



UNITED NATIONS DEVELOPMENT PROGRAM
THE INTER-AMERICAN DEVELOPMENT BANK
GOVERNMENT OF BRAZIL

MARKET TRANSFORMATION FOR ENERGY EFFICIENCY IN BUILDINGS

PIMS 3665

The broad development goal of the project is to provide affordable, reliable, and sustainable sources of financing in Brazil to accelerate market penetration of energy efficient technologies for buildings through the removal of various and specific market barriers.

The project will contribute to improve energy efficiency in the commercial and public buildings sectors by 5.617 million MWh of electricity over 20 years, and directly reduce greenhouse gas emissions by 2.820 million ton CO₂ equivalent over the same period. It will reinforce the local economy by decreasing the dependency of the country on imported fossil fuel and reducing building operation costs for project owners/operators. The project promotes cross-convention synergy by reducing GHG and CFC emissions through improving energy efficiency in buildings.

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Acronyms

ABESCO	— Associação Brasileira das Empresas de Serviços de Conservação de Energia
ABESCO	— Associação Brasileira das Empresas de Serviços de Conservação de Energia
ANEEL	— Agência Nacional de Energia Elétrica
APR	— Annual Project Report
AWP	— Annual Work Plan
BNDES	— Brazil National Development Bank
CC	— Climate Change
CFC	— Chlorofluorocarbons
CO	— Country Office
CO ₂	— Carbon dioxide
CONPET	— Programa Nacional Da Racionalização Do Uso Dos Derivados Do Petróleo E Do Gas Natural
CTA	— Chief Technical Advisor
EE	— Energy Efficiency
EDIFICA	— Programa de Eficiência Energética em Edificações
ESCO	— Energy Service Company
EPC	— Energy Performance Contracting
FEBRABAN	— Federação Brasileira dos Bancos
GDP	— Gross Domestic Product
GEF	— Global Environment Facility
GHG	— Greenhouse Gas
GOB	— Government of Brazil
HVAC	— Heating, Ventilation, Air Conditioning
IDB	— Inter-American Development Bank
INMETRO	— National Institute of Metrology, Normalization and Industrial Quality -
M&E	— Monitoring and Evaluation
MLF	— Multilateral Fund for Implementation of the Montreal Protocol
MMA	— Ministry of Environment
MME	— Ministry of Mines and Energy
MP	— Montreal Protocol
NPSC	— National Protect Steering Committee
PBE	— Brazilian Labeling Program
PBI	— Public Building Initiative
PGM	— Performance Guarantee Mechanism
PPGM	— Partial Performance Guarantee Mechanism
PIR	— Project Implementation Review
PMU	— Project Management Unit
PROCEL	— Programa Nacional de Conservação de Energia Elétrica
PROESCO	— Programa Apoio a Projetos de Eficiência Energética
PROZON	— Inter-ministerial Executive Committee for the Montreal Protocol
RCU	— UNDP/GEF Regional Coordination Unit
SMEs	— Small and Medium Enterprises
TOE	— Tons of oil equivalent
UNDP	— United Nations Development Program
UNFCCC	— United Nations Framework Convention on Climate Change
US\$	— United States Dollars

SECTION 1: ELABORATION OF THE NARRATIVE

PART I. Situation Analysis

Context and global significance

1. In Brazil electricity supply is dominated by large hydroelectric plants. Hydropower provides more than 75.5% of Brazil's 90.7 GW of power generation capacity (excluding 12.6 GW of Itaipu). There is a relatively large use of biomass in industry and alcohol in transport, little use of coal outside the steel industry, and the use of natural gas is negligible. Total primary commercial energy use was 287 million TOE in 2004.
2. On the demand side, the overall energy intensity of Brazil's economy has increased 13% between 1980 and 2004 - especially for electricity. The electrical intensity of both the residential and commercial sectors has doubled since 1980, while the energy (electricity and fossil fuels) intensity of the industrial sector has remained fairly stable. Overall, Brazil is increasing its energy consumption per unit of GDP. While greenhouse gas (GHG) emissions per unit of GDP are among the lowest in the world, they are increasing steadily. Moreover, environmental regulation imposes additional limits to accessing remaining potential additional hydro-electric generation sites. Unless the rate of investment in new generation capacity increases in the near future, and/or energy efficiency (EE) enhancement potential is actively tackled, serious energy shortages could be experienced post 2008, especially if projected economic growth targets are met. As a result, greater dependence on thermal options is expected to be the trend.
3. The government of Brazil (GOB) has been actively promoting EE activities through a variety of programs for the last two decades. However, despite various initiatives and efforts to stimulate the market to improve EE, there remain significant barriers to implementing such measures that involve both marketing to consumers and financing¹.
4. Brazil has ratified both the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), which addresses emissions of greenhouse gases, and the Montreal Protocol on Substances that Deplete the Ozone Layer. The objectives of the present project of market transformation for EE in buildings will contribute to meet Brazil's commitments under both Protocols, where CO₂ abatement results from initiatives to address building energy service demands, including the replacement of CFC-based centrifugal chillers with newer energy efficient models, as well as the elimination of CFC use.
5. Brazil has an enormous energy savings potential in all sectors of its economy. Energy saving policies and programs represent a potential least-cost contribution to the National energy supply in the medium and long term. Significant energy savings can be obtained through initiatives addressing heating, ventilation and air conditioning (HVAC) systems in private and public buildings. In commercial and public buildings, 64% of the energy consumption corresponds to air conditioning and lighting².
6. In the area of lighting and air conditioning the total potential annual energy savings in the commercial sector, has been estimated at 2,609 GWh or approximately 30 percent of the current energy consumption. A total investment of US\$285.6 million in this sector is estimated to produce US\$110.5 million in annual energy savings. In the public sector, the total potential for savings has been estimated to be 4.020 GWh or 22.6 percent of the total energy consumed annually. The monetary value of the potential energy savings is estimated to be US\$239.2 million per year at an investment of US\$419.8 million, representing a simple payback period of 1.75 years (or a simple rate of return at close to 50 percent per year). In the industrial sector, the total potential is of the order of 10-15 percent of total consumption per year³.

¹ See section on barriers to EE in Brazil

² Geller, H.S. (1994) O uso eficiente da electricidade: uma estrategia de desenvolvimento para o Brasil. Rio de Janeiro: INEE.

³ Information drawn from: CORE International Moving Markets for Energy Efficiency in Brazil, 1999.

7. Funding opportunities for EE projects remain limited as accessing third party financing and performance-based contracting, is virtually impossible for public buildings due to legal barriers, and lack of knowledge and understanding by various public sector stakeholders.

Baseline and Barrier Analysis

Baseline Analysis

8. As a result of economic expansion, industrialization and growing urbanization during the 1970- 2000 period, Brazil’s energy sector was largely expanded. During these thirty years, the Energy Consumption x Gross Domestic Product elasticity stood at about 1.25. Electricity (renewable source and hydro) shot up from 19 to 41%, the use of firewood, charcoal and sugar-cane bagasse dropped significantly (from 40 to 20%), and oil by-products use declined from 38 to 32%. Presently, renewable energy amounts to 2/3 of the total.

9. Electric energy use is growing at a rate of 5.7 % (see table 1), per year. Future electric energy demand is expected to be met through natural gas, coal, and hydro resources⁴. To meet power demand, while simultaneously avoiding pollution-related impacts, the Government of Brazil is following a three-prong approach: a) introducing wide power sector reforms, including pricing and regulations, to enhance competition and private sector participation; b) encouraging EE and energy conservation measures; and, c) encouraging the demonstration and deployment of renewable energy technologies.

10. In the medium and long term there are clear prospects of electric power consumption growth based on a) projected population growth (from 167 million inhabitants in the year 2000 to nearly 200 million inhabitants in 2015), and b) ongoing economic expansion.

11. The long-term forecast, (2000-2015), for the economy and the electric power market, suggest that electric power consumption will outpace growth in Gross Domestic Product as reflected in Table 1 below. Electric power consumption in Brazil will increase from 373 TWh in the year 2005 to 617 TWh (base case) or 657 TWh (optimistic scenario) by the year 2015. The resulting annual per capita consumption would be 3,048 or 3,245 kWh/inhabitant-year by that time.

TABLE 1: BRAZIL ENERGY CONSUMPTION GROWTH - 2000/2015⁵

Average Annual Growth - (%)		
	Base Case	Optimistic
Gross Domestic Product	4.3	5.3
Electric Power Consumption	4.7	5.7

12. The expected expansion in electric power consumption will require an increment in Brazil's installed capacity from 94 GW in the year 2006 to approximately 135 in 2015. This corresponds to an addition of 41GW generating capacity over the 2006/2015 period. Therefore, several different primary sources will have to be utilized for electric power generation.

13. Brazil has an abundance of primary energy sources for electric power generation: hydroelectric potential, coal, uranium (nuclear power) and alternative sources (such as biomass, solar energy and wind energy). On the other hand, oil and natural gas reserves available in Brazil are not sufficient for a large-scale conventional thermoelectric generation expansion program.

⁴ The Hydroelectric Power Option In Brazil Environmental, Technological And Economic Aspects, Ventura Filho, Altino Itaipu Binacional Foz Do Iguaçu, Brazil.

World Energy Council, http://www.worldenergy.org/wec-geis/publications/default/tech_papers/17th_congress

⁵ The Hydroelectric Power Option In Brazil Environmental, Technological And Economic Aspects, Ventura Filho, Altino Itaipu Binacional Foz Do Iguaçu, Brazil.

14. The current market opportunities for EE projects are limited due to a lack of confidence by both the end-user and the lender in the guaranteed energy savings projections provided by Energy Services Companies (ESCOs). Local banks are not familiar with the performance risk associated with energy savings projects and are not willing to consider energy savings as collateral. In addition, EE opportunities in the public sector market are very limited due to existing procurement and contractual barriers.

15. Therefore, it is reasonable to assume that, in the absence of the project's interventions, Brazil's EE efforts would likely remain in their current state or, given the reforms presently underway in the sector, funding for EE enhancement may start to decline as deregulation of the energy sector advances. Under the baseline scenario, demonstration of emerging technologies and market driven EE delivery mechanisms would be restricted. Investments in EE would most likely remain in Government hands, through the use of subsidized loans to state governments and qualifying enterprises.

16. Renewable energy emerging technologies and their application would not be part of the mainstream as the industrial sector modernizes its infrastructure to compete in the MERCOSUR region and globally. Information dissemination on EE financing and practices would remain hampered if no structured demonstration of best practices and monitoring of savings is achieved. Institutional capacity to implement innovative EE measures would remain fragmented and, most likely, at a centralized level. Participation of private investors and ESCOs would be delayed without the introduction of performance enhancement mechanisms to address performance risk in EE projects.

Barriers to Energy Efficiency in Brazil

17. The major historical barriers to Brazilian energy efficiency investments have been an unstable economy and subsidized energy, particularly with respect to electricity prices. In addition, very high import duties are applied on all imports, including EE equipment. The recent stabilization of the Brazilian economy and the movement of energy prices toward cost-based pricing, however, provide a growing incentive for EE investments. In 2005, the power tariff was on average US\$0.12 /kWh for the public sector and US\$0.14/kWh (including tax) for the commercial sector.

18. The Brazilian EE services industry encounters many barriers involving both marketing to consumers and financing. These barriers include:

At the customer level:

- Poor understanding of potential benefits;
- Low priority of EE improvements;
- Perceived difficulties in financing in a high interest rate environment;
- Lack of confidence in the projected energy savings provided by ESCOs;
- Staff responsible for operations and maintenance feel threatened by the EE service provider;
- Tendency to treat an ESCO as just another consultant.

At sector level:

- In the private sector, lack of leadership to promote EE benefits;
- In the public sector, a difficult legal environment for tendering projects.

At EE services supply level:

- Limited utility involvement;
- High transaction costs in marketing to customers;
- Almost no commercial bank or third party equity financing available for EE projects to date;
- Mistrust toward commercial ESCOs, high interest rates, high collateral requirements.

ESCOs specific barriers

ESCOs in Brazil confront the following specific barriers:

- ESCOs function mostly on a fee for service basis. They have little retained earnings, virtually no capital, and limited capacity to borrow against their assets;
- They lack access to financing (as do many of their clients) without an adequate “balance sheet”;
- There is lack of know-how among banks on lending to SMEs in general, and ESCOs in particular;
- Long-term revenues can be projected from their EE projects but banks do not see the contract cash flow as adequate collateral;
- Performance contracts are still little known by the market;
- Interest rates for local currency financing are significantly higher than for US Dollar financing, with average 12-15% p.a. for good corporate credits and up to 50% p.a. for smaller companies with weaker balance sheets. The average cost of capital is currently at 16% p.a.;
- Access to the public sector market is very limited and attempts remain largely unsuccessful because of the restrictive legislative and contractual environment. The major issue is the detailed technical description of project parameters required prior to tendering for services. To add to this impediment, the law stipulates that these parameters be developed by an entity that is legally distinct from bidding companies.

Institutional, Sectoral and Policy Contexts

The key institutional, sectoral and policy elements identified in the country are presented below:

19. LAW 9991 AND ANEEL Law # 9991 dated 24 July 2000 mandates electricity distribution companies to spend a minimum of 0.75 % of their operational liquid income in R&D and 0.25 % in energy efficiency programs. This percentage may change in time; up to 31 December 2005, the percentage breakdown was 50-50. Investments are to be applied according to the Agencia Nacional de Energia Eletrica, (ANEEL) regulations. ANEEL was created by Law 9427 (1996) to regulate and control the production, transmission, distribution and commercialization of electricity in Brazil.

20. PROCEL (Programa Nacional de Conservação de Energia Elétrica) In order to reduce the growing demand and consequently reduce the need for new, costly supply side investments, the Government of Brazil has adopted policies and measures with stronger emphasis on energy efficiency. Under Eletrobrás responsibility, and with close links with MME, the PROCEL program (Programa Nacional de Conservação de Energia Elétrica) was created in 1985. Its objective is to promote the rational use of electricity by, among others, households, industry, water utilities and in public buildings and public lighting. The CONPET program, created in 1991, aims at encouraging the efficient use of petrol and natural gas derivatives in transport, commerce, industry and agriculture.

21. PROMOTION OF EE STANDARDS AND LABELING Under the framework of the Brazilian Labeling Program (PBE), established in 1983 and managed by the National Institute of Metrology, Normalization and Industrial Quality (INMETRO), Brazil applies a voluntary labeling scheme for energy consuming equipment. To accelerate market transformation for a specified list of equipment, starting on 2006 labeling is to become mandatory. International EE standards (IEC, ISO, and ASHRAE) have been adopted. In association with the PBE, PROCEL have developed marketing activities to assist private stakeholders to cope with this new regulation, for example an award for the most efficient electric projects in the market for each type of equipment.

22. Parallel to PBE, Law 10.295 (of October 2001) states that minimum energy efficiency or highest energy consumption standards are to be established for energy consuming equipment and buildings in the future. This measure prevents manufacturers from shifting their production to undesired EE levels.

23. Under PROCEL Management since 2003, the EDIFICA Program (“Programa de Eficiência Energética em Edificações”) is responsible to organize actions and set targets for improvement that would lead to the development of (i) establish minimal requirements to integrate the architecture of the buildings to the environment and to the natural resources; (ii) create EE indicators for buildings; (iii) certificate material and equipment, establish procedures for regulation/legislation; (iv) create mechanisms to provide financial resources and the removal of barriers to the implementation of projects and (v) promote educational and of social interest projects.

24. *ESCOs*

ESCO experience in Brazil is recent and limited. Most EE service providers are small to medium sized engineering consulting firms and few make a living focused predominantly on energy efficiency (EE) services. Most successful ESCOs are linked to utilities that use partially their ANEEL funds in the market. ABESCO, the Association of Brazilian Energy Service Companies (ABESCO) was founded in 1997 by 15 members to represent and promote the ESCO industry in Brazil, but only but only began to take off in early 2001. Today, ABESCO has more than 64 ESCO members. ABESCO's mission includes the promotion of the energy efficiency industry in Brazil and the competitive improvement of Brazilian companies through the sustainable development.

Financing energy efficiency initiatives:

25. ABESCO estimated two years ago that the volume of energy conservation projects undertaken annually represents only about US\$25 million with the potential to reach ten times this number by the end of the decade. Only approximately five (5) large ESCOs have a gross income above US\$1 million per year. Currently, the typical energy conservation project in Brazil has an estimated cost of R250,000 (US\$80,000) and a simple payback of less than two years. Due to limited availability of credit EE projects are generally financed internally by the client or by the ESCOs themselves. Most projects are not carried out as performance contracts.

26. BNDES, the national development bank of Brazil, recognized over the years that even though a large potential for EE projects exists in Brazil, financing barriers were present that prevented stakeholders to benefit from this market:

- Brazilian Banks’ current practice of credit assessment,
- banks’ limited knowledge of EE projects, and
- the ESCO’s financial Structure.

27. In order to overcome or reduce the effect of these barriers, BNDES has recently launch a new financing mechanism (PROESCO) focused on reducing the credit risks for banks in financing local EE projects. As a result of partially reducing the credit risk for banks, the facility should also reduce the interest rates for EE project loans, enabling a better return on investment for the projects. This initiative will complement the PPGM proposed in this project and increase the market access to EE projects in Brazil. The PPGM will allow local banks to accept energy savings guarantees as collateral, reducing the high collateral requirements currently imposed by local banks on ESCO projects in Brazil. The acceptance by local banks of guaranteed energy savings as collateral would mark significant progress in opening the market for EE investments. Nevertheless, the PPGM is also not dependent on the BNDES program for success. The PPGM will provide risk mitigation related to technology issues for all banks. Local lending institutions are fully capable of credit risk assessment and will lend on the basis of their underwriting criteria. Clients with a poor credit rating will neither obtain financing under the current system, nor under a partial credit risk program.

Stakeholder Analysis

28. During the PDF B phase consultative meetings with various stakeholders (see the list below) and key market players revealed that the private sector is willing to integrate EE considerations in the buildings

operation process under specific conditions, including: (i) having the government take the leadership on this issue through retrofitting of its own buildings; and, (ii) having a PPGM in place to help mobilize investment resources from within the banking system.

29. The role of the government will therefore, be key to the participation of others stakeholders in this project. The Ministry of Environment (MMA - Ministério do Meio Ambiente) has been strongly supportive of this project from beginning and will act as a Leading Executing Agency and will work in close cooperation with other relevant ministries.

30. The Ministries of Mines and Energy, Finance, and Public Planning, as well as the MMA will oversee the global implementation of the project during its entire execution as part of the national program steering committee together with national banks and various private sector representatives.

31. Furthermore, as the project will need the support of a wide range of stakeholders within the market, it is expected that the project implementation will be coordinated in conjunction with the following stakeholders:

- Programa Nacional de Conservação de Energia Elétrica (PROCEL) will provide technical expertise to Ministry of Mines and Energy and will contribute in the CB program component implementation.
- Brazil National Development Bank (BNDES) is starting to implement a new EE financing facility called PROESCO. EE projects presented to our PPGM component for a savings guarantee will potentially be able to benefit from this new BNDES financing facility through the different private banks.
- Agencia Nacional de Energia Eletrica (ANEEL), which is responsible for the allocation of EE funds from electricity distribution
- The United States Agency for International Development (USAID), which is involved in public building EE strategy. The PBI component will take advantage of their evaluation of legal aspects for public buildings to access ESCOs technical and financial services.
- ESCOs belonging to electric utilities such as AES-ESCO, ESCO Light, Eficiência and others will actively participate in the project as implementers.
- Various banks such as ITAU and Banco Real have expressed their interest in the introduction of a performance guarantee mechanisms and an interest in financing ESCO projects.
- Associação Brasileira das Empresas de Serviços de Conservação de Energia (ABESCO) will assist in promoting the various activities included in the Brazil Market Transformation for EE in Buildings program.
- Associação Brasileira de Refrigeração, Ar Condicionado, Ventilação e Aquecimento (ABRAVA) will assist ESCOs in their efforts to take advantage of the Project.
- Federacao Brasileira dos Bancos (FEBRABAN) will act as a potential trainee/ partner, and linkage to banks for financing of EE programs.
- Other stakeholders are also expected to collaborate in the project implementation, as it is more widely marketed and gains renown.

32. Furthermore, as the project will need the support of a wide range of different stakeholders within the market, it is expected that the project implementation will be coordinated in conjunction with the following stakeholders:

- PROCEL will provide technical expertise to MME and will contribute in the implementation of the capacity building component.
- BNDES is starting to implement a new EE financing facility called PROESCO. EE projects presented to our PPGM component for a savings guarantee will potentially be able to benefit from this new BNDES financing facility through the different private banks.
- ANEEL, which is responsible for the allocation of EE funds from electricity distribution.
- USAID (The United States Agency for International Development), which is involved in public building EE strategy. The PBI component will take advantage of their evaluation of legal aspects for public buildings to access ESCOs technical and financial services.

- ESCOs belonging to electric utilities such as AES-ESCO, ESCO Light, Eficiência and others will actively participate in the project as implementers.
- Various banks such as ITAU and Banco Real have expressed their interest in the introduction of a performance guarantee mechanisms and an interest in financing ESCO projects.
- ABESCO will assist in promoting the various activities included in the Brazil Market Transformation for EE in Buildings program.
- ABRAVA (Associação Brasileira de Refrigeração, Ar Condicionado, Ventilação e Aquecimento) will assist ESCOs in their efforts to take advantage of the Project.
- Federaçao Brasileira dos Bancos (FEBRABAN) will act as a potential trainee/ partner, and linkage to banks for financing of EE programs.
- Other stakeholders are also expected to collaborate in the project implementation, as it is more widely marketed and gains renown.

PART II. Project Strategy

33. There is significant potential to achieve energy savings and reduce greenhouse gas emissions from the buildings market in Brazil, while simultaneously contributing to the phase-out of CFCs in an important emerging economy. GEF funding in the amount of US\$13.5 million is being requested to help remove finance, capacity, technology and policy barriers that currently stand in the way of the widespread adoption of energy-efficient measures and technologies in buildings in Brazil.

34. The project's strategy focuses on the removal of barriers that currently hinder the widespread development of EE initiatives in buildings in Brazil. This will be done through capacity building and the adoption of financial tools and mechanisms that will help realize market transformation. The project will help chart a less carbon-intensive and more sustainable energy consumption path in the country which in turn, could positively influence the EE market in Brazil and subsequently in the Latin American Region as a whole.

35. The proposed project conforms to GEF Operational Program 5: Removal of Barriers to Energy Efficiency and Energy Conservation, wherein it serves to encourage increased access to local sources of financing for renewable energy and energy efficiency.

36. The UNDP/GEF project will strive to remove the identified barriers (see Section 1) through a comprehensive and integrated approach that will focus on:

- Building awareness and capacity amongst various market actors;
- Creating a favorable policy and financing environment to eliminate the barriers specific to the implementation of EE projects in public buildings and facilities;
- establishing an integrated approach for potential EE enhancement in buildings while demonstrating the EE potential of CFC-based chillers replacement; and,
- Under the lead of the IDB, implementing an Energy Savings PPGM to reduce the risks perceived with investing in EE projects.

37. To address capacity barriers with respect to a the institutional framework and the lack of awareness amongst target end users, this GEF intervention will support a nationwide technical assistance program targeted to all of the relevant stakeholders identified during the PDF-B phase. This program will develop a range of knowledge products focusing on the technical, environmental and economic merits, and technical options, associated with EE practices, that can lead to broader scale replication in the host country and potentially in other Latin American countries.

38. From a financial perspective, the project includes a PPGM that will be set-up as a cost-effective and market-oriented approach to supporting investments in EE technologies for buildings as well as large-scale EE projects' in Brazil.

39. This mechanism will seek to directly eliminate many of the real, and perceived, risks at the financing level, and will effectively reduce the perceived risks of building owners/operators and Financial Institutions who will be involved in the project. The project will also provide building owners with financial incentives for the replacement of HVAC appliances as part of an integrated approach for EE enhancement in buildings.

40. The GEF funds will be used to leverage additional private sector capital through the PPGM to stimulate sustainable EE market transformation. Funds in the IDB trust account will be used only to make payments on the difference between projected and actual energy savings (except for the interest income that will be used to remunerate the Administrator). In the event of default by the ESCO client, the credit risk will be assumed by the bank and claims against the performance guarantee will not be allowed.

41. By taking a holistic view of the market, and by targeting both the supply and demand side of the EE technologies market, the project will boost its chances of success and hence increase its potential impact on reducing GHG emissions. Improving EE in building operations will contribute to lowering GHG emissions from an energy consumption perspective, as well as through the reduction of CFC emissions which have a very high global warming potential.

42. The implementation of this project will position Brazil as one of the front runners in the area of market transformation through uptake of EE technologies, with wide-ranging applications and replication potential outside Brazil.

Project Rationale

43. Brazil has a significant potential to achieve energy savings and reduce greenhouse gas emissions from the buildings market while simultaneously contributing to the phase-out of CFCs. GEF funding in the amount of US\$13.5 million is being requested to help remove finance, capacity, technology and policy barriers that currently limit the widespread adoption of energy-efficient measures and technologies in buildings.

44. To contribute to the removal of barriers to EE investment in the buildings sector, and to maintain compliance with the Montreal Protocol, the GOB has asked UNDP-GEF and UNDP-Montreal Protocol/Chemicals to join efforts to initiate a program that encourages cross-convention synergies to promote market transformation in EE in buildings and chiller replacement.

45. The barriers identified in consultation with various stakeholders to EE improvements in buildings are:

a) EE techniques in the development and implementation of EE projects in buildings, particularly in the complex HVAC sector, remain poorly understood by building owners/operators/designers,;

b) Very few building owners/operators have implemented EE projects and they are reluctant to invest in projects with long payback periods;

c) Accessing third party financing and performance-based contracts through, for example, ESCOs, is virtually impossible for public buildings due to legal barriers, and lack of knowledge and understanding by the various public sector stakeholders ; and,

d) Financial institutions (FIs) lack access to performance risk mitigation options which enhance their confidence in financing of EE initiatives.

46. This project proposes a Capacity Building program, complemented with an innovative Partial Performance Guarantee Mechanism (PPGM), as a mean to encourage and support the Brazilian EE services industry and targeting ESCOs. The project will also address the needs of public and private building owners/operators, to allow them to effectively capture building energy service demand savings potential.

47. Based on consultation with the Brazilian banking community, it has become apparent that performance risk is the one aspect of ESCO financing that presents the greatest challenge to local lenders. Therefore, the PPGM seeks to address and substantially mitigate the performance risk aspects of ESCO project financing, this mechanism will both address lenders risk concerns and lend additional credibility to the guarantees that ESCOs provide to their customers.

48. The concept that underpins this project was developed drawing on lessons and experiences generated through other, Brazilian and GEF-funded, energy sector projects, as well as from *emerging lessons* identified in the recent 3 country ESCO project financed by the United Nations Foundation (UNF) and implemented by UNEP and the World Bank.

The principal lessons used to inform the development of the project concept, are as follows:

Lessons learned	Manner incorporated
<i>Projects should consider a complete and phased plan for market development</i>	The project will encourage market transformation with respect to building energy service demands
<i>Large-scale, multi-donor, long-term funding may be required to develop ESCO markets</i>	A 13-yr programme with a 5-yr issuance period program with significant external funding, as well as financing through the local banking system is a key element of this project
<i>ESCOs require key technical and entrepreneurial skills</i>	An important Capacity Building support component is included for that purpose
<i>Active supply of EE equipment is essential to ESCO development</i>	The Brazilian economy is fully equipped to meet this condition, with access to local and international sources of EE equipment
<i>ESCO markets require educated end-users and financiers</i>	A Capacity Building component will reach all stakeholders involved in building operations and maintenance
<i>The local banking sector should be closely involved</i>	The innovative PPGM is clearly designed to entice the local banking system to the EE sector and thereby open up the EE business market
<i>Projects should develop sustainable institutions and companies</i>	This project will promote the use of Brazilian ESCOs, as well as the development of a sustainable performance guarantee offer to existing or new companies
<i>ESCO programs should seek to offer viable business models for all markets and projects</i>	ESCOs have the ability to conduct their activities in a cross-sectoral manner so henceforth, their services will be made available to all sectors (public and private)
<i>Specific target markets can provide a strong base for ESCOs</i>	The project's strategy is to target EE in buildings

49. It is anticipated that the PPGM will serve to demonstrate that the availability of such a partial performance risk mitigation tool is a critical element in any EE market transformation strategy and that the lessons learned from the Brazilian EE markets will be replicated in other countries.

50. The project will contribute to improving EE in the Brazilian commercial and public building sectors by 5.617 million MWh of electricity over 20 years, and will contribute to direct GHG emissions reductions in the order of 2.820 million tons of CO₂ equivalent over the same period.

Policy Conformity

51. The proposed project conforms to GEF Operational Program 5: Removal of Barriers to Energy Efficiency and Energy Conservation by removing barriers to the large-scale application, implementation, and dissemination of cost-effective, energy-efficient technologies and practices that will result in the reduction of greenhouse gas emissions in Brazil. In addition, the project will also serve to support the recently adopted (GEF-4) Strategic Objective CC1: Promote energy-efficient buildings and appliances.

52. The project seeks to improve the EE of buildings and appliances in Brazil by: (i) reinforcing the capacity of market actors in EE building activities; (ii) increasing market activities related to EE projects development and implementation in the buildings sector; (iii) designing an innovative performance guarantee mechanism (PPGM), (iv) increasing the number of EE appliances; and, (v) monitoring the results of project's activities.

53. The GOB's support for this EE Project is consistent with its strategy of improving efficiency of energy supply and use, and enhancing private sector participation. GEF support would help to develop 'state of the art' capacity in buildings EE, develop a mechanism for the implementation of EE projects in public sector buildings, implement an innovative PPGM to create the conditions for the implementation of a sustainable buildings EE market, disseminate information on buildings EE potential and benefits and, create best practice information on the adoption of EE in the Brazilian market.

Project Goal, Objective, Outcomes, and Outputs/Activities

54. The goal of the project is to influence, transform, and develop the market for energy-efficient building operations in Brazil and move towards a less carbon-intensive and more sustainable energy consumption path in the country. As mentioned above, the proposed project conforms to GEF Operational Program 5: Removal of Barriers to Energy Efficiency and Energy Conservation.

55. The objective of this project is to foster EE investments in private and public buildings, by addressing the technical and financial barriers which persist despite past and present public and private sector programs/initiatives in this domain.

The outcomes expected from the project are:

Outcome 1: Enhanced EE investments through Capacity Building (CB) in private and public sector buildings

56. The project will finance a Capacity Building Program that will develop best practice capacity in Brazil in the identification, formulation, implementation and management of EE projects in the buildings sector. This capacity development exercise will be designed to reach a wide range of EE services providers (ESCOs and other energy service providers), as well as building owners/operators (See Section IV, Part IV for details of the capacity building program). The program will serve to underpin the aim of market transformation by raising the level of knowledge and understanding amongst stakeholders.

Outputs will include:

- Local energy product/service providers capacity strengthened through targeted training events;
- EE market players have greater awareness of and interest in implementing EE measures. Up to 5,000 persons trained in the design, installation, operation and maintenance of building energy efficiency equipment and systems;

Note: Section IV Part IV provides a detailed list of the training activities under this outcome.

Outcome 2: Access to EE services and commercial financing for public sector buildings enhanced with a Public Building Initiative (PBI)

57. A Public Building Initiative program will be developed and implemented in order to eliminate the barriers specific to the implementation of EE projects in public buildings and facilities⁶.

⁶ For the purposes of the project, the public sector encompasses federal, state and municipal administrations, as well as public service providers, such as schools and hospitals.

58. The PBI has been designed to effectively tackle the current market barriers that are hindering the uptake of EE projects in the public building: a) lack of access to financial market and EE market players due to high credit risk; b) limited public investment budgets for upgrades of equipment/appliances and EE investments; c) lack of human resources trained to promote EE investment projects; d) lack of technical personnel with appropriate knowledge on how to implement EE projects; e) obstacles to existing legal and contractual frameworks where third party financing, either in the form of leasing or through a performance based contracting approach, are concerned.

59. Therefore, from the operational perspective, the proposed PBI will be based on the promotion of Energy Performance Contracting (EPC) in the public sector in Brazil. The PBI will have the mandate to clear the way for federal, state and municipal public organizations/agencies to use EPC within their facilities, thereby encouraging introduction of adapted mechanisms to enable the use of such an approach in the public sector.

60. The PBI will work at policy amendments that allow organizations to enter into energy performance contracts under their own authority in much the same manner as they currently pay their energy bills.

61. To make the contracting process easier, the PBI will provide model contracting and assessment documents. These model documents will include requests for proposals, actual energy performance contracts, environmental assessments and other necessary policy and legal processes. The PBI will also provide a list of pre-screened private-sector firms qualified to bid for energy performance contracts. In addition, during the inception stage of the project an in-depth study is planned on the typical costs, electricity savings and payback periods for different types of buildings and regions in the country.

Outputs will include:

- Enabling institutional framework for EE project development in Public Sector is established;
- EE Projects realized under the ESCO approach by the Government increased, (Public building owners/operators have been exposed to PBI program to access EE services and applied its recommendations);
- Capacity Building offered to Public Building Owners/Operators and ESCOs in developing and implementing selected projects on a pilot basis for public sector buildings. Tailored Executive and Managerial Support Program established to encourage the use of the PBI.

Note: Section IV Part V provides a detailed list of the training activities under this outcome.

Outcome 3: Interest enhanced in the replacement of energy-inefficient CFC-using chillers

62. In support of the overall aim of enhancing national capacity for buildings energy efficiency, this project component will serve to stimulate interest in an integrated approach for potential EE enhancement in buildings by demonstrating the EE potential of CFC-based chillers replacement. While it is clear that individual chiller replacement based on EE considerations has not occurred due to of the long payback period⁷, practical demonstration of the economic and environmental benefits of bundling EE initiatives in building systems is a logical and structured approach that is expected to be well received, by interested parties in the country.

63. The key barriers to the accelerated adoption of new, energy efficient, CFC-free chillers and related system improvements are barriers that are largely shared by energy efficiency investments in the building sector in general. Integrating the two components under the larger project umbrella would serve to demonstrate synergies between environmental conventions that address seemingly disparate issues – climate change and ozone depletion.

⁷ despite the fact that Brazilian stakeholders consulted all agreed that, on average, chilling represents 70% of electricity consumption in buildings

64. This project component will be funded using co-financing secured through the Multilateral Fund of the Montreal Protocol and from national stakeholders.

Outputs will include:

- Technical Assistance provided to professionals on EE improvement combined with HVAC equipment replacement. Improved capacities of at least 120 professionals (design engineers, ESCOs, building owners/operators, entrepreneurs, etc.) in CFC-based chiller replacement. Capacity building courses and practical on-the-job exercises will be provided to professionals to increase their capacities;
- Technical guides drafted for professionals;
- Pilot projects to evaluate the impact of the proposed CFC-based chillers replacement program.

Note: Section IV Part V provides a detailed list of the training activities under this outcome.

Outcome 4: PPGM made available to stimulate EE investment through ESCOs

65. Two key market barriers to the financing and implementation of local ESCO projects arise with respect to the lack of confidence by both end-users and lenders in the guaranteed energy savings projections provided by ESCOs. The end-user market remains skeptical of energy savings guarantees provided by local companies, while local banks are not willing to consider energy savings as collateral in assessing the credit-worthiness of an ESCO project.

66. Creation of a well capitalized PPGM will address both market barriers by leading the market and enhancing deal flow. End-users will become more confident in the guaranteed energy savings projections offered by local ESCOs and the PPGM will provide the risk mitigation confidence required to compel local banks to treat energy savings as collateral in their lending evaluation matrix. This would represent a major shift in local bank lending, away from exclusively balance sheet financing to project-based financing.

67. Internationally, guaranteed energy savings provided by large international ESCOs are accepted in the market due to their reputations and balance sheets. The PPGM, properly constructed and capitalized in Brazil, will provide the same benefit to local ESCOs. The creation of the PPGM to backstop local ESCOs' energy savings guarantees will effectively address the restrictive lending environment in Brazil, the lack of experience with cash-flow lending, the lack of awareness of the benefits of EE projects by decision-makers in companies, lenders, and government institutions and the limitations of local ESCOs to meet high collateral requirements of local lending.

68. The PPGM facility will be funded through a US\$10 million GEF grant⁸ and complemented with US\$15 million in the form of AAA-rated IDB guarantees. The PPGM will be operational for 13 years and will issue guarantees for a five year period (year 2 to 6 inclusive) with a maximum tenor of 7 years. The exit strategy is expected to be initiated in year seven. This should allow for an initial support of more than US\$48 million in EE projects to be implemented directly through the facility⁹ during the 5-year issuance period with a guarantee coverage from the PPGM of 43.6 million.

69. The level of funding for the PPGM was established in consultation with most stakeholders, based on their experience and the size of the market in Brazil. A US\$25 million financial mechanism comprising US\$10

⁸ Out of the total US \$13.5 million being requested for this FSP to help remove policy, capacity, finance and technology barriers that stand in the way of widespread adoption of EE measures and technologies in buildings in Brazil.

⁹ Any project that has the potential to generate EE benefits in buildings would be eligible to access PPGM support, assuming that required financial and technical criteria could be met. As a result, EE projects that target lighting, electricity distribution (transformer, power factor), HVAC (including ventilation, air conditioning, heat exchangers, heat control systems, pumping, steam distribution, boilers, chillers, etc), as well as self-power production, could be eligible. To be as cost-effective as possible, it is likely that ESCOs would bundle many of alternative technologies/processes in these projects.

million funded through GEF and US\$15 million of IDB support was considered appropriate to have a positive impact in transforming the market taking into consideration its investment leveraging ratio.

70. The operational rules of the PPGM will be based on the following framework:

- The IDB as the financial partner of this component of the project, will jointly with UNDP and the NPSC select the PPGM administrator through international competitive bidding and be in charge of ensuring that the PPGM is established following stringent legal and financial due diligence.
- The PPGM will be offered as an IDB guarantee product in Brazil, although being funded partially with GEF resources. As such, the PPGM will be a 'AAA' rated guarantee facility. The PPGM's maximum exposure will be limited to US\$ 25 million in outstanding guarantees¹⁰. However, over the 5-year issuing period of the PPGM, the cumulative amount of lending that will be guaranteed under the PPGM will be much greater. This is because after each year of successful project performance, the PPGM administrator will have access to guarantee amounts that have become available due to the successful amortization of the underlying guaranteed loans and will be able to redeploy up to the maximum available exposure under the PPGM, which is US\$ 25 million. As such, over the 5-year issuing period of the PPGM, a total of US\$43.6 million in guarantees could be provided.
- Performance Guarantee requests presented to the PPGM for consideration will be reviewed and accepted by the Administrator based on standard intake protocols, eligibility requirements and evaluation criteria.
- Performance guarantee coverage¹¹ will be issued by the PPGM to the benefit of the final end users and ESCOs. The guarantee may identify lending institutions as the beneficiary if required by the local lenders and will cover performance risk only.
- Performance shortfall calculations will be made by the Administrator on a quarterly basis and drawdown payments will be made once a year based on a consolidation of annual savings.
- To access the program and obtain a performance guarantee, the ESCOs will be charged a total amount of 3/4%¹² comprising fees and premium.
- All PPGM guarantees will contain a minimum 10% deductibility clause. This will place ESCOs in a first loss position. The PPGM would only make payment in cases where the shortfall in savings exceeds 10%.
- ESCOs who wish to become eligible for consideration of support by the PPGM will be assessed against a set of criteria to be determined by the IDB and the PPGM Administrator. The set of criteria will be continuously evaluated and adjusted as required during implementation of this component of the project.
- Projects recommended to receive a performance guarantee will be rated against a specific set of criteria including, but not limited to: (i) limited guarantee period of 7 years (the expected average period being 5 years); (ii) only established and proven types of projects/technology will be eligible; and (iii) the EE-related project investment bracket will vary from a minimum of US\$250,000 to a maximum of US\$750,000. While

¹⁰ IDB would consider taking more risk in other countries as the PPGM is replicated based upon the proven track record of the PPGM in Brazil under this component of the Project.

¹¹ Whose percentage is to be determined during the inception stage of the project in order to not distort the market and to best respond to specific ESCO project design.

¹² Based on consultation with insurance brokers in Brazil, a 3/4% premium rate was indicated to be appropriate. The premium and other terms and conditions will be negotiated with the administrator of the PPGM and will be progressively adjusted to reflect experience gained, lessons learned and the real market price. An average starting premium of 4% has been assumed for the purpose of calculations presented in the project.

these limits will be adjusted based on project development, the bracket range would encourage adoption of an integrated approach.

- The PPGM Administrator will be paid an annual fee that will also cover oversight of implementation of the project's awareness and marketing activities that will be deducted from the interest income on the PPGM funds and complemented by guarantee premium and fee income charged to clients under the PPGM. A performance bonus will be tied to a percentage of the interest earned on the US\$10 million in GEF funds placed in a reserve account. If funds are drawn from the reserve account to cover claims against the performance guarantee, interest income on the reserve account will necessarily decline resulting in a reduction in the performance bonus paid to the PPGM administration. This arrangement ties payment to the PPGM administrator to performance of the program and creates a strong financial incentive for the PPGM administrator to perform at the highest level.
- A US\$500,000 technical assistance program to be partially funded from the interest income on the PPGM funds will support the due diligence process for the establishment of the PPGM, and the establishment of technical parameters through which the Administrator will be able to support the operations of ESCOs and EE clients effectively.

71. Under the PPGM, local banks assume the responsibility of assessing the credit quality of the EE project beneficiary and the full credit risk of insolvency of the beneficiary. As mentioned before, the local ESCOs are in a first loss position for a minimum of 10% of the guaranteed energy savings. If actual energy savings fall below 10% of the guaranteed energy savings, the PPGM administrator will make payment to the beneficiary. If these payments are made, the PPGM will have full recourse to the ESCO under a reimbursement agreement. As such, the ESCOs are exposed to 100% of the performance risk.

72. The main benefit of the PPGM is to stimulate banks to rely on the cash flows generated by ESCO projects to service as collateral for ESCO loans¹³.

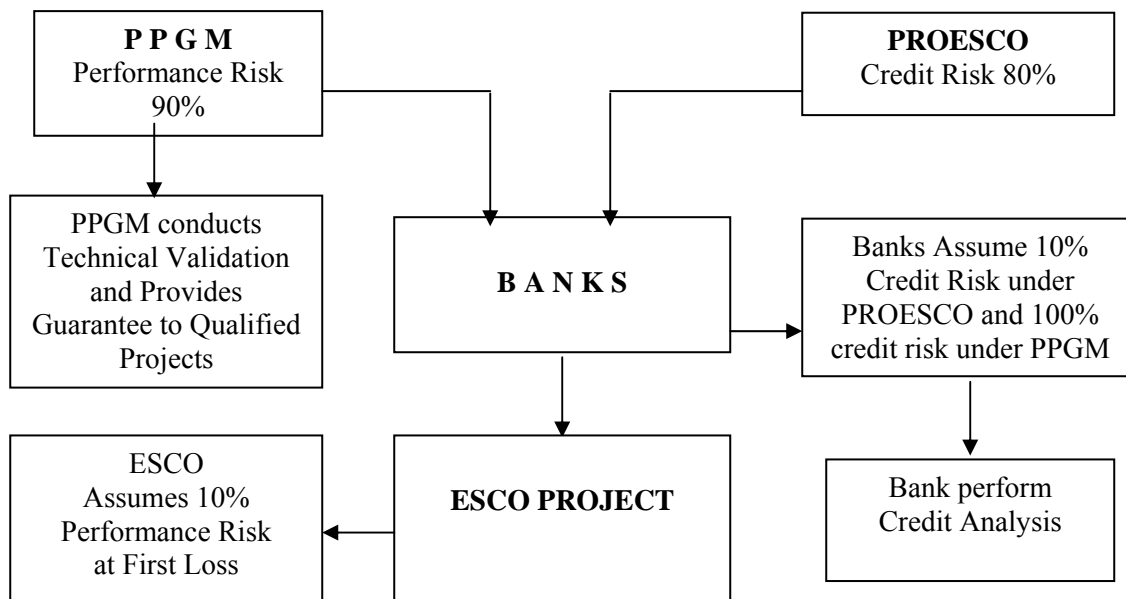
73. Relationship to BNDES and PROESCO:

- Under the PPGM, local banks will remain the source of credit review and assume credit risk. Brazil's National Development Bank, BNDES, has established a partial credit risk guarantee program (PROESCO) to partially mitigate credit risk for local lenders related to ESCO projects. The BNDES program and the PPGM are not mutually exclusive or competing initiatives. They are viewed as complementary by officials from both BNDES and IDB, and other local lending institutions (see table below).
- The PPGM is also not dependent on the BNDES program for success. The PPGM will provide risk mitigation related to technology issues for all banks. Local lending institutions will continue to conduct credit review of ESCO clients and will lend on the basis of their underwriting criteria. The PPGM removes the need for technical review of the ESCO projects by local banks, a task that local banks do not have the capacity or inclination to perform. Under the PPGM, this function is performed by the PPGM Administrator.
- While the PROESCO provides risk mitigation to banks for a credit review function that a local bank has already performed, the PPGM provides risk mitigation for the technical aspects of ESCO projects that banks do not understand.

¹³ According to the regulations of the central bank of Brazil, banks must have certain levels of collateral for each loan issued. According to the Basil Accord II, central banks are required to establish certain capital adequacy requirements for banks. Under Basil II different collateral pledges are given different value based on their credit strength. A local insurance policy from a AA rated insurance company that covers a portion of a loan is given one value while a local performance bond from a single A rated bank would have a different value. Under the UNDP/IDB proposal, the PPGM would be issued by the IDB which has an international AAA rating. This is far superior to a local currency AAA rated insurance product.

- National project proponents are pleased with the introduction of the BNDES partial credit risk guarantee and believe that the PPGM will have a market transformational impact on its own.

CHART 1: CREDIT ENHANCEMENTS AND RESPONSABILITIES



74. The table below provides an overview of the cash flow of a typical EE project with guaranteed savings of US\$500,000 over 5 years, and how the PPGM would work. It highlights how the ESCO remains financially liable for the performance of the project under the PPGM. This simulation presents one possible scenario assuming 100% PPGM guarantee coverage of a bank loan financing 90% of project costs. It is important to note that the share of energy savings due to return to the ESCO is not covered by the performance guarantee and that the ESCO is liable to the guarantors for any amounts disbursed under a PPGM guarantee, hence a 100% risk allocation would be assumed by the ESCO.

Table 2: Model EE Project

PPGM Cash flow Example

Project capital cost	271,308	including finance costs	
Bank finance %	90%	of project cost	
ESCO equity %	10%	of project cost	
Bank loan principal	244,177		
Bank debt service	372,869	principal and interest	
ESCO equity	27,131		
Tenor	5	years	
Bank interest rate	16%	p.a.	
ESCO profit	10%	of energy savings	
Client saving	10%	of energy savings	
PPGM gtee coverage to bank	100%	of debt service	372,869
Energy savings amount	500,000	EE contract amount	

Cashflow split	Year	1	2	3	4	5	Total
Total energy savings	100%	100,000	100,000	100,000	100,000	100,000	500,000
Client savings	10%	10,000	10,000	10,000	10,000	10,000	50,000
Debt service to bank	75%	74,574	74,574	74,574	74,574	74,574	372,869
ESCO equity recovery	5%	5,426	5,426	5,426	5,426	5,426	27,131
ESCO profit	10%	10,000	10,000	10,000	10,000	10,000	50,000

75. Under this example, the client's retains 10% of the total energy savings amount. The next 75% of energy savings cashflow is used to service the bank debt, with the next 5% being used to recover the ESCO's equity investment in the project costs (the amount not financed by the bank), and the final 10% being the ESCO's profit. While the 10% client savings and the amount of the debt service to the bank would be guaranteed under the PPGM, the 15% used to pay the ESCO is not guaranteed, creating an incentive for the ESCO to meet its obligations. In this example, the project would have to underperform by 15% to trigger a PPGM guarantee payment.

76. This structure places a strong incentive on the ESCO to meet projected energy savings or lose income. It also creates a strong incentive for the ESCO to quickly remedy any shortcoming in performance at the earliest possible moment. Energy savings could be certified through a Monitoring and Valuation protocol based on The International Performance Measurement and Verification Protocol (IPMVP)¹⁴ to ensure transparency in the process.

77. Under the PPGM, banks take 100% of the credit risk and ESCOs are exposed to 100% of the performance risk. The main benefit of the PPGM is to stimulate banks to rely on the cash flows generated by ESCO projects to service as collateral for ESCO loans.

78. It needs to be noted that the PPGM is not insuring against any non- payment by clients to ESCOs. This is a commercial risk being assumed by the ESCO and the banks. The PPGM will only insure against the risk that the project under performs in relation to its energy efficiency projections.

79. As to the end user, failure to make payment to the ESCO would be breach of contract¹⁵ and a default under the terms of the financing. Although Brazil does not have a strong credit friendly legal framework, and collections can be difficult, loan defaults are recorded and become a part of a businesses profile. Reputable companies are not inclined to stop payment for a performing project as it would have a negative impact on their credit standing and good business practices. In addition, companies in poor financial condition would not qualify for the program. This will screen out potential non-paying clients.

Note: Section IV Part V provides a detailed list of the training activities under this outcome.

EXIT STRATEGY

80. By the end of the seventh year of the operation, if not before it is expected that the PPGM will generate positive cash flow. At that time, IDB, UNDP and the National Project Steering Committee (NPSC) may decide to substantially expand the program by accepting additional risk relative to the US\$10 million in the reserve account and the IDB's initial US\$15 million commitment. In this case, the US\$ 10 million in the reserve account would remain in a trust, pledged to the IDB for future claims made against PPGM guarantees. Alternatively, the IDB, UNDP and the NPSC may decide to spin off the PPGM for private sector ownership. Under this scenario, an request for proposals would be issued for ownership of the PPGM. Selection criteria could include, among other things, the amount of equity investment in the PPGM proposed by private sector applicants. This will generate additional leverage of GEF resources. Under this arrangement, the US\$10 million in the reserve account would remain in the trust but would be pledged to the private sector owner for claims made against PPGM policies. The exit strategy will be decided by the IDB, UNDP and the NPSC based on the mechanism's uptake and relevance over the years.

Outputs and corresponding activities will include:

¹⁴ www.ipmvp.org

¹⁵ The contract will include an arbitration clause to accelerate the resolution process in a country such as Brazil where the court processes tend to be long.

- A new PPGM has been experimented and is fully operational. Design and implementation of a new financial mechanism based on performance guarantee including operational rules and management structure.
- Local banks begin to treat energy savings as collateral in their lending evaluation matrix. This output will be achieved based on the success in the implementation of EE projects financed with the guarantee of the PPGM.

Outcome 5 Project Management and M&E Implemented

81. The overall management of the project will be the responsibility of the NPSC that will be composed of senior representatives from the Ministries of Environment, Mines and Energy, Finance, and Public Planning, as well as national banks and the private sector.

82. A National Project Management Unit (PMU) would oversee the administration of activities related to project outcomes 1-3, with specific emphasis on the management of the Public Building Initiative. The PMU would have full-time staff members managed by a National Project Director (NPD) and an Assistant who would clear the work plan (which forms the basis for project execution), monitor activities, manage the project on its day-to-day implementation and report back to the NPSC. The PMU will:

- Launch project activities.
- Develop the Request for Proposal for all the TA activities to be conducted by external organizations.
- Manage the project on a day to day basis.
- Produce all the management reports for the benefit of the Brazilian government, the GEF and UNDP.

83. With respect to Outcome 4, the IDB working with local banks, ESCOs and the PPGM Administrator will help establish performance guarantee criteria and procedures. However, once the program is in operation, performance guarantee approval will be exclusively the responsibility of the PPGM Administrator. This fire wall between the NPSC and the PPGM Administrator regarding ESCO project approval will remove any concerns regarding political or other external influence on the project approval process. The IDB would have full authority to remove the PPGM Administrator only for failure to reach certain pre-established performance criteria or for breach of any obligations that would be set out in the PPGM administrator's contract.

84. Administration and quality control of the PPGM would be provided by a separate and qualified Administrator, engaged through a competitive international recruitment process conducted by IDB with participation of UNDP. The PPGM will be administered by a staff of highly trained and experienced technical and financial experts with extensive experience in the ESCO industry. The PPGM will be closely monitored by the IDB through periodic reporting by the Administrator.

85. The Administrator will be remunerated by the interest income generated by the GEF deposit contained in the Trust and/or by a portion of the guarantee premium and fees charged to clients¹⁶.

86. The Administrator of the PPGM program will:

- Perform project appraisals;
- Request the IDB to issue the PPGM guarantees for qualified projects;
- Administer outstanding guarantees;
- Monitor guaranteed projects;

¹⁶ Partially linking the remuneration of the PPGM Administrator to the interest generated on the GEF grant is a valid way of ensuring that the PPGM Administrator is highly incentivized to maintain the full level of the GEF grant deposit by (a) selecting sound ESCOs and projects where the guarantees are unlikely to be disbursed, and (b) pursuing all available remedies prior to having to pay out under a guarantee. The use of the GEF deposit interest also contributes to the self-sustainable nature of the PPGM - as principle, interest and premium income should be sufficient to provide remuneration for the PPGM Administrator, without the need for an ongoing subsidy from a source outside of the PPGM.

- Draw against the guarantee mechanism in the event of performance shortfalls;
- Execute appropriate documentation prior to issuance of the guarantees and seek indemnification from the project's ESCO when a guarantee payment is made;
- Require the project's ESCO to remediate the shortfalls in energy savings;
- Have step in rights to remediate if the project's ESCO fails to remediate shortfalls in energy savings;
- Seek indemnification for step-in costs against the project's ESCO.

87. Due to the fact that the key function of the PPGM is project appraisal, the staffing requirements will be modest. The proposed PPGM management structure is as follows:

- An Administrator;
- One senior and one junior technical specialist;
- One senior and one junior financial specialist;
- General support staff.

88. Upon review and approval of a proposed EE project, the Administrator will execute a guarantee agreement with the ESCO. This guarantee may be transferable to lenders to the project. The guarantee agreement will stipulate that the PPGM will make payments in the event of a periodic shortfall in projected energy savings equal to that shortfall.

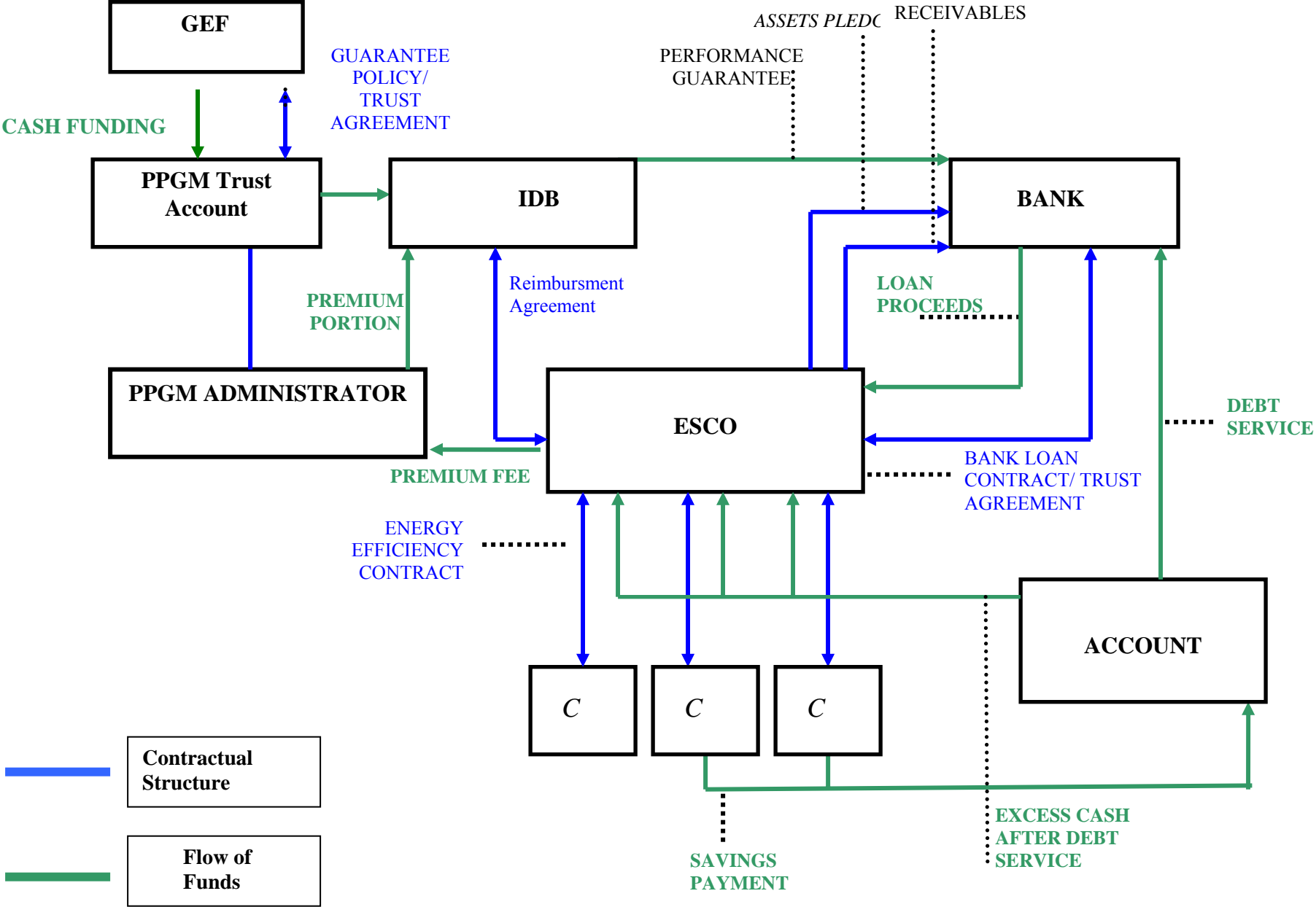
89. The Administrator will have the authority, through the guarantee agreement, to require an ESCO to return to a project and fix any problems that are creating a shortfall in projected energy savings. If the project is properly commissioned, a drop-off in projected energy savings will likely relate to component failure or system integration problems. These problems can be addressed in a short amount of time, returning the project to its original energy savings projections.

90. The Administrator, through the guarantee agreement, will have recourse against an ESCO for the payment for projected energy shortfalls if the guarantee is triggered for a project and the ESCO fails to make necessary remedial repairs. In this case, the Administrator could hire another ESCO to assess the project's performance and make necessary corrections. He would then have recourse against the original ESCO for the guarantee payment and the costs of project remediation.

91. Finally, the Administrator would have the authority to eliminate any ESCO from the program if their project consistently triggered guarantee payment(s) and the ESCO failed to respond to the Administrator's request(s) to remedy the project's shortcomings. This financial "death penalty" will be a strong incentive as it places any disqualified ESCO at a severe disadvantage compared to competitors that remain eligible for the guarantee.

92. The organigram presented in Figure 1 highlights the flow of contractual agreements expected during project implementation. Performance of the project will be monitored and evaluated on a regular basis (see UNDP ProDoc Section 1, Part IV for a detailed description of M&E requirements to be met).

CHART 2: FLOW OF FUNDS AND CONTRACTUAL AGREEMENTS



Project Indicators, Assumptions, and Risks

93. The “Market Transformation for EE in Buildings” project seeks to achieve several goals, and its success will be assessed against the following set of key indicators:

- (i) the reduction in GHG emissions resulting from the improvement of electricity consumption in both public and private building facilities;
- (ii) the gradual elimination of substances that deplete the ozone layer, as supported by the MLF.

94. As in many countries, a large part of electricity consumption goes to buildings. In Brazil this was estimated at 44% in 2004. As a result of increases in fossil fuel prices on the international market during 2005, the country’s energy sector policy seeks to enhance support for uptake of energy efficiency measures, mainly in the commercial, industry and institutional building sectors.

95. Secondary indicators have also been included as they are central to the sustainability of this project. These are all linked to the project’s outcomes and include: (i) increased capacity of market actors; (ii) increased market activities related to EE project development and implementation in the public and private buildings sectors; (iii) increased financing leveraged as a result of establishment of the energy savings PPGM; and, (iv) an increased number of CFC-free chillers installed within the context of an integrated approach to adoption of EE measures.

Indicators

96. Key outcome-level performance indicators used to justify the Objectives ratings during project development have been identified on a preliminary basis:

- Cumulative GHG emissions reduction : 9.588 Mt CO₂ eq over the next 20 years;
- An avoided cost of US\$1.40 per ton of CO₂ emissions.

97. Key outcome-level performance indicators used to justify the Implementation Progress (IP) ratings during project development have been identified on a preliminary basis as follows:

- 5,000 service and equipment providers (design engineers, ESCOs, entrepreneurs and vendors) are informed or trained on buildings EE management;
- In the order of 97 EE projects¹⁷ implemented directly through the PPGM ;
- Up to US\$48million¹⁸ of financed EE investment initiatives directly enabled by the Project;
- Feedback on quality and relevance of project’s technical assistance (80% of beneficiaries of capacity building activities rating them as “very good”);
- Number of stakeholders reached through dissemination of project publications/guides (at least 2,000);
- Number of visitors to project web site (at least 1,000 per month in 6 months after website launch)
- Capacity building provided to public building organizations on the use of the PBI;
- PBI design and implementation of demonstration activities completed;
- 120 professionals trained in CFC-based chillers replacement with EE CFC-free chillers;
- Up to 36 chiller replacement demonstration projects completed using MLF co-financing.

Assumptions

98. The following are conditions or factors that could assist the Project in achieving its objectives:

¹⁷ Calculated based on assumption that performance guarantee coverage of 90% is on offer see section IV Part VIII.

¹⁸ Ibid.

- (i) The government entities involved in the Project are committed to adopt an appropriate legal and regulatory framework for EE promotion and CFC-based chillers replacement;
- (ii) Relevant participants, particularly co-funding agencies and companies, are committed to participating in various activities;
- (iii) Building owners/operators, especially in Brazil's larger urban centers, are aware of and support, through increased participation, the demonstration pilot programs to improve EE efficiency in public sector and replace CFC-based chillers ;
- (iv) Line ministries are prepared to integrate the project strategy within their global and sectoral programs;
- (v) The private sector is prepared to follow the government's lead in participating at various levels (financial, technical, technological, etc.) to the Project's realization;
- (vi) Local FIs are interested in expanding their EE lending portfolios to support market transformation costs.

Risks

99. Based on the meetings held in Brazil with the various stakeholders during the development of the present project, several potential risks have been identified. The following section briefly summarizes and assesses these risks briefly.

100. The risk of lack of support for the PBI program within the Federal Government's administration: The project has already taken steps to mitigate this risk by involving all relevant stakeholders in the design and preparation of the proposed project. It will continue to mitigate this risk by establishing a National Project Steering Committee (NPSC) to co-ordinate project activities with other ongoing activities in Brazil, as well as to discuss and introduce the legal and regulatory changes needed to promote energy efficiency incentives. This risk is assessed as low.

101. Interest in EE financing does not evolve as projected during the PDF B phase: The creation of the PPGM to backstop local ESCOs' energy savings guarantees is expected to spur interest in EE financing and lend support to development of EE projects. A high level of interest has been expressed by national stakeholders with respect to the innovative nature of the energy savings guarantee concept during the PDF B phase. The PPGM, properly designed and capitalized in Brazil, is expected to catalyze all levels of stakeholder interest in EE projects. This risk is assessed as medium to low, the reasons for which are explained below.

102. Every EE project has two basic risks - credit risk and performance risk. Before a lending institution will finance a project loan, it will review both the credit risk of the borrower and the performance risk of the project. Credit risk analysis is a core competence of commercial banks and local banks in Brazil are fully competent to perform such credit risk analysis for ESCO projects. The principal constraint faced by local banks with respect to ESCO projects is that they do not have the capacity or the interest per se, to assess performance risk for ESCO projects and, as a result, generally will not finance them.

103. The PPGM addresses this issue by removing the need for a bank to engage in performance risk analysis by providing a guarantee of performance.

104. The PPGM suffers from limited interest from professionals, developers and operators to get involved in EE initiatives, from bank professionals to cooperate in the program, and from private operators/developers to submit projects with good EE improvement potential: A high level of interest was expressed by national stakeholders with respect to the innovative PPGM concept during the preparatory phase, as well as for the integrated approach to EE enhancement in buildings. Capitalizing on this interest, the development and implementation of a comprehensive and multi-faceted financing and TA program

under the project is expected to mitigate this risk through extensive and targeted marketing campaigns aimed at potential lenders and customers. This risk is assessed as medium to low.

Expected Global, National and Local benefits

105. The global benefits of the project involve both reduction of GHG emissions and phase-out of the use of CFCs, thereby demonstrating cross-convention synergy potential amongst multilateral Environmental Agreements (MEAs). Improving EE in building operations will contribute to lowering GHG emissions from an energy consumption perspective, as well as through the reduction of CFC emissions which have a very high global warming potential.

106. Nationally, endorsement and adoption of this project would position Brazil as one of the front leaders in the area of market transformation for energy efficient technologies, with wide-ranging applications and replication potential, both to other appliances and equipment, as well as in- and outside of Brazil. Additional national benefits include benefits to the local energy efficiency service industry, as well as a development of accessible financial mechanisms for local market players.

Country Ownership: Country Eligibility and Country Drivenness

Country Eligibility

107. According to the Instrument for the Establishment of the Restructured Global Environment Facility, Brazil qualifies for GEF financing on the following grounds:

- It has ratified the United Nations Framework Convention on Climate Change on February 28, 1994; and
- It receives development assistance from UNDP's core resources.

In addition, Brazil ratified both the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer in March 1990. It has also subsequently ratified the Montreal Protocol's London Amendment in October 1992, the Copenhagen Amendment in June 1997, and the Montreal and Beijing Amendments in June 2004.

Country Drivenness

108. The Government of Brazil began adopting policies and measures with stronger emphasis on energy efficiency over two decades ago. Programs have been implemented at the federal, state and municipal levels, as well as in the private sector. The overview of ongoing EE programs in Brazil, below, underlines the Government's interest in EE promotion and adoption.

109. The PROCEL (Programa Nacional de Conservação de Energia Elétrica) was initiated in 1985. Under Eletrobras responsibility since 1998, the program's objectives are to promote the rational use of electricity by, inter alia, households, industry, water utilities and public buildings, and public lighting. In 2001 ELETROBRAS received a US\$12 million grant from the Global Environment Facility (GEF Grant No TF 21843) to finance various demonstration projects, capacity building and marketing and communication activities, including a Best Practices Information program.

110. The CONPET program, created in 1991, aims at encouraging the efficient use of oil products and natural gas in the transport, commerce, industry and agriculture sectors.

Law # 9991 of 24 July 2000 mandates electricity distribution companies to invest in research and development (R&D), and in EE programs. Companies are required to apply annually, as a minimum, the amount of 0.75 % of their operational liquid income to R&D for the electric energy sector; and, a

minimum of 0.25 % in programs geared at EE for end users, allowing for some variations in percentage distribution as dictated by the law.

111. ANEEL, the Agencia Nacional de Energia Eletrica, was created by Law 9427 (1996) and is part of the Ministry of Mines and Energy (MME). ANEEL regulates and inspects the production, transmission, distribution and commercialization of electric energy in Brazil.

Under the Brazilian Labeling Program (PBE), established in 1983 and managed by INMETRO¹⁹, Brazil applies a voluntary labeling scheme for energy consuming equipment. Beginning in 2006, labeling is now mandatory for a variety of equipment. Labeling has proven to be very effective in terms of encouraging market transformation elsewhere. In association with the PBE, PROCEL has created an award for the most efficient electric products in the market for each type of equipment. Both, the PBE and PROCEL labels serve as marketing tools for manufacturers.

112. Parallel to PBE, Law 10.295 (October 2001) stipulates that minimum EE or higher EE standards are to apply to energy consuming equipment and buildings in the future.

113. The EDIFICA Program (“Programa de Eficiência Energética em Edificações” - EE Program for Buildings), under PROCEL Management since 2003, is responsible for organizing actions and setting targets for improvements that would lead to the development of: (i) establishing minimal requirements to integrate the architecture of buildings to the environment and to natural resources; (ii) creating EE indicators for buildings; (iii) certifying material and equipment and establishing procedures for regulation/legislation; (iv) creating mechanisms to provide financial resources and the removal of barriers to the implementation of projects; and, (v) promoting educational and social interest projects.

114. On top of the aforementioned initiatives, BNDES, the national development bank in Brazil, has launched a new financing mechanism, a partial credit risk guarantee initiative (PROESCO) that will aim at reducing the risks for banks in taking an active part in the EE market in the country. Apart from reducing the risk for banks, the facility aims at reducing the interest rates to loan receivers, enabling a better return on investment for the projects. While the BNDES partial credit risk guarantee initiative is of great interest to ESCOs, the PPGM proposed by this project will have market transformational capacity and impact of its own and is seen a key complement to PROESCO. The PPGM will allow local banks to accept energy savings guarantees as collateral, reducing the high collateral requirements currently imposed by local banks on ESCO projects in Brazil. The acceptance by local banks of guaranteed energy savings as collateral would mark significant progress in opening the market for EE investments.

115. The PPGM and the PROESCO programs are fully compatible and complimentary. Implementation of these two programs in Brazil recognizes that every ESCO project has two fundamental risks:

- Performance risk, or the capability of ESCOs to achieve promised energy savings for the projects they implement, and
- Credit risk, or the capacity of the ESCO’s client to make periodic payments for the ESCO project

116. The PPGM will possess the capabilities to conduct technical validation of local ESCO projects. This will fill a need for effective implementation of the PROESCO program. More importantly, PPGM’s validation will be backed by a guarantee that will be available to local banks in the event an ESCO projects fails to produce promised energy savings.

¹⁹ National Institute of Metrology, Normalization and Industrial Quality - INMETRO

Sustainability

Institutional sustainability

117. A major change expected to result from the project's implementation will be to enable public sector building managers to have access to outsourcing of technical and financial services all over the country. The PBI component will develop and market all necessary tools to reach that objective. As similar successful initiatives in other countries have been implemented, the project will take advantage of these experiences in designing and implementing the appropriate tools.

Technical sustainability

118. A Capacity Building component will be made available to a large number of stakeholders including building owners and operators, to all kind of EE service and equipment providers, including ESCOs, as well as to other key partners including universities and technical educational institutions. The new capacities created through this initiative are expected to be applied over time.

Financial sustainability

119. The PPGM will be financially self-sustainable and operated by a private company with a performance based incentive compensation system. The appropriate flexibility to adjust to market level components, such as project eligibility criteria and service fees, will result in a financial services mechanism adapted to market conditions. The PPGM will encourage local financing institutions to accept energy savings guarantees as collateral, reducing the high collateral requirements currently imposed by local banks on ESCO projects in Brazil.

Socio-economic sustainability

120. Market transformation, the use of market mechanisms to promote the development of EE initiatives holds the best prospect for sustainability, as it allows market actors to make decisions based on commercial merit. In addition, where market imperfections may be present, well-designed interventions can be very effective in bringing the market to the level required for normal and effective market operation.

121. ESCOs Development, an ESCO business currently exists in Brazil but it will be greatly reinforced by the present project, making it more viable. ESCOs will be one of the major players who actually benefit from the project by increasing the number of EE projects implemented.

Replicability

122. By end of the project, the conditions created by its implementation should encourage project developers, financing institutions and building owners/operators to replicate EE projects. The market will have been primed, the deal flow enhanced and private sector interest in this mechanism will be established. It is expected that the PPGM will be replicated by other financial players, such as insurance companies, that will benefit from the project experience and accomplishment to create and scale-up a sustainable performance guarantee market. More broadly speaking, by demonstrating success, either one or both of the newly developed activities could be used in other countries with similar economic situations.

PART III. Management Arrangements

The project will be nationally executed in accordance with standard UNDP national execution guidelines.

123. The executing agency will create, in consultation with UNDP, a National Project Steering Committee (NPSC) that will be established to oversee the global implementation of the project during its entire execution. The NPSC will be composed of senior representatives from the Ministries of Environment, Mines and Energy, Finance, and Public Planning, as well as national banks and various private sector interests (refer to Stakeholder Involvement section).

124. A national Project Management Unit (PMU) that will manage and supervise the global implementation of the project during its entire duration, except for Outcome 4, the PPGM, with specific emphasis on the management of the PBI and the capacity building activities of Outcome one. The PMU would have full-time staff members managed by a National Project Director (NPD) who with the support of an assistant will review proposals, clear the work plan (which forms the basis for project execution), monitor activities, manage the project on its day-to-day implementation and report back to the NPSC.

125. The PPGM, under the oversight of IDB, will be managed by a separate and qualified Administrator, engaged through a competitive international recruitment process. The PPGM Administrator will be staffed by highly trained and experienced technical and financial experts with extensive experience in the ESCO industry. This service would be performed under a management contract. The administrative and financial procedures of the PPGM will be established on the basis of IDB experience and due diligence. Furthermore the IDB will oversee the activities of the PPGM ensuring its transparent performance.

126. UNDP will have the overall responsibility of the project implementation with particular emphasis on the capacity building activities of outcome 1 and 2 and the implementation of outcome 3 but it will also play an active role in the implementation of outcome 4 under the oversight of IDB.

PART IV. Monitoring and Evaluation Plan and Budget

127. Project monitoring and evaluation (M&E) will be conducted in accordance with established GEF procedures as well as following new UNDP procedures in the ATLAS system. Project M&E provided by the project team, supported by UNDP, i.e., the UNDP Country Office (CO) and the UNDP-GEF Regional Coordinating Unit (RCU). The Logical Framework Matrix in Annex B of the Executive Summary provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built throughout the 7-year implementation period.

128. The main components of the Monitoring and Evaluation Plan will include: (1) establishing monitoring responsibilities and events, (2) project reporting and (3) independent evaluations. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

129. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the national project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The project indicators, as given in the Project Logical Framework, are the benchmark against which Monitoring and Evaluation will take place.

130. The PPGM monitoring will be carried out by the IDB through the reports of the Administrator and will make them available to UNDP and the NPSC. The IDB will have the right to review the operations and financial records of the Administrator and to appoint an independent auditor for the purposes of performing an audit on the books of the Administrator, to inspect the procedures used to recover defaulted Eligible Projects and to review the operations of the Administrator for the purpose of developing and enhancing best practices and implementing improvements based on the Administrator's record.

131. The IDB will apply the same degree of care and diligence in the execution of its responsibilities herein as it exercises in the monitoring of its private sector projects.

MONITORING AND REPORTING

Project Inception Phase

132. A *Project Inception Workshop* (IW) will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, IDB as well as UNDP-GEF (HQ) as appropriate.

133. The fundamental objective of the IW will be to allow the national project team to take ownership of the project's goals and objectives, as well as finalize preparation of the project's first Annual Work Plan (AWP) on the basis of the project's log frame matrix (indicators, means of verification, assumptions), and in a manner consistent with the expected outcomes for the project.

134. The *Annual Project Work plan* (AWP) will describe in detail the provision of inputs, activities, and expected results for the project in a given year, indicating schedules and the persons or institutions responsible for providing the inputs and producing results. The AWP will be updated and revised each year by the CTA in consultation with stakeholders and the UNDP-CO.

135. Additionally, the IW will: (i) detail the roles, support services and complementary responsibilities of the UNDP-CO vis à vis the project team; (ii) fine-tune the specific targets for the first year

implementation progress indicators together with their means of verification. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team; (iii) define means of measuring impact indicators related to global benefits. The measurement of global benefits will be undertaken through subcontracts or retainers with relevant institutions or through specific studies that are to form part of the project's activities; (iv) provide a detailed overview of UNDP-GEF and GEF specific reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs), the Annual Project Report (APR), Tripartite Review Meetings (TPR), as well as mid-term and final evaluations; and, (v) provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget re-phrasings.

136. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed and finalized in order to clarify each party's responsibilities during the project's implementation phase.

Monitoring responsibilities and events

137. A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives, and incorporated in the Project Inception Report (IR). Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related M&E activities.

138. *Day-to-day monitoring* of implementation progress will be the responsibility of the CTA, based on the project's Annual Work plan (Strategic Planning Matrix) and its indicators. The PMU will inform the UNDP CO and MME of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

139. *Periodic monitoring* of implementation progress will be undertaken by the National Project Steering Committee (NPSC) through quarterly meetings with MME, IDB and UNDP (or more or less frequently as deemed necessary). This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

140. UNDP Country Office and UNDP-GEF Regional Coordination Unit are responsible for monitoring the project activities on a continuous basis and can conduct, as appropriate, visits to the project and field sites to assess first hand project progress. IDB will be in charge of the overall monitoring of the PPGM as described in the Term Sheet of the mechanism. Any other member of the Project Steering Committee can also accompany, as decided by the Committee. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all NPSC members and UNDP-GEF.

141. The *Terminal Tripartite Review* (TTR) is held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO, UNDP-GEF-HQ and IDB. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

Project Monitoring Reporting

142. The CTA in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (e) are mandatory and strictly related to monitoring, while (f) has a broader function and the frequency and nature is project specific to be defined throughout implementation.

a) *Inception Report (IR)*

143. A Project Inception Report will be prepared immediately following the Inception Workshop (IW). It will include a detailed First Year AWP, divided into quarterly time-frames, detailing the activities and progress indicators that will guide implementation during the first year of the project. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the AWP, as well as any M&E requirements to effectively measure project performance during the targeted 12 months time-frame.

144. The IR will include a detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. A section on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation should be included.

145. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. The IR is due at the beginning of project implementation.

b) *Annual Project Report (APR) - Project Implementation Review (PIR)*

146. The APR-PIR is a UNDP and GEF requirement to facilitate central oversight, monitoring and project management. It is a self-assessment report by project management to the CO, providing inputs to the CO reporting process, as well as forming a key input to the UNDP/GEF M&E Unit, which analyzes the APR-PIRs by focal area, theme and region for common issues/results and lessons.

The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome;
- The constraints, if relevant, experienced in the progress towards results and the reasons for these;
- The AWP;
- Budget and full expenditure reports;
- Lessons learned;
- Clear recommendations for future orientation in addressing key problems in lack of progress.

c) *Quarterly Progress (QORs) and Financial Reports*. Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office (and forwarded to the UNDP-GEF RCU and IDB) by the Project Coordinator.

d) *Baseline and end-of-project reports*. During the inception stage the PMU will commission a study on the baseline situation. A similar study will be conducted done at the end of the project's implementation to revisit the data and issues of the baseline study and to quantify the progress indicators of the logical framework of the project document. This should enable the quantitative evaluation of outputs and impacts of the PPGM and capacity development interventions on EE uptake in buildings in Brazil in general.

e) *Project Terminal Report (PTR)*. During the last three months of the project the project team will prepare the Project Terminal Report (PTR). This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

f) *Project Reports and Publications*. Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on technical reports, depending upon the relevance, scientific worth, etc. of these reports, or may be summaries or compilations of a series of technical reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, IDB, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

INDEPENDENT EVALUATION

The project will be subject to two independent external evaluations as follows:

Mid-term Evaluation

147. An independent Mid-Term Evaluation will be undertaken at the end of the third year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document.

Final Evaluation

148. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP-CO based on guidance from the UNDP-GEF-RCU, UNDP-GEF and IDB.

AUDIT CLAUSE

149. The Governments of Brazil will provide the Resident Representative with certified financial statements, as well as with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in Section 30503 of the UNDP Policies and Procedures Manual (PPM) and Section 10404 of the UNDP Finance Manual. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

TABLE 3: INDICATIVE M&E WORK PLAN AND BUDGET

Type of M&E activity	Responsible Parties	Budget US\$	Time frame
Inception Workshop/ Annual Work Plan finalization	<ul style="list-style-type: none"> ▪ NPSC ▪ Project Team ▪ UNDP CO ▪ Hired consultant 	15,000	Annually, first SPM immediately following approval of Phase II
Baseline Study of Project Indicators	<ul style="list-style-type: none"> ▪ PMU ▪ Hired consultant 	50,000	Start and end of project.
Measurement of Means of Verification for Project Progress and Performance (measured annually)	<ul style="list-style-type: none"> ▪ Oversight by UNDP-GEF RCU & NPD ▪ Counterpart organizations in the field or hired consultants on an as-needed basis 	50,000	Annually prior to APR/PIR and to the definition of annual work plans
APR-PIR	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP-CO ▪ UNDP-GEF 	0	Annually
Steering Committee Meetings	<ul style="list-style-type: none"> ▪ NPD ▪ UNDP CO 	0	Following Project IW and held regularly
Technical reports	<ul style="list-style-type: none"> ▪ NPD/PMU 	As part of project activities	To be determined by Project Team & UNDP-CO
Mid-Term Evaluation	<ul style="list-style-type: none"> ▪ NPD/PMU ▪ Hired consultants 	50,000	Mid project
Final External Evaluation	<ul style="list-style-type: none"> ▪ NPD/PMU ▪ UNDP-CO ▪ UNDP-GEF RCU ▪ External Consultants (i.e. eval. team) 	50,000	At the end of project implementation
Terminal Report	<ul style="list-style-type: none"> ▪ NPD/PMU ▪ UNDP-CO 	As part of project activities	At least one month before the project's end
Lessons learned	<ul style="list-style-type: none"> ▪ NPD/PMU ▪ UNDP-GEF RCU (suggested formats for documenting best practices, etc) 	30,000	Yearly
Audit	<ul style="list-style-type: none"> ▪ UNDP-CO ▪ NPD/PMU 	10,000	Yearly
Visits to field sites (UNDP staff travel costs not included as will be charged to IA fees)	<ul style="list-style-type: none"> ▪ UNDP CO ▪ UNDP-GEF RCU (as appropriate) ▪ Government representatives 	0	Yearly
TOTAL INDICATIVE COST Excluding project team staff time and UNDP staff and travel expenses.		US\$255,000	

PART V. Legal Context

150. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Agreement between the Government of Brazil and the United Nations Development Program, signed by the parties on 2 February 1987. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

151. The UNDP Resident Representative in Brasilia is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

PART I. Incremental Cost Analysis

Broad Development Goals

152. The broad development goal of the project is to provide affordable, reliable, and sustainable sources of financing in Brazil to accelerate market penetration of energy efficient technologies for buildings through the removal of various and specific market barriers. The project will contribute to improve EE in the commercial and public buildings sectors by more than 5.617 million MWh directly, and reduce greenhouse gas emissions by in the order of 9.588 Mt CO₂ eq over the same period by catalyzing annual investments that increase EE through application of environmentally sound and energy-efficient alternative technologies. In this sense, the project will also contribute to reducing building operation costs for project owners/operators and reinforce the local economy by decreasing the dependence of the country on imported fossil fuel.

153. The GEF funds will be used to leverage substantial additional private sector capital through the PPGM in order that a sustainable EE market transformation may occur. Successful EE projects funded by the GEF, the IDB and the Multilateral Fund will have a multiplier effect by demonstrating the viable technical and financial benefits of EE ventures in the buildings sector to commercial operators and lenders, thereby making commercial financial resources more widely available in the future.

Baseline

154. Electric energy use is growing at a rate of 5.7 %, per year. Future electric energy demand is expected to be met through natural gas, coal, and hydro resources²⁰. To meet power demand, while simultaneously avoiding pollution-related impacts, the Government of Brazil is following a three-prong approach: a) introducing wide power sector reforms, including pricing and regulations, to enhance competition and private sector participation; b) encouraging EE and energy conservation measures; and, c) encouraging the demonstration and deployment of renewable energy technologies.

155. The expected expansion in electric power consumption will require an increment in Brazil's installed capacity from 94 GW in the year 2006 to approximately 135 in 2015. This corresponds to an addition of 41GW generating capacity over the 2006/2015 period. Therefore, several different primary sources will have to be utilized for electric power generation.

156. The current market opportunities for EE projects are limited due to a lack of confidence by both the end-user and the lender in the guaranteed energy savings projections provided by ESCOs. Local banks are not familiar with the performance risk associated with energy savings projects and are not willing to consider energy savings as collateral. In addition, EE opportunities in the public sector market are very limited due to existing procurement and contractual barriers.

157. Therefore, it is reasonable to assume that, in the absence of the project's interventions, Brazil's EE efforts would likely remain in their current state or, given the reforms presently underway in the sector, funding for EE enhancement may start to decline as deregulation of the energy sector advances. Under the baseline scenario, demonstration of emerging technologies and market driven EE delivery mechanisms would be restricted. Investments in EE would most likely remain in Government hands, through the use of subsidized loans to state governments and qualifying enterprises.

²⁰ The Hydroelectric Power Option In Brazil Environmental, Technological And Economic Aspects, Ventura Filho, Altino Itaipu Binacional Foz Do Iguacu, Brazil. World Energy Council, <http://www.worldenergy.org/wec>

Global Environmental Objective

158. The global environmental objective of the Project is to decrease GHG emissions from electricity generation associated with fossil fuel. By increasing EE in building operations, the project will enable Brazil to avoid emissions of about 9.588 Mt CO₂ eq from additional utilization of energy efficient technologies over a 20 year period.

GEF Alternative

159. The goal of the project is to influence, transform, and develop the market for energy-efficient building operations in Brazil and move towards a less carbon-intensive and more sustainable energy consumption path in the country.

160. This project will foster EE investments in private and public buildings, by addressing the technical and financial barriers which persist despite past and present public and private sector programs/initiatives in this domain.

The project is expected to have a catalyzing effect by reinforcing the capacity of local ESCOs and by establishing a PPGM which will help leverage capital resources through local financing institutions that would otherwise not be available due to the perceived risks in the local EE market.

161. The project proposes to look at five specific aspects of EE promotion in the buildings sector:

(i) instigate a knowledgeable EE 'offer and demand' base amongst owners/operators of private and public buildings; (ii) design and implement an EE project for the public sector (PBI); (iii) implement, as part of an integrated approach to EE enhancement in buildings, a pilot project for replacement of inefficient CFC-using centrifugal chillers with EE CFC-free models; (iv) establish a PPGM to stimulate implementation and financing of EE projects through ESCOs in Brazil; and, (v) increase learning by doing and by developing the tools necessary for effective project management and evaluation.

Incremental Cost Calculations

162. The analysis consists of the comparison between (i) the baseline costs of implementing EE projects in the absence of: capacity development, a PBI program, a pilot program for replacement of inefficient CFC-using chillers, and access to a PPGM; and, (ii) the cost of implementing these projects²¹. The scope covers the public and private buildings sectors, including owners/operators, service providers such as ESCOs and other stakeholders, including EE equipment suppliers, electric power suppliers, and others.

163. Within the context of the government's overall development programs the current EE improvement project for the buildings sector will provide significant financial leverage and CO₂ abatement.

164. In order to make an evaluation of the carbon emission reduction that will be generated from the present project, a series of assumptions have been made:

Direct and post direct emissions reductions

165. In a first step, the evaluation of the direct emission reductions was made on the basis that US\$25,000,000 would be made available for the use of the PPGM (US\$10 million from GEF and US\$15 million from the IDB).

²¹ including the incremental features associated with the financing scheme, demonstration, dissemination and capacity building programs included in the alternative

166. The US\$ 25,000,000 will be dedicated to be used as a reserve against claims that will be done for not meeting the energy consumptions reductions guaranteed by the ESCOs.

167. In order to evaluate the savings that could be generated from the projects to be guaranteed by the PPGM, we assumed that the average project presented to the facility will need a total investment of US\$500,000 (including interest to be paid on the loan), so generating at least US\$100,000 of savings per year for a period of 5 years. We also assumed that PPGM will only cover 90% of the default, the ESCO assuming the first 10% of non attained savings. A fee of 3/4% of the amount insured will be asked to be paid by the ESCOs.

168. On the side of the reserve to be maintained to cover the defaults of the different projects, an amount equal to the amount insured by the facility has been assumed to be kept at all times. This figure is highly conservative and could be reduced over time subject to IDB approvals, as required..

169. With the use of all these figures, we have established that it will be possible to cover about 97 projects over a period of 5 years of operation of the PPGM. We assumed the period of 5 years of operation out of the 7 years of the project, since the first year will be used to set up the facility and the last year will be used to transfer the facility in its new form, as presented in the exit strategy of the project.

170. Once the financial savings have been estimated, we made the following assumptions in order to convert them in carbon emissions savings. Based on an increasing penetration factor of the PPGM over the five years period, a 0,125US\$/kwh hour average cost, a downfall of the expected savings of 5% (meaning these investments would not generate any savings), a 20 years lifetime of the energy efficiency measures implemented (but including as well a reductions of the generated savings of 10% after the ESCO has completed its mandate), we evaluated that on a period of 20 years, the PPGM would be able to generate 5.617 million MWh directly of savings. Using the Emission Factor coefficient for Brazil of 0.502 tCO₂/MWh, as recommended in the publication titled 'Brazilian Greenhouse Gases Emission Baseline from Electricity Generation that enables us to evaluate the direct and post direct emissions reductions for the project at 2.820 Mt CO₂ eq.

Indirect emissions reductions

171. Using the suggested replication default factor of '4' for credit and guarantee facilities proposed by the 'GEF Manual for Calculating GHG Benefits of GEF Projects', and a conservative causality factor of 60% (level 3 as stated in the GEF guidelines), we can estimate that the indirect emissions reductions to be generated by the project are equal to:

$$4 \times 2.820 \text{ Mt CO}_2 \text{ eq} \times (0,6) = 6.768 \text{ Mt CO}_2.$$

Global emissions reductions

172. Based on these figures, we can estimate that the global emission reductions to be generated by the present project are:

$$2.820 \text{ Mt CO}_2 \text{ eq} + 6.768 \text{ Mt CO}_2 = 9.588 \text{ Mt CO}_2 \text{ eq}$$

Cost per ton of CO₂ avoided

$$13,500,000 / 9.588 \text{ Mt CO}_2 \text{ eq} = \text{US\$}1.40 \text{ per ton of CO}_2$$

Table 4: Direct Emission Reduction 20 Year Period

Total Emission Reduction	2.820	Mt CO2 eq
Energy Savings	5.617	million MWh

N.B. the CO2 emissions from electricity generation has been calculated using Brazilian Baseline Emission Factor²² of 502g CO2eq/MWh

Table 5: Total CO² Emissions Reduction From Electricity Generation
(Average Value Of Emission Factor: 502 Gco2eq/Kwh)

Total CO2 emissions reduction over 20years (Direct + Direct post project emissions reduction)	2.820 Mt CO2 eq
Total CO2 emissions reduction over 20 years (Indirect emissions reductions) factor 4 * 60% (Causality Factor level 3)	6.768 Mt CO2
TOTAL CO2 emissions reduction over 20 years	9.588 Mt CO2 eq

INCREMENTAL COST ANALYSIS MATRIX

Please refer to Annex A of the Executive Summary.

PART II. Logical Framework Analysis

Please refer to Annex B of the Executive Summary.

²² Brazilian Greenhouse Gases Emission Baseline from Electricity Generation, Rio 02 – World Climate & Energy Event Rio de Janeiro, January 6-11 2002

SECTION III: PROJECT BUDGET

173. The proposed total GEF grant requested for project implementation is US\$13.5 million. The details of the budget are elaborated upon in Table 6 below. The GOB, through its relevant agencies involved in EE-related projects, will provide US\$150,000 through in-kind contribution. UNDP, drawing upon funds approved under the Multilateral Fund for the Implementation of the Montreal Protocol, will contribute US\$1 million in response to project Outcome 3, and participating private sector entities, including local banks and other private sector actors, will contribute in the order of US\$48 million, and the IDB will contribute to the PPGM with US\$15 million for a total co-financing input of US\$64.8 million.

TABLE 6: SUMMARY OF PROJECT BUDGET PER COMPONENT (US\$)

OUTCOMES	PROJECT FINANCING			
	TYPE	CO-FINANCING	GEF SHARE	TOTAL
OUTCOME 1	GRANT/IN KIND	500,000	1,265,000	1,765,000
OUTCOME 2	GRANT/IN KIND	160,000	1,085,000	1,245,000
OUTCOME 3	GRANT/CASH	1,000,000	0	1,000,000
OUTCOME 4	GRANT/CASH/BALANCE SHEET	63,015,000	10,195,000	73,210,000
SUB-TOTAL	GRANT/CASH/IN KIND	64,675,000	12,545,000	77,220,000
OUTCOME 5: PROJECT MANAGEMENT AND M&E	GRANT/CASH/IN KIND	150,000	955,000	1,105,000
GRAND TOTAL		64,825,000	13,500,000	78,325,000

TABLE 7: PROJECT COST CONTRIBUTORS (US\$)

NAME OF CO-FINANCIER (SOURCE)	CLASSIFICATION	TYPE	AMOUNT (US\$)	STATUS
IDB	IMPL. AGENCY	BALANCE SHEET COMMITMENT	15,000,000	CONFIRMED THROUGH LETTER OF INTENT
MMA	NAT. GOVERNMENT	IN-KIND	150,000	CONFIRMATION IN PROCESS
BANKS, ESCOS, END USERS, ETC	PRIVATE SECTOR	IN-KIND	660,000	CONFIRMATION IN PROCESS
		IN CASH	48,015,000	CONFIRMED AS PER PPGM FINANCIAL MODEL ²³
UNDP - MULTILATERAL FUNDS (MONTREAL PROTOCOL)	IMPL. AGENCY	IN CASH	1,000,000	CONFIRMED THROUGH APPROVAL BY MLF EXECUTIVE COMMITTEE AT EXCOM 47, NOVEMBER 2005
TOTAL CO-FINANCING			64,825,000	

²³ See Section IV Part VIII, PPGM Guarantee Exposure and Investment Leveraging

Table 8: BUDGET DESCRIPTION (US\$)

OUTCOME 1 IMPROVE EE CAPACITIES	SOURCE OF FUNDING	US\$
2 PERSONS X 20,000US\$ X 7YEARS ²⁴	GEF	280,000
PRINTING, COMMUNICATION, AND TRAVEL	GEF	230,000
TRAINING ACTIVITIES	GEF	755,000
CO-FINANCING (DSA)	PRIVATE SECTOR	500,000
TOTAL		1,765,000
OUTCOME 2 PBI		
2 PERSONS X 20,000US\$ X 7YEARS ²⁵	GEF	280,000
1 SECRETARY X 12 000US\$ X 7 YEARS	GEF	84,000
PRINTING, COMMUNICATION, WEBSITE AND TRAVEL	GEF	206,000
TA BUDGET	GEF	250,000
TRAINING ACTIVITIES	GEF	265,000
CO-FINANCING (DSA)	PRIVATE SECTOR	160,000
TOTAL		1,245,000
OUTCOME 3 CHILLERS REPLACEMENT		
TA COMPONENT	MLF	200,000
CO-FINANCING (GRANT COMPONENT)	MLF	800,000
TOTAL		1,000,000
OUTCOME 4 PPGM		
GEF FUND	GEF	10,195,000
IDB FUND	BANK	15,000,000
CO-FINANCING	PRIVATE SECTOR	48,015,000
TOTAL		73,210,000
OUTCOME 5 MANAGEMENT COMPONENT²⁶		
1 PROJECT DIRECTOR X 35KUS\$/YEAR X 7 YEARS	GEF	245,000
1 ASSISTANT DIRECTOR X 25KUS\$/YEAR X 7 YEARS	GEF	175,000
1 SECRETARY X 12 000US\$ X 7 YEARS	GEF	84,000
PRINTING, COMMUNICATIONS, TRAVEL	GEF	196,000
CO-FINANCING	GOVERNMENT	150,000
SUB TOTAL		850,000
MONITORING & EVALUATION		255,000
TOTAL		1,105,000

²⁴ Outcome 1 ‘Enhanced EE investments through Capacity Building in private and public sector buildings’ aims at developing best practice capacity in Brazil in the identification, formulation, implementation and management of EE projects in the buildings sector. Since this capacity building component is very large and comprehensive, targeting administrators/owner buildings (800), technical staff of buildings (1,400), service providers (consultants and ESCOs) (1,800), architects and engineers (800), and Banks and other Financial institutions (400), for a total of 5,000 trainees from different areas in Brazil. The training should be distributed around the country in at least 2 cities of each geographical region. Therefore it has been estimated that the coordination needs and complexity of the logistics of the whole component requires 2 full time managers.

²⁵ Outcome 2 ‘Access to EE services and commercial financing for public sector buildings enhanced with a Public Building Initiative’ focuses on the elimination of barriers specific to the implementation of EE projects in public buildings and facilities. For this component two managers are envisaged: One will concentrate in the coordination of the activities related to removing the existing legal and contractual frameworks obstacles where third party financing, either in the form of leasing or through a performance based contracting approach, is concerned. The second manager will focus his/her activities on the coordination of the training activities. The capacity building program aims at training 1,600 people on 8 different topics and therefore a full time manager has been considered to be necessary.

²⁶ The cost of the management component without M&E is 850,000 out of which only 700,000 are GEF contribution. This amount corresponds to 5.2% of the GEF contribution and less than 1% of the total project costs.

Budget details:

Outcome 1

Printing:

-5,000 trainees @ US\$10 per trainee = US\$50,000.00

Communications:

-US\$200 per month x 7 years= aproxUS\$17,000.00

-Office Miscellaneous US\$150 per month x 7 years= aproxUS\$13,000.00

Travel:

-Trainers 25 different courses in 10 cities @ US\$500 (average) per trip = US\$125,000.00

- Managers 50 trips @ US\$500 (average) per trip = US\$25,000.00

Total: US\$230,000.00

Outcome 2

Printing:

-1,600 trainees @ US\$10 per trainee = US\$16,000.00

-Publications: -US\$3,000.00 per year = US\$21,000.00

-Office Miscellaneous US\$165 per month x 7 years= aproxUS\$14,000.00

Website:

-US\$15,000.00

Communications:

-US\$350 per month x 7 years= aproxUS\$30,000.00

Travel:

-Trainer 8 different courses in 10 cities @ US\$500 (average) per trip = US\$40,000.00

- Managers 10 trips per year @ US\$500 (average) per trip = US\$70,000.00

Total: US\$206,000.00

Outcome 5

Printing:

-Publications = US\$6,500.00 per year = approxUS\$45,000.00

-Office Miscellaneous US\$250 per month x 7 years= aproxUS\$21,000.00

Communications:

US\$700 per month x 7 years= aproxUS\$60,000.00

Travel:

- Managers 10 trips per year @ US\$500 (average) per trip = US\$70,000.00

Total: US\$196,000.00

SECTION IV: ADDITIONAL INFORMATION

PART I. Letters Of Intent and Co-Financing

Entity	Date
Multilateral Fund of the Montreal Protocol	November 2005
BNDES (Brazil National Development Bank)	23 March 2006
AES Eletropaulo	23 March 2006
Harmonia	17 March 2006
Banco Itaú	22 March 2006
Eletrobrás	17 March 2006
ABESCO	24 March 2006

PART II. Stakeholder Involvement Plan

The following list presents key stakeholder groups and their involvement in the proposed project

TABLE 9: STAKEHOLDERS ROLE IN PROJECT

Institution	Official Mandate	Role in project ²⁷
Government		
Ministério do Meio Ambiente (Ministry of Environment) (MMA)		<ul style="list-style-type: none"> • Leading Executing Agency in partnership with MME • Leading Agency of the NPSC • Also Executing Agency of the Chiller Demonstration Project funded by MLF, so responsible for project linkages. Active leader in the implementation of the demonstration component for replacement of CFC chillers. Sub-partners include IUM and PROZON (outcome 3) • Responsible in partnership with MME to ensure the launch of the PPGM. (outcome 4) • Co-financing in kind with activities in the CFC sector • Support / potential co-sponsorship to training activities • Active Member in the PBI (outcome 2) • Project website to be co-hosted by MME and MME
Ministerio de Minas e Energia - Ministry of Mines and Energy- (MME)		<ul style="list-style-type: none"> • Partner to MMA for operational purposes and linkages purposes for the project. • Responsible for linkages with PROCEL activities • Member of the NPSC • Responsible in partnership with MME to ensure the launch of the PPGM. (outcome 4) • Co-financing in kind for activities in the EE sector for building. • Support / potential co-sponsorship to training activities • Leader Member in the PBI (outcome 2). • Project website to be co-hosted by MME and MMA
BNDES (Development Bank of Brazil)	BNDES is a federal public company that is associated to the Ministry of Development, Industry and Foreign Trade, which has as an objective to long term financing of endeavors that contribute towards the development of the country.	<ul style="list-style-type: none"> • Financing (providing credit risk only) to clients directly or via commercial banks and complementing the PPGM program. • Special funds catering to EE including: <ul style="list-style-type: none"> ○ FINAME – Machinery and Equipment Purchasing, Financing the ESCO Customers, ○ PMAT – Public Lighting, Public Buildings Equity, and ○ RELUX for Municipalities. • Funding PROESCO, a special specific fund designed to meet the specific credit risk protection catering to the specificities of ESCOs.
ANEEL, Brazilian Electricity Regulatory Agency	Aneel's Mission - To provide favorable conditions for the electricity market to develop in a balanced environment amongst agents, for the benefit of society. Mandates electric energy distribution companies to invest	<ul style="list-style-type: none"> • Co-financing via the mandated EE program. • Supports the project

²⁷ These are possible roles. Final designations will be determined during the project inception.

Institution	Official Mandate	Role in project ²⁷
	in research and development (R&D), and in energy efficiency programs	
International Organizations		
UNDP-Brazil	Provision of TA grants for GOB's various energy and environmental projects	<ul style="list-style-type: none"> • GEF Implementing Agency;
Inter-American Development Bank	Provision of loans and TA grants for GOB's various energy and Environment projects	<ul style="list-style-type: none"> • Co-implementing Agency in charge of the oversight of the PPGM (Outcome 4) as described in the different sections of the project documents.
USAID (The United States Agency for International Development),	Technical and grants assistance to developing countries from the Government of USA including various environmental and electrification	<ul style="list-style-type: none"> • Potential collaboration in first two years if willing to refocus on public building. Energy Program after 2007 is not yet secured. • Potential adviser to PBI because of previous work
The World Bank	Provision of loans and TA grants for GOB's various energy and environment projects	<ul style="list-style-type: none"> • Linkage with the activities of the 3 country energy efficiency initiatives (India, China, Brazil) • Potential linkage activities in the energy and environment sector
IFC	Provision of loan to provide sector for various energy and environment projects or equity in ESCOs	<ul style="list-style-type: none"> • Potential linkage activities in the energy and environment sector.
Private Sector		
AES-ESCO, ESCO Light, Efficienca, etc	Private sector utility linked ESCOs, with an interest on the growing market, including co-financing from their ANEEL obligations	<ul style="list-style-type: none"> • Participation as active implementers • Co-financing by access fund contribution from the ANEEL obligation especially for public and social sector
Harmonia, private insurance companies		<ul style="list-style-type: none"> • Support / participation in the PPGM
ITAU, Banco Real, etc.	- Banks with a particular known interest in the EE sector	<ul style="list-style-type: none"> • Funding of ESCOs
Academic and Professional Associations		
ABESCO (<u>Associação Brasileira das Empresas de Serviços de Conservação de Energia</u>) Association of Brazilian Energy Service Companies	ABESCO's mission includes the promotion of the energy efficiency industry in Brazil and the competitive improvement of Brazilian companies through the sustainable development.	<ul style="list-style-type: none"> • Advising member of the BPBEEI • Potential co-organizer of training / marketing activities focused on ESCOs. • Beneficiary of training / marketing activities
ABRAVA (Associação Brasileira de refrigeradores, ar condicionado, ventilação e aquecimento)	The association of HVAC manufacturers and installers.	<ul style="list-style-type: none"> • Collaboration with ESCOs for implementation of projects (in operation and potentially in marketing, access to clients) • Linkage on proper disposal / reclaiming of used CFC • Linkage on training on HVAC (trainers and trainee)
Federação Brasileira dos Bancos (FEBRABAN)		<ul style="list-style-type: none"> • Potential trainee/ partner, and linkage to banks for financing of EE programs

PART III. Terms and Conditions for THE PARTIAL PERFORMANCE GUARANTEE MECHANISM

Sponsors	United Nations Development Program (“UNDP”) and the Inter-American Development Bank (“IDB”).
Guarantee Facility	<p>Partial Performance Guarantee Mechanism (“PPGM”) for the issuance of Performance Guarantees in respect of energy efficiency projects (“EE Projects”) implemented by qualified Energy Savings Companies (“ESCOs”) and their clients (“Clients”) in Brazil, evidenced by energy efficiency implementation contracts (“EE Contracts”). The EE Projects will comply with the Eligibility Criteria.</p> <p>It is anticipated that the proposed PPGM will consist of two guarantee tranches: (a) US\$10 million Global Environment Facility (“GEF”) guarantee facility, 100% backed by a cash reserve fund provided by a GEF grant to the IDB; and (b) US\$15 million IDB Partial Credit Guarantee (“PCG”) facility, in local currency equivalent, backed by the IDB’s AAA credit rating.</p>
Beneficiaries	(a) Brazilian banks (“Lenders”) lending to ESCOs or Clients, for up to 100% of the loan amount, using the EE Contract as collateral, and (b) Clients, for the energy savings guaranteed to them by the ESCO under the EE Contract.
Eligibility Criteria	To be determined by the Sponsors, and expected to include (i) minimum and maximum EE Project and EE Contract sizes, (ii) minimum and maximum Performance Guarantee amounts, (iii) proven technologies, (iv) EE Contract types pre-approved by the Sponsors, (v) EE Projects complying with the IDB’s environmental and social requirements, and (vi) counterparties (ESCOs, Clients and Lenders) fulfilling certain eligibility criteria to be determined, and not involved in activities on the IDB Exclusion List and complying with the Administrator’s integrity screening procedure.
Administrator	To be selected jointly by the Sponsors, through competitive bidding, to administer the PPGM. The Sponsors will develop detailed governance, oversight, reporting and operating procedures, including pricing and diversification guidelines, to be followed by the Administrator for the PPGM. The Administrator will review project proposals for satisfaction of Eligibility Criteria and request issuance of Performance Guarantees by the Guarantor. The Administrator will have an environmental and social procedure (to be defined) to ensure that the EE Projects being guaranteed comply with the IDB’s environmental and social requirements, and an integrity screening procedure (to be defined), to ensure that the Sponsors do not incur any reputation risks. The Administrator will be responsible for monitoring the portfolio of Performance Guarantees issued, keep appropriate books and records, and will provide periodic reports to the Guarantor.
Guarantor of Record	IDB (the “Guarantor”). The Beneficiaries will each receive a single Performance Guarantee issued by the IDB.
Co-Guarantor	Trustee of US\$10 million to be deposited and maintained in US Dollars by the GEF in a Trust Account to

	be pledged in favor of the Guarantor for as long as PPGM remains in effect
Monitoring	<p>The Guarantor will monitor the PPGM through the reports of the Administrator and will make the reports available to the Co-Guarantor. The Guarantor shall have the right to review the operations and financial records of the Administrator and to appoint a independent auditor for the purposes of performing an audit on the books of the Administrator, to inspect the procedures used to recover defaulted Eligible Projects and to review the operations of the Administrator for the purpose of developing and enhancing best practices and implementing improvements based on the Administrator’s record.</p> <p>The Guarantor shall exercise the same degree of care and diligence in the discharge of its responsibilities herein as its exercises with respect to the monitoring of its Private sector projects²⁸.</p> <p>The IDB, as per the Coordination Agreement to be signed with UNDP related to the implementation of the PPGM, the IDB undertakes to "coordinate and assume primary responsibility for the supervision and accountability of the US\$10 million GEF grant for the PPGM including ensuring that annual audits are performed on the PPGM, in accordance with the provisions of the IDB Direct Access to GEF Resources MOU".</p>
Availability Period	<p>The period during which the Administrator may issue Guarantees will be 5 years.</p> <p>During the Availability Period the PPGM Administrator will receive requests from ESCOs, Clients or Lenders, for the issuance of Performance Guarantees in respect of EE Projects. As long as the EE Projects meet the Eligibility Criteria, and there are sufficient funds in the Trust Account, the Administrator will request the Guarantor to issue Performance Guarantees. The Administrator’s request must demonstrate that the Eligibility Criteria have been met and must be accompanied by an information package, contents to be agreed, and expected to include information on the counterparties and a description of the EE Project. The Guarantor will issue the Guarantee within [10] business days of receipt of the request from the Administrator.</p>
Maximum Performance Guarantee Tenor	Each Performance Guarantee will have a final expiry date of no more than 7 years after issuance.
Performance Guarantee Structure	<p>While each Performance Guarantee will be a single seamless guarantee in favor of each Beneficiary, it will consist of at least the B Tranche and up to three Tranches, as follows:</p> <p>Tranche A: up to 50% of the bank loan amount in favor of the Lender, unfunded and backstopped by the IDB’s AAA credit rating;</p> <p>Tranche B: up to 50% of the bank loan amount in favor of the Lender, funded and 100% backstopped by funds in the Co-Guarantor’s Trust Account;</p> <p>Tranche C: the energy savings guaranteed to the Client under the EE Contract, 100% backstopped by funds in the Co-Guarantor’s Trust Account.</p>
Ranking	<p>Upon a call on a Performance Guarantee by a Beneficiary, the order of disbursement will be as follows²⁹:</p> <p>First: Tranches B and/or C</p> <p>Second: Tranche A</p> <p>The ranking of recovery rights against the ESCO will be as follows:</p> <p>First: Tranche A</p> <p>Second: Tranches B and/or C</p> <p>This arrangement will be reflected in an Intercreditor Agreement between the Guarantor and the Co-Guarantor.</p> <p>The Guarantor and the Co-Guarantor may instruct the Administrator to enforce and implement their respective recovery rights against the ESCO.</p>

²⁸ The provisions of the IDB Direct Access to GEF Resources MOU are incorporated in the Coordination Agreement and are binding on the IDB. In addition, the Financial Procedures Agreement between the IDB and the IBRD (as Trustee of the GEF) dated as of May 19, 2004 states that, “IADB shall exercise the same degree of care and diligence in the discharge of its functions under this Agreement as it exercises with respect to the administration and management of its own resources.”

Reimbursement Agreements	<p>The Guarantor and the Co-Guarantor will enter into a Master Reimbursement Agreement governing the reimbursement obligations of the Co-Guarantor to the Guarantor in the event that Tranches B and/or C of any Performance Guarantee, or part thereof, are disbursed by the Guarantor. The Co-Guarantor’s reimbursement obligations will be 100% cash collateralized in favor of the Guarantor through a pledge over the Trust Account.</p> <p>The Administrator will ensure that the ESCO signs a Reimbursement Agreement, governing the on-demand reimbursement obligations of the ESCO to the Guarantor in the event that Tranche A of the Performance Guarantee, or part thereof, is disbursed.</p> <p>The Administrator will ensure that the ESCO signs a Reimbursement Agreement, governing the reimbursement obligations of the ESCO to the Co-Guarantor in the event that Tranche B and/or C of the Performance Guarantee, or part thereof, are disbursed.</p>
Guarantor’s Step-In Rights	<p>The terms of the EE Contracts, the Performance Guarantees and the Reimbursement Agreements will contain step-in rights in favor of the Guarantor, enabling the Guarantor to replace the defaulting ESCO or seek other remedies to maintain the EE Contract in full force and effect, such as enforcement of any warranties or liquidated damages provided by equipment suppliers, service providers or subcontractors in favor of the ESCO.</p> <p>The Guarantor may instruct the Administrator to enforce and implement collection, foreclosure and its step-in rights.</p>
Performance Guarantee Coverage	<p>The Performance Guarantee will cover performance risk of the ESCO only, the legal definition of “performance” to be acceptable to the Sponsors and to the Beneficiaries. It is expected that the definition of performance will be based on an objective measurement of energy savings and clear, strictly performance-related reasons for failure to achieve the contracted energy savings.</p> <p>The Performance Guarantee will become effective only upon completion and acceptance of the EE Project.</p> <p>The Performance Guarantee will be unconditional with the following exceptions: the Guarantor may have the right to terminate the Performance Guarantee a) upon non-payment of the Guarantee Premium and/or b) upon the amendment of the terms and conditions of bank loan to increase the amount of the loan or extend its tenor or otherwise increase in any material respect, in the reasonable opinion of the Guarantor, the risk accepted by the Guarantor by virtue of having issued the Performance Guarantee.</p> <p>The Guarantor will pay to the Lender the shortfall between the actual energy savings generated under the EE Contract and the contracted amount, as these amounts fall due. The Performance Guarantee will not be subject to acceleration.</p>
Conditions Precedent to Issuance of Performance Guarantees	To be determined by the Sponsors and monitored by the Administrator.
Maximum IDB Liability	In aggregate, US\$15 million.
Maximum Co-Guarantor Liability	In aggregate, US\$10 million.

²⁹ The risk to be assumed by the GEF grant in the PPGM is well mitigated under the proposed structure. Firstly, the GEF funds are not exposed to construction or installation risk, since the PPGM Guarantee will be effective only after acceptance of the project. Secondly, the ESCO will absorb the first layer of losses. ESCOs eligible for PPGM support should be highly incentivized to perform because of their financial exposure under the PPGM. Thirdly, the step in rights that the PPGM Administrator should have (i.e. to replace a defaulting ESCO), as well as benefits from performance guarantees and liquidated damages from equipment manufacturers, mitigate the risk of losses under the PPGM in excess of the first layer of amounts defaulted on by the original ESCO.

Under the Bank's policies, the IDB cannot guarantee instruments other than debt; therefore any guarantees covering savings to the client that do not represent debt service would have to be covered by the GEF grant. In general, the IDB's position in respect of the GEF funds is considered appropriate since this is the IDB's first project as a guarantor of energy efficiency performance risk and technology risk. A successful track record due to a high level of risk mitigation and a reduced likelihood of loss in this initial operation should allow the Bank to participate in future energy efficiency projects in its Borrowing Member Countries and possibly replicate the PPGM.

Currency	The Performance Guarantee will be denominated in local currency, subject to a maximum cap in US Dollars. If disbursed, the reimbursement obligation of the Co-Guarantor will be for the amount in US Dollars actually disbursed. In order to comply with Brazilian regulations governing the issue of local currency guarantees by multilaterals, the reimbursement obligation of the ESCOs will be in local currency in the local currency amount actually disbursed.
PPGM Documentation	<ol style="list-style-type: none"> 1. An PPGM Administration Agreement between the Administrator and the Sponsors setting out the terms and conditions of the PPGM; 2. A form Performance Guarantee; 3. Master Reimbursement Agreement between the Guarantor and the Co-Guarantor; 4. A form Reimbursement Agreement between the Guarantor, the Co-Guarantor and the ESCO; 5. Trust Agreement. The UNDP will create a Trust under Delaware laws, appoint a Trustee, and sign a Trust Agreement] 6. Inter-creditor Agreement between the Guarantor and the Co-Guarantor; 7. Up to 4 approved EE Contract types. <p>1, 2, 3, and 4 each under New York law.</p>
PRICING, FEES, COSTS AND EXPENSES	
IDB Analysis Fee	Will be covered by the IDB IA fee received from GEF
Due Diligence Expenses	The due diligence expenses will be partially covered by interest income of the US\$10 million GEF cash contribution to the PPGM component of the project Trust and partially by the TA component of the same outcome.
Legal Fees & Expenses	The legal expenses will be covered by interest income of the US\$10 million GEF cash contribution to the PPGM component of the project Trust.
Payment of the Administrator	The Administrator will be remunerated by the interest income generated by the GEF deposit contained in the Trust and/or by a portion of the Performance Guarantee Premium and fees charged to clients.
IDB Monitoring Fee	Will be covered by the IDB IA fee received from GEF
Performance Guarantee Premium	The ESCO will pay the Guarantor and the Co-Guarantor a premium based on the outstanding amounts available under each Performance Guarantee, to be determined based on the type of risk assumed by the Guarantor and Co-Guarantor and based on relevant benchmarks.
Interest Rate	Reimbursement obligations of the ESCO following a disbursement under a Performance Guarantee will accrue at a default interest rate to be determined.

PART IV. Training Activities for Outcome 1

Training Plan

The Plan was divided by types of target public.

- For administrators/owner buildings,

Course	Place	Duration	# of trainees	Cost US\$
Energy Management of Buildings	10 cities ³⁰	1 day – 8 hours	10 x 20	10 x 2,500
Understanding Performance Contract and how to get bank financing	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Energy Efficiency in Buildings - Overview	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Monitoring the Performance Contract	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
TOTAL			800	US\$100,000

- For technical staff of buildings,

Course	Place	Duration	# of trainees	Cost US\$
Energy Management of Buildings	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
How to implement the Performance Contract	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Monitoring & verification - user's view	10 cities	1 day - 8 hours	10 x 20	10 x 2,500
EE technologies on buildings	10 cities	3 days – 24 hours	10 x 20	10 x 3,500
Air conditioning systems management	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Air conditioning systems maintenance and operation	10 cities	3 days – 24 hours	10 x 20	10 x 4,000
EE CFC-free chillers	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
TOTAL			1,400	US\$210,000

³⁰ The 8 biggest cities in Brazil plus the biggest cities of north and Middle East regions.

- For service providers (consultants and ESCOs),

Course	Place	Duration	# of trainees	Cost USUS\$
Selling Performance Contracts	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Monitoring and verification	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Improving the identification and formulation of EE projects	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Improving the implementation and management of EE projects	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Financing EPC and EE projects	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Design of HVAC systems	10 cities	3 days - 24 hours	10 x 20	10 x 4,000
Operation and maintenance of HVAC systems	10 cities	3 days - 24 hours	10 x 20	10 x 4,000
EE and green technologies on buildings	10 cities	2 days - 16 hours	10 x 20	10 x 2,500
Analysis and evaluation of thermal EE project	10 cities	2 days - 16 hours	10 x 20	10 x 2,500
TOTAL			1,800	US\$295,000

- For architects and engineers to promote the building regulation as requested by PROCEL,

Course	Place	Duration	# of trainees	Cost USUS\$
Energetic performance Simulation	10 cities	5 days – 40 hours	10 x 20	10 x 4500
Applying the Regulation	10 cities	3 days – 24 hours	10 x 20	10 x 4000
EE in building designs	10 cities	5 days – 40 hours	10 x 20	10 x 4500
TOTAL			600	US\$130,000

- For Banks and other Financial institutions

Course	Place	Duration	# of trainees	Cost USUS\$
Understanding EE market and projects	4 cities	1 day – 8 hours	10 x 20	4 x 2,500
Understanding Escos and Performance Contracts	4 cities	1 day – 8 hours	10 x 20	4 x 2,500
TOTAL			400	US\$20,000

GRAND TOTAL

Total # of trainees: 5,000
 Cost for training: US\$755,000

Co-Financing (DSA) 10,000 man days X US\$50/day = US\$500,000

PART V. Training Activities for Outcome 2, 3 and 4

Training Plan

- For Administrators and technical staff of public buildings

Assumptions:

- There are around 5,000 federal public buildings and more than 10,000 state public buildings.
- Proposal: The training should be distributed around the country in at least 2 cities of each geographical region, so for each course it should be repeated 10 times

Course	Place	Duration	# of trainees	Cost USUS\$
Energy Management on Public Buildings	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Understanding Performance Contract	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
Performance Contract Procurement	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
Energy Efficiency in Public Buildings	10 cities	3 days – 24 hours	10 x 20	10 x 4,000
How to do a Performance Contract in public sector	10 cities	4 days – 32 hours	10 x 20	10 x 4,500
EE benefits and its impacts	10 cities	1 day – 8 hours	10 x 20	10 x 2,500
			1,200	US\$195,000

- For service providers (consultants and ESCOs) a complementary training dedicated to public buildings will be provided.

Course	Place	Duration	# of trainees	Cost USUS\$
Performance Contract Procurement	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
How to implement a Performance Contract in public sector	10 cities	2 days – 16 hours	10 x 20	10 x 3,500
			400	US\$70,000

TOTAL

Total # of trainees: 1,600
 Cost for training: US\$265,000US\$

Co-financing (DSA) 3,200 X US\$50/day = US\$160,000

Activities for Outcome 3 ‘Interest enhanced in the replacement of energy-inefficient CFC-using chillers’:

- Technical training to 120 professionals (design engineers, ESCOs, building owners/operators, entrepreneurs, etc.) in CFC-based chiller replacement.
- On-the job exercises to professionals on EE improvement combined with HVAC equipment replacement.
- Draft Technical guides on CFC-based chiller replacement for professionals;
- Implementation of 36 pilot projects to evaluate the impact of the proposed CFC-based chillers replacement program.

Activities for Outcome 4 ‘PPGM made available to stimulate EE investment through ESCOs’:

- Carry out the due diligence process
- Select the administrator and establish the PPGM
- Issue performance guarantees to 97 projects
- Implement the exit strategy

PART VI. STAP expert review and IA/EA response

Howard Geller
 March 23, 2006
 Executive Director
 Southwest Energy Efficiency Project (SWEEP)
 2260 Baseline Rd. #212
 Boulder, CO 80302
 Ph: 303-447-0078 x1
 Email: hgeller@swenergy.org
 Web: www.swenergy.org

1. General Overview
Thank you for the opportunity to review this project. The design of the project has been improved considerably since an earlier version that I first reviewed. These improvements include clarifications such as explaining that non-chiller replacement projects will be eligible for support through the PPGM and using a more realistic CO ₂ emissions coefficient to estimate the projected CO ₂ emissions reduction. Also, the initiation of the PROESCO credit risk guarantee initiative is a significant development that should help to make the project a success. <u>In general I believe the project is well-designed and that there are good prospects for success, and I recommend approval.</u>
Comments : Responses to specific comments below:

2. Specific comments, observations and questions	
STAP Comments	Responses to STAP Comments and Corresponding Changes in the Document (in bold)
<p>1. As the project description states, it costs a lot of money to replace an older chiller with a new chiller and the payback period based on the electricity savings can be long, normally more than five years and in some cases 10 years or more. The idea of combining chiller replacement with more cost-effective efficiency measures such as lighting retrofits has now been fully incorporated into the project design. This should increase the likelihood that building owners will agree to undertake major energy retrofits.</p> <p>I recommend that the interest in and market for chiller replacement be carefully monitored as the project is implemented. Based on this experience, it may be desirable to adjust the project focus over time. For example, if there is interest in chiller replacements in hotels and hospitals but not large office buildings, marketing should be directed to the more receptive sectors. Or if there is little interest in chiller replacement entirely, more focus should be given to promoting lighting and HVAC system retrofits. Likewise the balance between marketing to the private and public sectors should be adjusted based on the receptivity of these different sectors and their willingness to implement major energy efficiency projects.</p>	<p>This project proposes a partial performance guarantee mechanism that is fully market-driven, it will complement the work of credit risk initiatives such as PROESCO of BNDES and support the expansion of the work of ESCOs.</p> <p>It promotes energy efficiency in buildings, including lighting and HVAC systems. As you suggest there may be a tendency from the private sector to concentrate on the more cost effective sectors such as lighting retrofits, nevertheless in the case of hospitals, major savings are to be made in the HVAC systems that make them attractive to ESCOs too. The project is not focusing on promoting one technology against another one, it will use ESCOs as the delivery mechanism and will give them all the flexibility to develop the most comprehensive and interesting project possible for each case.</p> <p>However, as you mention there is need for flexibility and thus a comprehensive monitoring and evaluation system has been included in the project to allow for timely adjustments to ensure that its objectives</p>

2. Specific comments, observations and questions	
STAP Comments	Responses to STAP Comments and Corresponding Changes in the Document (in bold)
<p>I have a concern that the private sector will prefer more cost-effective energy efficiency (EE) measures such as lighting retrofits and will not be very interested in combining these measures with more costly chiller replacement. If this is the case, I recommend figuring out some explicit ways to promote project bundling. For example, the PPGM could provide less guarantee coverage (say 50% maximum) for lighting retrofits and greater coverage (say up to 90%) for HVAC retrofits or projects that combine chiller replacement with other measures.</p>	<p>are fully met.</p>
<p>2. The Public Building Initiative (PBI) is focused on promoting energy performance contracting and ESCO services in the public sector. The use of ESCOs and performance contracting in the public sector is commonplace and successful in other countries such as the United States and Canada. There is great potential for EE improvement in the public sector in Brazil as well, but so far there has been very limited use of ESCOs and performance contracting to implement EE projects in the public sector.</p> <p>But there are very significant legal and regulatory barriers such as the Law 8666 that inhibit performance contracting from occurring in the public sector in Brazil. In order to make the PBI a success it may be necessary to revise these laws and regulations. The PD notes the importance of these barriers and talks about working to remove them. Legal and regulatory reform should be the primary focus of the project in terms of working with the public sector in my view, securing as much support from GOB as is possible. The GOB will need to make these reforms; the project can only provide advice and assistance to the GOB. But the PBI should make use of legal and regulatory experts (consultants) to do draft proposed legal and regulatory changes, for example.</p> <p>Also, I recommend that the PBI look carefully at how success in the public sector has been achieved in other countries including contracting terms, financing mechanisms, and performance verification techniques. This experience should be transferred to Brazil where appropriate. It may be desirable to have foreign experts on performance contracting in the public sector advise the project, or send project representatives abroad to meet with key ESCOs and governmental officials responsible for performance contracting to learn how this success was achieved.</p>	<p>We totally agree with this comment. The PBI component was designed based on the Canadian Federal Building Initiative that initially focused on developing the right legal framework to enable the ESCO concept to be used at the federal level in Canada, and then promoted the concept throughout the federal building managers and operators level, to finally expand to other public sectors such as the provincial and the municipal ones.</p> <p>The PBI has been developed under the assumptions that:</p> <p>For the first years, the initiative would focus essentially on the legal framework to be adopted in Brazil, analyzing the existing laws and regulations and proposing the most feasible modifications.</p> <p>On a second phase it will promote EE in public buildings by using the ESCO approach and carry out capacity building activities.</p> <p>To implement these tasks there is a provision for TA within PBI that has been reserved to exactly meet the recommendations presented here.</p> <p>We therefore believe that this comment is very relevant and that the proposed approach is fully integrated at this time in the PBI design.</p>
<p>3. With respect to marketing energy efficiency services and in particular chiller replacement to the private sector, one suggestion is to identify multi-national companies that have implemented energy efficiency projects on a wide scale in their home country and urge them to do so in Brazil as well, using ESCOs and performance contracting if they lack the capital and know-how in Brazil. Companies such as Johnson & Johnson, 3M, Dow Chemical, and IBM are well-known for their active pursuit of energy savings in the U.S., and these companies could be good candidates for participation in the</p>	<p>This is a good suggestion that could be promoted through the training to be provided to consultants and ESCOs as part of Outcome 1 'Enhanced EE investments in private and public sector buildings' and incorporated to the marketing strategy of the same Outcome. Large corporations will be included as a key sector for the promotion of EE in buildings activities.</p>

2. Specific comments, observations and questions	
STAP Comments	Responses to STAP Comments and Corresponding Changes in the Document (in bold)
project in their operation in Brazil.	
4. Regarding project implementation, I think it is appropriate to form a National Project Steering Committee (NPSC) with representatives from different agencies. But I think it might be desirable to have a lead agency as well. The lead agency could be responsible for chairing and convening the NPSC, taking the lead in initiating and supervising monitoring and evaluation activities (which should be independent from the PMU since it is the work of the PMU that will be evaluated). I am not sure which agency is most appropriate to be the lead agency, but the agency best qualified and most willing to take on this responsibility should be selected.	The Ministry of Environment will be the leading agency in the NPSC. See PART II of ProDoc ‘Stakeholder Involvement Plan’.
5. In order to increase the chance of project success, I have the following suggestion. Assuming the PMU is a private company (or consortium of companies) hired through a RFP process, I suggest including performance incentives in the contract with this entity. In particular, I suggest limiting the payment to the PMU to cost recover only (i.e., no profit) if the project is not a success in terms of the number and size of EE projects that go forward under the PPGM and BPI. However, if the project is a success, I suggest providing bonus payments to the PMU on a sliding scale. The sliding scale could be designed along the following lines: bonus level 1 at 50% success, bonus level 2 at 75% success, bonus level 3 at 100% success, bonus level 4 at 125% success, and bonus level 5 at 150% or greater success. The bonus levels can be defined as a fraction of the contract size (i.e., bonus level 1 is 2%, bonus level 2 is 4%, etc.). Success can be determined based on either the quantity of EE projects that are implemented (in R\$) or the energy savings achieved (or some combination of the two), with 100% success the levels identified in the PD. This type of bonus scheme has been used successfully in the U.S. when utilities or government agencies have hired contractors to implement complex EE programs. If adopted, the bonus scheme should be based on concrete results such as the level of EE project investment and energy savings, not on intermediate activities such as the number of training courses implemented.	We agree on this suggestion of incorporating a system of performance bonus, indeed the PPGM Term Sheet presented in Part II (page 48) of the Pro Doc, contemplates this idea of performance bonus. Nevertheless, these incentives should focus on the PPGM Administrator and not on the PMU. This because the main function of the national Project Management Unit (PMU) would be to oversee the administration of all activities with specific emphasis on the management of the PBI, while the PPGM Administration will be in charge of performing project appraisals, providing guarantees for qualified projects, monitoring guaranteed projects, etc. The exact modalities of the bonus system for the PPGM Administrator will need to be defined at project inception stage.
6. Regarding the issue of sustainability, I have a question about what happens to the PPGM after the 7-year project ends. What if there is a remaining balance in the PPGM at this time? (Hopefully there will be a balance.) Does this money revert back to the GEF or does it remain in Brazil? If it remains in Brazil, who will get it and what will it be used for? This should be explained in the PD.	There are a number of options that have been evaluated as possible exit strategy for the PPGM, these include: Converting the remaining funds to an EE technical assistance program if by the end of the project, FIs have gained confidence in the value of EE projects in buildings in general, and in performance contracting mechanisms in particular, and will be interested in funding these types of projects in an ongoing manner, even in the absence of the PPGM facility. Auctioning the mechanism to a private sector institution. The funds are transferred to BNDES to be used as a mechanism to reduce the interest rates on loans to be provided through PROESCO or

2. Specific comments, observations and questions	
STAP Comments	Responses to STAP Comments and Corresponding Changes in the Document (in bold)
	<p>others mechanisms that would aim at promoting energy efficiency projects.</p> <p>The second option has been proposed in the project document because it is expected that the PPGM will generate a positive cash flow by the seventh year of operation which will make it an attractive entity for private ownership and because this option will generate additional leverage of GEF resources.</p> <p>However, the exit strategy will have to be decided by the Project Steering Committee based on the mechanism uptake, market transformation effects and relevance over the years.</p>
<p>7. The proposal does not discuss at any length the potential contribution of distribution utilities to the project. Distribution utilities in Brazil are required to spend a minimum amount of money on promoting energy efficiency by their customers. It could be very valuable to have distribution utilities offer financial incentives to customers who replace older inefficient chillers with new high efficiency chillers as this would reduce the payback period for the building owner. I suggest that the project conduct outreach to distribution utilities and encourage them to participate in this manner, in partnership with this government-led market transformation project. Note that this is different from ESCOs owned by utilities participating in the project as a provider of energy efficiency services.</p>	<p>Distribution Utilities are critical partners for the success of the project, indeed AES Eletropaulo, a utility based in Sao Paulo, has been working closely with UNDP during development of the project and is a key private sector partner that will co-finance the project partially through its ANEEL obligation. Attached in PART I of the ProDoc is the Letters of intent and co-financing of AES.</p> <p>Furthermore, AES Eletropaulo has recently launched the “Integrated solution business concept” to encourage clients to transition to new CFC-free chillers and related systems improvement. AES is interested in launching such a business model in partnership with the GEF and UNDP, not only in the region of Sao Paulo, but also through partnership with other utilities which operate in other areas of Brazil.</p>
<p>8. Regarding the estimated electricity savings and reduction in greenhouse gas emissions, I believe the estimate of potential electricity savings is reasonable assuming the project is successful. The emissions coefficient of 500 kg of CO₂ per MWh of electricity savings is also reasonable in my view.</p>	<p>No response is required.</p>

PART VII. Gef Review and IA Response

Please refer to Annex C of the Executive Summary

PART VIII. PPGM Guarantee Exposure and Investment Leveraging

Average amount of each gtee	450,000
Average tenor (years)	5
Financing % by banks	90%
Interest rate on US\$ account	4%
Annual premium to Administrator *	1%
Fees per guarantee issued to Administrator*	1%
* Total premium and fees charged to ESCOs	3/4%
Default rate on GEF deposit	5%

Exposure Forecast	1	2	3	4	5	6	7	Total Gtees
Number of Gtees issued	0	20	36	12	13	16	0	97
Exposure increased	0	9,000,000	16,200,000	5,400,000	5,850,000	7,200,000	0	43,650,000
Exposure repaid	0	0	-1,800,000	-5,040,000	-6,120,000	-7,290,000	-8,730,000	Total Loans
Net exposure	0	9,000,000	23,400,000	23,760,000	23,490,000	23,400,000	14,670,000	48,015,000

Exposure Amortized	1	2	3	4	5	6	7	Total
	0	0	0	0	0	0	0	0
	9,000,000	0	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	9,000,000
	16,200,000	0	0	3,240,000	3,240,000	3,240,000	3,240,000	12,960,000
	5,400,000	0	0	0	1,080,000	1,080,000	1,080,000	3,240,000
	5,850,000	0	0	0	0	1,170,000	1,170,000	2,340,000
	7,200,000	0	0	0	0	0	1,440,000	1,440,000
	0	0	0	0	0	0	0	
Total amortization p.a.	0	0	1,800,000	5,040,000	6,120,000	7,290,000	8,730,000	

PPGM Revenues	1	2	3	4	5	6	7
GEF deposit bal net of defaults	10,000,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000
Interest income on GEF deposit	400,000	380,000	380,000	380,000	380,000	380,000	380,000
Interest available for due diligence	400,000	0	0	0	0	0	0
Interest available for Administrator	0	380,000	380,000	380,000	380,000	380,000	380,000
Fees for Administrator	0	90,000	162,000	54,000	58,500	72,000	0
Annual premium to Administrator	0	90,000	234,000	237,600	234,900	234,000	146,700
Max available for Administrator remuneration	0	560,000	776,000	671,600	673,400	686,000	526,700