the GEF funds should however be evaluated over a 15-year period (BEEF's expected operational lifetime) which includes the revolving effect of cash reflows from its transactions. With the repeated revolution of the funds, the total financing mobilized in the reference case is forecast to reach US\$193.6 million over 15 years, corresponding to a leveraging ratio of 19.

**Global Benefits and Unit Abatement Costs.** The global and local benefits from the project are summarized in Table A below. The cumulative value of EE investments facilitated by BEEF over its 15-year operation is estimated at US\$193.6 million (Table B). In the absence of the project, most of these investments would likely remain unimplemented due to the financing barriers and the resulting large EE finance gap.

The GHG emission reduction over 15 years is estimated at 14.7 million tons of CO<sub>2</sub>, which is obtained by extrapolation on the basis of the initial years pipeline. The associated unit abatement cost per ton of CO<sub>2</sub> is US\$0.68 per of CO<sub>2</sub>.

In view of the contingent nature of the financing provided by BEEF, the eventual incremental cost borne by the GEF may not exceed US\$10 million. One possible approach is to approximate the cost to GEF on the basis of costs of barrier removal, which include the TA component and the permanent write-offs from the BEEF portfolio due to net default losses.<sup>15</sup> The Incremental Cost Matrix (Table A) below shows the estimated costs of barrier removal based on this approach. Because the actual performance of the loan portfolio supported by the guarantees is not known, there is no firm basis for estimating *a priori* the amount of actual incremental cost. It will be only after a period of actual loan portfolio performance (in years 4-5) that reasonably good information on actual outcomes becomes available. However, based on actual experience from similar projects elsewhere (e.g., HEECP in Hungary and the First Energy Conservation Project in China) and conditions in Bulgaria, a conservative 3% of net default loss<sup>16</sup> is assumed for a cumulative lending portfolio of US\$170 million over BEEF's expected life of 15 years.<sup>17</sup> This results in US\$5.1 million of bad debt. Assuming that the GEF absorbs 50% of this debt, the permanent write-offs for the GEF amount to US\$2.55 million. Combined with the TA of US\$1.5

---

<sup>15</sup> After recovering all losses. In this context, it is noted that, in principle, pricing of the guarantee fees should aim to recover net default losses (in addition to operating costs).

<sup>16</sup> Under both HEECP in Hungary and the First Energy Conservation Project in China, the net default rate has been less than 2% of all transactions undertaken to date. Both projects have done business with financially strong clients and/or have required appropriate counter-guarantees. The availability of high quality project pipeline further minimized the default losses.

<sup>17</sup> Total financing mobilized minus sub-project borrowers' equity (see Table B).

million, this represents the barrier removal cost (or “minimum” incremental cost) to the GEF of US\$4.05 million.

Since the size of the GEF contribution to the project is expected to be US\$10 million, it is appropriate to calculate the unit abatement cost on this more conservative basis. However, even on this basis, the estimated unit abatement cost for the GEF is very low at US\$0.68 per ton of CO<sub>2</sub>.

**Local Benefits.** The local benefits will be specific to the circumstances of the projects. The major local benefit in most cases will be the value of fuel saved due to increased EE. In those cases where the project consists of switching to a cleaner fuel (e.g., natural gas) from a more polluting fuel (e.g., lignite), significant local environmental benefits are expected. Demand-side EE investments in the residential sector may have significant social benefits due to the mitigating impact of these measures on household energy bills at a time of sharply increasing residential energy prices and low disposable incomes.

BEEF’s impact on the Bulgarian commercial banking sector is expected to be beneficial. The Fund would actively seek co-financing from the commercial banks. BEEF would operate as a last-resort financier, extending credit on terms not more favorable than those available from commercial banks. Through project development support and partial risk mitigation, BEEF would help open up a new line of business—EE finance—for a number of Bulgarian banks.

<b>Table A: GEF Incremental Cost Matrix</b>			
	<b>Baseline</b>	<b>Alternative</b>	<b>Increment</b>
<b>Domestic Benefits</b>	Barriers to EE projects cause high energy intensity and inefficient industrial processes, hindering economic development, industrial competitiveness and investment in productive uses.	Increased investment in EE reduces energy intensity of the economy and enables capital preservation for investment in the productive economy.	Saved energy, avoided costs and higher competitiveness of the private sector through lower production costs.
	Limited penetration of EE technology and high levels of local and regional air pollution.	Increased penetration of EE technology yields lower environmental and health costs.	Less local and regional air pollution.
	High unemployment and weak EE project development capacity by ESCOs and FIs.	More productive jobs in the domestic service and manufacturing sectors, EE market development for ESCOs and FIs.	Less unemployment and increased capacity to develop EE projects.
<b>GLOBAL BENEFITS</b>	Baseline level of EE investments potentially eligible for support from BEEF (but in the absence thereof) reduces CO <sub>2</sub> emissions by 20.3 m tons over 15-year lifetime of assets.	Expanded EE investments supported by BEEF over a 15-year period yield 35 m tons of CO <sub>2</sub> emission reductions over 15-year project life.	An additional 14.7 m tons of CO <sub>2</sub> emissions avoided through incremental EE investments.
<b>COSTS</b>	Zero.	TA: US\$1.5 m  Projected permanent write-offs (bad debt): US\$2.55 m  Total: US\$4.05 m	TA: US\$1.5 m  Projected permanent write-offs (bad debt): US\$2.55 m  Total: US\$4.05 m



**Table B: Capitalization of BEEF and EE Financing Mobilized, US\$m**

<b>BEEF's initial capitalization (first five years, 2005-2009):</b>		
GEF:		10.0
of which:		
Partial credit guarantees	4.5	
Loans	4.0	
Technical assistance	1.8	
Government of Bulgaria		1.8
Bilateral/multilateral donors		5.8
<b>Subtotal: BEEF</b>		<b>17.6</b>
<b>BEEF-mobilized total investment (first 5 years, 2005-2009):</b>		
Commercial loans facilitated by partial credit guarantees		27.1
Loans extended from the revolving loan facility		11.6
Additional (unguaranteed) commercial bank loans		3.0
Sub-project borrowers' equity		5.8
<b>Total financing mobilized over first 5 years:</b>		<b>47.5</b>
<b>BEEF-mobilized total investment (15 years, 2005-2019):</b>		
Commercial loans facilitated by partial credit guarantees		102.0
Loans extended from revolving loan facility		54.5
Additional (unguaranteed) commercial bank loans		13.6
Sub-project borrowers' equity		23.6
<b>Total financing mobilized over 15 years:</b>		<b>193.6</b>

Note: Unit Abatement Cost:  
 14.70 Project life-time CO<sub>2</sub> savings from investments made over 15 years, mt CO<sub>2</sub>  
 10.00 Cost for GEF, US\$ m  
**0.68** Unit Abatement Cost (US\$/tCO<sub>2</sub>)

**Annex 4: STAP Roster Review**  
**BULGARIA: ENERGY EFFICIENCY PROJECT**

*Note: The GEF STAP reviewer was Daniel M. Kammen, Director, Energy and Resources Group, University of California, Berkeley, California. The full review is in the Project File.*

<b><i>Overall project justification and recommendation.</i></b>
Reviewer's General Comment: "The project is well designed, sufficiently financed and has an excellent project team." Recommendation: This project should be funded.
<b>1. How BEEF is expected to make a greater impact than the Government's recent National Energy Saving Action Plan (NESAP)?</b>
<p>Comment: In view of the poor implementation record under the Government's recent National Energy Saving Action Plan, the reviewer suggests to provide a clearer documentation of how the proposed project will go beyond simple project implementation by building a true market for EE investments.</p> <p><i>Reply: The NESAP is a collection of EE projects/programs underpinned by technical and financial feasibility assessments. However, the Plan failed to provide a suitable financing framework for project implementation. This explains why only a tiny fraction (5%) of the identified project have been implemented under the Action Plan. The proposed project addresses this systemic barrier (i.e., poor access to EE financing) by launching a commercially oriented finance facility whereby a sustainable market transformation could be achieved in the EE sector of Bulgaria. This is expected to be achieved through (i) building capacity for EE in the financial and energy services sectors; (ii) establishing and demonstrating the financial profitability of EE investments; and (iii) catalyzing through explicit business partnerships substantial commercial financing for EE projects. The project design is consistent with this objective.</i></p>
<b>2. Support for development of national center of excellence in EE policy and implementation.</b>
Comment: How will the project will work with and support the Energy Efficiency Agency (EEA) as the national center for excellence in EE policy making and implementation?

<p><i>Reply: The Project Team is working closely with the EEA within the Ministry of Energy and Energy Resources, the project implementing agency of the GOB. However, the proposed project is not targeting the EEA per se, but is focused on the creation of the Bulgaria Energy Efficiency Fund (BEEF) as an independent legal entity under public-private partnership. A representative of the EEA will serve on BEEF's Board. It was agreed that project ideas and specific proposals developed within the EEA in the past will be made available for potential financing by BEEF. Separately, the Bank is mobilizing substantial support to upgrade the EEA to a high quality EE policy center. This support, co-financed by the Government of Canada, has included the preparation of the long-term EE Action Plan and the new EE Law. A separate capacity-building with Canadian support is under preparation.</i></p>	
<p><b>3. Size of Technical Assistance component.</b></p>	<p>Comment: Is the amount of US\$1.75 million sufficient to develop the needed technical expertise and national profile in EE?</p>
<p><i>Reply: As BEEF is designed as a profit-seeking entity which over time should cover all costs associated with EE project development and implementation from its own revenues. Therefore, the size of the TA was deliberately calibrated to support capacity building (within BEEF and the commercial sector) and set-up and operating cost on a grant basis only until BEEF is not yet fully self-financing. This period is projected to last for about four years. However, should initial implementation experiences indicate a strong justification for increased TA, additional resources can be raised either by reallocation of the grant proceeds amongst expenditure categories and/or mobilizing incremental resources from the GOB or donors. This is reflected in the revised PAD, including a TA allocation of US\$0.3 million from GOB's US\$1.8 million BEEF contribution. The revised size of the TA is US\$2.05 million..</i></p>	
<p><b>4. Project alternatives: dedicated EE credit line.</b></p>	<p>Comment: Provide a more extensive reason for the dismissal of this financing model.</p>
<p><i>Reply: Agreed. It is to be noted that with the development of sufficient EE project evaluation and financing skill/experiences within the commercial banking sector, the relative attractiveness of the dedicated credit line may indeed improve.</i></p>	
<p><b>5. GEF exit strategy.</b></p>	<p>Comment: Waiting to year 4 of a 5-year project is too late to develop the GEF exit strategy.</p>
<p><i>Reply: The Project Team accepted the suggestion and definition of the exit strategy is now scheduled to occur at the mid-term review (in year 3). By this time, sufficient implementation experience (regarding the deal flow, availability of co-financing, payback period, etc.) should be available to design a suitable exit strategy for GEF.</i></p>	
<p><b>6. Financial covenant.</b></p>	<p>Comment: The 10%, 25%, 50% and 100% self-financing ratios for BEEF are "somewhat arbitrary."</p>

<p><i>Reply: While an element of judgment is unavoidable when specifying these ratios, they are nevertheless essential in creating the proper financial/remuneration incentives for the Fund Manager to steer BEEF progressively away from grant financing of BEEF's operating costs toward full self-financing, in sync with BEEF's underlying principle of commercial orientation. The proposed self-financing ratios are indicative at this point and are subject to confirmation during negotiations. Also, they are implementation conditions, meaning that they can be amended if justified by actual financial results in the early years.</i></p>	
<b>7. Project risk.</b>	
Comment: The potential risk that banks will not invest in the EE sector (despite the impressive IRR) is not discussed.	
<p><i>Reply: This is indeed a vulnerability and was explicitly included the risk management strategy table (section C.5, item 7) as a "moderate risk" factor. The proposed risk mitigation: (i) market BEEF to local financial institutions early on; and (ii) conduct periodic workshops and disseminate early project successes to encourage competitive co-financing. The Project Teams' discussions with Bulgarian banks have indicated strong interest in working with BEEF in co-financing partnership or relying on the partial guarantee as a credit enhancement facility.</i></p>	
<b>8. Changes in the legal framework.</b>	
Comment: The new EE Law should be discussed more extensively in relation to the project goals.	
<p><i>Reply: The new EE Law became effective on March 1, 2004. Key features of the Law in relation to the project goals are outlined in section A.1.3 (Government strategy) and C.2.1 (Institutional and implementation arrangements) in the PAD. Chapter Four, Section One of the Law is directly linked to the project goal of establishing BEEF as a sustainable vehicle to finance EE investments.</i></p>	
<b>9. Required manpower for TA component.</b>	
Comment: There may not be sufficient manpower in Bulgaria to meet the needs under the TA needs of the project.	
<p><i>Reply: The Project Team does not consider this as a serious risk based on experiences gained on the ground. The required manpower is available in the consultancy and ESCO sectors. The Team has identified a substantial pool of candidates for the TA component. In case bottlenecks are encountered, international consultants will be engaged.</i></p>	
<b>10. Project size eligibility.</b>	
<p>Comment: What is the rationale for the US\$100,000 to US\$2,000,000 million project range? Smaller projects may be the most effective at engaging local FIs into the EE sector.</p>	

<p><i>Reply: The Project Team agrees and the relevant text was amended accordingly. While very small projects (much less than US\$100,000) are not excluded, BEEF and FIs may not be interested in them because of high transaction costs. This situation may require “project pooling” by a third party where projects that are individually too small are bundled to make a financially viable package (see A.I.2. of PAD).</i></p>	
<b>11. Fund Manager (FM).</b>	
Comment: Is a single FM adequate for BEEF?	
<p><i>Reply: The FM is not a single person, but a small core team of technical and financial professionals (including an Executive Manager). More details are provided in section C.2.1 of the PAD (Governance structure of BEEF).</i></p>	
<b>12. Similar projects in other ECA countries.</b>	
Comment: Is there room for exchange/interaction with projects in other ECA countries?	
<p><i>Reply: Lessons to be learnt from similar projects elsewhere (including Romania) have been thoroughly examined and reflected in the project design (see especially sections B.2, B.3 and Annex 2 of the PAD). In addition, it is planned to arrange an experience-sharing meeting between the staff of the Romanian FREE and the Project Preparation Unit for BEEF.</i></p>	
<b>13. GHG reduction impact: Goals?</b>	
Comment: How the 0.6 to 3.6 mt CO <sub>2</sub> reduction figures were obtained? Are they pre-established goals?	
<p><i>Reply: These figures are not goals or objectives to be enforced. They are outcome indicators estimated on the basis of energy saved under the BEEF-supported EE projects. 0.6 mt CO<sub>2</sub> is the cumulative sub-project life GHG reduction for projects launched in the first year and 3.6 mt CO<sub>2</sub> is the cumulative sub-project life GHG reduction for projects supported by BEEF in the first five years (see Annex 3 of the PAD – Results Framework and Monitoring).</i></p>	
<b>14. Project defaults.</b>	
Comment: The assumed default rates (0%, 5% and 10%) seem unrealistically low.	

*Reply: The Project Team agrees that 0% is unrealistic. This was used as an illustrative, optimistic limiting case. 5% under the base case scenario and especially 10% under the pessimistic scenario are not unrealistic in view of favorable experience elsewhere. For example, under the USAID-supported municipal EE Program in Bulgaria no default was registered so far in overall portfolio of US\$9.5 million, consisting of two dozen projects. The Hungarian EE Credit Fund made nearly 500 loans in 1991-2000 and only 10 borrowers defaulted. Excellent payment performance (default rate: 2%) is demonstrated also under the IFC/GEF Hungary EE Co-financing Program. Under the first China Energy Conservation Project, the default rate has been less than 2% of all transactions undertaken to date. The Project Team believes that the 5% default rate rather conservative for the base case, considering also that BEEF will deal with only credit-worthy borrowers and high quality finance-ready projects. However, for appraisal a low case scenario with a 20% default rate will also be tested for sensitivity.*

WB76413

C:\DOCUME~1\wb76413\LOCALS~1\Temp\k.notes\data\Project Brief Work Program Incl. 09 04 04.doc  
April 9, 2004 11:18 AM