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Viewpoint

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Private Participation in Energy

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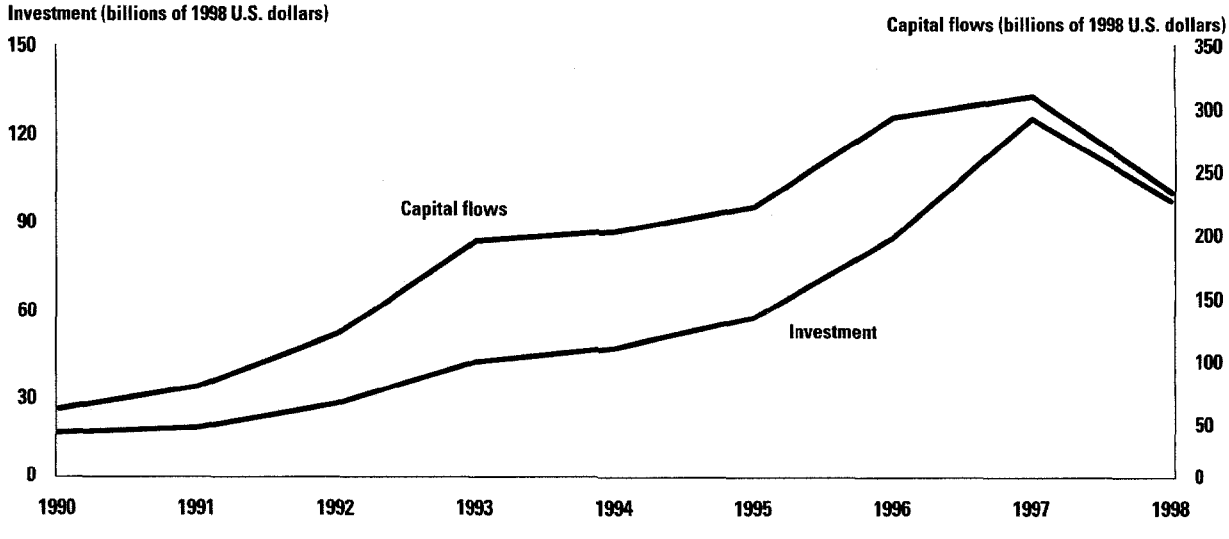
The past decade has seen a wave of liberalization and privatization of infrastructure activities in developing countries. By the end of the 1990s the private sector had become an important financier and long-term operator of infrastructure activities—in water, transport, energy, and telecommunications—in those economies. In 1990–98 it had undertaken the operating or construction risk (or both) of about 1,700 infrastructure projects in developing countries.[1] Those projects involved investments of almost US$500 billion.[2]

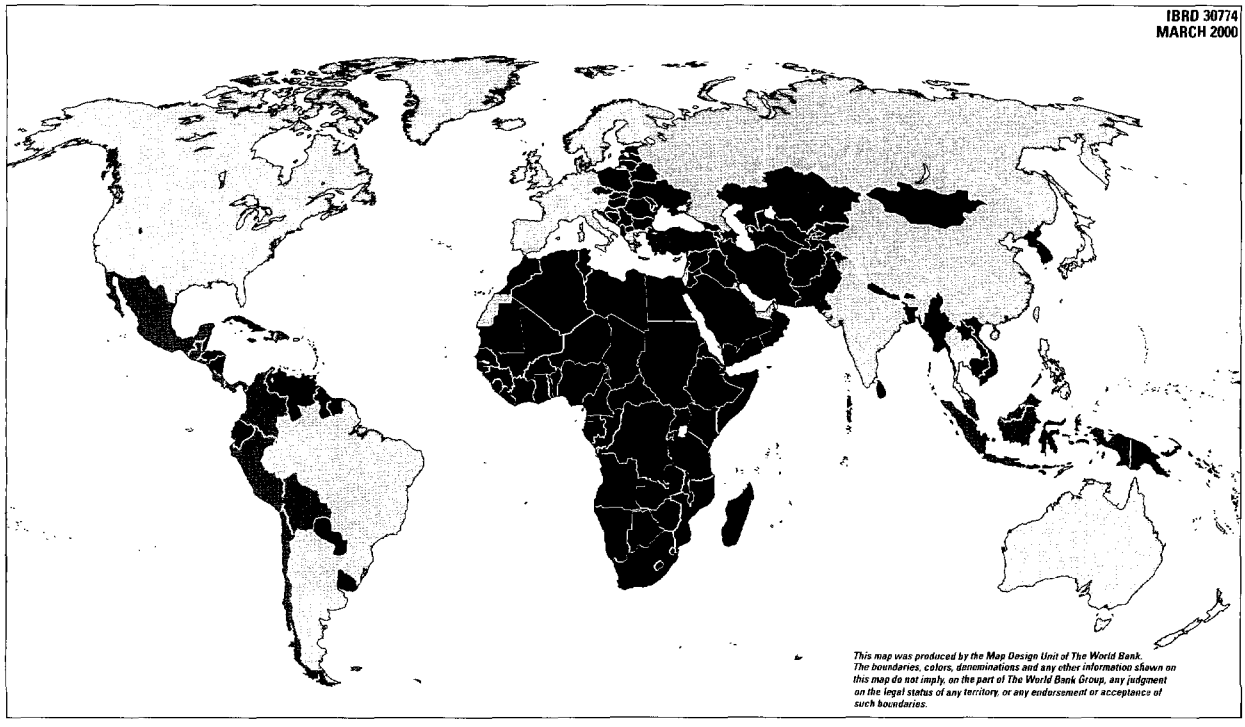
The availability of long-term foreign capital and the opening of infrastructure sectors to private investment allowed the rapid increase in private infrastructure activity in developing countries. Long-term foreign capital flows to developing countries—as foreign direct investment, foreign debt, or equity investment—more than quadrupled between 1990 and 1997 before falling in the late 1990s as a result of the financial crises in developing economies (figure 1). This influx of foreign capital has made foreign investors the main sponsors of private infrastructure in developing countries. In 1990–98 global developers were the top fifteen sponsors, measured by investment, in the infrastructure business in developing countries and were involved in a tenth of the private infrastructure projects in those

FIGURE 1 NET LONG-TERM PRIVATE CAPITAL FLOWS TO DEVELOPING COUNTRIES, AND TOTAL INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES, 1990–98



Source: World Bank 2000; World Bank, PPI Project Database.

MAP 1 ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES, 1990–99



Note: Projects cover electricity and natural gas transmission and distribution. The database includes mass privatization programs such as voucher privatization.
Source: World Bank, PPI Project Database.

TABLE 1 TOP TEN SPONSORS OF ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES, 1990–99

Sponsor	Projects	Total investment (billions of 1998 U.S. dollars)
AES Corporation	35	12.7
Enron Corp.	23	12.5
Electricité de France	22	11.5
Endesa (Spain)	11	9.1
Southern Energy Inc.	10	7.6
CMS Energy Corporation	17	6.7
Cia. Naviera Perez Companc	8	6.2
Endesa (Chile)	15	5.7
Tractebel	17	5.6
Enersis	7	5.3
Total	156	68.2

Note: Table includes projects in which the sponsor has at least a 15 percent stake. The data do not sum to totals because in some cases more than one sponsor is involved in a project.
Source: World Bank, PPI Project Database.

countries. These projects accounted for almost a third of total investment in such projects.

The energy sector, which in this analysis covers electricity and natural gas transmission and distribution, has been at the center of the liberalization and privatization activity. (Oil and upstream natural gas activities are excluded from this Note.) As in other infrastructure businesses, in energy private activity has been driven by the need to expand capacity and increase reliability in an environment of tight public budget constraints. Private participation and competition have also been propelled by new technological developments that have reduced the minimum size of competitive power plants, lowered transactions costs, and increased the efficiency of grid utilization.

In 1990–99 seventy-six developing countries introduced private participation in energy (electricity and natural gas transmission and distribution). These countries awarded the private sector more than 700 energy projects, representing investments of almost US$187 billion (map 1). Foreign capital has been a major source of funds. In 1990–99 global developers were the top ten sponsors of private energy projects, measured by investment, in developing countries and were involved in a fifth of those projects. Their projects accounted for just over a third of total investment (table 1).

This Note draws on the World Bank's Private Participation in Infrastructure (PPI) Project Database to provide an overview of trends in the private energy projects in developing countries. The PPI Project Database tracks infrastructure projects, newly owned or managed by private companies, that reached financial closure in 1990–99 (box A.1).

Four main trends have emerged in private energy projects in developing countries during the past decade:

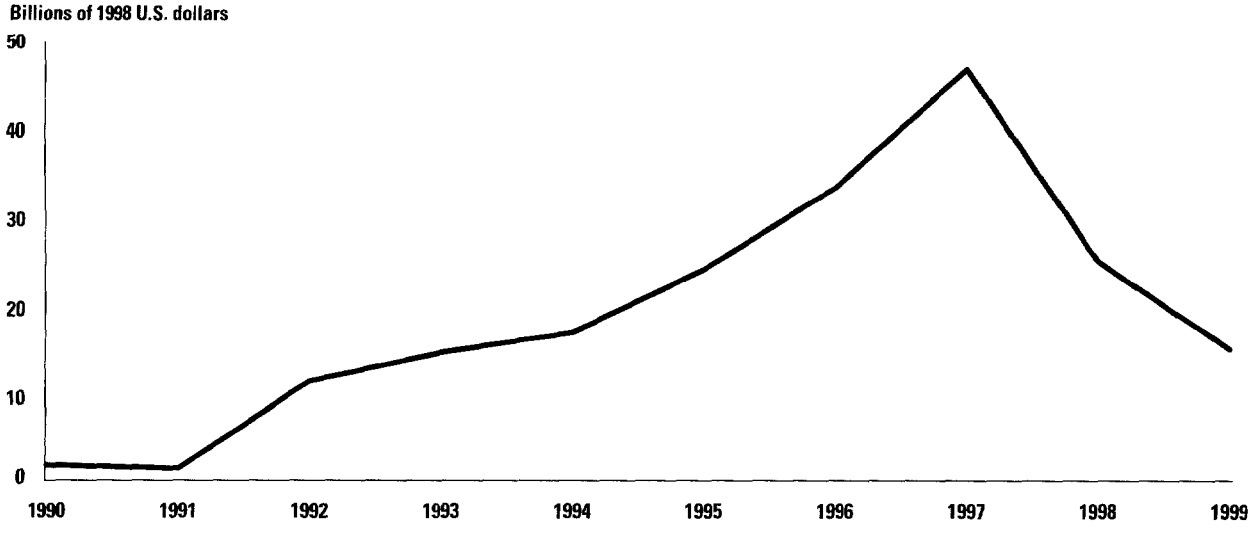
- As in other infrastructure businesses, private participation in energy grew rapidly during the 1990s.
- Investment in energy projects with private participation declined in 1998 and 1999 from a peak in 1997, falling most in East Asia and the Pacific and Latin America and the Caribbean.
- Latin America and East Asia have led in private activity in energy, each following a different approach.
- Private activity in energy—whether measured by countries, projects, or investment—has been concentrated more in electricity than in natural gas.

Rapid growth in private activity

Private activity in energy, measured by total investment (private and public contributions) in projects with private participation, boomed in 1990–97, rising from less than US$2 billion to US$46 billion (figure 2). It then fell to US$25 billion in 1998 and to US$15 billion in 1999—its 1993 level—as a result of the financial crises in developing countries in 1997–99. The economic downturns dampened the growth in energy demand. Annual growth in electricity demand in developing countries (excluding transition economies) dropped from 6.5 percent in 1990–96 to 4 percent in 1996–2000 (U.S. Department of Energy 2000). The financial crises also made international financial markets reluctant to invest in developing economies. According to preliminary World Bank estimates, net long-term capital flows to developing countries declined by a fifth between 1997 and 1999 (box 1).

Most affected were Latin America and East Asia. In Latin America investment fell from a high of US$23 billion in 1997 to US$7 billion in 1999, mostly because of the deferral of generating facility sales and new power plants in Brazil (figure 3). In East Asia private activity dropped from US$12 billion to US$3 billion as a result of the cancellation of many high-profile projects in crisis countries and reduced activity in China. In Malaysia, the Philippines, and Thailand annual private activity in energy in 1998–99 was only a fourth that in 1993–97. Indonesia, the country most affected by the crisis, had no new private energy activity in 1998–99.

FIGURE 2 TOTAL INVESTMENT IN ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES, 1990–99



Source: World Bank, PPI Project Database.

BOX 1 CHANGES IN PROJECT FINANCE FOR ENERGY

The big decline in long-term private capital flows to developing countries since 1997 reflects a sharp change in mood—from the excessive optimism of the precrisis 1990s to the conservatism of the late 1990s. Before the crisis large amounts of financing were chasing marginal projects in the electricity sector. This frenzied approach to lending "resulted in lenders downplaying the role of sponsor equity through overleveraging of projects, the loosening of project structure, and a failure to adequately assess the fundamentals of long-term country risk and to take a sufficiently long-term view of the nature and values of such assets" (Lack 1999, p. 7).

In the short term international financial markets' conservative approach to developing countries has made financing scarce and expensive. According to preliminary World Bank estimates, net long-term funds from international capital markets to developing countries dropped from a peak of US$151 billion in 1996 to around US$40 billion in 1999 (World Bank 2000). The biggest drop was in net lending from international banks, which turned negative in 1999. The cost of debt increased sharply. Secondary market spreads on Brady bonds rose from 500 basis points at the end of 1997 to more than 1,100 basis points in late 1998, declining in 1999 only in major East Asian economies and Brazil.

The scarcity and high cost of foreign resources forced some power sponsors to finance acquisitions on their balance sheets. U.S.-based firms such as AES Corporation, Duke Energy Corporation, and CMS Energy Corporation opted to purchase existing assets in Latin America on their own balance sheets in 1999, hoping to refinance them later under more favorable market conditions (Gelinas 1999).

In the long term international capital flows will return to developing countries as major economies recover from the crises. But lenders will become more cautious, focusing more on project quality and taking a more realistic view of long-term project risks, including macroeconomic, political, and regulatory risk. Project financiers will expect local and regional capital to play a greater role in project financing (Lack 1999). Sponsors will be expected to assume a greater share of project risk by accepting lower debt-equity ratios (Gelinas 1999). Ratios of 60:40 and 50:50 will be more likely than the precrisis ratios of 80:20.

Latin America and East Asia lead

Latin America and East Asia have led the growth in private participation in energy. Latin America accounted for 42 percent of the investment in private energy projects during the 1990s. Most of the region's countries promoted private participation in energy as part of broader sectoral reforms aimed at creating efficient, competitive energy markets. This approach has been reflected in an emphasis on privatization. Divestitures accounted for more than three-fourths of the investment in energy projects with private participation in the region (figure 4). Greenfield projects, which accounted for the other fourth, developed mainly in reformed markets, driven by such market signals as energy prices and demand growth.

East Asia accounted for a third of the investment in energy projects with private participation in 1990–99. Private activity in this region—as well as in South Asia, the third-ranked region—focused on introducing independent power producers in markets dominated by vertically integrated, state-owned enterprises. This strategy was aimed at expanding generating capacity to keep pace with expected demand growth. Greenfield power projects accounted for 80 percent of the investment in East Asia and 93 percent in South Asia. Other forms of private participation were also designed to expand generating capacity. Divestitures, involving the sale of minority stakes through public offerings, were aimed at raising funds for state-owned enterprises. And operations and management contracts centered on rehabilitating power plants.

In the other regions private activity in energy was limited. In Europe and Central Asia it was restricted to a few countries that mainly privatized existing facilities through mass privatization or sales of controlling stakes to operators. Economic problems, low energy tariffs, and rudimentary legal frameworks limited additional investment in these countries. In Sub-Saharan Africa and the Middle East and North Africa private participation was limited to some greenfield projects for capacity expansion and a few operations and management contracts for integrated utilities.

Investment concentrated in middle-income countries

Investment in energy projects with private participation has been concentrated in a few countries, but it is beginning to spread. The top five countries accounted for 100 percent of investment in 1990, but only 56 percent in 1997–99. Although the top five vary from year to year, they usually include Argentina, Brazil, China, and India, which also account for a major share of developing country income.

By 1999 forty-eight middle-income countries had private energy projects (twenty upper middle income and twenty-eight lower middle income), but twenty-eight low-income countries also had opened their energy sectors to private activity (figure 5). Middle-income countries still attracted most of the private activity in the sector, however (figure 6). Among low-income countries, China and India accounted for most of the investment.

Electricity projects predominate

Electricity has led the growth of private activity in energy. More than 600 private electricity projects, representing investment of US$160 billion, reached financial closure in seventy developing economies in 1990–99. Private electricity projects have been concentrated in generation, with projects involving generation assets capturing four-fifths of the investment.

Natural gas projects—around 100 in thirty countries—accounted for more than US$27 billion in investment in 1990–99. This investment has been concentrated in transmission assets, which accounted for almost three-fourths of total investment in natural gas projects in 1990–99. The natural gas business has attracted so much less investment than electricity mainly because of its early stage of development in most developing countries. Except for countries in Europe and Central Asia and a few in Asia and Latin

BOX 2 PLANS FOR REFORM IN EAST ASIAN ELECTRICITY MARKETS

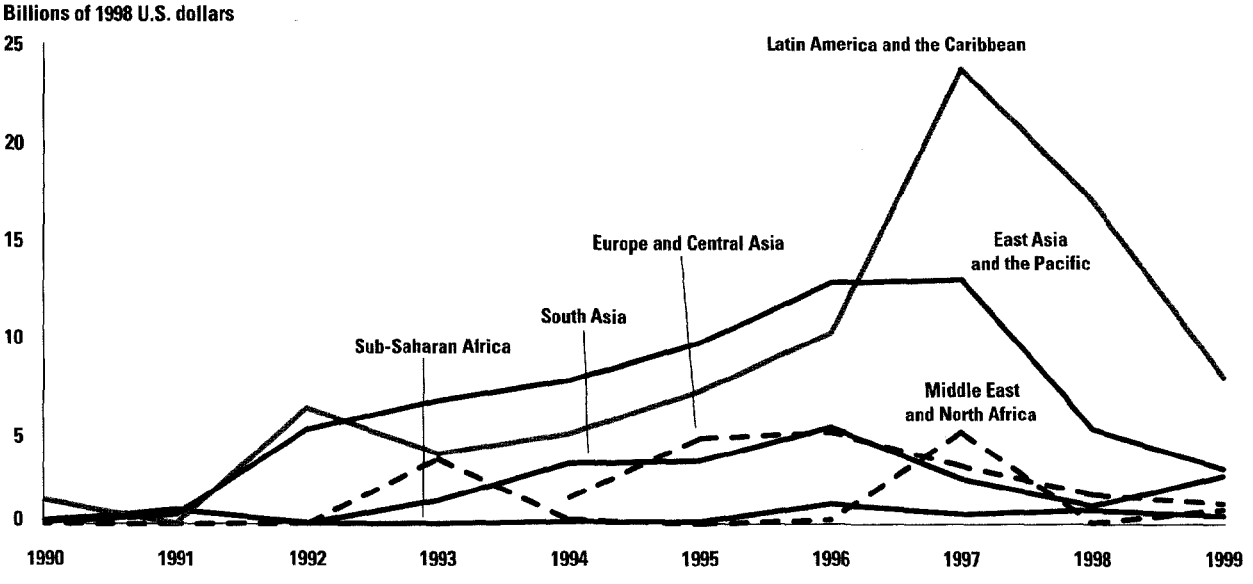
The 1997 financial crisis made East Asian governments recognize the potential problems of introducing private independent power producers—to sell power to state-owned enterprises—without reforming the sector. That strategy ignored the main problems in the sector, such as subsidized tariffs, sector inefficiencies, and monopolistic market structures. And it forced governments to assume contingent liabilities, through take-or-pay power purchase agreements, that they have had to cover when least able to, as in the case of Indonesia.

The limitations of the strategy coupled with growing budget constraints made East Asian governments realize the need to reform their electricity sectors. China, Indonesia, the Republic of Korea, the Philippines, and Thailand have announced plans to introduce competition in their electricity markets by establishing power pool markets. Power pools, open-bid processes in which the cheapest power is purchased first, have been introduced all over the world—in Argentina, Australia, Canada, Chile, South Africa, the United Kingdom, and the United States—to improve the management of system capacity and reduce electricity prices.

- Korea plans to liberalize its electricity market and create a competitive power pool by 2003. As part of the plan, the government has allowed private power generators to sell electricity directly to industrial consumers since August 1999. It plans to divide the generating assets of state-owned Korea Electric Power (Kepco) into six independent companies, to be privatized by 2005. Korea is also revising the 50 percent equity cap on foreign investment in power to encourage greater private participation and competition.
- Thailand plans to establish a wholesale electricity market by 2005. The National Energy Policy Office plans to vertically separate the electricity business into basic units (generation, transmission, and distribution) and privatize them. Retail competition will be introduced initially for large customers, gradually expanding to a wider market. Regulated distribution companies will serve the remaining consumers. The government may include a "competition transition charge" in tariffs to cover transitional costs of the reform, such as liabilities under power purchase agreements.
- The Philippines has plans for privatizing Napocor, the state-owned generation and transmission utility, and opening the electricity market to competition. But reforms have been put on hold until Congress approves the omnibus Electric Power Industry Code under discussion. The bill would establish the legal framework for privatizing Napocor, creating a competitive electricity market, and dealing with liabilities under Napocor's power purchase agreements.
- Indonesia plans to establish a fully competitive power market in phases. As a first step the state-owned utility PT Perusahaan Listrik Negara (PLN) will separate electricity assets into two regions, Java and outside Java. In Java, which has a well-developed electricity system, PLN will divide its assets into several companies for generation, transmission, and distribution to create a fully competitive power pool market by 2003. During the transition the transmission company will purchase electricity from all generators connected to the grid on behalf of distribution companies and major consumers. This transitional single-buyer model is designed to deal with short-term constraints such as take-or-pay power purchase agreements, fuel contracts, underdeveloped transmission systems in some areas, and lack of regulatory capacity.

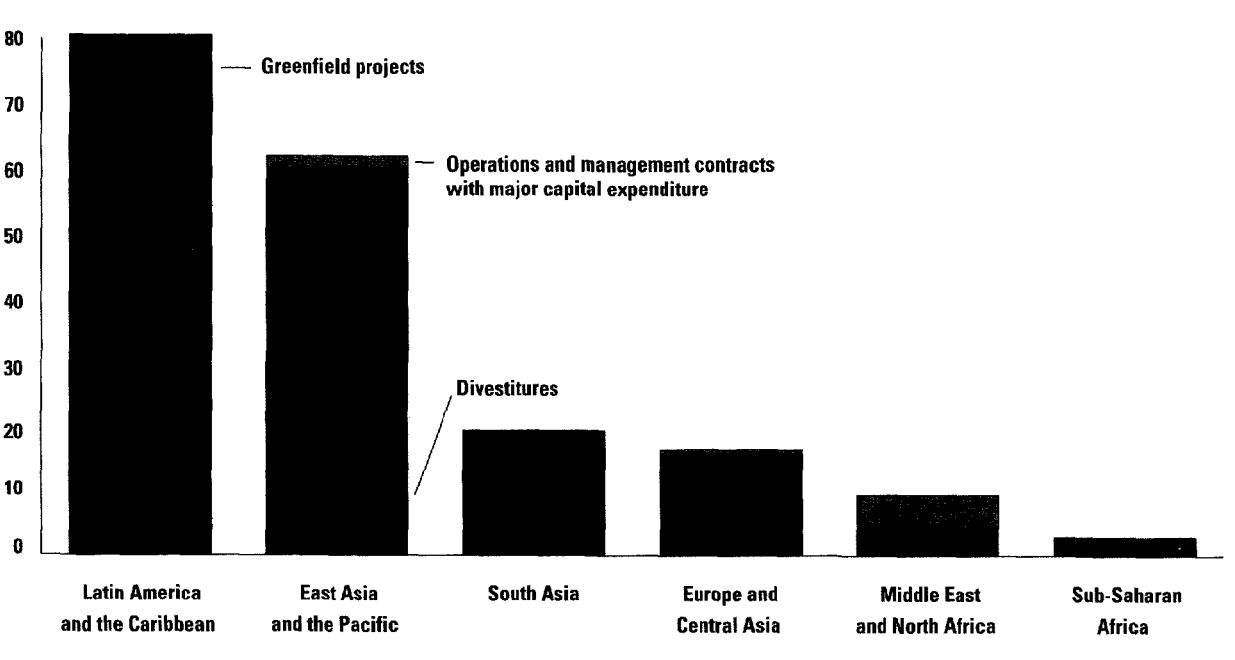
  Outside Java, where the electricity system is much less developed, PLN will transfer its assets to a new state-owned company. This company will manage the system while contracting out new opportunities for generation, transmission, and distribution through competitive and transparent bidding. The Indonesian government also plans to privatize state-owned assets, taking a phased approach until international market conditions become more favorable.
- China has launched a reform aimed at introducing competition in generation. Over the next decade State Power Corporation (SPC), the monopoly power grid company, will move electricity purchases from a contract system to a pooling program. Initially, SPC operating units will buy 15 percent of their annual electricity needs from a pooling program and the other 85 percent under existing contracts. Purchases through open bidding will rise 3–4 percent annually until all electricity is bought and sold through power pooling. Zhejiang and Shanghai Provinces and Shanghai City will be the first to launch power pool reform. Three other provinces will introduce it by the end of 2000, and the rest will follow.

FIGURE 3 TOTAL INVESTMENT IN ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES BY REGION, 1990–99



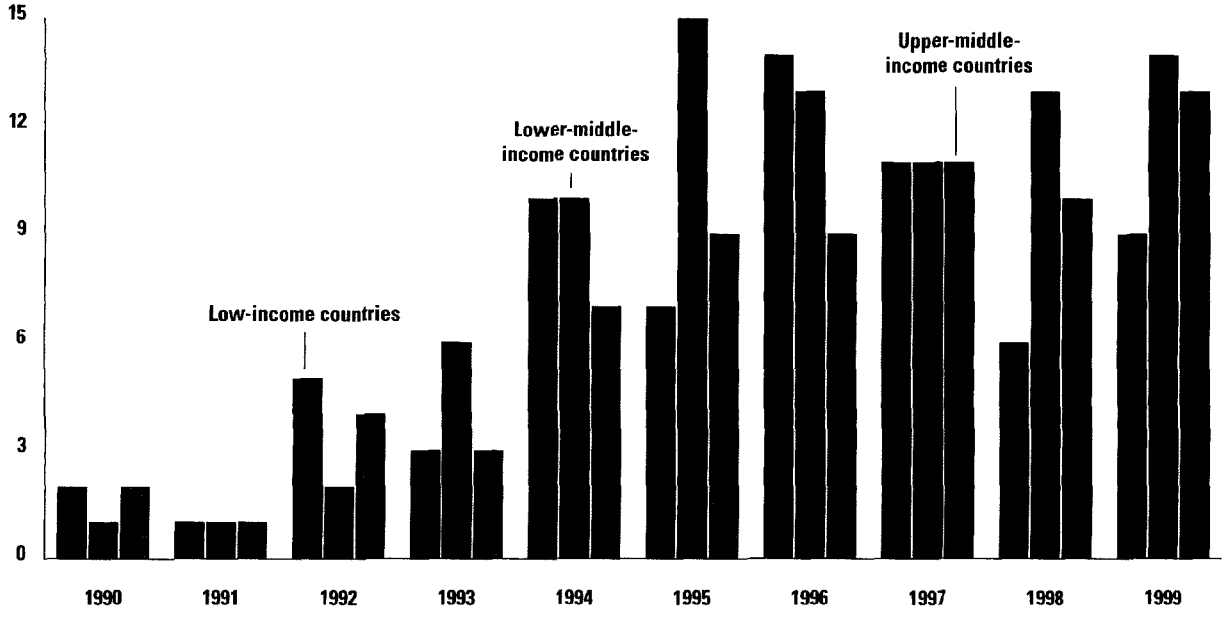
Source: World Bank, PPI Project Database.

FIGURE 4 TOTAL INVESTMENT IN ENERGY PROJECTS WITH PRIVATE PARTICIPATION BY REGION AND TYPE, 1990–99



Source: World Bank, PPI Project Database.

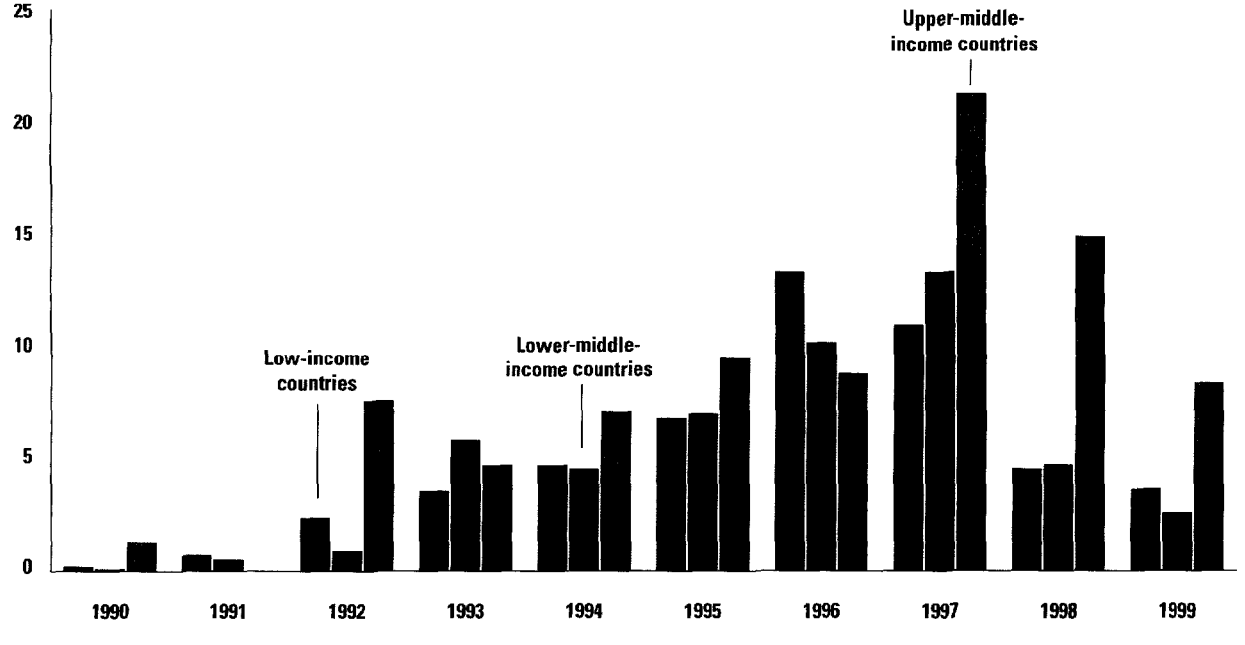
FIGURE 5 NEW ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES BY INCOME LEVEL, 1990–99



Source: World Bank, PPI Project Database.

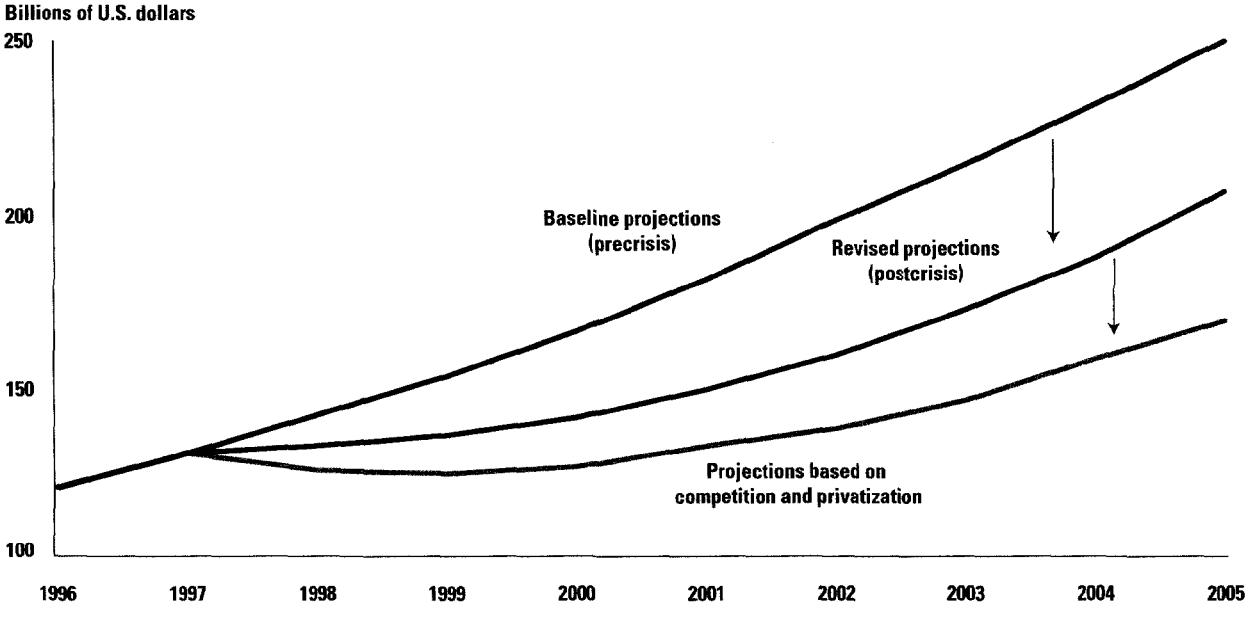
FIGURE 6 TOTAL INVESTMENT IN ENERGY PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES BY INCOME LEVEL, 1990–99

Billions of 1998 U.S. dollars



Source: World Bank, PPI Project Database.

FIGURE 7 ESTIMATED INFRASTRUCTURE INVESTMENT REQUIREMENTS IN EAST ASIA UNDER DIFFERENT SCENARIOS, 1996–2005



Source: Asian Development Bank 1999.

America, most developing countries have limited transport facilities and natural gas resources or none at all.

Looking ahead

Private energy activity should revive in developing countries as they recover from the economic crises of the late 1990s and as the fundamental reasons for long-term private activity—increasing demand for energy, sector inefficiencies, and public budget constraints—continue. But private activity in the next decade will differ from the precrisis activity in two ways. First, new capacity requirements will be smaller, reflecting the slower projected growth in developing countries (excluding transition economies) in 2002–08 compared with the precrisis 1990s (World Bank 1999). Second, most private activity will take place in competitive environments as more governments recognize that competitive electricity markets can provide cheaper and more reliable electricity service than monopolies.

In East Asia private activity will focus on existing assets rather than capacity expansion if major economies implement proposed sector reforms (box 2). The 1997–98 financial crisis significantly reduced new investment requirements in the region for 2000–05 (figure 7). Those requirements may be further reduced if competition and private sector discipline are introduced in the sector (Asian Development Bank 1999).

In Latin America private activity will revive as major economies recover, Brazil relaunches its electricity privatization program, and Mexico accelerates its independent power producer program.

In South Asia private energy activity will remain limited as countries continue to postpone sector reforms and rely on the private sector only for new generating capacity.

In Europe and Central Asia private activity in energy will remain limited by slow economic recovery and delays in sector reforms. But it may accelerate in countries applying for membership to the European Union, which face deadlines for energy sector reform.

In Sub-Saharan Africa and the Middle East and North Africa private activity should increase as recent proposals for new generating facilities are implemented in the coming years.

[1] For an overview of private participation in infrastructure see Roger 1999. For earlier reviews of private participation in electricity and in natural gas transmission and distribution see Izaguirre 1998 and 1999.

[2] All dollar amounts are in 1998 U.S. dollars. Figures for project investments refer to total investment, not private investment alone.

References

Asian Development Bank. 1999. *Private Sector Participation and Infrastructure Investment in Asia: The Impact of the Currency Crisis*. Manila.

Gelinas, Nicole. 1999. "Taking Latam Chances." In Rod Morisson, ed., *Project Finance International Yearbook 2000*. London: Thomson Financial Ltd.

Izaguirre, Ada Karina. 1998. "Private Participation in the Electricity Sector." Viewpoint 154. World Bank, Finance, Private Sector, and Infrastructure Network, Washington, D.C.

———. 1999. "Private Participation in the Transmission and Distribution of Natural Gas." Viewpoint 176. World Bank, Finance, Private Sector, and Infrastructure Network, Washington, D.C.

Lack, Howard. 1999. "Lessons Learned for Project Finance and the Emerging Markets." In Adrian Hornbrook, ed., *Project Finance Yearbook 1999/2000*. London: Euromoney Institutional Investor.

Roger, Neil. 1999. "Recent Trends in Private Participation in Infrastructure." Viewpoint 196. World Bank, Finance, Private Sector, and Infrastructure Network, Washington, D.C.

U.S. Department of Energy. 2000. "International Energy Outlook 1999." www.eia.doe.gov/oiaf/ieo99/tbla9-16.html. January 17.

World Bank. 1999. *Global Economic Prospects and the Developing Countries 2000*. Washington, D.C.

———. 2000. *Global Development Finance 2000*. Washington, D.C.

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ESMAP

BOX A.1 PPI PROJECT DATABASE: PROJECT CRITERIA AND DATABASE TERMINOLOGY

Database coverage

- Projects that have reached financial closure and directly or indirectly serve the public.
- Projects in energy, transport, water, and telecommunications. The energy sector includes electricity generation, transmission, and distribution and natural gas transmission and distribution.
- The database excludes captive facilities, such as natural gas pipelines owned by private upstream gas producers, natural gas condensate operations, incinerators, stand-alone solid waste projects, and small projects such as windmills.
- Low- and middle-income developing countries, as defined and classified by the World Bank.

Definition of private participation. The private company must assume operating risk during the operating period or assume development and operating risk during the contract period. A foreign state-owned company is considered a private entity.

Definition of a project unit. A corporate entity created to operate infrastructure facilities is considered a project. When two or more physical facilities are operated by the corporate entity, all are considered as one project.

Definition of project types

- *Operations and management contract.* A private entity takes over the management of a state-owned enterprise for a given period. This category includes management contracts and leases.
- *Operations and management contract with major capital expenditure.* A private entity takes over the management of a state-owned enterprise for a given period during which it also assumes significant investment risk. This category includes concession-type contracts such as build-transfer-operate, build-lease-operate, and build-rehabilitate-operate-transfer contracts as applied to existing facilities.
- *Greenfield project.* A private entity or a public-private joint venture builds and operates a new facility. This category includes build-own-transfer and build-own-operate contracts as well as merchant power plants.
- *Divestiture.* A private consortium buys an equity stake in a state-owned enterprise. The private stake may or may not imply private management of the company.

Definition of financial closure. For greenfield projects, and for operations and management contracts with major capital expenditure, financial closure is defined as the existence of a legally binding commitment of equity holders or debt financiers to provide or mobilize funding for the project. The funding must account for a significant part of the project cost, securing the construction of the facility. For operations and management contracts, a lease agreement or a contract authorizing the commencement of management or lease service must exist. For divestitures, the equity holders must have a legally binding commitment to acquire the assets of the facility.

Recording of investments. Investments and privatization revenues generally have been recorded on a commitment basis in the year of financial closure (for which data typically are readily available). Actual disbursement has not been tracked. Where privatizations and new investments are phased and data are available at financial closure, they are recorded in phases.

Sources. World Wide Web, commercial databases, specialized publications, developers, sponsors, and regulatory agencies.

Contact. The database is maintained by the Private Participation in Infrastructure Group of the World Bank. For more information contact Shokraneh Minovi at 202-473-0012 or sminovi@worldbank.org.