

Brazil Mission Report

November 3, 2000

Developing Financial Intermediation Mechanisms
For Energy Efficiency Investments in Developing Countries

Date of Mission: October 16 – 20, 2000

Prepared For:

United Nations Foundation

Prepared By:

Strategic Guidance Associates
P. O. Box 308
Delmar, NY 12054

Consultant: Charles R. Guinn
Telephone: (518) 478-0748
straguinn@aol.com

Energy & Environmental Ventures LLC
23 Cardinal Road
Weston, CT 06883

Consultant: Sanford J. Selman
Telephone: (203) 227-4111
sselman@eeventures.com

Table of Contents

I. THE MARKET FOR ENERGY EFFICIENCY IN BRAZIL	3
INTRODUCTION.....	3
ENERGY PRICES.....	3
RELIABILITY.....	4
GOVERNMENT PROGRAMS	4
ENERGY EFFICIENCY SUPPLIERS	5
II. FINANCIAL MARKET OVERVIEW	6
INTRODUCTION.....	6
PUBLIC SECTOR CAPITAL SOURCES	7
<i>BNDES</i>	7
<i>FINEP</i>	7
<i>Global Reversion Reserve (RGR) fund</i>	8
<i>The World Bank & Global Environment Facility</i>	8
“PRIVATE” SECTOR CAPITAL SOURCES.....	9
<i>Commercial banks</i>	9
<i>Specialized funds</i>	10
<i>Distribution utilities</i>	11
<i>Pension funds</i>	12
<i>High Net Worth Individuals</i>	12
<i>Suppliers</i>	12
<i>Export Credit Agencies (ECAs)</i>	12
III. FINANCING ESCOS AND ENERGY EFFICIENCY PROJECTS	13
THE STATUS OF PROJECT FINANCE	13
THE SME CREDIT DILEMMA.....	14
<i>ESCO Guarantee Model</i>	14
<i>SEBRAE Model</i>	16
IV. IMPLICATIONS FOR WORLD BANK ENERGY EFFICIENCY PROJECT.....	19
V. BRAZILIAN WORKING GROUP.....	20
INITIAL LIST	20
CORE IMPLEMENTATION TEAM	21

I. The Market for Energy Efficiency in Brazil

Introduction

The climate for Brazilian energy efficiency is improving according to energy efficiency industry representatives, an industrial association representative, NGO representatives and public officials. The improved climate results from a number of drivers including:

- Rising energy prices especially electricity prices;
- Privatization of many state electricity distribution companies and the resulting end of subsidies, especially for industrial and commercial companies;
- Increasing concern about the reliability of the electricity system as demand growth outpaces supply growth in terms of both peak capacity and annual energy;
- Increased interest by the Government of Brazil in energy efficiency as a mitigating factor in the looming electricity shortage problem;
- Federal government initiatives to encourage energy efficiency such as the obligation by utilities to spend one percent of their revenues on energy efficiency and research and development, a Presidential decree to reduce energy use in public buildings by 20 percent, and a street lighting efficiency program; and
- A growing energy efficiency industry composed of energy service companies and energy efficiency equipment manufactures.

Energy Prices

Brazilian electricity prices range from about US\$30/MWh for high voltage customers up to about US\$90/MWh for commercial and industrial consumers. These prices are likely to rise in the future because:

- New electric generation is gas-fired and the natural gas from Bolivia is tied to oil prices in U.S. dollars;
- The marginal power on the Brazilian system is going to be thermal generation fueled by Bolivian natural gas which is indexed to the world price of oil in U.S. dollars; and
- Electricity price subsidies, especially to industrial and commercial customers, are ending as electric distribution utilities are privatized.

Rising electricity prices and the prospect for continued price increases is raising consumer interest in reducing their electricity expenditures through more efficient use of energy.

Reliability

The Brazilian electric system is now experiencing a lack of capacity (i.e. megawatts) to meet peak demands (brownouts occurred last summer) and there are looming problems in meeting annual electricity energy requirements. The current and potentially significantly greater reliability problems are a concern to the distribution utilities, their industrial and commercial customers and the Government of Brazil. Distribution utilities and their customers are beginning to seek measures to manage their peak demands, including investments in greater energy efficiency. The street light efficiency programs are an example of increasing interest.

The potential shortage of electricity energy (i.e. kilowatt-hours) arises from the Brazilian electric system being primarily a hydroelectric system with declining water levels in the reservoirs. Hydroelectric reserves have been drawn down for three consecutive years. The rising demand/supply gap is leading to great interest in reducing demand growth. Brazilian industrial associations are promoting greater energy efficiency to their members due to their increasing concern over electricity shortages.

Government Programs

ANEEL, the Federal electricity regulatory body, by resolution (1/26/1999) required all distribution utilities to spend one percent of their revenues on energy efficiency and research and development (0.25% end-users¹, 0.65% distribution system² and 0.10% R & D³) This resolution was replaced by a new resolution (1/27/2000) which allocated the one-percent in a different way (0.25% end-users, 0.25% distribution system and 0.50% R & D) until 1/2006. The new resolution calls for the allocation to change after 1/2006 (0.25% end-users, 0.75% R & D). The portion of ANEEL's funding on end-users is thought by Brazilian energy efficiency industry representatives to provide a means to jumpstart Brazilian energy service company development.

¹ Meaning energy efficiency and load management “behind” the meter

² Meaning measures to reinforce the reliability of the distribution system

³ Meaning energy-related R&D, including energy efficiency

Managers of public buildings are required by Presidential Decree 3,330 (1/6/2000) to reduce their building's energy consumption by 20 percent before 12/31/2002 unless their buildings are determined to already be energy efficiency by PROCEL. PROCEL will provide technical supervision to achieve the goal. The Decree requires the building manager to pay for the energy savings measures out of the savings achieved which would indicate the need for a performance contract with an ESCO (even though there is little financing for ESCOs as discussed later in this report.) ANEEL has the responsibility to regulate the necessary procedures to allow energy savings to be used to pay for the investments.

This Decree, if implemented, would create a huge market for energy service companies in public buildings. Some Brazilian energy service companies are developing initial projects in public buildings. However the barrier to implement the Decree is lack of reasonable domestic financing for such projects.

The third major Brazilian energy efficiency program targets street lighting. Nearly US\$550 million is available for this program over the next three years. The sources of the funds are 55 percent national RGR funds (raised from utility assessments), 30 percent utilities and 15 percent from municipalities. Brazilian energy service companies are involved in complementing this program. At least in one case an energy service company is providing a long term lighting service contract to a Brazilian municipality. The RGR program is scheduled to end in 2002.

The distribution utility or the municipality provides street lighting in Brazil. If the utility provides the lighting, the utility has an incentive to lower its costs through improved efficiency. If the municipality provides the lighting and is obligated to pay the distribution utility for the electricity used, it has an incentive to save costs through greater efficiency. Street lighting programs could be an early source of expanding the Brazilian energy efficiency industry.

Energy Efficiency Suppliers

The growing interest in energy efficiency by industrial, institutional and commercial consumers has led to the formation of Brazilian energy service companies, greater activity by engineering companies in energy efficiency consulting and increased efforts by energy efficient equipment manufacturers. The Association of Brazilian Energy Companies (ABESCO) has been formed and is promoting performance contracts. Johnson Controls, Siemens Building Systems and many others are active in marketing their energy efficiency equipment.

According to all energy efficiency industry members interviewed their major barrier to expanding their business is the lack of available financing especially for small and medium sized companies. The very high interest rates that may be available destroy the economics of most energy efficiency measures.

ISSUE: The missing element in developing a sustainable energy efficiency industry in Brazil is domestic commercial financing according to both energy efficiency providers and potential customers. Can the Brazilian financial sector currently provide reasonable loans for energy efficiency investments? If not what actions are necessary to cause this essential element to occur?

II. Financial Market Overview

Introduction

To say the Brazilian financial sector is in transition would indeed be an understatement. After some twenty years of hyperinflation, the Brazilian economy is presently experiencing a period of relative calm where inflation has settled down to a more rational 6 – 6.5% p.a. down from 20% p.a. just last year. However, the financial sector has not completely made the transition to this low inflation environment and, hence, the bank loan market for small and medium-sized enterprises (“SMEs”) is still typically characterized by very short loan tenors, extraordinarily high credit spreads and stringent guarantee and/or collateral requirements. Symptomatic of this “hangover”, the Banco Nacional de Desenvolvimento Econômico e Social (“BNDES”) is widely regarded as the only significant source of long-term (> 3 years) domestic capital for commercial loans.

But things are changing, albeit slowly. In the wake of the opening of the bank sector to private investment, there has been significant acquisition activity, and hence, consolidation in the past three years. In addition to acquisitions made by Brazilian banks, several foreign banks have entered the market for the first time by purchasing Brazilian banks and quickly gaining a foothold.⁴ As they move up the Brazilian learning curve and get more comfortable, these new market entrants can be

⁴ For example, ABN Amro (Netherlands) purchased Banco Real, Banco Santander (Spain) purchased Bozano Simonson, HSBC/Midland (Hong Kong) purchased Bramerindus.

expected to push the envelope of traditional Brazilian banking practices, hopefully easing credit conditions for SMEs, assuming the macroeconomic environment remains stable.

Public Sector Capital Sources

BNDES

Created in 1952 to promote the development of the country, BNDES is the chief federal agency for long-term funding in every sector of the economy. Its strategy focuses on industrial restructuring, infrastructure expansion and revamping, managing the Brazilian Privatization Program, supporting foreign trade, preserving the environment, and improving the competitiveness of agriculture and services. BNDES is a public company, fully-owned by the Federal Government.

BNDES is the undisputed “king” of long-term finance in Brazil directly providing long-term loans (e.g. 8 years) for large transactions (in excess of US\$7 million) as well as providing loans to Brazilian banks who on-lend, on a similar long-term basis, for smaller transactions. In general, BNDES is a balance sheet lender, that is, they extend capital based solely on the credit strength of the borrower, whether it be a large multinational company or a domestic bank. BNDES sources their capital from the Government of Brazil (Central Bank) and pays a cost of capital at or near the government’s cost of capital. At the moment, sovereign bonds sell for 300 to 500 basis points over comparable US Treasury bonds (“USTs”) and go out about 8 years. However, these terms are subject to wide fluctuations depending upon macroeconomic conditions.

FINEP

Financiadora de Estudos e Projetos (“FINEP”), or the Agency to Finance Studies and Projects, is a public organization founded in 1967 and linked to the Ministry of Science and Technology. FINEP’s goal is to promote technological development and innovation in Brazil. FINEP provides financing for a wide variety of activities for companies developing new technology including training, engineering studies, equipment, consulting studies and working capital. The terms of such financing are more favorable than available elsewhere in the country, for example, lines of credit for 10 years with a 2-year grace period at interest rates ranging from 12% - 16%.

Historically, FINEP was oriented to R&D as opposed to creation of new businesses. In association with SEBRAE, the Multilateral Investment Fund of the Inter-American Development Bank and the Petrobras pension fund, FINEP has launched the INOVAR Technology Investment Facility whose

goal is to leverage a US\$50 million investment by the four partners into US\$200 million in total investment, including participation by private equity funds, both inside and outside Brazil. FINEP hopes to do this by taking a hands-on approach to helping incipient companies at Brazilian universities develop business plans that will be attractive to private equity investors. In addition, FINEP will organize venture forums, develop a Brazilian venture capital internet portal, conduct networking events and conduct capacity building activities for venture capital professionals.

Finally, FINEP manages the FNDST, the National Fund for Development of Science and Technology, which finances university-based R&D. FNDST has been decreasing in importance over the past several years, however, it is now staged for dramatic growth owing to a provision included in concession contracts of the electric distribution utilities since 1999 requiring them to set aside 1% of their gross revenue for investment in energy efficiency amounting to some US\$150 million per year. Of this amount, 50% is to be allocated to FNDST for refurbishing university laboratories (40% of the 50%) and for investment in energy-related companies in the north and northeast of the country (60% of the 50%). There apparently is no specific regulatory guidance as to how FINEP is to apply these funds.

ISSUE: Can FNDST funds be channeled to support energy efficiency activities?

Global Reversion Reserve (RGR) fund

The RGR is a fund administered by Eletrobras to fund energy R&D and energy efficiency activities. It is funded by a surcharge on utility bills but is reported to be phased out by the end of 2002. It is understood that PROCEL's activities are supported by the RGR. Due to its limited life, the RGR is not seen as a long-term source of investment capital in energy efficiency.

ISSUE: Are there RGR funds, available now or prior to the end of 2004, that can be allocated to a specialized energy efficiency investment fund?

The World Bank & Global Environment Facility

The World Bank ("WB") and Global Environment Facility ("GEF") are planning to make a total of US\$58.4 million available to support energy efficiency activities in Brazil. This funding would come

in the form of a US\$43.4 million adaptable program loan from The World Bank to Eletrobras (with sovereign guarantee) and a US\$15 million grant from GEF. The funds would be allocated as follows:

Phase I – Demonstration and Capacity Building	Sub-Activities	Total Cost (US\$million)
Demonstration Projects	<ul style="list-style-type: none"> ▪ Various building envelope, DSM, street lighting and tariff setting projects 	90.2
Core Support Activities	<ul style="list-style-type: none"> ▪ Information dissemination and marketing 	8.9
	<ul style="list-style-type: none"> ▪ EE financing facility 	5.2
	<ul style="list-style-type: none"> ▪ Appliance testing, certification and labeling program 	3.4
	<ul style="list-style-type: none"> ▪ Market assessment of EE measures and equipment 	2.7
Capacity Building Module	<ul style="list-style-type: none"> ▪ Training and education 	3.8
	<ul style="list-style-type: none"> ▪ Support to federal/state regulatory agencies 	5.8
	<ul style="list-style-type: none"> ▪ Project management support 	5.5
Total Phase I		125.5
<p><i>Of this total, US\$67.1 million or 53% is expected to be contributed by local sources of funds.</i></p>		

ISSUE: Can the US\$5.2 million be used to catalyze the start-up of a specialized energy efficiency investment fund?

“Private” Sector Capital Sources

Commercial banks

Generally speaking, loan products from commercial banks range from 30 days to 3 years, absent BNDES financing. For SMEs, these loans are typically floating rate and priced as shown in [Table 1](#).

Larger, creditworthy companies who have access to financing in international markets have several additional options including commercial paper (180 – 360 days) and debentures (out to 5 years).

These instruments trade at rates typical of international markets.

The extraordinarily high credit spreads for SMEs are of special concern for the financing of ESCOs. This will be discussed further in the following sections.

Table 1 Domestic Debt Financing Options For Brazilian Companies (Rates expressed in US\$)

Type of Company	Product	Base Rate ⁵	Credit Spread	“All In” Rate
“Weak” SME	30 day – 3 year credit facility	11.0% p.a.	2 – 4% per month	40 - 50% p.a.
“Strong” SME	30 day – 3 year credit facility	11.0% p.a.	2 – 6% p.a.	13 – 16% p.a.
Large Company	30 day – 3 year credit facility	11.0% p.a.	2% p.a.	13% p.a.

Specialized funds

There are at least two specialized funds, A2R’s proposed Clean Technology Fund and the International Finance Corporation’s (“IFC”) Renewable Energy & Energy Efficiency Fund for Emerging Markets Ltd. (“REEF”), that could be tapped to provide capital for the energy efficiency sector.

A2R Ltda. (formerly Axial Renewable Resources) is headquartered in Sao Paulo and was spun out of Banco Axial which was created in 1997 to focus on niche markets, including the environment. A2R’s first venture fund, Terra Capital, is a US\$15 million biodiversity fund whose investors consist of the Multilateral Investment Fund (“MIF”) of the InterAmerican Development Bank (“IDB”), IFC, the Swiss government and high net worth individuals. In addition, there is a GEF grant to fund incremental (i.e., administrative) costs.

A2R plans to launch a Clean Technology Fund to focus on renewable energy and energy efficiency in Brazil, Argentina and Mexico. This fund is planned to have some US\$20 to \$25 million in equity for investment plus an additional US\$10 to \$15 million in debt available for lending (to be managed separately by the InterAmerican Investment Corporation, the private sector lending arm of the IDB). GEF is also expected to provide grant funding for incremental costs. So far, only the MIF money is committed so it is likely to be some time yet before this fund is officially launched.

⁵ The base rate is CDI or the Brazilian interbank rate

Launched in February 2000 with US\$65 million in initial capitalization, REEF seeks to make minority equity investments in private companies and projects in renewable energy generation, energy efficiency and conservation, and renewable energy/efficiency product manufacturing. The minimum investment is expected to be US\$1 million. Instruments include various forms of equity, convertible or subordinated debt with equity options, and bridge or term loans. REEF's investors include IFC, Alliant Energy Corporation, NUON Energie-Ondernemig, DEG, FINNFUND, VMH (Belgium), and John Hancock Life Insurance Company. REEF is co-managed by IFC, EIF Group and Energy House Capital Corporation.

Distribution utilities

Beginning in [1998?], concession contracts for electric distribution utilities require them to set aside 1% of gross revenue, some \$150 million annually, for investment in energy efficiency. The FNDST is supposed to receive 50% of this cash flow stream while the distribution utilities themselves are responsible for investing the other 50%. Certain utilities have established their own ESCOs funded from their 50% share while others have funded demonstration projects. It was reported in several of the meetings that, in general, the utilities are not spending or investing the full 1% as required even though their spending plans are submitted for annual review by ANEEL, an autonomous federal regulatory agency established in late 1997 to regulate the restructured power sector and its energy efficiency activities.

ISSUE: A more thorough inventory of the spending/investment plans of the distribution utilities should be conducted to ascertain the extent to which these funds can be captured in a specialized energy efficiency investment fund while giving the donor utility credit against its annual 1% spending requirement.

ISSUE: It is not understood what penalty, if any, exists for a non-complying utility with respect to the 1% spending requirement. If there is no discrete and effective penalty, then this levy as a source of funds for energy efficiency may be less certain than would otherwise appear.

Pension funds

It is understood from our discussions that pension funds are a source of long-term financing for real estate assets, including office buildings, etc. No pension funds were approached during the mission so it is not known what kinds of credit conditions are available from this type of lender.

ISSUE: If pension funds are a source of reasonably priced, long-term credit, is there a way to package an energy efficiency project financing so a pension fund can treat is like a real estate asset?

High Net Worth Individuals

One of the ESCOs reported that specific projects undertaken by their company were capitalized with investments made by high net worth (“HNW”) individuals. In any country, the HNW market is extremely fragmented and has a limited capacity for any particular transaction (i.e., individual investors typically invest up to US\$50,000 to US\$100,000 per transaction). For these reasons, the HNW market was not a focus of our investigation.

Suppliers

It was interesting to note that the ESCOs and equipment manufacturers interviewed did not report that manufacturers were stepping up to provide investment capital. Even very large companies with in-house finance capabilities, such as Siemens, were not planning on making investments themselves. In the independent power sector, for example, supplier financing is commonplace. It seems appropriate to not push any particular supplier to make financing available as that would bias the equipment purchase decision. Rather, competitive forces should and will be the driver for supplier financing.

Export Credit Agencies (ECAs)

In theory, imported equipment and services can be partially financed under an ECA loan or guarantee. No specific research has yet been undertaken to determine whether any (or all) of the major ECAs will provide cover (and if so, under what terms) for private or public sector energy efficiency projects or ESCOs.

III. Financing ESCOs and Energy Efficiency Projects

Financing for energy efficiency can generally be segmented into two kinds of finance:

- Corporate financing for ESCOs
- Project financing⁶ for projects

The Status of Project Finance

Project finance, or any form of structured finance for that manner, is not a well developed market in Brazil. In other emerging markets with active independent power programs, most new large privately-owned power stations financed in this manner. Moreover, privately-owned infrastructure financed in this manner includes toll roads, wastewater treatment plants, gas pipelines, and the like. By contrast, newly privatized Brazilian companies are most often financed on a corporate basis directly supported by the financial strength of their new corporate owners. The independent power market has not yet taken hold until the government promulgates policies⁷ that make project financing feasible. By the same token, the notion of cash flow-based lending is virtually non-existent in Brazil at this time, even though there are a number of foreign banks with very strong structured finance capability in other countries.

Until the SME financing issues discussed below are resolved, either through creation of a special energy efficiency investment fund, or as a result of credit becoming more available SMEs, it seems unlikely there will be much project financing of energy efficiency projects.

ISSUE: One possible exception to this conclusion is if energy efficiency projects can be made to look similar to accounts receivable financings now being undertaken by Brazilian banks. In other words, if the end user is deemed to be creditworthy (e.g. a large multinational company), it may be

⁶ The term “project finance” refers to a particular type of structured financing where a single purpose company (“SPC”) is established whose only assets are the equipment and contracts directly related to the project. The SPC is capitalized with equity plus debt that is limited recourse to the SPC’s shareholders. Repayment of SPC debt is based strictly upon the cash flow generated by the SPC.

⁷ In spite of a perceived shortage of power, the government has yet to establish a regulatory and commodity price framework with respect to wholesale natural gas and electric prices that would allow for project financing to take place, except perhaps with respect to industrial cogeneration projects.

considerably easier to finance energy efficiency improvements since credit risk of the end user addresses one of the lender's two primary concerns. The other major concern is whether the ESCO can install the energy saving measure properly have the predicted savings materialize.

The SME Credit Dilemma

A significant amount of time was spent trying to understand the barriers facing SMEs in obtaining credit on “reasonable” terms and what attempts have been made in the past to address this issue. In this regard, two credit schemes were reviewed:

- An ESCO-specific guarantee structure put forward by Econergy International as modified by BNDES
- A SME-specific guarantee fund advertised as being under the auspices of Servico de Apoio as Micro e Pequenas Empresas (“SEBRAE”) and administered by Banco do Brasil and BNDES

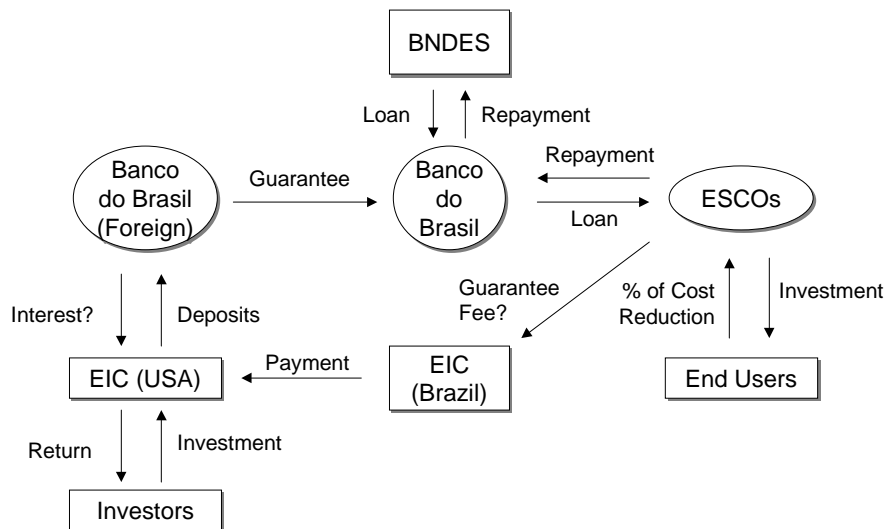
The central feature in each of these financing structures is a guarantee to a bank which serves as a precondition to the bank making a loan. This guarantee theme seems to permeate Brazilian banking practice and stands in contrast to banking practices in more mature financial sectors where banks structure and price risk. The thinking that a bank needs a guarantee in order to make a loan to a less-than-blue chip credit is a concept reinforced by the practices of BNDES and Banco do Brasil, a state-owned bank.

ESCO Guarantee Model

Econergy International Corporation, a Boulder, Colorado (USA) consultancy specialized in energy efficiency, in conjunction with Banco do Brasil, has proposed to set up a guarantee fund in Brazil to mobilize private sector lending for energy efficiency. Their suggested structure is shown below in Figure 1.

It should be emphasized this structure was not fully vetted during our discussions with BNDES, nor did we have an opportunity to review the structure with EIC. Our comments on this structure include:

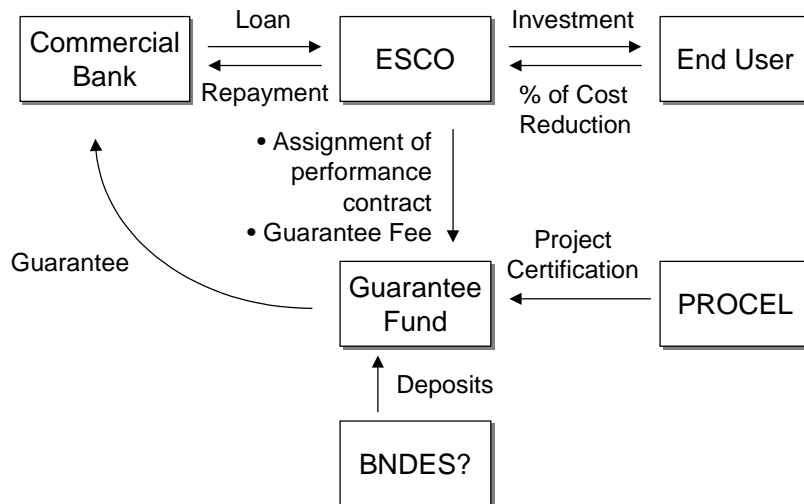
Figure 1 **Econergy International Corporation (“EIC”)/Banco do Brasil Guarantee Fund Structure**



1. It places EIC in a proprietary position with respect to BNDDES and Banco do Brasil participation.
2. It is not clear how or where EIC would be able to find investors to make the deposit in the offshore Banco do Brasil account. In the BNDDES meeting, a deposit of some US\$50 million was discussed.
3. The structure appears complicated and the investment case is not at all clear. It would appear a large volume of large energy efficiency projects would have to be undertaken in order to give the investors any kind of return.

This structure, as modified by BNDDES, is shown in Figure 2.

In this structure, a guarantee would be used in a more generic fashion to give a bank comfort as to the credit risk of an ESCO loan. As an added measure, PROCEL would be used to certify the technical merit of any proposed project. Presumably, no project could be financed unless endorsed by PROCEL.

Figure 2 **BNDES Guarantee Fund Structure**

There was little discussion of this structure and several questions are evident:

1. Who makes the guarantee? BNDES indicated they had the ability to make the guarantee although this seems out of character with their role as long-term lender. It was also discussed that GEF, Eletrobras and the 1% efficiency levy on distribution utilities could also be sources of guarantee funds.
2. Is the bank really taking any risk? It was mentioned that BNDES would put US\$3 million in a fund and the bank would be able to make US\$24 million worth of loans, an 8:1 ratio. If more than US\$3 million in loans go bad, BNDES stated they would still cover the risk. In this case, the 8:1 ratio is really a 1:1 ratio.
3. Banco do Brasil stated they would not take any risk on a smaller transaction and would look solely to the guarantee. They further stated they would price the ESCO loan, with the guarantee, at 300 basis points over their cost of funds. If they're not taking any risk, what is the justification for the 300 basis points?

SEBRAE Model

SEBRAE has been operating as a not-for-profit institution for the past ten years and its mission is to provide assistance to “micro and small”⁸ enterprises in Brazil. “Micro” enterprises are defined as

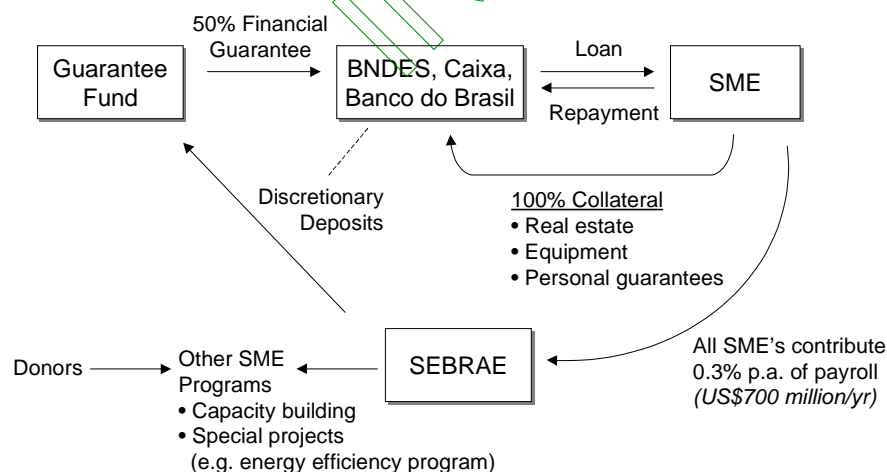
⁸ The nomenclature with SEBRAE is different as we typically refer to SMEs as small and medium-sized enterprises. However, given the nature of SEBRAE’s constituency, this difference may be merely semantics.

companies with as few as 25 employees and “small” companies are defined as having ~100 employees⁹. By law, all SMEs with at least 25 employees must contribute 0.3% of their payroll to SEBRAE each year, some *\$700 million annually*. In return, SEBRAE provides a variety of services to SMEs including:

- Training (financial management, etc.)
- Promotion of new business (e.g. development of export markets)
- Scaling up of small businesses
- Introduction of new technologies
- Workshops

In an effort to stimulate investment in SMEs, a loan program (Figure 3) was established five years ago by BNDES and Banco do Brasil. Under this scheme, a portion of the \$700 million that flows to SEBRAE is deposited in a Guarantee Fund and is used to mitigate the risk of loans made to SMEs by Banco do Brasil (as the lead lender and program administrator), Caixa (another commercial bank) and BNDES.

Figure 3 SEBRAE SME Loan Program



This SME loan program must be judged as unsuccessful overall. For example, in the State of Rio de Janeiro, just 150 loans in excess of one year tenor have been made in five years for roughly R\$25,000 each or about US\$2.5 million total. Of these, only 5 loans are non-performing. In the State of Minas Gerais, the region with the most “long-term” loan activity, some 2000 loans have been made at about

⁹ We did not obtain the statutory definitions of micro and small enterprises.

R\$20,000 each (~US\$25 million total) owing to the active promotion of the SME loan program by a state development bank. However, reportedly due to weak program administration, about 30% of these loans are non-performing. Countrywide, roughly one million loans have been made at an average of R\$17,000 each; however, 80% of the applications have been for working capital (<1 year tenor) loans. So far this year, 58% of the applications under the program have been approved but almost all of the approvals are for working capital loans. Hence, the program is doing precious little to provide long-term credit for the SME sector.

These results are astonishing in view of the fact that about \$250 million per year of the \$700 million SEBRAE revenue was earmarked for the Guarantee Fund. Since loan volume is so low, the participating banks determine how much money should flow into the Guarantee Fund, which stands at about US\$250 million at the present time. SEBRAE says it has essentially no control over the administration of the program and has no powers to approve or turn away applications even though prospective borrowers make their the initial loan application to SEBRAE. These powers reside primarily with Banco do Brasil, whose risk averse stance toward SMEs is well documented.

Additional shortcomings of the program include:

1. The Guarantee Fund provides only a 50% guarantee for the participating banks. Since the banks do not wish to take any credit risk, they require the SME to post collateral that, in the banks' judgement, sufficiently mitigates the risk of non-payment of the remaining 50% of loan principal not covered by the Guarantee Fund. Because such collateral is most often in the form of personal guarantees and fixed assets (e.g. real estate), the banks require the value of the collateral to be 100% of loan principal, not 50%, on the assumption that they could only recover one-half the value of the collateral if it were called. For an SME with little access to credit, this is obviously an incredibly onerous requirement.
2. Bank officers have little incentive to approve loans under this program as the administration is more complicated (than a loan outside the SEBRAE program) and the risks of making loans to SMEs are seen as higher. If a loan officer has a bad loan, even under the SEBRAE program, he/she is judged poorly by bank management.
3. SME loans are small and the "hassle factor" is disproportionately high compared to the amount of money being lent. – a further disincentive to bank loan officers trying to "make their numbers".

In a special project relating to the promotion of energy efficiency within SMEs (partially funded by the German government), SEBRAE, with the assistance of PROCEL, prepared six industrial energy efficiency projects and presented each for funding by the SME loan program. All were turned down by Banco do Brasil under the SME loan program.

Perhaps the single greatest fatal flaw of the SME loan program is the unwillingness of Banco do Brasil to take credit risk. It is this aspect of the program that necessitates the need for the Guarantee Fund and onerous collateral requirements on the borrower. Other banks interviewed (e.g. HSBC/Midland), have an active middle market lending operation and do take credit risk for those companies with whom they have an established banking relationship. This practice is the norm in other countries and should, with a stable macroeconomic environment and the natural forces of competition, eventually become the norm in Brazil as well.

IV. Implications for World Bank Energy Efficiency Project

To sum up, the present barriers to financing energy efficiency in Brazil appear to fall into two main categories:

- Cost-prohibitive credit conditions for SMEs, a category into which all ESCOs in Brazil fall; and
- Lack of cash flow-based lending for smaller transactions typical of energy efficiency projects.

It is felt that foreign banks, in particular, are the most open to addressing these barriers. Moreover, the creation of a specialized energy efficiency fund, such as that envisioned in the World Bank Energy Efficiency Project, seems appropriate. Such a fund might be most effective if it were designed to:

- Leverage World Bank/GEF funds with private sector (e.g. commercial bank) capital and, in fact, to have the program be private sector-led;
- Be administered by a private, experienced fund management company;
- Use GEF funds to defray disproportionately large administrative costs (e.g. engineering) associated with energy efficiency lending;
- Leverage SEBRAE funding (and perhaps the 1% energy efficiency levy on distribution utilities) in some manner, but not necessarily to provide guarantees to lending banks; and
- Take advantage of the value-added offered by PROCEL in screening potential projects.

The ultimate design of such a financing facility was not the objective of this UNF mission. However, it is obvious that an alternative to the present financing options must, and in fact can, be developed.

V. Brazilian Working Group

The composition of the Brazilian Working Group must be inclusive so that all issues are raised and all opinions can be heard and discussed. Ideally the Working Group would include representatives from:

- Private commercial banking – domestic
- Private commercial banking – international
- BNDES – national development bank
- Specialized funds – private
- Specialized funds – public
- Distribution utilities
- PROCEL – national energy efficiency agency
- ANEEL – national regulatory agency
- Ministry of Mining and Energy
- Industrial associations
- Municipal association
- Large ESCOs
- Small ESCOs
- Equipment manufacturers
- Energy efficiency NGOs
- Professors specializing in financing

Initial List

The initial list of potential Brazilian counterparts includes:

- Aloisio Telmo Director – Corporate Banking Director
Banco Santander (international banking)
- Walsey De Assis Magalhaes – FINAME

(Public Financing Agency)

- Eduardo Bandeiro De Mello – BNDES
(National Development Bank)
- Patricia Moles – Director A2R Fund
(Private special fund)
- Carlos Eduardo Becker – SEBRAE
(Not-for-profit special fund)
- Maria Luiza Viana Lisboa – PROCEL
(Program manager of World Bank Project)
- Jose de Alencar Medeiros Filho – advisor to Secretary of Ministry of Mining and Energy
(Ministry representative)
- Jose Octavia Knaack Campois – FIRSAN (Rio de Janeiro industrial association)
- Eduardo Moreno – BBL (large ESCO representative and current President of Association of Brazilian Energy Service Companies)
- Pedro Paulo Da Silva Filho – SAGA (small ESCO representative)
- Marcos Jose Margues – President of INEE – national energy efficiency NGO
- Carmen Alveal – Coordinator of Energy Group, Institute of Economics, Federal University of Rio de Janeiro (one financial academic representative)

It is recommended that more representatives from commercial banks active in “middle market” lending be included, especially those with structured finance capability, would benefit the working group. It is also recommended a representative from a utility with its own ESCO (e.g. Light, CEMIG) should be added. A representative from a large manufacturer with financing experience (e.g. Siemens) would provide the equipment manufacturer’s viewpoint. An additional academic representative with expertise in financing would improve the working group.

Core Implementation Team

The core implementation team would be drawn from the above list of participants. The facilitation function by the core group is critical to the organization, operations and results of the working group. The facilitator must ensure all issues, opinions and options are raised and discussed, group consensus on issues is presented and recommendations on actions are made.

The ideal facilitator would be a combination of a distinguished member of the energy efficiency community and a distinguished member of the financial community. Alan Poole of INEE could provide the facilitation role with assistance from a financing professor perhaps from a business school.

An initial core implementation team could include:

- Alan Poole – INEE
- Business School Professor
- Maria Luiza Viana Lisboa – PROCEL
- Jose de Alencar Medeiros Filho- Ministry of Mining and Energy

The energy efficiency community and financial community of Brazil must work together if financing of energy efficiency measures is to occur. The Working Group is a means to begin this effort.

