

Viewpoint

Note No. 146

August 1998

The East Asian Financial Crisis—Fallout for Private Power Projects

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Countries around the world have increasingly turned to the private sector to finance and build new power projects. This trend has been especially pronounced in Asia, which accounts for nearly 60 percent of all new private generation capacity financed in the developing world. But the East Asian financial crisis that began in mid-1997, triggering dramatic stock market and currency slides and stalling economic growth in the region, has already had a profound effect on investment in infrastructure. This Note discusses the impact of the crisis in the power sectors of four of the most severely affected economies—Indonesia, Malaysia, the Philippines, and Thailand. All have major private investments in power generation, but their power sectors are still dominated by vertically integrated public utilities that act as the

country's single buyer. The single buyer enters into long-term power purchase agreements (PPAs) in which the buyer agrees to take power at specified rates from private power producers for periods ranging from ten to thirty years.

While the full extent of the crisis and its fallout in these four countries is not yet known, information available to date shows that the effects vary widely among the countries. To varying degrees their private power programs have been affected by:

- Increased cost of power.
- Threats of contract defaults and renegotiations.
- Contraction of the market for private power.

As the following analysis will show, the divergences in the management and impact of the crisis suggest a number of important lessons for

TABLE 1 CRISIS-RELATED FACTORS AFFECTING THE IMPACT OF IPP COSTS ON RETAIL TARIFFS

Country	Dimensions of crisis	Fuel supply	Denomination of payments	Source of financing	Project vintage	Wholesale tariffs	Overall impact
Indonesia	●	○	●	●	●	●	●
Malaysia	◐	○	○	○	○	○	○
Philippines	◐	●	●	●	◐	◐	◐/●
Thailand	●	●	○	◐	◐	○	◐/○

○ Little impact ◐ Some impact ● Severe impact



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power reform and the role of independent power producers (IPPs) in that process.

Increased cost of power

A currency depreciation of the magnitude of those in East Asia increases the cost of most goods and services, including electric power. The extent of the rise in power costs attributable to private power has varied among the countries, depending on such factors as:

- The dimensions of the economic crisis.
- The origin of the fuel supply.
- The currency denomination of the wholesale tariffs.
- The extent of domestic financing for projects.
- The amount and timing of private power purchases.
- Wholesale and retail tariffs.

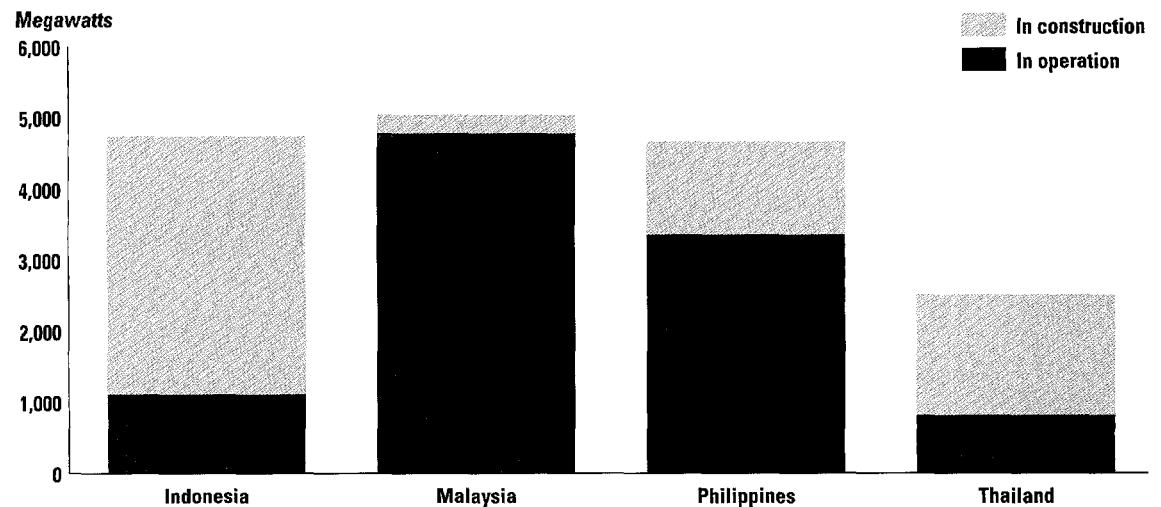
Each of these factors is examined below, and table 1 sums the aggregate implications for tariffs. This analysis suggests that the crisis will have the most severe impact in the Indonesian power sector, where retail tariffs may need to rise by up to 70 percent to pay for the increased cost of private power. In contrast, retail elec-

tricity rates will need to increase only slightly in Malaysia and Thailand to cover increased IPP costs—though rates may have to increase further for other reasons.

Dimensions of the economic crisis

All four countries have suffered severe economic setbacks since mid-1997, and the International Monetary Fund has forecast a significant slowdown in economic growth in 1998.¹ By early June 1998 Malaysia, the Philippines, and Thailand had experienced currency depreciations of around 35 percent, and interest rates in Malaysia and the Philippines had risen 50 percent from a year earlier. Interest rates in Thailand are nearly twice the previous year's level. The drop in the value of currencies was accompanied by declines in regional stock markets. The Malaysian market index fell by more than 50 percent in local currency terms between early June 1997 and 1998, while the Philippines and Thailand suffered slides of 30 and 40 percent. Indonesia has been hit hardest—the rupiah has dropped 80 percent in value in the past year, increasing the local cost of imports by a factor of five. Interest rates are more than three times higher

FIGURE 1 PRIVATE POWER CAPACITY, MARCH 1998



Source: Hagler Bailly IIP Knowledge Base.

than before the crisis, the stock market has fallen by more than 40 percent, and growth is projected to turn sharply negative this year.

Many regional utilities have high levels of foreign debt, and the depreciation has led to heavy foreign exchange losses in servicing that debt, eroding their financial positions. The cost of capital for new projects is likely to rise sharply as investors assess additional premiums to compensate for higher perceived risk. The skyrocketing domestic interest rates also make financing new projects costlier.

Origin of fuel supply

Fuel costs, a pass-through for power off-takers under most private power contracts in Asia and throughout the developing world, can represent about a third of the life-cycle cost of a coal project and about three-quarters of the life-cycle cost of oil and gas projects.² If fuel is imported, a depreciation of the size of those in East Asia significantly increases the local currency costs of both public and private power. In the Philippines and Thailand most private projects import fuel—at prices about 50 percent higher in 1998 than in 1997.

Currency of wholesale tariffs

The currency denomination of payments for private power is one of the most important differentiating factors in the impact of the crisis on those payments. In Indonesia and the Philippines, where wholesale electricity tariffs for IPPs have been denominated in hard currencies, the local currency cost of utilities' off-take obligations has ballooned. In Malaysia, where power purchase payments are denominated in local currency and interest rates have risen comparatively less, the cost of private power has risen by less than 10 percent.

Thailand's national utility, the Electricity Generating Authority of Thailand (EGAT), has been partly insulated from currency exchange risks because, with the exception of purchases from a private power project in the Lao People's

Democratic Republic, payments to private power projects are denominated in baht. Nonetheless, the depreciation of the baht made planned projects unfinanceable under the existing power purchase agreements. EGAT reopened negotiations with sponsors to ensure the financial viability of projects needed to reduce the country's power shortages. The utility pegged part of the private power tariff to the U.S. dollar and assumed some currency risk by agreeing to pay IPPs at an exchange rate of 27 baht per dollar, close to the precrisis rate of about 25 baht per dollar. In early June the baht traded at 40 to 42 per dollar.

Extent of domestic financing for projects

Projects attracting high levels of domestic finance are less susceptible to exchange rate volatility (although they may be vulnerable to interest rate hikes). Malaysia and Thailand both have high levels of local debt financing for IPPs (90 percent and 75 percent), which help to mitigate the impact of the currency depreciation. Domestic financing is negligible in the other two countries—14 percent in Indonesia and just 3 percent in the Philippines—leaving them more exposed to the mismatch between project revenues denominated in local currency, and hard currency obligations to project lenders.

Amount and timing of private power purchases

Indonesia, Malaysia, and the Philippines are among the developing world's largest markets for private power with limited recourse financing.³ Each has nearly 5 gigawatts (GW) of private power capacity in operation or under construction (figure 1). Private power now accounts for more than half of all generation in Malaysia and the Philippines. It has played a smaller role in Thailand. But once all the nearly 2 GW of private generating capacity now under construction in Thailand becomes commercialized, private power will account for about 10 to 15 percent of the country's electricity.

The four countries differ in the timing of their private purchases. Malaysia and the Philippines

began their private power programs early and now account for about 80 percent of the commercial private power capacity in operation in the four countries. The financial crisis is likely to have a large impact on electricity costs in the Philippines, which must make dollar payments to several operating IPPs. But in both Malaysia and the Philippines relatively little new private power is expected to be commercial by 2001. The fact that relatively little new private capacity is coming on line, along with the substantial payments for private power made before the crisis, will help mitigate the short-term impact of the crisis in these two countries. The longer-term impact of the crisis will depend on the cost and timing of development after 2001. Currently, the Philippines plans to commercialize substantial gas and hydroelectric capacity starting in about 2002.

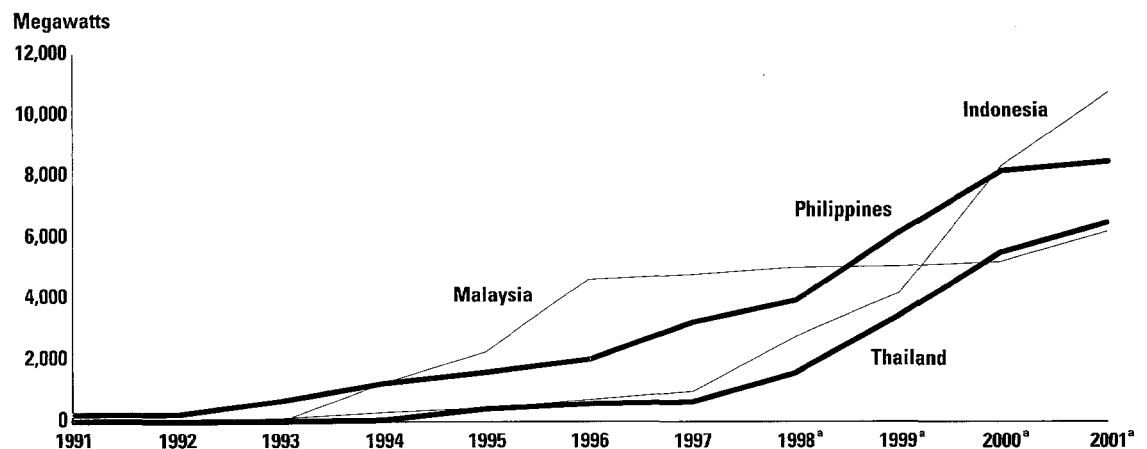
The crisis will have the largest impact in Indonesia, which accounts for nearly half the new IPP capacity due to begin operation in these countries in 1998–2001. In all, more than 9,000 megawatts (MW) of capacity is under construction or at an advanced stage of development in Indonesia (figure 2).

Wholesale and retail tariffs

A rational system of wholesale IPP tariffs and retail consumer tariffs is a prerequisite for a successful private power program. Wholesale power costs should on average be about two-thirds of retail rates, which must also cover nongeneration costs (such as transmission, distribution, administration, and customer service). Wholesale IPP tariffs in Malaysia and Thailand range from 3¢ to 4¢ per kilowatt-hour (kWh), while retail tariffs are substantially greater, suggesting that utilities in these countries have adequate margins to pay nongeneration expenses.

The relationship between retail and wholesale power tariffs in Indonesia and the Philippines implies a less stable financial situation. Wholesale power tariffs in the Philippines are relatively high, and retail rates may not be sufficient to cover the cost of operations by the national power utility, Napocor. The increase in interest costs on foreign debt and in fuel and other costs in the wake of the crisis has further eroded Napocor's financial position. Rates should rise substantially as a result of automatic tariff ad-

FIGURE 2 CUMULATIVE DEVELOPMENT OF PRIVATE POWER CAPACITY, 1991–2001



a. Projected.

Source: Hagler Bailly IIP Knowledge Base.

justments and will need to rise even more if Napocor is to cover its costs.

In Indonesia Perusahaan Listrik Negara's (PLN) financial situation appears even more critical. Even before the crisis retail tariffs appeared inadequate relative to costs. While wholesale tariffs for private power ranged from 5.4¢ to 8.5¢ per kWh, retail tariffs were just over 7¢ per kWh, implying that margins were inadequate to pay for nongeneration expenses. When the rupiah fell from roughly 2,500 per U.S. dollar to more than 10,000, PLN's position deteriorated. Even with price hikes in March and May 1998 totaling more than 30 percent, retail tariffs remained below 3¢ per kWh.

Some of the region's utilities will need massive cash infusions from either government transfers or privatization to meet their debt obligations. As a result, their ratings by international credit agencies have been downgraded, and some are now considered technically bankrupt.

Threats of contract defaults and renegotiations

The public utilities' worsening situation has increased pressures to renegotiate contracts. Several planned projects with signed PPAs have been reviewed or postponed. Governments have also sought to modify contracts for projects already in operation. Indonesia, the most heavily exposed country, has called on project sponsors to lower power prices and has tried to negotiate lower purchase obligations. In February 1998 PLN issued letters to three IPPs unilaterally setting an exchange rate for its payments to the private projects of 2,450 rupiah per dollar (the rupiah was then trading below 8,450), in violation of the existing PPAs. PLN later backed away from this position, promising eventual full payment in dollars. But international rating agencies have assessed an increased risk of default for several projects.

Renegotiating or defaulting on contracts can be costly to governments as well as to sponsors and investors. Countries that have breached contracts will deter investors. But all parties have

TABLE 2 EFFECT OF THE CRISIS ON EXPECTED NEW GREENFIELD PROJECT DEVELOPMENT, 1998-2001 Gigawatts

Country	Precrisis projections	Postcrisis projections	
		Low-growth scenario	High-growth scenario
Indonesia	7.3	3.8	4.0
Malaysia	1.4	0.1	0.5
Philippines	3.6	2.8	3.3
Thailand	3.8	0.2	2.0
Total	16.1	6.9	9.8

Source: Hagler Bailly IPP Knowledge Base.

an interest in reviewing agreements that may lead to an unsustainable situation. Many factors affect the sustainability of IPP programs, including (as outlined below) the appropriateness of government support for private projects, the use of competitive procurement procedures for projects, and the need for power. Analysis of such factors in the four countries predicts sustained government commitment to private projects in most countries. But it also points to a high risk of breach of contract by the government or public utilities in some cases.

Government risk sharing

Governments have assumed some risk for private power projects in all four countries. Such support may take the form of government guarantees backstopping the obligations of the power purchasing utilities or financial participation in the projects. While direct support to projects can serve as an indicator of government commitment, excessive liabilities that are likely to come due when governments can least afford them (such as during a financial crisis) can undermine the sustainability of private investment programs, leading to default and renegotiation.

In Malaysia and Thailand the central governments have assumed some risk, but have granted no guarantees or other direct official forms of support. They have provided no special foreign exchange protections for private power projects beyond those granted to all foreign investors. Government fuel suppliers have provided similar levels of security to projects as would be provided under commercial fuel supply contracts. In many projects governments have assumed risks mainly by providing loans through government pension funds, state banks, or other public sources of funds, thus assuming similar commercial risk as other lenders.

In contrast, the government of the Philippines assumed fairly substantial risks through sovereign guarantees, including all fuel supply, inflation, and foreign exchange risks.⁴ Its willingness to assume these risks was important to the successful financing of several early projects. Now that the market is fairly mature, the Philippines has recently reduced the guarantees offered to new projects, and some are being financed with no sovereign guarantees. The Indonesian government assumed fewer risks for projects, but it granted projects “letters of comfort” in which it

agreed to support the discharge of PLN’s responsibilities. These letters do not amount to a guarantee, however. Project sponsors assumed some fuel supply and other risks.




















Competitive bidding





Recent experiences such as Enron’s Dabhol project in India have shown that governments may face pressure to renegotiate projects that have not had to undergo the scrutiny of a formal competitive bidding process. Both Malaysia and Thailand procured new generation using competitive bidding—one reason for the lower wholesale tariffs in these two countries—while most IPP projects in Indonesia and many of the early projects in the Philippines were concluded through direct negotiation with project sponsors. The Philippines has since adopted international competitive bidding to increase transparency and lower costs.

Need for power

The primary motivation in seeking private power was the dire need for more generation capacity. Widespread power shortages and blackouts are a costly drag on private investment and eco-

TABLE 3 FACTORS AFFECTING THE SUSTAINABILITY OF CURRENT PRIVATE POWER PROGRAMS

Country	Government risk sharing	Transparency of contract awards	Expected capacity needs (short term)	Overall sustainability
Indonesia				 / 
Malaysia				 / 
Philippines				
Thailand				 / 

 Low
  Low to medium
  Medium to high
  High

conomic growth. As long as this need persists, it creates powerful incentives for governments to remain committed to private power projects.

There is a long-term need for power in all four countries. While there is currently excess capacity in the Philippines and Thailand, future demand growth should eliminate these surpluses and create a need for new projects. The future balance of supply and demand depends on the pace of new capacity additions. Excess capacity is expected to materialize in parts of the Indonesian power system as large plants now under construction become operational. Excessive surpluses could lead to pressures to break agreements on new projects. Thailand has taken steps to avoid surpluses by delaying power projects for two years.

A shrinking market for private power

The economic slowdown and the higher prices for many basic goods have reduced demand for electricity, restricting future private power opportunities. It is estimated that total new private power development in the region could fall from around 16 GW to less than 7 over the period 1998–2001 (table 2). In Indonesia alone new private power development could decline by 3.5 GW, and near-term markets for new projects in Malaysia and Thailand could all but disappear. In the Philippines the crisis is expected to have a modest impact on new project commercialization through 2001.

The financial crisis has stalled many new construction projects, both public and private, as the construction costs have soared in local currency terms. PLN has canceled sixteen IPP projects, many of which had signed contracts. Plans for a 1,000-MW private power project in Malaysia have reportedly been shelved because the drop in the exchange rate increased the project's prospective costs by more than 1 billion ringgits (about US\$260 million). Depreciation poses a greater challenge to countries still in the early phases of IPP development, when construction risks are important, since most equipment and construction costs are in hard currency.

Implications for private power policy

While no one could easily have predicted the dimensions of the crisis or have designed a power policy to protect projects from the economic shocks, analysis of the effects offers lessons for Asia and the rest of the developing world. Countries such as Malaysia and Thailand have adopted power policies that appear to have left them less exposed than other countries (table 3). Price reform, domestic financing, competitive bidding, and appropriate government support mechanisms mitigate the effects of the crisis on the cost of power and the sustainability of investment programs. The timing of project development also appears to be a major factor in the severity with which the crisis has affected regional power programs.

The Philippines and Thailand are pushing ahead with plans to privatize their national utility companies, despite the more difficult environment for privatization in the wake of the crisis. But unlike many countries in Latin America, no Asian countries have yet undertaken fundamental restructuring and privatization of their power sectors to reduce the burden of public sector liabilities and put the whole power industry on a more sustainable footing.

The market for private power in Asia appears both smaller and more fraught with uncertainty than before the crisis. In this new environment investors will scrutinize projects more closely, and governments will need to manage power programs judiciously to continue to attract investment. They need to strike a balance in providing support to the industry, shoring up private projects in the near term while avoiding burdensome, open-ended commitments that could hamper the longer-term prospects for reform.

This text was finalized in late June.

¹ International Monetary Fund, *World Economic Outlook* (Washington, D.C., May 1998).

² Power off-takers accept fuel risks in most projects with power purchase agreements. Banks generally believe that power off-takers are better able to take these risks than other project participants because of their ability to pass fuel price increases along to

consumers. See Suman Babbar and John Schuster, "Power Project Finance: Experience in Developing Countries" (RMC Discussion Paper 119, World Bank, Resource Mobilization and Cofinancing Vice Presidency, Washington, D.C., 1998).

³ See Suman Babbar and John Schuster, "Power Project Finance: Experience in Developing Countries" (RMC Discussion Paper 119, World Bank, Resource Mobilization and Cofinancing Vice Presidency, Washington, D.C., 1998).

⁴ See David Baughman and Matthew Buresch, "Mobilizing Private Capital for the Power Sector: Experience in Asia and Latin America" (U.S. Agency for International Development and World Bank, Washington, D.C., 1994).

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