

# The *right* and *wrong* ways to attract *investments* in generation

Brazil's experience speaks volumes about the limits of market-based restructuring

**T**o attract private foreign investment in general and financing for power projects in particular, most developing countries face significant difficulties. Many try to make themselves more appealing to foreign investors by ending their electricity sectors' dominance by government-owned monopolies and bringing competition and transparent regulation to them. However, numerous political, institutional, technical, and economic constraints can arise during the transition to such markets, and they have derailed many thoughtful investment plans.

Given the importance of reliable power supply to economic growth, the solution to the timely provision of adequate supply through private foreign investment may be neither total government control nor totally free markets. Instead, a continuous dialogue among developers, investors, and government should be used to establish the necessary framework for creating a stable, market-based power sector. Most importantly, private initiatives need to be enabled in a timely fashion by both government-sponsored credit and

market support mechanisms.

Brazil provides a good example of these difficulties and lessons. Although it has attractive supply/demand fundamentals and has pursued market-based restructuring policies, Brazil has been unable to attract the level of needed investments because it has failed to resolve several key investor concerns, including the absence of an effective wholesale market.

Last year, those failures combined with a drought, necessitating significant power rationing. Fortunately, it appears that an emergency thermal power program is succeeding in providing the capacity most critically needed this year, and a fast-track thermal program may lead to significant expansion of capacity several years down the line. The Brazilian experience teaches that to succeed, a power plan relying on foreign financing needs to address key investor concerns that often require substantial government-led credit and market mechanisms.

It remains to be seen if Brazil will take those lessons into account as it reviews its long-term regulatory and market frameworks.

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## Investment issues: Macro and micro

In considering whether to build a power project, developers and potential investors assess both the project's economic merit and the host country's electricity business climate. "Desirable characteristics of power project investment environments," which can be found at [www.platts.com/business/issues/0203/0203geb\\_brazil#1](http://www.platts.com/business/issues/0203/0203geb_brazil#1), groups favorable investment criteria into three categories: macroeconomic, institutional, and project-specific.

Cutting across the three categories are three financing challenges common to most developing countries attempting to make their electricity sectors competitive:

**Currency exchange risk.** When power is paid for in local currency and costs are incurred in another, the owner of a power plant sees his margins reduced to the extent that he fails to hedge against erosions of local currency value. On the other hand, allowing currency devaluation costs to be passed through can penalize assets financed largely by local currency.

**Recovery of capacity value.** Capacity value can be recovered either opportunistically, or as designated capaci-

ty payments under long-term power purchase agreement (PPAs). However, market conditions determine owners' ability to do the former, and to depend on periodic power payments is to place faith in the purchaser's credit.

**Credit support.** Governments must take measures to support the solvency of both power generators and the distribution companies. Initially, these measures may have to be enabled by government-sponsored credit and market support mechanisms. However, whether this is possible depends on the government's overall sector policies—for example, whether subsidies are used to make electricity affordable.

All the favorable criteria in the first two categories can be provided by a competitive, transparent, market-oriented business climate. However, the efficacy of a market approach depends on attracting investment capital, and investors will consider a country too risky if its power sector lacks effective payment, tariff, tax collection, and/or cross-subsidy systems.

As Brazil's recent history demonstrates, a government's failure to attract adequate investment through timely implementation of credit and market support mechanisms can lead to crippling power shortages. At [www.platts.com/business/issues/0203/0203geb\\_brazil#2](http://www.platts.com/business/issues/0203/0203geb_brazil#2), "Potential long-term solutions to key risks" details steps that the government and sector regulator could take to mitigate the risks associated with currency exchange, recovery of capacity value, and credit support.

### A short history of Brazilian restructuring

Brazil has been trying to restructure its electricity sector since 1993. Over the past nine years, it has privatized numerous electric utilities and attempted to create an independent regulator, an independent system operator, a wholesale energy market, and a wholesale energy market operator.

However, by the end of the 1990s, piecemeal restructuring efforts had failed to achieve their purpose: continued strong growth in demand—driven largely by low electric rates—

has not been matched by investment in new supply to meet it. This maintained Brazil's risky reliance on hydroelectric plants, which account for 92% of its 66,000 MW of generating capacity.

The riskiness of this all-eggs-in-one-basket approach will increase along with Brazil's electricity consumption, which is estimated to grow 4% annually over the next 15 years. In more concrete terms, what the demand growth forecast means is that between now and 2016, Brazil will need an average 3,400 MW of new generating capacity each year. Such an expansion would require Brazil to more than double the rate at which it has expanded its capacity over the past two decades: 1,600 MW per year.

### Three steps to keep the lights on

The consequences of Brazil's failure to address its shrinking power supply/demand gap came home to roost beginning in the middle of 2000, when its worst drought in 70 years severely curtailed the nation's overall hydroelectric capacity. As the magnitude of the drought became evident, the government was forced to take three successive steps: institute a program to fast-track the approval processes for new thermal plants, impose temporary but draconian rationing, and solicit bids for emergency power plants.

The first step actually predated the onset of the drought by a few months. In early 2000, saying its goal was to get what later grew to 55 thermal power plants with a total capacity of more than 17,000 MW commissioned by 2005, the government simplified and streamlined the process for getting such plants approved and licensed. In doing so, Brazil had to set aside some aspects of the "pure" market approach for a pragmatic reason: to alleviate investors' concerns about the macroeconomic, institutional, and project-specific issues mentioned earlier.

For example, it established a fixed price for natural gas that developer/owners of fast-track plants would pay to Petrobrás, the government-owned

national oil/gas monopoly. It also made it possible for Petrobrás to participate in projects either as an investor, tolling agent, or both. In hindsight, the latter decision was a prescient one. As international developers have continued to hesitate and the supply/demand gap has continued to narrow, Petrobrás has had to take a leading role in the development of thermal generating capacity in Brazil. The company has minority equity stakes in most of the thermal power projects to be completed in 2002, and will be the sole developer of several projects.

However, even with such government support, it's doubtful that the fast-track program will achieve its ambitious goal. One reason is that it still fails to effectively address the existing regime's pricing and regulatory problems. Final prices to distributors remain capped, and regulatory policies effectively limit developers' margins to unacceptably low levels and expose them to substantial currency risk.

After the onset of the drought, Brazil had to take the second and far more painful step; it began "temporary" rationing of electricity consumption in June 2001. Mandatory reductions were set regionally and by customer class, and initially ranged from a low of 10% in the south for all consumers to 25% in other regions for energy-intensive industries. The government says that it will adjust the numbers periodically, but also that it expects rationing to be required for several years.

Two months after it mandated rationing, Brasilia was forced to take the third step. It created CBEE, an agency with the mandate to sign PPAs with terms of up to four years. CBEE has received 125 proposals representing approximately 5,000 MW of capacity and has indicated it will contract for approximately 2,200 MW. Each emergency power plant will be oil-fired and relatively small (the largest being 200 MW). Although oil-fired plants produce more costly power than hydro or coal- or gas-fired plants, they are the only kind of plant that has a chance of coming on line by the middle of this year.

## Investing overseas

The PPAs—which are to begin in 2002 and terminate at the end of 2005—allow for the passing through of fuel costs to the CBEE (subject to a heat-rate guarantee from the project developer) and for monthly adjustments of capacity payments to reflect variations in the Brazilian real/U.S. dollar exchange rate. Under the program, CBEE payments are guaranteed by the Brazilian government.

After struggling with several issues, last December the government finally authorized CBEE to begin signing significant PPAs and issuing guarantee forms. Whether the emergency power program will achieve its goals remains to be seen, however. “Investors’ misgivings about Brazil’s emergency power program,” at [www.platts.com/business/issues/0203/0203geb\\_brazil#3](http://www.platts.com/business/issues/0203/0203geb_brazil#3) details several unattractive aspects of the program, most of which stem from their vagueness.

### Looking forward

To summarize, the following are among the major, unresolved core problems frustrating foreign private investment in Brazilian thermal power plants:

- Brazil is reluctant to raise electric rates to reflect the true cost of power production. This reluctance is politically motivated—fears of inflation and alienating voters spoiled by decades of subsidized electricity.

- The cost of power production indeed varies with fuel costs and fluctuations in the real/dollar exchange rate. However, the government’s attempts to address these linkages—such as increasing price caps for thermal plants, and making gas prices real-denominated and annually adjustable—have not adequately addressed the core concern of lenders and investors. That remains the same: Whether the system is fair enough to not unduly interfere with a project’s cash flow over its payback period of 10 to 15 years.

- Brazil has yet to figure out how to integrate its older, lower-cost hydro plants (which have been fully amortized) and its newer thermal plants into a cohesive system.

- The transition of power from old electricity sector institutions to new ones has been disorganized.

- Measures to manage the immediate power crisis have created a set of new regulations and constraints that are not necessarily in accord with the framework the government states it wants the electricity sector to operate under: market competition.

These shortcomings have already produced one public embarrassment. Soon after September 2000, when it was launched, the new wholesale power market collapsed. At the autopsy, analysts suggested several causes of death, but most pointed to the market’s onerous legal and performance obligations and a retroactive price-setting mechanism that together made liquidity all but impossible to achieve. At the time, *The Wall Street Journal* attributed the demise of the wholesale market to “policy blunders of Amazonian proportions.” From the perspective of developers, its collapse has been particularly troubling for Enron’s 380-MW Riogen and El Paso Energy’s 700-MW Macae projects, two merchant plants that were built in record time with the expectation that a liquid market for bulk power would be in place. Both companies are now seeking new PPAs.

Brazil’s ongoing failure to systematically resolve the disparity in the way that costs and revenues are risk-assessed will continue to inhibit the flow of inward foreign investment to its electricity sector. Lacking such a resolution, independent power producers are left with two choices: do what they can to increase the chances of making a profit in Brazil (see “Developers’ risk mitigation options” at [www.platts.com/business/issues/0203/0203geb\\_brazil#4](http://www.platts.com/business/issues/0203/0203geb_brazil#4)), or stay home. Bear in mind, however, that in Brazil, efforts to effect these risk-mitigation strategies have met with only partial success, mainly because of the incomplete nature of restructuring and privatization efforts.

Currency risk, and exposures to the “wholesale vs. retail” price squeeze are perhaps the most apparent hurdles to

project finance. The consequences are just as apparent; Brazil’s critical industries—aluminum, mining, and chemicals—have already cited a lack of generation capacity as a constraint to future production growth. If the needed expansion of generation capacity does not come to pass, Brazil’s overall economic growth and viability could be jeopardized.

Fortunately, Brazil is positioned to make patchwork progress in the short run under the emergency power program. In the longer term, however, Brazil needs to promptly establish firm market rules that foster the integration of its hydro and thermal capacity, rationalize their prices, and promote divestiture of state-owned generation and distribution assets. Brazil is reviewing its regulatory and market framework and is leaning toward elucidating a revised energy policy that is more welcoming to foreign financing. Again, however, it remains to be seen whether the details will provide salvation, purgatory, or damnation.

For other developing countries, Brazil’s experience offers several important lessons. One is that fast-track and emergency power programs cannot make up for years of complacency in electricity sector policy planning. Another is that unless they are backed by a combination of timely private risk mitigation and public participation initiatives, piecemeal efforts to transform a monopoly sector into one driven by market forces will be stymied by payment delays and disputes and produce little more than market failure. Supported by such measures to provide project cash flow needs, projects can more readily find support from developers and lenders. Only by working together can the public and private sectors design and implement in timely fashion a market structure that works as efficiently in practice as it does in theory. ■

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