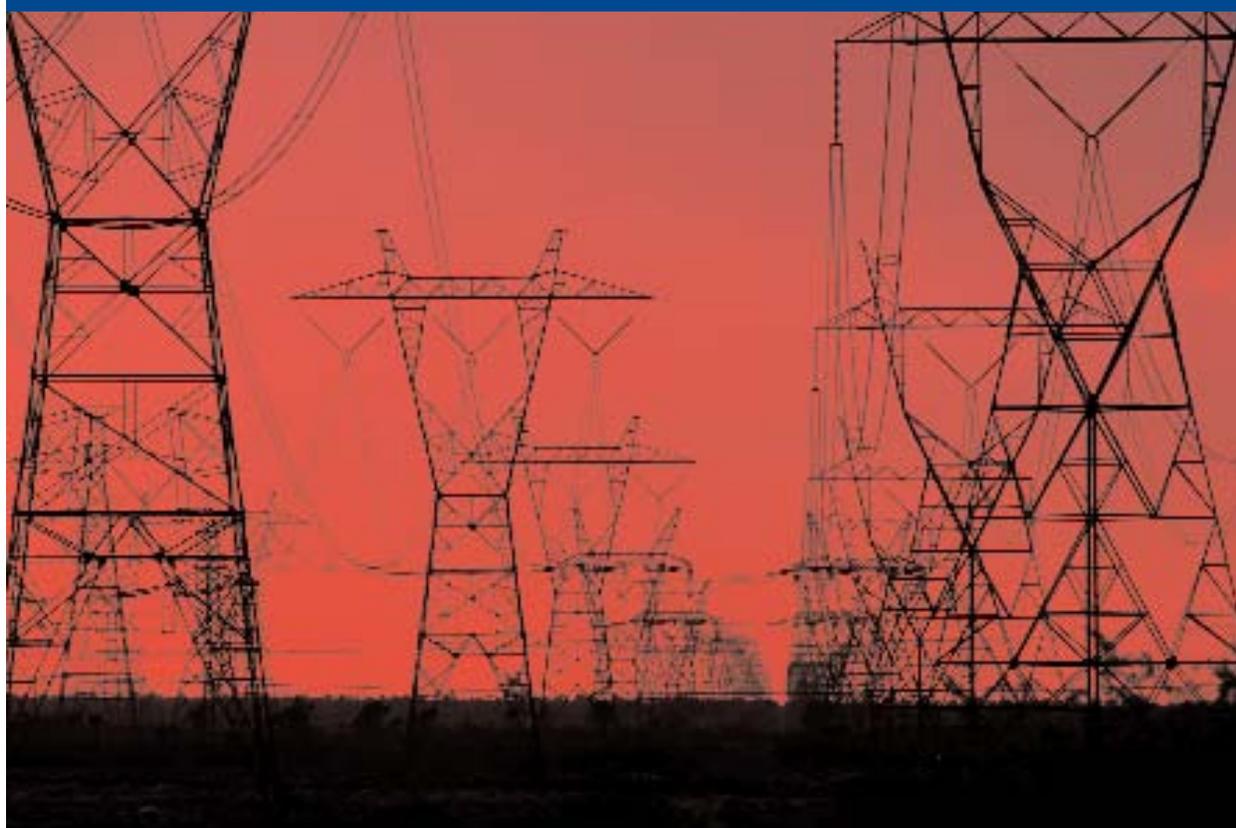


Sustainable Power Sector Reform in Emerging Markets - Financial Issues and Options

Joint World Bank/USAID Policy Paper

MAIN REPORT



Submitted by:
**Deloitte Touche Tomatsu Emerging Markets, Ltd.
(Emerging Markets Group)**

Submitted to:
**World Bank
US Agency for International Development (USAID)**

Date: 18 June 2004

Final Draft

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ACKNOWLEDGEMENT

This report was prepared for the World Bank and USAID and involved close cooperation with the project managers of Suman Babbar and Gary Stuggins at the World Bank and Griff Thompson, Kevin Warr, and Mark Murray at USAID. The report was guided by a Steering Committee chaired by Jamal Saghir of the World Bank and Griff Thompson of USAID. The report was researched and written by Matthew Buresch and Han-Shen Lin of Deloitte Touche Tohmatsu Emerging Markets, Ltd. (Emerging Markets Group, or EMG).

Members of this Steering Committee that contributed to the valuable discussions that helped guide and inform this report include John Besant-Jones, Clive Harris, Alan Townsend, Dominique Lallement, Bernard Tenenbaum, and Ananda Covindassamy of the World Bank, Denis Clarke of the IFC, Angela Paris of the MIGA, and others. Valuable input was received from various investors (AES, EDF, UF, Intergen, ABB, and others) and lenders (ANZ, Citibank, ABN-AMRO, and others) institutional investors (CALPERS, Ohio State Teachers Pension Fund, GE Capital, and others)

Other team members drafted specific sub-sections. Allen Eisendrath from Deloitte EMG's Utility and Infrastructure Unit contributed to developing strategic recommendations and to the Power Market Framework section. Joan Green from Deloitte EMG's Financial Services Group researched and wrote part of the section on domestic capital market development and on power finance mechanisms. Additional Deloitte power sector experts who contributed to this effort are Ian Driscall and Fraser Morrison of Deloitte EMG. The following three experts were provided under a USAID contract through the firm AEAI. James Sullivan researched and wrote much of the section on the Political and Governance Framework. Dr. Carlos Rufin contributed to the Edinor and Luz del Sur cases and to developing the analysis of concessions and affermages. Connie Smyser prepared the cases on utility electrification initiatives and contributed to the discussion of how to expand utility services to the poor.

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LIST OF ACRONYMS

ADB	Asian Development Bank
ADR	American Depository Receipt
AfDB	African Development Bank
AKFED	Aga Khan Fund for Economic Development
AsPIFF	Asian Private Infrastructure Financing Facility
BLT	build-lease-transfer
BOO	build-own-operate
BOT	build-own-transfer
BTO	build-transfer-operate
CDC	Commonwealth Development Corporation
CEE	Central and Eastern Europe
CENTREL	Central Europe Power Pool
CIE	Compagnie Ivoirienne d'Electricite
discos	distribution companies
EBASCO	Electric Bond and Share Company (GE)
EBRD	European Bank for Reconstruction and Development
ECA	export credit agency
EDF	Electricite de France
EIB	European Investment Bank
EPF	Employee Provident Fund
EU	European Union
FDI	foreign direct investment
FSU	Former Soviet Union
GDDS	General Data Dissemination Standards (IMF's)
GDP	gross domestic product
GDR	Global Depository Receipt
gencos	generation companies
GOP	Government of Pakistan
GOT	Government of Tajikistan
GOV	Government of Vietnam
GS	Grameen Shakti
IBRD	International Bank for Reconstruction and Development
IDA	International Development Agency
IDB	Inter-American Development Bank
IDC	infrastructure development company
IDFC	Infrastructure Development Finance Company
IEA	International Energy Agency
IFA	international financial architecture
IFC	International Finance Corporation
IFI	international financial institution
IMF	International Monetary Fund
IPO	initial public offering
IRA	individual retirement account

IPP	independent power producer
IRR	internal rate of return
IT	information technology
kW	kilowatt
kWH	kilowatt-hour
LIBOR	London Inter-Bank Offertory Rate
MDB	multilateral development banks
MIGA	Multilateral Investment Guarantee Agency
MW	megawatt
NGO	nongovernmental organization
NIC	newly industrializing country
NYSE	New York Stock Exchange
OECD	Organization for Economic Cooperation and Development
OED	Operation Evaluation Department
ONE	Office of National de l'Electricite
OPIC	Overseas Private Investment Corporation
PFC	Power Finance Corporation
PNE	Phambili Nombana Energy
PPA	power purchase agreement
PPI	private participation in infrastructure
PPP	public-private partnerships
PRG	partial risk guarantee
PRONAI	Program for Normalization of Informal Areas
PSP	private sector participation
SAIDI	average duration of interruption
SAIFI	average interruption per customer and year
SAPP	South Africa Power Pool
SDDS	Special Data Dissemination Standards
SEEG	Societe d'Energie et D'eau du Gabon
SEPCO	Shandong Electric Power Group Corporation
SHS	Solar Home System
SIEPAC	Central American Countries Interconnection System
SITIC	Shandong International Trust and Investment Corporation
SME	small and medium enterprise
UF	Union Fenosa
USAID	US Agency for International Development
WBG	World Bank Group

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EXECUTIVE SUMMARY

This report is based on analysis of 20 successful power financing case studies and from discussions with major international power investors and lenders active in emerging markets. In addition, this report was informed by a large body of literature (as provided in the Bibliography found in Appendix 2) that has analyzed the subject of power sector reform and privatization. The objective of this report is to assist power sector policymakers in advancing power sector reforms in a way that successfully attracts private capital. The recommendations reflect lessons learned during the investment expansion and contraction periods between 1990 and 2003. The focus is on both near- and longer-term actions that multilateral development banks (MDBs), export credit agencies (ECAs), and donors can take in emerging markets.

KEY CONCLUSIONS: Major private investment is required in the power sector of emerging markets to meet IEA's projected annual investment need of about US \$140 billion to US \$160 billion per year between 2002 and 2020. The total level of capital and support provided by all MDBs and ECAs active in the power sector of emerging markets currently is on the order of about US \$4 billion per year. Based on this limited financing capacity, the priority has to be on how MDB and ECA funds can best maximize leverage of private capital. Based on an estimated leverage ratio of 6 to 8, the MDBs and ECAs could leverage a maximum of about \$30 billion in private investment in power. While this contribution would be substantial, it will still be insufficient to meet private investment needs. Assuming that 40% to 50% of power sector investment in emerging markets (i.e., between US \$60 billion and US \$80 billion per year) comes from self-financing, this still leaves an additional investment need of about US \$50 billion to \$70 billion per year, which policymakers would seek to attract from the private sector (over and above the \$30 billion of private capital potentially leveraged by the MDBs and ECAs). At its peak, private investment in the emerging-market power sector reached about US \$45 billion per year in 1997, only to drop to about US \$10 billion per year in 2002. Evidently, the MDBs and ECAs are not succeeding to leverage their full private investment capacity at this time.

The question is whether the MDB's most effective means of leveraging private capital are financial instruments such as syndicated loans, equity investments, guarantees, and insurance? A case could be made that the IBRD and IMF sectoral and adjustment lending (which can affect the larger political economy and governance structures) could in the long run be more effective in creating the necessary enabling framework for private investment. When leveraging private financing, the MDBs and ECAs play more of a catalytic role, which in the longer term will only be effective within the context of an improving governance framework. Similar to this study that examined successful private power transaction financing, it would be worth also examining cases of sector and structural adjustment lending that had a favorable impact on power sector reform.

The analysis of the 20 successful power financing cases and the extensive literature on power sector reform yields some important insights as to what MDBs can do to revitalize power sector reform and private investment in emerging markets. It is important to first examine the overarching conclusions and then to focus on the specific successes common to many of the 20 cases. There are four fundamental insights to consider.

- ❖ ***Power sector reforms need to be implemented with a better understanding of the risks private investors and lenders face, the risk-adjusted rewards they must earn, and the business cycle and decision-making process of private capital markets.*** The lessons from emerging markets financing is that there were major miscalculations about the expected risks and returns made by investors, governments, and the international development community. During periods of market exuberance, some investors made investment decisions that failed to reflect adequate business risk management and prudent investment decision-making. In order to promote genuine *public private partnerships*, the failures of the private sector need to be viewed also as a public sector problem. In promoting a real partnership, public sector policies could better mitigate excessive volatility by applying a better understanding of how to manage risk and rewards and incentivize private investors to achieve economic efficiencies.
- ❖ ***Some important factors that impact private capital flows into emerging market power are exogenous to the power sector and increase volatility.*** This observation suggests that power market reform policies need to be made more robust and able to sustain power sector development in the face of volatile private capital flows and less than stable interest by foreign investors. Focus more attention on enabling self-financing and encouraging domestic capital where possible.
- ❖ ***Power sector development requires coordinated progress on all four legs of the development process, i.e., political, macro-economic, sector, and financial.*** The failures in reform and private investment mobilization highlight the fact that electric power, as a social good and key input to economic development, is inextricably tied to larger political, macro-economic, and financial conditions that need to develop in parallel to enhance the potential for reform.
- ❖ ***Power sector reforms will be enhanced through more of a cross-sectoral development strategy.*** Development professionals in the financial, public, social, private, and infrastructure sectors are all active in areas affecting the governance of the power sector. Selective, coordinated exchanges across sectors can potentially better leverage development financing to support effective reform not only in power but in other sectors as well.

The fundamental conclusion is that development policymakers cannot rely on formulaic economic or systems models for power sector reform. The *World Bank's Guidance Note* affirms this view and indicates that this lesson is already being internalized within the World Bank. A better understanding of the political economy of the power/energy sector needs to be developed to better inform the reform design process.

In addition to the above overarching conclusions, there are five key success factors, summarized below, common to many of the 20 successful private power financing cases. The detailed discussion of the success factors is found in **Chapter 5** and **Figure 5-7**. A legend for all the figures and case boxes is found at the end of the Table of Contents.

- ❖ Political leadership and support was critical at multiple levels;
- ❖ MDB and ECA support was essential in specific transactions and to cover specific

- risks;
- ❖ Good project design was required that fairly balanced the imperatives of the government and investors;
 - ❖ Public participation was needed for projects particularly at the customer-facing (i.e., power distribution) end of the business;
 - ❖ Domestic and regional capital from investors and banks, and the ability to expand internal self-financing proved critical in many cases.

These success factors from the cases provide added insights for policymaking. Success, however, has to be sustained and cannot simply rest on a successful financial closure. Successful privatizations can lead to a political backlash and to vested interests seeking to undermine reforms. Investors may need sustained support from the MDBs to enforce agreements. Sustained post-privatization assistance is needed to maintain the reform process over time.

RECOMMENDATIONS: Sustainable power sector reform requires increased private sector investment. It is evident that improved policies need to be designed and implemented that are more effective at providing an attractive investment framework for private capital. Given the major decline in private sector participation in emerging market infrastructure during the 1998 to 2002 period, there is a certain urgency to developing strategies to facilitate greater private capital flows in the near to medium term. Nonetheless, longer-range policies still need to be pursued as well. The recommendations provided below are therefore separated into near-term and longer-term actions. The recommendations are summarized in brief below; a full explanation of the conclusions and each specific recommendation is found in **Chapter 8**. These recommendations are primarily directed to power sector policy makers in governments, MDBs, and the donor community.

NEAR-TERM ACTIONS

- 1) Improve coverage for the key risks of concern to investors and lenders, which are currency devaluation risk and legal/regulatory/contractual risk.
- 2) Streamline the process for providing MDB and ECA guarantees and insurance instruments, to allow for more flexible and timely application.
- 3) Support implementation of a tariff regulatory framework that protects investors and lenders from undue political interference.
- 4) Provide incentives and financing support targeted to encouraging domestic and regional investors and lenders.
- 5) Wherever feasible, promote expanded domestic capital mobilization through establishing financial intermediaries to channel a growing pool of domestic savings into power infrastructure.
- 6) In countries where a single buyer framework may prevail for some time, support IPP project-financed transactions under a BOT/BOO or a concession framework, subject to three cautions discussed in the conclusions.
- 7) Support generation company divestitures in markets that are in the transition to competitive multi-buyer / multi-seller markets, yet encourage the necessary vesting and bilateral contracting framework to provide investors with needed revenue certainty.

- 8) In the power distribution sector of countries with little private investor interest, seek private participation at least in the revenue collections end of the business and promote affermage/lease or concessions as part of public-private partnerships.
- 9) In the distribution sector of countries with strong private investor interest, promote concessions and divestitures that incentivize private investors to make both operational and capital investments.
- 10) Support expanding power coverage to underserved communities in the urban slums and rural areas in a sustainable way by relying on utility electrification initiatives that effectively use intermediaries and involve consumer participation.
- 11) Where no private investment is feasible, rely on management contracts and on “performance improvement” loans to commercialize state-owned utilities.
- 12) Establish an ongoing dialogue with a representative group of private power investors and lenders in emerging markets to obtain collectively agreed recommendations to the World Bank on optimal policies for mobilizing private capital.

LONGER-TERM AND ENABLING FRAMEWORK ACTIONS

- 13) Promote power market designs and financing structures that better reflect country and sector risks in a way that is sustainable for private investment at each stage of development.
- 14) Better explain and communicate the power sector reform process to the key stakeholders in order to achieve greater public buy in.
- 15) Strengthen good governance at the national, sector, and corporate levels by focusing on the rules and restraints, competitive pressure, and voice and partnership dimensions.
- 16) Integrate a better understanding of the necessary macro-economic conditions needed to support private capital flows in the power sector in order to engage in better market timing, credit enhancement, and investment promotion.
- 17) Encourage collaboration between financial and power sector experts to promote policies that mobilize an increasing proportion of power infrastructure financing from domestic markets using, for instance, securitization and pooling structures.
- 18) Promote power sector planning that minimizes the excesses that result from poor governance and undue influence by vested interests.
- 19) Strengthen international arbitration conventions to provide more effective and timely recourse in the case of disputes.
- 20) Encourage better facilitation of government agencies to reduce the costs and time required to develop private investments.
- 21) Collect better data necessary to improve policy formation (e.g., domestic private capital flows, collections rates).

These recommendations are intended to cover the full range of market conditions faced in emerging markets including lower income to middle income countries, the mobilization of foreign, regional, and domestic capital, and the different political and legal traditions. **Chapter 8** has a more detailed discussion of each of these recommendations according to the same number scheme and **Chapters 6** and **7** provide further supporting justification. **Chapters 3** and **5** provide detailed analysis of the cases and **Chapter 4** is dedicated to the topic of domestic capital mobilization.

1. INTRODUCTION

Since the 1990s, power-sector development policies in emerging markets have been predicated on promoting market reforms that will attract private investment and lead to an economically sustainable power sector. The ability to attract both foreign and domestic private capital has been an indicator of the success of these reforms. After the 1991 – 1997 period that saw strong growth in private investment in emerging markets' power sectors, the period 1998 – 2002 saw a major decline in capital flows. This decline was due to various factors including an economic recession, high-profile corporate and project failures, an inadequate power-sector legal and regulatory framework in some countries, and a mismatch between the expectations of investors and those of emerging market governments. The power-sector reform process in some developing countries has not progressed as expected. The reform setbacks and decline in investment present a substantial challenge to sustainable development of the power sector in many emerging countries. In order to design new development policies to respond to these challenges, there needs to be a better understanding of how to renew the reform and privatization processes so that it yields sustainable results.

In order for the World Bank and the US Agency for International Development (USAID) to define new policy directions, there needs to be a thorough analysis in four areas: (a) the risks and barriers that have led to a decline in both foreign and domestic private capital flows in the power sector of emerging markets and the lessons learned; (b) the track record of power privatization; (c) the role of domestic capital and its ability to play an expanded role; and (d) the effective market, regulatory, and contractual frameworks that have demonstrated success in achieving economically viable, socially equitable, and financially attractive power market reforms. Although prior studies have analyzed some of these topics, there is a need to bring together detailed analyses of successful privatizations, which can then lead to substantive policy recommendations. These topics are ambitious in scope, but data are limited; as a result, analyses of these topics have had to rely on a selective case study approach.

The objective of this report is to analyze and then prepare recommendations for power-market transition policies, financing strategies, and risk management methods, which can support equitable and sustainable power sector development in the current environment of capital scarcity. This report includes an analysis of the lessons learned across regions, from the perspective of both emerging market governments as well as international and domestic investors. This report develops representative case studies from countries in different regions, in order to base policy formation on concrete examples of models demonstrated to work well. The goal is to define policies meeting the World Bank and USAID objectives of market efficiency and social equity: that is, developing a commercially viable and sustainable power sector that can support economic growth and meet the need for reliable and affordable power.

2. RESPONDING TO THE DRIVERS FOR POWER SECTOR REFORM

The last two decades of power sector reform and investment in developing countries present lessons with valuable insight into adjusting future development policies. During this time of global power market retrenchment and increased discussion about the merits of reform and privatization, it is particularly appropriate to examine what drives, and what results from, power sector reform and investment, and then to ask whether new policies need to be developed in response.

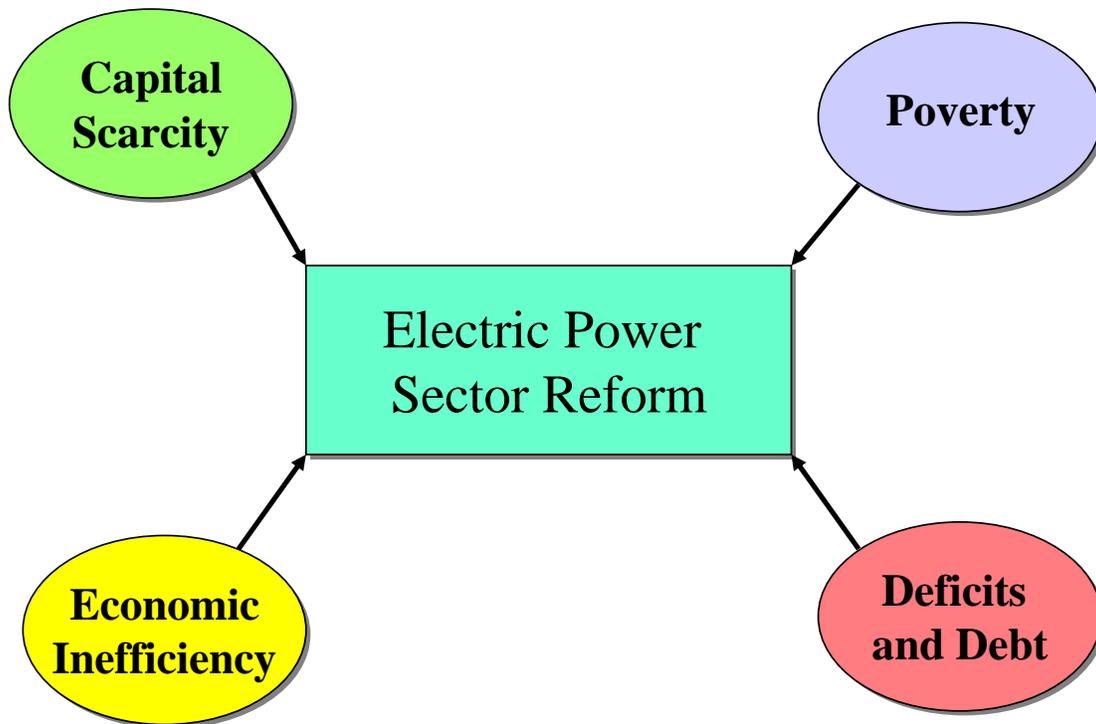
2.1. DRIVERS OF POWER MARKET REFORM

Power sector reform in emerging markets has four major drivers. These drivers have spurred the donor community to launch policies guiding the major initiatives, grants, loans, and conditionalities that have become the basic architecture of development assistance not only for infrastructure but for many other sectors. The drivers of reform are outlined below and in **Figure 2-1**.

- ❖ **Capital Scarcity.** In the 1980s, there was a recognized major shortage of capital to finance the required expansion of power capacity in developing countries. While, historically, developing country governments had financed their largely state-owned power utilities and supplemented their capital requirements with multilateral development bank (MDB) loans, it was recognized that these two sources would be entirely inadequate to finance power sector investment in the decades to come. The private sector was seen as the only additional source of capital that could close the power sector's financing gap. It was recognized the private sector required higher financial returns than those needed by MDBs or governments; it was expected that the efficiency gains from private sector involvement would more than offset the higher cost of capital such involvement would entail. The challenge is reforming the power sector to attract the needed private investment.
- ❖ **Economic Inefficiencies.** In most developing countries, the power sector has been troubled by high technical losses, a lack of cost recovery pricing, poor maintenance, low equipment reliability, high staff levels, low productivity, corruption, a crippling non-payments problem, and mounting debt. These factors have resulted in the commercial unsustainability of many developing countries' power sectors, which are unable to attract the needed private investment. If the power sector is unable to charge the consumer for the full cost of power, the public must then make up the difference in one form or another through direct or indirect taxes that support subsidies. These state subsidies necessary for financing the power sector's financial shortfalls have become a mounting burden that is no longer sustainable for many developing countries.
- ❖ **Persistent Poverty.** The lack of reliable power and other infrastructure (particularly water, telecommunications, and transportation) has had a notably adverse impact on growth and has contributed to perpetuating poverty. The shortage of capital means power is rationed and that only those regions, major industrial or commercial consumers, or residential consumer blocks that can pay, have a chance of receiving reliable power. While this process reflects a natural market response, it condemns regions, neighborhoods, and populations to poor power availability and economic

hardship, even though not all of those in these underserved groups are the source of non-payment problems. Mismanagement also means misallocation of resources, which further worsens the availability and quality of power service. The net effect is that economic growth is constrained and poverty is not alleviated. The links between unreliable power and reduced economic growth have been established and reinforce the imperative to reform the power sector.

Figure 2-1. Drivers of Market Reforms



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- ❖ **Debt and Deficits.** The power sector in many developing countries is saddled with large debts accumulated from years of not charging cost recovery tariffs, not collecting from all consumers, not disconnecting consumers who do not pay, and using the utility as a vehicle for subsidies and political patronage for jobs and other favors. These power sector debts have led to non-payment to the central government and to governments having to channel sizeable shares of their budgets into subsidizing the power sector. These subsidies, along with other expenditures, have led to serious budget deficits that concern the international financial community and the International Monetary Fund (IMF) in particular. For these reasons, power sector reform and privatization have been seen as attractive solutions to the problems of debt and deficits by transferring the power utilities to private companies that then assume the responsibility for eliminating the losses.

These four drivers have been the most important basis for power-sector reform policy in developing countries for the past few decades.

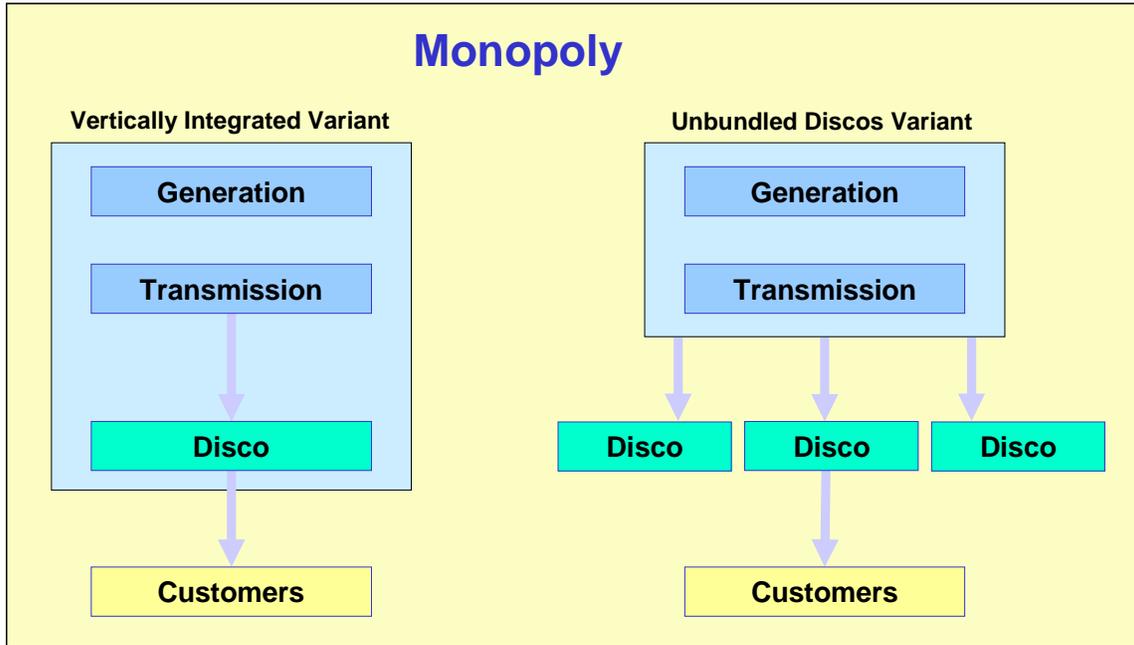
2.2. MARKET MODELS FOR REFORM

In response to these drivers of reform, the international development community has implemented programs to overcome barriers. The policy, legal, regulatory, and institutional development assistance that the bilateral and multilateral development institutions have offered focus on all four drivers. The need to attract capital and for increased economic efficiency has been addressed by bilateral development agencies through technical assistance, and has been re-enforced by the IMF, World Bank, and other multilateral donors through loans and conditionalities. Technical assistance and loans with conditionalities have promoted power-sector reform models and the technical processes that are discussed below. Regarding poverty alleviation, to meet the ambitious targets of the Millennium Development Goals set by the United Nations in 2000 (for instance, to cut in half the number of people living on less than one dollar a day between 1990 and 2015) implies the need for expanded electricity coverage.

A cornerstone of the responses to these drivers has been promotion of various power-sector reform models in developing countries over the past 20 years. These models have involved a major restructuring of the traditional vertically integrated, state-owned power utility monopoly that has dominated the power sector of most developing countries. These power-sector reform models have evolved over the past two decades to incorporate the latest market designs emerging from industrialized countries, notably the United Kingdom, the United States, Chile, and the Scandinavian nations. The four basic models that have existed in the power sector worldwide are listed below and are illustrated in the diagrams in **Figures 2.2 - 2.5**. The single buyer, wholesale competition, and retail competition models have been promoted over the past 20 years in developing countries.

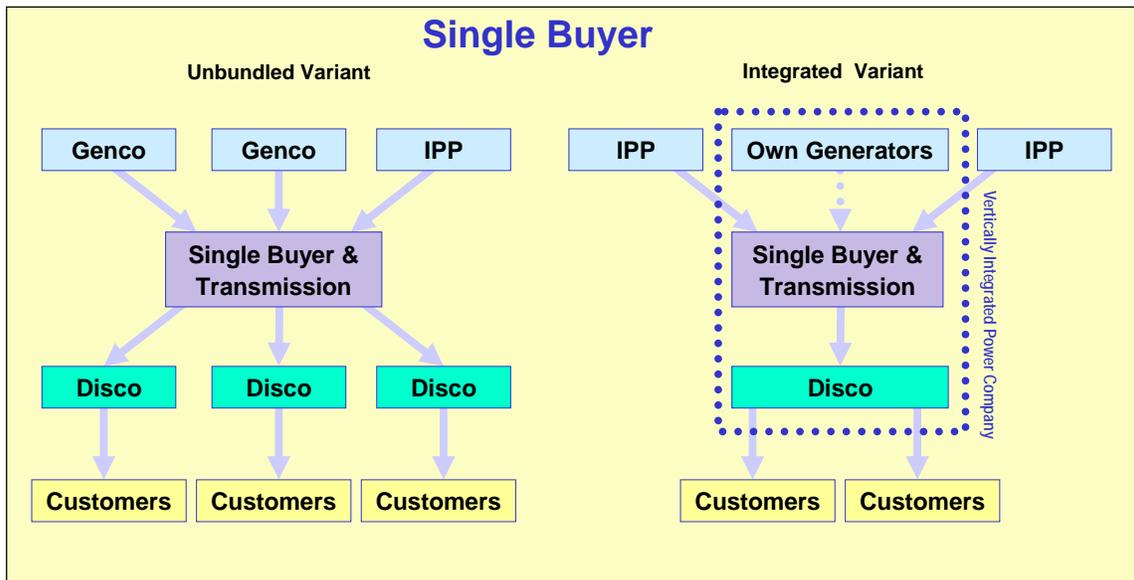
- ❖ **Monopoly Model.** The power sector is dominated by vertically integrated utilities with full monopoly power in their service territory and that either engage in self regulation of tariffs or are regulated by some outside entity.
- ❖ **Single Buyer Model.** The utility is still vertically integrated, but it enters into power purchase agreements (PPAs) with independent power producers. A variation is where an unbundled power sector has separate generation companies (“gencos”), transmission companies, and distribution companies (“discos”), and where the central transmission dispatch company purchases all wholesale power.
- ❖ **Wholesale Competition Model.** The power sector has undergone unbundling of generation, transmission, and distribution and is establishing a regulatory authority to set up a multi-buyer, multi-seller competitive power market. Competition only takes place at the wholesale power market level through bilateral contracts and the spot market.
- ❖ **Retail Competition Model.** Identical to the wholesale competition model in that the power sector has undergone unbundling of generation, transmission, and distribution and is establishing a regulatory authority to set up a multi-buyer, multi-seller competitive power market. However, this model has competition taking place not only at the wholesale power market level but also at the retail level through competition in the supply of power.

Figure 2-2. Power Market Models – Monopoly



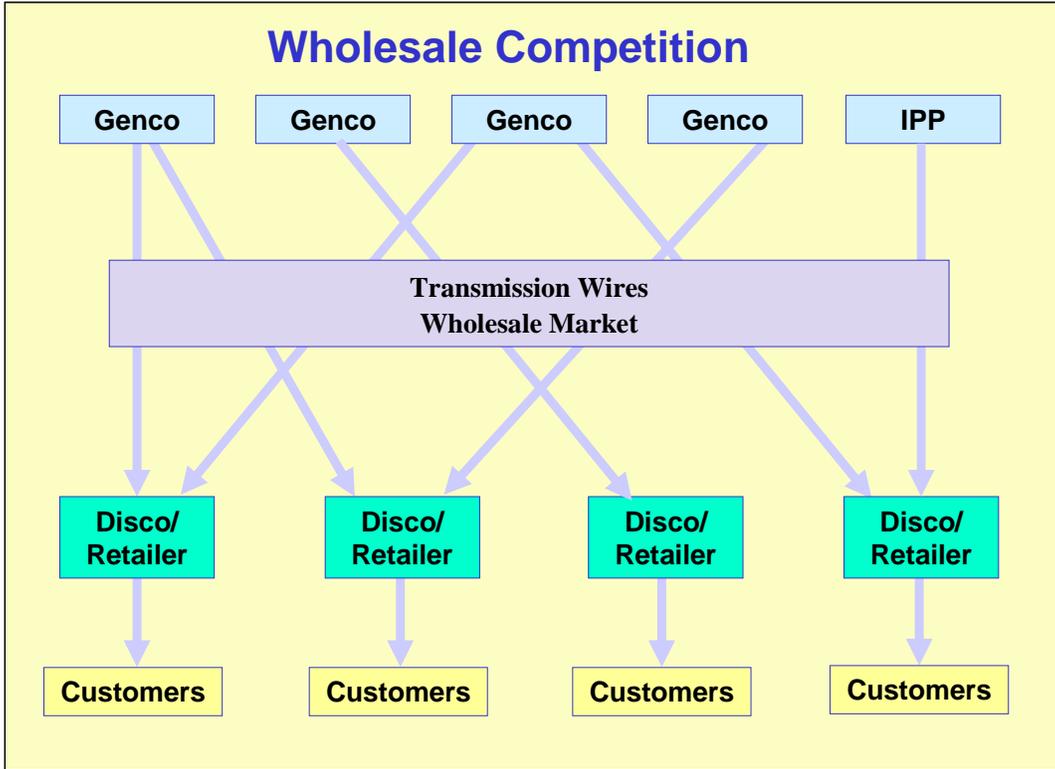
Source: NERA, Deloitte Emerging Markets Group

Figure 2-3. Power Market Models – Single Buyer



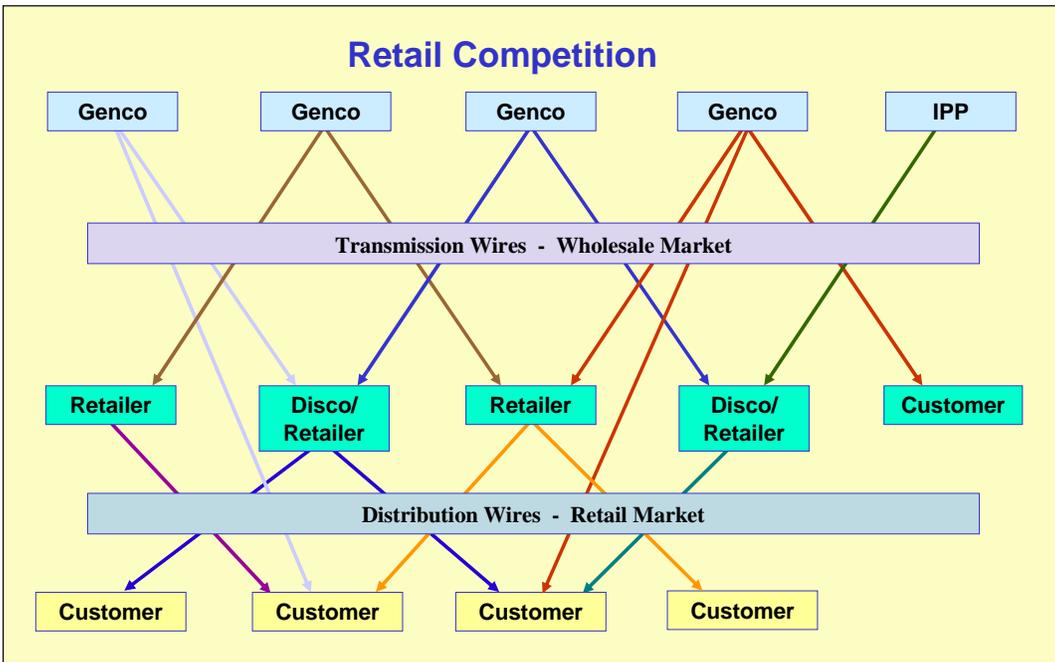
Source: NERA, Deloitte Emerging Markets Group

Figure 2-4. Power Market Models – Wholesale Competition



Source: NERA, Deloitte Emerging Markets Group

Figure 2-5. Power Market Models – Retail Competition



Source: NERA, Deloitte Emerging Markets Group

These power market reforms have had different objectives in the developed versus developing world. While the power sector in industrialized countries has generally been commercially viable and has provided reliable and quality service to the entire population, the power sector in many developing countries has not been commercially viable without major state subsidies and has provided power, often unreliably, to only a fraction of the population. Given these two different sets of circumstances, it is hard to expect that the same market reform approaches can be implemented in the same way. While the long-term objectives – to create commercial and competitive power markets – might well converge, the near-term strategies will not be the same. The different objectives of power market reforms between industrialized and developing countries are worth noting.

- ❖ In **industrialized countries**, market reforms were intended to create competition in order to reduce prices and increase consumer choice. Liberalization of power markets and the introduction of competition into a traditionally regulated monopoly industry were intended to bring down power costs, therefore benefiting consumers and prompting greater economic competitiveness and growth.
- ❖ In **developing countries** where prices are often below the level of full cost recovery (with reforms sometimes requiring higher tariffs in the near term), the focus is on introducing commercial principles that will attract investment and improve the reliability, quality, and coverage of service.

These different market environments and near-term objectives should have influenced how market reforms were introduced in developing countries. Hindsight can clarify some of the ensuing power sector problems over the past two decades. The World Bank's Operations Evaluation Department (OED) report, *Private Sector Development in the Electric Power Sector*, concludes not enough thought has been given to the political economy of each developing country, when addressing the appropriateness of its power sector reform plans. In addressing how to make the reforms applicable, the following considerations are worth noting.

- ❖ **Level of Market Maturity.** Exporting the power market models of industrialized countries to developing countries may not have been appropriate in all cases, given the limited maturity of the enabling legal, regulatory, institutional, and governance structures. There is a growing recognition of the need to better understand the political economy in each country, in order to apply more successfully reform measures exported from different societies and cultures. For example, it may be premature to export a deep pool market model from the U.K. to an emerging or transitional country (as occurred in Ukraine) that does not have similar systems and institutional capacity. It may have also been overly optimistic in some cases to introduce a regulatory agency into a country with no history of an independent regulator and then to expect that regulatory body to fulfill its prescribed functions with only a few years of institutional development and training.
- ❖ **Large Versus Small Markets.** Many developing countries have small economies with small power systems. These systems at present are usually not connected to regional power pools that provide depth to power markets (emerging power pools

such as the South Africa Power Pool [SAPP] and the Central American Countries Interconnection System [SIEPAC] will change this picture over time). Despite these small markets, initial attempts at reform sometimes tried to apply specific features of large, sophisticated power market models, which have evolved in the industrialized world, to some of these small power markets in the developing world. It may have been inappropriate, for instance, to unbundle a power system with less than 1000 megawatts (MW) of capacity into many separate generation and distribution companies, with the assumption that real competition can be promoted. (Bacon and Besant-Jones, 2002).

- ❖ **Rapid Economic Growth Versus Stagnant Markets.** Some developing countries, notably in Asia, have experienced robust economic growth based on sound industrial development and as a result have experienced strong growth in electricity demand. Urgent investment has been needed in Asia to expand power capacity through Greenfield projects. In other regions, notably among the countries of the Former Soviet Union (FSU) and in Eastern Europe, there was economic stagnation or decline due to the collapse of the Soviet Union, and these countries actually had excess capacity. Under communism, the power systems in FSU countries did not have the necessary commercial practices and pricing; as a result, the FSU countries have had an inefficient and commercially unsustainable power sector crippled by artificially low tariffs, poor collections, theft, and corruption. The FSU and Central and Eastern Europe (CEE) regions have generally focused on attracting investment not so much for new generation but for modernizing and commercializing the existing power system. Implementing reforms in these two diverse markets and regions has been a notably different process.
- ❖ **Full Versus Partial Divestiture.** Some countries, particularly in Latin America, the FSU, and Eastern Europe, were prepared for political and cultural reasons to support asset transfers (i.e., privatization) of power companies to private investors. In other countries, notably in Asia, there was considerable reluctance to sell state utilities to private owners, and thus there was an emphasis on entering into PPAs with independent power producers (IPPs) who would be contracted to build-own-operate (BOO) or build-own-transfer (BOT) power plants. Asset transfers were typically done in the context of promoting a competitive multi-buyer, multi-seller competitive market, while IPP projects were promoted in the context of a single buyer power-sector model with the goal of attracting investment. This distinction has become complicated by the fact that countries that had started with IPPs have typically then restructured their power sectors to allow for greater competition. This process has led to concerns about stranded assets that result from long-term PPAs. Long-term PPAs are seen as incompatible with establishing a competitive market. There is a tradeoff between the economic efficiencies that can be achieved through greater competition and the need to provide a stable market environment with long-term contracts, which private investors who participate in risky emerging markets require.

These and other dimensions of the reform development process illustrate how major and sometimes subtle distinctions between different countries, economies, and cultures may need to be better understood in order for the reform process to advance sustainably.

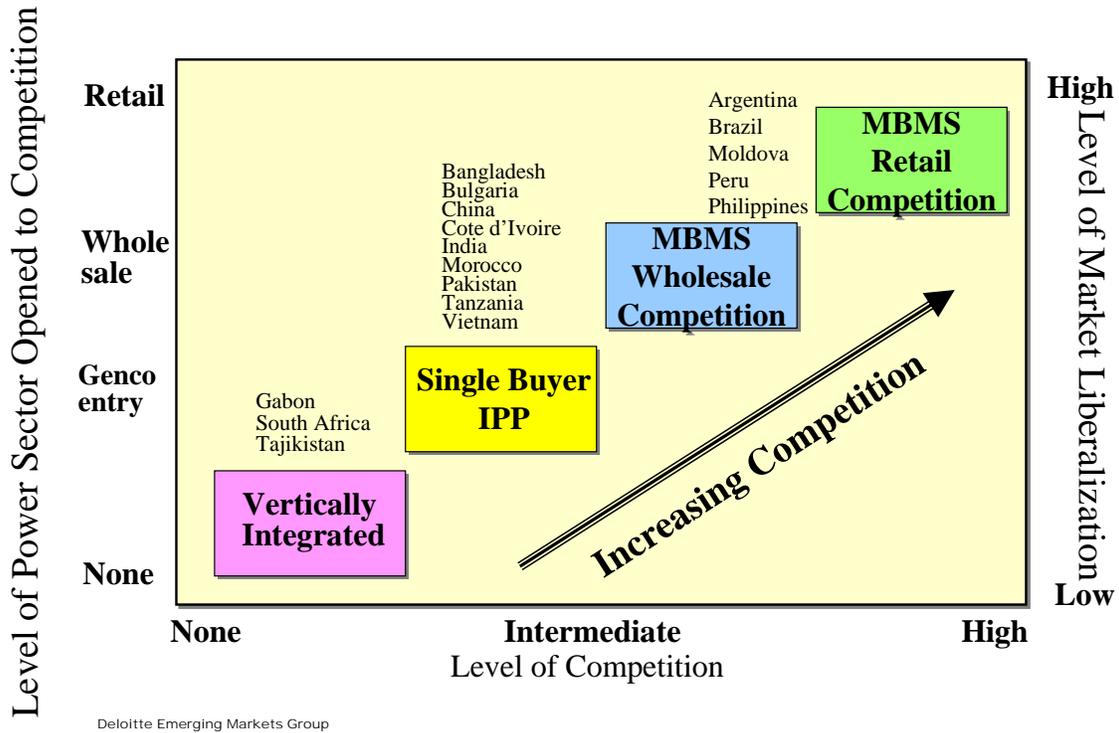
2.3. EVOLUTION OF POWER FINANCING STRUCTURES

The evolution of power market models and financing structures has become progressively more complex, presenting the international development community with greater challenges. From the 1950s to 1980s, the World Bank generally provided sovereign loans to vertically integrated state-owned power utilities. This framework was a relatively simple financing structure; nonetheless, it took years to put in place properly. While in some countries (e.g. South Korea and Thailand) these loans have led to effective power sector development, in many developing countries with poor power sector policies and governance (e.g., India and Indonesia), lending to vertically integrated power utilities has proven to be commercially unsustainable.

During the 1980s, a policy shift was promoted. It called for instituting the single buyer model where state-owned utilities would purchase power from privately financed, owned, built, and operated power plants procured on either a BOO or a BOT basis. The limited recourse project financing structure for these generation projects was considerably more complex to design and implement. Given the substantial levels of debt mobilized, bankers were asked to provide credit based on the financial strength of a developing country's utility, backed by a speculative-grade developing-country credit. Based on this risk profile, lenders and investors required an array of guarantees and risk insurance backed by multilateral banks and export credit agencies (ECAs). It took multilateral and bilateral donors, ECAs, developing-country governments, and the power industry years to develop this project financing structure. Nonetheless, it became increasingly clear that the single buyer model of procuring generation from private investors had flaws, which in many instances has led to the selling of expensive generation into a system that was not collecting sufficient revenues to make the model sustainable. As evaluated by Lazlo Lovei of the World Bank, the single buyer model has set up major impediments to introducing competition and has supported vested interests seeking to maintain central government control over the power sector (Lovei, 2000).

During the 1990s, there was a growing tendency in developing countries to pursue a plan of unbundling of the power sector, establishing an independent regulator, and then privatizing assets. At this stage, the focus was on privatizing distribution companies to bring the pricing of wholesale and retail power to cost recovery levels, to improve collections, and to enforce disconnections for non-paying customers. The privatization of distribution companies (or "discos") was pursued to monetize the power sector of many developing countries, which had often relied on artificially low tariffs, barter, and offsets to maintain their financial stability. This push to full power sector restructuring and unbundling based on the competitive market model involved an even higher level of complex financial engineering. At this point, investors were asked to finance transactions based on the risk of the entire power market's legal structure, regulatory framework, and institutional capacity. Guarantees had to be commensurate with the new risk profile.

Figure 2-6. Power Market Model Transitioning



The progression of the power market model from a vertically integrated, state-owned monopoly to an unbundled competitive market has been under way throughout the industrialized and developing world during the past few decades. As shown in **Figure 2-6**, this market evolution has introduced competition first at the single buyer level, then at the wholesale market level, and finally at the retail market level. With increased competition has come more complexity and uncertainty that requires new management mechanisms. The industrialized countries have been in the forefront of this move to competitive markets, and they have been better able to manage this new complexity and uncertainty because their power utilities are more commercially viable, their regulatory institutions are more mature, their capital markets are more developed, and their ability to finance and implement the necessary information technology (IT) is greater. The ability of the power industry in developing countries to adapt to more complex market and financing structures has raised new challenges, which these countries have been less equipped to address.

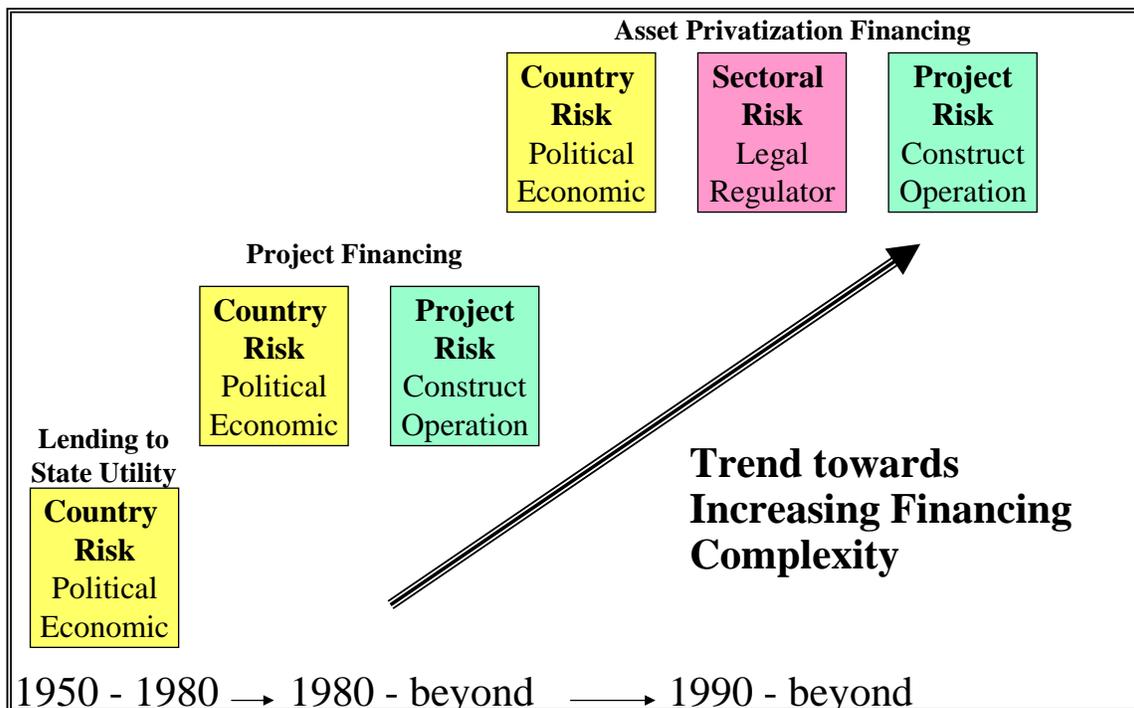
Industrialized countries have embarked on the move to competition after developing mature power sectors that have achieved full cost recovery, have well-established subsidies to poor consumers, provide full electricity coverage for the entire population, and have met basic environmental objectives. In contrast, developing countries have been led to introduce competitive markets even though their power sectors often have not achieved full cost recovery, have poor subsidy delivery programs, often do not provide full coverage to all consumers, and fall short of meeting environmental and social objectives. This transition has also occurred at a time when these countries have been trying to attract major private investment to their power sectors. These challenges to

introducing competition raise questions about how quickly competition can be introduced into developing countries, a topic further discussed in Chapter 6 and Chapter 8.

When a vertically integrated state-owned power company is broken up into separate generation, transmission, and distribution companies and when private investors and market participants are introduced, risk management at the country, sector, and project levels require different financing and risk-management mechanisms. In addition, this transition increases many-fold the demand for management talent for all the new power sector companies that are being created. Finding the management professionals to guide these new companies in ways that serve the financial interests of international investors presents a new challenge.

The evolution to competitive power markets and privatization has resulted in more complex financing structures. The basic country, market, and commercial risks exist regardless of the market design, yet the introduction of competitive markets and private sector investors and market participants changes how these risks need to be analyzed and handled. As shown in **Figure 2-7**, the evolution from first a basic loan to a state-owned vertically-integrated utility, then next to project financing, and then to divestiture, involves breaking out and managing the risks into more discrete categories such as country risk, power sector risk, and project risk. There needs to be a better understanding of how to best manage these risks in a sustainable way. New mechanisms for addressing these risks have emerged: financial engineering designs, guarantees, insurance, and other related mechanisms. Chapter 7 of this report will focus on the risk management models that show the greatest promise for attracting private capital into the power sector, given the current challenges of capital scarcity.

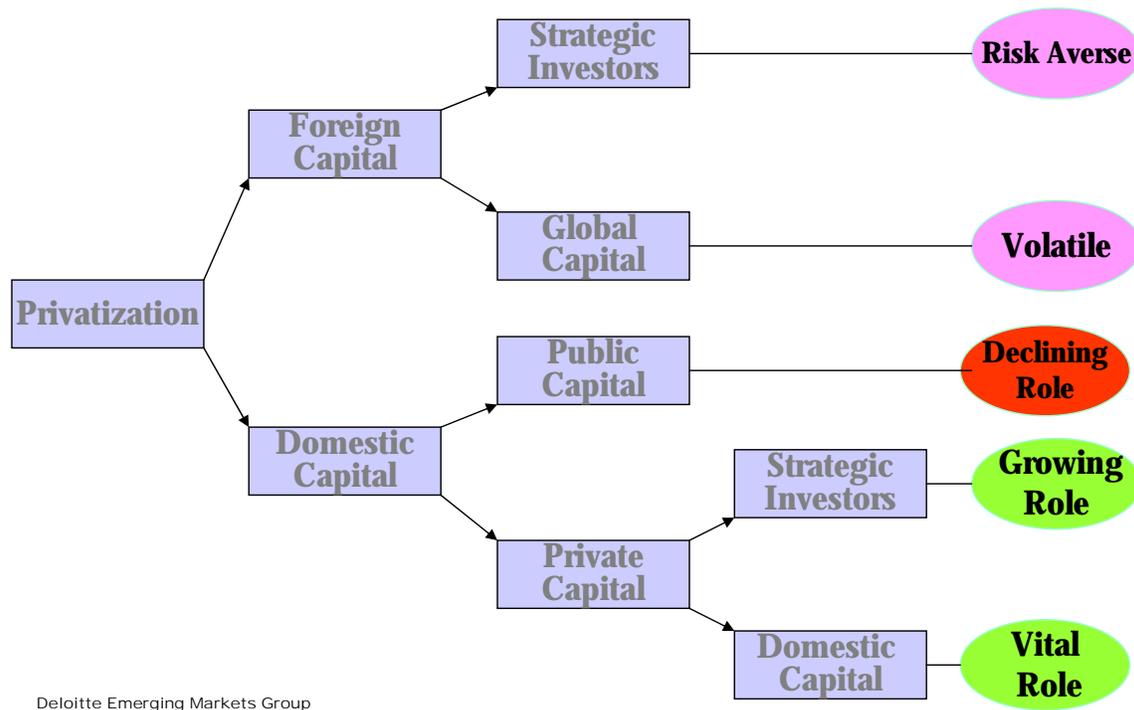
Figure 2-7. Trend Towards Increasing Financing Complexity



Deloitte Emerging Markets Group

The sources of capital for the power sector have different levels of risk preferences and stability, as shown in **Figure 2.8**. The split between foreign and domestic capital is an important distinction. Strategic investors who supply foreign capital are relatively risk averse and, if they are willing to so commit their capital, require a relatively high return and and/or guarantees to address risks that they are unable to control. Foreign capital markets financing is volatile and prone to rapid capital flight during periods of uncertainty and crises. The source of domestic capital is meanwhile beginning to shift from public-sector financing to domestic strategic investors. In many developing countries, an emerging and nascent capital market and banking sector are increasing the opportunity for domestic financing. Foreign capital will likely play an important transitional role in financing industrialization in developing countries. Domestic capital, on the other hand, plays a dominant role in financing infrastructure in industrialized markets and is the largest potential source of financing in countries with maturing capital markets and banking sectors.

Figure 2-8. Strategies for Mobilizing Foreign Versus Domestic Capital



The trend to increased financing complexity requires new instruments and mechanisms to manage the new risks involved, as discussed in Chapter 7. This trend will also likely prompt greater participation of domestic capital sources, which are often in a better position to manage certain political risks and are not exposed to currency devaluation risk. The mobilization of domestic capital is largely constrained by the degree to which domestic capital markets and the domestic banking sector have developed, a topic discussed further in Chapter 4.

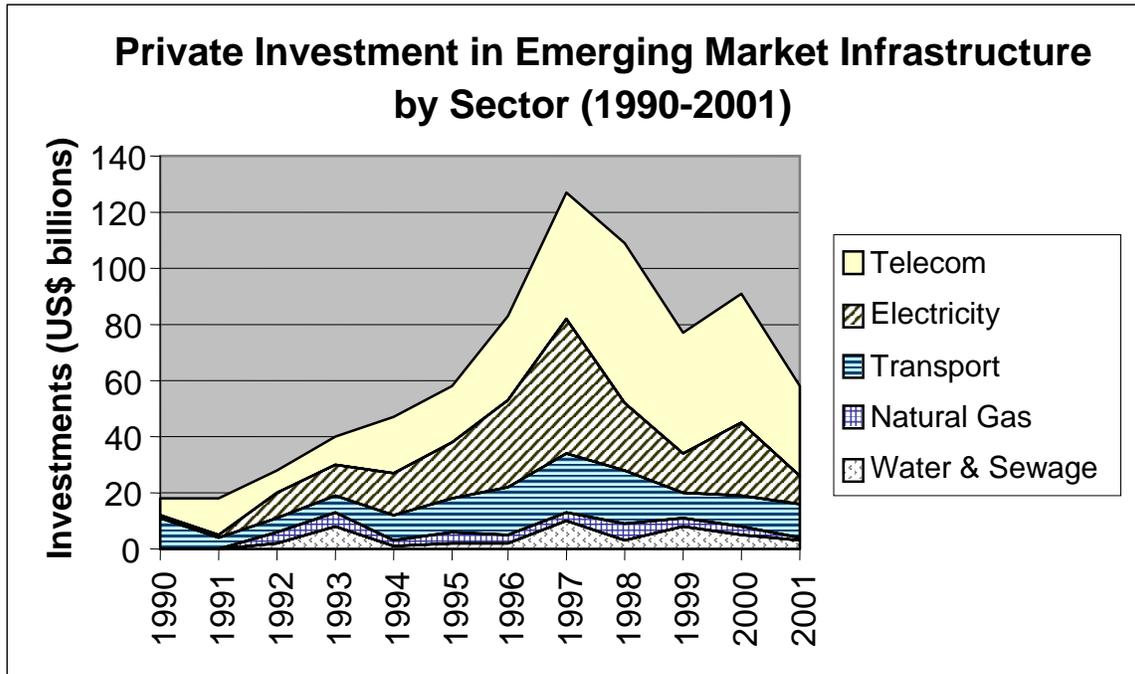
2.4. INVESTMENT TRENDS AND INDICATORS OF SUCCESSFUL REFORMS

Based on the four major drivers of power sector reform—capital scarcity, economic inefficiency, debt, and persistent poverty—it would be reasonable to ask, after some 20 years of power sector reform worldwide, what its record is. Power market reforms were implemented in emerging markets with the expressed goal of achieving economic efficiency gains and creating a sector that could be increasingly financed by the private sector. Private sector participation and investment were recognized as not ends in themselves but as a means to achieving economic development goals. The impact of power market reforms and privatization are discussed in Chapter 3. The record of performance is based on limited information and relies on experiences in particular countries and with specific projects. The impact on economic efficiency and poverty has not been documented in a way that can be aggregated and clearly quantified, using identical benchmarks, across many different countries and regions. For this reason, the success indicator of power sector development often cited has been the level of private capital flows. As discussed in Chapter 5, the real measure of success is sustainable economic development of the power sector; private capital mobilization has often been seen as a proxy indicator of such economic development. If the reforms to the power sector were working, the assumption was that the flow of private capital would naturally increase.

The assumption has been that with international private capital comes the necessary management and technology to achieve efficiency gains. While private capital comes at a higher cost, it has been expected that the efficiency gains from private capital would more than offset its high cost. It has also been assumed that with the proper international and national policies, private capital flows into the power sector would reduce or eliminate the financial burdens of subsidizing the power sector and thereby would free up government budgets and development financing to support basic human services such as education, health, and social welfare. It was also assumed the larger expanse of capital would lead to more rapid economic growth, which would in turn help reduce poverty in developing countries. Discussing these assumptions alone could be the topic of entire reports, and thus these issues cannot be done justice here.

The record of private investment in the power sector of emerging markets between 1990 and 2001 shows some striking, instructive trends. During the first 7 years of the 1990s, there was dramatic growth in private capital flows to emerging markets' infrastructure and power sectors. After 1997, there was a dramatic decline during the next 4 years, which erased much of the gains made during the first 7 years. As shown in **Figure 2.9**, there has been greater volatility in the private investment in power than has been the case with investment in such other infrastructure sectors as water, gas, and transport.

Figure 2-9. Private Investment in Emerging Market Infrastructure



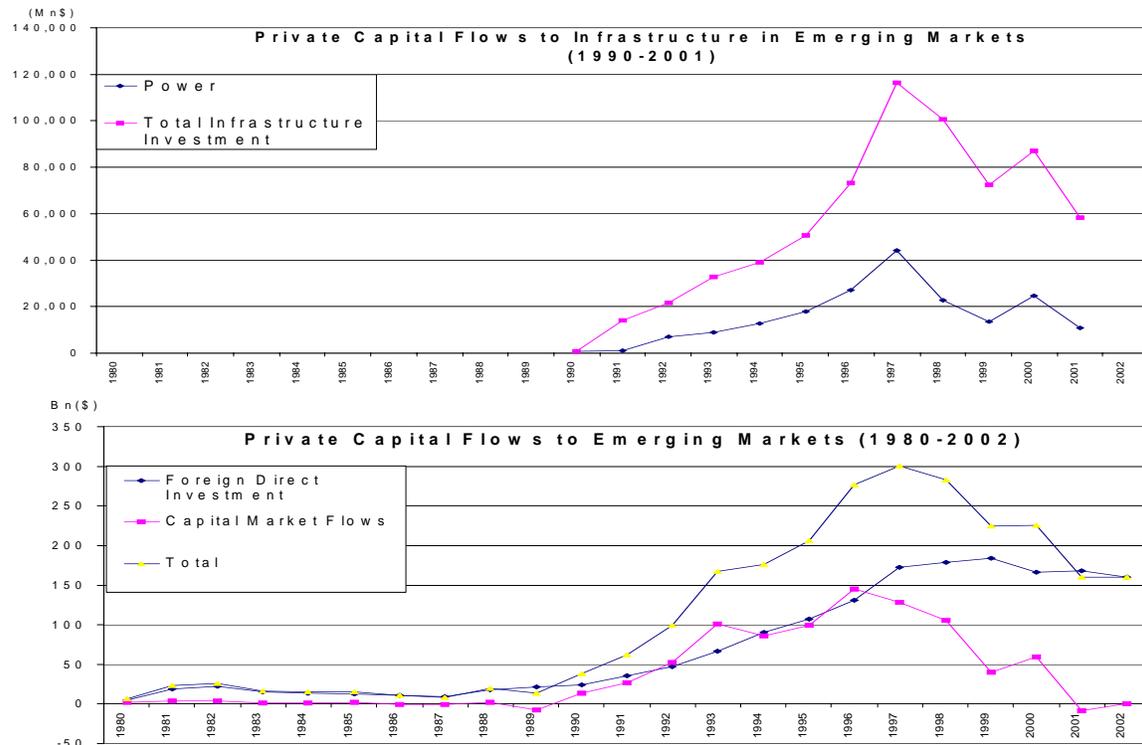
Source: World Bank

The infrastructure sector is integrally part of the larger economy in emerging markets. How much of investors' expanded participation in, and then pull back from, the infrastructure of developing countries has been affected by larger macro-economic factors rather than sector-specific conditions? While it is hard to address these questions in a rigorously economic manner, it is instructive to examine the history of overall private capital flows into emerging markets as compared to private capital flows into infrastructure and power in particular. As shown in **Figure 2.10**, the growth in private investment in infrastructure between 1991 and 1997 is mirrored by an almost identical pattern of exponential growth in total private capital flows to emerging markets during this same period. Total private capital flows increased by 34.4% per year between 1991 and 1997. Private investment in infrastructure increased by 36.6% per year during the same period. It is probably not coincidental that both total private capital flows and private infrastructure capital flows started to precipitously decline in 1997 (triggered by the Asian and then the Russian financial crises).

The ensuing decline in private infrastructure capital flows during the following 5 years (with only a temporary boost in 2000) is mirrored by larger trends of private capital flows to developing countries. During this period, total capital flows declined by 46.8% and infrastructure capital flows declined by 49.8%. Investment in power infrastructure was even more volatile, with an increase of 75.1% between 1991 and 1997, and then a subsequent decline of 74.6% from 1997 to 2001. This analysis suggests a strong link between total private capital flows and private infrastructure capital flows into emerging markets, and also that exogenous factors possibly play a more important role in capital flows into infrastructure than has been generally recognized in the literature.

There has been a remarkable divergence between the flows of foreign direct investment (FDI) and capital market flows, as shown in **Figure 2.10**. From 1990 to 1996, both FDI and capital flows grew at about the same rate. Then in 1996, capital market flows took a marked downturn while FDI continued to grow and then stabilize. A similar breakout between capital market flows and FDI for investments in power and infrastructure could not be obtained (the major source of data on private capital in emerging markets infrastructure, the World Bank private participation in infrastructure [PPI] database, does not have a similar breakout). It would be instructive to examine the respective and evolving roles of FDI and capital market flows into infrastructure, to determine what level of volatility exists and what level can be expected in the years to come.

Figure 2-10. Power Market Policies Link to Capital Flows

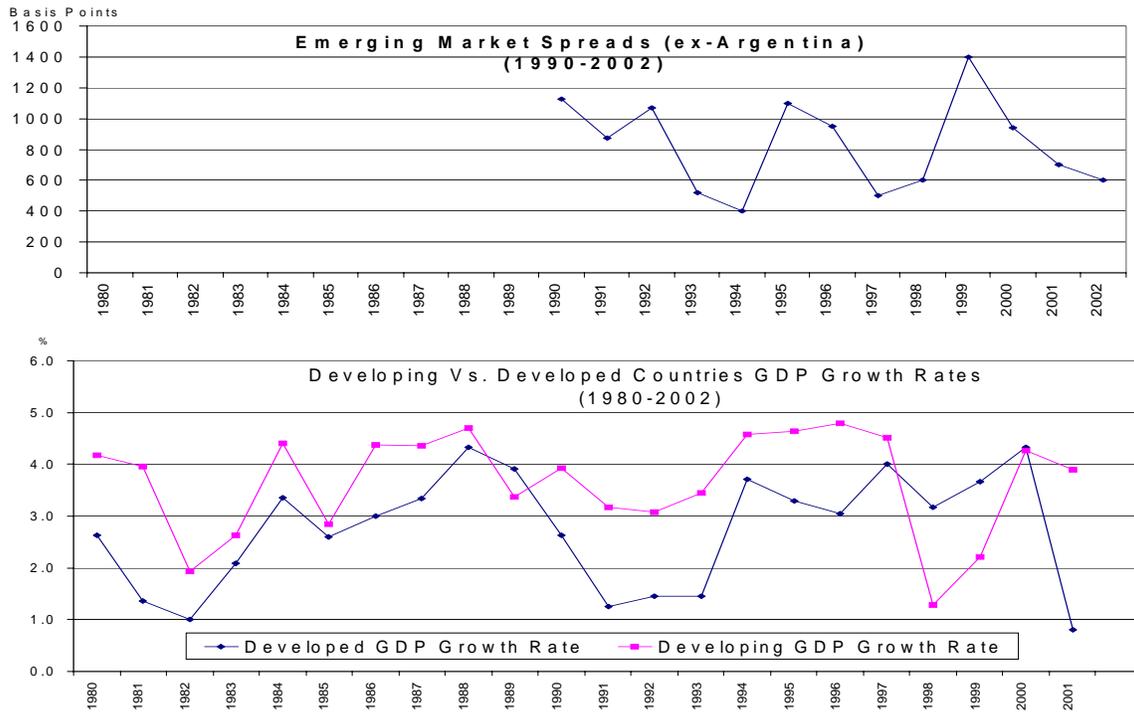


Source: World Bank, IFS Statistics

As shown in **Figure 2-11**, the spreads on emerging-market bonds over U.S. Treasuries with similar terms, have shown a strong cyclical pattern of boom and bust periods. Shrinking spreads between emerging-market and U.S. Treasury bonds have been associated with increased capital flows and vice versa. An interesting phenomenon is when emerging market spreads peaked in 1999 then declined substantially, yet capital flows to emerging markets stayed at low levels during this period. This implies that lowering the cost of capital in emerging markets through lower spreads does not necessarily increase the flow of capital to those markets, in the absence of other supporting factors. For instance, many industrialized country power investors were facing financial problems in their domestic market, and their weak balance sheets were not able to support international expansion during this period. Another factor could be overall global and regional economic trends. In 2000, soon after the dramatic decline in

emerging market spreads, economic growth in industrialized countries briefly dropped to its lowest level in over 20 years, as the U.S., European, and Japanese economies faced simultaneous retrenchment. This economic slowdown in the industrialized countries could explain the lack of resurgent capital market flows into developing countries during this period, even though spreads were shrinking.

Figure 2-11 Emerging Market Spreads & GDP Growth Comparisons



Source: IFS Statistics

The key question is to what extent are capital flows to emerging markets and, in particular, to power infrastructure, a function of emerging-market capital attraction or of industrialized-country capital promotion. Successful private capital flows are driven by both the need for capital in emerging markets and the search for better returns by the sources of private capital in industrialized countries. The relationship between economic growth in industrialized and developing countries plays a factor. Typically, the economic growth rate in developing countries is higher than that seen in industrialized countries; this was the case between 1990 and 1997. The greater economic growth in developing countries, and therefore the potential for higher returns, is generally an attraction for industrialized market capital. However, the level of capital flows from industrialized to developing countries has faced barriers, and there have been extraordinary events, such as financial crises, which have restricted capital flows and led to a high degree of volatility.

There is a growing recognition that free trade in capital presents more risks and potential pitfalls than does free trade in goods. The overall globalization agenda, which includes power market reforms and privatization, initially assumed that free trade in capital and goods were both desirable and beneficial to the world economy. While free trade in goods consistently benefits all countries in terms of expanding economic growth, the

unrestricted free trade in capital has not always been so beneficial. Economists initially argued that free flow of capital increases choice and enables capital, attracted by the best returns available, to flow where it can be best utilized. However, there have been some unexpected consequences. This topic has been debated by economists both inside and outside of the IMF (Rogoff, 2002). It has been observed that the free flow of capital is more volatile than the free flow in goods is. The many financial crises that have occurred in the international financial community over the past two decades have often had a contagious effect that went beyond the national borders of the country where the particular crisis originated. The financial crises in Mexico during 1994, in East Asia during 1997 – 1998, in Russia during 1998, in Brazil during 1998 – 1999, and in Argentina during 2001, illustrate how financial crises have consequences that often affect a much wider area than where the crisis originated. These crises can also seriously harm countries such as Argentina, which have implemented fairly successful power sector reforms, and in the process, these crises can seriously undermine political and economic support for these reforms.

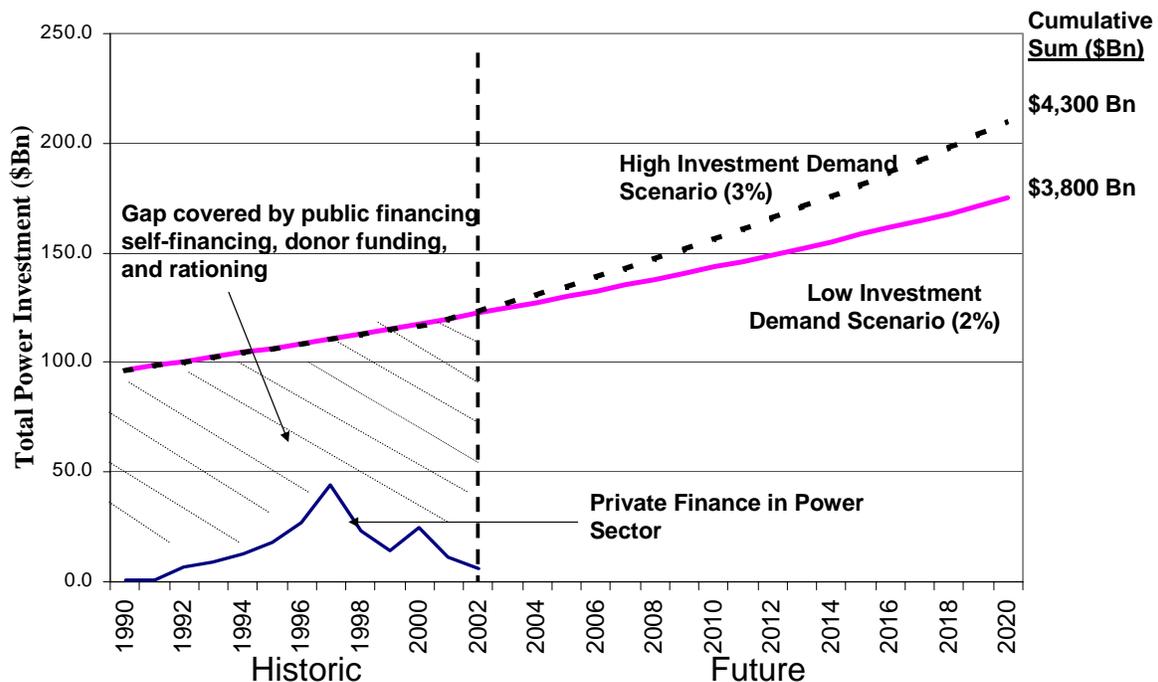
As shown in **Figure 2-10**, the overall macro-economic conditions and private capital flows into emerging markets may have a greater influence on investment in power infrastructure than does a power market's design and its legal and regulatory frameworks. This observation may seem obvious, yet it is sometimes not sufficiently recognized by power sector policymakers. While the conditions of the specific power market are major contributing factors and all must be done to address these, even the best efforts at improving the power sector framework will not counteract the larger market and capital flow conditions. If this observation is correct, it would imply the investment boom of 1991 – 1997 was not necessarily because power policymakers made all the right decisions, nor was the decline in subsequent years due to a total failure of those policymakers. This hypothesis would suggest that private capital flows at the macro level can not be used as a good indicator of the success or failure of power sector reforms in the near term. Only longer-term trends might be valuable as an indicator, but these trends may take too many years to evolve in order to be a useful guide. As this report suggests, however, the lessons from successful private capital mobilization at the project level does provide useful insights about specific policy measures and financial engineering designs. This subject will be examined in more detail in Chapter 3 and Chapter 5.

2.5. CORE CHALLENGES FOR EXPANDING INVESTMENT AND REFORM

International strategic investors from industrialized countries led the way during the first 7 years of the 1990s in expanding investment in emerging market power sectors. Their retrenchment since then, however, has left a substantial capital and private investment shortfall in the power sectors of emerging markets, as shown in **Figure 2-12**. The International Energy Agency (IEA) has estimated an emerging-market power investment need of about US \$120 billion per year between 2002 and 2010. Private investment in emerging market power, in comparison, was roughly only about US \$10 billion in 2002. Assuming that between 30% and 40% of power sector financing in emerging markets (i.e., between US \$40 billion and US \$50 billion per year) comes from self-financing and about US \$4 billion per year comes from MDBs and ECAs, this still leaves an investment need of about US \$55 billion to US \$65 billion per year that is either financed through

government subsidies or presents an investment shortfall that could lead to power rationing to those consumers and regions that do not pay their bills. A detailed analysis of these investment flows is not available, yet there is plenty of anecdotal evidence to illustrate what happens when the power sector is commercially unsustainable. The subsidies required by a non-viable power sector can rob health, education, and social service programs of critical funding. The power losses and outages resulting from underinvestment can limit economic growth, and the resulting power rationing can aggravate poverty in certain communities.

Figure 2-12. Projected Financing Requirements for the Power Sector in Emerging Markets



Source: World Bank, Deloitte Emerging Markets Group

Over the past decade, domestic and regional capital flows have expanded in a way that could reduce reliance on private capital flows from industrialized countries. As presented in the World Bank’s *Global Development Finance* report for 2004, foreign direct investment (FDI) between developing countries, or South–South FDI, has grown substantially, from US \$15.3 billion in 1995 to a peak of US \$56 billion in 1997. When overall private capital flows declined after 1997, FDI in general and South–South FDI in particular remained fairly stable between 1998 and 2000. South–South FDI as a percentage of total FDI went from 16.5% in 1995 to a peak of 38.6% in 1997 and then hovered between 30% and 37% during 1998 – 2000. (World Bank *Global Development Finance*, 2004). With developing-country South–South FDI expanding, the role of North–South capital flows may not be as dominant as originally envisioned. Also, as discussed in Chapter 4, the role of domestic or regional capital has been expanding during this period of international capital scarcity. Aggregated data on domestic and regional capital flows into infrastructure is sorely lacking, which limits quantitative analysis of these trends.

There is a notable scarcity of data and information on domestic capital flows in infrastructure, which makes it more difficult to assess the extent of its expanding role. The ultimate goal is to match long-term domestic savings to the long-term domestic financing needs of infrastructure in developing countries. To achieve this goal, it is instructive to better understand the flows of domestic strategic investment, of capital market flows, and of bank lending.

Nonetheless, given the limited maturity of the capital markets and banking sectors of most developing countries, international capital has an important role to play, particularly during the capital-intensive transition to industrialization. When examining the history of economic development in the United States during the last quarter of the 19th century and the early part of the 20th century, foreign capital investment (primarily from the United Kingdom and other European countries) played an important role in the country's industrialization. Likewise, in the successful development of the newly industrializing countries (NICs) of Taiwan, South Korea, Malaysia, and Singapore, the role of foreign capital has played an important role. The challenge is how to attract private financing in the face of ongoing barriers to investment and the volatility in the financial markets, which often undermine the necessary conditions for sustained economic growth and development.

It has often been said that while many officials in developing countries comment on apparent capital shortages, there is no shortage of capital for well-designed infrastructure projects in countries with favorable investment frameworks. The focus needs to be on how to better establish the appropriate investment climate for private investment. This involves addressing the obstacles to private capital flows at three levels:

- ❖ **global policies** that regulate the flows of capital worldwide in a way that reduces the number and severity of financial crises;
- ❖ **national policies** that define a country's overall risk and investment climate in a way that reduces the risk premium associated with that country; and
- ❖ **power sector policies** that define the soundness of the legal, regulatory, institutional, and market framework, as well as the overall investment framework, in a way that enables investors to earn a fair, risk-adjusted return on investment in the power sector.

The underlying suggestion is that power sector reform will only sustainably attract the needed capital in emerging markets if the reform is within a macro-economic policy framework supportive of capital flows and if it is not undermined by financial crises and uncertainties. Effective governance structures at the global, national, and power sector levels are necessary to provide the basis for sustained power sector reform that can contribute to strong economic growth.

This analysis does not imply that capital flows into infrastructure are largely at the mercy of macro-economic policies and that little can be done therefore at the sector level to increase capital flows. This analysis does, however, acknowledge that capital flows may be strongly influenced by the business cycle and larger macro-economic events. Maximum investment in power will be achieved when macro-economic, national, and sector conditions are positive and support each other. There also appears to be a cyclical

aspect to capital flows into emerging markets in general and into infrastructure in particular; this phenomenon needs to be understood and factored into power sector reform and development programs. Clearly, power sector reforms need to be undertaken with a better understanding of the broader economic reforms and trends. This observation is self-evident but can be overlooked at times by power policymakers who have a natural tendency to narrowly focus on the power sector.

3. POWER SECTOR REFORM AND PRIVATE INVESTMENT IMPACT

The power sector reform and privatization process has about a 20-year track record in emerging markets that is important to examine before defining any policies for revitalizing the process. This chapter examines this history and presents a detailed analysis of 20 case studies of successful private power financing projects in emerging markets. This analysis will set the stage for assessing the key factors for success and defining a policy for revitalizing private investment in Chapters 6, 7, and 8.

3.1. THE IMPACT OF PRIVATIZATION ON POWER SECTOR REFORM

The power-sector reform movement originally considered privatization integral to establishing a commercially viable and competitive power industry. Introducing private investors into the power sector typically was promoted in two ways, based on what a country's policies would permit. Predominantly in Asia, the initial focus was on project finance transactions for the construction of independent power projects (IPPs) that sold into a state-owned single buyer. In these countries, competition was introduced at the IPP transaction level. Predominantly in Latin America and in countries in Central and Eastern Europe (CEE) and the Former Soviet Union (FSU), the focus was instead on full divestitures of utilities, as those governments' role in the power sector was limited to minimal regulation and systems operation. In both cases, it was assumed that allowing the power sector to be fully retained in state hands would not completely achieve the needed objectives of commercialization and economic efficiency. With the prevalence of political interference, mismanagement or lack of management, corruption, and with the lack of incentives for improving efficiency in state-owned power utilities, transferring ownership to the private sector was seen as the best means of installing commercial discipline. Notwithstanding the merits of these arguments, there are now about two decades of experience with privatization in the power sector, which provides some important lessons. In assessing the impact of privatization, it is instructive to remember that privatization has involved three broad phases.

- ❖ **Privatization Policy Formation.** The initial concept of privatization in power and other sectors was launched in the industrialized world shortly before it was promoted in emerging markets. Privatization was defined in the popular mind by the U.K.'s Prime Minister Thatcher. During the 1980s and early 1990s, various Organization for Economic Cooperation and Development (OECD) countries, initially led by the U.K., successfully used privatization not simply to boost efficiency but to enact a fundamental shift in these countries' political, social, and economic models. These policies, originating largely in the U.K. and echoed in the U.S. and other OECD countries, were a decisive step away from monopolies and state ownership.
- ❖ **Privatization Policy Implementation.** Prompted by international financial institutions (IFIs) and donors, and beginning in the mid to late 1980s, privatization was applied widely in emerging markets. The policy expanded in the 1990s, following the fall of the Berlin Wall in 1989 and the subsequent collapse of the Soviet Union: events that, along with the persistent economic boom, led to the belief that capitalism was the proven, universally applicable economic model. This phase began with the fairly rapid privatization of state-owned property, particularly following the reunification of Germany.

- ❖ **Privatization Policy Reconsideration.** Following the Asian and Russian financial crises of 1997 and 1998, there was a major decline in private investors' appetite for emerging market infrastructure, as illustrated in **Figure 2.9**. In many countries and cases, privatization failed to fulfill the expectations with which it had been sold. Many investors saw their investments not earning the risk-adjusted returns they needed. Governments often encountered political difficulties with the higher tariffs, the disconnections of non-payers, and the changes in the labor makeup of privatized companies that were often required by investors. When investors did not get the full terms they needed, they sometimes did not invest at the levels expected, which led to further disappointments. The fact that private investors were largely foreigners and they were taking possession of utilities providing what many regarded to be an entitled "social good," further complicated the picture. Foreign investors were sometimes portrayed as profiting off the backs of poor citizens by buying utility assets at low prices and then raising tariffs and forcing collections. Some countries (e.g. Mexico, Thailand) successfully attracted substantial amounts of private investments to the sector, especially into generation, through build-own-operate (BOO) and build-own-transfer (BOT) models, without necessarily privatizing the state-owned utilities. The IPP model in other countries (e.g., Turkey, India), however, although successfully financed, led governments to sign long-term power purchase agreements (PPAs) at wholesale tariffs that were unsustainable given the retail tariffs and collections record. All these factors and more led first to the emergence and then gradual strengthening of the view that privatization creates as many problems as it solves, and may even be a flawed model in the way it is implemented.

Power sector privatization over the past 20 or so years has had both positive and negative impacts. It is worth focusing first on the positive impacts of privatization to date, and then next examine the views of doubters.

- ❖ **Enterprise financial performance has improved.** The experience with most power sector privatizations, whether IPPs, divestitures, and even concessions (which do not fully transfer assets to the private sector), has demonstrated positive results at the enterprise performance level. There is considerable and convincing evidence that, in the main and on average, the financial performance of these privatized power enterprises systematically improved post-sale, unless such gains could not be achieved due to larger macro-economic events outside of their control. Revenues increased, productivity improved, and costs declined on a clear trajectory to improved profitability in most power companies with private sector investment. The state no longer faced taking on project development risks and accumulating direct debt obligations, as the private sector assumed responsibility for collections and/or financing of investments. There is a wealth of analysis on this subject with many reports conducted by the World Bank and others, so it is not necessary to elaborate at length here. Key reports, which are listed in this document's Bibliography, provide detailed analysis on financial performance and improvements with power privatizations; these include Krishnaswamy and Stuggins (2002), Plane (1999), Barnett (2000), Shaikh (1996), Macedo (2000), and Mckenzie and Mookherjee (2002). The case studies of the Edenor project in Argentina (shown in **Case Box 3-1**), and the Luz del Sur project (shown in **Case Box 3-2**), illustrate how notable financial performance improvements were achieved in divestiture and concessions projects.

Case Box 3-1. Edenor Distribution Company - Argentina

When Concession Contract Meets Social Contract– Edenor Concession

In 1992, Empresa Distribuidora Norte S.A.(Edenor), the Company, was established under a 95-year government concession to provide electricity distribution services in northern Buenos Aires, Argentina. The concession was won in a competitive bidding process by a consortium of EDF, SAUR (France), Endesa (Spain), and Astra, an Argentine company. About \$800Mn was invested into the concession from 1992-2002.. The International Finance Corporation (IFC) and the Inter-American Development Bank (IDB) provided loans of \$30Mn and \$120Mn respectively. Despite initial losses of \$100Mn in 1992-1993, Edenor has experienced significant improvements both financially as well as operationally. Energy losses were reduced from 30% in 1992 to 10% in 1999. Quality of service improved, average interruptions per customer and year decreasing from 13 in the first year of operation to 5.7 five years later, and the average duration of interruptions from 22 to 8.6 hours per annum. Access of poor households to electricity supply service (300,000 illegal connections in Edenor's concession area in 1992) was ensured through agreements with community organizations and government entities; 554,000 users were legalized by 1998. Argentina's 2002 economic and currency crisis led to rate freezes and effective contract breach by the government upon abandonment of convertibility. Nevertheless, the following factors have contributed to Edenor's successful concession structure.

- ❖ **Good Wholesale Market Design and Performance:** Argentina's performance-based regulatory regime allowed pass-through of the distributors' cost of supply under PPAs and spot market purchases.
- ❖ **Appropriate Regulatory Framework:** During the first 10-year period of the concessions, rates in pesos were only adjusted for changes in the peso/dollar exchange rate and for U.S. inflation; no productivity adjustment factor was included. This limited uncertainty about revenues and created cost recovery and return incentives for the operators to eliminate cost inefficiencies.
- ❖ **Credible Regulator:** The electricity regulatory entity was designed to minimize political manipulation or private interest capture. Regulatory decisionmaking was entrusted to a board with overlapping terms for its members, funded by a quasi-fiscal charge on electricity transactions.
- ❖ **Consensus-building Capacity:** The main limitation to electricity service for the poor was primarily price. As a result, Edenor proposed to sell electricity at wholesale to the community with the government covering a portion of the costs. In addition, a media campaign emphasized electricity payment as a civic duty. In return, Edenor contributed funds for local public works such as parks.
- ❖ **Concession Duration Flexibility:** The concession is subdivided into management periods of 10 years (15 years for the first one) at the end of which there is a public auction. The concessionaire will retain the concession if its offer is the highest, or will sell it to who makes the highest offer and will receive that price. This provides an exit mechanism for the concessionaire without creating an end-of-concession problem.

Edenor's success prior to the convertibility crisis of 2002 highlights the potential for well-designed concession contracts, together with other elements of reform packages, to create substantial benefits for investors, operators, and consumers. The convertibility crisis, however, has become a major challenge, because it has forced up tariffs to a level many consumers are unable to pay. Many Argentines blame the crisis on the foreign companies that bought privatized assets. The current government, responding to populist pressures and to instinct, is determined not to compensate utilities for the impact of the massive peso devaluation and is content to feed public outrage, however misguided.

Case Box 3-2. Luz del Sur Distribution Company - Peru

How Cumulative Power Reforms Benefit Society – Luz del Sur Divestiture

Luz del Sur is evidence that privatization can lead to improvements in both social welfare and investment returns. Between 1994 to 2002, the distribution utility targeted service, operational, and financial improvements. The number of customers increased by one-third to 700,000, with roughly 90% of them residential customers; collections were improved alongside with service. Key success factors included the following.

- ❖ **Domestic Capital Market Access:** Luz del Sur's listing on the Lima Stock Exchange provided financial resources for capital investment. More important, the ownership of shares by employees and local investors aligned their interests with those of foreign investors, in seeking productivity gains and financial returns in the utility, while helping maintain domestic support for the divestiture in the midst of local skepticism about privatization.
- ❖ **Dedicated Government Commitment of Subsidies:** To expand and ensure coverage among low-income communities, residential customers with less than 30kWh per month usage are provided with subsidies which cover 50% of the cost of service.
- ❖ **Progressive Power Sector Reforms:** Peru improved upon the Chilean reform model. Vertical unbundling and increased competition facilitated the regulation of distribution utilities and put downward pressure on the price of electricity paid by regulated consumers.
- ❖ **Appropriate Regulatory Framework:** The regulatory framework provided reasonable assurance of revenue stability by limiting rate reviews to every 4 years and ensuring full pass-through of electricity purchase costs to regulated customers, while encouraging efficiency improvements through the use of a model utility rather than a cost-plus arrangement.

Despite regional and macro challenges to Peru's economy, Luz del Sur has held its course. By 1999, the average time to install a new connection was down to 5 days, from 90 days in 1994; energy losses dropped from 20% to 8.4% between 1994 and 2002. Despite the ability of customers with peak demand in excess of 1MW to freely choose their supplier of electricity, energy sales grew from 2,400 GWh to 3,900 GWh over the period—a 52% increase. In fact, sales to unregulated customers grew from 500 GWh in 1997 to 665 GWh in 2002. Increased productivity contributed to Luz del Sur's positive net-income stream, which has averaged \$50 million in the last three years (2000-2002) on sales of about \$300Mn, and resulted in payment of dividends at least since 1996. The number of customers per employee increased from 426 to 1,039 over the 1994-2002 period, with cumulative investment over the same period reaching nearly \$300Mn. Luz del Sur posted a \$50.5Mn profit for 2003. Finally, public perceptions of the utility's future prospects improved such that from 2001 to 2003, Luz del Sur's stock price grew from \$8 to \$18 – a total return of 125%.

- ❖ **Enterprise technical quality of service has improved, even to the poor.** Whatever the form of utility privatization, there has been evidence of improvements in the quality and reliability of electricity supply. Power has been delivered with fewer outages, higher efficiency, lower losses, and improved voltage and frequency. There are many reports published by the World Bank and others that provide detailed illustrations of how enterprise service improvements were achieved through privatization. In particular, we draw your attention to the following reports: Megginson and Netter (2001), Estache and Rodriguez-Pardina (1998), and Feler (2001). Even coverage has improved in many cases to the underserved in poor communities in urban and rural areas, as described in a series of reports including Clarke and Wallsten (2002), Torero and Pasco-Font (2001), and Estache, Gomez-Lobo, and Leipziger (2000). The Chisinau/Centru/Sud distribution divestiture project in Moldova has demonstrated how notable technical performance improvements can be achieved quickly after a private owner takes over, as described in **Case Box 3-3**.

The impact on the poor has been mixed, however, because while privatization often brought service that is more reliable to many communities, it often came with higher tariffs and disconnections of non-payers. Programs to provide targeted subsidies to poor consumers have been slow to be instituted and were often not well-administered. The utility electrification projects of Phambili Nombane in South Africa (described in **Case Box 3-4**) and Meralco DAEP (**Case Box 3-5**) illustrate how power has been successfully and sustainably extended to underserved communities. Complex performance contracts, leases, and concessions have all been used explicitly to expand service coverage and improve service quality. The lesson is that infrastructure privatization can help the poor, but it generally requires investors to have clear requirements to expand service to underserved communities and to be provided with a transparent and reliable public subsidy mechanism to support customers who cannot pay the full tariffs. The projects of SEEG in Gabon (depicted in **Case Box 3-6**) and the Lydec in Morocco (depicted in **Case Box 5-7**) illustrate how incentivizing a private investor in a concession's contract can effectively lead to expanding coverage to underserved communities, despite the many challenges involved.

- ❖ **Net financial flows to government have improved.** Net proceeds from privatization transactions were significant in many countries during the height of privatization in the 1990s. Specific analysis of proceeds generated from power privatizations are found in various reports including Ossowski, Richardson, and Barnett (2002), Macedo (2000), Shaikh (1996), and La Porta and Lopez de Silanes (1997). While receipt of these proceeds was a one-time event, the larger benefit to many countries was the removal of loss-making enterprises from their balance sheets and the assumption of commercial risks and responsibilities by the private sector. The fact that many governments did not continue to accumulate debts to finance the sector investments was often worth more than the proceeds from the privatization, because it freed up government budgets to serve important social sector needs. Net financial flows to governments from privatized companies and sectors promised to increase post-privatization due to the collection of tax revenues. Examples include Egypt, Hungary, Mexico (La Porta and Lopez de Silanes, 1997), Brazil (Macedo, 2000), and Argentina (Shaikh, 1996).

Case Box 3-3. Chisinau/Centru/Sud Distribution Companies - Moldova

Two Steps Forward, One Step Back – Chisinau/Centru/Sud Divestitures

On February 9, 2000, the Spanish utility Union Fenosa (UF) paid an estimated \$26.9Mn for three of the five unbundled Moldova distribution companies (“discos”), with an 18.5% of UF’s stake later sold to the European Bank for Reconstruction and Development (EBRD) for \$5Mn in June 2001. The total project cost was estimated at \$132Mn, of which \$78Mn was dedicated to a capital investment schedule over 5 years. Since UF’s acquisition, there have been improvements in the discos both operationally and financially. For example, the number of electricity cutoff hours has dropped from as high as 4,710 in 1999 to 163 total hours between 2000 and 2002. In addition, net sales per employee grew 50% between 2000 and 2002. The World Bank and a USAID-funded program worked closely with the Moldavian government on power sector reforms to support privatization. The 1999 electricity reform act opened the door to UF’s purchase of the Chisinau/Centru/Sud discos, but a number of other factors contributed to its financing and performance improvements.

- ❖ **Active Multilateral Participation in Financing and Risk Management:** Both the IFC and EBRD provided critical debt financing necessary for the discos’ capital investments. The Multilateral Investment Guarantee Agency (MIGA) provided political risk insurance and has played the honest broker among UF, debt financiers, and the new 2001 communist-dominated government, which wanted to revisit the privatization.
- ❖ **More Favorable Tariff Structure:** The regulatory agency, ANRE, was an active partner in the negotiations with UF during the time of sale and agreed to a tariff methodology attractive to UF. As a result of an international audit of UF’s true disco operating costs, a later agreement was negotiated with ANRE to raise and solidify multi-year tariffs for a period of 7 years, however actual implementation was delayed after the 2001 elections.
- ❖ **Quality Investment in Human Resources:** Between 2000-2002, the aggregate labor pool was reduced from 3,200 to 2,500. However, the present 2,500 employees incorporate the hiring of 300 younger employees from the best educational institutions. Furthermore, 150 of the top employees underwent extensive skills training either in Moldova or in Spain at UF’s corporate university.
- ❖ **Focused Technical and Collections Losses Reduction:** In November 2001, UF adopted the new SGC bill collection system throughout all three discos. Combined with active meter reading by UF staff, this system computerized electricity consumption and other technical data.
- ❖ **Supportive Community Intervention:** In parallel to loss reduction efforts, UF sought to improve community relations. This included charity efforts such as daily free entrance canteens for the poor and material aid in the form of medicine and clothing.

Political and legal events in Moldova continue to challenge the sustainability of the Chisinau/Centru/Sud distribution companies. Some have observed that Union Fenosa’s initial successes may have tempted the communist government to pursue a strategy of creeping expropriation of the discos. Despite the continuing obstacles, Union Fenosa materially contributed to the welfare of the people through improved electricity service and has committed to improving financial performance. The combination of multilateral support, progressive tariff structures, human resources improvements, loss reduction strategies, and community intervention has not solved all of Union Fenosa’s problems. Union Fenosa has faced challenges with ANRE in recognizing their needed tariff increases and with the Gum on some attempts at creeping expropriation, such as a court ruling that annulled the Sales Purchase Agreement. Nonetheless, Union Fenosa has set the Chisinau/Centru/Sud discos on the right path and served as positive benchmarks for the remaining two state-owned discos.

Case Box 3-4. Phambili Nombane Electrification Initiative– South Africa

The Wonders of Community-based Distribution - Phambali Nombane

Phambali Nombane Energy's (PN Energy) biggest single accomplishment has been demonstrating that a community-based distribution company, run as a business, can successfully electrify challenging areas under extreme economic hardship and rife with incidents of power theft. PN Energy was a modest joint venture among electricity giants: Eskom, EDF, and East Midlands Electric. A small amount of equity and self-financing (totaling roughly \$25Mn) on an as-you-go basis gave the venture flexibility in its business design and financial/equity requirements. It was accomplished in parallel with an ambitious rural electrification effort waged primarily by Eskom (after the government adopted very ambitious pro-poor electrification goals.). The initiative was difficult but several factors contributed to successful deal closing.

- ❖ **Improved Value Equation for the Customer and Community:** Subsidies and financial assistance on the connection charge made it easier for poor households to participate.. A completely revamped electricity distribution system within the area brought high-quality service to an area that had been renowned for poor quality. This in turn allowed the opening of (or better operation of) businesses and services (e.g., supermarkets, clinics, and small telephone services) within the community, which had formerly been problematic. Many jobs were created and have remained in the community, not least the employment by PN Energy of technical and administrative personnel from the community, and the look and feel of the community in general has been improved.
- ❖ **Positive Change from Theft Culture to Prepay Culture:** Prepayment meters were not a foregone conclusion to the theft culture and needed to be “sold” to the townships as well as the public in Cape Town. Providing an amnesty and clean slate for former transgressors who joined the program was a good start. Using prepayment meters throughout Cape Town for all new connections of any sort (instituted by Unicity, the municipal utility) removed some of the stigma associated with the new approach that people were suspicious of. Once the meters were installed, people found these helped them stay within their budget (or suffer self-blackout as result) and began to use the meters/prepayment to manage their electricity budgets: an entirely new concept.
- ❖ **Economical Service Cost Reduction without Quality Reductions:** PN Energy's adoption of prepayment metering and its implementation of a comprehensive revenue management systems as well as its initial standardization of the ready boards and service drops allows it to connect and serve customers and to monitor for potential problems. This approach lowers costs at no expense to service quality and allows PN Energy and Eskom to carry out government goals at relatively low cost per connection.

The program overall found a highly effective means for entirely revamping the service approach to low-income customers and for vastly improving collections as well as the company image; indeed, it appears to be the most sustainable of the three cases studied because it is still operating at least at break even. While problems remain, particularly in the lack of return from the investment made by the utility in the area and slow progress on the remaining (and growing) number of households (as high as one-quarter of those in the area), management at Eskom and PN Energy seem quite satisfied with the pilot's progress and achievements. New government decrees on providing free electricity to poor households will challenge profitability, particularly as there is uncertainty about who really bears the cost of the complete subsidy. Furthermore, changes in structure of the distribution side of the electricity sector are under way and it is unclear what will happen to the township electrification efforts in the new scheme.

Case Box 3-5. Meralco DAEP Electrification Initiative - Philippines

Adding Community Value by Electrification – Meralco Utility Initiative

In 1990-1992, with the assistance of a loan from Japan Overseas Development Authority, the Philippine government and the Manila Electric Company (MERALCO) jointly began implementation of the “Depressed Areas Electrification Program” (DAEP). This program significantly expanded legal electricity connections and lowered costs, both for the connections and for electricity usage, in many low income urban settlements over a period of 10 years. By encouraging legalized electrification and bypassing illegal operators, effective tariffs often dropped from roughly \$0.09/Kwh to \$0.045/Kwh. Over 300,000 households were “regularized” or connected to electricity for the first time. The total project cost was approximately \$50Mn in 1988. The project involved an innovative design for providing individual meters to households without having to secure legal right-of-way (a meter wall placed at the edge of the slum), waiving the largest cost of connection, a very low connection deposit, and loans to households for internal wiring repayable in 60 months. Key success factors were:

- ❖ **Aggressive Strategy on Non-technical Loss and Cost Reduction:** Non-technical losses (“theft”) from all sectors in the years prior to the DAEP program ranged over 20% and as high as 40%. Theft of power in the target areas amounted to around 3.1% of the total 20.8% total losses in 1986. System losses had dropped from 20% to 12% by end of the program. Transformer overloads were virtually eliminated in these areas.
- ❖ **Lowering Cost and Making Payment Easier:** The substantial subsidy provided to make connection to the MERALCO system more affordable and the availability of loans payable over 5 years were key in making the DAEP scheme work.
- ❖ **Adding Value for the Community:** Making the Slums Safer through Community Participation - Slums are physically dangerous, even for providers of public services that people feel they deserve “for free.” The DAEP design took this into account and found a reasonable solution: using NGOs and local organizations as trusted intermediaries and “socializers” (helping to explain the program and gain support for it within the community and organize the initial HH associations).

While the subsidized program was terminated in 1999 when the loan funds were used up, each year a few households in slums are actually coming up with sufficient down payment to become individually electrified and the program is highly popular where it was implemented. The company expresses a desire to rework the DAEP approach to increase efficiency based on lessons learned in its first 10 years as described above.

There is also evidence of significant **negative impacts** and policy failures, however, which we now consider.

- ❖ **Improvements in efficiency at the level of the firm have often been accompanied, at least in the short term, by reductions in social equity.** Tariff increases and disconnections have disproportionately affected the poor, who in addition have not benefited from effective subsidy mechanisms targeting low-income consumers. The impact of privatization on labor and job certainty of workers has also been perceived to be negative. Privatization, particularly to foreign companies, has played into the hands of nationalist and anti-foreign sentiments. This negative view has been heightened by the fact that in many countries post-privatization, tariffs, and disconnection of non-payers have increased. Essentially the private sector has been blamed for implementing the necessary measures that the public sector in many countries had failed to implement. In those countries where the state/public utility had

implemented tariff adjustment to cost-recovery levels prior to the privatization, privatization has been better accepted (e.g., see Gabon in **Case Box 3-6**).

- ❖ **The political economy in many countries has not been fully compatible with implementing market-based solutions in the power sector.** Some governments have opted for a hybrid model or for managing markets through policy actions. Such mechanisms have included “golden shares,” retaining a minority or even a majority stake, and interfering in the employment, dividend, investment, location, divestment, and diversification decisions of investors. These government actions have in some cases damaged the critical role of private investors in performance improvement. Where large companies have been privatized, it has often been without prior disaggregating, as in Russia, thus granting the new private firm an artificially dominant market position. Corruption has played a part in many transactions, since the short-term advantages to a monopolist are significant and worth paying for. There have been more problems with the privatization of network infrastructure companies than with firms operating in naturally competitive industries. Success in network infrastructure has been held back by the absence of institutionalized competition, by deficiencies in legal/judicial systems, by weak regulation, and by deep and persistent corruption in the companies and in the operation of markets. Many of these failures have been expensive to the government and taxpayers, and have created negative signals in the market about the government’s commitment to market reform. There is strong regional variation in the outcomes. CEE countries have had more success than FSU countries. Privatization has proven more difficult to launch and more likely to produce sub-optimal results in low-income settings such as Sub-Saharan Africa. China is on a different course, where the mobilization of private capital, predominantly domestic resources, has been chiefly through asset securitization for refinancing of operating power projects and the initial public offerings (IPOs) of previously state-owned utilities often involving foreign joint ventures.

The overall result is that privatization is poorly regarded among the large populations in many developing countries. How do we explain this phenomenon? Detailed analysis by John Nellis provides valuable insights on this topic (Nellis, 1994; Nellis and Birdsall, 1999; Nellis, 2002) as summarized below. Improvements in service due to privatization are not widely recognized. The impact of privatization is generally small per person and widely distributed across a large population; consumers who enjoy a more reliable power supply and better quality of consumer service or somewhat lower tariffs tend to be silent.

Negative consequences of privatization hit a minority of people more painfully and are vocally opposed. Increases in tariffs, redundancy, and the liquidation of firms are all blamed on privatization, rather than being seen, correctly, as the result of years of mismanagement and value destruction by governments. The inequities resulting from privatization particularly have an adverse impact on the poor, employees who have been made redundant or who have had wages reduced, or consumers who have been hit with higher tariffs. These minorities often are highly vocal in the political process.

There is a widespread perception that governments have failed to honor their contractual commitments under privatization, so deals “go bad” as with the Indian

and Indonesian IPPs and the Indian electricity distribution in Orissa. Surprisingly, the objective evidence is that very few infrastructure deals have, in fact, been cancelled. Of the 2,500 private infrastructure projects studied in a World Bank paper prepared by Clive Harris, John Hodges, Michael Schurd, and Padmesh Shukla, only 1.9% were cancelled, with about one-third of these not power projects but in fact such things as toll road projects in Mexico (World Bank Public Policy for the Private Sector Note Number 252). In the case of the Indonesian IPPs, 19 out of the 27 IPPs contracted but mostly not financed were cancelled after the country's financial crisis, though negotiations and PPA contracts for the rest (except one) were renegotiated. However, the few failures have received more publicity than the hundreds of successes combined.

- ❖ Privatization is confused in the popular mind with the results of macro-economic or micro-economic errors of governments, as in Argentina, because of the perception that privatization leads to inequitable growth and is often corrupt.
- ❖ The counterfactual case, the 'do-nothing' option, is rarely used for evaluation, either ex-ante or ex-post, so the magnitude of gains is not measured and therefore not valued. For example, major benefits as reductions in the government's liabilities and other related gains in the power sector or the country's economy, are not publicized or are not believed by the public.

In hindsight, it is evident that perhaps too much emphasis has been placed on privatization and ownership change as key to power-sector reform. Although necessary in most countries, privatization needs to be better supported with significant legal, regulatory, and institutional changes in many countries. Although the donor community in all countries has provided major technical assistance in preparing the necessary legal and regulatory framework for reforms, the work in this area appears to have been inadequate or perhaps in need of better design.

Case Box 3-6. SEEG Multi-utility- Gabon

Extending Electrification Profitably – SEEG Concession

In 1997, Gabon awarded the 20-year concession of its electricity and water utility, Societe d'Énergie et D'eau du Gabon (SEEG), to Vivendi. SEEG was unique as the first electricity and water concession in Africa where the concessionaire was completely responsible for both capital investment and operations. Out of a population of 1.2Mn, SEEG serves electricity to 40% of the population and serves water to 66% of the population. By many benchmarks, the 1997 SEEG multi-utility concession has been a success. Actual service coverage for both electricity and water has surpassed not only year 2000 targets, but in the case of electricity, even surpassed 2015 coverage targets for certain regions in Gabon. Investment commitments by Vivendi have also been fulfilled at accelerated rates. For example, by 2001, a total of \$108Mn was invested into rehabilitating the water and electricity infrastructure. This amount was equivalent to 80% of the contractual commitment yet was achieved by the fifth year of the 20-year concession. Most surprisingly, SEEG has maintained healthy profits and paid ever-increasing dividends above the contractual rate of 6.5%. Yet, these results were not all instantaneous. There were a number of factors that contributed to SEEG's social support capabilities and financial sustainability.

- ❖ **Committed Government Preparation Prior to Privatization:** Gabon experimented early with private participation in its water and electricity sector. Prior to 1997, SEEG was already corporatized. Between 1989 and 1997, the government oversaw a 27% headcount reduction of almost 600 employees. By 1996, 98% of private customers were metered and 100% of administration connections were metered. In addition, prepaid metering was introduced to further reduce collections risk. Tariffs were steadily increased and came closer to cost recovery levels from 1987-1996, but social tariffs continued to be cross-subsidized by higher-end customers.
- ❖ **Sound Contract Design Regulation:** The SEEG contract defined clear output-driven coverage targets by region for both water and electricity. It granted Vivendi some flexibility on quality of service, to promote electrification coverage faster.

SEEG has had a positive social impact and is self-sustainable. The tariff structure almost looks like a cost-plus arrangement, thus reducing Vivendi's capital-at-risk. Indeed, Vivendi accelerated 80% of its investment commitment into the first 5 years of the 20-year concession, but still successfully maintained utility profits while extending coverage. Combined with Gabon's pre-1997 reforms targeting corporatization, labor, collections, tariffs, and its favorable contract design, the SEEG concession has thus far proven to be a win-win situation for the foreign investor, the government, and the population.

The tendency for the international community to focus on ownership change as a central part of the reform process has been due to at least three major factors. *First*, there has been an overly optimistic assumption that private ownership would push through the necessary legal, regulatory, and sector reforms. It has been believed establishing and implementing the right legal, regulatory, and institutional frameworks (as had been widely done with technical assistance programs) would require introduction of a new class of owners and operators. Privatization therefore has become a key catalyst for the reform essential to implement the process. *Second*, there has been a strong vested interest in privatization from industrialized nations that, through their industries, financial sectors, export credit agencies (ECAs), and supporting multilateral development bank (MDB) institutions, have had a financial interest in promoting privatization. *Third*, in many developing countries, governments have also benefited from privatization transactions, through generating near-term proceeds for the national treasury (often to meet MDB targets) as well as possibly for key decision-makers in the government through various kickback schemes. In light of these realities, there has been a tendency to overlook the need to better understand and manage the negative consequences of privatization.

It was assumed the private sector would naturally bring in a pragmatic and commercial imperative that would clear out the public-sector abuses. Regulation was seen as a transitional step from monopolies to competitive industries. Once markets were fully open and competitive, the need for regulatory oversight would diminish. In hindsight, this view overlooked the considerable time it takes to establish an effective regulatory system and to govern the transition to competitive markets in developing countries. In addition, the process was complicated by some in the private sector introducing their own types of abuses, dysfunctional behaviors and manipulations that not only undermined the public interest but also the public trust. The tendency to rely too heavily on privatization as a means of catalyzing reforms also overlooked the lack of local capacity to regulate the complex power system efficiently, as well as the potential ability of governments and utilities in developing countries to undermine the reform process through pursuing their own interests. These problems have not been exclusive to emerging markets, as the California, Enron, and Northeast-blackout crises in the United States illustrate.

3.2. CASE ANALYSIS OF SUCCESSFUL PRIVATE FINANCINGS IN POWER

There needs to be a clear definition of success in power sector reform and privatization in order to proceed with any clear new policy formation. In the 1990s, the definition was often assumed and sometimes forgotten during privatization. That definition of success was establishing a commercially viable and self-sustaining power sector that could serve the consumer's needs through clear economic and technical efficiency gains. Implicit in this definition was the ability to attract private investment with minimum government interventions in the form of subsidies and other market controls. Achieving commercial viability required raising tariffs to cost recovery levels (including appropriate equity returns), disconnecting non-paying customers, reducing technical and non-technical losses, modernizing billing and metering, improving the efficiency of operations, increasing reliability of service, and addressing the need to eliminate externalized costs (predominantly environmental) through proper controls and incentives.

The larger impact of establishing a commercially viable and reliable power sector would benefit the economy by enabling greater economic growth through expanded industrial output, improved standards of living, and a vibrant commercial sector. On top on these achievements, it was recognized the power sector must address poverty by expanding reliable coverage to underserved communities in the urban slums and rural areas. Privatization was seen as not acceptable if its implementation neglected the poor or, worse, led to increasing poverty by widening of the gap between the rich and poor. The definition of success is defined in greater detail at the beginning of Chapter 5.

Underlying the goal of privatization was not only to catalyze reforms but also ultimately to make the sector creditworthy so that it could finance through private investment its operations, maintenance, rehabilitation, and urgently needed expansions. As discussed in Chapter 2, one of the key drivers of reform was the need to raise financing. It was recognized that governments had limited ability to finance the power sector and that subsidies were more needed for health, education, and human services. The MDBs also were limited in their ability to finance infrastructure through lending to the government/public utility. As result, the international, regional, and domestic private sector was seen as the largest and most important pool of capital for financing the power sector in the decades to come.

The challenge is to (a) properly define the performance indicator metrics, (b) measure the metrics consistently across countries over time, and (c) develop an effective methodology to report progress on these measures in a rigorous way over at least 10 to 20 years. Implementing this process of measurement and reporting has been spotty at best. Privatizations have demonstrated concrete results at the enterprise level. The problem lies in demonstrating this positive impact at the larger economic and social level. Once documented, the larger challenge is to communicate these results to the public to obtain public support for the reforms. In many countries, vocal minorities can undermine trust and confidence in the privatization process; demonstrations in the street and active resistance can galvanize opposition. This has occurred in various countries where some ratepayers are aggressively subverting attempts to disconnect non-payers (e.g. South Africa).

Table 3-1. Post Privatization Results Analysis

Country	Region	Efficiency % Ratios	Financial Income / %Collections	Service Expansion	Author
Moldova	ECA	↑	↑	↑	Stuggins (2002)
Georgia	↓	↑	↑	↑	Walters (1997)
Argentina	↓	↑	↑	↑	Shaikh (1996)
Chile	LAC	↑	↑	↑	Estache, Rodriguez (1998)
Peru	↓	↑	↑	↑	Torero, Pasco-Font (2001)
Namibia	Sub-Sahara	↑	↑	↑	Econ One Research (2002)
Gabon	↓	↑	↑	↑	World Bank/PPIAF (2002)
Ivory Coast	↓	↑	↑	↑	Plane (1999)

Source: World Bank

The experiences with public ownership and privatization are mixed and thus make it difficult to come up with a definitive record or measure. There are cases of major private investment that did not lead to successful power sector performance because these did not allow investors to earn a fair risk-adjusted return on their investment. The experience of AES, Tractebel, EDF, Union Fenosa, Mission Energy, CMS, and many other investors with failed investments in particular developing countries, points to how privatization can disappoint. Nonetheless, the introduction of private investors may have introduced competition or new technologies that led the public sector to perform better (as occurred in the Chisinau/Centru/Sud project in Moldova as described in **Case Box 3-3**). Initial failures in privatization may have led to an exit of foreign investors and the expansion of the role of domestic investors (as occurred in the North Delhi project in India as described in **Case Box 4-1**). In a way, this could prove beneficial to the power sector. The lessons from failures lead to new solutions. Also, what may have been a success in one period may lead to a failure later under a new ownership of a private power investment or under a new political regime. A number of the projects in this study have had an ownership change or are in the process of being sold on the secondary market, as mentioned later in this report. The challenge is to define the criteria and time scale for measuring these performance impacts of private investment consistently.

Given the major investment requirements in the power sector of emerging markets, and the limited capacity of governments, state-owned utilities, and the MDBs to finance this investment, the emphasis still needs to be on mobilizing private capital. However, due to the pullback or narrowly focused interests of international investors, there are various countries where investors are no longer willing to put much if any capital at risk in the power sector, unless the government and MDBs or ECAs more explicitly mitigate certain country or regulatory risks. Countries that are well below investment grade and without a strategic position (e.g., like being oil-rich or having a large strategic market) are having particularly difficulty attracting power sector investors without having adequate risk mitigation by international financial institutions.

The power distribution sector has proved to be more challenging for foreign investors to operate in profitably because of the political risks of a consumer-facing business. In response, various forms of public-private partnerships (PPP) are being explored to attract private sector participation. These schemes incentivize private sector participation with more limited levels of private financing that help to improve operations, so that the utility can increasingly finance its investment program through internally generated revenues. Management contracts are being reconsidered in some markets. It is recognized that well-designed management contracts can lead to performance improvements, but these often have diminishing returns over time and cannot in and of themselves mobilize any investment. There is a recognition that attaining the ultimate goal of power company and sector reform may require intermediate steps in countries where private investors are showing little or no interest.

The scope of this study is based on examining cases that involved success in mobilizing some private capital into project designs supportive of sustainable power sector reform and investment. Because private capital flows during the past 6 years have been particularly difficult, there has been an interest in learning what has been required to mobilize private capital during this more difficult financing environment. As a result, cases of private financing in power during the past 6 years are of particular interest. The more recent cases do not have a sufficient performance track record to confirm their positive sector and enterprise impact, therefore it is necessary to select cases that to the best of our knowledge show the elements of a good project design. These cases need to take into account the interests of key stakeholders and thus show the signs of being sustainable. This latter analysis has been difficult in all cases because of the limited information available. **Table 3-2** summarizes the cases selected, on the basis of region and financing structure. The selection is based on some cases that are older and have a performance track record, with half the cases being within the past 6 years and thus demonstrating the ability to mobilize private capital in a difficult financing environment.

Table 3-2. Case Matrix by Region

	EAP	ECA	LAC	MENA	SA	Sub-Sahara	Total
Concession		Pamir Power (Tajikistan)	Edenor (Argentina)	Casablanca Lydec (Morocco)		SEEG (Gabon)	4
IPP	Phu My 2.2 (Vietnam)	Maritza East III (Bulgaria)	Termobahia (Brazil)	Jorf Lasfar (Morocco)	Lal Pir (Pakistan)	Azito Power (Cote d'Ivoire)	9
	Shandong Power (China)				Haripur (Bangladesh)	Songo-Songo (Tanzania)	
Divestiture		Chisinau/Centru/Sud (Moldova)	Luz del Sur (Peru)		North Delhi (India)		3
Utility Electrification Initiative	Meralco DAEP (Philippines) - Disco Case		Light (Brazil) - Disco Case		Grameen Shakti (Bangladesh) - Genco Case	Phambili Nombane (South Africa) - Disco Case	4
Total	3	3	4	2	4	4	20

- (1) Bold-faced projects denote greenfield
(2) Unshaded projects denote projects of existing assets

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The process of selecting the cases for this study involved using the simple criteria defined above and was based on a review of 116 cases of private investment in the emerging market power sector, as listed in **Appendix 1**. The criteria for selecting cases were

- ❖ **successful private capital mobilization** into a power sector transaction in emerging markets, which proved to be sustainable (for cases with a longer track record) or which was designed and located in ways where sustainability was highly likely (for more recent cases with a shorter track record);
- ❖ **regional coverage** with cases taken from South Asia, Southeast Asia, Eastern Europe, the Former Soviet Union, North Africa, Sub-Saharan Africa, and Latin America;
- ❖ **financial structure coverage** including IPP project financing, divestitures, concessions, and utility electrification initiatives (defined more clearly in the next section);
- ❖ **financing source coverage** including both foreign strategic equity and debt financing as well as domestic and regional capital; and
- ❖ **Greenfield versus existing-assets** cases to capture the experience of financing the major capital investment needed for a Greenfield project versus the lower upfront investment needed for a divestiture or concession.

A summary of the 20 cases selected and how they met the coverage defined above is found in **Table 3-2**. Each of these cases has a full write-up in the separate Case Studies Volume and is also covered in the shorter Case Boxes that are interspersed in the text of this report between Chapters 3 and 7. Greenfield cases are shaded dark while the cases involving existing assets are unshaded. As is evident from **Table 3-2**, there is about an even split between Greenfield and existing-asset cases.

The goal is to examine the role that difference sources of financing have played, including foreign equity and debt from strategic as well as commercial/capital market sources and also the role of domestic or regional equity and debt. A summary of the types of sources of capital examined in these 20 cases and some of the types of investors and lenders in the foreign, regional, and domestic markets, who were sometimes contacted for interviews, is listed in **Table 3-3**.

Table 3-3. Leading Sources of Private Capital

Strategic Investors (Equity)		Pensions (Debt/Equity)	Banks (Debt)	
Foreign	Domestic/Regional	Institutional Investors	Foreign	Domestic
AES	BSES/Tata Power	CALPERS	ANZ Bank	Bank of India
EDF	Eskom	Ohio State Teachers	ABN Amro Bank	Philippine National Bank
UF	RAO UES	GM	GE Capital	Banco de Galicia y Buenos Aires
RWE	Endesa (Chile)	GE	Citigroup	Bulgaria Invest Commercial Bank
Intergen	Aga Khan Fund	IBM	Standard Chartered	Bank Bumiputra (Malaysia)
	Singapore Power	AIG Infrastructure Fund		
	Barmek Holdings	Petros (Brazil)		
	Netgroup Services			
	CEZ			

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The technical characteristics of the 20 cases selected cover a wide spectrum, as depicted in **Table 3-4**. Note that these cases are ranked in order of country risk based on country risk rankings by Institutional Investor Country Credit Risk Ratings for 1990 – 2003. This ranking is used throughout the tables and helps to differentiate the cases based on country risk. It is important to note this ranking is based on the year of financial closure. Cases selected not only had the necessary regional and financing structure and source diversity, but also reflected a range of sub-sector, capacity, primary fuel, and age characteristics. The cases involved a fairly even mix of generation and power distribution companies, with two cases also including a limited transmission component. The cases were projects in a wide range in sizes, from a 50-watts solar photovoltaic (PV) project in Bangladesh, to a 3,000-megawatt (MW) power project in China. Distribution cases went from as few as 25,000 customers up to as many as 2,000,000 customers. The primary fuel mixes included coal, oil, gas, hydro, and solar PV. The age of the cases varied from three projects that are still under construction to four projects that reached financial closure over 10 years ago. There was a conscious attempt to select about half the cases from transactions that closed during the difficult financing period of the past 6 years, with the remaining cases being older. In fact, the split is even, with 10 cases reaching financial closure in 1998 or later. Given that the period of exuberant optimism among private investors ended in 1997 (when the major 5-year drop-off in private investment in emerging market power began), this date presents a clear break point for analysis.

Table 3-4. Private Power Financing Cases: Technical and Age Characteristics

Country Rating	Case	Project Type	G/T/D	Capacity	Primary Fuel	Finance Close Date	Year of Operation
57.7	Shandong Power (China)	IPP	G	3000 MW	Coal	1998	4
47.3	North Delhi (India)	Divestiture (Auction)	D	Customers:800,000	Oil	2002	2
47.0	Maritza East III (Bulgaria)	IPP(Joint Venture)	G	840 MW	Lignite	2003	1
42.1	Termobahia (Brazil)	IPP (BOT)	G	190 MW	Gas	2001	U.C.
40.9	Casablanca Lydec (Morocco)	Concession	D	Customers:1,300,000	Oil	1997	6
40.9	Jorf Lasfar (Morocco)	IPP/Concession	G	1356 MW	Coal	1997	6
40.0	Phambili Nombane Energy (South Africa)	Utility Electrification Initiative	D	Customers: 625,000	Coal	1994	10
39.5	Light (Brazil)	Utility Electrification Initiative	D	Customers:25,000	Hydro	1997	7
32.3	Phu My 2.2 (Vietnam)	IPP (BOT)	G	286 MW	Gas	2002	U.C.
30.7	Lal Pir (Pakistan)	IPP (BOO)	G	360 MW	Oil	1995	8
26.9	Grameen Shakti (Bangladesh)	Utility Electrification Initiative	G	0.5 MW	Solar PV	1996	8
26.4	Haripur (Bangladesh)	IPP(BOT)	G	360 MW	CC Gas	2001	1
26.2	Edenor (Argentina)	Concession	D	Customers:2,000,000	Hydro, Thermal	1992	12
25.9	Meralco DAEP (Philippines)	Utility Electrification Initiative	D	Customers:317,000	Oil	1990	14
25.7	SEEG (Gabon)	Concession	D	Customers:491,000	Hydro, Oil	1997	7
25.5	Azito Power (Cote d'Ivoire)	IPP/Concession	G/T	300 MW / 225 KV	Gas	1999	4
21.0	Luz del Sur (Peru)	Divestiture (Auction)	D	Customers:700,000	Hydro	1994	10
20.6	Songos Songos (Tanzania)	IPP (BOT)	G	112 MW	Gas	2001	2
15.8	Chisinau/Centru/Sud (Moldova)	Divestiture (Auction)	D	Customers:746,000	Oil	2000	4
12.7	Pamir Private Power (Tajikistan)	Concession/IPP	G/T	28 MW/ 35 KV	Hydro	2002	U.C.

Notes:

- (1) Shaded projects denote greenfield
- (2) Unshaded projects denote projects of existing assets
- (3) The term "Utility Electrification Initiative" denotes rural and peri-urban electrification programs
- (4) Country Risk Rankings based on the Institutional Investor Country Credit Risk 1990-2003 Ratings
- (5) U.C.= Under construction; G/T/D = Generation/Transmission/Distribution

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The financing sources for the 20 cases represent the full range of foreign, regional, and domestic equity and of foreign, regional, and domestic debt, as shown in **Table 3-5**. The split between foreign versus regional and domestic capital is about 36% based on a conservative estimation of how the investment commitments in the Gabon and Morocco concession cases are treated (this is discussed further in Chapter 7). Domestic capital played a substantial role, as discussed in Chapters 5, 6, and 7. The level of investment involved ranges from US \$5 million for the Grameen Shakti project in Bangladesh to US \$2,200 million in the Shandong Zhonghua project in China. The specific sponsor and lenders are listed in this table for each case. Foreign investors that represent major U.S., European, Asian, African, and Latin American investors, which are found on this list, include AES, EDF, Union Fenosa, Entergy, ABB, Sumitomo, Endesa, Aga Khan, CDC, Alstom, and CMS. Major international, regional, and local lenders are also represented, including Deutsche Bank, Bank of America, Citibank, ANZ, Societe Generale, and IBJ Asia. The major MDBs and ECAs that played a substantial role in supporting the debt of many transactions included the World Bank, MIGA, the International Development Agency (IDA), IFC, the Japan Bank for International Cooperation, British Exim, US Exim, the Overseas Private Investment Corporation (OPIC), the Italian Export Credit Agency (SACE), the Inter-American Development Bank (IDB), the Asian Development Bank (ADB), the European Investment Bank (EIB), and the European Bank for Reconstruction and Development (EBRD). The ratio of debt in these projects is provided for the Greenfield projects only and was in the range of 55% to 80%.

Table 3-5. Private Power Finance Cases: Financing Sources Characteristics

Country Rating	Case	Project Type	Total Investment (\$M)	Sponsor Lead Investor	Lender Debt or Insurance Source	Debt %	Equity + Cash %	Foreign Capital	Domestic-Regional Capital
57.7	Shandong Power (China)	IPP	2200.0	SEPCO, SITIC, EDF, China Light & Power	SITIC, China Construction Bank, SG Asia, IBJ Asia, British Exim	73%	27%	20%	80%
47.3	North Delhi (India)	Divestiture (Auction)	37.5	Tata Power	Tata Power	—	—	0%	100%
47.0	Nariza East III (Bulgaria)	IPP (Joint Venture)	788.0	Entergy, NEK, Ente Nazionale per l'Energia	EBRD, Societe Generale Synd, MGA, Bulgarian banks	53%	47%	58%	42%
42.1	Termobahia (Brazil)	IPP (BOT)	244.0	ABB, Petrobras, A&A	IDB, Bank of America	75%	25%	51%	49%
40.9	Casablanca Lydec (Morocco)	Concession	80.0	EDF, Elyo, Ondeo, Endesa, Agbar, Casablanca Govt	EDF, Elyo, Ondeo, Endesa, Agbar, Casablanca Govt	—	—	51%	49%
40.9	Jorf Lasfar (Morocco)	IPP/Concession	1483.0	ABB, CMS, EDF	ERG, SACE, USEXIM, IBRD, OPIC, ABN-Amro syndicate	60%	40%	87%	13%
40.0	Phambili Nombane Energy (South Africa)	Utility Electrification Initiative	25.0	Eskom, EDF, East Midland Electric	Eskom, EDF, East Midland Electric	—	—	26%	74%
39.5	Light (Brazil)	Utility Electrification Initiative	20.0	Light Disco (PRONAI)	MGA, Citibank N.A., IDB	—	—	10%	90%
32.3	Phu My 2.2 (Vietnam)	IPP (BOT)	480.0	Sumitomo, Tepeco, EDF, Alstom	IDA, ADB, IFC, Japan Bank of Intl Cooperation, ANZ/SG Synd.	70%	30%	100%	0%
30.7	Lal Pir (Pakistan)	IPP (BOO)	344.0	AES	IFC, Deutsche Bank Synd.	72%	28%	100%	0%
26.9	Grameen Shakti (Bangladesh)	Utility Electrification Initiative	5.0	Grameen Shakti	Grameen Bank	0%	100%	0%	100%
26.4	Haripur (Bangladesh)	IPP (BOT)	180.0	AES	ANZ-Synd loan, AES, IDA	59%	41%	96%	5%
26.2	Edeonor (Argentina)	Concession	794.0	EDF, Endesa	IFC-Syndicate, IDB	—	—	84%	16%
25.9	Meralco DAEP (Philippines)	Utility Electrification Initiative	40.0	Meralco (DAEP)	Meralco, Japan Bank of Intl Cooperation	—	—	75%	25%
25.7	SEEG (Gabon)	Concession	265.0	Vivendi	Vivendi	—	—	100%	0%
25.5	Azito Power (Cote d'Ivoire)	IPP/Concession	223.0	ABB, EDF, Aga Khan	IDA, IFC, CDC, SocGen	80%	20%	92%	8%
21.0	Luz del Sur (Peru)	Divestiture (Auction)	512.0	PSEG, Sempra, PCC	Sempra Intl, Peru OpCo Company	—	—	60%	40%
20.6	Songos Songos (Tanzania)	IPP (BOT)	265.0	AES, CDC, EIB/TDFL	IDA, EIB	70%	30%	100%	0%
15.8	Chisinau/Centru/Sud (Moldova)	Divestiture (Auction)	87.2	Union Fenosa	MGA, IFC, EBRD	—	—	100%	0%
12.7	Panir Private Power (Tajikistan)	Concession/IPP	26.0	Aga Khan, IFC	IFC, IDA, Swiss Gov't	55%	45%	70%	30%

Lower Risk
↑
High Risk

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Given the importance of risk management in mobilizing private financing, it is instructive to examine both the ownership and equity financing structure of the 20 cases selected and the extent to which government and MDB/Bilateral guarantees were present in the cases, as shown in **Table 3-6**. It is more useful to discuss the share of private/public equity stakes for privatizations or Greenfield projects rather than constitutional government ownership for power facilities; contractual assurance for equity returns are often not bankable, requiring government guarantees and MDB/ECA political risk cover to make them bankable. Yet, the level of government ownership does impact the potential for PPPs and government financing options. For details on the split in terms of equity invested in the project company between foreign versus domestic, see **Table 3-5**.

There were seven cases that had 100% domestic or local government ownership; these were either concession cases (two cases in Morocco, one each in Argentina, Gabon, Cote d'Ivoire, and Tajikistan) or the one case (China) where the national government did not allow foreign ownership of its strategic power capacity. These cases maintained greater government control and enabled more extensive PPPs, since the government could still borrow directly from the World Bank to finance investments in these projects. Investors or concessionaires would require contractual relationships that would give them the right to earn a return on their investment. Generation concessions often required a contractual relationship with the state-owned utility for the sale of power.

Most cases either involved either 100% government or 100% private ownership with only three cases (e.g., in Brazil, Peru, and Bulgaria) involving majority private ownership with the government maintaining a minority stake. Government sovereign guarantees/undertakings were provided in seven of the cases, all of these being

Greenfield projects in countries with higher country risks (as depicted in **Table 3-6**). MDB/Bilateral institutions provided some form of guarantees, backed by government guarantees to the project, and these were found in 13 of the 20 cases (also depicted in **Table 3-6**). It should be noted that even in cases where there was no sovereign guarantee, MDB/Bilateral lenders operated on a commercial basis. Their private sector departments or partners often required and obtained “comfort” letters or implicit government undertaking for political, regulatory, and agency performance risks, for them to approve their financial support. These assurances were often not made public and thus were less well-documented.

Table 3-6. Private Power Financing Cases: Risk Management Characteristics

Country Rating	Case	Project Type	Government Guarantees	MDB - Bilateral Guarantees or Financing	Private/NGO Ownership Stake	Central Government Ownership Stake	Local Government Ownership Stake
57.7	Shandong Power (China)	IPP	No	British Exim	0%	0%	100%
47.3	North Delhi (India)	Divestiture (Auction)	No	None	51%	0%	49%
47.0	Maritza East III (Bulgaria)	IPP (Joint Venture)	No	MIGA, EBRD	73%	27%	0%
42.1	Termobahia (Brazil)	IPP (BOT)	No	IDB	51%	49%	0%
40.9	Casablanca Lydec (Morocco)	Concession	No	None	0%	100%	0%
40.9	Jorf Lasfar (Morocco)	IPP/Concession	Yes	US Exim, IDA, OPIIC	0%	100%	0%
40.0	Phambili Nombane Energy (South Africa)	Utility Electrification Initiative	No	None	100%	0%	0%
39.5	Light (Brazil)	Utility Electrification Initiative	No	IDB, MIGA	100%	0%	0%
32.3	Phu My 2.2 (Vietnam)	IPP (BOT)	Yes	IDA	100%	0%	0%
30.7	Lal Pir (Pakistan)	IPP (BOO)	No	None	100%	0%	0%
26.9	Grameen Shakti (Bangladesh)	Utility Electrification Initiative	No	None	100%	0%	0%
26.4	Haripur (Bangladesh)	IPP (BOT)	Yes	IDA	100%	0%	0%
26.2	Edenor (Argentina)	Concession	No	IFC, IDB	0%	100%	0%
25.9	Meralco DAEP (Philippines)	Utility Electrification Initiative	No	Japan OECF, MIGA	100%	0%	0%
25.7	SEEG (Gabon)	Concession	No	None	0%	100%	0%
25.5	Azito Power (Cote d'Ivoire)	IPP/Concession	Yes	IDA, IFC	0%	100%	0%
21.0	Luz del Sur (Peru)	Divestiture (Auction)	No	None	70%	30%	0%
20.6	Songos Songos (Tanzania)	IPP (BOT)	No	IDA, EIB	100%	0%	0%
15.8	Chisinau/Centru/Sud (Moldova)	Divestiture (Auction)	No	MIGA, (EBRD: 19%)	81%	0%	0%
12.7	Pamir Private Power (Tajikistan)	Concession/IPP	No	IFC, IDA	0%	100%	0%

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Table 3-7 summarizes the governance structures that enabled and supported these 20 cases. Some sections of this table involve less factual, more subjective assessments that are based upon the analysis of the case and sector from existing reports and also from discussions of the case, when possible, with investors, lenders, and project participants. Some of these categories’ exact ratings involve some level of judgment can be debated. The level of political commitment is ranked from weak to strong. Political commitment is important because almost all cases reported strong if not moderate political support. The power market model is defined at the time of financial closure. Some markets have moved beyond the stage defined here, but the deciding factor is what model existed at the time investors and lenders were planning their financing decisions. It is interesting to note that three cases involved vertically integrated utilities, 11 cases involved the single buyer model, and only six cases involved some form of wholesale competitive market. The regulatory framework involved six cases of Ministry-based regulation. There were 11 cases involving an independent regulator, with a clearly

defined contractual framework as part of a PPA or tariff methodology, which placed prescriptive requirements on the regulator in order to give the investors some level-of-certainty tariff methodology. Only in two cases was there an independent regulator operating in a wholesale competitive market, i.e., in Argentina and the Philippines.

Table 3-7. Private Power Financing Cases: Governance Structures

Country Rating	Case	Project Type	Political commitment & leadership	Power Market Model	Legal-judicial framework	Regulatory Framework	Level of Competition	Overall Transparency Level **
57.7	Shandong Power (China)	IPP	Strong	Single Buyer	Formative	Independent-Contracted	Entry level	Low
47.3	North Delhi (India)	Divestiture (Auction)	Strong	Single Buyer	Formative	Independent-Contracted	Entry level	Low
47.0	Maritza East III (Bulgaria)	IPP (Joint Venture)	Strong	Single Buyer	Formative	Independent-Contracted	Entry level	Moderate
42.1	Termobahia (Brazil)	IPP (BOT)	Strong	Wholesale Competition	Capable	Independent-Contracted	Wholesale	Moderate
40.9	Casablanca Lydec (Morocco)	Concession	Strong	Single Buyer	Formative	Independent-Contracted	Entry level	Moderate
40.9	Jorf Lasfar (Morocco)	IPP/Concession	Strong	Single Buyer	Formative	Independent-Contracted	Entry level	Moderate
40.0	Phambili Nombane Energy (South Africa)	Utility Electrification Initiative	Moderate	Vertically-integrated	Capable	Independent	Entry level	High
39.5	Light (Brazil)	Utility Electrification Initiative	Moderate	Wholesale Competition	Capable	Independent-Contracted	Wholesale	Moderate
32.3	Phu My 2.2 (Vietnam)	IPP (BOT)	Strong	Single Buyer	Weak	Ministry-based	Entry level	Low
30.7	Lal Pir (Pakistan)	IPP (BOO)	Strong	Single Buyer	Capable	Independent-Contracted	Entry level	Low
26.9	Grameen Shakti (Bangladesh)	Utility Electrification Initiative	Moderate	Single Buyer	Weak	Ministry-based	Competitive Retail Market	Low
26.4	Haripur (Bangladesh)	IPP (BOT)	Strong	Single Buyer	Weak	Ministry-based	Entry level	Low
26.2	Edenor (Argentina)	Concession	Strong	Wholesale Competition	Capable	Independent	Wholesale	Low
25.9	Meralco DAEP (Philippines)	Utility Electrification Initiative	Moderate	Wholesale Competition	Formative	Independent	Wholesale	Low
25.7	SEEG (Gabon)	Concession	Strong	Vertically-integrated	Formative	Ministry-based	Entry level	Low
25.5	Azito Power (Cote d'Ivoire)	IPP/Concession	Strong	Single Buyer	Capable	Independent-Contracted	Entry level	Moderate
21.0	Luz del Sur (Peru)	Divestiture (Auction)	Strong	Wholesale	Formative	Independent	Wholesale	Moderate
20.6	Songos Songos (Tanzania)	IPP (BOT)	Strong	Single Buyer	Weak	Ministry-based	Entry level	Low
15.8	Chisinau/Centru/Sud (Moldova)	Divestiture (Auction)	Moderate	Wholesale Competition	Weak	Independent-Contracted	Wholesale	Low
12.7	Pamir Private Power (Tajikistan)	Concession/IPP	Strong	Vertically-integrated	Weak	Ministry-based	Entry level	Low

Lower Risk
↑
High Risk

** Transparency International (2003)

- (1) Shaded projects denote greenfield
- (3) The term "Utility Electrification Initiative" denotes rural and peri-urban electrification programs
- (2) Unshaded projects denote projects of existing assets
- (4) Country Risk Rankings from Institutional Investor Country Credit Risk 1992-2003 Ratings

Deloitte Emerging Markets Group

The level of competition and transparency is shown in **Table 3-7** for all 20 cases. Thirteen of the cases are characterized as “entry level,” which means that investors had to compete to enter the market (e.g., tender for an IPP contract), but did not face the prospect of wholesale competition in the market at the time of project financial closure. Some of these cases are in countries that were evolving a wholesale competitive market, and faced the possibility of renegotiation over time. Six cases are in countries that have wholesale competition; however, some of these cases are utility electrification projects that themselves do not face the market. The only cases that involve projects facing a wholesale competitive market are in Argentina and Peru. In Brazil, a competitive wholesale market exists but the case selected was a behind-the-fence IPP transaction and thus did not significantly face the market. Finally, the table includes an overall transparency ranking based on the country rankings of Transparency International. This transparency ranking is based on the country as a whole and is not specific to the case in each country.

A detailed discussion of these project characteristics is provided in Chapter 5. In addition, each project was analyzed to identify the key success factors that were critical to achieving financial closure. This analysis of success factors is summarized in **Figure 5-7**, as found in Chapter 5.

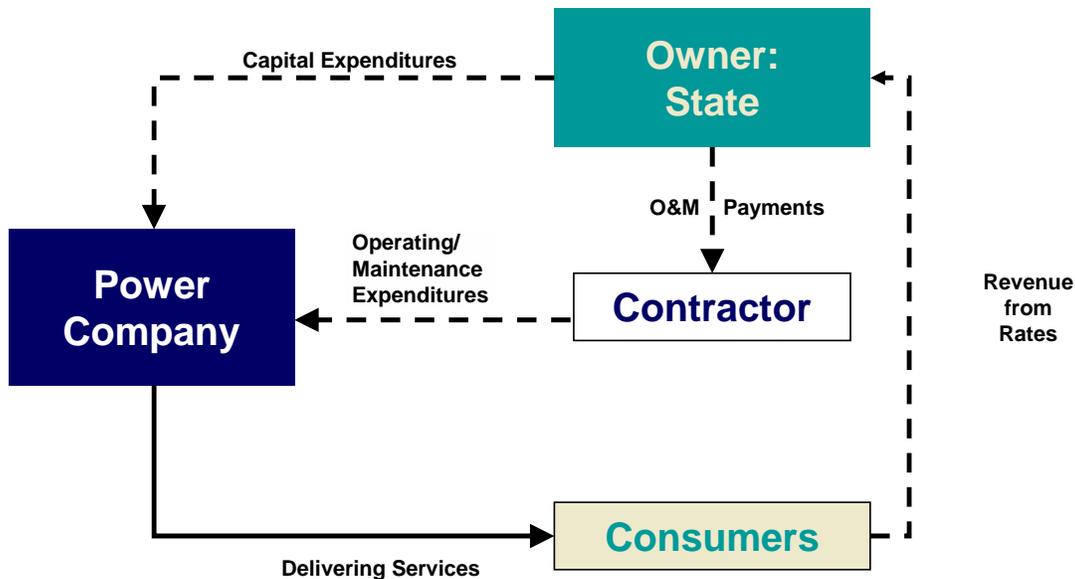
3.3. PREVAILING POWER FINANCING MODELS IN THE MARKET

The reform and financing of the power sector in emerging markets can employ a variety of models, depending on the level of a country’s risk, its legal traditions, the preference of its government policymakers, and the structure of its electricity market. In this analysis, certain projects reflect how these models have been used to effectively mobilize private capital. The key models are important to consider in any policy for private capital mobilization, because these employ different methods for assigning risks and blending private financing with MDB and ECA financing, guarantees, and insurance to successfully mobilize financing for emerging-market power projects. There is no simple formula defining when and how to use these models, but general guidelines can be framed, as they are later in this report.

There are five models most commonly applied in the sector: management contracts, affermage/leases, concessions, project financings, and divestitures. The main source of variation in these models is the degree of control over assets transferred to the private sector. Degree of control ranges from purely operational decisions to full ownership of assets and substantial freedom over managerial decisions. As a subset of these models, there is another one categorized in this report, which we call utility electrification initiatives. These utility initiatives are particularly found in cases of expanding electricity coverage to underserved communities in urban slums or poor rural areas. A brief summary of each of these models is provided.

- ❖ **Management Contracts.** Under this framework, the state-owned power utility continues to own the power assets and takes full responsibility for making capital investments, but assigns via a contractual agreement responsibility for day-to-day operations and maintenance to an outside private contractor. This management contractor implements and staffs the day-to-day operations, but the utility still controls the revenues received from the customer. (See **Figure 3-1.**)

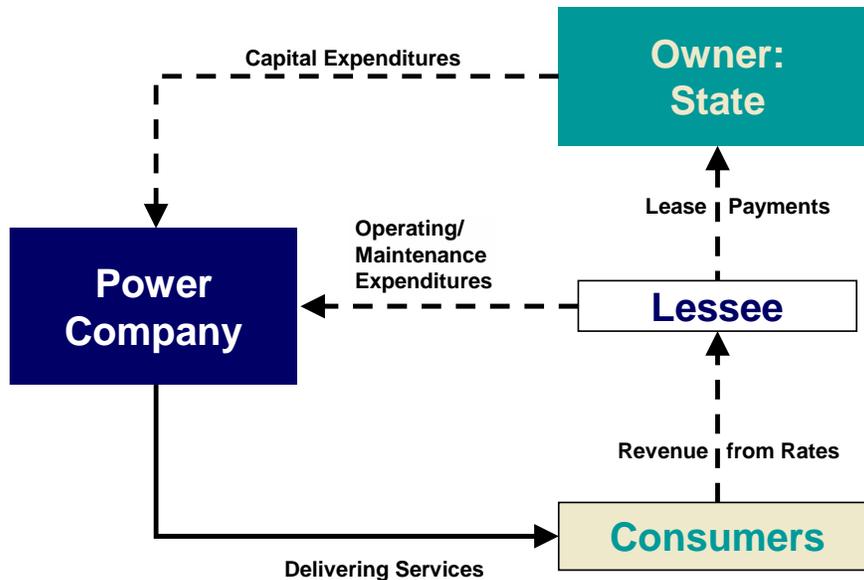
Figure 3-1. Management Contract Diagram



Source: KPMG/ Deloitte Emerging Markets Group

- ❖ **Affermage/Leases.** Under this framework, the state-owned utility continues to own the assets and take responsibility for capital investment. The difference with a management contract is that it leases the state-owned utility assets to the private operator for daily operations and maintenance. In return for this lease, the private operator makes lease payments to the utility to compensate it for its capital investments. Under this framework, the private operator collects the revenues from the consumer to cover its costs and lease payments. (See **Figure 3-2.**)

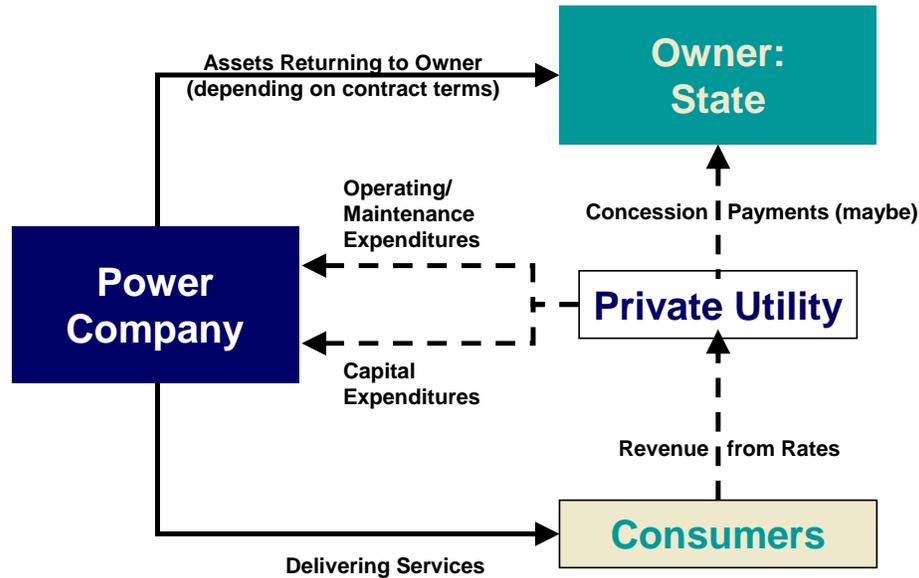
Figure 3-2. Affermage Lease Diagram



Source: KPMG/ Deloitte Emerging Markets Group

- ❖ **Concessions.** Under this framework, the state-owned utility continues to be the owner of the power assets, but through a concession agreement transfers responsibility for both capital expenditures and daily operations and maintenance to the private concessionaire. The private concessionaire collects the revenues from the consumer to cover its capital and operating investments and costs. At the end of the concession over a prescribed period of 30 to 50 years, the private concessionaire is required to return the responsibility to the state-owned utility, or the concession can be renewed. Concessions are featured in one form or another in five of the 20 cases presented in this study. (See **Figure 3-3.**)

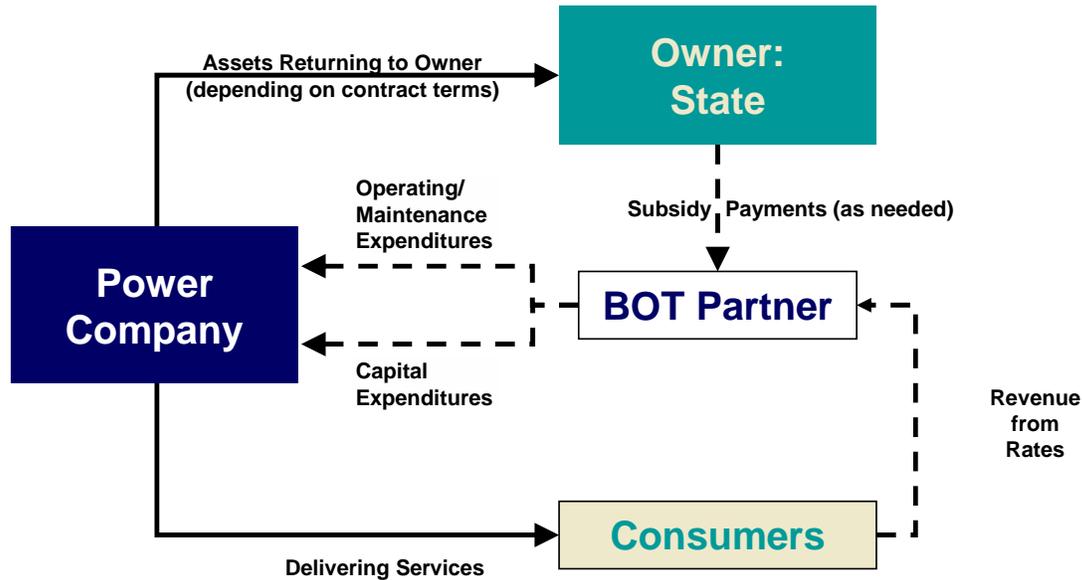
Figure 3-3. Concession Diagram



Source: KPMG/ Deloitte Emerging Markets Group

- ❖ **Project Financings.** Non- or limited recourse project financing is a particular model for private financing of power projects, which is typically used for Greenfield projects where major upfront capital investments are needed to build a power plant. Any parties to a project financing only have recourse to the assets and revenue streams of a particular project and do not have recourse back to the balance sheet of the original sponsor. Project financings are set up with a carefully crafted set of security agreements defining the rights and obligations of all parties: the utility off-taker, fuel suppliers, investors, lenders, operators, engineering construction firms, etc. There are various permutations of a project financing, including BOO, BOT, build-lease-transfer (BLT), and other such arrangements that define how ownership may change over time. The versatility and adaptability of this model has been demonstrated in the applicability of project financing both to developed or industrialized countries as well as to the most risky developing countries. This model is featured in one form or another in 10 of the 20 cases evaluated in this study. (See **Figure 3-4.**)

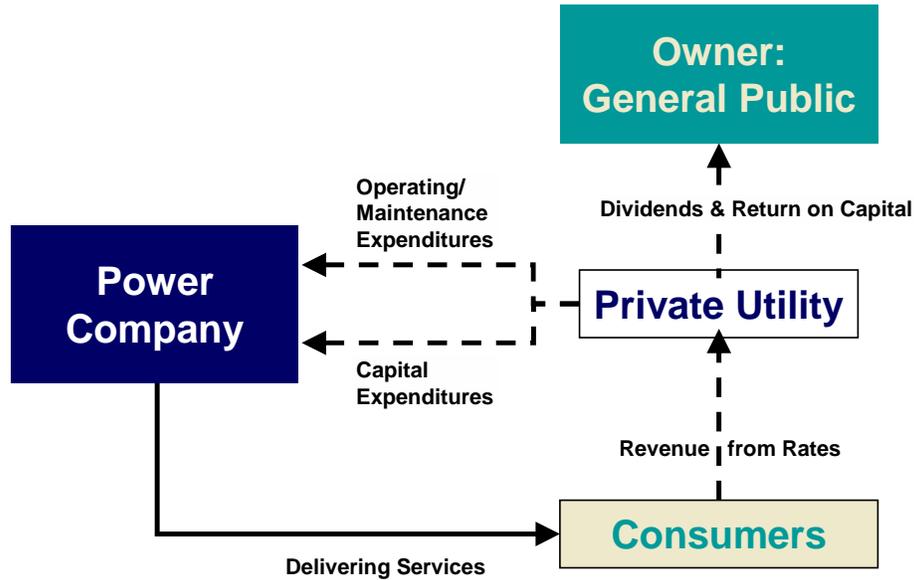
Figure 3-4. Project Financing Diagram



Source: KPMG/ Deloitte Emerging Markets Group

- ❖ **Divestitures.** Under a divestiture, full ownership of the assets are transferred to the private company that in turn takes full responsibility for capital investment, operations, and maintenance. With the sale of assets to a private company under a divestiture, the transaction is in perpetuity so there is no limit on the duration of ownership. With a divestiture, the investor takes on the greatest risk and is typically given the least level of contractual assurances. An investor in a power company divestiture takes on the maximum levels of market, legal/regulatory, capital investment, and operations risk. Investors in a divestiture typically seek various assurances from the government, which are spelled out in the sale and purchase agreement and in other related agreements such as the tariff methodology. In countries with poor governance structures, these agreements need to be backed by government and MDB guarantees and the right to international arbitration; if not, an investor has little assurance that a change in government will not alter the position of the government and undermine the investor’s interests. Even under this form of private participation, there are key decisions, such as pricing, that continue to be made by the public sector. This means that the private company continues to be exposed to a considerable level of intervention on the part of the public sector. (See **Figure 3-5.**)

Figure 3-5. Divestiture Diagram



Source: KPMG/ Deloitte Emerging Markets Group

These models are not always pure and distinct. As shown in the project types for the 20 cases evaluated in this study, there are a number of cases where IPPs and concessions are both applicable. There is also some debate around when a project should be regarded as a concession versus as a divestiture. There are cases where a concession looks more like an affermage. In fact, these models can be seen as overlapping and in some cases can be mixed and matched or become hybrids of each other.

For instance, the distinction between a concession and a divestiture can sometimes be unclear. A concession in the power sector is defined as a contractual agreement between a government that owns the power sector assets (including the land, power plant, distribution lines, and buildings) and a private concessionaire who manages the assets over an agreed-upon period. The concessionaire is given the right to make investments and earn a return on these investments within clearly defined contractual terms. The key issue involves property rights and who has the right of free disposal. In a concession, the government has this property right, while in a divestiture this property right is transferred to the new private owner. In a concession, the concessionaire is given major rights over the property, to manage these as necessary to serve the goals of delivering power to the consumer. In a divestiture, however, while the private owner is given full rights over the property, there generally are constraints placed on these rights in that the private owner of the power assets has to serve the public interest and could forfeit its right to the property if it fails to deliver on its obligations to the public. For instance, if a private owner that has taken over power sector assets in a divestiture were to fail to invest in and upgrade the assets as agreed upon in the sales purchase agreement, or were to take the extreme decision to shut down the facility and turn it into a different business, the government would generally have the right to renationalize the asset, thereby denying the private owner its full freedom to dispose of the assets as it chooses.

In short, a private company operating under a concession versus a divestiture may in the end face similar constraints. A concession is for a limited period of perhaps 30 to 50 years, while a divestiture is in perpetuity; a concession, however, can be extended after the term, usually after a new tender is issued. This puts the concessionaire in a somewhat less certain environment; then again, it can also limit its risk exposure better because it usually receives a more certain contractual framework. One of the important advantages of a concession for the purposes of this study is that it allows for more creative PPPs and cofinancings among the government, MDBs, and the private concessionaire. At a time and in a country where mobilizing private capital is particularly difficult, the concession model can provide MDBs, ECAs, donors, and country governments with more options for how to structure a deal acceptable to private investors.

The concession model has been applied in many societies but typically has its roots in the political and legal traditions of a country. Concessions are popularly associated with French law and are commonly practiced in Latin cultures and colonies in Europe, Africa, and Latin America. Nonetheless, concessions have also been applied, if less commonly, in Anglo-Saxon cultures; they were used, for instance, in the United States during the early development of the power sector at the beginning of the 20th century, for the provision of power and urban transportation at the municipal level.

Another area for overlap is between a management contract and an affermage/lease. In both cases, the private operator is neither expected nor prepared to make capital investments and focuses its business on operations and maintenance. The important distinction between a management contract and an affermage/lease is that the private operator in a affermage/lease is incentivized to improve operational procedures and even systems, such as building a better billing, metering, and collections system enabling the firm to improve its financial performance. In a management contract, the private operator is neither incentivized nor prepared to make investments of any kind, and is there only to provide professional management services with a narrow set of performance targets and incentives. The type of investments made under affermage/leases can be substantial, e.g., a commercial system can constitute a major capital investment involving extensive new computer infrastructure. The distinction is between investments into specific routine operations versus in major capital infrastructure such as a power plant.

The existence of a range of private-sector involvement models creates the possibility of better matching the degree of private sector participation to the risk profiles of each country, market, and organization. In risky markets, it is important to have a financing structure that enables the private investors to decouple major investments in capital infrastructure from the smaller, more distributed investments in operations and maintenance. In instances where investors are not comfortable with putting major capital at risk, it is important for governments and donors to expand private sector participation to the level that is possible. In the riskiest markets, management contracts may be all that is possible for a period. Management contracts generally lead to limited performance improvements, but after a time they reach a point of diminishing returns. Nonetheless, a transition mechanism may well be needed to begin engaging a highly dysfunctional utility with the measures that must be taken to graduate to the next stage.

At this next stage, an affermage/lease structure incentivizes the private company to make modest but real investments in the operations of the business and enables this private company

to earn a real return based on how well it performs with these investments. In particularly risky markets, only when the private sector has developed enough comfort with the utility's operation can it begin to consider making capital investments. At this point, the concession or divestiture model is worth considering. An important obstacle for transitioning from management contracts to greater private sector involvement is the difficulty of defining clear objectives for private managers that lead them to take on investment risks. It should be noted, however, that when the proper security packages, guarantees, and insurance, PPA, and tariff terms, are offered to mitigate risks perceived by private financiers, generation projects in particular have attracted private investment financing even in difficult countries and markets. More on this is discussed under Section 5.



The detailed analysis of the cases along with the different financing models described above form the basis of the material presented in the following sections of the report: the role of domestic capital in Chapter 4, and the successful practices for power sector reform and investment covered in Chapter 5. These chapters then lead into developing the policy implications indicated by successful financings, which are found in Chapter 6 and Chapter 7, and then to the recommendations, which are provided in Chapter 8.

4. EXPANDING THE ROLE OF DOMESTIC PRIVATE CAPITAL

Domestic private capital plays a central role in power sector financing in the industrialized world. There has been insufficient focus on how domestic private capital is now mobilized and on how international development institutions could better facilitate mobilizing this important source of financing for the power sector of developing countries. This chapter examines this central topic as part of crafting an overall strategy for revitalizing private investment in power.

4.1. THE CRITICAL ROLE OF DOMESTIC CAPITAL

The important role of domestic capital in financing infrastructure is widely recognized for three major reasons.

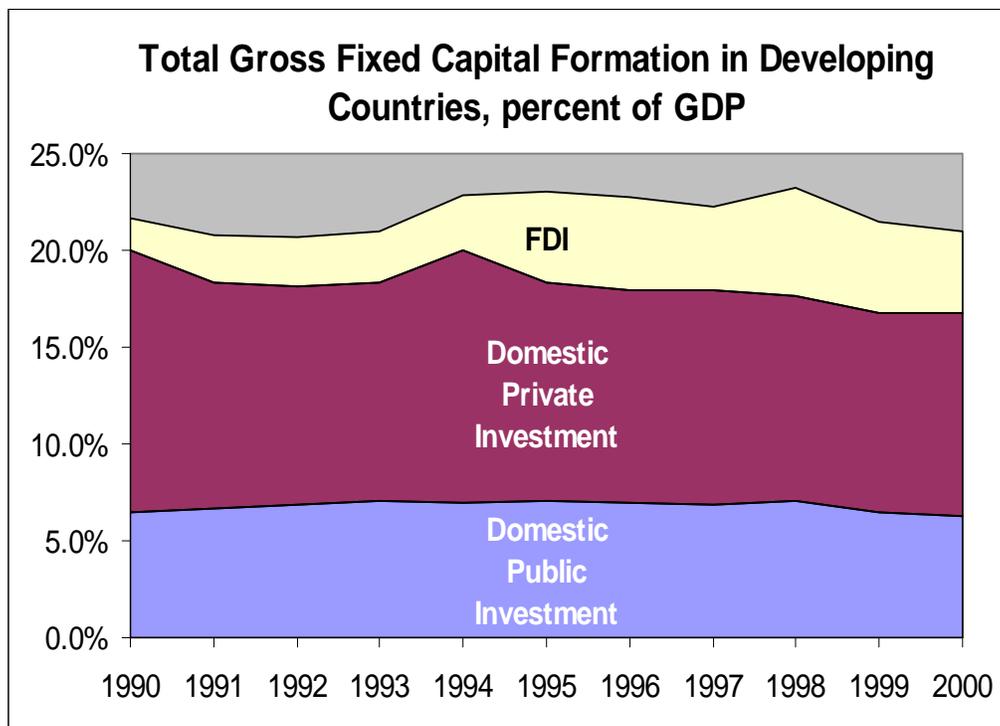
- ❖ **First**, infrastructure sectors such as power and water generate little if any foreign exchange given that the primary if not exclusive market for power and water is domestic. In developing countries, attracting foreign investment to and incurring foreign-exchange risk in an industry that generates little or no hard currency creates clear problems in economies that can experience wide fluctuations in exchange rates. Given the volatility of exchange rates in many emerging markets, foreign-exchange risk often ranks as one of the major concerns of foreign investors. The ability to mitigate this risk over the longer term is limited and problematic.
- ❖ **Second**, the accountability for cost recovery pricing, billing, and collections involves complex local politics. Managing the political risks while achieving commercial viability in these sectors might be better handled by giving local investors a vested interest in resolving the contentious debates over pricing and collections. Foreign investors have limited influence in the domestic market, and they may come to be unfavorably regarded if their investments are associated with necessary tariff increases and tougher policies regarding collections and disconnections. In general, foreign investors have to rely on multilateral and bilateral institutions to provide guarantees and to pressure the central government to mitigate political, regulatory, and institutional risks.
- ❖ **Third**, it is worth examining whether the cost of domestic financing in some cases might be lower. Domestic financing incurs no foreign-exchange risk, does not require the level of guarantees and insurance commonly called for in internationally financed transactions, and does not require high-priced international lawyers, financial advisors, and developers to perform the necessary due diligence. This condition prevails only if the greater efficiency offered by foreign capital markets offsets the costs faced by foreign investors, to cover currency and political risk.

For the aforementioned reasons, power infrastructure is financed largely by domestic capital sources in industrialized countries such as the United States, Japan, and the European nations. Although these countries generally relied on foreign capital during their respective periods of economic development (for instance, the U.S. relied on British capital during its industrialization), the net outcome was the preeminence of domestic financing. Mobilizing domestic capital in the United States and Japan is achieved to a large extent by capital markets tapping into contractual savings. Major investments are made by institutional investors who manage large pools of savings and who invest in pension and life insurance funds. The goal is

to match long-term liabilities (i.e., investments in power systems) to long-term savings pools (i.e., pension and life insurance funds). In addition, as mutual funds have emerged as savings vehicles not only for the long term but also for the short and intermediate terms, mutual fund managers are now playing an expanded role in channeling savings into infrastructure through the capital markets. Although the United States has financed major power complexes like the Tennessee Valley Authority through the public sector, most of the nation's power sector is owned by private utilities. The main source of financing for these power utilities is through debt and equity issues on the public capital markets. In Europe, there has been greater reliance on the European Investment Bank (EIB), a large development bank owned by the member countries of the European Union (EU). The EIB can raise financing on the capital markets at a very low cost because of its high credit rating that is based on the financial backing of the Bank's member countries. This capital is then lent to what have traditionally been state-owned (but which are trending toward privatization) power utilities in Europe.

In developing countries, domestic capital has also played a predominant role in financing the power sector, but this has largely been through state-owned electric utility self-financing from retained earnings (if there are any), state subsidies to cover revenue requirements that are not met by tariffs and collections, and state development institutions that finance capital investments. There is a shortage of data on domestic private capital flows to the power sectors of emerging market countries. **Figure 4-1** shows how domestic financing has played the dominant role in financing the overall economy of developing countries, with its proportional influence remaining fairly constant during the 1990s despite that decade's boom and bust economic cycles.

Figure 4-1. Gross Fixed Capital Formation in Developing Countries



Source: World Bank

In the electric utility sectors of many developing countries, public financing of infrastructure has resulted in commercially unsustainable operations that are heavily subsidized and a major drain on national budgets. In India's State of Karnataka, for example, the annual subsidies to the power sector are about US \$400 million, which is reported to exceed Karnataka's combined budget for health and education. The priority is not so much to expand domestic financing, then, but to shift the source of it from the public sector to the nascent private capital markets and the banking sector, and to do so within a commercial framework that both introduces private owners or operators and inspires the confidence of private investors. Underlying this transition from domestic public financing to domestic private financing is establishing the necessary framework of incentives and discipline to mobilize sustainably both foreign and domestic private capital.

4.2. EMERGING MARKET EXPERIENCE WITH DOMESTIC PRIVATE CAPITAL FOR POWER

International development institutions have tended to emphasize the role of foreign investment for power sector financing and until recently have paid less attention to how to better harness domestic capital. The natural question is why this has been the case, given the aforementioned arguments in favor of mobilizing domestic private capital. Three major reasons might explain this emphasis on foreign investment.

- ❖ **Most developing countries are at a stage of development where they are net importers of capital.** This was the case in the United States, for instance, during its period of industrialization in the 19th century, when it imported substantial capital from the United Kingdom to industrialize (Eichengreen, 1996). As in developing countries today, there was not sufficient savings and capital in the U.S. domestic market then to finance the rapid economic expansion required for industrialization. In contrast, industrialized countries tend to be net capital exporters, whose investors are seeking the higher investment returns that emerging markets can offer.
- ❖ **Developing countries have not adequately developed their capital markets and banking sector.** Consequently, there is no effective intermediation between the savings that do exist in the domestic market and the long-term investments needed for domestic infrastructure development. Typically, there are not the type of longer-term securities or lending vehicles available in the market necessary to finance the 10- to 20-year tenors that investments in power-sector infrastructure generally require. The legal and institutional framework required for issuing and trading in these securities is poorly developed, and investors therefore lack confidence in such a market.
- ❖ **International development institutions operate on the basis of hard currency.** In most developing countries, the power utility sector is not commercially viable, so it is hard to attract any private capital, be it foreign or domestic. In facilitating infrastructure financing for a power sector that is not functioning adequately, the international institutions with their hard currency obligations naturally apply loans, insurance, guarantees, and technical assistance based on hard currency repayment obligations. The valid view is that with foreign investment comes the international expertise, management, and technologies vital to reforming the power sector. Industrialized nations also have a vested interest in promoting the sales of services and equipment from their own industries, which is actively

backed up by their export credit, political risk insurance, and guarantee facilities. Repayment of these investments and loans for equipment and services is naturally in hard currency. A central question, then, is who assumes the long-term foreign-exchange risk. That risk is generally left with the government, which plays a substantial role in defining the macro-economic policies that influence a country's exchange rate.

Due to this emphasis on foreign investment by international development institutions, there has not been enough attention paid to how to best catalyze domestic private capital for infrastructure development. In less-developed countries, there is a shortage of domestic capital, as described in the first point above. Nonetheless, in more advanced developing countries, there is a large pool of domestic capital that could be better harnessed to support power sector reforms. This chapter analyzes how domestic private capital has been best mobilized in the past and what can be done to expand such investment in the future.

In developing the detailed case studies that form the basis of this study, we identified a limited number of cases involving majority domestic ownership and financing. While the total amount of domestic and regional capital mobilized in all these cases in the aggregate is substantial, much of that capital is concentrated in a small number of cases of large projects (such as Shandong Zhonghua in China and Lydec in Morocco); domestic financing represents the majority of capital mobilized in only four out of the 20 cases. This begs the question why so few of the cases have used domestic financing as the main source of investment, given that many of the cases selected were financed between 1997 and 2003: a period when mobilizing foreign capital was most difficult.

There are multiple reasons. As discussed later in this chapter, in many developing countries there is limited domestic capital available for infrastructure. In addition, domestic capital tends to be applied to smaller projects, which may not receive as much attention from the international development community. Cases of domestic financing are also not as thoroughly documented because these cases tend to have less involvement by multilateral and bilateral financial institutions, which are required to perform the detailed due diligence that would be a source of such comprehensive documentation. Given the limited budget for this research, it was not feasible to research cases of domestic financing to the level of detail that is seen in cases of foreign financing, due to a shortage of information. In order to compensate for the low number of domestic financing cases in the case sample, **Table 4-1** presents a summary of domestically financed power cases. Although less detailed information is available for these cases, these examples nonetheless provide some interesting insights, which are discussed later in this chapter.

While there is a natural and understandable tendency toward harnessing foreign capital, the question is whether international development institutions can play a more effective role in mobilizing private domestic capital. Foreign investment will play a critical near-term role in many developing countries as long as there is a short supply of capital, required international expertise, and technology. Nonetheless, it is worth examining experiences with domestic private capital mobilization in order to determine what can be done to expand this important source of development financing.

Between 1998 and 2002, a period characterized by a marked drop-off in foreign investment (as shown in **Figure 2-9**), the role of domestic investors grew substantially, both by default and

because of growing sophistication among domestic investors and lenders. For the purposes of the following analysis, “domestic investment” will actually have two components: internal domestic sources and regional sources where investments come from the neighboring regions that have similar cultural, political, and economic conditions. In our analysis, we examine notable examples of expanded domestic investment, including cases of strategic equity investments, commercial bank debt, balance sheet financing, and capital market issues.

A widely recognized case of domestic financing is the privatization of the North Delhi India power distribution company, as described in **Case Box 4-1**. Tata Power purchased it at a time when most foreign investors had departed India after a decade of disappointing investment experience there. This case involved mobilizing private strategic equity capital.

Case Box 4-1. North Delhi Distribution Company - India

Can Further Reforms Boost Private Participation? –North Delhi Divestiture

The North Delhi distribution company divestiture was part of a broader Delhi Vidyut Board state utility reform. Prior to July 2002, the Delhi Vidyut Board (DVB) state utility had a number of physical, financial, operational, and regulatory issues that challenged the survival of the distribution companies (“discos”) it planned to divest. However, the government experimented with new reforms based on observations of lessons learned from the earlier Orissa utility privatization. In July 2002, the New Delhi government successfully privatized the DVB’s three discos with Tata Power purchasing a 51% stake in one of the discos within the north and northwest zones for US\$37.5Mn. The Bombay Suburban Electric Supply Limited (BSES) purchased the other two for US\$64.8Mn. Key factors that assisted in the transaction’s completion include the following.

- ❖ **Solid Political Support/Minimal Public Resistance:** Starting with the Chief Minister, the government of New Delhi was a solid advocate for the divestitures. Public resistance to the divestitures was also relatively low since discontent with DVB’s service reduced employee union resistance.
- ❖ **Open Multi-tariff System Experimentation:** Traditionally, retail tariffs had been based on an annual cost of service approach. However, in May 2002, the Delhi Electricity Regulation Commission started to explore the multi-year tariff system: a major step forward in boosting the confidence of investors in long-term cash flow stability.
- ❖ **Conservative Asset Valuation:** Many privatizations, such as the Orissa case, sought to maximize government revenues by encouraging the highest bid. In contrast, the New Delhi government’s intent was to preserve the discos’ long-term viability by encouraging efficiency gains and keeping the bid price low to minimize tariff increases.
- ❖ **Targeted 5-year Subsidy:** The New Delhi government’s commitment of a US\$720Mn budgeted subsidy for the North Delhi and other two discos over a 5-year period, gave the discos some breathing space.
- ❖ **Direct Linkage Between Incentives and Performance Turnaround:** To accelerate the loss reductions, the Delhi government pursued a revenue sharing agreement where 50% of the savings over the agreed upon loss targets would go to disco operators such as Tata.

While it is still too early to evaluate the success of the North Delhi disco, there have been positive signs. For example, the number of transformer losses has dropped 30% from 2002 to 2003. In addition, technical and commercial losses have come down from 63.1% to its target of 47.7% from July 2002 to March 2003. Questions remain regarding regulation, tariff setting, and subsidy provisions to name the most important, but in the end, the North Delhi transaction proceeded fairly smoothly with solid domestic investors like Tata giving a stamp of approval to the Delhi government’s initial reforms.

There are notable cases of harnessing domestic debt capital through the banking sector to support independent power producer (IPP) transactions, as took place in Bulgaria with the Maritza East III project, where a syndication of domestic banks lent substantial debt capital alongside a syndication of foreign banks and the European Bank for Reconstruction and Development (EBRD). This transaction is described in **Case Box 4-2**.

Case Box 4-2. Maritza East III Power Generation - Bulgaria

Domestic Financing Coming to the Fore -Maritza East III IPP

The Maritza East III project, a joint venture between Entergy/ENEL and the state-owned National Electric Company (NEK), is a rehabilitation and retrofitting of the 840MW lignite-fired Maritza East III power plant at a cost of \$787Mn. The unique project is Bulgaria's first private sector financing and first major foreign investment in the power sector. The project provides an alternative to nuclear energy and meets EU environmental compliance standards, by utilizing new and replicable emissions-control technology. Maritza East III will allow the plant to utilize cheaper, indigenous fuels, which will have positive economic and fuel-efficiency impacts. Maritza East III also has an impressive proportion of domestic financing. Four Bulgarian banks – Bulbank, UBB, Biochim, and SG Expressbank -- jointly contributed \$90Mn (75Mn Euros) in debt for a tenor of 12 years. In addition, \$189Mn (157Mn Euros) is to be generated through internal financing. With NEK's sponsorship, almost 42% of the total project financing will be locally sourced. Key success factors that mobilized both domestic and foreign capital include the following.

- ❖ **Strong Political Support:** The Bulgarian government demonstrated its support by agreeing to take all measures to ensure the operation of the state-owned enterprises under the project agreements.
- ❖ **Effective Multilateral Development Bank Participation:** The EBRD's and the Multilateral Investment Guarantee Agency's (MIGA's) joint support ensured successful foreign and local commercial lender participation with tenors up to 15 years.
- ❖ **Compelling Cash Flow Security for Lenders:** In addition to the MIGA risk coverage, lenders received a secured interest in all assets of the joint venture company and an assignment of the project agreements as well as any insurance proceeds. The lenders also benefited from a 9-month Debt Service Reserve Account.
- ❖ **Competitive Tariff Structures:** The tariff structure is about 3.3 cents per kilowatt hour (kWh). According to MIGA, this low rate diminishes the likelihood of a stranded-asset problem, given NEK's 15-year power purchase agreement (PPA). Given that Bulgaria is transitioning to a competitive power market, there are concerns about committing to a long-term PPA while the power market is moving to open competition. These concerns are addressed by the fact that the tariff is considered highly competitive and power demand in the region is increasing.
- ❖ **Solid Mitigation of Key Project Risks:** The parties involved with operations, supply, and construction are highly experienced and have a good track record of delivery. Off-taker risks have been mitigated through a series of agreements ensuring creditors have priority with cash flows.
- ❖ **Promising Economic Prospects:** Bulgaria has experienced macro-economic stability and strong growth since a major economic downturn in 1996 led to the fall of the then-socialist government. The new government is committed to economic reform and responsible fiscal planning.

Although the Maritza East III project has taken a long time to develop and finance, by the time the finance agreements were finally signed the macro-economic and political situation in Bulgaria had improved considerably and the profile of the sponsors had been strengthened with the investment of ENEL. In its final shape, this is a competitively priced power project with well-structured contracts and appropriate risk allocations. The direct involvement of the EBRD, the political risk coverage from MIGA and the appetite of local banks all contributed to its successful financing.

There are notable examples of mobilizing domestic capital in China. The private developer Cheung Kong from Hong Kong has been active in developing Mainland China power projects, such as the 1,400 MW project in Zhuhai, Guangdong Province in 1995. China stands out in its ability to raise domestic financing for its power sector, as notably illustrated in the case of the Shandong Zhonghua project that raised 80% of its US \$2.2 billion financing using domestic debt and equity, as described in **Case Box 4-3**.

Case Box 4-3. Shandong Zhonghua Power Generation - China

Is Domestic Financing Just A Dream? – The Shandong Zhonghua Power IPP

The coal-fired Shandong Zhonghua Power Project (3000MW) at \$2.2Bn was over 80% domestically financed during the 1997-98 Asian crisis. It was also one of the largest and most robust IPPs to date with a competitive tariff of 5.69 cents/kWh. Shandong Zhonghua was started in May 1997 as a joint venture between the state-owned Shandong Electric Power Group Corporation (SEPCO) and Shandong International Trust and Investment Corporation (SITIC), and foreign investors EDF and Hong Kong-based China Light and Power. The project consisted of two power stations (Shihengs I & II, totaling 1200MW) already in operation at time of financial closure, as well as two new power stations (Heze II and Liaocheng, totaling 1800MW) to be built. Despite the project's tremendous scope, it managed financing due to the following.

- ❖ **High Domestic Capital Mobilization:** Besides utilizing the deep pockets of China's domestic banks, the project included a substantial amount of local equipment. The fuel supply, operating costs, and technical expertise were also sourced in local currency. As a result, the exchange rate liabilities that come with high levels of foreign financing were significantly reduced.
- ❖ **Creative Risk Management of Equity Participants:** The maxim, "Risks should be allocated to the party best able to manage it," took an unusual twist in Shandong Zhonghua because the equity participants often wore multiple hats. For example, EDF was both a sponsor and EPC contractor. According to EDF, this was "the best way to protect our equity investments: through the monitoring of the construction contract. EDF is fundamentally an engineering company and an operator which is well positioned to ensure the quality of the works will mitigate the operating risk of the project."
- ❖ **Flexible British Export Credit Guarantee (ECGD) support:** The Export Credit Guarantee Department provided 100% political and commercial risk coverage for \$312Mn in debt at a generous term of 18 years.
- ❖ **Efficient leveraging of completed plants for the financing of new plants:** By the time of financial closing, the Shihengs I & II were already operating and generating revenues. Hence the Shandong Zhonghua project was able to draw internal financing of \$133Mn to build the Heze II (600MW) and Liaocheng (1200MW) stations.

The Shandong Zhonghua project's vulnerability to currency fluctuations is significantly less than a majority foreign-financed IPP. As SG Asia commented, "Our ultimate protection is that the power price is as low as possible. You can't rely on indexing as it makes the power price too expensive in any LDC and then you get power tariff issues. You need to build a structure that will keep you at the lowest end of the cost base." Through a combination of domestic sourcing, creative risk management, export credit agency (ECA) support, and internal financing, the Shandong Zhonghua project has demonstrated how to successfully finance a major IPP project in China and possibly by extension to other rapidly industrializing countries.

Domestic capital also plays a major role in the smaller and disbursed development of rural electrification and slum electrification projects, as illustrated by the Grameen Shakti case in Bangladesh, described in **Case Box 4-4**, and the PRONAI Light initiative, described in **Case Box 4-5**. In these cases, the financing was typically done on the balance sheet of a local utility or company that supported these energy poverty initiatives either as an outgrowth of their mainline businesses or as a pilot company dedicated to developing a niche business commercializing auto generation systems.

Case Box 4-4. Grameen Shakti Electrification Initiative - Bangladesh

Locally Financing Micro-Utilities-The Grameen Shakti Story

Grameen Shakti: its name alone (meaning “rural energy”) captures the spirit of the organization’s dedication to provide renewable energy solutions for the off-grid, low-income communities of Bangladesh. With 80% of the country’s population in rural locations, main grid expansion in Bangladesh has not kept up with the 10%+ per year growth in demand for electricity. Through the assistance of USAID, the Government of Bangladesh established agencies dedicated to renewable energy development and adopted a supportive, if not hands-off, approach to encouraging its private financing. Founded in 1996, Grameen Shakti (GS) has gone a step further by promoting the local financing of micro-utilities that has led to ownership and income-generation opportunities for the community. The key has been the sale of the Solar Home System (SHS) photovoltaic units. Configurable between 17-120 peak watts, these units help extend the business hours of local shops, provide extended lighting for schools, power soldering irons in radio repair shops, and keep the roads safer at night. Yet at a cost of \$400-\$500, the SHS is not cheap. Nevertheless, thanks to a 1998 World Bank concessional loan, the terms of customer financing are extendable out to 3 years. Financing options are combinations of down payments and monthly installments at reasonably set interest rates. No collateral is required. The three payment options are

- ❖ a 15% down payment, with the other 85% paid over 3 years at 12% through 36 monthly installments;
- ❖ a 25% down payment, with the rest is paid within 2 years at 8% through 24 monthly installments; and
- ❖ a 100% cash purchase with a 4% discount on total price.

Regardless of which option is selected, the opportunity of ownership has become a very real possibility for a growing number of people in rural areas. Therefore, a key factor in the success of the GS program has been its flexible financing. Yet, GS goes beyond this to nurture a supportive network. Customers receive 1 year of free maintenance. Engineers visit the customers each month to check systems, take corrective actions, and collect installments. GS also provides customer training on installation and maintenance as well as specialized technician training to local youths. This stimulates local employment. Finally, GS organizes public demonstrations to reinforce awareness and understanding of SHS in addition to its potential uses for income generation. In short, GS does not focus only on the technical and financial issues of the SHS. Rather, GS sells a vision of self-empowerment through electricity access with the SHS as a locally financed means to that goal.

Case Box 4-5. PRONAI Light Electrification Initiative - Brazil

A “Community Face” in Electrification – Light Utility Initiative

In five years (from 1997 to 2002) Rio LIGHT’s PRONAI or Program for Normalization of Informal Areas has either regularized or connected for the first time over 250,000 households in the favelas (slums) of Rio de Janeiro, areas that are notorious for crime and violence and where virtually all stole electricity as a matter of course. PRONAI’s biggest single accomplishment was demonstrating how intense interaction with the community through a strong community-based set of “LIGHT agents” could literally open up the slums and change people’s attitudes toward paying for electricity. Self-financing (through a loan guaranteed by MIGA and the International Finance Corporation [IFC]) meant approval by the company’s management as well as by the newly instituted Brazilian electricity regulator. Several factors contributed to getting approval.

- ❖ **Raised Service Quality and Safety Through Infrastructure Upgrades:** Extensive reconstruction of the distribution systems within the slums was a significant part of the program’s expenses. Internal house rewiring reduced fires associated with the abysmal electrical installations in the houses.
- ❖ **Formalized Grid Connections and Through Subsidies and Financing:** Besides the familiar face that the company put on the program, it offered strong economic incentives for participation, including amnesty from both prior electricity debts and fines for theft and disconnection, as well as subsidized connection fees with easy payment terms. Free efficient light bulbs were distributed in 2000 and 2001 and lowered the level of electricity consumption for participants. Ease of payment was also improved with customer service offices added in many areas that are more convenient to community circulation patterns. The program documented proof of residence for favela residents, which is necessary for them to get a phone installed and to establish credit.

LIGHT considers PRONAI to be a success in terms of its reaching into slums where utilities had heretofore generally feared to tread, in the number of homes it electrified (connected or regularized), and in its ability to at least break even in many areas. However, the economic duress caused by drought-induced energy crises, economic downturn, etc. caused its cancellation and replacement by an evolving new approach. The company is presently revamping its approach, drawing on the best aspects of its experience with PRONAI and fixing others. It is significant that COELBA, the electricity company for the state of Bahia, has successfully applied the PRONAI approach (again with several modifications intended to reinforce the good results and eliminate the bad) to electrify hundreds of thousands of slum households in Salvador, Bahia, and other surrounding cities.

There are also notable cases of regional investment where investors in one country have expanded into adjacent countries with similar political, cultural, and economic conditions. The Russian power company RAO UES has played an expanding role in investing in or targeting such neighboring Former Soviet Union (FSU) countries as Georgia, Armenia, and Ukraine, and the company is also targeting Bulgaria and Romania in the Balkans. The South African power company ESKOM has been active as an operator and limited investor in the neighboring countries of Zimbabwe, Namibia, Angola, and the Republic of Congo. The Chilean utility ENDESA has expanded to invest in the power sectors of the neighboring countries of Argentina, Peru, and Colombia. Another regional power investor is Barmek Holdings of Turkey, which entered into a power distribution concession in Azerbaijan in 2002. Singapore Power has done a major bond issue for a potential investment in the Philippines Transco sale. The Czech utility CEZ, which has expanded beyond its frontiers to invest in Slovakia, also plans to expand into Bulgaria, Poland, and Hungary.

An interesting example of regional investment is how “Islamic capital” plays a role in developing infrastructure in Islamic countries. The Aga Khan Foundation, for example, was set up as a “modern vehicle for traditional philanthropy in the Ismaili Muslim community under the leadership of the Aga Khan.” This foundation engages in a variety of initiatives including health, education, rural development, and enhancement of non-government organizations (NGOs). Part of its focus has been to invest strategically in specific power projects, as the Foundation has done in two of our cases, Azito and Pamir. Specifically, Aga Khan’s involvement in the Pamir case in Tajikistan, as described in **Case Box 4-6**, is an example of an energy poverty development project that channels regional Islamic capital into a project that is also innovatively cofinanced with the World Bank.

Case Box 4-6. Pamir Power Generation - Tajikistan

Regional Capital in the Tajikistan Power Sector – Pamir Power IPP

Pamir is Tajikistan’s first private power project and was sponsored by the Aga Khan Fund for Economic Development (AKFED) and the IFC under the project company, Pamir Energy. The project consists primarily of completing the Pamir I hydroplant to its original design capacity of 28MW, from its current 14MW, by installing units 3 and 4 along with an associated regulating structure at Lake Yashikul. (Units 1 and 2 were completed in 1994 through USAID funding.) The total project cost is \$26.2Mn. Tajikistan is the poorest country of the former Soviet Union. Approximately 60% to 80% of the population is said to be living in poverty. Tajikistan is also burdened by heavy dollar-denominated external debts comprising approximately 97% of GDP. Furthermore, the seasonal income cycle of most consumers has made collections difficult. Thus, despite reasonable economic growth since 1997, Tajikistan has not attracted much interest from private investors. As a result, the project had to be structured in a way that balanced financial sustainability with social objectives, to increase and improve electricity accessibility. Key elements to closing the project included the following.

- ❖ **Lower Equity Rate of Return Requirement:** The equity investors accepted a 10% rate of return for the project, a level substantially below expectations, given Tajikistan’s country risk. AKFED, which provided 70% of the equity, saw its participation as a long-term investment based on a long history of involvement, which has lasted even through the country’s civil war in the early 1990s. As AKFED’s Matthew Scanlon commented, “The Pamir project was part of a broader development commitment, which built upon the Aga Khan Development Network’s earlier support of Tajikistan in areas including agriculture and humanitarian assistance.”
- ❖ **Strong Political Support:** Tajikistan’s President Rakhmonov declared the project would go through. The unofficial story is that in a heated debate over whether or not to accept the project, the President asked, “Does anyone have any better proposals?” In the ensuing silence, the President declared the project would be approved. True or not, it illustrates the difficulty politically in getting these projects off the ground.
- ❖ **Targeted Social Protection Assistance:** The Swiss government and the International Development Agency (IDA) together provided funding of \$9.3Mn for a social protection net targeted at assisting the population in tariff payment adjustments over the first 10-year period.
- ❖ **Independent IFC/Swiss Government-funded Legal Advice to the Government of Tajikistan (GOT):** The IFC and the Swiss Government provided the government of Tajikistan with legal counsel that brought the Ministry of Energy and other GOT bodies up to speed on international transaction standards; this was a selling point to Parliament, which recognized the importance for attracting foreign direct investment (FDI) into future power projects.

AKFED is part of the broader Aga Khan Foundation focusing on social development primarily in Asia and East Africa. Its collaborative experience with the IFC and Swiss government, as well as its understanding of Tajikistan, helped it to serve as a channel of regional capital and technical assistance for the Pamir project. Through a focus on social development over returns, as well as from strong political support, targeted social assistance, and the advocacy of Tajikistan before the international financial markets, Pamir financially closed in a difficult environment and established a precedence of private participation in the Tajikistan economy and similar high-risk markets.

Given the limited detailed case analysis of domestic capital financings in power infrastructure, **Table 4-1** has been prepared as a response; it is a summary of the key features of an additional 20 power cases that are all entirely domestically financed.

Table 4-1. Domestic Capital Cases

Country Risk	Case	Financial Closure	Project Type	Type G/T/D	Capacity	Total Investment (\$Mn)	Sponsor Lead Investor	Foreign Capital	Domestic Regional Capital
61.7	Johor Coal Plant (Malaysia)	2003	IPP	G	2100 MW	2100.0	SKS Power	0.0%	100.0%
59.9	Three Gorges Hydro (China)	2003	IPP	G	18,200 MW	25000.0	Yangtze Electric (1.19Bn IPO)	0.0%	100.0%
60.6	Guangxi Guigan Electric (China)	2000	Divestiture	G	592 MW	83.3	Local	0.0%	100.0%
60.6	Hubei Changyuan Electric (China)	2000	Divestiture	G	80 MW	79.6	Local	0.0%	100.0%
59.9	Xinji Thermal Power Plant (China)	2003	IPP	G	24 MW	24.0	Hengshui Construction	0.0%	100.0%
56.4	Prai Power Gas-fired Plant (Malaysia)	2001	IPP	G	350 MW	265.0	SKS Ventures	0.0%	100.0%
53.2	Ratchaburi Power (Thailand)	2000	Divestiture	G	3645 MW	238.5	Local	0.0%	100.0%
51.5	Tanir Bavi Power (India)	2000	IPP	G	220 MW	207.0	GMR Group	0.0%	100.0%
51.5	BSES Andhra Power (India)	2000	IPP	G	230 MW	165.0	Prasad & Co, BSES.	0.0%	100.0%
45.0	Jauru Small Power Plant (Brazil)	2000	IPP	G	409 MW	16.6	Agroindustrial Araputanga	0.0%	100.0%
44.1	Los Gemelos Mini-Hydro (Costa Rica)	2000	IPP	G	20 MW	30.0	Producciones Antheus SA	0.0%	100.0%
44.0	Interconexion Electrica SA (Colombia)	2000	Divestiture	D	7900 Km	45.7	Local	0.0%	100.0%
39.8	Reho Electricity (Namibia)	2000	Mgmt Contract	D	>1000 Km	1.0	Icon Investments	0.0%	100.0%
28.6	Cochabamba Rural Electricity (Bolivia)	2000	Utility Electrification Initiative	D	1400 Km	7.3	Empresa de Luz Y Fuerza Electric Cochabamba SA	0.0%	100.0%
26.8	Sumgayitelektriksebeke (Azerbaijan)	2002	Concession	D	160 Km	80.0	Barmek	0.0%	100.0%
18.7	Kirirom 1 Hydropower (Cambodia)	2000	IPP	G	12 MW	26.0	China Electric Power Tech Import/Export	0.0%	100.0%
17.5	Lepel Hydro (Belarus)	2003	Refurbishment	G	0.3 MW	0.5	Polatsk Power Networks	0.0%	100.0%
15.9	Essergei Hydro (Albania)	2002	Concession	G	8 MW	8.0	Essergei	0.0%	100.0%
13.5	Myanma Electric (Myanmar)	2003	IPP	T	230 KV	34.7	Sichuan Machinery (Reg)	0.0%	100.0%
13.0	Hwange Power (Zimbabwe)	2001	Mgmt Contract	G	> 5 MW	3.0	Eskom	0.0%	100.0%
7.5	Pyongwon Power Plants 1,2,3 (North Korea)	2003	IPP	G	> 5 MW	> 5 Mn	Local investors /Govt	0.0%	100.0%

Lower Risk
↑
High Risk

- (1) Shaded projects denote greenfield
- (2) Unshaded projects denote projects of existing assets
- (3) The term "Utility Electrification Initiative" denotes rural and peri-urban electrification programs
- (4) Country Risk Rankings based on the Institutional Investor Country Credit Risk 1992-2003 Ratings
- (5) Source: PPI Database, Energy Central Professional Archives

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There appear to be four factors that contribute to greater domestic capital participation. First, countries that are not well-integrated into the international community (e.g., North Korea, Myanmar) force their populations to channel their savings to critical infrastructure because these nations are unable to attract foreign capital. Second, major countries (e.g., China, India, Colombia, Brazil) that have achieved significant levels of economic and financial market development are able to mobilize substantial sources of domestic financing for both large and small projects. Third, less developed and/or smaller countries are able to mobilize domestic capital, but usually for smaller-scale projects of little interest to foreign investors. Fourth, rural electrification and urban slum electrification projects, while attracting donor funding, typically rely on domestic financing or utility balance sheet financing due to these projects' small scale, high transaction costs, and complexity. There is a tendency for domestically financed cases to be smaller projects, as is seen in the cases in Zimbabwe (less than 5 MW), Albania (8 MW), Belarus (0.3 MW), Cambodia (12 MW), Costa Rica (20 MW), and in many provinces of China. There are notable exceptions, such as the massive Three Gorges hydro project in China.

Given the high transactions costs of these smaller projects, foreign investors tend to concentrate on larger projects (in excess of 100 MW), while domestic investors are better able to keep the development costs lower and structure smaller deals to be financially

attractive. Notably, domestic investors are involved in Greenfield IPPs, divestitures, and concessions but at a lower cost and usually with little or no form of multilateral, bilateral, and central government financing, guarantee, and insurance support. The ability of domestic investors to manage risk makes it more feasible for them to operate without co-financing, guarantees, and insurance.

As countries industrialize, the prevailing pattern is they succeed in commercializing or privatizing their power sectors and are then able to attract domestic private capital for financing their power sectors. For instance in newly industrializing countries (NICs) such as Malaysia, Singapore, South Korea, Thailand, Chile, and Argentina, domestic capital has played an expanding role in financing domestic power infrastructures. The high gross domestic savings rates (for example, 50% of GDP for Singapore, 38% for Malaysia, and 37% for Thailand) creates a large pool of domestic capital for these countries to draw upon (based on 1993 - 1995 World Bank data). One of the most notable instances in 2003 of raising domestic capital in a NIC was in Singapore. Senoko Power of Singapore raised up to US \$116 million with 10-year local currency bonds. This issue came soon after Power Seraya, another Singapore power generation company, successfully issued US \$202 million through a 7-year local currency bond issue. Singapore Power, the largest of the three power companies in Singapore, is expected to go international with the launching of a US \$2.17 billion bond issue on regional stock exchanges.

4.3. FINANCING SECTOR TRENDS IN EMERGING MARKETS

As we have noted, mobilizing domestic capital is relevant to increasing financial flows to power sector projects. Domestic-capital structures can more directly address risks specific to the power sector, and well-functioning local capital markets can provide a more stable source of finance than the more-cyclical flows of foreign capital. In addition, domestic capital markets create opportunities to leverage foreign capital and eventually lead to more sustainable funding sources for infrastructure finance. Domestic capital investors, by demanding returns and governance that are acceptable to public shareholders, also introduce discipline into locally operated entities, which in turn indirectly improves the operations of those entities. These new funding sources can supplement, and to some extent replace, the historical reliance on highly structured project finance deals as the major source of private finance for many infrastructure projects.

Developing local capital markets is not a new to the development agenda. Domestic governments, international financial institutions, and the donor community have implemented, or are currently implementing, many programs to strengthen capital markets. As these efforts and programs accumulate, we are witnessing clear progress in many markets. Emerging local bond markets have nearly doubled in size since 1993, and local bond markets have become the dominant source of funding for the public sector in all regions. Local corporate bond issues grew by a factor of 10 between 1997-1999 and 2000-01. While emerging markets have been traditionally viewed as bank-dominated financial systems, local bond markets have become the largest single source of domestic and international funding, although these markets are dominated by the public sector. The challenge, then, is to open these local bond markets to private infrastructure finance, including the power sector. Given the importance of debt to power sector financing, this is an encouraging trend. On the equity market side, Asia and Latin America have tripled the rate of equity market capitalization to GDP since the mid-1990s.

Comparing emerging capital markets with mature capital markets illustrates the potential for additional progress. At 36% of GDP, emerging bond markets compare to a mature market average of 122% of GDP. Domestic corporate-bond issuance, at 31% of total corporate domestic and international funding, still reflects a heavy reliance on bank funding in emerging markets. Although emerging capital markets are growing in absolute size, these markets' liquidity remains low and their volatility remains high. And, as with any average statistics, there are significant regional variations in progress toward developed capital markets. Southeast Asia, Latin America, and certain countries in Eastern Europe demonstrate the most progress in capital market development, with a diverse collection of countries falling somewhere in the middle statistically, and many countries in Sub-Saharan Africa and the Caribbean excluded from the statistics altogether.

The challenge for development institutions is to identify countries where both domestic capital activity and power sector reforms have reached the stage that make possible the strategic intermediation between domestic savings and infrastructure that is needed for expanding private capital flows to the power sector. In the two sections that follow, we discuss the constraints and key issues in capital market development and in power sector investments, as a context for our discussion in Chapter 7 of possible mechanisms for IFIs to expedite private capital flows to the power sector.

4.3.1. Capital Markets Development – Constraints and Issues

Several recent studies on domestic capital-market development illustrate the growing realization that there is a model for “sequencing” reforms to optimize the development of domestic financial markets; this encompasses a generally accepted hierarchy of financial markets, illustrated in following table.

Order	Market	Market enables:
1	Money Market	<ul style="list-style-type: none"> ❖ Monetary policy and setting of short-term interest rates ❖ Financial institution liquidity and price discovery
2	Foreign Exchange Market	<ul style="list-style-type: none"> ❖ Exchange rate price discovery ❖ Confidence in macro-economic stability
3	Government Bond Market	<ul style="list-style-type: none"> ❖ Determination of term structure of interest rates (yield curve) which allows pricing for corporate bonds and other instruments through benchmark securities ❖ Development of derivatives markets to allow financial risk management ❖ Enhanced monetary policy operations and liquidity management
4	Corporate Bond and Equity Markets	<ul style="list-style-type: none"> ❖ Additional channels for the intermediation of savings and diversification of risk
5	Asset-backed Securities and Derivatives	<ul style="list-style-type: none"> ❖ Further market innovations

With respect to power sector financing, the transition to corporate bond markets is especially relevant, as this signals the potential for greater infrastructure finance.

Describing the specific steps to develop each of these markets is beyond the scope of this paper; these steps are largely reflected by the broad range of capital market development that is ongoing in developing countries. The key themes of development include activities directed at each of the five major elements of a vibrant capital market: (a) developing stock exchanges, trading systems, and settlement and depository institutions to build a **market infrastructure**; (b) establishing technical assistance and making recommendations for market-driven regulation to create **independent securities commissions**; (c) providing consistent and transparent information about issuers, through accounting and corporate governance reform, to build **market confidence** and to create **rating systems**; (d) reforming the pension and insurance sectors to develop **institutional investors** with longer-term investment horizons; and (e) creating **financial intermediaries** that can provide the quality services needed to solicit active participation in the markets.

The development of capital markets cannot take shortcuts in its basic stages. The activities at each level of market development are complex; there are interdependencies between the markets, which require a coordinated approach to development; and the entire process takes time. Development must also occur in the context of a commitment to macro-economic stability, which provides an environment where market participants can begin to think in the long term and where the fear of crises is reduced. Development must also take place in the context of government commitment to reform, which provides a regulatory environment conducive to market development and which encourages investor confidence. While there are short-term substitutes for these two key contexts, in the form of guarantees and highly insulated risk allocation structures, true sustainability of capital markets will only occur when governments provide these two requirements for capital market development.

4.3.2. Illustrative Data on Emerging Markets Capital Market Development

Table 4-2 presents domestic debt securities in emerging economies, as of September 2002. Analysis of this data is not meant to be exhaustive, but rather to illustrate general trends in domestic capital markets.

Table 4-2. Domestic Debt Securities in Emerging Economies: September 30, 2002

DOMESTIC DEBT SECURITIES IN EMERGING ECONOMIES: SEPTEMBER 30, 2002				
(billions US\$, %)	Total	Private Financial Institutions	Corporate Entities	Public
Emerging Economies	1,615.2	442.8	229.2	943.4
Brazil	200.9	35.6	1.6	163.7
China	410.4	198.7	10.4	201.3
India	148.8	0.3	2.0	146.6
Korea	351.4	124.5	137.4	89.6
Czech Republic	42.3	3.1	3.2	36.0
Hungary	26.2	0.0	0.9	25.3
Poland	50.5	0.0	0.0	50.5
Other	384.7	80.6	73.7	230.4
Emerging Economies	100.00%	27.41%	14.19%	58.41%
Brazil	12.44%	2.20%	0.10%	10.13%
China	25.41%	12.30%	0.64%	12.46%
India	9.21%	0.02%	0.12%	9.08%
Korea	21.76%	7.71%	8.51%	5.55%
Czech Republic	2.62%	0.19%	0.20%	2.23%
Hungary	1.62%	0.00%	0.06%	1.57%
Poland	3.13%	0.00%	0.00%	3.13%
Other	23.82%	4.99%	4.56%	14.26%

Note: Based on Nationality and Type of Issuer; financial institutions are assumed to be private in this table; China is net of Hong Kong SAR; other transition countries are not included in the BIS data.

Sources: Tables 16A-B, BIS Quarterly Review, March 2003

Among emerging markets, it is noteworthy that there is a conspicuous absence of corporate sectors in domestic debt markets, apart from South Korea and, to a lesser extent, Malaysia. Corporate issues account for 14% of total domestic debt securities issued by emerging countries. While some financial institutions in China and Brazil have been able to float domestic debt securities, only South Korea and Malaysia have seen their corporate sectors issue amounts of debt comparable to smaller Western European countries. South Korea had issued US \$137 billion in domestic corporate debt outstanding as of September 2002, and in Malaysia, the comparable figure was US \$38 billion. By contrast, China's corporate sector had only US \$10.4 billion outstanding in September 2002, and Brazil's corporate sector had only US \$1.6 billion outstanding. Other emerging markets' corporate sectors were generally in this range as well, including Argentina, India, Mexico, South Africa, Thailand, and Turkey.

Although these are still underdeveloped, local-currency bond markets have had some significant successes in infrastructure financing. An important rotation from external to domestic debt has already occurred in the public-sector debt pools of major emerging economies. In several countries, including Brazil, Chile, Hungary, India, South Korea,

Malaysia, Mexico, Poland, South Africa, and Turkey, local-currency fixed-income markets have grown considerably in recent years. In response to several institutional and policy initiatives, these markets have also considerably modernized their trading practices and mechanisms. Such markets now offer a range of money market, Treasury bill, and longer-term securities. These markets also have adequate liquidity, particularly on the government side, and the depth to respond to the debt issuance needs of the public and corporate sectors. In countries such as Chile, South Korea, and Malaysia, which have well-developed local institutional investors (insurance companies, pension funds), local debt markets have developed the capacity to meet the needs for long-term infrastructure investment.

There are a number of reasons why debt markets seem to grow more slowly than equity markets. In many countries, particularly in Eastern Europe, equity markets grew quickly in response to a wide variety of privatization methods employed post-liberalization. Many voucher-type privatization programs quickly produced equity markets, although the long-term sustainability of some of these exchanges is now in jeopardy as more accurate corporate valuations begin to emerge. In contrast to equity instruments, which are well understood by many potential investors, debt instruments are relatively more complex, a situation further complicated by underdeveloped insolvency regimes in many countries. Finally, the traditional relationship between the cost of equity and the cost of debt, as captured by capital asset pricing models, does not always hold in underdeveloped markets. High prevailing interest rates on debt, when compared to the lower short-term cash flow commitments associated with equity, make issuing equity shares more attractive than issuing debt securities for many companies.

India is a good example of a developing capital market. The country has a high savings rate, averaging 25% of GDP in the years 1993 – 1997. The share of that savings invested in financial assets is still relatively small, but it has increased from 3% in 1971 to 10% in 1996. Most savings are still held in the form of physical assets: gold or other commodities, and property and buildings. Most banks are state-owned and generally offer low interest rates on deposits. As a result, households have been shifting their savings away from banks and other forms of interest-paying assets and into equity markets. From 1990 to 1996, the share of incremental financial savings that went into the equity markets increased from 25% to 53%. Indian corporations raised a total of US \$9.3 billion in 1997, 77% of which was from debt issues and 23% from equity issues; this compares with the US \$6.4 billion they raised in 1995, 3% of which came from debt and 97% from equity. This reflects both growing demand for and supply of debt instruments. Because of these trends, India is an example of a country where the shift of savings into infrastructure investment may take an even steeper upward trend in the near term.

In the transitioning economies of Eastern Europe and the FSU, capital markets are also showing promising signs of development. Our research in Croatia, Kazakhstan, Romania, and Ukraine indicates that although it is currently low, institutional investor prevalence is growing. Assuming even very low levels of insurance penetration, potential total insurance company resources for investment could approximate or exceed US \$8.6 billion in these four countries by 2008. The pension fund potential is also considerable in Ukraine, Romania, and Kazakhstan, which have a combined population of about 85 million. Kazakhstan has actively pursued pension reform since 1997-98, and is now poised to privatize 15 funds. The funds have already begun to invest in corporate bonds, and can be

expected to increase this investment in the coming years. Croatia also introduced private pension funds in 2002. By contrast, as of early 2003, the status of pension reform in Ukraine and Romania is nascent. Based on conservative assumptions, pension funds in the four focus countries could potentially be US \$9.3 billion or more by 2008. Also, based on conservative assumptions, it is possible these four countries could reasonably attract US \$2.6 billion in mutual fund investments in corporate bonds by 2008.

4.3.3. Changes in International Financial Architecture

Given the impact that the financial crises of the 1990s had on private capital flows to the global power sector, the subsequent changes in the international financial architecture (IFA) are highly relevant to this discussion of mobilizing domestic capital. A key role of the IFA in international financial markets is ensuring macro-economic stability. As discussed previously, macro-economic stability is the foundation for vibrant local capital markets, enabling the establishment of yield curves, which facilitate debt market development, and boosting investor confidence.

In the aftermath of these crises, IFA institutions are increasingly concerned with identifying and preventing future emergencies. The key causes of these crises include expansionary macro-economic policies, inflexible exchange-rate regimes, weak financial systems, reliance on short-term finance, excessive corporate leverage, and insider trading or “crony capitalism.” To prevent or lessen the severity of future crises requires more than just following sound fiscal policies. The areas of concern that need to be addressed include the soundness of domestic banking systems, which includes examination of corporate finance and accounting systems, financial laws, and bank supervision; the appropriateness of exchange-rate regimes; the transparency and quality of information, including that from domestic accounting systems; an assessment of the role of the International Monetary Fund (IMF); and consideration of “bail-in” provisions for the private sector. Developing countries, IFIs, and financial intermediaries in developed countries each have to act in order to reduce both the likelihood and severity of crises, by addressing these key topics.

Committed developing countries are promoting greater transparency and improving domestic financial systems. Transparency initiatives include participation in the IMF’s Special Data Dissemination Standards (SDDS) and General Data Dissemination Standards (GDDS), as well as in the IMF and World Bank’s Financial Sector Assessment Program. Another key step to enhancing transparency is to implement international accounting standards.

With respect to their financial systems, countries address weaknesses in their banking sectors (which are largely related to the magnitude of non-performing loans) by improving accounting practices and the accounting profession, upgrading supervision and the legal system, and reforming tax laws. The World Bank has strongly supported financial sector reform, making 77 Financial Sector Adjustment Loans, 26 Technical Assistance Loans in Finance, and 435 Investment Loans through the financial sector, in the period between 1984 and 1999. These initiatives have had mixed success, depending on the desire of the borrowing nations to change. Finance remains very close to politics in many countries, and the cost of reform is quite high. Also, depositors have often not

demanded change, and the perception of state protection of funds in government-owned banks provides a sense of security that, while forestalling a run on the bank, certainly inhibits improvement of capital markets. Foreign participation in the banking sector is growing in many emerging markets, and there is some evidence (Mathieson and Roldos, 2001) that foreign banks improve stability and efficiency in the financial sector. There are some recent indications, however, that the greater the role played by foreign banks, the less long-term capital they make available domestically. The reasons for this are still under review; it is possible that foreign banks have a shorter-term investment return horizon than domestic banks, but it is also possible that previous levels of non-performing loans by state-owned banks are distorting the data. Developing countries are also addressing the sequencing of appropriate capital controls and are taking steps to manage their exchange-rate systems.

In addition to actions taken by developing countries to improve the IFA, IFIs, and financial intermediaries in developed countries have certain responsibilities as well. The IMF's role as a lender of last resort is under constant review, as are the Fund's eligibility criteria, interest rates, maturities, and loan size. Developed countries are being asked to consider extending the maturities of private finance to developing countries in order to reduce volatility. In addition, the new Basle Capital Accord requirements are aimed at improving global financial-sector stability.

4.3.4. Key Trends in Financial Market Development

Over the last two decades, global financial sectors have undergone dramatic changes, driven by new technology, product innovation, the opening of markets and, ironically, financial crises. Major developments in the global financial sector have triggered several important trends in reform, which have implications for infrastructure finance in developing countries. Based on our research, we have identified the following five key trends currently driving global financial-market development.

- ❖ **Globalization, consolidation, and convergence** of intermediaries and markets are by-products of change in the industrial organization of financial services. As financial intermediaries face substantial competition in their traditional lines of business, they are seeking new markets, reconfiguring their product/service portfolios, developing more efficient conglomerate structures, and exploiting regulatory imperfections by entering new businesses. With these trends, issuers have increased access to international capital markets, to leverage local capital sources. For governments and market supervisors, the availability of global capital markets increases exponentially the importance of prudent and active macro-economic stability, capital control, and exchange-rate measures.
- ❖ **Information, disclosure, and governance** have become the central focus of IFA reform, stemming from the needs to increase market efficiency and to reduce information asymmetry among intermediaries and issues of securities. Proactive compliance by issuers improves access to well-priced sources of finance. Growing participation by institutional investor groups will increase discipline in this area through market-based allocation of capital. For governments and market supervisors, achieving consistency and transparency in capital markets will foster market growth.

- ❖ **Electronic finance**, including the use of electronic banking and electronic money, and the provision of other financial services through electronic means, is spreading quickly in both developed and developing countries. This has significant implications for consumers, financial institutions, and supervisory authorities, on the access to finance, the regionalization and globalization of financing sources, and the associated supervisory challenges.
- ❖ **Safety-net reforms** are primarily focused on pension reform and financial assurances such as deposit insurance and investor protection. While these are technically and administratively disparate areas, they both serve similar purposes for financial sector development: to harness long-term savings for long-term investments such as infrastructure, and to reduce both the explicit and implicit cost of state funding for the sustenance and financial safety of consumers.
- ❖ **New financial products and tools** have done more to transform financial markets than any other development during the last 20 years. These have created new sources of finance, induced disintermediation, and enhanced risk management. These have also, however, increased the complexity of financial services, further burdening the already limited capacity of financial sector regulators in many developing countries.

4.3.5. Sources of Long-term Investment Capital

A solid base of institutional investors is a key element for successful infrastructure finance, as these investors represent a source of long-term capital. For this reason, as well as to meet broader safety-net goals, and pension and insurance reform, are important features of capital market development. Major classes of institutional investors include

- ❖ pension funds, both corporate and state-mandated;
- ❖ private savings, including individual retirement accounts (IRAs) and other tax-efficient savings vehicles;
- ❖ insurance companies, including life insurance funds;
- ❖ mutual funds that invest in both equity (stock funds) and debt (bond funds);
- ❖ brokerages and investment banks; and
- ❖ endowment funds.

One of the main benefits of introducing institutional investors into a capital market is that it intensifies competition and discipline in the financial system, driving banks to innovate and forcing issuers to increase transparency and accountability and to improve governance. In the United States, the growth of institutional investors, as well as a notable change in the investment policies of life insurance companies to favor private placement lending to commercial and industrial companies, created significant additional capital for funding the private sector in the 1950s. During the 1970s, the greater availability of financial resources encouraged corporations to place new issues directly with institutional investors, competing with traditional underwriting sources. And during the 1980s and 1990s, institutional investors supported the growth of venture-capital funds and the provision of private equity.

Financial assets of institutional investors as a percentage of GDP is one measure of the stage of development of this segment of a country's capital market. Among Organization for Economic Cooperation and Development (OECD) countries, the assets of institutional investors are, in the cases of the United States and the United Kingdom for instance, an average of 200% of GDP. This compares with South Korea at 89%, Portugal at 50%, Czech Republic at 20%, Hungary at 11%, and Turkey at 3%. A second measure, for which comparable emerging markets data was available, indicates that contractual savings as a percentage of GDP measures over 100% in South Africa, 50% in Chile and in Malaysia, and 5% in Thailand.

Based on the above, pension reform and the growth in contractual savings are areas of focus for many developing countries, although there are various levels of progress among these countries.

4.3.6. Power Sector Investment Opportunities – Constraints and Issues

From the general context described above, and from the discussion of the constraints and other issues regarding development of capital markets, several key themes emerge, which affect the options available to entities in developing countries looking to finance infrastructure projects through mobilizing domestic capital. These key themes are the following.

- ❖ Although many emerging-market domestic capital markets do not yet have significant levels of corporate bond issuance, there has been dramatic progress toward building a foundational market environment that will eventually allow corporate bond markets to flourish.
- ❖ Macro-economic stability is the foundation for vibrant domestic capital markets, enabling the establishment of yield curves to price longer-term financing, as well as boosting investor confidence. Activities by market stakeholders under the mandate of improving the IFA will, subject to government commitment, assist in improving market stability.
- ❖ Globalization, consolidation, and convergence of intermediaries create access to international capital markets, to leverage local capital sources and to enhance expertise in deal design and execution.
- ❖ Introducing institutional investors into a capital market intensifies competition and discipline in the financial system, driving banks to innovate and forcing issuers to increase transparency and accountability.
- ❖ New financial products and tools, including regulatory and contractual risk cover, partial credit risk guarantees, and newly evolving devaluation backstop facilities, will enable innovative risk allocation in deal structuring.

Given the financing needs of the power sector (long-term debt denominated in the local currency and secured against the cash flows of a power project or power company), a capital market that can start providing longer tenor paper, through private placement, public issuance, or bank lending, will begin to reduce dependence on foreign capital to finance infrastructure.

In order for investment opportunities in power companies to be attractive to private investors in domestic capital markets, the power sector needs to be commercially viable and to present an attractive risk-adjusted return on investment. Currently, the power sector in many developing countries consists of loss-making enterprises that only survive due to political support and subsidies. As discussed at length in Chapters 3, 4, 6, and 7, clear power-sector reform is under way in many countries, to address this central problem. Because the reform process may often require an extended transition period, as discussed in Chapter 6, confidence building measures will be needed by investors. As illustrated in the 20 cases presented in this report, these measures involve everything from clear legal and regulatory frameworks, to specialized financing institutions, cofinancing by multilateral development banks (MDBs) and export credit agencies (ECAs), guarantees, and insurance.

4.4. CAPITALIZING ON DOMESTIC CAPITAL MARKET TRENDS

Expanding domestic private investment in the power sector of developing countries requires a strategy for how to best identify the opportunities and mechanism to achieve this objective. This process requires two stages. First, there is a need to identify which countries have reached the levels of financial-market and power-sector development to permit integration of domestic private capital into the power sector. Second, once these countries are identified, there is a need to define the appropriate mechanisms for domestic financing, based on the sources of the financing, the risks, and the legal, regulatory, and institutional framework.

4.4.1. Target Countries for Expanding Domestic Private Capital

In order to identify the best countries in which to expand the participation of domestic private capital, it is instructive to examine the key NICs that have made the important transition to industrialization and what the necessary processes and conditions were behind this transition. One of the hallmarks of a NIC is the development of its financial markets in terms of both securities trading and bank lending, and the support of the financial sector in mobilizing domestic capital for infrastructure. In Malaysia, for example, national policies and cultural norms have led to a high savings rate that has exceeded 33% of GDP; this provides a large pool of domestic savings. In 1991, the Employee Provident Fund (EPF) was created in Malaysia to establish a social security and pension system for employed workers, providing old age, survivor, and disability benefits. Restrictions on investment were liberalized so that the proportion of the annual funds that had to be invested in government securities was reduced from 70% to 50%, which in turn expanded the availability of these funds for private infrastructure investments. In conjunction with this development, there were important reforms made to the power sector and the capital market: a divestiture program that created financially sound investments in power and an effective financial market that enabled the issuing and trading of securities by power sector companies. A notable example in 2003 was the domestic financing of SKS Power's Tanjung Bin 2,100 MW coal-fired power plant in Malaysia. This case of classic project financing involved about US \$2 billion in debt through the issuance of Islamic project bonds. The rating agency Malaysia Berhad assigned a long-term rating of AA3 to these project bonds.

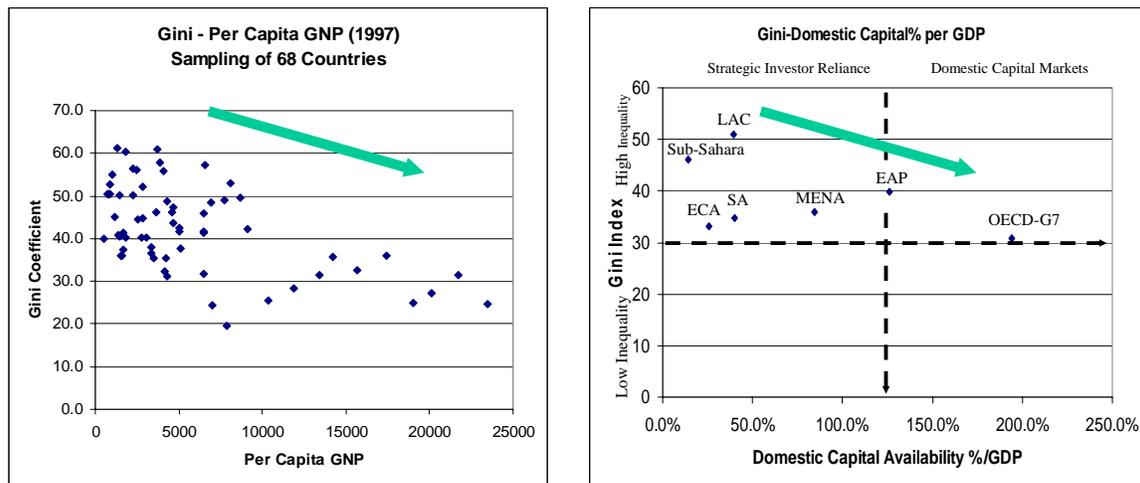
Another example is Chile, where there was a revolutionary reform of its social security system in May 1981, when the country replaced the existing national social-pension system with a private system of personal pension plans based on individual capitalization accounts, with fully funded and transferable benefits. A notable success of the new pension system was its rapid accumulation of long-term funds, which increased from US \$300 million or 0.9% of GDP in 1981 to US \$26 billion or 40% of GDP in 1996. This new social security system played a key role in the development of a strong domestic capital market: Chile went from meeting only 40% of its domestic investments needs in the 1980s to about 90% by the middle of the 1990s. In addition to the pension funds, life insurance and mutual funds have also played important roles in strengthening domestic capital markets, constituting, respectively, 10.8% and 4.1% of GDP. In conjunction with these developments, there were policies to establish a transparent and efficient capital market and to implement an effective power sector reform and divestiture program. The Ralco 570 MW hydroelectric project is a recent example in Chile of a domestically financed power project. Endesa Chile regularly taps the domestic capital markets to raise financing for power investments; for instance, it issued US \$200 million in bonds during 2003 to help finance projects like Ralco.

In addition to these measures, prudent political and macroeconomic management was central. Credit-rating agencies such as Standard and Poor's and Moody's focus on specific indicators to determine their credit ratings of countries: political stability; gross domestic product capital per capita; monetary policy and whether it keeps inflation and interest rates stable and low; fiscal policies and whether these keep the country's debt, as measured as a percentage of GDP, within reasonable limits; trade and current-account balances; and foreign-exchange reserves. This raises a note of caution. There have been instances, most notably in Argentina, where reforms in the power and capital markets created the perception of a higher credit rating than could be justified by the country's overall credit rating (which was relatively low given the level of investment made). There were major private investments in the Argentine power sector (including the Edenor case examined in this study) only to have poor macro-economic policies result in a massive devaluation and a default on foreign debts and obligations. The lessons from this experience could be that a country's overall credit rating should not be overlooked, and that it is very risky to assume that the credit of an industry generating little or no hard currency can effectively exceed the overall sovereign credit rating ceiling.

From experiences with NICs, it appears there have been four key factors to the successful expansion of domestic private capital into the power sectors of NICs. **First**, establishing well-managed pension and insurance systems provided an effective mechanism for pooling domestic savings, and liberalizing these systems allowed for the investment of these funds in infrastructure. In addition, mutual funds provided an additional avenue for intermediation of domestic savings. **Second**, the capital market system was established and regulated so that it provided an effective means for issuing and trading equity and debt securities. **Third**, power sector reform and privatization were effectively implemented to provide commercially sound investment opportunities in the power sector. **Fourth**, macro-economic policies were sound, ensuring economic growth without allowing such things as inflation, national debts, and current-account deficits to undermine any reforms in the power and financial sectors.

An interesting dimension of domestic capital-market formation is the role played by the middle class. Parallel political, economic, financial, and sector developments are required to effectively set the stage for expanded domestic financing of infrastructure. In many developing countries, there is typically a high concentration of wealth in the hands of oligarchies; this is particularly so in developing countries rich in natural resources, such as Russia, South Africa, Venezuela, and Mexico. When domestic wealth is concentrated in the hands of a few, this source of domestic financing is typically in the form of strategic investments that often cherry-pick the most attractive opportunities to deliver power (e.g., captive independent power projects selling to commercially attractive export-oriented industries, or owning distribution companies that force payments from average citizens). As a country develops and a larger middle class emerges, the expanded pool of savings that this middle class invests in pensions, insurance, and mutual funds becomes available for investment in infrastructure through the capital markets and banking sector. At this point, the process of investing in the power sector becomes more market oriented and transparent. This transition from domestic capital in the form of strategic investment to its greater reliance on the financial markets, is a key indicator of development. As shown in **Figure 4-2**, the expansion of domestic capital as a percentage of GDP is tied to the level of income distribution in a country as defined by the Gini Index.

Figure 4-2. Gini – Per Capita GNP and Gini – Domestic Capital

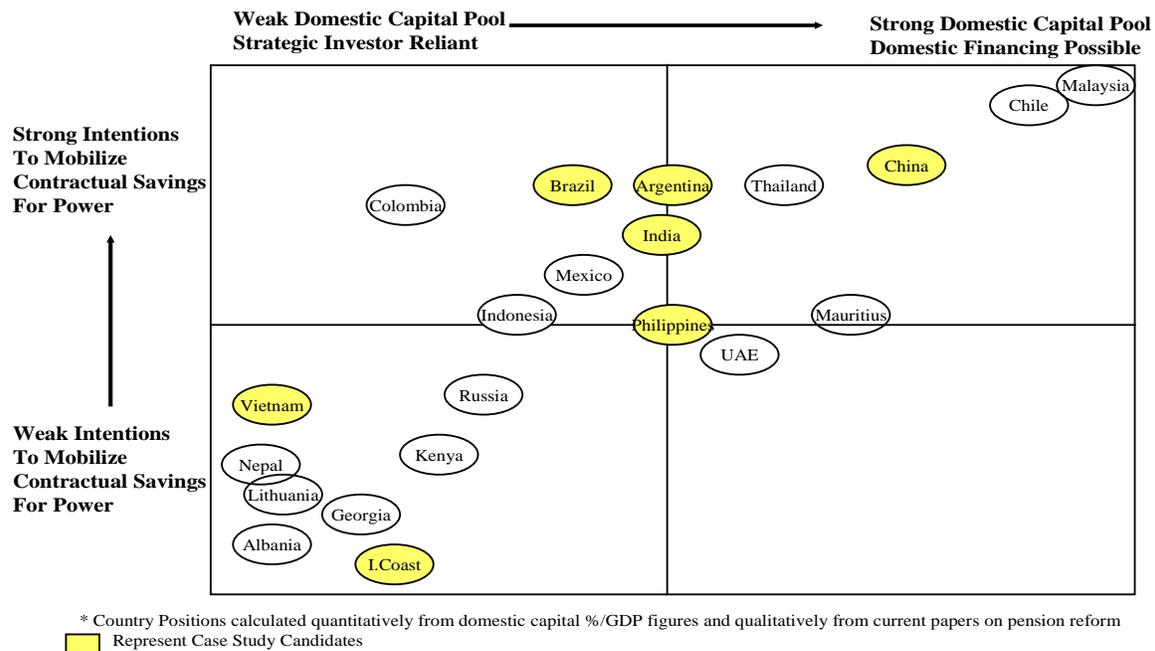


Source: World Development Indicators

Given the major transitions required to develop domestic capital markets for infrastructure, the ability to rely on domestic capital in emerging markets depends on a country’s overall economic and financial market development. This suggests that initiatives to expand the role of domestic financing in infrastructure need to target countries that have achieved certain levels of development supportive of expanded domestic financing. In **Figure 4-3**, countries are organized along the x-axis according to their levels of domestic capital availability as a percentage of GDP, and along the y-axis according to their governments’ intent to liberalize contractual savings. Thus, countries in the upper-right quadrant of the figure, such as Chile and Malaysia, have deeper domestic

capital liquidity (corporate debt and equity markets and private-sector bank credit as percentages of GDP) and a greater intention to tap into the country’s long-term contractual savings (e.g. liberalization of pension funds into infrastructure). In short, these countries are more able to mobilize long-term savings into financing power. In contrast, countries in the lower-left quadrant of the figure, such as Albania or Vietnam, have neither sufficient domestic capital markets nor sufficient intention on the part of their governments to reform and liberalize contractual savings for infrastructure investment. These countries may depend more on MDB/Bilateral assistance in the short to medium term to meet their power-sector financing needs.

Figure 4-3. Evolution of Domestic Capital Market Development



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4.4.2. Priority Sources and Mechanisms for Private Domestic Capital Mobilization

Domestic private financing for power infrastructure has various sources of capital to call upon and needs the development of specific financial and institutional mechanisms to be effective. In order to identify the best mechanisms, it is necessary to clarify which barriers are the most important to overcome, in addition to the underdeveloped power and financial market sector conditions referred to in the previous sections. Four market conditions pose the greatest barriers. **First**, the longer tenors required to finance the highly capital-intensive power industry are a specific barrier, given the short tenors that prevail in most developing-country financial markets. Even in countries with high savings rates, there is a reluctance to invest in power infrastructure and a tendency to invest instead in industries with returns that are more attractive and lower tenors. Specific market conditions and policies are needed to incentivize investing in infrastructure, as occurred in Malaysia and Chile. **Second**, the tendency for debt markets to develop more slowly than equity markets poses a barrier because the power industry needs to keep its

cost of capital low, which is best achieved with substantial debt financing. Stock market capitalization is more mature (and growing fast) in most East Asian economies, while the bond markets are relatively undeveloped. These less-mature debt markets in many developing countries and in the emerging NICs pose a problem for infrastructure financing with domestic capital. **Third**, a particular barrier for international development institutions seeking to support private capital is the foreign-exchange risk incurred when providing loans or guarantees in local currency. For instance, when local currency guarantees are provided or local financial institutions are set up with international development financing, the foreign-exchange risk remains a reality that needs to be factored into the equation. **Fourth**, the limited capital market development in most developing countries means there are few mechanisms for diversifying risk and increasing liquidity, which create greater confidence in infrastructure and power sector investments.

Domestic capital mobilization involves two basic sources: equity and debt. Equity will be from strategic investors and the capital markets, and debt will come from banks and the capital markets, as described below.

- ❖ **Strategic equity investment.** In many developing countries, domestic power investments are predominantly in the form of strategic investments made by wealthy oligarchic investors who are able to mobilize capital from their deep financial pockets for the most attractive investments. The most attractive investments are typically located in the nation's capital, in the most prosperous industrialized cities, and in companies that target exports. Domestic investors, like their foreign counterparts, are seeking investments with the best risk-adjusted returns, and these investments are typically not found in the less-developed regions of the country. The privatization of North Delhi is a good example of a strategic equity investment.
- ❖ **Capital market equity.** Equity financing through capital market issues is a growing option for infrastructure financing in some emerging market countries. In India, for instance, the state-owned Power Finance Corporation (PFC) has decided to structure the India Power Fund (IPF) as a mutual fund to target over US \$4 billion over the next decade for making equity investments in power projects. While the capitalization of this fund will initially be about 50% PFC financing and will seek IFC financing, a share of the financing is also expected to come from financial institutions, power companies, and individual investors. In addition, India's Life Insurance Corporation (LIC) is planning to participate in the Infrastructure Equity Fund, which will be administered by the Infrastructure Development Finance Company (IDFC).
- ❖ **Capital market debt.** In countries with maturing capital markets, the potential for a public or private utility or power-sector investor to raise financing on the public debt markets presents an important avenue for private investment. Behind strategic equity investments by private companies may be debt financing. For example, the major private investor in North Delhi, the Tata Group, was able to raise debt financing on its balance sheet, to keep the cost of capital low.
- ❖ **Bank loans.** Commercial bank loans, particularly for the balance sheets of major industrial firms and for limited recourse project financings, are another important

source of financing. In the case of the Maritza East III power project in Bulgaria, key Bulgarian banks (Bulbank, UBB, Biochim, and SG Express Bank), provided US \$90 million of 12-year debt, along with a syndication of foreign banks led by Societe Generale and the EBRD. In India, the Tata Group, a major Indian investor in power, is seeking to raise 5-year syndicated loans of US \$75 million.

Based on the range of financing sources, there are various institutional mechanisms that can help overcome the key barriers to mobilizing private domestic capital in those countries that have matured in their development so that they could be regarded as potential NICs in coming decades.

Various financing mechanisms have been applied and are being developed for mobilizing domestic capital. These include:

- ❖ internal financing through retained earnings;
- ❖ a major domestic strategic investor;
- ❖ domestic-bank participation in structured finance;
- ❖ quasi-blind securitization;
- ❖ discrete pool securitization;
- ❖ mutual funds;
- ❖ domestic equity stock market;
- ❖ domestic debt capital markets; and
- ❖ international capital markets.

A detailed discussion of these financing options is at the end of Chapter 7 as part of the overall capital mobilization strategies.

5. SUCCESSFUL PRACTICES FOR POWER SECTOR REFORM AND INVESTMENT

Analyses of cases of the successful mobilization of private capital into the power sector of emerging markets can guide how international development institutions can better revitalize private capital flows after experiencing more than 5 years of declining investments. This case analysis illustrates the need to fully understand all the barriers, including the political, economic, financial, and power-sector reform dimensions, in order to effectively mobilize private capital. After obtaining a grasp of the overall framework of barriers, the next step is to focus on the specific risks to be addressed in order to satisfy the risk-management and investment-return criteria of private investors. The goal of the following review of these barriers and risks is to develop a more effective strategy for greater private sector participation.

To clarify priorities, it is important to return to the idea of clarifying a definition of success, as it was initially defined in Chapter 4. This definition can be refined now that there is a substantial track record of private investment in the power sector over the past two decades or more. There are cases of major private investment that did not lead to successful power sector performance, or at least not in the view of the investors who made the initial investment. The experience of AES, Tractebel, EDF, Union Fenosa, Mission Energy, CMS, and many other investors with failed investments in particular developing countries argues for the application of a long-term impact measure of success. To be sustainable, private capital flows logically need to lead to improved sector performance. The challenge is to define the criteria and time scale for consistently measuring the impact of private investment. Private power investments also tend to evolve or to change ownership over time, so that what may have been considered a success at one point may have led to failure under subsequent new ownership or political regime.

A number of the 20 cases in this study have had ownership changes, or the projects are in the process of being sold on the secondary market. Whether these projects will continue to be successful under the new owners is not clear, particularly if the new owners do not meet the international short listing criteria initially established. To date, AES has sold three projects featured in our successful cases (i.e., Haripur in Bangladesh, Songo Songo in Tanzania, and Lal Pir in Pakistan). Of the three cases we selected where ABB has been a major equity investor, ABB is currently selling one project, (i.e. Jorf Lasfar in Morocco) and is considering the sale of the other two projects (Azito in Cote d'Ivoire and Termobahia in Brazil). In addition, Entergy sold 60% of its stake in the Maritza East III project in Bulgaria to ENEL. The major reasons for these sales (as determined through informal discussions with these investors) was because of changes in these companies' business strategies that were in large part triggered by the poor financial performance of their international business portfolios. As previously discussed, there has been an overall retrenchment among international strategic investors, which has involved both foregoing making new investments as well as selling existing investments. Investors are sometimes compelled to sell their stakes in even successful projects when the overall international strategy is no longer considered a priority, or when cash is being raised to pay off losses. These subsequent changes in ownership in the 20 cases we have selected have added uncertainty about whether the initial successes will be sustained under the new ownership.

It is also notable that some successes at the company and sector levels have been undermined by poor political and economic policies at the macro level, as was the case with Edenor in Argentina. We regard the Edenor project as a success because in fact it was a successful transaction at the project and sector level, with much to teach policymakers. The fact that Edenor later faced major problems due to the massive devaluation of the Argentine Peso, was the result of exogenous macroeconomic policy failures. Investors in the power sector need to consider more carefully the larger political and economic framework when they are deciding to invest. Yet, events in this larger framework do not negate the success of a project at the transaction and sector level.

There are also success stories with public–private partnerships (PPP) where private investment was more limited. Under conditions where international private investors are reluctant to invest, there are models promoting private-sector participation to achieve performance improvements and coverage, which incorporate modest levels of private investment. These PPP models rely on limited private investment supplemented by public sector financing by governments (often with multilateral development bank [MDB] financing). The benefit of the private sector’s role in these projects is it enables the utility to increase its revenue collection and thus its ability to finance future investments. By extracting the maximum amount of investment out of the sector through improving efficiency and collections, and through tariff increases, these PPPs lead to greater financial sustainability of the power sector through enhancing the utility’s self-financing capacity.

For the purposes of this report, ***success has been defined as successful mobilization of private capital, be it foreign or domestic or be it external or internal to the business, which has been achieved in a framework that leads to economic efficiency gains and sustainable power sector development.*** This involves achieving the following key measures of sustainability.

- ❖ Commercial utility operations that place little or no financial burden on the central government (with the possible exception of where targeted subsidies are required for power-network expansion and poverty alleviation).
- ❖ A market framework that curbs monopoly power through whatever level of effective regulation and competition that is appropriate to a country’s political and economic development.
- ❖ Performance improvements in terms of quality, efficiency, and reliability of supply.
- ❖ Competitive power pricing that both enables investors to earn a fair return on investment and passes along in time the benefits of performance and productivity gains to the consumer.
- ❖ Expanded coverage to bring power to underserved communities.
- ❖ Decreased cost of supply.

Projects that lead to private capital flows that are opportunistic and do not demonstrate sustainable performance are not models to replicate. There needs to be a minimum track record of between 10 and 15 years in order to confirm sustainable performance. Because one of the guiding principles of this study is to identify projects financed during the last 5

years, during a time when private capital flows have been declining, about half of the cases chosen for this study have been financed recently. It will take time to confirm that these projects are leading to sustainable power sector performance. These projects were selected not only because they mobilized private capital during a challenging investment climate but also because they exhibit the features of a well-designed power sector intervention that is likely to be sustainable.

5.1. SUCCESSFUL POWER FINANCING FACTORS

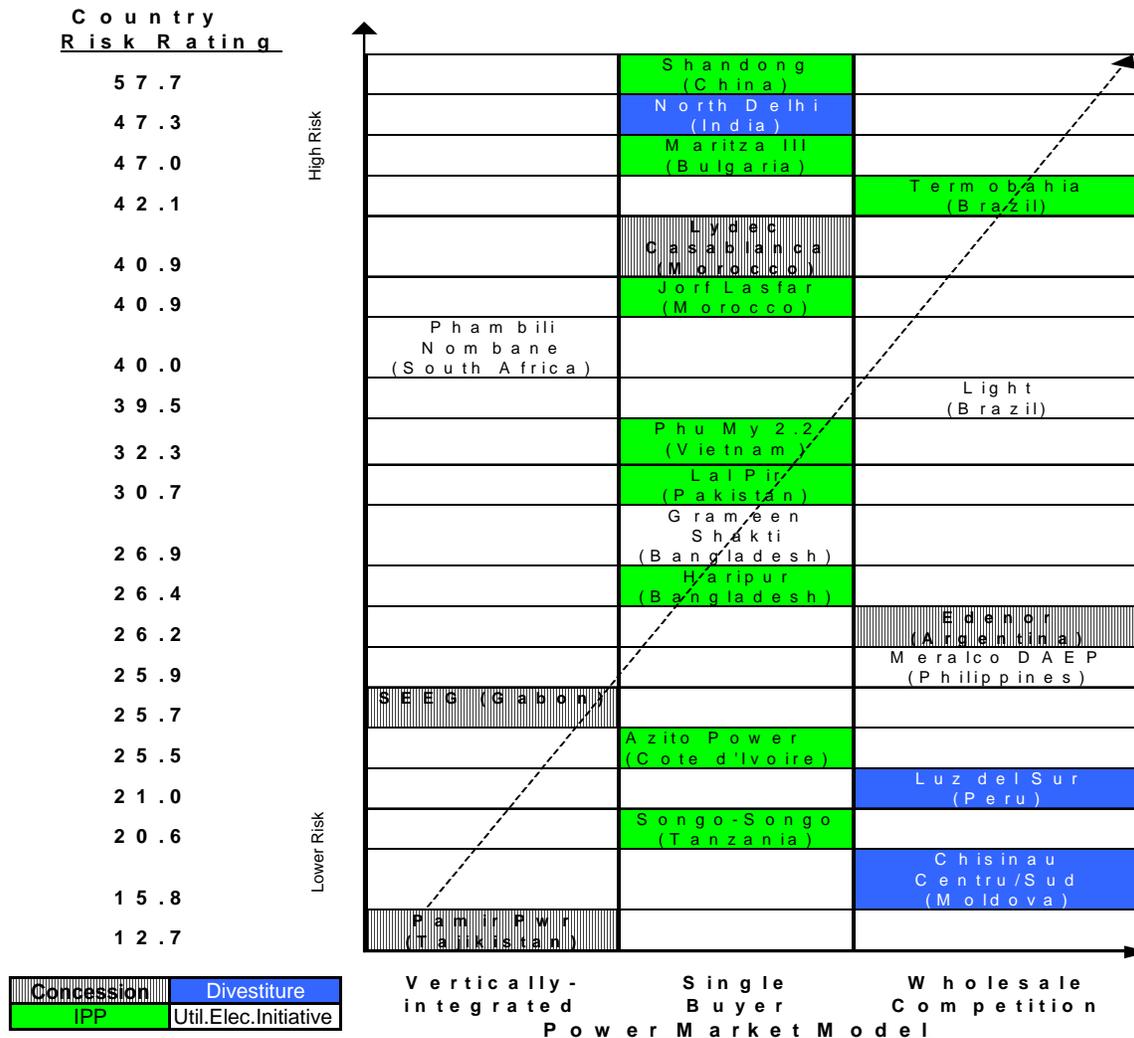
The analysis of all 20 cases leads to some valuable insights about how private capital has been mobilized for the power sector. Private capital mobilization has been achieved across a full spectrum of country-risk levels, into Greenfield power-generation projects as well as divestitures or concessions of transmission and distribution systems. These case studies demonstrate that private capital can be successfully mobilized in countries at all levels of risk, as shown in **Table 3-4**. For instance, countries with high levels of risk such as Tajikistan, Moldova, Gabon, and Tanzania have been able to attract investors and develop successful power projects. These successes in risky markets have had to rely on strong political support and well-designed transactions that properly assigned risks and responsibilities, and have included significant international financial support with guarantees, insurance, and cofinancing. Private capital has also been quite effectively mobilized in higher-risk market segments, expanding coverage to poor communities in urban slums and in rural areas.

While this study is focused on success stories, many failures in the larger sample need to be acknowledged. There is a widespread assumption that private investors working for their own best interests will invariably make the best decisions about what will maximize their worth. The private sector focus should be on how to minimize risks and maximize returns over the life of an investment. An analysis of private investments in emerging markets leads to the conclusion that this assumption is not always the case. During boom markets, investors have often pursued market share while overlooking more prudent risk and return analysis. Markets are driven partially by psychology as well as by economic and financial fundamentals. During expansionary periods when optimism predominates in the markets, investors have been found to make shortsighted decisions that were seen to be in error only after a subsequent market shakeout brought the bad investments to light. It could be argued that governments and development institutions have a role to play in tempering the excesses that accompany an overly inflated market.

In examining these cases, there has been a hypothesis derived that there should be a clear relationship between an investor's willingness to risk capital and the level of risk that exists in that market. This hypothesis is illustrated in **Figure 5-1**, where the level of country risk is plotted against different power-sector financing models ranging from management contracts that put no private capital at risk, to divestitures that put high levels of private capital at risk. Although concessions and project financings often put substantial private capital at risk, these are usually done within the context of the public sector and MDBs assuming more risk in the forms of guarantees, insurance, limited recourse financing, and contracts backed by international arbitration. These features of concessions and project financings reduce the level of risk the private sector assumes and place more responsibility on the government, MDBs, and export credit agencies (ECAs). In competitive business sectors (e.g., such businesses as mobile phones, bottled water, and automobiles), competition primarily limits the potential

return on investment that can be earned, which in turn compensates for any extra risks that are taken. In the power sector, on the other hand, the regulator, in the consumers' interest, places significant limits on the returns that can be earned. The power sector in emerging markets typically cannot offer high returns, given the purchasing power of most consumers is low. Power is considered a social good in many developing countries, so there is often a demand for some level of subsidy to make up for the difference between risks and costs, and the return that private investors require. Where these subsidies are insufficient, the sector is unable to attract adequate investment, which leads to poor performance and power rationing.

Figure 5-1. Country Risk / Power Market Model Matrix

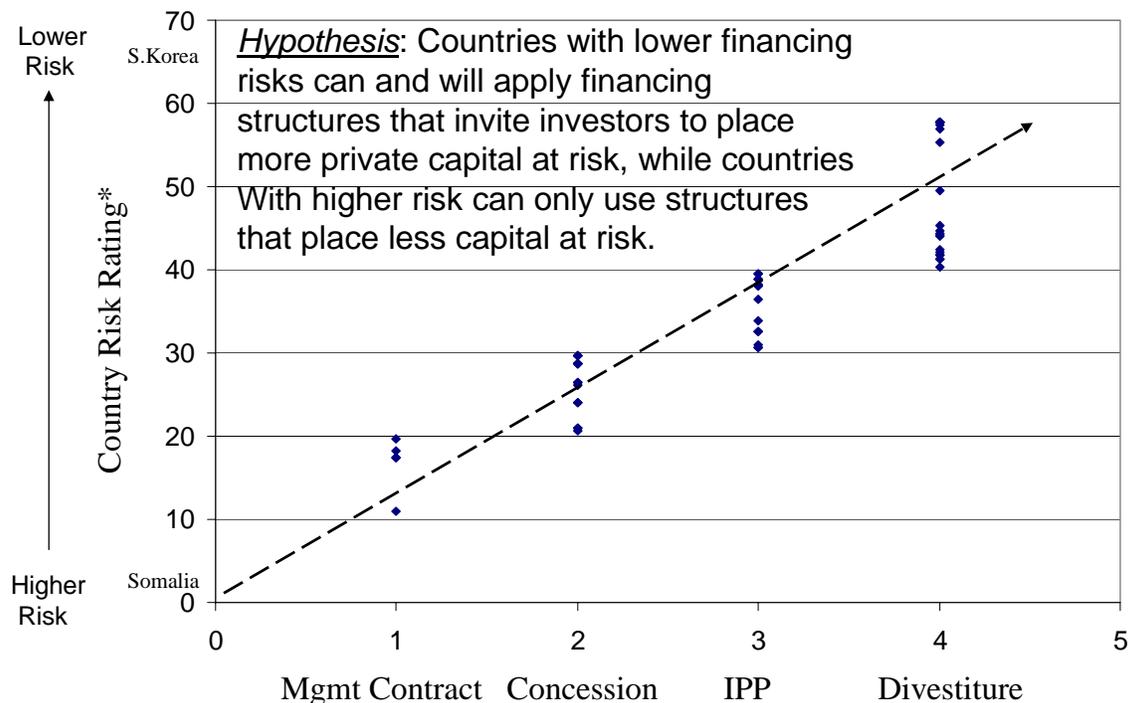


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The hypothesis defined in **Figure 5-2** has been tested against the performance of two major investors, AES and EDF, who participated in eight of the successful private financings evaluated in this project. AES was the lead developer in the Lal Pir project in Pakistan, the Songo Songo project in Tanzania, and the Haripur project in Bangladesh. EDF was a major investor in the Phu My 2.2 project in Vietnam, the Azito project in

Cote d'Ivoire, the Edenor project in Argentina, the Lydec concession in Morocco, and the Shandong Zhonghua project in China. As shown in **Figures 5-3**, and **5-4**, AES and EDF demonstrated decidedly different risk management strategies. In evaluating the projects financed by AES, there was only a 1% correlation found between capital put at risk (based on the financing model) and the level of country risk; in contrast, there was a 28% correlation found with the projects financed by EDF. EDF appeared to better account for risk when deciding on what kind of financing structure it was willing to invest in. AES appeared to have been maximizing market share; given its decentralized management structure during the power-market boom period, it paid less attention to risk and return issues. It is important to note that the major area of divergence is that AES engaged in more divestitures than did EDF; given the higher risk of divestitures, this left AES far more exposed to market risks. The major business crisis at AES that led to the dramatic drop in its share price—from over US \$70 a share in 2000 down to under US \$2 a share in 2002—also led to a serious re-evaluation of its business model, the need to sell off assets to service debts, and a closer scrutiny of how it could better manage risks. The implication of this analysis is that investors ignore risks at their own peril and that pursuing a strategy of market-share maximization will not likely succeed in the long term unless that strategy is accompanied by a very careful strategy for risk/return management. What saved AES in the end and has given it a new lease on life is that the company contained its risks through limiting recourse to the project or local or regional companies.

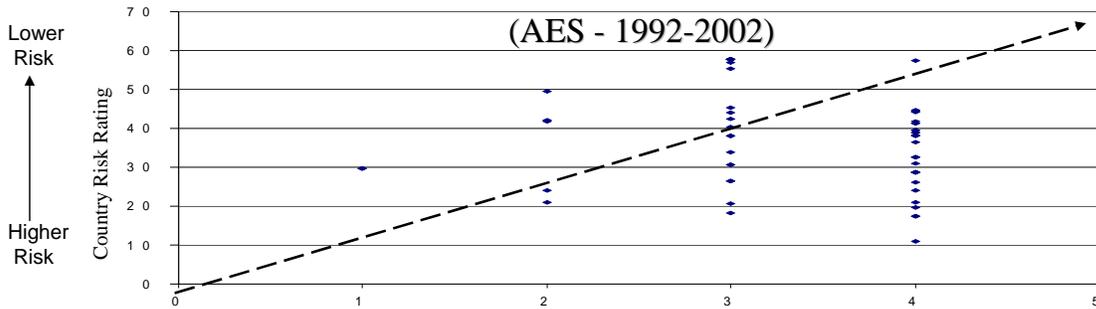
Figure 5-2. Country Risk – Project Risk Structure: Hypothetical



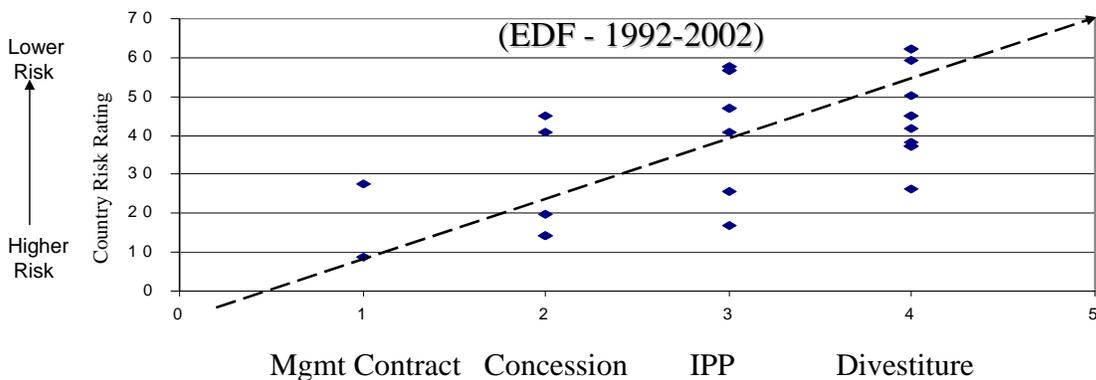
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Figure 5-3. AES & EDF CR and PR Charts

Country risk explains 1% of AES' project risk structure selection in developing countries



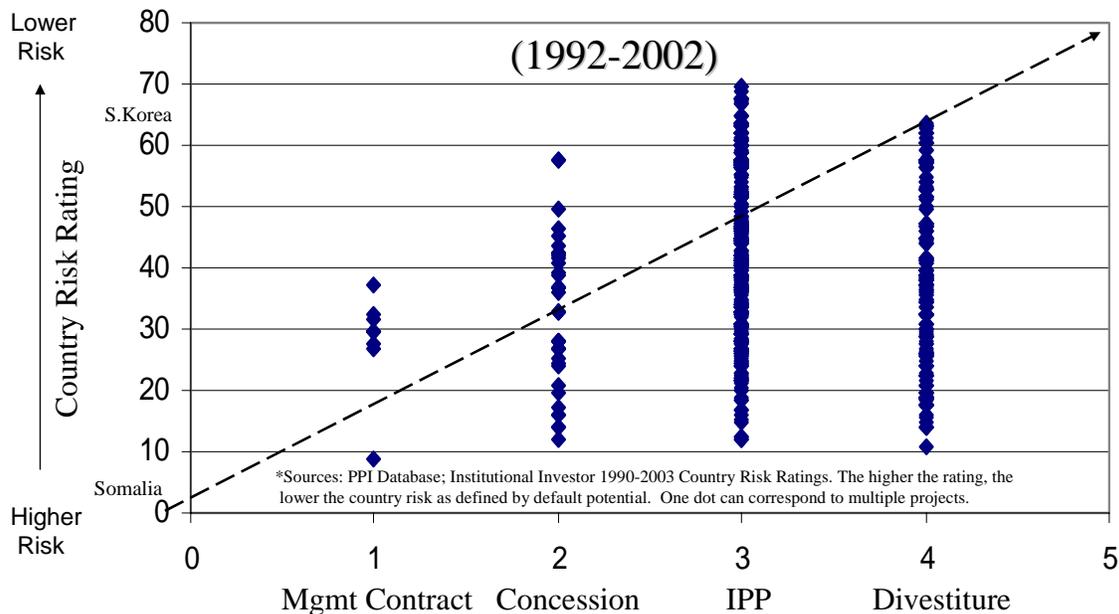
Country risk explains 28% of EDF project risk structure selection in developing countries



Source: World Bank, Deloitte Emerging Markets Group

Figure 5-4. Country Risk – Project Risk Structure: World Bank PPI Database

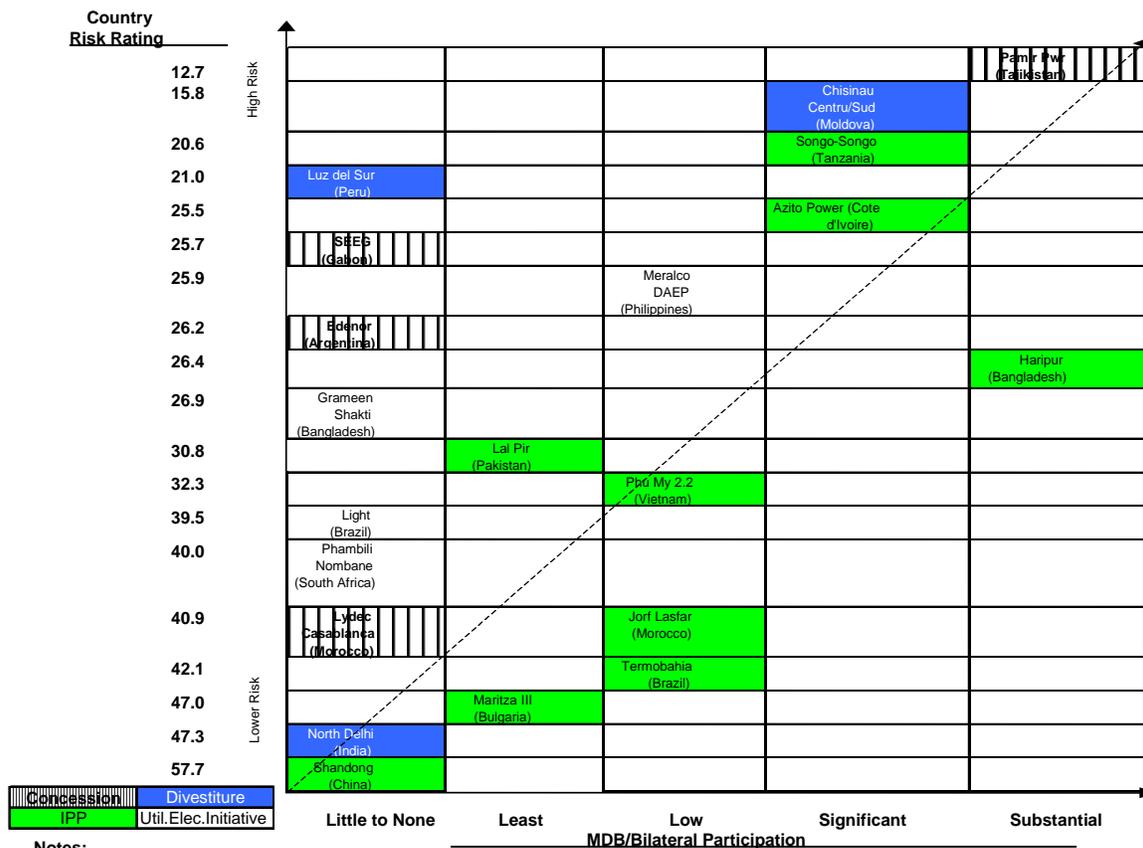
Country risk explains 1.4% of PPI project risk structure selection in developing countries



Source: World Bank, Deloitte Emerging Markets Group

An important issue for development institutions is how effective their interventions are in facilitating private capital mobilization. Multilateral banks and bilateral financial institutions provide an array of investment, lending, guarantee, and insurance instruments to support private capital flows to infrastructure in emerging markets. The successful power-sector financing cases were assessed based on the levels of multilateral and bilateral financial support, in order to determine how many and what types of investments received this kind of support and how important that support was. As shown in **Figure 5-5**, we have plotted the cases according to the Institutional Investor Country Credit Risk rankings and a relative measure of MDB/Bilateral financial support.

Figure 5-5. Country Risk / MDB Bilateral Participation Matrix



Notes:
 (1) Country Risk Rankings based on the Institutional Investor Country Credit Risk at time of project financial closure
 (2) MDBs/Bilaterals include the World Bank, ADB, IDB, OPIC, US Exim, Japan Exim, CDC and other government development agencies

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The results of this analysis are revealing. First, in many cases the MDB/Bilateral role in enabling financing was important. The only cases with little or no international financial support from MDBs or bilateral institutions were three concessions (Lydec in Morocco, Edenor in Argentina, and SEEG in Gabon), three rural or urban slum electrification initiatives (Phambili Nombane in South Africa, PRONAI Light in Brazil, and Grameen Shakti in Bangladesh), one IPP (Shandong in China), and two divestitures (North Delhi in India and Luc Del Sur in Peru). It could be argued there was a bias in favor of cases involving the MDBs or bilateral institutions because these received the most publicity and had the best documentation available. This may be partially true. When reviewing the

116 cases, it is evident that those 20 cases are quite representative of the larger sample. Leveraging private foreign capital into risky domestic markets calls for financial support mainly supplied by MDBs and bilateral agencies. It is only with incidents of mobilizing domestic capital, where the MDB and ECA role was more limited or nonexistent, that there may be a shortage of case analysis. This limitation is addressed in part by providing the additional case data in **Table 4-1**.

It is our view the role of MDBs and ECAs may have actually become more important over the past 5 years. This trend runs counter to the expectations many development policymakers had in the early 1990s. There was the hope that, while MDBs would have a pronounced role in supporting the first private investments, as confidence in markets increased (due to these initial MDB-supported transactions), the need for international MDB/ECA support would diminish over time. The market and investment failures that led to the major decline in private investment since 1997 have undermined this view of the markets' development. There remains a strong need for foreign MDB and ECA financing support, particularly for Greenfield generation projects, which require large upfront investments (e.g., all the independent power producer [IPP] projects studies in this analysis: the Songo Songo IPP in Tanzania, the Haripur IPP in Bangladesh, the Phu My 2.2 IPP in Vietnam, Jorf Lasfar in Morocco, Termobahia in Brazil, and Martiza East III in Bulgaria). For concessions and divestitures and local initiatives to expand coverage, investments are distributed over time and are tied to tariff increases and to gains in efficiency and collections, in a way that requires less external private investment capital.

A hypothetical relationship has been defined, which assumes that the higher the country risk level, the greater the level of MDB/Bilateral support needed. As **Figure 5-5** illustrates, this hypothetical relationship does not entirely hold; the cases by and large showed a relatively low degree of MDB/Bilateral support, with the main exceptions cases of Greenfield IPP project financing (Songo Songo IPP in Tanzania, Haripur IPP in Bangladesh, Phu My 2.2 IPP in Vietnam, Jorf Lasfar in Morocco, Termobahia in Brazil, and Maritza East III in Bulgaria). It stands to reason that the project financing cases typically call for more guarantees than do divestitures and concessions, because of the large upfront capital investments called for. In order to assign and manage risk, project financings have an off-take agreement with a single buyer and are able to lock in tariffs, fuel supply, and other terms with a relatively high degree of certainty over the life of the contract. In divestitures, the investor is asked to rely on a legal regulatory structure and the overall market, which offers less contractual certainty. For this reason, investors generally make limited upfront cash payments for the assets and tie their investments to tariff increases and the ability to earn a financial return on performance improvements.

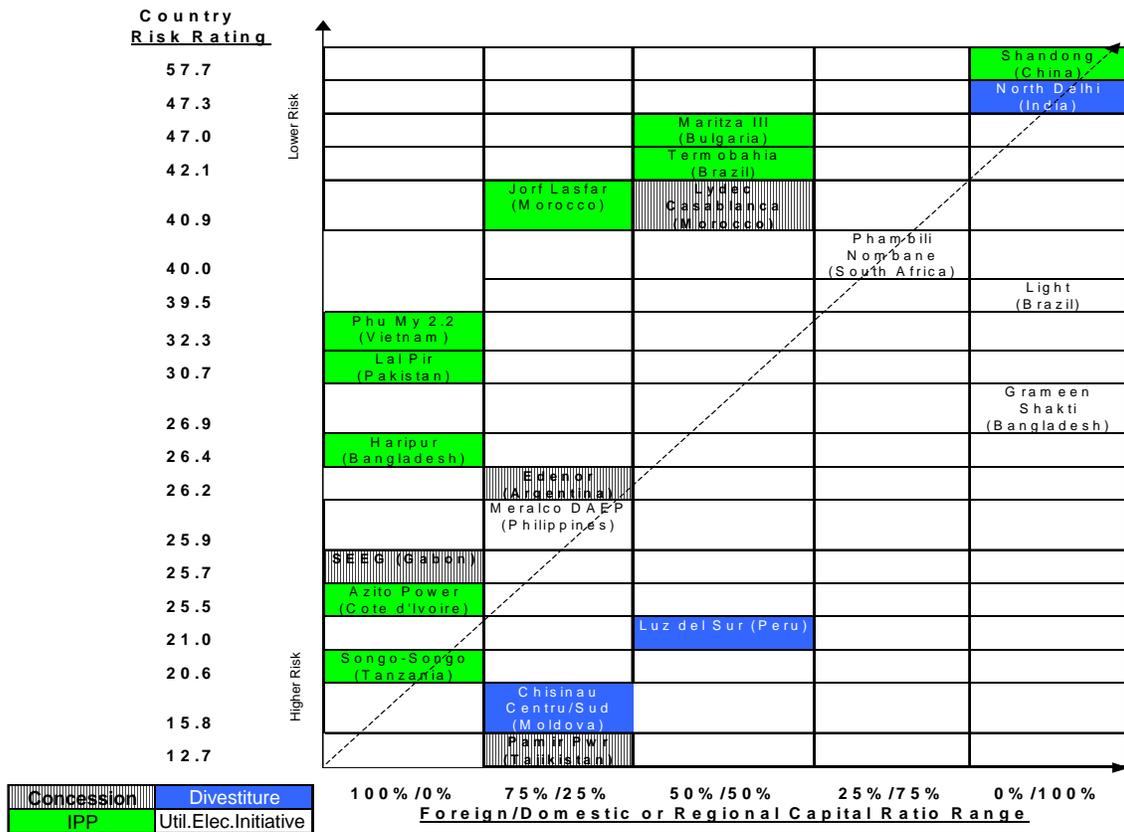
In examining the levels of foreign versus domestic capital supplied in the 20 successful cases under study, it appears domestic capital played a smaller role. Of the total capital of US \$8.1 billion that was mobilized in the 20 cases, 35.6% came from domestic or regional capital sources. It is important to note that if the entire investments obligated by Lydec in Morocco and SEEG in Gabon over the duration of these concessions are factored into this calculation (where this investment will be generated from revenues recovered from the tariff), the total amount of domestic or regional capital jumps to US \$6.1 billion or 53.5% of the total. These large projects are able to extract a sizeable amount of domestic capital from the ratepayer, which can serve to fund capital

investment projects. This appears to be a promising method for tapping into domestic capital, particularly in countries where the capital market is not an attractive avenue for raising domestic financing. Putting the power sector on a solid commercial footing also enhances the utility's creditworthiness so that it can raise financing on its own balance sheet in the future.

As discussed in Chapter 4, there are two clear reasons for foreign investment to play a major role in the power sector of emerging markets. **First**, the local banking sector and capital markets are not mature enough to provide an adequate source of domestic capital for the power sector. **Second**, the country is at a stage of development where it is a net capital importer and has to rely on foreign investment to meet a significant part of its development financing needs. For this reason, a major focus of this analysis was on power-sector financing cases involving foreign investment. There was a serious attempt to identify cases in which domestic capital played a substantial role, given that domestic capital plays an increasing role as a country develops. We did not select cases in such countries as Chile, Malaysia, Singapore, and other such newly industrializing countries (NICs), because these countries have largely graduated and are no longer significant recipients of development assistance. It was more difficult to identify domestic financing cases in developing countries where donors and MDBs are active.

It is generally assumed there are a limited number of domestic financing cases that can be analyzed because, simply, there are few such cases available. It is important to note the power sector in emerging markets continues to rely in large part on domestic financing through utility self-financing, public sector financing, and government subsidies. We hypothesize this apparently limited number of domestic private power-financing cases is primarily due to two factors: (a) the dominant role played by the public sector in many developing countries continues to crowd out private investors, and (b) cases with entirely domestic financing are less well documented and analyzed because they do not require the level of international due diligence and reporting than do cases of foreign investment. Domestically financed power projects in developing countries are typically much smaller than higher-profile internationally financed projects and thus receive less attention from policymakers at the national and international level. Given that most domestic private power-sector financings are not well documented, there is a tendency not to find enough detailed information to enable a serious case analysis. For this reason, there is a separate **Table 4-1** provided, which is a longer list of 100% domestically financed power projects in emerging markets. Although the projects in this list are not as well documented, the table provides an overview of the types of project that attract domestic capital. **Chapter 4** provides commentary on this table and this subject. This table of domestic cases still includes a fair number of large projects, because of the difficulty of getting data on the smaller projects.

Figure 5-6. Country Risk – Foreign/Domestic Capital Ratio



Notes:

(1) Country Risk Rankings based on the Institutional Investor Country Credit Risk at time of project financial closure

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It is instructive to examine the power market and regulatory models prevailing at the time these cases were being financed and the critical decisions by investors and lenders were being made. It is also instructive to examine the conditions investors and lenders found most conducive to attracting private capital. Despite the strong push toward setting up competitive markets and transitioning from the single buyer model to unbundled wholesale competition, a majority of these cases (11 out of 20) were financed during periods when the power sectors in the countries in question were in fact single buyer markets, as measured at the time of financial closure. Three of the cases were in countries with vertically integrated state-owned utilities at the time of financial closure. The other six cases involved unbundled competitive markets at the wholesale level. The regulatory regime in many of these cases relied on more traditional mechanisms of Ministry-based regulators or independent regulators governed by contracts or decrees that fairly narrowly prescribed the regulatory regime. There were no cases where the generators or distributors were functioning in markets governed by wholesale competition through a deep power pool.

This fact illustrates the reluctance of investors to take competitive power-sector market risks in developing countries with high degrees of legal and regulatory uncertainty.

Investors tend to be active in markets where they can obtain some degree of contractual certainty through long-term power purchase agreements (PPAs), as reflected by the 14 of 20 cases that were in single buyer or vertically integrated utility markets. Even in the six cases where there was wholesale competition in the market, investors sought to minimize risks by either seeking inside-the-fence industrial projects with PPAs or by negotiating vesting contracts and longer-term bilateral contracts. In the case of Brazil, its power market has not evolved to the point where it relies heavily on the spot market, with substantial power traded via bilateral contracts; in Argentina, the competitive trading of power on the spot market has a more important role. Even in the case of Termobahia in Brazil, this IPP in a competitive market involved investors cherry-picking one of the most attractive customers and developing a behind-the-fence transaction with a refinery owned by Petrobras, the state petroleum company.

This analysis indicates the relatively slow progress that has been made towards establishing competitive markets, and that investors in the cases identified as successes have not yet shown real confidence in the competitive market model in a developing country context. Support for a process where investors cherry-pick the best customers also needs to be questioned, given the impact these projects have on the credit of utilities serving the less well-paying customers.

There is growing globalization and integration of markets in terms of finance, goods, and services, as well as power. The development of regional power pools such as the South Africa Power Pool (SAPP), the Central Europe Power Pool (CENTREL), and the Central American Countries Interconnection System (SIEPAC), to name a few, is being promoted due to their ability to increase competition, lower prices, reduce the need for reserve capacity, and increase power reliability. Among the successful power cases, there were only 3 IPP projects, Songo Songo in Tanzania, Maritza East III in Bulgaria, and Azito in Cote d'Ivoire, that involved potential sales of power into a regional power pool or to a neighboring country. Songo Songo in Tanzania is exploring the potential of eventually selling into the SAPP. The Martiza East III power project in Bulgaria is expected to sell into Southeast Europe and possibly to Turkey. The Azito Power project is possibly going to sell power into the West Africa Power Pool. These represent small power plays at this stage in these markets. The cases selected have large flows of foreign and regional capital across borders, leading to the comment that money flows more freely than electrons.

As the regional power pools evolve and mature over time, they will present expanded opportunities for private investment and for earning regional foreign exchange that can then support more regional financing. As regional power pools develop the necessary transmission infrastructure, dispatch, and trading platforms, investors could face lower levels of currency and power-market risks. The benefit of power pools will likely be realized more quickly in developing countries that are contiguous with industrialized countries (such as Bulgaria) than in countries that are surrounded by other poor developing countries (as is the case with parts of Sub-Saharan Africa).

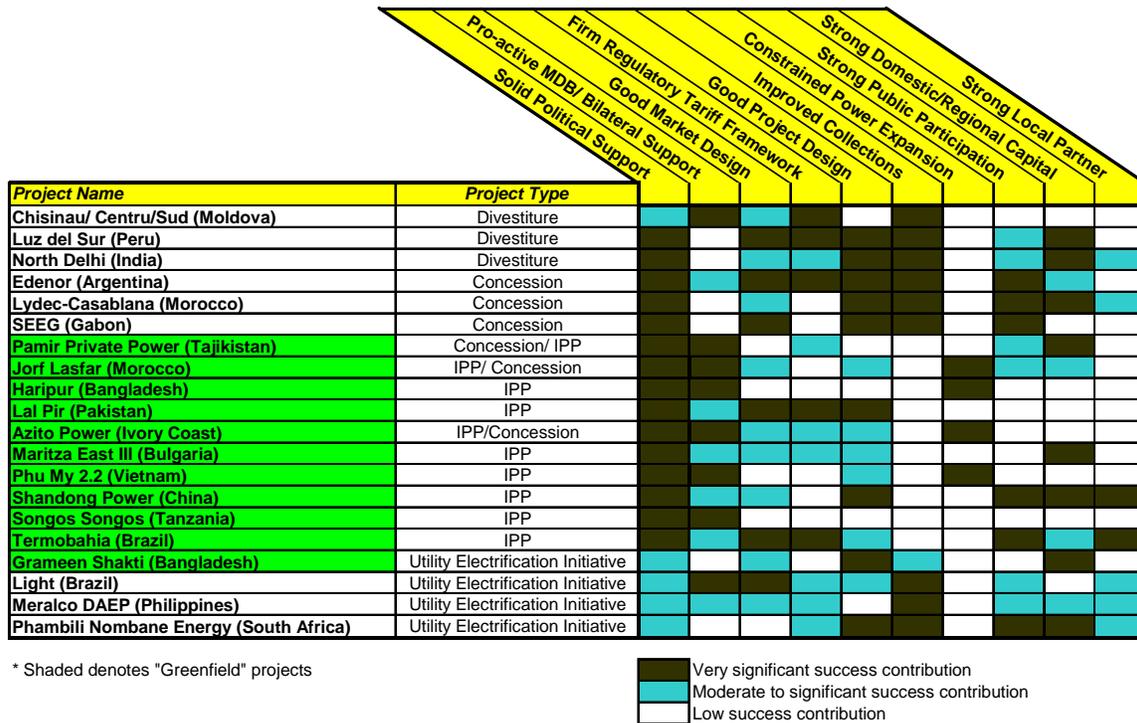
This analysis defined what criteria investors and lenders need before they provide financing. While a sample of 20 cases out of a total of 116 is not statistically significant, this sample is sufficiently sized to offer useful insights. For broader surveys of investors,

other World Bank studies could provide additional data points (e.g., Lamech and Saeed, 2002). In the 20 cases we analyzed, investors were prepared to enter into a wide range of risky markets and sectors when the conditions were favorable enough in terms of risk allocation, mitigation, and return optimization. The level of investor interest in the power sector is not only a function of country risk and market conditions, but also of the power sub-sector risk, as discussed below.

- ❖ **Generation projects/companies** continued to attract private investment even during the difficult financing period over the past 5 years, when the proper security package, guarantees, insurance, and PPA and tariff terms were offered. Our case sample involved a total of 11 generation cases out of 20, thus representing the major share of the success stories. Almost all Greenfield generation cases involved project financing, except for Grameen Shakti. Cases that involved acquiring or operating existing assets (such as power distribution companies) typically involved some form of concession (as promoted in countries such as Morocco, Argentina, Tajikistan, and Gabon) or divestiture (as implemented in Moldova, India, and Peru).
- ❖ **Transmission companies** typically are regulated monopolies that can provide a stable return for managing the wires business. Two of the cases in our analysis involved transmission components, but because these cases were tied to generation projects, they were not real transmission company privatizations. Transmission companies typically stay in the hands of the central government, but there is increasing consideration of attracting at least a share of private investment into the transmission sector, (e.g., the Philippines, Brazil, Peru, and Russia).
- ❖ **Distribution company** privatizations and concessions comprised 8 of the 18 cases examined. This included four cases of power expansion to poor rural and urban slum communities. The prevailing view among many investors is that the retail customer-facing power-distribution business presents a greater risk for foreign investors, given the politically sensitive problems of raising tariffs, metering, billing, and disconnecting non-paying customers. Distribution company (“disco”) privatizations have been promoted in recent years due to the recognized need to monetize power sectors that have low rates of cash collection. Investors have assumed their risks would be lowered because they would be close to the point of cash collections. Nonetheless, the political risks related to tariff reform, collections, and disconnection have proved formidable. The higher level of risks associated with a retail customer-facing power-distribution business has led foreign investors to show less interest in recent years. On the other hand, domestic and regional investors that know how to operate within the local political and cultural context have started playing a more active role, as illustrated by the North Delhi disco privatization case.

Based on an extensive analysis of these 20 cases, there have been key success factors identified critical not only to the mobilization of private capital but also to the sustainability of the investment over time. A summary of these success factors and their effect on each case is presented in the matrix shown in **Figure 5-7**. The success factors are further defined and described in the text following the matrix.

Figure 5-7. Success Factor Matrix



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- ❖ **Strong Local Political Support:** Political support was evident in every case, yet political support was manifested in different ways. Sometimes a head of state, or the regional equivalent, personally pushed through a project despite political opposition. This happened in the Tajikistan Pamir IPP, the Morocco Lydec multi-utility concession, and the North Delhi distribution company divestiture. In other cases, there was aggregate support for a project based on a government’s positive experience with private participation. This was true with the Cote d’Ivoire Azito IPP and the Gabon SEEG multi-utility concession. In both these cases, the countries progressed from management contracts to French-model leases / affermages / concessions or IPPs. For IPPs utilizing the International Development Agency’s (IDA’s) partial risk guarantee (PRG), the sovereign guarantee was the most overt commitment of political support. Projects that used the PRG included Jorf Lasfar (Morocco), Azito (Cote d’Ivoire), Haripur (Bangladesh), and Phu My 2.2 (Vietnam). All the cases are summarized in the case boxes (see Case Box Legend in the Table of Contents) and in the full case write ups found in the separate Case Studies volume. The Jorf Lasfar case in Morocco found in **Case Box 5-1** and the Azito case in Cote d’Ivoire found in **Case Box 5-2** both exemplify how the use of the PRG demonstrated political support and was instrumental to success.

Such government guarantees, covering key deal-braking risks, also enabled the mobilization of political risk guarantees and loan support of the private-sector arms of other MDBs or bilateral financial institutions. While these other MDBs institutionally operate without direct sovereign counter-indemnity, they do require a government’s explicit guarantee for projects when risks are perceived to be excessive (as in, for example, the Phu My 2.2 project in Vietnam). Sometimes government support was more indirect. For instance, the Bulgarian

government, with its eye on European Union (EU) accession, worked with international financial institutions to enable local Bulgarian banks to cofinance the Maritza East III project. Government support may also take the form of a specific subsidy. In the Luz del Sur divestiture, the Peruvian government chose to lessen the impact of higher tariffs on the poor by structuring a targeted subsidy.

Case Box 5-1. Azito Power Generation– Cote d’Ivoire

A Role Model for the Rest of Sub-Saharan Africa? – Azito IPP

Cote d’Ivoire set a standard in independent power producer (IPP) financing with the 1999 Azito 300MW build-own-transfer (BOT) project. Sponsored by the Cinergy consortium (ABB/EDF/Industrial Promotion Services) with debt financing by the Commonwealth Development Corporation (CDC), the International Finance Corporation (IFC), and the IDA, the \$223Mn plant was the first major private infrastructure project in the region to receive commercial term financing in the difficult post-1997 period. It positioned Cote d’Ivoire well to export electricity to the West Africa Power Pool. Furthermore, Azito supported social goals, significantly incorporated private participation in power, and virtually fathered a whole regulatory structure. Project financing was difficult but several factors contributed to successful deal closing.

- ❖ **Critical IDA Partial Risk Guarantee:** Without the PRG, financing might not have come through. The PRG extended tenor to a regional precedent of 12 years. Furthermore, its back-to-back sovereign guarantee requirement encouraged Cote d’Ivoire to abide by its commitments. This enhanced cash flow security and helped catalyze private investment.
- ❖ **Positive Private Participation Experience:** As early as 1971, the government experimented with affermage leases in water where the lessee took on operating risk but left capital investment decisions to the state. The affermage model was extended to the power sector in October 1990 when the private firm Compagnie Ivoirienne d’Electricite (CIE), a consortium of Bouygues, EDF, the government, and Ivoirian employees, was established to generate, transport, distribute, and trade electricity. CIE was considered a success and was followed by another successful private power concession, CIPREL. In short, prior to Azito, there had been a succession of positive private sector experiences for Cote d’Ivoire.
- ❖ **Innovative Purchaser Risk Mitigation:** The purchaser was the government of Cote d’Ivoire. To mitigate payment risk, the Azito Company signed an agreement under which CIE, instead of the government, would pay for the electricity. CIE was seen as a better credit risk. According to EDF, bills sent out on the 10th of each month have been collected with consistency.
- ❖ **Right Macroeconomic and Political Conditions:** As a member of the CFA franc zone, Cote d’Ivoire enjoyed moderate growth until the late 1980s when the franc’s real appreciation hurt exports such that the government devalued the currency 50% in 1994. However, this later led to robust economic growth. Combined with general political stability until 2002, the country was politically and economically willing to privatize.
- ❖ **Strong Payment Prioritization:** A turning point in the deal was the concession clause, Avenant 4, which concerned seniority of cash flow payments and its dilution in the event of future approved projects. Avenant 4 essentially prioritized private sector participants for payment and rated gas suppliers and IPPs as equal in the hierarchy of payment seniority from electricity revenues. Second, the government pledged to limit new entrants into the power sector, effectively reducing competition for the incumbents.

Azito embodies the successes of Cote d’Ivoire’s power sector reforms, but it also opened a number of questions. First, how likely will current electricity tariffs be maintained? After the September 2002 failed coup, Laurent Gbago remains president; electricity prices (roughly 8.75 cents/kWh) may become an election issue, however. Second, will the need to introduce additional competition override Cote d’Ivoire’s commitment to regulate IPP expansion? Given Azito’s exclusive contract terms and potential surplus capacity, the possibility to increase the number of IPPs in the future is limited. One could argue that the PRG is a test of both the World Bank’s and Cote d’Ivoire’s credibility with respect to IDA’s influence on contract compliance. The private sector sees the PRG as a World Bank promise to monitor and protect its assets. If this proves true, Cote d’Ivoire will have established a model track record for future financing.

Case Box 5-2. Jorf Lasfar Power Generation - Morocco

An Opening to Private Power Investment in Morocco – Jorf Lasfar IPP

In 1996, the Moroccan state electricity utility, Office of National de l'Electricite (ONE), awarded CMS Energy and ABB Energy Ventures a 30-year concession contract under a competitively bid tender. The project consisted of two stages. The first was to manage two operating 348MW coal-fired/steam-based generation units under a 30-year concession arrangement. The second consisted of a power plant expansion by building two similar specification generators under a build-transfer-operation (BTO) arrangement. The total capacity for all four units is 1356MW and the project cost was \$1.48Bn. The Jorf Lasfar project faced a number of obstacles in its financing. For example, Morocco was not rated by an international rating agency, which limited the availability of financing, particularly the long-term financing required by major power projects. Furthermore, the sheer size and scope of Jorf Lasfar increased certain financial risk dimensions. Nevertheless, the project financially closed in part due to these significant factors:

- ❖ **Formidable Multilateral/Bilateral/Export Credit Agency Support:** The benefits of the World Bank, OPIC, USExim, and the Swiss and Italian Export Credit Agencies participation extended beyond mere access to loans. Through their coverage of multiple political risks, the sponsors could borrow at more favorable rates and with longer tenors (up to 15 years) than would have been otherwise available to Morocco. In particular, financing from all the commercial banks was contingent on the World Bank's participation through its PRG. The combined impact of the development support agencies in Jorf Lasfar helped Morocco set a milestone through the creation of benchmark reforms and legal structures for future projects.
- ❖ **Additional Government Security Package:** Under the terms of the BTO contract, the sponsor would not own any of the generating assets. This could have made financing difficult for the borrower (sponsor) in the absence of collateral for the lenders. To compensate, the Government of Morocco provided a security package that included the following: (a) the PRG backed by a sovereign guarantee; (b) a guarantee of termination amounts and support letter in the event of default; (c) foreign exchange account and convertibility letters; (d) a comprehensive set of insurance policies covering building risk, general liability, business interruption, etc; (e) a letter of credit worth 2 months of ONE payments to the sponsor; and (f) an escrow account collected from electricity payments worth 1 month of ONE payments to the project company.
- ❖ **Beneficial Off-taker Risk Reduction:** The government strengthened the off-taker's, ONE, payment capacity through two measures. First, tariffs were increased in the early 1990s, significantly improving ONE's financial health in 1995-1996 in time for the project. Second, through a customer collections recovery program, arrears to ONE dropped from 8.5 months worth to 4.2 months worth over the 1993-1996 period: closer to the 3-month arrears target, determined by the World Bank as adequate for ONE to comply with its PPA obligations.

Jorf Lasfar was a landmark project in many ways. It was not only Morocco's earliest IPP but it also established the country's international credit history for future projects in the power sector. Morocco's inexperience with IPPs and capital markets initially slowed financial closure, but through a combination of government support, development institution support, and efficient financing, the project came to fruition. Today, it produces 40% of the country's electricity output.

- ❖ **Strong MDB/Bilateral Support:** In many cases, support from multilateral development banks (i.e. the World Bank) or bilaterals (i.e., the Overseas Private Investment Corporation [OPIC] and ECAs) proved to be critical. This support came in the form of sovereign lending or guarantees, non-guaranteed loans (e.g., IFC A or B Loans), equity cofinancing, and political risk insurance. Fourteen of the 20 cases had MDB/Bilateral participation; the majority of these cases (10) were IPPs. The Songo Songo project in Tanzania, as described in **Case Box 5-3**, illustrates how IDA provides critical guarantees to enable private financing. The Phu My 2.2 project in

Vietnam, as found in **Case Box 5-4**, illustrate how IDA in concert with the ADB and JIBIC was able to provide the necessary support to mobilize private financing that was critical to these successes. Exceptions included the Edenor concession, which benefited from IFC loans; the Meralco DAEP utility electrification initiative, which received major funding from the Japan Overseas Economic Cooperation Fund; and the PRONAI Light Initiative in Brazil, which received some Multinational Investment Guarantee Agency (MIGA) funding. In contrast, when domestic capital markets were liquid and project design quality was high, the demand for foreign MDB or ECA assistance declined. This was evident in the Shandong Zhonghua IPP in China, the SEEG Concession in Gabon, the North Delhi privatization in India, and the Luz del Sur privatization in Peru.

Case Box 5-3. Songo Songo Power Generation - Tanzania

Helping a Power Sector Help Itself – Songo Songo IPP

Songo Songo is Tanzania's first IPP, and the second in East Africa. This \$295Mn project was financed with AES, Commonwealth Development Corporation (CDC), and the European Investment Bank (EIB) as sponsors and the IDA and EIB as lenders, resulting in a total debt/equity ratio of 70/30. This project had a long history of difficulties yet managed financial closure in October 2001, which was a difficult period for any region. The equity sponsors at the time were AES, CDC, and a partnership between the EIB and Tanzania Development Finance Company Ltd. (TDFL). This IPP followed a two-stage development process: (1) The development of a gas field at Songo Songo island; (2) The conversion of the 112MW Ubungo thermal plant into a gas-firing facility prior to its privatization. The delayed financial closing of Tanzania's Songo Songo project was driven by the financial problems of the vertically integrated monopoly utility, Tanesco. For years, its operational inefficiencies, uneven tariff structure and collections difficulty led to underinvestment and to skepticism by investors of the utility's ability to meet its financial obligations. This was especially critical to the Songo Songo project given Tanesco's position as off-taker. As a result, financing became contingent upon Tanesco reforms. The World Bank and EIB were critical in closing the deal in the following ways:

- ❖ **Strong Leverage on Tanesco Reforms:** In return for its large but interest-free loan to the government of Tanzania, the World Bank crafted fairly stringent standards on Tanesco's eventual privatization. A precursor was to improve the utility's performance, which resulted in Netgroup Solutions, a South African firm, taking over operations under a 2-year management contract. Furthermore, tariffs were leveled at roughly \$0.08 per kWh, which according to CDC's Paul Kubert, was "very competitive for the region."
- ❖ **Softened Regional Risk Through IDA's Presence:** IDA's presence softened the risk profile for private investment in the region and helped to extend the tenor of financing.
- ❖ **Proactive EPC Risk Mitigation:** IDA credits provided the Songo Songo sponsors recourse to a World Bank Letter of Credit to cover procurement services so that contractors are paid even in the event of project default.

A continued issue within the Sub-Saharan region is the dearth of private participation in financing. Tanzania is not without its potential but the country can still do much to improve its investment attractiveness. The Songo Songo case demonstrated how MDB's can play a major role in incentivizing reform by providing both technical assistance and financing. It can help establish an IPP precedent and definitively contribute to society through increased electricity access.

Case Box 5-4. Phu My 2.2 Power Generation - Vietnam

Nurturing A Future Asian Tiger's Power Sector - Phu My 2.2 IPP

It was not easy closing the 715MW build-own-transfer (BOT) gas-fired combined cycle Phu My 2.2 (\$480Mn) project in December 2002. The IPP faced numerous challenges. First, the Government of Vietnam (GOV) was unfamiliar with international power projects, thus it initially hesitated to provide guarantees covering breach-of-contract risks or on foreign-currency exchange and repatriation, particularly since Hanoi had only \$2Bn in reserves around the time of financing. Upon bidder consultation, the government offered undertakings covering these key risks which private financiers were not ready to assume. The World Bank (IDA) thereby was able to offer a PRG at the time of bidding to enhance competition. Second, the authorized state body for negotiating BOTs did not have sufficient authority to resolve issues in BOT contracts. Approval authorization was spread out among multiple bureaucratic agencies thereby dragging out negotiations a long time. Finally, the market interest for international power projects was low. But in the end, Phu My 2.2 saw closure due to the following factors:

- ❖ **Strong Sponsor Commitment:** The consortium, from 1997-2001, struggled step-by-step to turn Phu My 2.2 into a viable project. Rather than negotiate with the Ministry of Industry as a one-stop BOT shop, the consortium painstakingly negotiated direct agreements with several Vietnamese counterparties on such issues as foreign currency availability and repatriation, restrictions on the sponsors' transfer of share capital, English law security over offshore assets, and pre-approval of financing documents by the state bank of Vietnam. Despite the delays this caused, this was a wise course of action by the consortium: paying close attention to all risks in the project transaction prior to financing commitments. The sponsors took a lesson from an earlier 1997 precedent when Wartsila of Finland rapidly negotiated and started a 120MW thermal project with the GOV before securing guarantees on the state utility's non-performance and foreign exchange convertibility. The project failed after Wartsila had already invested \$10Mn. In contrast, the Phu My 2.2 negotiations resulted in a long and complex deal structure, but it solidified at the start appropriate risk sharing and clear performance guarantees and obligations. The GOV's eventual agreement to a sovereign guarantee also was important.
- ❖ **Disciplined Multilateral/Bilateral Participation:** The combined efforts of IDA, ADB and the Japan Bank of International Cooperation proved critical on a number of fronts in closing the deal. Beyond their significant roles in financing through either direct loans or PRGs, the triumvirate ensured transparency in the sponsor selection through an international bidding process. They were also able to play the role of honest broker between the government and sponsors. At the same time, the World Bank's support helped to implement key sector reforms. The World Bank's important role was in the adoption of an internationally accepted BOT framework and the provision of guarantees to foreign investors covering key risks (Vietnamese performance under PPA and other key project documents, currency convertibility/transferability, Vietnam political force majeure events, and other contractual obligations of the GOV and state-owned entities).
- ❖ **Competitive Bidding Leading to a Low Tariff.** The competitive bidding process was critical to getting the world-class sponsor consortium of EDF, Sumitomo, and Tokyo Electric Power (TEPCO). The competition also led to the low tariff of 4.1 cents/kWh, and set a precedent for future low-cost expansion.

Phu My 2.2 set benchmarks for managing political and economic risks. More importantly, it paved the way for Vietnam's adoption of international legal requirements for attracting private investment. Indeed, with Phu My 2.2 under its belt, Vietnam rapidly closed the Phu My 3 project in June 2003. Phu My 2.2 was not without its challenges but it demonstrated that committed sponsors, multilateral/bilateral support, risk management, and project transparency could attract investors to the emerging markets.

- ❖ **Good Market Design:** A well-crafted market design tailored to the country's and power market's level of development was particularly important in cases that involved a divestiture and to some extent a concession. In the case of IPPs and to some extent concessions, a security package with MDB and ECA support can better insulate investors from country and market risks, through the contractual framework.

With divestitures, however, investors are more exposed to market risks; in these cases, market design and the legal and regulatory framework become more critical. Introducing higher levels of market complexity and competition increases risk and uncertainty. If a complex competitive-market design is introduced where there are high levels of country and market risk, it presents an unattractive investment condition. These successful cases illustrate how market designs varied and depended on the country's level of development. For example, establishing an unbundled competitive power market appeared reasonable in Argentina (Edenor) and Peru (Luz del Sur) because investors had substantial confidence in the market design (although in hindsight they may have overlooked some of the country risk factors). In contrast, a vertically integrated, state-owned, multi-utility seemed to make sense for Gabon (the SEEG project) given that country's stage of economic development and market size. Market designs that adapt to investors' ability to assume risk seem to improve the ability to mobilize private capital and to enhance the likelihood of the project's long-term success.

- ❖ **Strong Tariff Regulatory Framework:** Given investors' primary concern for the generation of stable revenues that enable an adequate return on investment, the tariff regulatory framework was a very important factor for many projects. There were three general forms of regulatory frameworks in our study: (a) Ministry-based regulation (six cases); (b) regulation by contract with an independent regulatory agency (10 cases); and (c) independent regulation in a market that has inspired sufficient investor confidence (four cases). Based on these cases, there was needed either the presence of a strong, independent regulator (i.e. Argentina) or effective regulation by contract involving either a Ministry-based regulator or an independent regulatory agency (i.e. Gabon and Cote d'Ivoire). The wholesale and retail tariffs needed to be either at or rapidly approaching cost recovery levels. A substantial degree of tariff certainty was required in the form of long-term power purchase agreements (as provided in the IPP cases such as in Bulgaria, Vietnam, Pakistan, and Tanzania) or a multiyear tariff structure (as provided in divestiture cases such as in North Delhi, India). Tariffs also needed to be competitive enough so that, over time, the stranded-asset problem could be avoided (i.e. Maritza East III and Shandong Zhonghua). If the tariff negotiated in a long-term PPA is high relative to what will emerge as a competitive market is set up, or if the tariff is locked in a way that is unsustainable due to the high likelihood of a major currency devaluation, then such a tariff arrangement could threaten the sustainability of the investment.
- ❖ **Good Project Design:** Project design is tested by the ability of the project to be sustained with minimal government intervention. Despite the Argentina crisis, Edenor is a well-designed project; the subsequent financial problems faced by Edenor were due to exogenous factors. The Luz del Sur, Lydec, and SEEG projects also appear to be solidly designed and are likely to stand the test of time financially. While it is too early to judge, North Delhi may also possess elements of good project design based on such factors as its conservative pre-privatization valuation, multiyear tariff experimentation, and technical/commercial reduction performance incentives. Among IPPs, Lal Pir and Shandong Zhonghua stand out as enduring projects. As described in Lal Pir, Pakistan **Case Box 5-5**, good project design combined with the right policy framework was central to this successful private power participation. Of the utility electricity

initiatives, Grameen Shakti merits the most attention, especially given its flexible financing options for new purchasers of Solar Home Systems. As a result of the long-term financing available, sales of the Solar Home Systems continue to grow rapidly.

Case Box 5-5. Lal Pir Power Generation– Pakistan

A Welcome Mat to Pakistan's Power Sector – Lal Pir IPP

In 1995, AES was awarded the Lal Pir project. The landmark \$344Mn build-own-operate (BOO) project consisted of a 362MW oil-fired plant located in Punjab province. The off-taker was the Pakistan Water and Power Development Authority (WAPDA) under a 30-year power purchase agreement (PPA). The project, along with AES PakGen, was among the first independent power producer (IPP) entrants into Pakistan since the introduction of the March 1994 Power Policy Guideline. This reform opened the Pakistani power market to private participation, thereby addressing power shortages, which were costing the economy up to \$1Bn per year according to the World Bank. At the time, many investors were hesitant to invest in Pakistan given the country's wavering political stability and its tensions with India. However, Pakistan was keen to build its power sector, and it therefore improved its investment attractiveness in the following ways.

- ❖ **1994 Power Policy:** Pakistan's 1994 Power Policy Guideline was a major milestone in power sector development. It standardized contracts and incentivized private investment with PPA inflation indexation, levelized tariffs of 5.7 cents/kWh, and included performance bonuses and security packages. These included guarantees by the Government of Pakistan (GoP) of PPA obligations and foreign-currency availability: a precursor to one of the most popular features of the IDA's PRG..
- ❖ **Foreign Exchange Protection:** Currency indexation to the dollar was standard for foreign currency loans; Pakistan also extended this to yen-denominated loans for AES. Even more generous, the government was willing to cover any losses beyond a 5% devaluation and has, thus far, fulfilled its commitments.
- ❖ **Rapid Approvals:** Licensing, environmental permitting, and other decisions received rapid government approval. Combined with AES' decentralized decisionmaking structure, Lal Pir financially closed in 2 years and realized project completion in a record 33 months, thus earning it an early construction completion bonus. As the early entrant into the market, AES also won a contractual premium on the PPA dispatch in December 1997. This earned AES an extra 0.25 cents/kWh for the project's first 10 years.

Other critical factors included the following.

- ❖ **Supportive Japanese Participation:** The Japanese Export-Import Bank and Nichimen Corporation together provided a \$209Mn political risk guarantee that covered 100% of the commercial debt tranche at very favorable rates. This guarantee not only helped to extend financing tenor out to 12 years, but it also was the first untied guarantee ever granted in the world to a power project undertaken on a BOO or build-own-transfer (BOT) basis
- ❖ **Confident IFC Investment:** The IFC's A-loan commitment of \$40Mn added confidence to commercial banks involved in Lal Pir's debt tranche syndicate.

Some believe that Pakistan may have temporarily overexpanded power capacity in the late 1990s at high tariff rates and that it should have moved to a competitive market earlier. Nevertheless, at the time of Lal Pir's project development in 1994, Pakistan's energy shortage severely constrained economic growth. Japanese and IFC financing facilitated Lal Pir's financial closing, but Pakistan's investor-friendly policies established the framework for Lal Pir and many other future projects.

- ❖ **Improved Collections:** Improving collections have been critical, particularly when power distribution companies were trying to attract private investment. The perception of power supply as a public good made it difficult initially for utilities to reduce non-technical and commercial losses. The Lydec, SEEG, Edenor, North Delhi, Luz del Sur, Meralco DAEP, Phambali Nombane, and PRONAI Light projects all adopted promising methods at improving collections through the joint application of technology, community support, education, financing, and government reforms. The Lydec Case in Morocco, as

described in **Case Box 5-7**, illustrates how a modern management program of loss reduction, collections improvement, and effective community involvement can lead to private sector participation that not only mobilizes capital but achieves sector reforms. Technological innovations included prepaid meters, public fountains, underground power lines, and other means to reduce the physical theft of electricity. Community support incorporated utilities' funding of public works and sponsoring social programs. Education included the use of social intermediaries to build consensus on energy conservation, usage, and payments. Financing covered making available flexible payment schedules at reasonable rates over periods comfortable for the user. Government reforms referred to measures such as land tenurization that give urban slum dwellers a stake in property and therefore a greater incentive to meet electricity payments.

Case Box 5-6. Haripur Power Generation - Bangladesh

Risk Management, the World Bank and Sector Reform – Haripur IPP

In 1997, AES was awarded the Haripur project in an international competitive bid. The \$180Mn build-own-operate (BOO) project consisted of a 360MW gas-fired combined cycle plant that reduced Bangladesh's power shortages, with the remarkably low tariff of less than 3 cents per kWh. This plant generated savings by displacing less-efficient plants that ran on imported liquid fuels. Furthermore, the Haripur project set a benchmark for bringing in private participation into power projects and established a framework for additional sector private participation in Bangladesh. The Haripur project was a classic example of solid risk management in project finance due to the following key factors.

- ❖ **Critical IDA Partial Risk Guarantee:** The IDA's PRG was absolutely critical in mobilizing the ANZ bank-led syndicated debt financing of \$60.9Mn. The PRG helped to extend its maturity to 15 years through its political risk mitigation, at a cost of financing 2% above the London Inter-Bank Offered Rate (LIBOR) a very favorable rate given Bangladesh's country risk. It covered multiple non-commercial, government performance risks and, more importantly, provided the leverage by which the IDA could work closely with the government of Bangladesh to improve the sector's governance structure. It should also be noted that, in support of this project, IDA provided frustration of arbitration coverage for the first time.
- ❖ **Diligent Management Fuel Supply Risk:** To mitigate fuel supply risk, the World Bank persuaded the government to equalize gas prices to public and private sector plants by the time the sector IPP capacity reached 1780MW. As a result, Haripur would not face discriminatory gas price differentials that would lead to plant underutilization relative to public sector plants.
- ❖ **Unique Adjustment of Off-taker Risk:** In an unusual instance of off-taker risk mitigation, under an indemnity agreement, the Bangladesh Power Development Board is required to consult the Bank should it seek to develop further IPP capacity after the 1780MW benchmark is reached.
- ❖ **Focused Monitoring of Foreign Exchange Risk:** The Management and Monitoring System was designed to provide early warning signals on the country's foreign-exchange exposure and facilitate the regulation of foreign-exchange commitments across all sectors by requiring full disclosure in financing agreements between the government and the private sector.

In the Haripur case, the World Bank played an interesting role in strengthening Bangladesh's IPP governance sector while improving the project's sustainability. Political risk mitigation through the PRG was critical to foreign investors because it allowed for effective risk sharing, with the private investor assuming the commercial risk. In the meantime, the PRG backstopped government contractual-performance risks, which the private sector cannot control. Furthermore, the Bank acting as an honest broker between the private sector and the government in power sector expansion, added value to its role in monitoring IPP/sector/country foreign-exchange exposure. Given the dearth of private investment in power today, Haripur is an interesting case suggesting that the cooperative efforts of multilaterals, governments and the private sector can bridge the gap of financing through creative risk management.

- ❖ **Power Expansion Constraints:** The IPP model can lead to power sector over-expansion if not carefully managed. Overly optimistic projections of demand are used to justify adding more capacity than is eventually needed. The resulting surplus capacity leads to utilities having to pay for power they do not need (as took place in China and Pakistan in the mid-1990s and, more recently, in Turkey, just to name a few major countries) and pushes down tariffs in a way that hurt existing investors. In projects involving IDA PRGs, the IDA has played a strong role in capping buildups of a country's power capacity in order that a minimum debt-service ratio for current IPPs may be maintained. Such was the case in the AES Haripur IPP, as described in **Case Box 5-6** where there was a special adjustment of off-taker risk that limited the freedom of the utility to add new capacity without prior approval. In all the PRG cases (Azito, Jorf Lasfar, Phu My 2.2, Songo Songo, Haripur), IDA played an active role in educating the governments on both the advantages and disadvantages of the IPP model and on the importance of pacing expansion of power capacity so as to not drain the single power purchaser of its often foreign-denominated financial obligations to current projects.
- ❖ **Public Participation:** Public participation came in two forms: stakeholder activity and government financial input. Public participation was particularly important with retail consumer-facing power-distribution cases, which needed political support to enable improved collections and cost recovery. This was most easily identifiable in the French concessions. For example, in the Lydec case, the government shared responsibility for the multi-utility's capital investment obligations. Public participation also appeared in our study of IPPs and privatizations. For instance, the Shandong Electric Power Company and Petrobras, both state-owned entities, shared equity risk as sponsors in the Shandong Zhonghua and Termobahia power projects, respectively. In divestitures, public participation through targeted subsidies for the poor was critical in winning support for the North Delhi and Luz del Sur projects.
- ❖ **Domestic Capital Participation:** Domestic capital encompasses private capital sourced from within the project's country or geographic region. Of the 20 cases, 11 had significant domestic financing of at least 20% of total project cost for IPPs and utility electricity initiatives, or 20% of the initial capital investment required for concessions and divestitures. Domestic private-capital vehicles traditionally include strategic investor capital, private equity, private domestic infrastructure funds, insurance, pensions, non-public sector bank credit, public equity, and corporate debt markets. Internal financing was also included. For example, the IPP revenues generated from a single-cycle unit and then used to finance a combined-cycle project, were counted as domestic capital. Among concessions, the Lydec and projects stood out because a substantial bulk of the capital investment has been internally financed from the utility's revenues. For the IPPs, Shandong Zhonghua, Pamir (via AKFED), Maritza East III, and Termobahia spotlighted the significant role that private capital (at times cofunded with state capital) can play in project financing. Of divestitures, the North Delhi distribution company project demonstrated how local Indian power players, such as Tata, are filling the vacuum left by exiting foreign investors. The Luz del Sur divestiture showed how the local stock market can provide needed capital investments as long as service performance improved (such as increasing the speed

with which new connections could be serviced). Surveying the utility electricity initiatives, Grameen Shakti proved that domestically financed “micro-utilities” could go hand and hand with local economic empowerment.

Case Box 5-7. Lydec Multi-utility- Morocco

The Social Impact of Utility Reforms – Lydec Concession

In April 1997, the Lyonnaise des Eaux Casablanca (Lydec) consortium signed a 30-year multi-utility concession with the Casablanca Urban Community (CUC) municipal government “to provide the urban area of Casablanca with electricity, water, and sewerage services in the most efficient way possible.” The consortium consisted of Ondeo, Elyo, EDF, Endessa, and Aguas de Barcelona. Initial equity was \$80Mn (Lydec 51%; CUC 49%). Approximately \$3Bn will be invested over the 30-year period of the concession. Since 1997, Lydec has improved across a wide range of performance measures. For example, between 1997 and 2002, water connections increased from 440,000 to 590,000. Electricity connections increased from 510,000 to 625,000. Sewage connections increased from 65% to 85%. Customer satisfaction rose from 53% to 93%. More than 280,000 training hours were provided to Lydec staff. Key success factors include the following.

- ❖ **Modern Managerial Reforms:** Lydec streamlined its total labor force by 22% between 1997 and 2002. In addition, it improved its managerial processes by adopting modern practices such as performance appraisals. Furthermore, procurement costs were estimated to have dropped by 15% as a result of competitive sourcing and auditing of bribery cases.
- ❖ **Focused Technical and Commercial Loss Reduction Strategy:** Lydec has focused on improving efficiency by closing the aggregate technical and commercial loss gap. Since 1999, the company has targeted achieving an electricity loss of under 5% by 2004-2005.
- ❖ **Close Linkage Between Performance and Tariff Revisions:** Performance improvements are required prior to tariff increases. Tariffs have increased 20% for water, 8% for electricity, and 44% for sanitation. However, service quality has also gone up with customer satisfaction increasing from 50% to 93% between 1997 and 2002.
- ❖ **Enforced Regulation by Contract:** To date, there is no legal definition of concession in Moroccan law or in any regulatory text governing its application. In the absence of concession law, Lydec has successfully operated since 1997 under regulation by contract. The contract, agreed to by Lydec and the CUC, clearly stipulates tariff rates, modification periods (5 years), performance measures, configuration of services, sources of financing, and capital investment requirements.
- ❖ **Cultivated Community Support:** Lydec has cultivated community relations through the support of social intermediaries. Collection delinquencies have dropped as a result; more importantly, Lydec and the community stay in close communication about service improvements.

With 7 years under its belt, Lydec’s multi-utility operation is starting to break even. The investors see the next 23 years as the opportunity to earn modest internal rate of returns (IRRs), perhaps in the range of 10% to 15%. On January 9, 2003, the majority shareholder, Suez, announced a five-point “Action Plan” which included reducing its exposure to developing countries by one-third and reducing its debt by selling existing assets. Thus far, Lydec is safe from a sale. Barring unforeseen financial crises, Lydec will continue to improve public service through its focused blend of cost cutting, tariff cost recovery, service quality increases, community involvement, and balanced government relations.

- ❖ **Strong Local Partner:** Combining a foreign investor with a strong local partner can be critical to the success of a private investment in the power sector. In the Brazilian Termobahia project, ABB and CMS funded an IPP in a country headed toward a competitive power market. Fortunately, the project was fundable thanks to their alliance with Petrobras, which is not only one of the most reliable local partners in

Brazil but also the sponsor who initiated Termobahia, as described in **Case Box 5-8**. This project partner was one of the most creditworthy off-takers in a transaction that was ring-fenced from the competitive market. Likewise, with the Shandong Electric Power Company (SEPCO) as a cosponsor, power purchaser, and operator, EDF had greater confidence that SEPCO's interests were aligned with Shandong Zhonghua's success.

Case Box 5-8. Termobahia Power Generation - Brazil

The Benefit of Powerful Local Partnerships – Termobahia IPP

A solid local partner is invaluable for any foreign investor, and no less so for those in project finance. The Termobahia \$244Mn, 190MW BOT gas-fired cogeneration project was the first of its kind in Brazil. Like any project, it faced extreme currency risks (i.e. the Brazilian Real's devaluation), not to mention the standard off-taker, supplier, construction, and financing risks. In the aftermath of the 2001 crises, the government of Brazil revised its tariff structure, which made it difficult to pass on higher fuel costs to distributors and ultimately customers in the event of devaluation. Yet, despite these economic and electricity crises in 2001, Termobahia financially closed in December of that year. A key factor was the participation of the Inter-American Development Bank (IDB), which mobilized financing and extended tenor up to 14 years. In addition, ABB Alstom (now through ABB Equity Ventures) and A&A Electricity Investments (affiliated to Swiss financial group A&A Actienbank) were solid cosponsors (51% ownership total) and acted as technical advisors. Yet, many would credit the project's success to the participation of the Brazilian state-owned petroleum consortium, Petrobras. Its contribution lay in the following multiple roles it played.

- ❖ **Equity Sponsor:** As an equity sponsor, Petrobras contributed roughly \$35Mn, but the real value was in its balance sheet strength. Along with ABB, Petrobras was able to take on early construction risk before the availability of project financing, thereby keeping Termobahia on a tighter completion schedule.
- ❖ **Off-Taker:** Petrobras was contracted to purchase 100% of the Termobahia's generation output. Petrobras' PPA agreement had market credibility in light of its ability to sell excess capacity on the spot market.
- ❖ **Fuel Supplier:** As Termobahia's fuel provider, Petrobras was able to achieve one of its goals, which was to monetize its gas reserves. Furthermore, as both a purchaser and supplier to the project, it was believed to be quite capable of managing a fair percentage of the project's currency exposure because two of the major project costs, fuel and off-take, were in local currency.
- ❖ **Implied Government Guarantor:** The government of Brazil had an energy strategy to diversify the country's energy sources and to encourage private participation of the power sector's development. Termobahia was an essential component of this strategy. Given Petrobras' state-ownership status, investors had the perception that the Brazilian government would protect the project.

It is acknowledged that investor cherry-picking of the most creditworthy customers such as Petrobras, could undermine the financial strength of the power utilities that must serve all customers. Nevertheless, Termobahia was a confidence builder in a humble period of Brazil's power financing. Petrobras' involvement demonstrated the importance of local participation in strengthening project robustness. Its success also attracted the interest of US EX-IM, OPIC and other government/multilateral backed institutions, thereby setting the stage for future private power finance mobilizations in Brazil.

Considering all of these success factors together, it is possible to distill them down to five overarching criteria that were the most common characteristics of successful private capital mobilization. These five essential factors are listed below.

- ❖ **The importance of political support remains unchallenged. Political support was at the heart of every project's success at the time of deal closure.** For the seven divestitures and concessions, political support was important for two reasons. First, by deciding to privatize, governments had to willingly withdraw from making the key decisions about ownership, operations, or both. Second, the support required to turn around the utilities had to be sustained over time and often in the face of popular resistance. This support was critical to the successes of Luz del Sur, Edenor (up to 2002), Lydec, and SEEG. Ironically, a successful privatization can trigger a backlash and bring in a government that is hostile to privatization and later seeks to undermine or reverse it. The Moldova Chisinau/Centru/Sud divestiture project illustrates this point. The North Delhi and Pamir projects demonstrated strong political leadership, which was the tipping point in closing the transaction. For IPP development, governments provided the credibility necessary to mobilize capital, often through sovereign guarantees, as seen in the Azito, Jorf Lasfar, Phu My 2.2, and Haripur projects. While not as critical to electrification initiatives, political support opened the door for utility experimentation in financial sustainability and coverage increases.
- ❖ **The importance of MDB/Bilateral support for project funding was mixed. The real value of MDB/Bilateral participation lies in inducing governments to reform and privatize, incentivizing private sector participation, and ensuring that there is adequate planning to prevent overexpansion of the power sector.** Many countries were reluctant to take the difficult measures that reform requires. The MDB and bilateral agencies both enticed and pressured governments to take the necessary steps towards reform. Government guarantees or some form of undertakings were generally a basis for MDB and ECA participation. The MDB's and ECA's role was also critical in incentivizing private investors to participate in markets they would not normally enter, by providing necessary policy support, guarantees, insurance, and cofinancing. Finally, the MDBs also played a role in restraining excess capacity additions, as demonstrated in four cases (Azito, Jorf Lasfar, Phu My 2.2, Haripur). In these cases, the MDBs used their leverage to support IPP expansion in these countries while trying to ensure the off-taker utility's financial sustainability by limiting its overcommitment to generation projects, based on political pressures.
- ❖ **Good project contractual design mitigated the demand for MDB/Bilateral support and sometimes temporarily offset the absence of a firm market design and a regulatory framework.** Good project designs balanced the needs of investors and the government so that both parties received a fair and reasonable return from the private sector participation. A hallmark of failed projects was either the investor taking advantage of the country or the country taking advantage of the investor. This generally led to either the investor leaving the country after years of sustaining losses or the country forcing renegotiations of unfair deals. A good project design allocates risk efficiently and reduces the demand for MDB/Bilateral support. This was the case among the divestitures and concessions along with the Grameen Shakti and Phambali Nombane utility initiatives. In some cases, sound project design could offset the absence of a fully developed market design and regulatory framework, particularly in the French-influenced countries of Gabon and Morocco. The SEEG and Lydec concessions operated under a regulation by contract arrangement, and these projects

were able to proceed without MDB support. In the case of IPP transactions such as the Lal Pir, Pakistan's 1994 Energy Policy was sufficient to sustain successful projects even in the absence of an adequate legal and regulatory framework. As the Edenor concession proved, however, sometimes even a good project and market design faced difficulties due to unstable macro-economic conditions.

- ❖ **Public participation strengthened the robustness of certain types of power investments.** Gaining the support of the consumer was important, especially in cases involving retail customer-facing businesses such as power distribution. Among the non-IPP projects, Luz del Sur, Edenor, Lydec, SEEG, Phambali Nombane, PRONAI Light, and Meralco DAEP were all distribution companies facing technical and commercial losses. The governments in some of these cases helped enable public support by providing targeted subsidies for the poor to help them accept the market changes and private sector participation (as was illustrated in the Edenor and Luz del Sur cases). It also helped to fund technologies such as prepaid meters, which reduced non-technical losses, as seen in the Phambali Nombane, PRONAI Light, and Meralco DAEP cases. The IPP cases were not retail customer-facing, so there was less need with these cases to secure popular support. However, the public sector did participate as equity investors in the Shandong Zhonghua and Termobahia projects. Supporting public participation in these instances was serving the financial interests of public shareholders. It may be a stretch to consider public shareholding to be public sector participation, yet in some countries, small investors have been invited to participate as shareholders in power projects (as has been the case in China), which leads to greater public buy-in to the power-sector reform process. In all circumstances, public participation played a progressive role in taking on and diversifying various project risks, thereby increasing the probability of long-term sustainability.
- ❖ **Domestic capital participation in the power sector was substantial and could be seen as dominant if all the investments committed in the concession cases were taken into account.** The biggest domestically financed projects as a percentage of total cost were in South Africa, China, and India. The Peruvian and Argentina projects followed closely behind. While only the Peruvian case actually accessed the capital markets, these countries generally have deep capital markets and thus demonstrated greater capital market sophistication. Domestic capital participation was high in the regulation-by-contract concessions in Gabon and Morocco as well as in the small-scale Grameen Shakti project in Bangladesh. The approach of raising domestic financing through the tariff from the power customer is a return to fundamentals and meets the ultimate objective of building creditworthy utilities and a sustainable power sector. This approach of increasing self-financing was more common in power distribution concession and divestiture cases, yet it was also applied in the case of the Jorf Lasfar IPP generation project.

The key success factors for the 20 cases described above provide valuable insights that should lead to policies that can revitalize private capital mobilization in the power sector of emerging markets. In Chapter 6, a framework for defining these better policies is suggested.

6. ENABLING FRAMEWORK POLICY IMPLICATIONS

Having reviewed the cases, it is important to draw some insights from these and related discussions with investors and lenders, to help frame a better policy framework for power sector reform and investment. The first area of consideration to enable sustainable power sector investment is the larger political, macro-economic, power sector, and financial sector conditions. The critical barriers to reform in these four areas cannot be addressed by more innovative financing instruments but require a more integrated vision of reforms. There is a tendency for infrastructure sector development to largely focus on the individual sector dimensions and related capital mobilization strategies. While this is understandable because of the specialization with respective disciplines and sectors, greater interaction between professionals in the political, economic, and financial sectors may well be needed to develop more effective, integrated policies.

To determine what integrations could be constructive, it is necessary to review how these four dimensions affect progress in power sector reform and capital mobilization. The discussion below is only introductory, given the large scope of such an exercise. Its goal is to raise issues and make suggestions. After reviewing these larger framework requirements, we will address specific transaction risks and the financing requirements critical to capital mobilization.

The World Bank's Infrastructure Trends and Action Plan, presented to the World Bank Group Board of Executive Directors in July of 2003, emphasized "applying the World Bank's instruments across the World Bank Group" by focusing on the application of loans, private co-financing, foreign and local currency guarantees, insurance, and sub-sovereign lending. The World Bank's intention is to expand its infrastructure lending by between US \$1 billion and US \$2 billion per year in the coming years. The World Bank Group (WBG) has an array of instruments and mechanisms at its disposal. At one end of the spectrum, the WBG can support financing for individual transactions through equity and debt capital and guarantees as provided by the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the World Bank Guarantee. At the other end of the spectrum, the WBG has policy-based instruments that use structural and sector adjustment lending. The next two chapters examine actions to be taken in both of these areas to support power sector reform and to revitalize private sector financing.

The International Energy Agency (IEA) recently estimated the power sector investment need in emerging markets to be about \$120 billion per year during the period 2002 to 2020. Over the coming years, the World Bank Group's (IBRD, the International Development Agency [IDA], IFC, MIGA) financing in the power sector will be about US \$2 billion per year with total multilateral development bank (MDB) and export credit agency (ECA) financing of about US \$4 billion per year. Given a significant share of the \$120 billion will be financed by utilities from their own revenues and through government financing, there is still a large share of private financing required. The World Bank's limited resources need to leverage the large pool of private investment, which has many other investment options. To date, the average level of private capital mobilized into the power sector of emerging markets has been notably disappointing.

Encouraging the major levels of private investment called for will require serious rethinking of power sector reform and investment policies. There are indications this major leveraging of private capital cannot be done simply through more innovative financial engineering. Many of the financing mechanisms developed by the MDBs and ECAs (e.g., cofinancing, lending, syndications, equity investment, guarantees, insurance, etc.) have been demonstrated to work reasonably well when and if there are projects worth investing in and investors who are interested in the market. Although a number of financing innovations are still worth developing, as discussed later in this chapter, the greatest impact will not be simply from developing better financing instruments. If only it were that simple. The core problem is that markets as currently designed are not attractive enough and therefore there are too few serious investors and lenders. There needs to be a major focus on addressing the shortcomings in the enabling political, economic, financial, and power sector frameworks.

This chapter first focuses on the enabling environment before examining transaction financing. While private capital can still be mobilized in dysfunctional power markets with sufficient MDB and ECA cofinancing, these projects are not in themselves sufficient agents for reform. This assessment is demonstrated by the various independent power producer (IPP) projects during the 1980s and early 1990s (e.g., in India, Indonesia, and Pakistan) that were successfully financed and bankable in their own right, but were not at the time adequately allied with sustainable power sector development. The development of IPP projects with long-term power purchase agreements (PPAs) was a particular problem. With these projects, there was an imbalance between the wholesale tariff agreed to in the PPA and the retail tariff and poor collections existing at the retail level. It is increasingly evident that implementation of strong transaction support through MDB and ECA cofinancing, guarantees, and insurance needs to be better coordinated with more effective governance, legal, regulatory, and institutional policy incentives and support in the power sector as a whole. The past decade's experience could be regarded as demonstrating this latter point. For instance, the power sector reform and privatization program in India (extensively supported by the MDBs and donor community) led to various setbacks. While some say these failed policies contributed to little or no progress for power sector development in India over the past decade, it could be argued that great risks had to be taken and that these resulting problems provided important lessons that contribute to better policies going forward.

The message from India and other countries suggests the need to reconsider how power sector reforms are designed and implemented in emerging markets, as an integral part of any effort to revitalize private investment in the power sector. This process is already well under way. Many of the insights from this report echo conclusions by many in the development community, which are already translating into a new policy framework. In many cases, the points raised here will confirm views already gaining credence. Other points may generate further debates that are needed to change the reform process itself.

6.1. THE ENABLING FRAMEWORK FOR PRIVATE INVESTMENT IN POWER

The enabling framework for power sector reform and investment faces four critical barriers: political, macro-economic, financial, and sector. How these barriers were addressed has had a substantial impact on enabling the successes of the 20 cases analyzed

in this report. The most serious obstacles to sustainable reform and investment are highlighted in each section below, with the goal of providing guidelines for establishing a more supportive enabling environment.

6.1.1. Political and Governance Framework

Power sector reform occurs at multiple levels. First, there are direct performance-oriented reforms such as improving efficiency, expanding reliability, reducing technical and administrative losses, reducing costs, and improving collections. Second, there are process-oriented reforms: changes that enable or facilitate better performance, such as reorienting management of the sector and utility by creating the right incentives and penalties through commercialization or privatization, and devising effective sequencing and pacing strategies. Underlying both performance and process reforms is the third and most fundamental level of reform: political or governance changes such as strengthening the role of civil society in power sector polity and operations, strengthening the rule of law, and increasing transparency.

Of the three, political and governance reform has received the least attention, because it is the most complex and delicate. In its 2003 review of its assistance to private sector development in the electric power sector, the World Bank found that its *“technocratic view did not give adequate weight to the political economy of reform and proved too optimistic. While the 1993 [World Bank] policy is basically sound, the lack of accompanying strategic and operational guidance raises many questions about its implementation.”* (Joint World Bank OED/OEG/OEU Review 2003). While the “technocratic view” defined by the World Bank is essential to reform, it is by itself insufficient. Power sector reform is at its core both a political and economic process, and to be successful, reform measures must account for political economy and governance.

Governance, in its simplest definition, is “the traditions and institutions by which authority in a country is exercised” (Kaufmann, Kraay, and Lobaton, 1999). These include (1) how governments are selected, monitored, and replaced; (2) the ability of the government to effectively formulate and implement sound policies; and (3) the respect of citizens and the state for the institutions that govern the economic and social interactions among them. The authors have compiled a database of more than 300 governance indicators taken from a variety of sources. They derived six aggregate indicators corresponding to six basic governance concepts: voice and accountability, political instability and violence, government effectiveness, regulatory burden, rule of law, and graft. For those working in the power sector, the attention is generally on sector or corporate governance. National governance, however, can often have a profound impact on sector or corporate governance, particularly in small countries. Power sector policymakers may not have much influence on governance at the national level; nevertheless, there is a need to consider national governance when it is a key factor in undermining sector and corporate governance.

Investors in infrastructure routinely cite weak governance as a major barrier to investment. According to a survey by Lamech and Saeed of 48 firms that invest equity in developing countries, the factors found to be critical to the success or failure of their investments include the tenor and stability of elected officials and negative perceptions

and resistance to private investment by civil society (trade unions, press, non-government organizations [NGOs]) (Lamech and Saeed, 2002). Both of these factors were rated as “major” considerations in a firm’s decision to invest. Investment-grade credit ratings for foreign-exchange debt, another major factor, incorporate political issues related to democratic forms of governance.

Indicators of investment climate, upon which international equity investors rely, cover a broad spectrum of governance and political-economy issues: social conditions, ethnic factionalization, coercive measures to retain power, strength of forces for a radical government, riots or other societal conflict, instability as perceived by non-constitutional changes, civil war, terrorism, transparency, corruption, orderly transfers of power, freedoms of association and demonstration (and other civil rights), a free press, military activity in politics, and external conflicts ranging from trade restrictions and embargoes to border incursions or full-scale war. Political and economic-stability factors predominate in many overall measures of investment climate. Standard and Poor’s criteria include “political risk” as measured by “stability, predictability, and transparency of political institutions; public and national security; and responsiveness to change and adaptation.” Moody’s, like Standard and Poor’s, includes mostly quantitative factors but also qualitative factors “to assess the data in the context of the sovereign’s economic, political, and social forces.”

Few empirical studies trace power-sector reform results to indicators of good governance. On the broader scale of linking economic growth to good governance, Reynolds’ survey of more than a century of comparative development experience in 40 developing countries, concluded that “*the single most important explanatory variable [of development] is political organization and the administrative competence of government*” (Reynolds, 1983). Examining a cross-section of more than 150 countries, Kaufmann, Kraay, and Lobaton (*op.cit.*) provided empirical evidence of a strong causal relationship between better governance and better development results. As measured by their three aggregate indicators described above, there is an unambiguous correlation between their criteria of good governance and positive development outcomes such as higher per capita income, lower infant mortality rates, and higher literacy rates.

In sum, both infrastructure investment and economic growth depend on good governance. Which governance and political factors do investors look for? This section examines two of these governance factors: (1) democratic and participatory processes, and (2) transparency.

Democratic and participatory processes. If good governance facilitates economic development, does a democratic form of governance do the same? The reverse of this question is certainly true; it is well accepted that economic growth leads to liberalization and to democracy. This concept goes back to Aristotle’s *Politics*. Zakaria observed that democracy’s political success is its economic success; once rich, democracies become immortal (Zakaria, 2003). It has been the underlying faith and assumption of foreign assistance programs that economic development leads to the development of a middle class in developing countries and that the middle class in turn militates for systemic political, institutional, and economic reform.

This has occurred to varying degrees in Chile, Argentina, and Brazil and is increasingly happening in countries such as South Africa, Botswana, and Ghana. The middle class has successfully brought more democracy to South Korea, Malaysia, and more recently to Thailand, Taiwan, and Mexico. Most Latin American countries have moved substantially toward democracy; in most of these countries the military has stepped away from political control, there are elections, and there are peaceful transitions from one administration to another, even if the victor is from the opposite party of the incumbent. At the same time, most have developed nascent market economies and the constitutional and legal structures essential to building democratic societies and market economies.

While it is clear that economic development facilitates democracy, it is not so clear whether democracy facilitates economic development. Is democracy the economically efficient form of government? Democratic politics can impose costs or make economic adaptation more costly. Some have argued that a “strong hand” may be better suited to manage growth. Quinn and Wooley reviewed the literature on the theoretical evidence and summarized that, on the negative side, democracies are more prone to redistribution of wealth and income, which shifts national income from investment to consumption and thereby slows growth (Quinn and Wooley, 1998). Interest-groups’ use of political activity to gain rents results in an unnecessary growth of government and an unnecessary partisan manipulation of growth rates. All of these activities suppress economic growth in the long run. On the positive side, democratic competition enhances transparency of policy and policymaking, thereby reducing self-serving rent seeking. Property rights are enhanced in democracies, leading to higher rates of investment in democratic regimes.

The results of most empirical studies on this topic are ambiguous. Przeworski and Limongi reviewed 18 studies (with 21 sets of findings) and found inconsistent results: eight of the studies reported a positive link between democracy and growth, eight of the studies reported a negative link, and the remaining five studies showed no link (Przeworski and Limongi, 1993). Subsequent studies have been similarly inconsistent. Consider countries that enjoy economic freedom without enjoying political democracy, particularly during the early stages of their economic development. China, Malaysia, Chile, Hong Kong, Taiwan, Singapore, and South Korea have achieved high *per capita* gross domestic product (GDP) levels based on their relatively free markets, their adherence to rule of law, and on securing property rights, but democracy has emerged only recently, if at all, in these countries. Democratic India and politically liberalized Russia have failed to match undemocratic China’s economic performance. Those who have argued against pursuing a dual reform agenda that couples democratic governance reform with power sector reform, often cite such examples.

Quinn and Wooley (*op cit.*) appeared to resolve much of the ambiguity in the empirical and theoretical literature about the relationship between democracy and economic growth. They found that voters in democracies care not only about prosperity and economic growth, but also about economic instability. Most prior research on the economy and democracy had focused on only the aspect of increasing growth. Quinn and Wooley examined a sample of 108 countries and found that democracies, as compared to autocracies, were, during the period 1974 – 1989, unquestionably characterized by more stable growth rates. They found a strong, positive association between democracy and the dual variables of economic stability and economic growth. According to these results, a

democratic form of government facilitates stable economic growth. Such stable growth is an essential factor in attracting higher-quality foreign capital.

On a smaller scale of democracy (i.e., public participation), there is more than ample evidence that organized public dissatisfaction, particularly by labor and by consumers, can hinder or stall the reform process. Protests over electricity prices and blackouts (e.g., in Indonesia, Ecuador, Costa Rica, Guatemala, Mexico, Philippines, India, and elsewhere) have often delayed reform. Denying the public a meaningful chance to express its views can lead to suspicion and cynicism, if not to active protests, that contribute to such chronic energy-sector problems as low collections, theft, and corruption. In theory, skillfully managed public involvement can help replace conflict with social dialogue. Outside of the United States and other developed countries, however, electric utilities and power sector policymakers have not had to manage public involvement programs, so skillful management remains a rarity. In order to achieve sustainable power sector reform, this record of limited attention to public involvement will need to be addressed.

Transparency. With its large capital investment requirements and its weak regulatory institutions, the power sector in developing and transitioning countries is vulnerable to excessive rent seeking and corruption. Like the stability factors previously discussed, transparency is perceived in investor surveys as important and as an indicator of a positive investment climate. The Lamech and Saeed survey by the World Bank found that transparency and corruption are significant but not high-priority factors in investor willingness or reluctance to participate in power sector development and operations. Our study failed to find any significant correlation between transparency and investor behavior. This apparent inconsistency may be from the ambivalence investors have about transparency. For example, an investor who has an inside track on a particular power proposal or concession is not interested in transparency that would alert other investors and promote competition in a transaction that is already being negotiated quietly. This view is not limited to domestic players in a country; foreign investors that have worked with a government to design a particular transaction often do not welcome greater transparency or competition either. Lack of competition is, on the one hand, a greater incentive to invest on the part of some players who are in a well-connected position and is, on the other hand, a disincentive to invest for new players who are not as well-integrated into the market.

Lack of transparency, therefore, does not necessarily mean that investment will not follow. Investors consider stability in the rules of the game to be more conducive to investment than transparency is, and so a “strong hand” may be attractive even if transparency is lacking. This was certainly the case in early IPP projects. Few IPP projects at this early stage were solicited on a competitive basis, because few rules had been formulated, much less applied. The Paiton project in Indonesia, developed during the coercive Suharto regime, is a case in point. This project was developed by direct discussion and negotiations between the government and developers and was not the subject of a formal competition. The project was not open to public scrutiny. Paiton had the potential to substantially alleviate severe power shortages in the near term. It appeared to be unsustainable once Indonesia’s financial crisis struck. There were allegations of rampant corruption, and the flow of electric power was seriously delayed by the controversy over these alleged improprieties. This diminished the attractiveness of Indonesia for foreign direct investment.

A lesson that could be learned from Indonesia's experience is that lack of transparency may not appear to investors to be important at the start of a project's development, but that in hindsight, transparency becomes essential to the investment's long-term viability. Given that some investors make decisions for the relative short term, their decisions often do not reflect the long-term prudence that is needed. When the negative repercussions of a non-transparent process eventually occur, as happened in Indonesia, the resulting crisis prompts massive investor flight, but only after the crisis has already erupted.

These insights lead to the general observation that power sector reform is best enhanced by focusing on improving sector and corporate governance. Stability in the rules of the game is of paramount importance. Where government cannot exercise the "strong hand" of a China or Singapore, the involvement of stakeholders and the public in significant power sector policymaking is necessary if sector reform is to be sustainable. It is evident from the case studies that public participation and a strong role for civil society are necessary for gaining support of consumers and implementing reform, especially at the distribution end of the electric power enterprise.

In conclusion, although it is evident that investors do not necessarily seek competition and transparency, it is also clear that transparency is necessary to promote fair competition, reduce corruption, and ensure that the best services or equipment is contracted for. The levels of transparency and competition need to be appropriate to the existing levels of development and investor interest. Some markets require substantial due diligence and feasibility assessments before any investor will proceed. There may be few companies familiar enough with a country to be willing to take the time and effort to do this due diligence. This limited interest may be due to the country's small size or its levels of political instability or economic development.

If after a careful survey of investors, it is evident that there are very few serious investors, the levels of competition and transparency needed may be lower than that required in a more developed market that has many active investors. Competition at the entry level may be the most that can be achieved, and it may be premature to push for wholesale and retail power competition. This all needs to be done with a clear idea on how to attract the right investors. A highly transparent process will potentially deter some investors and attract others. A transparent but also overly bureaucratic process may deter many of even the most desirable investors. Any transparency and competition regime needs to be simple, streamlined, and openly communicated to all parties. The advent of the Internet and the ability to put information on the web makes this process easier than it was before. Further developments in clarifying, streamlining, and simplifying the full and open competitive bidding process can help to achieve greater transparency and competition in a way that is efficient and is compatible with the need to expand private investment.

6.1.2. Macro-Economic Framework

The macro-economic policies of a country are one of the most important determinants of country risk, of the enabling framework for economic development in general, and of power sector development in particular. These factors define a country's overall investment attractiveness and are the backdrop for an investor's overall decision to consider a particular country. Macro-economic stability is important to sustained

economic development. It is very challenging for industry to develop when the economy is often hit by macro-economic shocks and by financial crises. High volatility in the inflation rate, exchange rates, and interest rates increases the cost of capital and uncertainty in a way that makes it harder for investors to undertake the kind of long-term obligations that are required by infrastructure projects. As discussed in Chapter 5, the development of the domestic capital markets and the banking sector, and particularly the yield curve that is necessary for long-term bond financing, requires a degree of macro-economic stability. The experience in the Baltic countries, for instance, is a good example of a combination of macro-economic and finance-sector reform policies helping to support power sector reform and the capital mobilization process.

Given globalization and the fact that investors are concurrently comparing investment opportunities in many countries, the failure of a country to meet certain risk and credit ranking thresholds (which reflect the political and macro-economic policies of a country), can exclude them from even being considered by many investors and lenders. Many investors systematically rule out countries because of their overall risk ranking and investment climate. These investors will not even take the time to examine a particular transaction if it is in a country that is off their target map. Policymakers trying to reform the power sector need to understand what factors cause investors to rule out a country for consideration and to examine the macro-level policies that lead investors to reconsider a country. Lenders operate with credit limits for each country, which cap the amount of lending they can undertake in a country. These credit limits are a function of the macro-economic conditions and policies in each country. While many of the risk-ranking indicators are based on historic data, some indicators can reflect a forward-looking perspective. The extent to which a country's government brings in new leadership that starts demonstrating good governance in the management of the political economy and that starts ensuring a certain degree of political and economic stability, can lead to greater investor optimism and confidence in that country's future, and will result in investors and lenders moving beyond their conservative postures.

One of the most important factors defining a country's level of development is how it manages its economy. The credit rating agencies such as Standard and Poor's and Moody's focus on specific indicators to determine their country credit ratings: political stability, gross domestic capital per capita, monetary policy in terms of keeping inflation and interest rates stable and low, a country's fiscal policies that keep the state debt at a reasonable level in terms of percentage of GDP, the trade and current account balance, and foreign-exchange reserves. The extent that a country manages its economy prudently sets the foundation for sustained growth not only of the entire economy but also of the power sector. It would be fair to say that economic growth is less driven by effective managements of key infrastructure inputs such as power and more driven by how political institutions manage the political economy and a country's human, financial, and resources capital, to serve the goal of improving its citizens' well-being. In this respect, power sector reform serves the larger economy and is dependent upon macro-economic factors to a large extent for its own development. The countries that have developed the most have often not been rich in natural resources (e.g., Russia, Nigeria, Indonesia, etc.) but rather have shown the most talent in management and industry (e.g., Japan, Taiwan, Singapore, South Korea, Malaysia, Chile, etc.). These countries have all remarkably

developed their power sectors as an integral building block for their economic development. The lessons from this fact point to what country factors are the best indicators of where power sector reforms will likely be the most successful, and what areas need attention in order to turn failing power sector reforms into successful ones.

Some countries have been successful in ways that will be hard for other countries to emulate. Many newly industrialized countries (such as South Korea, Taiwan, and Malaysia) have built their economies on export-led growth and on technologies and manufacturing that primarily could sell products to the industrialized countries. This development strategy generated the hard currency earnings and reserves needed to import the technology and investments needed to build up their power sectors. Some less-developed countries (for instance, many in Sub-Saharan Africa) may find it difficult if not impossible to emulate, in the near to medium term, this high-technology, export-led growth strategy. Those countries that cannot implement such a plan need to focus on integrating power sector development with the development of other types of economic activity supportive of economic growth, even if that activity is not primarily export-oriented. For instance, there is a growing recognition that expanding power coverage in underserved communities in urban slums and rural areas cannot be done in isolation. It needs to dovetail with efforts to define and finance enterprises that generate the income and jobs needed to pay for that electricity service. This view has led to a greater integration of programs promoting micro, and small and medium enterprise (SME), financing with programs expanding electricity coverage. These programs are beginning to demonstrate progress in Africa and Latin America, which is illustrated by Ghana's program of rural transformation where rural electrification is an integrated component. [Examine cases for examples of such integration: e.g., Gabon, Morocco, South Africa, Philippines, and such].

A complication is that even countries with well-managed economies are still not immune from the financial contagions that can spread across the world, and which result from mismanagement by some other countries. Financial crises, such as the Mexican financial crisis of 1984, the Asian financial crisis of 1997, the Russian financial crisis of 1998, and the Argentine crisis of 2001, have had damaging affects in entire regions or indeed across the world. The recurrence of various types of financial crises, such as currency crises, sovereign debt defaults, bank failures, major corporate bankruptcies, stock market crashes, and capital flight, have highlighted the financial risks in the international markets and the potential for these crises to project themselves across national borders into neighboring countries or regions, or around the world. These financial crises can have a great impact on power sector reform and development; it is important to understand how these shape the environment for developing the power sector. Major financial losses experienced by key international investors in the Argentine power market (such as EDF, Union Fenosa, AES, and others), after that country's financial collapse, have played a significant role in the pullback of some investors from further investments in the emerging-market power sector in general.

Countries that may have pursued good macro-economic and financial sector policies can get pulled down by the failings of neighboring countries or countries halfway around the world. Because of the problem of financial contagion, there is always the risk of setbacks even in countries that manage their economies well. Nonetheless, indications are that

well-managed countries are able to recover better and faster than countries that are less well-managed, as can be illustrated by the difference in the way Indonesia and Malaysia recovered from the 1994 Asian financial crisis.

The relationship between power sector risk and country risk is worth considering. Generally, the foreign investor's perceived risk of investing in a country's power sector has been bounded by the overall country risk indicators. It was unlikely that investors would allow a well-managed power sector in a country with high levels of country risk, to break through the sovereign credit rating ceiling. However, in rare circumstances a country has made remarkable strides in power market reform, which has in turn investors to regard the low sector risk as more than compensatory for what may have been a significant country risk. Argentina is a notable example. During the 1990s, Argentina's major power sector restructuring and reforms led to large investments by international power investors, at a time when Argentina's overall country rating was relatively low due to the legacy of Argentina's political and economic policies, its history of coups d'état, and the Falklands war with the United Kingdom. Yet, investors apparently overlooked these country risk concerns to some degree and invested at a level beyond what now could be considered prudent. This development is evident in the Edenor case studied in this report. The details of how investors treated country risk in Argentina and other countries with similar experiences warrant further analysis before developing policy recommendations. The lesson suggested by this experience is that a country's overall macro-economic and political framework and the level of country risk cannot be overlooked by those who are considering investment in a sector such as power. Given that the power sector does not earn substantial foreign exchange, its viability is closely interwoven with the political fabric of the country. This link between country and sector risk in an investor's decision making process is worth examining in greater detail.

As discussed in Chapter 2 and presented in **Figure 2-10**, capital flows into emerging markets show a cyclical pattern that is a function of global economic cycles and the optimism and disappointment that is characterized by investors' experience in emerging markets. Also, as discussed in this Chapter, the pullback of foreign investors is not simply due to their negative experiences in emerging markets. Such decisions may be more profoundly prompted by business and financial downturns in investors' home markets in industrialized countries. Foreign investors cannot be expected to expand investment in emerging markets when they are facing a recession in their domestic markets and substantial problems at home with major financial losses, blackouts, capital shortages, and share-value destruction. Shareholders are insisting their firms' balance sheet be cleaned up after the experiencing major losses like the ones suffered by AES, EDF, Union Fenosa, and many other power investors in emerging markets.

Programs to expand foreign investment need to consider the larger macro-economic factors governing capital flows in both the industrialized and developing economies. There may be a need to assess and anticipate when the next business cycle will support expanded capital flows. Similar to how few companies pursue international public stock offerings when the stock market is in a slump, privatizations may need to be delayed when national and international markets are in a recession. During recessions, a country can focus on commercializing its power sector, advancing legal and regulatory policy reform, and improve metering, billing, and collections. This approach is sometimes

implicit in MDB policies, but may need to be more systematic or explicit. MDBs and donors could be more opportunistic in their approach and perhaps more consciously take into account larger political and economic events affecting power market reform and privatization. Contingency planning could also provide alternatives to the main agenda, when it is evident the primary agenda is not likely to succeed in the near term.

The central question from the discussion above is how can these insights help advance future power sector reforms? **First**, these insights can help development institutions better design their assistance, to more comprehensively account for a country's macro-economic policies and its position on the development ladder and business cycle. **Second**, these can help power sector development professionals design their programs by better integrating them with parallel economic development efforts, so that the economic activities that rely on power are factored into a more integrated power development plan. **Third**, these can lead power sector policymakers to better recognize the role country risk plays and how lowered power sector risks generally cannot break through the sovereign credit rating, particularly when substantial foreign investment is involved. **Fourth**, while MDB and International Monetary Fund (IMF) conditionalities for economic and power sector reform are coordinated, perhaps more can be done to more effectively manage interactions between power sector reforms and progress in other areas of the economy.

The redefinition of policies is already under way in light of these lessons, by policymakers in the economic development community. The suggestions above are not necessarily new; rather these are largely self-evident and represent simply a call to fundamentals. The main suggestion is to prepare a more formal process of integration that creates a more systematic dialogue across the different practice areas.

6.1.3. Power Market Framework

The overall power market reform process plays an important role in defining the investment risks in the power sector. The major drive to attract private capital into the power sector of emerging markets has occurred as the power sector in many countries has been going through a profound transformation. The transition from a vertically integrated monopoly business reliant upon regulation (to curb monopoly power) to an unbundled market that sets wholesale prices based on competition, is a major undertaking. This transition has involved going from vertical integration to the single buyer and then to the multi-buyer and multi-seller model. The merits of competition have been clearer in the industrialized world that was expecting more competitive pricing and better provision of services (Stuggins and Krishnaswamy, 2003). In developing countries, the benefits of competition were more difficult to realize because of average tariffs often being below the costs of production and due to high cross subsidies.

Power market reform in Europe and the U.S. has experienced some painful lessons, as most notably seen in the California power market crisis and the collapse of Enron in 2000; the massive power blackout in the Northeast U.S. in 2003; the recent major power outages in such European countries as Italy, Denmark, and Sweden; and the major shareholder value destruction that has taken place in the European utility sector during the past 10 years (UBS-Deloitte, *Will Value Destruction Continue Forever*, 2003). In fact, a strong argument could be made that the pullback of international power investors

from emerging markets is not entirely due to failed markets and investments in emerging markets, but is also substantially related to power market disappointments that have taken place in the industrialized world. The retrenchment of major international power investors such as EDF, Mission Energy, Enron, Southern Electric International, ABB, Mirant, Union Fenosa, Tractebel, Energy, and NRG, is partly due to major problems in the domestic markets of the industrialized world, particularly in the U.S. and Europe. As one commercial banker stated, the losses experienced by commercial banks in power sector transactions were substantially greater in the industrialized markets of the U.K. and the U.S. than it ever was in emerging markets. Commercial banks generally survived most of the power project failures by recovering the loans due to a strong guarantee and risk insurance framework backed up by MDBs and ECAs.

The World Bank's evaluation of its power sector reform efforts has commented that the complexity of the transition from vertically integrated monopoly structures to market competition was often underestimated and that insufficient assistance was provided (*Private Sector Development in the Electricity Sector: A Joint OED/OEG/OEV Review of the WBGs Assistance in the 1990s*, 2003). Some could argue also that new power market models were exported to developing countries at a time when they did not have a well-established track record of success in the industrialized world. Western investors in power were often attracted to emerging markets by expectations they could earn higher returns in foreign markets than domestically. There was an insufficient understanding of the risks in emerging markets and the difficulty of realizing substantially higher returns in these markets to reflect these risks. An area of interesting investigation could be the extent that power market setbacks in industrialized countries were linked to setbacks in emerging markets. If setbacks are significantly attributable to the power sector problems of transitioning to competition in the industrialized world, this would imply that major power sector capital flows from the industrialized world into emerging markets would likely not occur until the financial health of the power sector in the industrialized world improved.

As result of the lessons learned from the experience worldwide, there appears to be a growing recognition that introducing competitive markets in the power sector of developing countries may need to be part of a longer process and a proper sequence of reforms.

- ❖ Over 100 small, developing countries (e.g., the Dominican Republic, Moldova, and Jamaica) have less than 1000 MW of capacity and thus do not have the market depth to effectively support unbundling generation and distribution to the level that was being promoted (Bacon and Besant-Jones, 2002).
- ❖ Many developing countries do not have the legal and regulatory history and capacity to effectively implement the competitive market designs being promoted in the short-term and require longer transition periods than development institutions have planned for.
- ❖ Bid-based competitive power pools based on spot pricing are too complex and abuse too difficult to prevent, for these to be applied in most developing countries. Developing countries with rapidly growing demand and capacity shortages are also inappropriate for competitive power pools (Bacon and Besant-Jones, 2002; Besant-Jones and Tenenbaum, *California Lessons Learned*, 2002);

- ❖ The political structures and governance in the power sector in some countries has had a history of subsidies and political patronage in the power sector, which was untransparent and resistant to the reforms necessary to meet investors' expectations.
- ❖ Competition for entry into the power sector on a contractual or regulated basis continues to be the primary way that competition is achieved in most developing countries, particularly through tenders for IPP projects, divestitures, and concessions. This distinction between competition within a market and competition for a market is addressed in the literature of Professor Stephen Littlechild of the U.K. (Bacon and Besant-Jones, 2002).

The overall importance of promoting competition is less in question; what is more debated is the process and time schedule for introducing market competition into developing-country markets facing multiple challenges. From investors' perspective, attempts at introducing extensive competition at not only the entry but also wholesale and retail levels, in markets with high levels of risk and uncertainty, has proven to be problematic. During the period of growth and relative market optimism between 1990 and 1997, some investors overlooked the underlying risks in these markets, which only later, in the period following 1997, came back to bite them. While many of these investments were not in power markets that were competitive at the time, many of the target countries were in the process of defining and establishing competitive markets over time and were expanding their power sector in anticipation of major growth.

In hindsight, the lessons from the excesses of the 1990s are becoming clear. The experience of AES as a leading company in the international power business is instructive. The management structure of AES was highly decentralized, thus allowing its many subsidiaries to pursue business with limited oversight by the parent company. The focus was on expanding market share. During the boom years, AES was one of the most aggressive competitors in the international power business. Many other investors such as Enron, Mission Energy, Southern Energy, Tractebel, and Union Fenosa, also pursued an aggressive international strategy that did not fully appreciate the risks inherent in this business. Only when the inevitable correction took place in the market did AES, Enron, and many other companies see the shortcomings of their strategies, and only then did their shareholders face serious financial setbacks.

Because of these lessons learned, there are various corrective measures being taken that reflect the needed pragmatism for achieving sustainable power sector development.

- ❖ The drive towards creating competitive markets is tempered in some countries with the recognition that the single buyer model is still viable in smaller and less-developed markets and that deep pool competition is limited only to more-developed countries. Where the single buyer model is still required, the design of power purchase agreements (PPAs) can be improved to make these more competitive and to give countries more flexibility in renegotiating their commitments as competition begins to emerge. (Halpern, Fiona, and Wolfe, 2003). The transition from the single buyer to a multi-buyer and multi-seller market requires well-designed market rules, bilateral contracts with a balancing market, and vesting contracts for the first market entrants.

- ❖ Regulatory regimes that initially emphasized independence and training of regulators to effectively perform their functions have come to recognize that “independence is not enough.” In the initial power-sector development phase, governments need to give investors more certainty in the form of regulations by contracts. The underlying principles need to be codified in primary or secondary electricity laws and the tariff methodology and the rate-review process clearly specified. There is now emphasis on regulators setting prices under a transparent, predetermined process that involves multiyear tariffs that give investors greater certainty (Bakovic, Tenenbaum, and Woolf, 2003). Second-generation regulatory reform appears to be under way in some countries
- ❖ The single focus on private investment and power sector privatization has shifted to recognition of the continuing role of the public sector and the need for public–private partnerships to advance reforms in countries that cannot attract the needed levels of private investment.
- ❖ Sequence and timing are recognized as crucial to the long-term sustainability of power sector reforms. The key stages call for (a) establishing the legal regulatory framework and performing the power sector restructuring that needs to be done in advance of privatization; (b) defining the modalities of competition in a way that is tailored to what the country can effectively implement; (c) limiting the number of long-term power-purchase contractual commitments made by a single buyer, to leave open the potential for competitive markets in the future; and (d) improving collections and raising tariffs at the retail distribution level before privatizing most of the generation, through some appropriate form of public-private partnership, depending a country’s level of risk. (Bacon and Besant-Jones, 2002; Stuggins and Krishnaswamy, 2003).

The above lessons and insights have led to a more systematic, country-specific approach to power market reforms, which takes greater account of the risks faced by investors. Most of these insights have already been recognized by the power-sector development community and are being internalized into new policies. Many of these insights were in the *World Bank Guidance Note* that was presented at the World Bank’s Energy Week in 2004. They are restated here as a confirmation of their validity and to generate further discussion where debate may still exist.

In developing a power sector strategy going forward, it is important to fully understand the perspective of the private investors and design a program that recognizes their justifiable needs while not satisfying all their desires. Power sector investors face two particularly challenging risks in developing countries: regulatory risk and transitional risk. These two risks need to be addressed in order to fashion a power-sector reform plan that is likely to be successful. The focus on regulatory and transition risk assumes that all markets are at some stage of transitioning from a vertically integrated power market to a single buyer and then eventually a competitive power market. There might be some small, undeveloped countries, which may not seek to make this transition in the near term. These few instances may require special consideration outside of this discussion.

Regulatory Risk. While regulatory risk is present in any country, it is particularly serious in developing countries. This reflects an often poorly developed regulatory system, and the legal framework protecting private investment may be either weak or

unfavorable to private sector interests. In addition, in many developing countries, regulatory institutions, frameworks, and methods are in the early stages of development and do not offer a large, well-established body of precedents to help investors and operators predict regulatory events. Finally, in some countries, regulators are not truly independent and are subject to political interference.

Transition Risk. A second major risk facing investors and operators in emerging market power sectors is transitional risk. Transitional risk is actually a composite risk that captures the various risk events well known to occur during the transition from a deeply troubled state-owned utility to a well-managed, rehabilitated private utility. Regulatory risk is imbedded within transition risk, but it is worth breaking out on its own account. The risks that result from the common features of a transitional period include

- ❖ the need in many cases for real tariff increases over a relatively short period of time;
- ❖ the need to enforce collections when these efforts may have been intermittent or weak;
- ❖ the requirement to address consumers' dissatisfaction with being charged for service, when the service quality and reliability improves only gradually over several years;
- ❖ the negative reactions from introducing volumetric charging, metering, and disconnection or regularization of illegal connections;
- ❖ the need to address the imbalance between necessary cost increases and delays in corresponding revenue increases (cash-short public operators often under-spent on many key activities of the business, such as capital investments and operations and maintenance, which urgently needed attention);
- ❖ the need to build institutional capacity in the Ministries, regulatory agency, and utility ("stroke of the pen" reforms are meaningless unless the capacity to implement these is in place); and
- ❖ the challenges of reorienting and retraining employees who may not have adequate skills or incentives to turn the business around.

It is evident that **transition** risk – the cluster of potential risk events that are reasonably common during the transition from a deeply troubled to a self-sustaining utility – is perhaps one of the most serious risks facing investors in emerging-market power projects. It is clear that many of the major risk events in recent years in power sector projects have occurred during the transitional period, and have been driven by the complex set of challenges and problems characteristic of the transition process.

When there is significant **regulatory** and **transition** risk or uncertainty, investors and operators seek protection from these risks. Recent developments with power projects in Argentina, Brazil, Georgia, India and other countries have demonstrated to investors that regulatory and transition risks are very serious, and that these must be mitigated in advance of investing in a project. There are several possible short-term approaches to mitigating regulatory risk for power projects. Two approaches that seem to work are (1) use of regulatory settlements or regulation by contract, and (2) public-private partnerships

where the private sector focuses on investments in management in close cooperation with the public sector and MDBs that focus on major capital investments.

A **regulatory settlement** is a multiyear, legally binding regulatory and price control arrangement that is established prior to investment in a project. An example is the Delhi electricity-distribution privatization transaction, where a government order established the main features to be followed by the Delhi Electricity Regulatory Commission for the first 5 years of the project. In this case, investors and operators believe the initial regulatory settlement provides enough time to reform the sector before less prescriptive regulatory rules are put into practice. Other current examples of a regulatory settlement are the regulatory arrangement being put in place by the Electricity Regulatory Commission of Jordan and the leasing of assets by Dalkia in Lithuania.

Alternatively, **regulation by contract** has been practiced in numerous concessions, affermage, and lease contracts as a viable solution to addressing investors' concerns about regulatory risk (Bakovic, Tennenbaum and Wolfe, 2003). Under a concession, affermage, or lease contract approach, the main regulatory and pricing provisions are established as contract terms, and the consequences of non-adherence to these regulatory provisions are also specified in the contract. Regulation by contract has been most common for water projects. Examples where regulation by contract has been used for electricity-sector private participation include Lydec in Morocco and SEEG in Gabon (both examples of multi-utility concessions in Francophile (countries of Africa).

It is important for investors to be certain about the regulatory rules and procedures that will prevail prior to making an investment. In many instances where the rules and procedures were not established prior to an investment, the operator and investors have sustained large financial losses due to unfavorable regulatory orders. The key point is that some mechanism for mitigating regulatory risk and uncertainty is needed in countries without strong regulatory institutions and a substantial record of reasonable regulatory treatment of utility owners and operators. In the past, investors were willing to assume this risk. Now, after the events in Orissa (India), Brazil, Argentina, Georgia, Indonesia, and Ukraine, investors demand higher levels of risk protection. The leading concerns for electricity projects are regulatory settlements and regulation by contract.

There are several project-design features important to mitigating transitional risk. These factors have been present in a number of the successful cases cited in this study. The features include the following:

- ❖ **A regulatory settlement or regulation by contract.** This was done in the North Delhi project in India, the Lydec project in Morocco, and the SEEG project in Gabon.
- ❖ **A restructuring financial plan.** This will generally need to include subsidies paid to the operator during the transitional period. These subsidies can be designed to decline in each year of the transition. This approach is present in the North Delhi project in India, the Edenor project in Argentina, and the Pamir project in Tajikistan. Time will tell if these restructuring financial plans succeed in places such as India and Tajikistan where the projects are new, while Edenor has not been able to fully run its course due to the economic collapse in Argentina.

- ❖ **Allow private investors initially to limit their investment to management and operations** during the transitional period. In order to limit risks, the investors may seek to invest only in developing operations management, the utility’s technical and commercial systems such to cover billing and metering, the procurement and installation of software and hardware to implement these systems, commitment of qualified corporate staff, and retraining of employees to work with the new utility systems. Separating capital investment from management investment is generally accomplished by the use of lease or affermage contracts in which the operator’s capital investment responsibilities in the early stages of the project are very limited. The Lydec project in Morocco and the SEEG project in Gabon had elements of this separation of management and capital investment.
- ❖ **Incentives to the operator**, which are directly associated with key business performance variables. The key business-performance variables would generally include increased cash collection per unit of electricity input to the system, and reduced cost per unit of electricity input into the system. This type of incentive is strongest in a divestiture, where the operator has full operational control over the business, but it can also be present in leases and affermage contracts. Such incentives are generally the weakest in management contracts.

In recent years, major international utility firms have dramatically scaled back their investment and operational exposure in emerging markets. In addition, many firms have stated to donor agencies their reluctance to re-enter emerging markets unless the terms of investment are fundamentally changed. Key suggestions coming from international operators include the following:

- ❖ **Use long-term, incentive-oriented contracts** such as leases and affermages for customer-facing businesses such as potable water and electricity distribution.
- ❖ **Ensure that the contracting period is long enough** so that the operator has an opportunity to benefit from the turnaround of the business and to profit from the substantial investment in management and in information technologies and systems needed to turn the business around.
- ❖ **Fund capital investment** – at least until the business is rehabilitated – through public sources, not on the balance sheet of the private operator.
- ❖ **Minimize regulatory risk** through long-term contracts that include regulatory features, or through an explicit agreement on the regulatory rules for a reasonably long transition period.

The use of medium-term regulatory arrangements, putting the obligation for capital investment on the public sector during the transitional period, and providing incentives to achieve “business turnaround,” are three design features present in many of the successful cases.

6.1.4. Financial Markets Framework

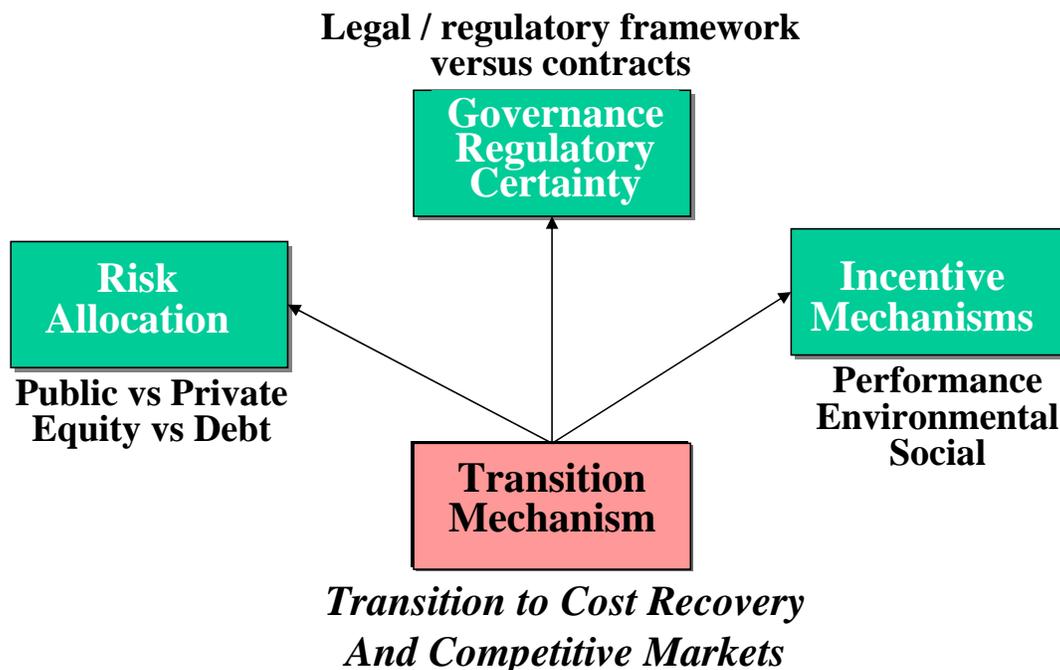
Mobilizing private capital into the power sector of emerging markets is also affected by the extent that domestic capital markets and the banking sector have evolved to where they can effectively channel domestic savings into domestic infrastructure. The role of domestic

capital is critical to the development of the power sector and requires parallel financial market developments to accommodate the growing needs of the infrastructure sector in general and the power sector in particular. A full discussion of the capital market development in emerging markets and how these markets can be better tapped to support investments in the power-sector reform process is covered at great length in Chapter 4.

6.2. PRIORITY POLICIES FOR ENABLING FRAMEWORK DEVELOPMENT

Defining policies that will address the barriers and risks holding back private investment requires addressing the enabling framework before defining ways to mitigate specific risks for individual transactions. The challenge is not how to mobilize capital in its own right but how to create attractive investment opportunities in the power sector that lead to sustainable investments. It is now recognized that privatization or private capital mobilization per se is not the goal or the primary indicator of success, but that the objective is sustainable power sector development effectively fueled by private capital. This process is achieved by identifying and framing the right enabling environment and then incentivizing private investors to be agents of reform, almost unwittingly, as part of their normal commercial operations. The challenge is getting the risk management, governance, and incentive frameworks right, as depicted in **Figure 6-1**. Given the competing political and economic interests, this process of allowing private sector interests to expand their role requires a transition framework that can take years to implement. Progress should be defined in incremental stages rather than expecting dramatic outcomes in the near term. Engaging the private sector also may involve incremental stages, as discussed later in this chapter.

Figure 6-1. Power Finance Priority Factor



Defining this policy will require a better understanding of how each country's level of political, economic, financial, and power sector development will guide what policies and mechanisms are appropriate. A country's political, economic, and financial sector development will shape the power-sector reform agenda. The historic approach of applying more standardized power-market reform models across many countries is being replaced by an approach that accounts for a broader set of factors and adapts the models to the country's conditions.

Development professionals in the power or infrastructure sectors may likely regard this more comprehensive approach as well beyond their purview. This type of policymaking requires more dialogue and coordination of policymakers across sectors and professional spheres. This process is often counter to how institutions function and will be challenging. Yet to achieve major reforms and mobilize the level of capital required, there needs to be greater coordination and innovation across disciplines and sectors. To overlook this important need and opportunity could lead to sector-focused approaches yielding results that do not fulfill the scope of the challenge.

The first consideration is to address the overall enabling environment. Some countries are much further along the path of development than others, and thus present fewer challenges. Countries at earlier stages of development will call for different policies than more advanced countries. Rather than designing policies that assume development will take place and are thus hostage to any failures, these policies need to be pragmatic and based on rewarding progress. This process involves the five following basic suggestions.

1) Apply an understanding of the necessary macro-economic conditions needed to support private capital flows to the power-sector development process. While the larger macro-economic policies that support private investment may be beyond the purview of policymakers focusing on the power or infrastructure sectors, it is helpful to realize the larger conditions are conducive to capital flows. Policymakers in the power sector can then better design their programs to be compatible with larger market conditions. Macro-economic stability is important to overall economic development, domestic capital market formation, banking sector development, and investment promotion overall and in the power sector in particular. As discussed in Chapter 2 and presented in **Figure 2-10**, an understanding of the business cycles that lead to large capital inflows into emerging markets followed by major capital outflows is important to consider in the power privatization strategy. No matter how dynamic a policy is established for attracting private investment into the power sector, it will yield few results if it is promoted at a time and place when most larger macro-economic indicators are decidedly unfavorable.

Sometimes countries are pushed to advance reforms and privatization without sufficient attention to whether the larger macro-economic conditions are sufficiently supportive. If privatizations are pushed through at a time when the government is unlikely to attract serious investors, the government could be forced to sell its assets to second- or third-tier investors. In the long run, these investors may actually not perform as intended in the market, and thus may undermine reforms. Market timing is common in the private sector. Private companies are more reluctant to implement an initial public offering (IPO) or attempt to raise capital on the stock market when the economy and stock market is in a

major downturn. They are less likely to get a fair price for their offering. Similarly, if governments are expected to privatize at a time when it is unlikely they will attract serious investors, the process may need to be reconsidered.

Given the cyclical nature of capital flows into emerging markets, it would make sense for the donors and MDBs active in emerging markets to more carefully temper the policy pressures in the power sector to reflect the larger macro-economic conditions. If there is a sustained downward cycle in the flow of capital into emerging markets, a strong policy emphasis on reforms that rely less on privatization or the expectation of substantial private investment, is naturally advised. While this adjustment happens naturally as donors are forced to face the shortage of investment, there would be value in considering a more proactive way of addressing these market cycles. Alternative plans need to be devised for countries that cannot attract major investment due to high levels of systemic risk or due to its economy being at the low point of a business cycle. During periods when private investment is not flowing, policymakers can consider intermediate actions such as commercialization of state-owned utilities (when no form of private-sector participation [PSP] is possible), incentive-based private-sector participation contracts (e.g., management contracts, affermage, and concessions), limited recourse project financings (which are often viable on a limited basis even in very risky markets or during a business downturn), or various forms of public-private partnerships.

The other side of the cycle is also worth considering. In a period of strong economic expansion with a high degree of investor exuberance, there might be a need for the donor and MDB community to dampen this exuberance with prudence and realism. Policies that try to limit the excesses could be advised. For example, the World Bank promoted policies (as demonstrated in 4 of the 20 cases analyzed, i.e., Jorf Lasfar in Morocco, AES Haripur in Bangladesh, Azito Power in Cote d'Ivoire, and the Phu My 2.2 in Vietnam) that constrained the amount of capacity additions allowed in a market. These policies were intended to prevent governments and developers from pursuing more power generation than the market could bear. Failure to exercise this restraint could lead to a dramatic correction at later date.

This topic of macro-economic coordination is complex and can only be addressed in an introductory manner in this report. The purpose here is to flag this issue as an area warranting further consideration and investigation.

2) Apply country-specific transitional and incremental strategies when designing power-sector reform programs. Power market models need to be designed to better fit a country's particular characteristics such as market size, fuel mix, legal tradition, degree of expansion needs, adequacy of transmission infrastructure, and stage of development. It could be argued that the tendency to require a country to conform to the power sector models that are in various stages of development if not experimentation in the industrialized world has not shown sufficient success. This means that some smaller and less-developed countries may decide to not unbundle their power sectors, may not set up an independent regulator, and may not privatize in the near term. The success story of Gabon, which chose this path, illustrates why it may be necessary to be more flexible in the policies being promoted. On the other hand, larger and more advanced countries may well seek to move to unbundling, independent regulation, privatization, and competitive

market formation. Yet these countries need to be able learn from the mistakes taking place in the industrialized world that have set back international power sector investors in their own markets.

There is a debate about whether accelerated and more radical reform programs are preferable to a slower and more incremental approach. The poor collections, lack of cost recovery, power outages, major losses, mounting debts, and underinvestment in many developing countries, can be seen to justify accelerating the unbundling and privatization process. Radical measures, however, are only fruitful if they are effective. In a number of developing countries (e.g., India, Ukraine, Georgia, etc.) such radical measures could be seen as not only often falling well short of expectations but also setting back the reform process by leaving the country with unfulfilled promises that in turn undermine political support for reform. In such instances, there might an argument to take a more measured and incremental approach. Encouraging public-private partnerships (PPPs) that incentivize whatever level of private sector participation is feasible, are worth exploring as an alternative. In less-developed countries, the focus could be more on PPP and PSP to achieve commercialization objectives before focusing on market designs intended to increase competition beyond the entry level.

In some less-developed countries, a transitional framework may be needed that recognizes the two separate and not necessarily compatible initiatives being promoted: reforming a power sector that is not commercially viable, and introducing a competitive power market framework. Implementing both of these transitions at the same time is asking a great deal of many developing countries. The transition in the industrialized world first involved commercialization; only later, after utilities had demonstrated viable commercial performance over many years under a regulated monopoly model, was the new power sector model of competition introduced. It is a daunting exercise to require a less-developed country to implement both of these initiatives simultaneously in a sector that has powerfully competing political and social interests and an undeveloped legal, regulatory, and judicial framework. Therefore, the limited institutional capacity to implement reforms needs to be factored in when designing such programs.

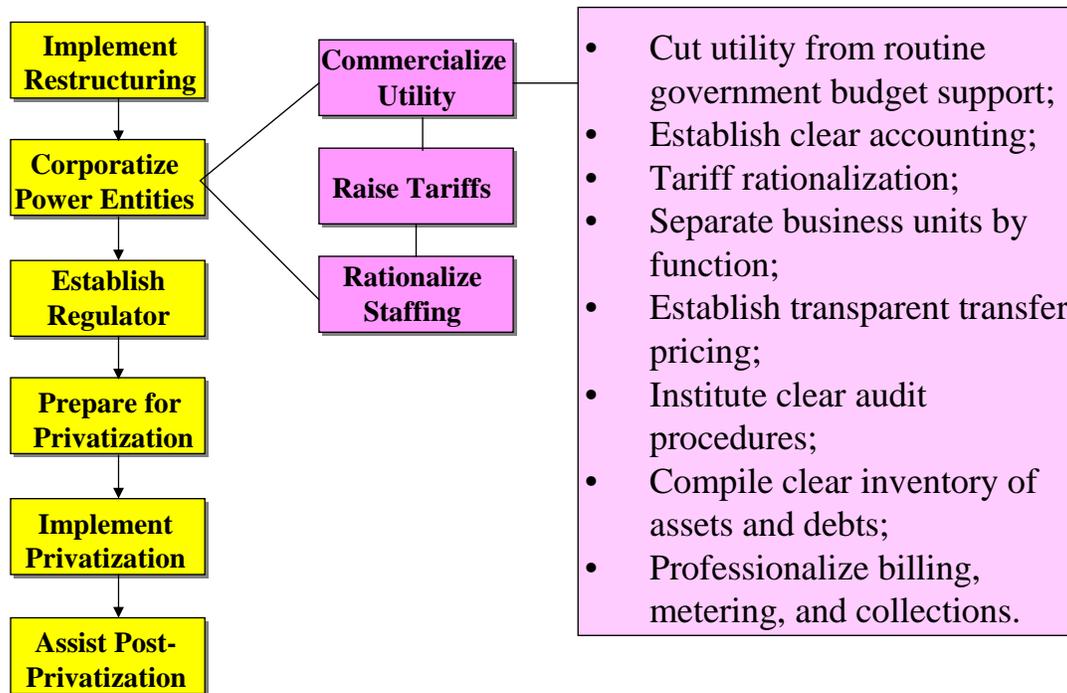
Promoting a high level of competition (e.g., a deep pool based on a spot market) may well be inappropriate in a country that has a power sector with serious financial losses, an inadequate legal and regulatory framework, and a chronic history of poor governance (as was promoted by the World Bank in such countries as Ukraine). Privatization under these circumstances will have difficulty attracting serious investors. Even if investors motivated by inflated optimism enter the market, the chances these investments will succeed are low. The market design and the extent to which competition is introduced needs to take into account the level of risk in the market and the ability of a country to effectively attract and retain investments. In the early stages, it may be better advised to limit competition at the entry level, or only to wholesale level, until the market matures further.

While alternative measures may not be feasible given the extent that the donor community has launched advanced restructuring programs, the following approach is worth considering in those markets where this option is still feasible. Before proceeding to full asset privatization, it could be preferable to implement specific transitions prior to asset privatization. While there is often a strong imperative to privatize quickly in order

to catalyze commercialization and reforms and remove loss-making enterprises with accumulating debts from the books of the government, speed in the privatization process may be counterproductive.

As reviewed above, implementing reforms prior to privatization can be done in various ways: (a) through corporatization and reforms of a state utility, where possible, as preparation for privatization; (b) through management contracts where private investors are unable to be mobilized; or (c) through an affermage framework where the utility is retained in state hands but where private operators are introduced to improve the operations of the company. This approach is discussed further in the next section. In the less-developed countries that are the focus of MDB and donor activity, there could be more priority given to a series of intermediate actions, as shown in **Figure 6-2**. There have been attempts to enhance this commercialization process through utility partnerships linking an emerging market utility with a utility in the industrialized world. This linkage allows sharing of management expertise, experience, and related training and technical assistance. These partnerships have had mixed results, however, and thus cannot be seen as a cornerstone of the commercialization process.

Figure 6-2. Intermediate Power Sector Reform Stages chart



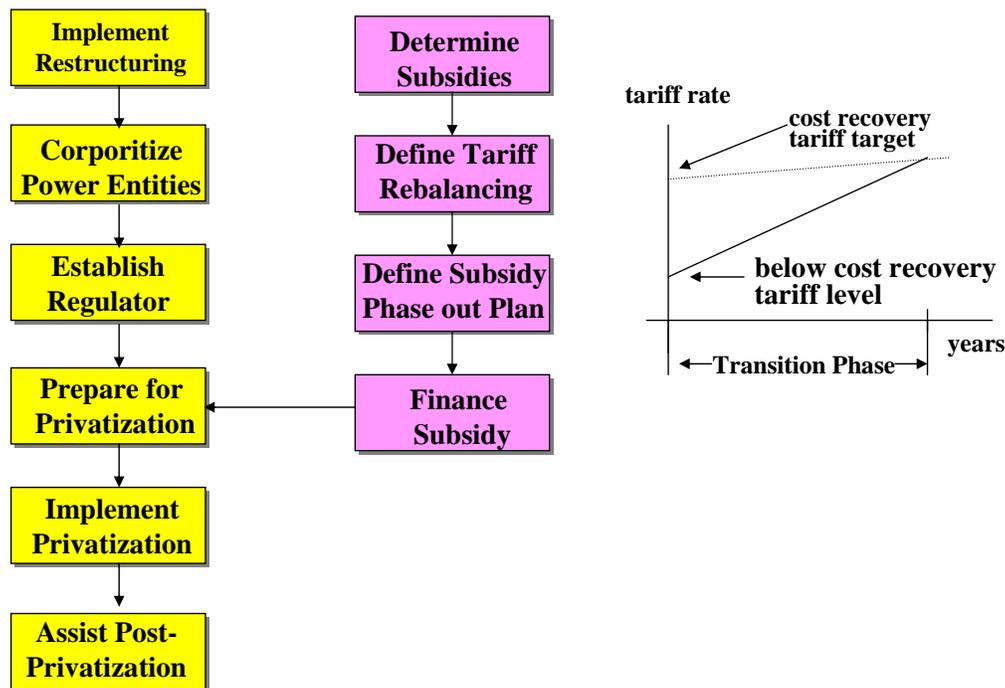
Deloitte Emerging Markets Group

The case analysis confirms that taking these initial reform measures prior to privatization was important to achieving success in cases, particularly those involving complex governance issues, particularly at the customer-facing distribution end of the business. This was particularly the case in the North Delhi privatization in India and in the SEEG concession in Gabon. Requiring the private investor to assume full responsibility for the

painful actions (e.g., tariff increases, improved collections, and disconnections, etc.) that were the result of years of public sector mismanagement has invited a political backlash in some countries not only against privatization but also against foreign and private investment.

If there is a strong commitment to implementing commercialization and restructuring at the same time, there needs to be a full recognition that a transition period is required and must be supported with appropriate incentives and financial support. There will always be the risk the transition will fail after years of trying and that a country may revert to reconsidering established policies. The key elements of the transition period are shown in **Figure 6-3**. This transition acknowledges it is not generally feasible to go from a tariff level well below cost recovery and where many consumers are relying on power they pay little or nothing for, to full cost recovery in a short period of time. A transition phase of a number of years may well be required.

Figure 6-3. Power Sector Development Tariff Transition Chart



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It can be challenging to design the transition phase and the appropriate incentives in a way acceptable to a country's government. There is a need for clearly revealing the level of subsidy and providing a framework for phasing these often-hidden subsidies out over time. The experience in Karnataka, India in designing and implementing the distribution margin transition approach to reforming and privatization of the power distribution sector, has faced a continuing series of political challenges. From this attempt at instituting this approach for privatizing distribution companies serving both urban and rural customers, these lessons have been learned: (a) political leadership is critical to pushing through a solution, which can be undermined in the absence of leadership, that

all parties can live with; (b) investors have shown active interest in bidding on an arrangement where the government shares in the transition risk over a 5-year period; (c) tariffs do not need immediate rebalancing but do need subsidies to allow for a gradual transition to cost recovery; and (d) investors are reluctant to take on regulatory risk and thus need a government order to reduce the risk.

An important additional recommendation evident from the cases, one that has also been commented on by individual investors, is the importance of careful electricity demand analysis. There has been a tendency in some countries for demand projections to be inflated, thus leading to contracting for excess capacity. There are vested interests both in a country and in the international investment community to inflate demand projections and thus justify extra capacity. This tendency needs to be moderated wherever possible because it places an unsustainable financial burden on the central buyer that has contracted for power. It could also lead to calls to renegotiate PPA tariffs downward in the face of surplus generation. For this reason, four of the cases studied involved MDBs playing a key role in sector governance by putting constraints on the government in terms of adding new capacity without adequate justification. These four IPPs were Jorf Lasfar in Morocco, AES Haripur in Bangladesh, Azito Power in Cote d'Ivoire, and the Phu My 2.2 in Vietnam. This constraint took three forms: (a) requiring government utilities to meet minimum debt service ratios, (b) requiring the government to inform the World Bank of intentions to expand capacity above the recommended sector level, and (c) monitoring the levels of foreign-exchange reserves to ensure these did not fall below a certain level.

3) Apply power-sector financing models that better fit a country's market conditions and risk. It is evident from the experience over the past decade that power market designs and financing models were sometimes promoted with insufficient regard to a country's level of development and risk profile. Greater attention could be paid to designing a financing structure to be compatible with a country's risk profile. While the financing structure may not have been well designed, this does not necessarily mean that private investors did not invest. The assumption that private investors necessarily and always act in their own best and most prudent interest has been demonstrated not to be true. During periods of exuberance and optimism, private investors can sometimes become short-sighted and make decisions that not only are not in their best interest but can also lead to investments that do not result in the best outcome for the country (the experience of private power investments in India in general and Enron's Dabhol project in particular can be seen as an example). The analysis presented in Chapter 5 and in **Figure 5-3** illustrates that some investors, e.g., AES, may have often been preoccupied with maximizing market share to the point that they did not fully take risk and return into account in their investment decisions. This fact raises the question, do the multilateral and bilateral development institutions have a greater responsibility to craft policies that better balance the interests of both the public and private sectors by reducing the volatility of power sector financing in developing countries?

The IPP project financing model has proven to be highly versatile and applicable across the full spectrum of country and sector risk levels. The IPP model is versatile. Its limited recourse project-financing structure is backed by security agreements supported by government guarantees, MDB guarantees and insurance, and international arbitration,

giving investors and lenders a high degree of comfort. This design has been applied widely in very risky markets; this point is illustrated by the cases profiled in this study: the IPP projects profiled in Bangladesh, Tanzania, Cote d'Ivoire, and Tajikistan. The IPP model came from, and has been widely used in, the industrialized world, where there is minimum country risk. The IPP model continues to be popular (despite predictions of its declining role) precisely because it effectively provides comfort to investors and lenders when they are facing a high degree of uncertainty.

The IPP model, however, has its shortcomings. The IPP model in emerging markets typically requires long-term PPAs (since merchant plants generally will not be acceptable to lenders) either with a single buyer utility or with a creditworthy industrial off-taker. This model presents two types of stranded-asset problems in emerging markets: (a) if the power market is moving towards competition, there is the risk that the tariffs agreed to in the PPA may be high relative to the wholesale power market price that emerges after competition; and (b) there is always the risk of a major currency devaluation leading to unsustainable escalation in the hard-currency denominated portion of the tariff. It is important to note that currency risk also exists for other types of power project development (e.g. public projects) financed with foreign-currency debt and when power plants are fired with dollar-denominated fossil fuels. Given the concerns mentioned above and the global trend towards competition, the IPP model may continue to be applied, but it is likely to evolve in ways that will seek to reduce the stranded-asset risks defined above.

In some cases, the continuing success of the IPP model could be more attributed to the lack of progress with power market reform in some countries over the past decade. The IPP model has also been used to cherry-pick the most creditworthy customers (as was well-illustrated by the Termobahai case in Brazil), which could contribute to undermining the financial viability of those utilities that must serve the larger consumer base with a less certain payment record. If the IPP model is allowed to be applied unfettered in a market, it may contribute to a growing divide in the market between customers who receive reliable service and can pay for it and customers who receive unreliable service they often cannot pay for. While this phenomenon demonstrates normal market forces at work, it is not clear how this will help the World Bank achieve its Millennium goals, in the absence of strong economic growth in emerging markets.

In designing power market and PSP models in emerging markets, there are two important questions to ask: (a) how much do particular power market and PSP models call on the private sector to risk capital, and (b) what level of risk can the private investor reasonably be asked to assume, given the level of the country's development. If private investors are induced to take on far more risk than is prudent and sensible in a particular market, there is less likelihood of a sustainable power-sector development program. Private investors have a history of taking more risk than is prudent during booming investment periods. For this reason, it is advisable for development policymakers to consider this question carefully in designing their power sector policies in emerging markets so as not to create a situation that will needlessly perpetuate the boom-bust cycle fairly common in emerging markets. The range of private-sector risk assumption that is required goes, from least to most, a management contract, an affermage, an IPP, a concession, and a divestiture; this spectrum has been widely analyzed and recognized. Management

contracts do not call on private companies to put capital at risk. This model is the minimalist option for private sector participation. An affermage or lease involves private investors being exposed to operational risk but avoiding capital investment risk. An IPP requires that investors take on commercial risks but shields the investor from most political, legal, regulatory, market, and force majeure risks. A concession involves an investor as the concessionaire taking on both operational and capital investment risk but minimizing its exposure to certain market and revenue risks; a concessionaire often receives a more certain tariff regime than in a divestiture. At the highest level, a full divestiture requires the investor to take on the full spectrum of risks.

The problem investors face in the power sector is that they cannot earn a fully risk-adjusted return on investment. Unlike in other industries, the returns in the power sector of emerging markets are much harder to adjust to reflect risk. With electricity seen as a social good in many developing countries, and since the power sector is often used as a vehicle for delivering subsidies and political patronage, it is not feasible in many cases to raise tariffs in risky countries to earn returns based on higher risks. Power is typically regulated by an agency that is more sympathetic to the needs of the government and consumers than investors and hence will not entertain high returns unless pressured into it by the central government and the international financial community. As a result, investors in power essentially face a market where returns on investment are limited and very hard to expand. Investors have tried in various ways to extract higher returns from power investments through completing construction ahead of schedule, efficiency gains, cost reductions, etc. However, these higher returns generally are short-lived, given the regulator's imperative to transfer those savings on to the consumer.

In the face of this market reality, investors and lenders have to focus on how to minimize risks. The policy decision about what level of risk assumption is acceptable to ask investors to assume is important. A general rule of thumb could be that *investors should only be invited to put capital at risk to a point that is reasonable for the financial return that they can be expected to earn in a particular market and transaction*. This would therefore mean that it might be inappropriate, for example, to promote full-scale divestitures in markets with very high levels of risk, because investors will have great difficulty earning a return to cover that risk. It will also require the MDBs and ECAs to provide major guarantees and insurance cover in places where it may be difficult to yield optimal performance. The experiences of AES in Georgia and Tractebel in Kazakhstan, for example, could be seen as supporting this concern. When investors are induced by international donors to put major capital at risk in a market that is unprepared to offer the returns required, these investors may well face some form of creeping expropriation and extortion over time. This process will often lead to years of financial losses and can eventually lead investors to abandon their investments and leave the market altogether, to the detriment of the investor and the country.

While it is not feasible to come up with a formulaic or prescriptive approach to understand how to apply appropriate financing models in emerging markets, it is worth trying to frame some general guidelines that call for more careful, case-by-case consideration. There will always be exceptional circumstances that could overrule these guidelines, yet this principle should at least be tested in each case before proceeding. **Figure 6-4** attempts to frame such guidelines by suggesting what financing model may

be most appropriate in two separate dimensions: (a) investment sub-sector and (b) the country's stage of development. Investment sub-sector is broken down into generation, transmission, distribution, and expanding service coverage (a subset of the distribution business). Country stage of development is broken down into three categories: low income, lower-middle income, and upper-middle income (as defined by the World Bank). In each of these categories there is also a breakout of the level of indebtedness into less, moderately, or severely indebted. While this debt sub-classification is not factored into this analysis, it is an issue worth considering. The types of financing structures that could be advisable to apply in the cross-section of these two dimensions are provided in the matrix shown in **Figure 6-4**.

Figure 6-4. Power Financing Structures

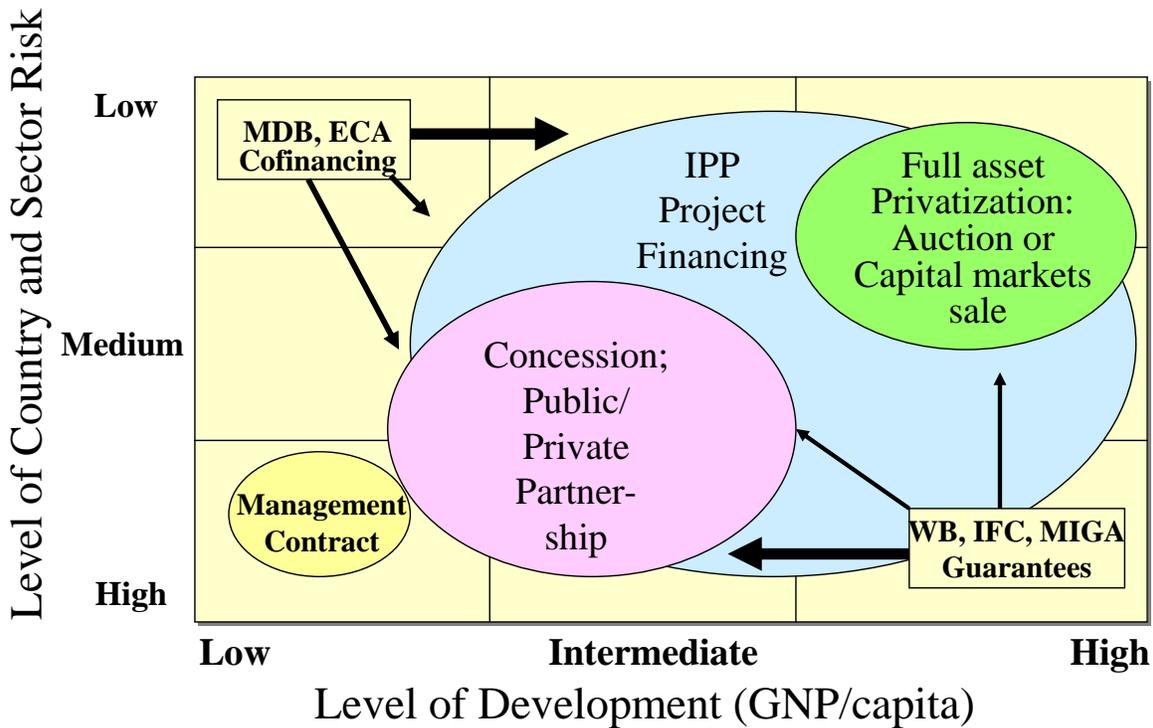
Investment Type	Country Stage of Development		
	Lower Income	Lower Middle Income	Upper Middle Income
<i>Generation (greenfield)</i>	<i>PF / C</i>	<i>PF / C</i>	<i>PF / C / D</i>
<i>Transmission (existing)</i>	<i>MC / SO</i>	<i>MC / SO</i>	<i>SO / C / D</i>
<i>Distribution (existing)</i>	<i>MC / L / HST</i>	<i>MC / L / C / LST</i>	<i>C / D</i>
<i>Power Poverty (expansion)</i>	<i>UI / NGO</i>	<i>UI / NGO</i>	<i>UI / NGO</i>

Legend	
SO = State Ownership Retained	UI = Utility Initiative
MC = Management Contract	NGO = Non-Governmental Org
L = Lease – Affirmage	C = Concession
PF = Project Financing	D = Divestiture

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The sub-sectors of generation, transmission, and distribution each have their own risk profile. Generation projects face market risk, which can be mitigated through a PPA or bilateral contracting mechanisms, as has been done in many of the cases presented in this study. Transmission is a monopoly wires business that requires stable regulation. The distribution sector is retail customer-facing and encounters the challenge of implementing painful reforms with customers who are often resistant if not hostile to measures that raise tariffs and disconnect non-payers. The distribution business also tends to have large numbers of workers who do not welcome new management systems that call for higher numbers of customers per employee. The level of risk varies depends on the sub-sector being addressed. A different way of presenting the applicability of these financing structures is found in **Figure 6-5**. The applicability of financing structure here is presented on two axes: level of country and sector risk, and the level of development in terms of GNP per capita. This reader might regard the message communicated in these matrices and diagrams as self-evident in light of recent experience. However, the number of cases where this simple message has not been adequately considered is sufficient to warrant revisiting this topic.

Figure 6-5. Power Financing Models in Emerging Markets



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Privatization during the early 1990s tended to focus on generation because of the attractiveness of the limited recourse project-financing structure and also because of the high perceived risks at the distribution level. The experience of IPPs selling into the power sector with guaranteed revenues, where the utility failed to raise tariffs and collect cash, led single buyer utilities to accumulate mounting and unsustainable debts. There has been a World Bank analysis pointing out the strong potential for corruption in the contracting of IPPs under a single buyer model (Lovei, 2000). The focus then shifted later in the 1990s to privatizing distribution in order to help monetize the power sector. Private investors took comfort in that they were close to the source of cash by collecting the revenues from consumers. However, the experience with distribution privatization has forced investors to face the serious political risks relating to tariff increases, collections, and disconnections. As a result, investors have begun to show serious reservations about pursuing divestitures of distribution in the more risky emerging markets, and are only interested in management contracts, affermage, and concession arrangements with adequate controls and guarantees. The SEEG project in Gabon and the Lydec project in Morocco both present informative examples of how concession schemes were effectively implemented to operate a distribution company. It is interesting that in both of these cases, the utility decided to bundle power and water distribution in order to capitalize on the economies of scale that could be achieved by this integration.

4) Strengthen good governance at the national, sector, and corporate levels to support power sector reforms. The role of governance in economic development as a whole and in the power sector in particular in increasingly recognized as fundamental and

essential. The challenge is that this topic is so broad that it is very hard to get one's hands around it and to make tangible changes in the near to medium term. The World Bank in its *Reforming Public Institutions and Strengthening Governance: A World Bank Strategy* (2002), lays out the three main drivers of public sector reform: (a) rules and restraints, (b) competitive pressures, and (c) voice and partnership. In the power sector, the legislation and regulations governing the energy and power sectors set out the ***rules and restraints***. Insofar as these laws, regulations, and market rules reflect the insights discussed in this chapter, this governance dimension can be managed. The problem, however, as discussed in this chapter, is that the design of the power sector's legal and regulatory framework is not always compatible with a country's political economy. A dysfunctional outcome can therefore ensue. This highlights the need to apply a more integrated political and economic policy in defining the legal and regulatory framework.

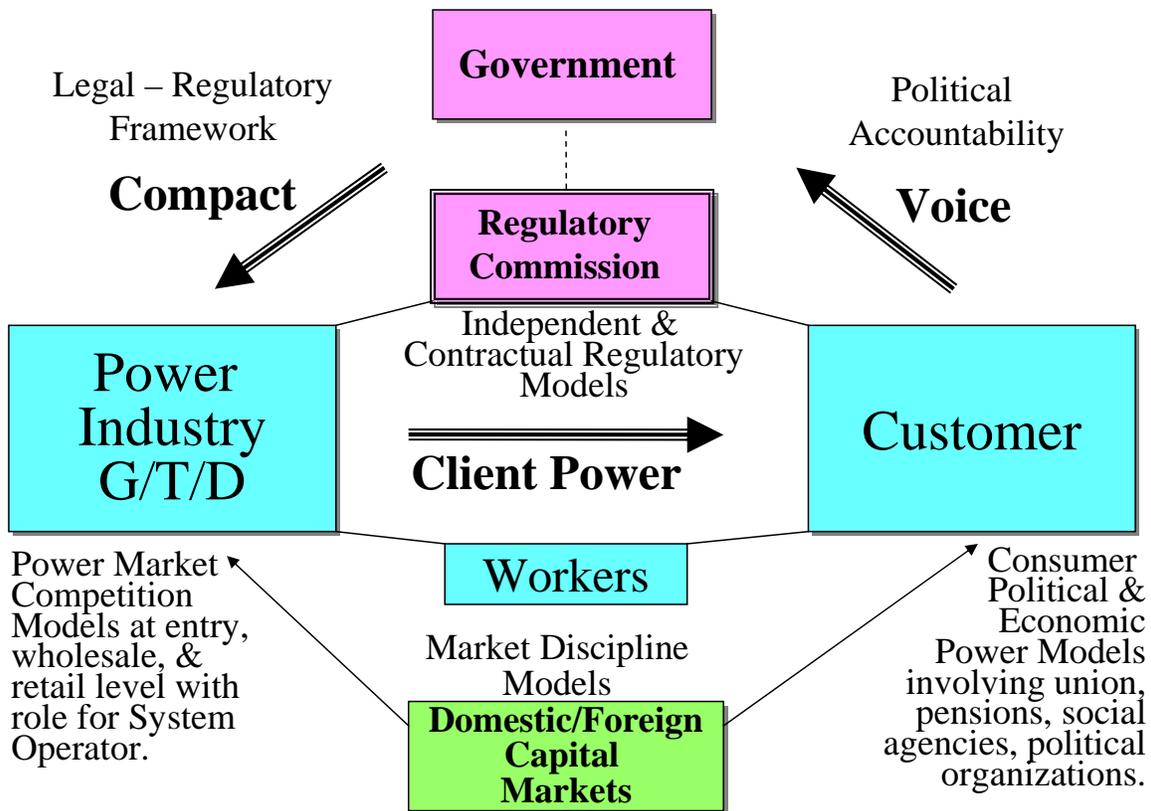
The push towards introducing competition into a sector that historically has been a monopoly is designed to enhance the ***competitive pressure*** dimension of good governance. However, if competition is introduced at a level that the market is ill-equipped to integrate, dysfunctional outcomes can ensue, which can limit progress in implementing good governance. This area is a particular challenge because it promotes competition in a sector that is traditionally rife with corruption. Failure to introduce adequate transparency and competition plays into the hands of those entrenched interests that are corrupt. Pushing higher-order competition too fast, however, will only lead to parties gaming the system in a way that does not achieve the intended good governance objective either. This calls for a balancing act that introduces forms of competition that are readily transparent and can be implemented within the existing political and economic framework. For example, entry-level forms of competition in less-developed markets may be preferred: a full and open competitive tender for the sale of a company or IPP project, as distinct from promoting a power pool or retail competition that relies on complex market systems the market is not ready for. A key question is how to implement privatization into a market where limited competition is possible. It is likely PSP will need to be introduced more slowly and systematically in riskier markets in order to allow competition to be introduced over time, and that PSP does not become an obstacle to market reforms.

Finally, the ***voice and partnership*** dimension of creating good governance needs to reflect on the analysis found in Chapter 6 of this report. Promoting democracy in less developed countries on the assumption it will necessarily lead to good governance overlooks that this governance stool has three legs. If the rules and restraints dimension is either very autocratic and if there are few real competitive pressures because the economy is controlled by a few oligarchs (e.g., Russia), expanding democracy by itself will not achieve the desired result. What is evident from the studies is that increasing voice and partnership is more important in the retail customer-facing dimensions of the power business. That means that when privatizing a distribution company or in a program involving the expansion of the grid to underserved communities in urban slums or rural areas, it is important to listen to the voices of the consumer and seek to build partnerships to gain acceptance of higher tariffs, to improve meter reading and collections, and to gain understanding for the disconnection of non-paying customers. In particular, it is especially evident from the utility electrification cases found in this study (Meralco

DAEP in the Philippines, Phambili Nombane in South Africa, PRONAI Light in Brazil, and Grameen Shakti in Bangladesh) that these projects had to emphasize being close to the customer and on working with intermediaries that could best understand and communicate with the consumer.

The governance framework in the power sector has particular pressures and issues that are captured in the diagram found in **Figure 6-6**. Citizens and consumers in emerging markets generally have a weak voice in shaping government and power sector policies, when trying to address their grievances. Only large and politically influential customers can affect decisionmaking, and that influence may undermine the viability of the sector by demanding power without paying for it (e.g., major state-owned enterprises). This breakdown is due to the rules and restraints not functioning properly. The power of the client or the competitive pressures are weak as well, so retail consumers, unless they are large or well-connected, often cannot seriously affect the decisions of the utility. The government's compact of rules and restraints on the power industry is also dysfunctional and ineffective. In many developing countries, all three legs of this governance stool are not functioning effectively.

Figure 6-6. Power Sector Governance Chart



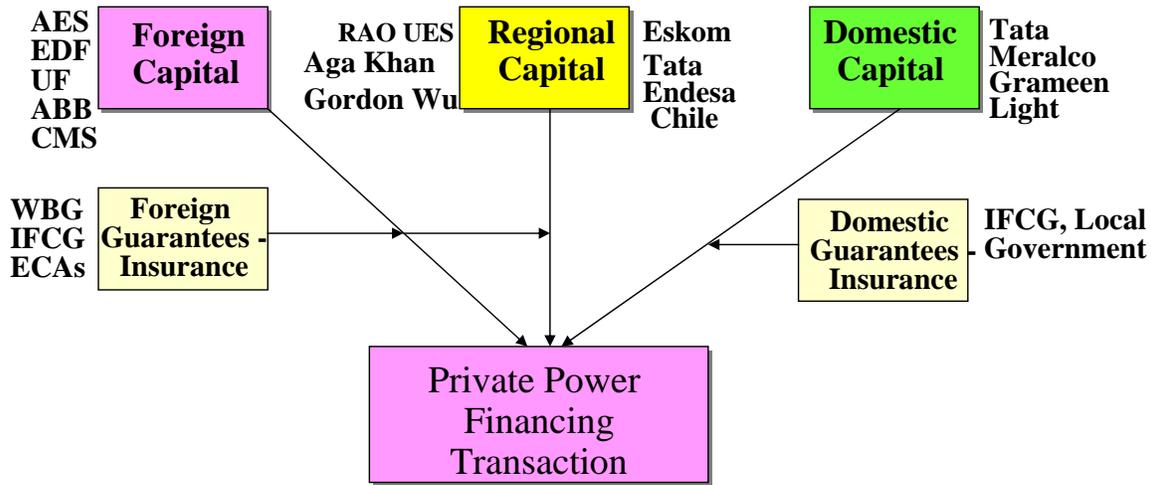
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Certain key interventions can play a role in catalyzing better governance. The introduction of private sector participation includes the accountability that well-managed private sector interests will demand. For instance, capital markets can likely manage political risk, to enhance the governance framework. Financial institutions such as bank credit departments, mutual funds, insurance funds, and pension funds (i.e., institutional investors) demand a higher level of accountability. The role of workers is often problematic on the assumption that workers are resistant to reform. Getting buy-in from workers and giving them at least a minimal stake in the venture combined with training has the potential for bringing this important stakeholder into the circle of motivated participants in favor of reform. The role of the regulator is central. The regulator represents three interests: the government, the consumer, and the power industry investor. Traditionally, the regulator has largely focused on the government's and consumer's interests. Increasingly, the regulator must now recognize the needs of investors for regulatory and revenue certainty. Given the inability to fully adjust returns to reflect risks, the regulator must recognize the need to help minimize risks where feasible. The new emphasis on regulation through contracts and multiyear tariffs that give investors greater confidence that political abuse will not undermine the tariff setting process, is an important step in this direction.

5) Capitalize on trends in emerging financial markets to enable greater domestic and regional private capital flows. The trends occurring in the financial markets need to be understood in order to expand private investment into power. The power sector is just one of many sectors that can attract private investment. Given the risk and return profile of the power sector, it is quite understandable why it is one of the least attractive emerging market sectors to invest in. There are various trends to factor into a private-capital mobilization strategy, in order to better position the power sector for private investment.

First, as discussed above, *domestic and regional investors* are becoming more active due to their growing maturity and to the departure of many foreign investors. The emergence of increasingly prosperous domestic industries that can be serious players in the domestic power markets, create growing sources of private or quasi-private capital (e.g., Tata Power in India, Huaneng Power in China, RAO UES in Russia, SKS Power in Malaysia, Eskom in Africa, CEZ in the Czech Republic, etc.). The domestic capital markets and banking sectors are beginning to participate more dynamically, as illustrated by the domestic capital market case of Luz del Sur in Peru and the domestic bank financing case of Maritza East III in Bulgaria. Regional sources of capital (e.g., Islamic Financing in the Tajikistan Pamir case) are also a growing source of private capital. With the expansion of regional capital markets, there are growing opportunities for infrastructure companies with adequate creditworthiness to list on a regional securities market and raise financing regionally if not internationally (e.g., Singapore Power is seeking to raise US \$2 billion via a bond issue for expanding power investments in the Southeast Asian region). As shown in **Figure 6-7**, it is important to re-examine the interplay among the full mix of capital sources including foreign, regional, and domestic.

Figure 6-7. Financial Markets Chart



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Foreign investors are sometimes reluctant to participate in joint ventures with local industrialists if these could potentially undermine investors' ability to control the management of their investment. For this reason, some foreign strategic investors have indicated they would prefer passive domestic investors. If some form of securitization and of pooling financial institutions can be established to intermediate between long-term domestic savings (e.g., pension and life insurance funds) and long-term domestic debts (e.g., power and infrastructure projects), there could be more promising opportunities for mobilizing domestic capital in a way that compliments foreign investors and diversifies and reduces the risk exposure. Some international banks have indicated they would welcome domestic banks taking over the debt financing after the construction phase of an IPP. The successful experience of mobilizing domestic debt by enabling domestic banks to lend at the tenor and terms needed for infrastructure needs to be expanded upon (e.g., Bulgarian banks were able to lend on 12-year terms in the Martiza East III project in Bulgaria).

Second, *capital markets* are evolving so that equity markets develop first, with debt markets developing later. The experience in South Asia, for instance, is that equity markets are much deeper at this early stage than are debt capital markets. This trend puts power sectors at a disadvantage, given the capital structure for power utilities calls for a high proportion of debt. The trend towards setting up individual stock exchanges in each country is now giving way to the realization that this model is not financially viable, and is leading to more emphasis on regional stock exchanges. The trend of more creditworthy domestic companies in emerging markets listing on major stock markets in the industrialized world through a global depository receipt (GDR) or an American depository receipt (ADR) also presents a new avenue for raising financing, which further competes with domestic sources. These capital market issues are really accessing global capital, because those who buy securities on major exchanges (e.g., New York, London, or Paris) are not necessarily just nationals of that country. The globalization of capital markets present growing competition for domestic capital markets.

Third, the *banking sector* is similarly going through trends leading to greater due diligence and accountability requirements for credit. Countries are addressing weaknesses in the banking sector (which are largely related to the magnitude of non-performing loans) by improving accounting systems and the accounting profession, upgrading supervision and the legal system, and reforming tax laws. Finance remains very close to politics in many countries, and the cost of reform is quite high. Also, depositors have often not demanded change, and the perception of state protection of funds in government-owned banks provides a sense of security which, while forestalling runs on the bank, certainly inhibits the improvement of capital markets. Foreign participation in the banking sector is growing in many emerging markets, and there is some evidence (Mathieson and Roldos, 2001) that foreign banks improve stability and efficiency in the financial sector, although there are some recent indications that the greater the role of foreign banks, the less long-term capital these make available domestically. The reasons for this are still under review; it is possible that foreign banks have a shorter-term investment return horizon than domestic banks, but it is also possible that previous levels of non-performing loans by state-owned banks are distorting the data. Developing countries are also addressing the sequencing of appropriate capital controls and taking steps to managing their exchange-rate systems.

Fourth, the potential for utilities to *internally generate revenues* from the sector to cover capital expenditures and to evolve to where they can raise financing on their own balance sheet either from bank loans or from domestic or international capital market issues, is also an important avenue to consider. The need to establish rating agencies providing an independent assessment of a company's credit rating (as has happened in such countries as India with the formation of CRISIL) is an important development. Such developments naturally require a utility to get regulatory approval to raise tariffs to a level that covers not only operating costs but also the necessary capital investment on an amortized basis. The utility must also improve metering, billing, and collections to a world-class standard. It must also enhance its operations' productivity in terms of such measures as customers per employee, to attain an adequate credit rating that will entice the capital markets to finance an equity or bond issue. It is noteworthy that certain affermage and concession models can help guide a utility in emerging markets to achieve this goal. The Lydec concession in Morocco is a good example. Of the US \$3 billion of investment committed by Lydec over the duration of the concession, about 90% was assumed to come from internally generated cash based on a tariff that was able to recover revenues needed for capital expenditure.

7. TRANSACTION FINANCE POLICY IMPLICATIONS

Having reviewed the larger enabling framework for private capital mobilization in the power sector, it is important to next focus at the transaction level on the specific risks that need to be managed, assigned, transferred, and mitigated in order to successfully conclude transactions. Incentivizing private investors to expand power sector generation and distribution in emerging markets requires both understanding and better managing the risks investors face. The goal of this analysis is to determine what risk management strategies are most effective and what role multilateral development banks (MDBs) and export credit agencies (ECAs) can play in mitigating or managing those key risks that are holding back private investment.

Once an investor and lender have accepted the political, macro-economic, power sector, and capital market conditions as manageable, they next move to the transaction level and examine the risks and returns carefully. In designing power sector transactions, whether IPPs divestitures, or concessions, investors and lenders scrutinize a full spectrum of risks and develop specific strategies to address each one.

There is a substantial track record in designing financing structures to address the risks faced by investors and lenders in emerging-market power sectors. There is already an extensive array of MDB and ECA financing instruments (equity, debt, subordinated debt, quasi-equity, guarantees, insurance, etc) available on the market today. In fact, there have been more financing options and instruments made available by different MDBs and ECAs in the past decade, giving investors and lenders greater choice, which is always a positive development. There are a few (but not many) new, high-impact innovations, beyond what are currently available, which are worth considering. The greatest impact will likely come less from development of new financial instruments than from process changes that could help to streamline the administering of these instruments, as discussed later in this chapter.

The most well-established risk management framework in the power sector is the IPP project finance structure. IPPs establish an elaborate set of security agreements involving contracts between all key parties (the utility, the government, the fuel supplier, the engineering construction firm, the operator, the lender, the sponsors, etc.) to the transaction. Some of the key contracts, such as power purchase agreements (PPAs) and fuel supply agreements, can be backed up by government and possibly MDB guarantees, as illustrated in most of the IPP cases in this study. The IPP structure is resilient and applicable to risky and developed markets alike. It is not as dependent on the power-market risk-management mechanisms that are required by other finance structures, particularly divestitures. The continuing necessity and widespread use of the IPP model can be regarded as a result of the delays and challenges of implementing power market reforms and the setbacks in developing more creditworthy borrowers over time. The IPP model is a mature design that has been tested and proven effective worldwide in industrialized and developing countries alike.

The greater challenges are faced in mobilizing investment for transactions at the other end of the spectrum, i.e., divestitures. In a divestiture, the investor faces a more complex set of risks: power market, regulatory, changes in law, environmental, etc. In a

divestiture, there is a far less prescriptive contractual framework for comforting investors. The investor is required to “bank” on the legal and regulatory framework and the confidence in the market as a whole. In response to this different risk profile, investors and lenders have developed their own financial models and strategies. In addition, the MDBs have adapted their guarantee and insurance products to serve the special set of risks faced in divestitures.

There is an interesting question about how the experience of financing the power sector relates to the experience in other infrastructure sectors. The financing of infrastructure is often treated as homogeneous, when in fact there are important distinctions. The oil/gas, telecom, and ports sectors are not considered fair comparisons because these sectors are typically more commercially viable, earn foreign exchange, and are not saddled with the “social good” expectation (These distinctions are in fact useful for diversifying risks when setting up a more generic infrastructure financing facility). The water sector is the other infrastructure sector most analogous to the power sector in terms of risk and policy requirements.

The question has been raised, why cannot power sector policymakers implement some of the innovative financing approaches used for the water sector in developing countries? While there are some applications from the water sector that are being considered and applied more widely in the power sector, such as the concession and affermage model, there are some important distinctions that need to be recognized. Water sector projects are by nature smaller and less capital-intensive. While the water sector, like the power sector, is a network industry, it does not involve the same scale of large capital investment on the production side. The smaller scale of water projects makes these less of a challenge to finance. In addition, water utilities are often operated at or are being devolved to the municipal level, where it supplies water to a particular city. Financing the water sector has increasingly opened up areas of sub-sovereign lending that involve lending to municipalities or concessions at the municipal level. This financing structure opens up greater possibilities. The power sector typically is run at the national or state level (as in large countries as India) and financing is typically at that level. The number of investors active in the water sector internationally is also far smaller than in the power sector, so there has traditionally been less competition. The water sector is also tied to other key development indicators such as health; as a result, there is a greater justification for subsidies to support the provision of clean water to maintain community health.

For these and other reasons, the water sector has certain advantages that need to be understood when comparing it to the power sector and explaining why financing models in one sector are not automatically transferable to another. Nonetheless, useful lessons can be drawn from the water sector, particularly from the application of the affermage and concession models. There is also the interesting multi-utility development where power and water utilities are being merged to achieve the necessary economies of scale in the distribution end of the business (as demonstrated by the SEEG project in Gabon and the Lydec project in Morocco). These synergies between the power and water sectors in the distribution business present a combined risk-management strategy worth exploring in other countries.

7.1. RISK ANALYSIS AND MANAGEMENT

Investors and lender face a complex array of risks in the power sector of emerging markets, as laid out in **Table 7-1**. These risks are organized into distinct categories: political, legal/regulatory/contractual, economic, credit, and commercial. Each of these risk categories is further broken by the sub-categories typically used when designing and closing financing for power sector transactions.

The standard principle regarding risk allocation is that risks are best assigned to those parties best able to manage them. In **Table 7-1**, those parties widely regarded as the best ones to manage particular risks are identified generically. For instance, political risks are clearly the responsibilities of the governments in developing countries, often backed up by MDBs and/or ECAs to enhance the credit rating. At the other end of the spectrum, commercial risks for the construction and operation of power facilities are clearly in the domain of the private investor. In between, key legal, regulatory, and contractual risks related to factors solely under the control of the government (for example, a change in laws, a breach of utility performance under a contract, or regulatory non-compliance) need to be addressed by the government, which is again backed up by international financial institutions. Economic risks as from inflation and with exchange rates are some of the most problematic risks (if there is no framework to effectively pass such risks onto the power takers or consumers). These risks can bankrupt a project for reasons outside of its control. Who has responsibility for these risks is more ambiguous, but investors would argue the MDBs and ECAs are often in the best position to manage these critical risks.

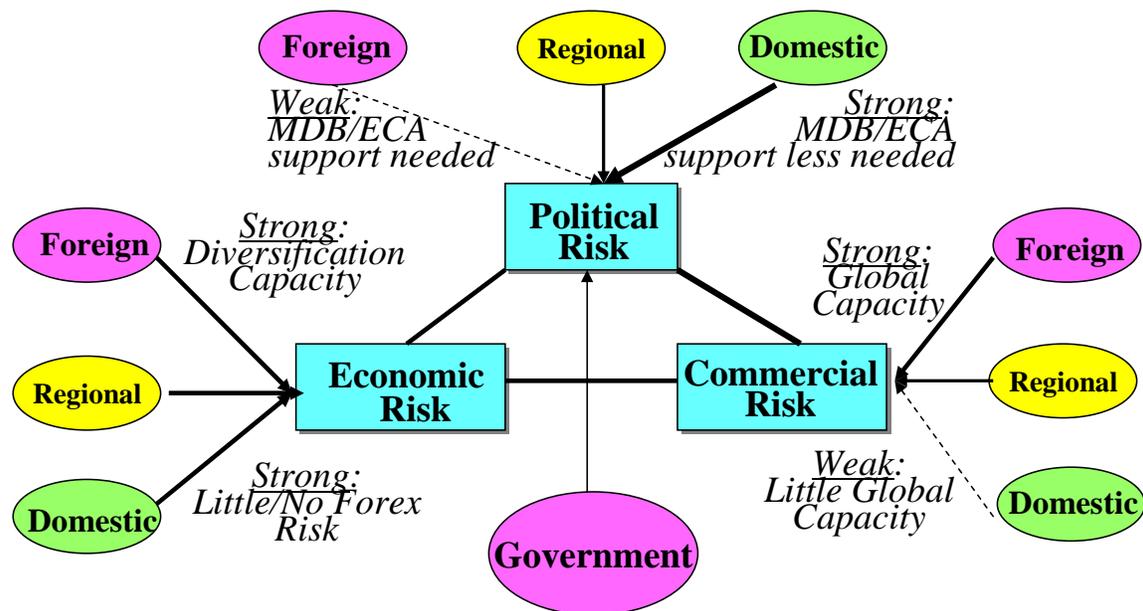
Table 7-1. Power Sector Risk Matrix and Coverage

Risk Category	Best Party to Cover Risk	Common Source of Coverage	Adequacy of Coverage	Level of Priority Attention Needed
Political Risk				
Expropriation/Nationalization	Government, MDB/ECA	MDB/ECA insurance	Adequate	Lower Priority
Convertibility/Transferability	Government, MDB/ECA	MDB/ECA insurance	Adequate	Lower Priority
War and Civil Disobedience	Government, MDB/ECA	MDB/ECA insurance	Adequate	Lower Priority
Terrorism	Government, MDB/ECA	MDB/ECA insurance	Insufficient	Major priority
Legal, Regulatory, Contractual Risk				
Changes in Law	Government, MDB/ECA	MDB/ECA guarantees/insurance	Insufficient	Major priority
Breach of Contract	Government, MDB/ECA	MDB/ECA guarantees/insurance	Insufficient	Major priority
Regulatory Non-Compliance	Government, MDB/ECA	MDB/ECA guarantees/insurance	Insufficient	Major priority
Obstruction of Arbitration	Government, MDB/ECA	MDB/ECA guarantees/insurance	Insufficient	Major priority
Non-payment of a Termination Amount	Government, MDB/ECA	MDB/ECA guarantees/insurance	Insufficient	Major priority
Economic Risks				
Inflation Risk	Government, MDB/ECA	only covered as credit risk	Insufficient	High priority
Foreign Exchange Risk	Government, MDB/ECA	only covered as credit risk	Insufficient	High priority
Credit Risk				
Political	MDB/ECA	MDB/ECA limited to public sector	Limited	Medium Priority
Commercial	MDB/ECA	MDB/ECA limited to public sector	Limited	Lower priority
Commercial Risk				
Construction Risk	private investor	private sector	Adequate	None needed
Operation Risk	private investor	private sector	Adequate	None needed
Technology Risk	private investor	private sector	Adequate	None needed

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Some risks pertain only to foreign investors or are more acute for foreign investors than domestic investors, as illustrated in **Figure 7-1**. For instance, domestic investors do not face foreign-exchange risk and sometimes are better able to manage some of the political and legal/regulatory/contractual risks. Domestic investors on the other hand may not be as well-equipped to manage some of the construction and operational risks associated with extracting the best performance out of power systems. Sometimes, this latter point may not be the case, given that the high-technology solutions practiced in industrialized countries may be too costly and complicated. Domestic investors may have simpler and more cost-effective local solutions. For instance, in South Asia, turbines can be sourced from licensed manufacturers in India and thereby can reduce costs. The cost of domestic capital can be less expensive, which presents its own advantage. It is worth examining which risks, domestic versus foreign, investors are best able to manage, and then designing financing structures that reduce both risks and the cost of capital.

Figure 7-1. Political/Economic/Commercial Risk Management Diagram



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The generic sources of coverage for the risks outlined are also listed in **Table 7-1**. There are many publications that detail all the specific guarantees, insurance instruments, and cofinancings offered by the MDBs, ECAs, and other international financial institutions. The *Comparative Review of IFI Risk Mitigation Instruments and Direct Sub-Sovereign Lending* by PWC Securities Ltd., provides an updated analysis of these programs as these pertain to the water sector, and it provides a useful reference for the power sector as well. The Multilateral Investment Guarantee Agency's (MIGA's) political risk insurance covers most of the political risks, and the World Bank partial risk guarantee (PRG) covers both political and many of the legal/regulatory/contractual risks. The World Bank's partial credit guarantee can be applied to many credit risks. The International Finance Corporation (IFC) through its B Loan cofinancings is able to provide additional

comfort to investors regarding credit risks by the “halo” affect of being part of the World Bank Group (even though it is only implied and is not backed up with any sovereign guarantee). As pointed out in the PWC Securities report, the availability of this MDB and ECA cover has expanded over the past decade, with most of the MDBs including the Inter-American Development Bank (IDB), the European Bank for Reconstruction and Development (EBRD), the Asian Development Bank (ADB), and the African Development Bank (AfDB) adopting similar instruments to support private investment. This expansion of providers has led to increased competition in the provision of these forms of guarantees, insurance, and cofinancing. This expanded coverage by more MDBs presents the private sector with more choice, which is always welcome.

The critical questions are what are the most important risks to private capital mobilization and where are the greatest coverage gaps that the MDBs and ECAs could potentially address to further advance private investment. The last two columns of **Table 7-1** itemize where the greatest gaps are. Three risk areas present the greatest concerns in terms of impeding private investment and lacking adequate coverage. These three risk areas are listed in order of importance. First, foreign exchange risk (and its corollary, domestic inflation risk) stands out as the one of greatest concerns and the one that is least covered by existing programs. Second, legal, regulatory, and contractual risks are a major concern. While these risks have far better coverage from available instruments, they still raise concerns. Third, terrorism risk has been raised as a concern by certain lenders, who have noted that more coverage is needed. The first two risks are the most important to discuss, as is done in the following two sections. Note, this focus is not to ignore the many other risks that investors and lenders face in emerging markets. Rather, this discussion is intended to focus policymakers on the most critical areas for consideration.

7.1.1. Currency Risk

Currency risk has been identified as the most problematic risk for investors because of the potentially catastrophic impact it can have and the very limited coverage currency risk has. The dramatic currency devaluations that have occurred in countries such as Russia, Argentina, and Indonesia have resulted in major stress to, if not failure of, projects, and have led to very large losses or bankruptcies. When a currency is dramatically devalued, the ability to service hard currency debts and returns on equity is hammered. It is often not possible to raise tariffs through indexing, given the public’s inability to pay substantially higher tariffs because of both their low incomes and the overall economic crisis under way.

The prevailing mechanisms for addressing currency risk in the industrialized world involve indexing tariffs to cover currency fluctuations and using the derivatives markets to hedge currencies. These mechanisms are not feasible in many developing countries because of the immaturity of the capital markets. In addition, there can be limitations in getting a hedging contract to cover the longer periods typically required for infrastructure financing. The MDB and ECA guarantees can cover currency convertibility. While these guarantees do not cover exchange-rate risk directly, they do cover the risk indirectly through breach of contract cover for PPAs of IPPs with defined foreign-currency denominated tariff components. Because of the limited coverage, foreign investors and lenders are very exposed to currency risk. The danger of this risk has been particularly

highlighted by investors and lenders who have suffered major losses in such devaluations, as occurred for instance in Argentina.

Devaluation risk can be divided into three categories: (a) *normal exchange-rate fluctuations*, (b) *major shock-type devaluations*, and (c) *catastrophic devaluations*. Normal exchange-rate fluctuations fit within a range expected to be manageable by investors, do not need special interventions, and can be managed by indexing and hedging (where possible). Shock devaluations involve a sudden and unexpected drop in the exchange rate; nonetheless, in these cases there are the expectations that the country's economic fundamentals are relatively sound and that the currency will recover after a reasonable period. The catastrophic devaluation involving a complete collapse in the currency is particularly problematic, because the exchange rate it is unlikely to recover in the next 10 years or more.

In order to address this currency risk, MDBs and ECAs are innovating to provide instruments giving investors and lenders greater comfort. A devaluation backstop facility has been developed by the Overseas Private Investment Corporation (OPIC) to address shock-type devaluations. This OPIC backstop facility was applied in the AES Tiete project in Brazil that reached financial closure back in 2001. This backstop facility acts as a revolving credit reserve that maintains in this case about US \$30 million for meeting any possible devaluation-related liabilities. If the reserve is drawn upon, the issuer will repay the reserve over time, which is often feasible given the possibility that the currency will recover over time. This facility can have certain built-in conditions that require meeting specific performance measures. For instance, in the OPIC facility with AES Tiete, OPIC can cancel the policy if AES does not comply with specified labor, environmental, and corruption standards. The World Bank Guarantee Department is reportedly developing a devaluation backstop facility that may be sponsored by a developing country government with World Bank backstopping. As with the OPIC facility, this new instrument is likely to be first tested in the Brazilian market. More details about this facility are forthcoming.

Currency risk is a formidable concern for international investors. It is a risk that has generally not been addressed by the MDBs and ECAs at the level needed. This limited available coverage is because this risk is problematic for the MDBs and ECAs as well, because they similarly need to limit their exposure to risks that could substantially impact their own credit ratings. While the reluctance to cover currency risk is understandable, this risk needs to be addressed in a way that will facilitate greater capital flow. The private sector's view is that the MDBs in conjunction with developing country governments are in a far better position to manage currency risk than is the private sector for two reasons. *First*, governments, MDBs, and donors are shaping the macro-economic environment that affects currency fluctuations, so they have a greater responsibility to take on this currency risk. *Second*, MDBs and donors operate in many currencies on a large scale and thus are in a better position to hedge risks than are individual private companies.

There are multiple remedies the international community could consider. *First*, it could increase the proportion of domestic capital with no foreign-exchange exposure. Other sections of this report discuss in-depth the option for expanding domestic capital

participation. *Second*, MDBs and ECAs can and are developing devaluation backstop facilities to deal with currency shocks. These facilities need to be expanded in scale and across a wider array of countries than is currently available. Third, where feasible and for normal currency fluctuations, investors can rely on hedging mechanisms in some markets.

7.1.2. Legal, Regulatory, and Contractual Risks

The next most important risk category that has substantial coverage available, but one that is still a continuing cause for concern, is legal, regulatory, and contractual risks. Particularly in divestitures, where investors do not have the support of a strong contractual framework, investors face major legal and regulatory risks. The regulatory framework continues to evolve and is therefore considerably uncertain. The response is to focus more on regulation through contracts and multiyear tariffs in the overall power-sector enabling environment (as discussed above). The World Bank's partial risk guarantee (PRG) and the new privatization guarantee offer good coverage for these risks, when these guarantees are available. The success of the four cases highlighted in this study (i.e., Jorf Lasfar in Morocco, Phu My 2.2 in Vietnam, Haripur in Bangladesh, and Azito Power in Cote d'Ivoire) that used the World Bank's PRG, testifies to its effectiveness. However, in order to expand private investment on the large scale that is required, the use of the PRG and related instruments needs to be expanded much further. The major challenge faced in many markets is getting the guarantee approved and mobilized. The World Bank guarantees require a back-to-back guarantee from the country government. Although there is no cost to the government, there must be agreement from the highest level of the government, the Ministry of Finance, and sometimes the country's Parliament. The politics natural to the approval process often become a substantial impediment to the implementation of the World Bank guarantee. Given that governments usually are under pressure to privatize promptly, the schedule to get support and approval for the guarantee is often not tight enough. The World Bank guarantee requires a government to stand by its policy and contractual commitments, but governments often prefer to have the flexibility to compromise on such commitments. There is often insufficient pressure on the government to back up its commitments, and thus the opportunity to use the guarantee is lost.

This latter point is an important concern. In order for greater private capital mobilization to occur, governments need to be more accountable for their policies and the risks they can control. The role of the MDBs in convincing governments to honor their commitments through loan conditionalities is clear, yet there often appears to be insufficient political will at the MDB and national government level to require such accountability. As a result, the World Bank guarantee is not used as often as it should be. After loans have been signed, conditionalities are not always complied with. The question to consider is, could the World Bank guarantee be integral to a larger lending package? For instance, could the World Bank guarantee itself become a conditionality as part of a programmatic adjustment or a sector adjustment loan? Typically, the PRG is promoted to the government as separate from the major loan negotiations between the government and the World Bank. If the World Bank guarantee was integrated into the sector loan and became a required part of a power-sector reform and privatization program, it would both strengthen and expedite the process of providing investors with a more attractive investment framework.

Another concern from the private sector perspective is that the cost and time to get PRG coverage and the ability to collect on the guarantee in the event of default is problematic. In the about 20-year history of the World Bank guarantee, the World Bank has never had to pay out a claim under the PRG. This is ostensibly because the World Bank relies on its “halo effect” as the preferred creditor, to put strong pressure on the government in order to obtain compliance. However, getting compliance can take time and for investors time is money. The issues of the time required to get a World Bank guarantee in place and of enforcing compliance in the event of creeping default may need greater attention because it is limiting the interest of some private investors in using such instruments. This reflects the opinion that this instrument in total can be costly when factoring in the fees, the professional time invested in getting the guarantees negotiated, and the time and financial cost incurred when guarantees are being enforced. There is also the view the guarantee is not flexible enough and too slow to adapt to market realities. While these views may be hollow complaints from the private sector, they do warrant greater investigation. If the guarantee is to play a significant role in the major and necessary expansion in private investment in infrastructure, then there needs to be more attention to understanding and serving the needs of the customer. If the World Bank guarantee could be streamlined in its approval and enforcement process (when necessary) and be made more responsive to the specific terms that investors seek, this instrument could potentially play a greater role in supporting private investment in the power sector of emerging markets.

Over time, other partial risk guarantee products have come on the market from other MDBs, including the ADB, the IDB, the AfDB, and the EBRD. In addition, MIGA has come out with an expanded insurance policy that provides insurance cover for breach of contract. Some of these guarantees are available without requiring backstopping sovereign guarantees from the national government. While this reduces the barriers to implementation, these other development institutions do not carry the same weight as the World Bank, particularly when the World Bank negotiates in a strong alliance with the IMF. It would be instructive to investigate to what extent the PRGs offered by MDBs, which do not require a backstopping sovereign guarantee, are in the end more attractive to and successful among investors.

7.1.3. Other Risks

In the area of political risk, political insurance cover is generally viewed as adequate and the payments in the event of default more available. In the event of default and an arbitration award, MIGA and other providers of political risk insurance have a track record of paying on claims.

The one exception is in getting better *coverage for terrorism*. The pattern of more large-scale terrorist attacks over the past few years has heightened the need for more terrorism coverage. Some bankers have identified better coverage for terrorism as a concern. The coverage now available in the private sector is insufficient; therefore, lenders are looking to the MDBs and ECAs to provide more coverage.

Overall, the instruments for mitigating other risks associated with power sector investments are generally considered adequate, assuming that investors are interested in investing overseas and are sufficiently comfortable with power markets in developing

countries. The primary impediment to power investment in emerging markets is not so much the lack of available MDB cofinancing, guarantees, and insurance as it is the process for accessing and using these instruments. The largest impact on capital flows will not come from financing instruments but from improvements in the overall enabling environment and the types of measures discussed in Chapter 6.

7.2. POWER FINANCING MECHANISM REVISITED

Having considered the constraints and issues affecting both capital markets and power sector investments in developing countries, we now consider the main financing structures available for mobilizing private capital. Given the extensive worldwide experience with the tried and tested model of IPP project finance, concessions, and divestitures, and the extensive coverage of these models in the many case studies and in Chapter 4, this section focuses more on mechanisms that mobilize domestic capital and access international capital markets. For each option, we highlight successful deals that demonstrate the feasibility of the financing structure, and also suggest ways that international financial institutions (IFIs) might strategically intermediate between domestic savings and power investments to expand private capital flows to the power sector.

7.2.1. Internal Financing through Retained Earnings

Internal financing through retained earnings is classic corporate finance. It creates a strong balance sheet and creditworthy operation that produces the cash flow necessary to attract private financing, through banks, bonds, equity, or a combination. This classic scenario is often not possible for power companies in developing countries, for the various commercial and political reasons discussed elsewhere in this report. Concession arrangements, which initially appear to be focused on foreign capital, by design increase internally created domestic capital. By improving operations, often with relatively low upfront capital commitments, professional utility operators “create” domestic capital by generating retained earnings for the entities they manage. The Lydec concession in Morocco is an example of a concession expected to generate significant domestic capital. Initial equity of US \$80 million, provided by a consortium of foreign investors, is expected to generate US \$3 billion over the 30-year period of the concession. The company is performing well, based on post-1997 performance indicators.

Concessions do, however, generally require foreign capital and an experienced international operator to get started. In many cases, smaller concessions are not attractive to large-scale operators looking for significant absolute returns. Operators will also favor concessions with very long terms, as they need to protect the intellectual property they are committing to the concession company. Truly “damaged” utilities often have difficulty attracting operators, as the business equation to get to full cost recovery does not seem feasible, especially if large upfront capital commitments are called for.

To address some of these concerns, a number of development experts are considering hybrid lease arrangements. Under these arrangements, governments retain responsibility for financing capital investment and often contractually subsidize tariffs. Operators receive incentive payments for collections above minimum-agreed targets, during a transition period defined by the time it takes the utility to achieve financial stability and

become bankable. At the end of the transition period, the operating contract is re-bid on standard commercial terms. Although currently being tested in the water sector, these arrangements could also be applied to power sector financing.

IFIs, through a variety of measures, could encourage the formation of both traditional and hybrid concessions. In particular, structured financing for subsidies and/or capital improvements during the transition period, for especially troubled utilities, may encourage the creation of financially sustainable entities over a 5-to-7 year period. Risk mitigation instruments specifically addressing the needs of operators may also increase infrastructure investment through concession arrangements.

7.2.2. Major Domestic Strategic Investors

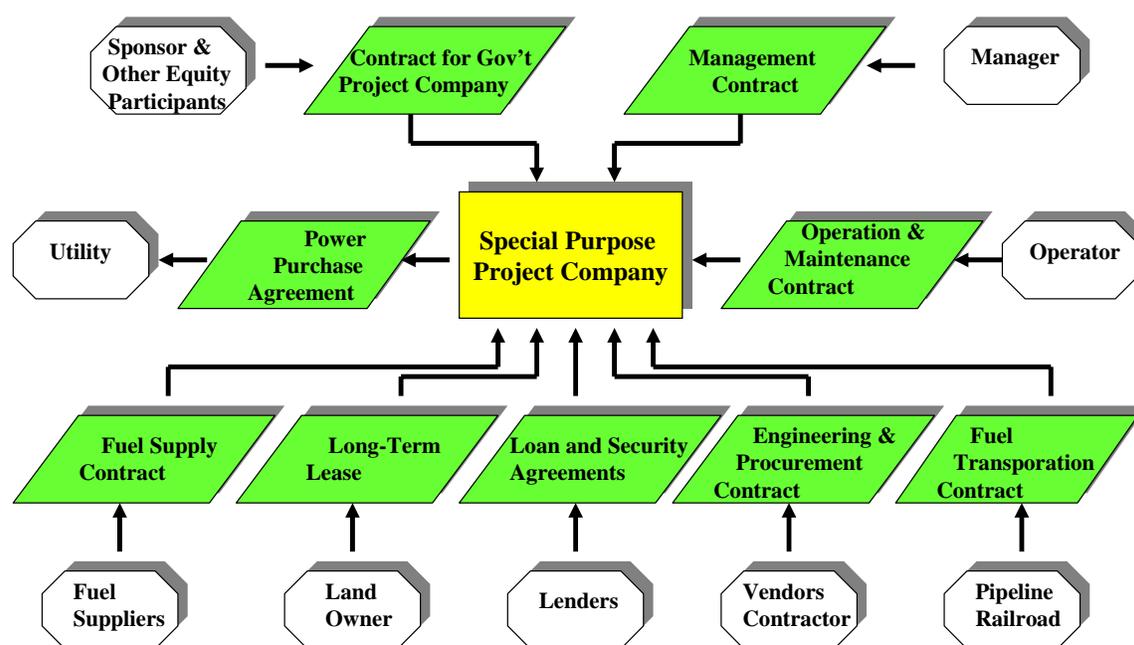
Major domestic strategic investors are often the first to identify attractive business opportunities in a country's power sector. The North Delhi project is an example. Tata Power, with an agreed government subsidy to provide support for commercialization, invested US \$37.5 million in a newly privatized distribution company. In this case, the government provided significant support and commitment to the transaction, which, combined with the strength and market presence of Tata Power, was the equivalent of internally generated political risk and contractual risk coverage.

Replicating deals like North Delhi requires the commitment of strong local corporations and their counterparts in government. Strategic investors, because of the variety of investment opportunities they have to choose from, usually have high internal rate of return (IRR) hurdle rates). This leads to the impression they are cherry-picking investments, leaving much of the country underserved. IFIs, given their relationships with both parties, may be able to facilitate intermediation. By working closely with strong local companies to fully understand their investment profiles, IFIs may be able to increase the frequency of largely domestically financed strategic deals by offering strategic credit enhancement to improve the attractiveness of "second-tier" investments.

7.2.3. Domestic Bank Participation in Structured Finance

In a number of project finance deals, part of the financing is mobilized from the domestic banking sector in partnership with international investors. Domestic banks share many of the same concerns as foreign banks when making this type of investment. The tenor mismatch between short-term deposits and long-term loans, and the breach-of-contract risk on the government's part, are likely the banks' most pressing concerns, in addition to general credit risk. Although not much can be done to mitigate general credit risk, instruments that address maturity and contractual risk could increase domestic bank participation in power sector deals. Domestic banks also have one key advantage over foreign banks: as vested members of the local financial market, domestic banks have an implied performance guarantee from the government because by not performing, the domestic bank could threaten domestic financial-market stability. By increasing domestic banks' involvement in structured deals, those who structure deals increase the comfort level of local banks with the risk mitigation methodologies available, which could increase their participation in power sector finance. **Figure 7-2** illustrates the basic project finance structure with local participation.

Figure 7-2. Project Finance



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There are a number of examples among our cases that illustrate successful local bank participation in power sector finance. In Brazil, the Termobahia IPP mobilized Petrobras funding, as a strong partner for foreign capital. Because it is state-owned, Petrobras' involvement in the transaction provided implied contractual risk coverage with respect to tariff levels. Furthermore, IDB's participation enabled tenor extension up to 14 years. In the Shandong Zhonghua project, the use of 80% domestic bank funding allowed the project to achieve very low off-take pricing, providing security to investors for long-term pricing risk. A British export credit guarantee provided political and partial credit risk guarantees. In Bulgaria, the Maritza East III IPP mobilized US \$90 million of bank capital and US \$189 million from the state-owned utility, resulting in 42% domestic project funding. EBRD and MIGA's joint support provided tenor enhancement to 15 years.

These examples, as well as other successful deals elsewhere in the world, use a variety of risk mitigation instruments: government-provided refinancing guarantees, to address rollover risk; multilateral or bilateral guarantees and/or contingent lines of credit, to back up refinancing guarantees; maturity-extension guarantees, to address payment of debt service over the later maturities of debt; structured subsidies, to supplement unit tariffs as these are eventually brought up to cost-recovery levels; and government subordinate debt, often assisted by multilaterals, to substitute for local capital markets or to reassure foreign lenders. These instruments are complex and increasing their use will require additional efforts to develop a better understanding within the domestic banking sectors of the availability, pricing, and applications of these tools.

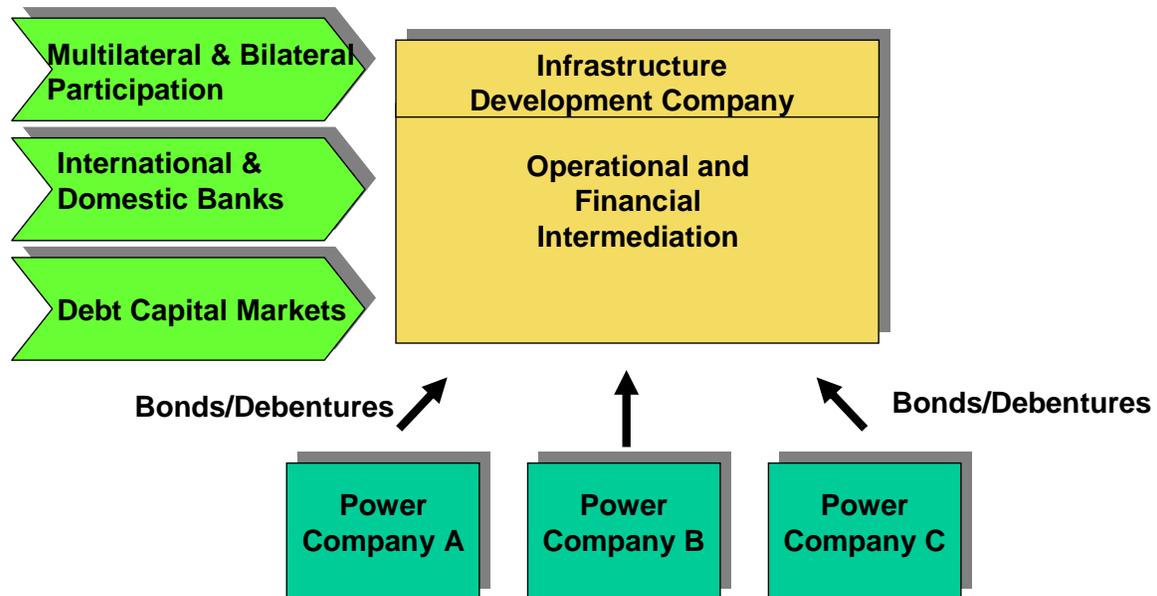
7.2.4. Securitization Structures

The creation of new intermediaries in domestic financial markets can take various forms, many of which have successfully funded a wide variety of infrastructure projects but which have had less success at developing local capital markets as a more sustainable solution to funding constraints. Essentially, development finance intermediaries provide a form of securitization, in that they provide diversification to investors and liquidity or market access to issuers. By combining individual investments, credit risk is diversified across a group of companies, enhancing investment attractiveness.

To be successful, a securitization requires an identifiable stream of contractual cash flows, which can be packaged into a combined security supported by the group of underlying contracts. Two of the more common forms of securitization that are applicable to the power sector are described below.

Infrastructure Development Companies (Quasi-blind Securitization). Infrastructure development companies (IDCs) are a departure from the classic development finance institution, in that IDCs actively assist deal structuring, provide a vehicle to demonstrate the viability of infrastructure investment, and are a pass-through entity for capital. In essence, however, an IDC is a quasi-blind securitization, in that it seeks to securitize a portion of portfolio by issuing debt/equity backed by projects' cash flow, thereby providing risk diversification to investors. **Figure 7-3** illustrates a quasi-blind structure.

Figure 7-3. Quasi-blind Securitization



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An IDC is capitalized by governments and development agencies, raises money on local capital markets, and lends those proceeds to a group of domestic infrastructure projects. India's Infrastructure Development Corporation is an example of this structure. The Infrastructure Development Finance Company (IDFC) was created in 1997 to respond to

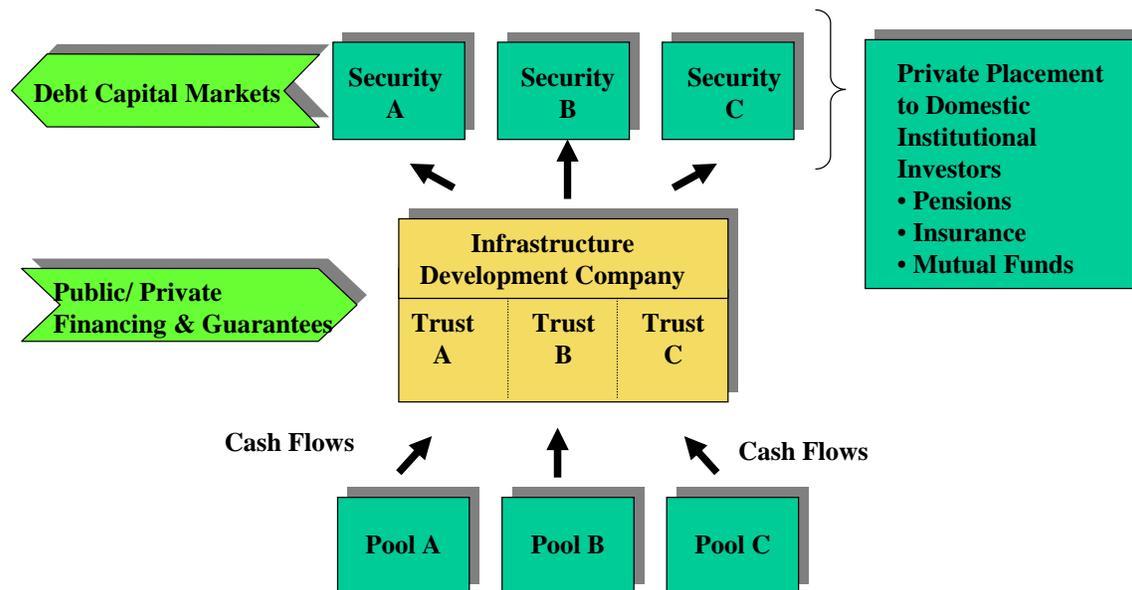
the need for a specialized financial intermediary for infrastructure. IDFC is capitalized 40% by foreign investors (banks and development banks), 40% by the Government of India, and 20% by domestic banks, with an additional tranche of government subordinated debt. Total capitalization is US \$343 million, supplemented by a further US \$315 million in bonds and debentures. IDFC has done approximately 35 deals in the power sector since 1997, through investments in bonds, mutual funds, and infrastructure loans, with infrastructure loans representing approximately 75% of total investments. IDFC provides direct project funding, as well as take-out financing for banks, and it facilitates risk participation for projects. IDFC also intends to provide advisory services to mutual and pension funds to facilitate and strengthen their connection to infrastructure projects. The Government of India is also setting up an equity fund to be managed by IDFC, and an institutional mechanism to coordinate debt financing by financial institutions with IDFC acting as the coordinating institution. IDFC is distinct from India's Power Finance Corporation (PFC), a state-owned development finance institution, in that IDFC has a diverse capital base that allows it to access international private capital. IDFC also has a broader portfolio of sector-building services than its state-owned counterpart focusing largely on public projects.

The recently announced AsPIFF (Asian Private Infrastructure Financing Facility) represents another securitization approach for infrastructure. AsPIFF is a concept currently under consideration for the Asia region, to address financing gaps and assist in the resolution of the various types of financial engineering problems encountered there. AsPIFF's intended focus is on projects ranging in size from US \$5 million to US \$100 million, and its goal is to be an entity on a regional basis to create scale, avoiding the inherent limitations of single country/single currency institutions. AsPIFF would assist in early project development, providing partial guarantees to third-party lenders, extending subordinated debt or senior debt in hard currency, subscribing to equity for smaller-scale projects, and providing wholesale lending for small projects.

With added risk to investors, IDC market liquidity may be limited and the cost of funding higher than in a discrete pool, which is discussed below.

Discrete Pool Securitization. In contrast to an IDFC, discrete-pool securitization structures pool the cash flows of pre-identified securities, issuing new securities supported by the underlying pool's combined cash-flow streams. In the U.S., securitization has developed into a huge industry, enhancing liquidity for multiple corporations that issue credit cards, auto loans and, most commonly, Fannie Mae and Ginnie Mae mortgage securities. Through securitization, companies significantly reduce the time they hold any one transaction on their balance sheet, thereby creating significantly enhanced liquidity and the ability to do additional business on a lower capital base. Sophisticated securitization structures are often built using trusts (discrete pools) that collect and distribute the cash flows from pre-identified underlying pools of mortgages, loans or other instruments. In developing countries, securitization structures have been used to finance concessions, such as the Tribasa toll road in Mexico. **Figure 7-4** illustrates a discrete pool structure.

Figure 7-4. Discrete Pool Securitization



Note: “Pool” denotes Pool of Infrastructure Investments

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Use of Securitization in the Power Sector. Securitization played a significant role in the early development of the U.S. electricity industry. In 1905, General Electric formed the Electric Bond and Share Company (EBASCO) to serve as a financing vehicle for the U.S. electricity industry, which was at that time perceived as risky, fragmented, and immature. EBASCO purchased preferred stock, bonds, and other securities of numerous local electrical companies in exchange for cash or equipment: a quasi-blind securitization model. EBASCO then packaged these securities and listed debt instruments on the New York Stock Exchange (NYSE). Through this approach, EBASCO financed the establishment of over 50% of the U.S. electricity industry, while providing investors with security of payment. EBASCO was known to take proactive and remedial actions as problems emerged in the portfolios.

The EBASCO model presents an interesting option for present-day financing of developing-country electricity projects. Private-sector international investors have considered an EBASCO-type structure at the international level, which would obviously produce a fairly dramatic example of diversification across developed and emerging market risk. Such a project would be large in scale and complex, involving securities regulations in many countries and agreements among a wide array of multilaterals, bilaterals, governments, and private sector participants. It is an ambitious idea which we are sure will receive significant attention in the near to medium term, although such a project would realistically take significant time to implement.

Implementing the EBASCO model at the domestic level, however, may produce results more quickly. Key steps in setting up this type of structure would include the following.

- ❖ Creating an IDC specific to the power sector, with support from multilateral and bilateral institutions as well as strong regional or international power-sector experts with strategic interests in a particular country. It may be possible to create a structure that includes other infrastructure sectors, but this should be done carefully to ensure that water and power sectors (which are more political, more complex, and therefore require more attention) are not neglected.
- ❖ Allocating the contractual and political risks among multilateral and government participants.
- ❖ Defining the geographic scope of operations: specific enough to have a direct impact on a country or region, but broad enough to provide sufficient diversification.
- ❖ Providing the entity with the necessary base of skills in the key areas of energy-sector project assessment and deal design, as well as familiarity with the array of risk mitigation instruments offered by the market.
- ❖ Developing outreach plans to work specifically with domestic banks and strategic investors to facilitate project identification.
- ❖ Simultaneously working closely with institutional investors to design attractive instruments that facilitate capital market development.

The above list is not meant to be exhaustive by any means, but to illustrate some of the interesting features that may make an EBASCO-model structure feasible at the domestic level. There are obviously a number of issues, including currency profiles, which make housing these structures at the domestic level more complex than assigning the full currency risk to domestic governments. IFIs need to be a catalyst in limiting and controlling their exposure to domestic currency risk, by maximizing mobilization of domestic capital.

7.2.5. Domestic Equity Markets

Domestic equity markets are a source of finance for bankable entities, often as part of a privatization strategy. The Luz del Sur privatization in Peru is an example of a power company successfully accessing local equity markets, with 20% of the equity of the company listed on the Lima Stock Exchange. In a two-stage divestiture over 2 years, the Peruvian government sold its stake in the company to a combination of foreign investors, employees, and local institutions, including a regional energy-sector private equity fund. Post-listing, the company has performed well; its stock has appreciated 125% since 2001, and it also generates dividends. Government subsidies built into the cost recovery tariffs were not externally guaranteed.

Most equity market divestitures have little IFI involvement, as most risk mitigation instruments do not guarantee equity investors, and the transactions by definition meet market norms for creditworthiness and other risk assessment factors. Significant participation by foreign investors, as in Luz del Sur, encourages local participation, as capital market investors have confidence in the due diligence standards of experienced strategic investors. The existence of public shareholders also assists in applying indirect pressure on governments to honor their contractual commitments to the investor company

for reasons of capital market stability. IFIs also have the ability to influence governments to comply with their contractual obligations to power sector companies, enhancing an investment's attractiveness to the market as a whole.

7.2.6. Domestic Debt Markets

Stand-alone domestic bond issues to finance individual power sector investments are rare outside of developed markets. In Malaysia, private power producer SKS Power Sdn Bhd has placed out 2.6 billion ringgit (US \$700 million) of its 5.6 billion ringgit (US \$1.5 billion) Islamic bond to a state-run pension fund, and is planning to bring the balance to the public market in two tranches. As our previous data indicates, Malaysia's corporate bond sector is relatively advanced, with approximately US \$40 billion issued in 2002. Well-managed state-owned power companies, such as Eskom in South Africa, routinely access debt markets directly. For other markets in earlier stages of development, indirect access to corporate debt markets through securitization structures like IDCs both foster capital market development and provide a demonstration effect to vet power companies as attractive investment opportunities. In Brazil, however, the Petrobras pension fund, with US \$7 billion in assets, is planning to invest in 8-year debentures issued for the Tucuruí hydroelectric project, which is partially funded by the Brazilian national development bank.

7.2.7. International Capital Markets

Globalization of capital markets presents some interesting opportunities for transactions between domestic issuers and investors to actually take place internationally. For investors, international markets provide the liquidity often lacking in domestic exchanges. Some large international private equity investors have a stated strategy to identify investment opportunities where an eventual international listing would be viable as an exit strategy. For issuers, deeper international markets offer attractive security pricing. A number of Indian companies, including Tata Power, the Industrial Development Bank of India, IPCL Petrochemicals, and BSES (a large power company) have issued GDRs and/or raised foreign syndicated loans to finance Indian operations, attracted by the relatively attractive currency-adjusted cost of capital.

Market liberalization also provides domestic institutional investors opportunities to invest in foreign assets, providing opportunities for credit and currency diversification. Although pension funds in markets such as Chile do invest some of their assets abroad, research indicates there is a strong bias in favor of domestic companies that are known entities. As pension fund liabilities are denominated in local currency, prudence dictates limiting foreign currency denominated investments, even if the likely trend is toward local-currency depreciation rather than appreciation. The implied creditworthiness of an internationally vetted security is, however, attractive to money managers in any country. Issuers subjecting themselves to this process may also generate increased confidence in domestically issued securities. It is even conceivable that domestic capital markets invest in domestic securities but make those investments on foreign exchanges.

Creative use of global capital markets therefore may be a valuable tool in mobilizing domestic capital in developed capital markets. This trend should be balanced, however, by the overriding objective of fostering macro-economic stability in the domestic market,

the key precondition for domestic capital market development. In the wake of the Mexico crisis, many countries are looking to manage both public and private foreign currency exposure, especially on short-term instruments, to avoid creating instability.

8. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations reflect insights drawn from the 20 successful power financing case studies analyzed in this report and from discussions with major international power investors and lenders active in emerging markets. In addition, this report was informed by a large body of literature (as provided in the Bibliography found in Appendix 2) that has analyzed the subject of power sector reform and privatization. The objective of this report is to assist power sector policymakers in advancing power sector reforms in a way that successfully attracts private capital. The recommendations reflect lessons learned during the investment expansion and contraction periods between 1990 and 2003. The focus is on both near- and longer-term actions that multilateral development banks (MDBs), export credit agencies (ECAs), and donors can take in developing countries.

8.1 CONCLUSIONS

Major private investment is required in the power sector of emerging markets to meet IEA's projected annual investment need of about US \$140 billion to US \$160 billion per year between 2002 and 2020. Of this total demand, the World Bank Group is currently only providing about US \$2 billion per year (including financing, guarantees, and insurance). The total level of capital and support provided by all MDBs and ECAs active in the power sector of emerging markets is on the order of about US \$4 billion per year. Based on this limited financing capacity, the priority has to be on how MDBs' and ECAs' funds can best maximize leverage of private capital.

The World Bank Group has leveraged substantial private capital through equity, loans, guarantees, and insurance. Based on some cases in this study involving the World Bank partial risk guarantee (PRG), we estimate the leverage ratio ranged between 3.0 and 8.4, with an average around 6.3. With MDB and ECA power sector financing of about US \$4.0 billion per year in emerging markets, there is perhaps optimistically a maximum of US \$30 billion per year of foreign and domestic private capital that can be leveraged. If realized, this level of financing would be an important contribution to meeting emerging-market power financing needs. We provide concrete recommendations below and in the report about specific actions the MDBs, ECAs, and donors can take over the near to medium term to better achieve this potential.

Even the maximum contribution of about \$30 billion of MDB/ECA-leveraged private investment in power, however, will still be insufficient to meet private investment needs. Assuming that 40% to 50% of power sector investment in emerging markets (i.e., between US \$60 billion and US \$80 billion per year) comes from self-financing, this still leaves an additional investment need of about US \$50 billion to \$70 billion per year, which policymakers would seek to attract from the private sector (over and above the \$30 billion of private capital potentially leveraged by the MDBs and ECAs). At its peak, private investment in the emerging-market power sector reached about US \$45 billion per year in 1997, only to drop to about US \$10 billion per year in 2002. Evidently, the MDBs and ECAs are not succeeding to leverage their full private investment capacity at this time. If even the most optimistic private investment MDB and ECA leverage scenarios are falling substantially short of demand, then, what other mechanisms can mobilize

private investment?

The question is whether the MDB's most effective means of leveraging private capital are financial instruments such as syndicated loans, equity investments, guarantees, and insurance. A case can be made that the IBRD and IMF sector and adjustment lending (which can affect the larger political economy and governance structures) could in the long run be the most critical in creating the necessary enabling framework for private investment. When leveraging private financing, the MDBs and ECAs play more of a catalytic role, which in the longer term will only be effective within the context of an improving governance framework. This question opens up various complex and sensitive issues about the effectiveness of sector and adjustment lending and is clearly beyond the scope of this study. Yet, given the analysis in this report and the limitations in the leveraging financial instrument model, it is evident that this question warrants further examination. Similar to this study that examined successful private power transaction financing, it would be worth also examining and learning from cases of sector and structural adjustment lending that have had a favorable impact on power sector reform.

The analysis of the 20 successful power financing cases and the extensive literature on power sector reform yields some important insights as to what MDBs can do to revitalize power sector reform and private investment in emerging markets. It is important to first examine the overarching conclusions and then to focus on the specific successes common to many of the 20 cases. There are four fundamental insights to consider.

❖ ***Power sector reforms need to be implemented with a better understanding of the risks private investors and lenders face, of the risk-adjusted rewards they must earn, and of the business cycle and decision-making processes of private capital markets.*** The lesson from emerging market financing is that there have been major miscalculations made, by both investors and the international development community, about the expected risks and returns. Given the difficulty of earning high returns from emerging-market power investments without engaging in transaction or market manipulations, the focus is on how to minimize risks the private sector has no control over. The major risks are currency devaluations and legal, regulatory, and contractual uncertainties. Investors are prepared to assume commercial risk, but they have learned the hard way that currency, legal, regulatory, and contractual risks that they cannot control, can be catastrophic for their investments. There is a critical need for improved and expanded MDB and ECA support to cover these risks.

During periods of market exuberance, some investors make investment decisions that fail to reflect adequate business risk management and prudent investment decision-making. The power market and transaction financing designs supported by the development community over the past two decades sometimes invited excessive risk taking by the private sector, which was a willing party to these designs during periods of inflated optimism. When private investments fail due to poor judgment, the private investors should pay for their mistakes. However, high volatility in capital flows into emerging markets not only hurt the private investor but also the country's development. The question is, given the prevailing focus on *public private partnerships*, might not the failures of the private sector also be viewed as a public sector problem? In promoting a real partnership, public sector policies could better

mitigate excessive volatility by applying a better understanding of how to manage risk and rewards and to incentivize private investors to achieve economic efficiency. These policies can define and implement market and privatization designs that do not invite investors to take excessive risks that are not justified by what possible return they can earn. Either investors will not participate in emerging market investments with excessive risk, or if they do during periods of considerable optimism, many of their investments will eventually fail. There is also a need to limit the inflated demand projections and capacity expansion plans that are motivated by vested interests. Better financing structures can be promoted, which require governments to be more accountable for the risks they can control and to employ more risk-appropriate power sector models and financing structures.

- ❖ ***Some important factors that impact private capital flows into emerging market power are exogenous to the power sector and increase volatility.*** The dramatic decline in private investment in the power sector of emerging markets since 1997 is primarily the result of (a) a period of economic recession in most OECD countries, (b) financial problems faced by international power investors in their home markets due to competitive and market challenges resulting in part from restructuring, and (c) failed power investments in emerging markets. The major inflows and outflows of capital into the power sector of emerging markets generally mirror the overall capital flows into emerging markets. While the pullback of major international investors was strongly influenced by failed investments in developing countries, a case can be made that major contributing factors have been financial pressures on utilities in their home markets and the global recession. This observation suggests that power-market reform policies need to be more robust and able to sustain power sector development in the face of volatile private capital flows and less-than-stable interest by foreign investors. Focus more on enabling self-financing and encouraging domestic capital.
- ❖ ***Power sector development requires coordinated progress on all four legs of the development process, i.e., political, macro-economic, sector, and financial.*** In reviewing the large number of reports and studies on the subject of power sector reform in emerging markets, it is noteworthy that very few reports dedicate much if any discussion to how power sector development is contingent upon parallel developments in the larger political and economic frameworks. This literature conveys the perhaps unintended impression that success or failure of power sector reforms is largely dependent upon the effectiveness of power sector reform and privatization interventions. The failures in reform and private investment mobilization highlight the fact that electric power, as a social good and key input to economic development, is inextricably tied to larger political, macro-economic, and financial conditions that need to develop in parallel to enhance the potential for reform. The recent focus on governance and political economy has highlighted this realization that power sector reform will only succeed in the context of progress in the larger political and economic frameworks.
- ❖ ***Power sector reforms will be enhanced through more of a cross-sector development strategy.*** While it has been recommended that increased financial assistance is needed to enhance the enabling framework, this process needs both more funding and more interdisciplinary coordination between parallel development activities. Development

professionals in the financial, public, social, private, and infrastructure sectors are all active in areas affecting the governance of the power sector. Selective, coordinated exchanges across sectors can potentially better leverage development financing to support effective reform not only in power but in other sectors as well. One area that illustrates the need for a cross-sector approach is how the need for good governance is addressed. The focus on corporate governance is important yet may be insufficient if sector governance and even national governance are not adequately managed. A well-designed corporate governance structure may have difficulty being effective if it resides in a sector and national context that has a dysfunctional governance framework (as illustrated by the experience in Argentina). Another example is the growing recognition that selective and targeted subsidies may be necessary to support power sector reforms, which in turn requires greater coordination between a government's social and power sector policies.

While this realization may seem obvious and difficult to implement, it can be critical to making progress in the power sector. Power sector reforms need to account for what is feasible within a country's political context, its macro-economic condition, and what can be financed by the existing capital and banking sector framework. In hindsight, this perspective could have significantly changed the way specific power-sector reform programs were designed, and could have resulted in a higher rate of success.

The fundamental conclusion is that development policymakers cannot rely on formulaic economic or systems models for power sector reform. The *World Bank's Guidance Note* affirms this view and indicates this lesson is already being internalized within the World Bank. Given the political, economic, financial, and time pressures faced by development institutions, it is understandable why policymakers often reach for standardized approaches to power sector reform. Nonetheless, it would also be unrealistic for each country to have a unique and entirely customized program. More can be done, however, to understand the political economy and power/energy sector characteristics of countries and thereby better design appropriate power-sector reform programs. A country typology that better reflects the political economy of the power/energy sector needs to be developed to better inform the reform design process. This type of analysis is already beginning to be discussed within the World Bank and should be developed further.

In addition to the above overarching conclusions, there are five key success factors, summarized below, common to many of the 20 successful private power financing cases.

- ❖ ***Political leadership and support was critical at multiple levels.*** Political support has been critical in most of the cases at the levels of the central government and the utility, as well as among the broader community of stakeholders. By privatizing, governments had to willingly stop making some key decisions on ownership and/or operations. In addition, political support for reform and sector/utility restructuring had to be sustained, often in the face of popular resistance from workers, consumers, and the public at large. In fact, the recently declining political support for reforms in some countries presents a serious challenge to the reform process. In some markets, real progress can be seen at the corporate and sector level. Yet if these reforms lead to dramatic tariff increases, painful service disconnections, and job uncertainty, without

an accompanying process of obtaining public understanding and buy-in, the reforms may not be politically sustainable.

- ❖ ***MDB and ECA support was essential in specific transactions and to cover specific risks.*** Many countries were reluctant to take the difficult measures required to reform. The MDBs and bilateral agencies provided a carrot-and-stick approach that helped entice and pressure governments to take the necessary steps towards reform. The MDBs' and ECAs' role was also critical in getting private investors to participate in markets they would not normally enter, by providing necessary policy support, guarantees, insurance, and cofinancing. Finally, the MDBs also played a role in constraining excess-capacity additions that could have undermined the private investments. MDB and ECA support was not present in all cases, particularly in those transactions involving higher levels of domestic capital. Nonetheless, the MDB and ECA role was critical in many transactions, particularly Greenfield power-plant development that had major upfront investments.
- ❖ ***Good project design was required that fairly balanced the imperatives of the government and investors.*** Good project designs balanced the needs of investors and the government so that both received a fair and reasonable return from the private sector participation. A hallmark of failed investments is where either the investor took advantage of the country or the country took advantage of the investor. This imbalance generally led to either the investor leaving the country after years of incurring losses or the country forcing renegotiations of unfair contracts with investors after contentious legal actions. A good project design allocates the risks efficiently and reduces the demand for MDB/Bilateral support over time, which can reduce the overall cost of private sector participation (PSP) to the economy.
- ❖ ***Public participation was needed for projects, particularly at the customer-facing (i.e., power distribution) end of the business.*** Given the negative public perception of privatization that has emerged in many countries over the past decade, it is evident that public participation was not given enough attention by policymakers. From the case analyses, it is clear that success of some power investments was substantially attributable to serious efforts at recruiting public participation. It is important to note this was particularly the case with retail customer-facing businesses, such as power distribution. Efforts to encourage consumers to become accountable for their power consumption (i.e., paying bills and not engaging in theft) were particularly important for businesses which had direct contact with consumers. With large, central power-plant developments where sales are made to the wholesale market, public participation was not a significant factor for success.
- ❖ ***Domestic and regional capital from investors and banks, and the ability to expand internal self-financing, proved critical in many cases.*** The departure of many foreign strategic investors has led to domestic and regional investors playing a more important role. Domestic capital has key advantages: it does not have foreign-exchange risk, can be less costly and less volatile, and can sometimes better manage the political risk inherent in power sector investing. As countries move up the development ladder, they increasingly succeed in intermediating between long-term savings (e.g., pension funds, insurance funds, and mutual funds) and long-term

liabilities (i.e., infrastructure financing). In the case analyses, there were notable examples of private domestic investors playing an important role. In addition, where risks were high, there were notable cases of private investors and operators implementing programs to improve revenue collections and cost recovery so that the utility could effectively self-finance its operations through improved tariffs, billing, and metering. In the end, these measures also enhanced the creditworthiness of the utility and its ability to raise financing on its own balance sheet.

These success factors from the cases provide added insights for policymaking. Success, however, has to be sustained and cannot simply rest on a successful financial closure. Successful privatizations can lead to a political backlash and to vested interests seeking to undermine reforms through creeping expropriation, refusing to implement tariff increases as agreed, or engaging in various attempts to undermine the viability of the utility business. Investors may need sustained support from the MDBs to enforce agreements and to seek recourse through arbitration. Sustained post-privatization assistance is needed to maintain the reform process over time.

8.2 RECOMMENDATIONS

Sustainable power sector reform requires increased private sector investment. While private sector participation is not the objective in itself and does not negate the public sector's critical role, it is evident that improved policies need to be implemented, which are more effective at providing an attractive investment framework for private capital. Given the major decline in private sector participation in emerging market infrastructure between 1998 and 2002, there is a certain urgency to developing strategies to facilitate greater private capital flows in the near to medium term. Longer-range policies still need to be pursued, however. The recommendations provided below are therefore separated into near-term and longer-term actions. These recommendations are primarily directed to power sector policy makers in governments, the MDBs and the donor community. In the end, these recommendations are intended to support emerging market governments in power sector reform and so are also of interest to government policymakers.

NEAR-TERM ACTIONS

- 1) ***Improve coverage for the key risks of concern to investors and lenders, which are currency devaluation risk and legal/regulatory/contractual risk.*** Develop further the Currency Backstop Facilities and make these more available across countries to address currency devaluation risk. Expand the application of the World Bank's partial risk guarantee PRG and of related insurance to cover legal/regulatory/contractual risks. Consider if and how guarantees can meet the risk management requirements of domestic capital. At a perhaps lower level of importance, consider the expressed need from the investment and lending community for better terrorism coverage.
- 2) ***Streamline the process for providing MDB and ECA guarantees and insurance instruments, to allow for more flexible and timely application.*** Focus as much on process improvements as on expanding coverage for MDB and ECA guarantees and insurance, to address key uncontrollable risks: currency devaluation and legal/contractual/regulatory matters. Investors and lenders need greater flexibility in

adapting these instruments to existing markets and a more streamlined and accessible process for making these instruments available for specific transactions. Gaining agreement from governments to implement guarantees is often too complex and time-consuming. Accelerate the decision-making on guarantees (e.g., require the guarantee be available for a privatization as a conditionality in a World Bank Sector or Programmatic Adjustment Loan, so it is decided upfront and does not need special approval). A clearer cooperative framework is needed upfront in defining the preferred creditor status when multiple MDBs and ECAs are involved in a particular transaction, in order to streamline the process of financial closure.

- 3) ***Support implementation of a tariff regulatory framework that protects investors and lenders from undue political interference.*** Support regulation by contract and multiyear tariff arrangements providing investors and lenders certainty that they will be able to earn a fair return on their invested capital. Seek to implement incentive-based cost-of-service regulatory models that attract investments in improving efficiency, reducing losses, and improving collections. Where subsidies are needed, provide a clear method for administering the subsidies, which does not place an undue burden on investors.
- 4) ***Provide incentives and financing support targeted to encouraging domestic and regional investors and lenders.*** Support, where needed, domestic or regional strategic investors who work with a transparent and competitive process. Support, when needed, the expanded role of domestic strategic investors, through policies and local currency guarantees. While often not possible in the least developed countries, support, where feasible, syndication of domestic bank debt and extending tenures to meet project-financing needs. Provide local currency guarantees, where needed, to mobilize domestic debt.
- 5) ***Wherever feasible, promote expanded domestic capital mobilization, through establishing financial intermediaries to channel a growing pool of domestic savings into power infrastructure.*** In countries where pensions funds, insurance funds, mutual funds, and domestic capital market are forming, establish infrastructure financing facilities, through pooling and securitization schemes that can intermediate between the growing pool of domestic savings and the infrastructure financing needs of the power sector.
- 6) ***In countries where a single buyer framework may prevail for some time, support IPP project-financed transactions under a BOT/BOO or a concession framework, subject to three cautions.*** Where mobilizing commercial debt is not feasible, seek to use a concession framework that allows for MDB debt co-financing with the government. Before supporting an IPP transaction, consider the following three cautions. (a) Avoid promoting IPP transactions in a power market where cash collections are low, technical and non-technical losses are high, and retail tariffs do not approach cost recovery; under such conditions, IPP contractual obligations could place an unsustainable financial burden on the single buyer if it is not generating enough cash to pay for the wholesale power generated by the IPP. (b) Question supporting IPP transactions that cherry-pick the best industrial customers and leave the utility with an increasingly less creditworthy customer base. (c) If the power

sector is scheduled to transition to a competitive power market, address both how IPPs will be integrated into the larger power market restructuring and the potential stranded-asset problem of long-term PPAs, through shaping the market rules and IPP contractual framework to define an acceptable renegotiation process. In the design of the market rules and the IPP contractual framework, seek to have an integration plan so that the IPP can transition into an emerging competitive market when one emerges.

- 7) ***Support generation company divestitures in markets that are in the transition to competitive multi-buyer/multi-seller markets, yet encourage the necessary vesting and bilateral contracting framework to provide investors with needed revenue certainty.*** Where a competitive market is established, promote generation company divestitures but provide investors with some degree of revenue certainty through vesting contracts and contracts for ancillary services. Enable establishment of a proper trading platform, spot market, bilateral contracting, and balancing market. Where needed, provide guarantees to give investors support behind these contracts when the market has an insufficient track record.
- 8) ***In the power distribution sector of countries with little private investor interest, seek private participation at least in the revenue collections end of the business and promote affermage/lease or concessions as part of public-private partnerships.*** Incentivize private investors to invest in improved billing, metering, and collections, to put the disco on sound commercial footing. Support tariff increases to reach full cost recovery over time, phasing down major subsidies during a transition period and only sustaining subsidies that are for life-line rates to serve the poor. Enable private operators over time to generate revenues from their operations to finance capital investments directly through retained earnings and financing on an improved and more creditworthy balance sheet. Provide MDB-supported public sector debt co-financing to meet capital investment needs in the near term that cannot be provided either by the private investor or through internally generated income. Design and implement transitions that reduce subsidies and phases in cost recovery over a period that is politically sustainable. Establish a clear plan for defining and phasing out subsidies, reforming tariffs, aligning private incentives to invest in operations improvements, and rationalizing staffing through attrition.
- 9) ***In the distribution sector of countries with strong private investor interest, promote concessions and divestitures that incentivize private investors to make both operational and capital investments.*** Depending upon a country's legal tradition, promote either concessions or divestitures of discos to bring private investors into the transaction. Majority private ownership will generally be required in higher-risk markets. Incentivize these private investors to not only invest in operational improvements but also to make major capital investments that are provided through external financing on an improved balance sheet or based on retained earnings.
- 10) ***Support expanding power coverage to underserved communities in the urban slums and rural areas in a sustainable way by relying on utility electrification initiatives that effectively use intermediaries and involve consumer participation.*** As defined in the successful utility electrification programs described in this report, promote local programs initiated by utilities that rely on intermediaries and public

participation, to obtain buy-in to programs combining improved performance with improved billing, metering, collections, loss reduction, and cost recovery.

- 11) ***Where no private investment is feasible, rely on management contracts and on “performance improvement” loans to enhance commercialization of state-owned utilities.*** As a temporary measure to advance reforms and to potentially make the power sector more commercially attractive in the future, implement management contracts and commercialization technical assistance in a way that improves financial performance. Ensure the utility is corporatized, rationalize business units and functions, decouple the utility from the central government budget, establish clear accounting and audit procedures, establish transparent transfer pricing, and professionalize billing and metering.
- 12) ***Establish an ongoing dialogue with a representative group of private power investors and lenders in emerging markets, to obtain collectively agreed upon recommendations to the World Bank on optimal policies for mobilizing private capital.*** The MDBs continuously receive input from the private sector, but it is usually from individual companies, and with a focus on individual transactions. The discussion needs to be broadened to cover larger sector policy. There is also a need to solicit recommendations reflecting the common view of the industry and not just of individual companies. For this reason, the World Bank would benefit from engaging in a dialogue with a representative group of private investors and lenders, to receive recommendations that reflect industry-wide rather than simply company-specific input.

LONGER-TERM AND ENABLING FRAMEWORK ACTIONS

- 13) ***Promote power market designs and financing structures that better reflect country and sector risks in a way that is sustainable for private investment at each stage of development.*** Power market designs should introduce competition into power markets at a rate commensurate with the level of country and sector risk and the number of private sector investors active in the market. Generally, avoid promoting high levels of power sector competition (e.g., wholesale and retail competition) in countries with high levels of country and sector risk. Recognize that the vertically integrated or single buyer utility model may still have valid applications in small countries or countries with high risks and low levels of power sector development. Where the competitive process reveals little investor interest, and where those few investors who are interested require substantial time to develop an opportunity, governments, MDBs, and donors should recognize investors’ needs for higher returns in the initial years.
- 14) ***Better explain and communicate the power-sector reform process to the key stakeholders in order to achieve greater public buy-in.*** The complexity of the power-sector reform process and transitioning to competitive markets is often only understood by a small group of leading experts. When these sophisticated models fail, as occurred in California or Argentina, the public’s worst suspicions about power sector reform and competitive markets are reinforced. The declining political support for power sector reforms and privatization is in part due to policymakers not seeing

the need to explain the imperatives of reform and competition to the public in ways that could be understood and accepted. There is a need to address the general failure to communicate the purpose and process of reforms to the larger group of stakeholders and to seek their input and accommodate their concerns. Otherwise, popular opposition could overrule the corporate and economic successes of reform.

- 15) ***Strengthen good governance at the national, sector, and corporate levels by focusing on the rules and restraints, competitive pressures, and the voice and partnership dimensions.*** Engage in an interdisciplinary and inter-sector exercise to strengthen better governance, focusing on (a) rules and restraints, (b) competitive pressures, and (c) voice and partnerships. This exercise would likely be led outside of any department focusing on infrastructure per se, yet it should involve power sector professionals in its conceptualization. Design the legal and regulatory framework assistance so that is more adapted to local political, economic, and cultural conditions and so that it is within the country's historic traditions. Design competitive frameworks that are compatible with the market's ability to absorb such frameworks; in the beginning this may call for only entry-level competition, yet promote transparency and accountability. Improving corporate governance is a clear starting point, with the focus on the structure and composition of the board of directors and management to enhance fiduciary accountability. Expand the role of the voice and partnership, particularly with customer-facing businesses (such as power distribution) and with labor unions, in order to increase buy-in from the larger population.
- 16) ***Integrate a better understanding of the necessary macro-economic conditions needed to support private capital flows in the power sector, in order to engage in better market timing, credit enhancement, and investment promotion.*** Understand how macro-economic policies and trends can best affect the ability to attract private investment into the power sector. Work with macro-economic and trade-and-development policymakers to understand how to better apply credit analysis to the power sector and engage in better market timing and investment promotion. When at the bottom of a market cycle, strategies for enhancing the value of business assets can be pursued. These measures can be seen as preparation for market upturns when better investors, borrowing capacity, and pricing exists.
- 17) ***Encourage collaboration between financial and power sector experts to promote policies that mobilize an increasing proportion of power infrastructure financing from domestic markets using, for instance, securitization and pooling structures.*** MDBs and donors need to expand their roles in mobilizing domestic equity and debt capital in individual countries or regions with sufficient capital-market and banking-sector development by establishing:
 - infrastructure equity funds that target power sector investments;
 - securitization and pooling financial institutions that serve institutional investors;
 - credit enhancing facilities that support domestic infrastructure bonds; and
 - development and enhancement of domestic bank limited-recourse project-financing facilities.

Such funds could give greater legitimacy to domestic capital, making it more

available and on more attractive terms for infrastructure projects. The level of a country's development and the maturity of its capital markets will determine the extent these measures can be implemented in the near or longer term.

- 18) ***Promote better power sector planning to minimize the excesses that result from poor governance and undue influence by vested interests.*** Planning of demand and capacity additions for fuel, power generation, transmission, and distribution are sometimes distorted by bad governance and corruption. These distortions can lead to inflated demand projections and justifications for more capacity than needed. These excess power purchase commitments financially burden the power sector in a way that can eventually undermine the market and private investment. Policies that seek to mitigate volatility in power market pricing and supply are welcome, such as those used by the MDBs to cap capacity expansions without prior approval.
- 19) ***Strengthen international arbitration conventions to provide more effective and timely recourse in the case of disputes.*** Arbitration is often too time-consuming with rapidly degrading investments; accelerated arbitration procedures such as pre-arbitration or proximity justice mechanisms need to be considered.
- 20) ***Encourage better facilitation of government agencies to reduce the costs and time required to develop private investments.*** For instance, the “one-stop shop” framework could be more widely promoted so that governments centralize the contracting and permitting process in a way that simplifies and accelerates power project investments.
- 21) ***Collect better data necessary to improve policy formation.*** There are gaps in the economic and financial data that need to be addressed to enable better policy design. For instance, the World Bank's PPI database does not distinguish between private international versus domestic capital. Better data on the flow of foreign versus domestic private capital would enable policymakers to better understand the trends and patterns of these two different sources of private capital. The quality of data on collections and losses could also be improved in some countries. Determining what policies and procedures lead to better collections and to reductions in losses, depends upon reliable data for such variables.

APPENDICES

APPENDIX 1

COMPLETE LIST OF CASES CONSIDERED

PROPOSED POWER SECTOR REFORM CASE STUDIES

February 06, 2004

<u>Country</u>	<u>Region</u>	<u>Project</u>	<u>Highlighted Case Theme</u>	<u>Date</u>	<u>Note</u>
1 Argentina	LAC	Edenor	Concession	1990's	Concession
2 Argentina	LAC	Edesal	Concession	1993	Union Fenosa (100%)
3 Argentina	LAC	Generadora Cordoba SA	Concession	1996	Fesescor(36%), Inepar(26%), Ucelca (16.3%), Fesesor (16.3%)
3 Argentina	LAC	AES-Caracoles	Concession	1998	AES (100%)
4 Azerbaijan	ECA	Baku Electricity	Concession	2001	Barmek Holdings -Turkey
5 China	EAP	Fushun Cogen Power	Concession	1997	60% Priv ownership -Cheung Kong Infra
6 Gabon	Sub-Sahara	SEEG	Concession	1997	Vivendi
7 Ghana	Sub-Sahara	Takoradi Power	Concession	1997	Electricity Supply Board of Ireland
8 Hungary	ECA	Tisza II Power Refurb	Concession	2003	ABB Hungary, Transelektro, Slovak Elect
9 India	SA	Chandrapura Power	Concession	1996	Kepeco (100%)-Korea
10 Mexico	LAC	Elina del Golfo Power	Concession	2003	Techint Mexico (100%)
11 Morocco	MENA	Lydec - Casablanca Electricity & Water	Concession	1997	Affermage
12 Namibia	Sub-Sahara	Northern Electricity	Concession	1997	Northern Electricity OM contract
13 Vietnam	EAP	Hiep Phuoc Power	Concession	1996	70% Priv ownership -Central Trading & Dev-Taiwan (70%), Gov of Viet (70%)
14 Argentina	LAC	Endesur	Divestiture	1992	Electricity Losses Drop
15 Argentina	LAC	Edemsa Genco	Divestiture	1999	Distribution - \$367 Mn
16 Argentina	LAC	SEGBA Genco	Divestiture	1990's	Tax Revenues Generated
17 Bolivia	LAC	PPW Disco?	Divestiture	1990's	Reduced Fiscal Deficit; Privatization proceeds reinvested back into sector
18 Chile	LAC	Chilgener	Divestiture	1990's	Price Decreases-World Bank research
19 Chile	LAC	Chilquinta	Divestiture	1990's	Electricity Losses Drop - World Bank research
20 Georgia	ECA	AES- Acquisition of Telasi Disco	Divestiture	1990's	Collections Improvement, Increase Availability. Reduced Losses
21 Guatemala	LAC	EEGSA Privatization	Divestiture	1998	Constellation Power consortium
22 Lithuania	ECA	Lithuania Power Company privatization	Divestiture	2003	Reform before privatization success story
23 Moldova	ECA	Chisinau/CentruSud - Union Fenosa - Three Discos	Divestiture	1990's	Collections Rise
24 Panama	LAC	IRHE Privatization	Divestiture	1998	Union Fenosa (\$212 Mn), Constellation Engy (\$89Mn)
25 Peru	LAC	Luz Del Sur Disco	Divestiture	1994	Increased Electricity Coverage / Reduced Losses
26 Philippines	EAP	Philippines TRANSCO	Divestiture	2001	First ever privatization of transmission assets in Asia
27 Russia	ECA	RAO UES Privatization	Divestiture	1990's	Divestiture share sale in energos and RAO UES; questionable?
28 Uganda	Sub-Sahara	Uganda Electricity Disco (UEDC) privatization	Divestiture	2002?	Concession involving international bidder: Escom
29 Venezuela	LAC	SENE Privatization	Divestiture	1998	80% total to CMS (70%), Casa Paris (25%), Consultores Occid (5%)
30 Albania	ECA	Essergei Hydro (Albania)	Domestic Capital	2002	Essergei
31 Albania	ECA	Vlora Disco	Domestic Capital	1996	Small local investors
32 Azerbaijan	ECA	Sumgayitelektriksebeke (Azerbaijan)	Domestic Capital	2002	Barmek
33 Bangladesh	SA	AES-Meghnaghat (450MW) Genco	Domestic Capital	2001	Funded by the Infrastructure Development Company, Ltd.(IDCOL)
34 Belarus	ECA	Lepel Hydro (Belarus)	Domestic Capital	2003	Polatsk Power Networks
35 Belize	LAC	Belize Electricity Limited	Domestic Capital	1992	Foreign and domestic investors
36 Bolivia	LAC	Cochabamba Rural Electricity (Bolivia)	Domestic Capital	2000	Empresa de Luz Y Fuerza Electric Cochabamba SA
37 Brazil	LAC	Jauru Small Power Plant (Brazil)	Domestic Capital	2000	Agroindustrial Araputanga
38 Brazil	LAC	Rio Grande Energia	Domestic Capital	1997	Foreign and domestic investors
39 Cambodia	EAP	Kirirom 1 Hydropower (Cambodia)	Domestic Capital	2000	China Electric Power Tech Import/Export
40 China	EAP	Three Gorges Hydro (China)	Domestic Capital	2003	Yangtze Electric (1.19Bn IPO)
41 China	EAP	Guangxi Guigan Electric (China)	Domestic Capital	2000	Local
42 China	EAP	Xinji Thermal Power Plant (China)	Domestic Capital	2003	Hengshui Construction
43 China	EAP	Inner Mongolia Mengdian Thermal Power Co.	Domestic Capital	1994	Small local investors
44 China	EAP	Heilongjiang Electric Power	Domestic Capital	1996	Small local investors
45 China	EAP	Hunan Huayin Electric Power Co.	Domestic Capital	1996	Small local investors
46 China	EAP	Hubei Changyuan Electric Power Development Co.	Domestic Capital	2000	Small local investors
47 China	EAP	Shandong Zhonghua Power	Domestic Capital	1998	Local financing played a major role
48 Colombia	LAC	Interconexion Electrica SA (Colombia)	Domestic Capital	2000	Local

PROPOSED POWER SECTOR REFORM CASE STUDIES

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<u>Country</u>	<u>Region</u>	<u>Project</u>	<u>Highlighted Case Theme</u>	<u>Date</u>	<u>Note</u>
49 Costa Rica	LAC	Los Gemelos Mini-Hydro (Costa Rica)	Domestic Capital	2000	Producciones Antheus SA
50 Czech Republic	ECA	Elektrarna Uzin Genco	Domestic Capital	1990's	Small local investors
51 Estonia	ECA	AS Laanemaa Elektrivork Genco	Domestic Capital	1998	Small local investors
52 Hungary	ECA	Matrai Power Genco	Domestic Capital	2001?	Entire financing of EUR 200 million was locally sourced in Hungarian Forint
53 India	SA	Tanir Bavi Power (India)	Domestic Capital	2000	GMR Group
54 India	SA	BSES Andhra Power (India)	Domestic Capital	2000	Prasad & Co, BSES.
55 India	SA	Tata Power- Acquisition of North Delhi Disco	Domestic Capital	2002	Tata Power
56 Kenya	Sub-Sahara	Iberafrica Power Ltd	Domestic Capital	1996	Regional strategic investor for Lagos
57 Lithuania	ECA	Lietuvos Eergija Genco	Domestic Capital	1998	Small local investors
58 Malaysia	EAP	Johor Coal Plant (Malaysia)	Domestic Capital	2003	SKS Power
59 Malaysia	EAP	Prai Power Gas-fired Plant (Malaysia)	Domestic Capital	2001	SKS Ventures
60 Malaysia	SA	YTL Power Generation Genco (135MW)	Domestic Capital	1994	Required US\$967 Mn in local financing
61 Myanmar	EAP	Myanma Electric (Myanmar)	Domestic Capital	2003	Sichuan Machinery (Reg)
62 Namibia	Sub-Sahara	Reho Electricity (Namibia)	Domestic Capital	2000	Icon Investments
63 Nepal	SA	Bhote Koshi Hydro	Domestic Capital	1994	Small local investors
64 Nigeria	Sub-Sahara	AES Nigeria Barge Ltd	Domestic Capital	2001	Local investor input
65 North Korea	EAP	Pyongwon Power Plants 1,2,3 (North Korea)	Domestic Capital	2003	Local investors /Govt
66 Peru	LAC	Empressa de Distribucion de Energia de Chancay SA	Domestic Capital	1995	Foreign and domestic investors
67 Philippines	EAP	Mt. Apo Geothermal	Domestic Capital	1990's	Small local investors
68 Tanzania	Sub-Sahara	TANESCO (Tanzania)	Domestic Capital	2001	M&O Contract Financed by Netgroup - Regional Capital from S. Africa
69 Thailand	EAP	Ratchaburi Power (Thailand)	Domestic Capital	2000	Local
70 Thailand	SA	Rayong Power Transation (aka. Regco)	Domestic Capital	1994	Thailand's first major privatization of any kind
71 Vietnam	EAP	Can Don Hydro	Domestic Capital	1999	Small local investors
72 Zimbabwe	Sub-Sahara	Hwange Power (Zimbabwe)	Domestic Capital	2001	Eskom
73 Argentina	LAC	Rural Off-Grid Service	Energy Poverty	1999	Argentine Government sponsored for Jujay province
74 Bangladesh	SA	Photovoltaic Program for Solar Home Systems	Energy Poverty	1996	Managed by Grameen-Shakti organization
75 Brazil	LAC	Light Genco	Energy Poverty	1998	Sponsor: Government of Brazil
76 Brazil	LAC	Brazil Light Private Utility Initiative	Energy Poverty	1990's	Light agents in peri-urban slums
77 Cambodia	EAP	Rural Electrification Program -Small Diesel	Energy Poverty	1990's	Service Expansion (Small Diesel Generators)
78 Chile*	LAC	Rural Electricification Program	Energy Poverty	1994	Chilean Government run
79 Dominican Republic	LAC	Solar-Based Rural Electrification	Energy Poverty	1993	Managed by Enersol organization
80 Guatemala	LAC	Output-based Aid	Energy Poverty	1998	Managed by Union Fenosa
81 India	SA	Orchna Independent Rural Power Producer (80KW)	Energy Poverty	1996	Managed by DESI
82 India	SA	Parivartan Initiative (Gujarat State) - Private Utility Initiative	Energy Poverty	1990's	SEWA Bank initiative to regularize utility usage
83 Kenya	Sub-Sahara	Photovoltaic Systems	Energy Poverty	1990's	Private provision of photovoltaic systems
84 Philippines	EAP	Meralco (DAEP) Private Utility Initiative	Energy Poverty	1990	Peri-urban utility usage regularization
85 South Africa	Sub-Sahara	Capetown, South Africa	Energy Poverty	2002	Potential regional capital case under Mbeki's NEPAD initiative
86 South Africa	Sub-Sahara	Phambili Nombane	Energy Poverty	1995	EDF(33%), East Midlands (33%), Eskom (33%)
87 Tajikistan	ECA	Pamir Private Power Project	Energy Poverty	2002	Aga Khan, IFC
88 Bangladesh	SA	AES Haripur	IPP	2001	Involved WB financing and similar to AES Meghnaghat
89 Brazil	LAC	AES Tiete	IPP	2001	First long term financing of Brazilian Genco in intl capital markets
90 Brazil	LAC	Termobahia	IPP	2001	Financing in a tough market
91 Bulgaria	ECA	Maritza East III	IPP	1997	Entergy(13%), NatElec(27%), Ente Nazionale (60%)
92 China	EAP	Suzhou Plant (76MW)	IPP	1990s	Foreign investor is Coastal
93 China	EAP	Wuxi Plant (40MW)	IPP	1990s	Foreign investor is Coastal
94 China	EAP	Zhejiang (36MW)	IPP	1990s	Foreign investor is Enserch
95 Guatemala	LAC	El Canada Hydro	IPP	2002	Energia Global Intl (100%)
96 Indonesia	SA	Muara Karang Power	IPP	2003	PerusahaanListrik Negara (100%)
97 Indonesia	SA	Muara Tawar Power	IPP2	2003	PerusahaanListrik Negara (100%)

PROPOSED POWER SECTOR REFORM CASE STUDIES

February 06, 2004

<u>Country</u>	<u>Region</u>	<u>Project</u>	<u>Highlighted Case Theme</u>	<u>Date</u>	<u>Note</u>
98 Ivory Coast	Sub-Sahara	Azito Power Project	IPP	1999	Received World Bank Guarantee of \$92 million
99 Kenya	Sub-Sahara	Kipevu	IPP	2000	First openly bid BOOT concession for an IPP to close with Com bank backing
100 Malaysia	EAP	Panglima Power	IPP	2003	Powertek (100%)
101 Mexico	LAC	Altamira II Power	IPP	2002	Mitsubishi (49%), EDF (51%)
102 Mexico	LAC	Naco Nogales Power	IPP	2002	Union Fenosa (100%)
103 Mexico	LAC	Tuxpan III & IV	IPP	2003	Union Fenosa (100%)
104 Morocco	MENA	Jorf Lasfar	IPP	1997	ABB (50%), CMS (50%)
105 Pakistan	SA	AES- Lal Pir	IPP	1995	AES sponsor; one of the earliest in Pakistan; Considered success by AES
106 Pakistan	SA	Hub Power Project (1292 MW) Genco	IPP	1996	Received WB Guarantee; after setbacks and delays project has been revived
107 Panama	LAC	Esti Hydro Power	IPP	2002	AES Panama (100%)
108 Peru	LAC	Red Electrica del Sur	IPP	1999	Red Electrica (30%), Cobra Peru (20%), Abegoa Peru (20%), Banco Hisp(15%)
109 Saudi Arabia	MENA	Sadaf Cogen	IPP	2003	CMS (25%), Al-Zamil (37.5%), El Seif Dvlpt (37.5%)
110 Senegal	Sub-Sahara	Dakar Power Project	IPP	1998	Government enthused to close deal quickly
111 Tanzania	EAP	Songo Songo	IPP	2001	Tanzania's first IPP, East Africa's second
112 Turkey	MENA	Iskenderun Genco (1200MW)	IPP	2003	Generation - \$1.5 billion; a pioneer in Turkey's power privatization program
113 Turkey	ECA	Ankara Power	IPP	2002	Tractebel (95%), MIMAG Makina (5%)
114 UAE	MENA	Umm al-Nar Power	IPP	2003	Tepco, IP, Mitsui, Abu Dhabi Wtr (60%)
115 Vietnam	EAP	Phu My 2.2 Power	IPP	2002	Sumitomo(28.1%), Tepco(56.2%), EDF (56.2%)
116 Vietnam	EAP	Phu My 3 Power	IPP	2003	BP Amoco (25%), Nissho (25%), Kyushu Elect (25%), SembCorp (25%)

Shading Designates Flagship Cases : 20

Total Cases: 116

APPENDIX B
BIBLIOGRAPHY

INTERNATIONAL POWER SECTOR REFORM AND PRIVATIZATION

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Favorable Policies and Forgotten Contract	Affermage	Nov-00	UNDP	Working Paper	J. Plummer
Forms of Private Participation	Affermage		World Bank	Power Point	Transport Sector WB
Capital Flows to Emerging Market Economies	Capital flows	May-03	Institute of International Finance	Survey	D.Maxwell, Y.Horiguchi, D. Gould
Global Financial Stability Report	Capital flows	Mar-03	IMF	World Economic and Financial Surveys	www.imf.org
A Cruel Sea of Capital	Capital flows	May-03	Economist	Economist Survey	www.Economist.com
Private Infrastructure- A Review of Projects with Private Part 1990-2001	Capital flows	Oct-02	World Bank	Public Policy for the Private Sector	A.K.Izaguirre
Private Participation in Energy	Capital flows	May-02	World Bank	Public Policy for the Private Sector	A.K. Izaguirre
Private Participation in Infrastructure: A Review of the Evidence	Capital flows	Oct-01	World Bank	N/A	P. Gray
Credit Rating Agencies: Their Impact on Capital Flows to Developing Countries	Capital Flows	Apr-03	Derivatives Study Centre	Special Policy Report 6	Setty, Gautam, Dodd
The Spread of Economic Growth to the Third World 1850-1980	Capital Flows	1983	Journal of Economic Lit	Article	L.J. Reynolds
Private Sector Participation in Water and Sanitation Field	Concession contr	Jul-97	DFID	Working Paper	R. Franceys
Reforming Public Institutions and Strengthening Governance: A World Bank Strategy	Governance	Apr-02	World Bank	Implementation Update	C.Gray
Northern Electricity Distribution Service in Northern Namibia-A Case Study in the Private Provision of Rural Infrastructure	Energy Poverty	Jul-02	World Bank	Final Report	Econ One Research
Energy Services for the World's Poor	Energy Poverty	Mar-03	African Energy Policy Research Network	Presented at the World Bank Energy Lecture Series	S. Karekezi, O. Kalumiana, Eng., S.E. Mangwengwende
Universal(ly Bad) Service – Providing Infrastructure Services	Energy Poverty	Jul-02	World Bank	Policy Research Working Paper	G. Clarke, S. Wallsten
Peri-Urban Electricity Consumers	Energy Poverty	Oct-01	World Bank	ESMAP Paper	None

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Impact of Power Sector Reform on the Poor – A Review of Issues and the Literature	Energy Poverty	Jul-00	World Bank	ESMAP Paper	None
World Energy Outlook 2002- Energy & Poverty	Energy Poverty	Jan-02	International Energy Agency	Chap 13 of Energy Study	IEA
Does Reform of Energy Sector Networks Improve Access for the Poor?	Energy Poverty	May-00	World Bank	Public Policy for the Private Sector	S. Powell, M. Starks
Emerging Lessons in Private Provision of Infrastructure Services in Rural Areas: Water and Electricity Services in Gabon	Energy Poverty	Sep-02	World Bank	Environmental Resources Management	PPIAF
Improving Access to Infrastructure Services by the Poor	Energy Poverty	Oct-01	World Bank	Presentation	P.Brooks, W. Smith
Sri Lanka - Energy Poverty - Rural Electrification	Energy Poverty	Oct-02	ESMAP	Presentation	
Utility Privatization and the Needs of the Poor in Latin America	Energy Poverty	Jun-00	World Bank	Technical Paper	A.Estache, A.G.Lobo, D.Leipzigger
Promoting Private Investment in Rural Electrification – The Case of Chile	Energy Poverty	Jun-00	World Bank	Viewpoint	A. Jadresic
Zimbabwe - Energy & Poverty Utility Performance	Energy Poverty	Oct-02	ESMAP	Presentation	
Successful Solar Business: A Model for Policy in Developing Countries	Energy Poverty	Jun-02	Grameen Shakti	World Renewable Energy Forum Brief	N.Wimmer
Utilization for Renewable Energies in Bangladesh	Energy Poverty	May-02	Grameen Shakti	Survey	M. Islam
Bolivia: Final Report on Operational Activities Rural Energy Energy Efficiency	Energy Poverty	Aug-00	NRECA	Technical Paper	ESMAP
Renewable Energy for Rural Community Water Supply in the Dominican Republic	Energy Poverty	Aug-00	Enersol	Case Study	S.Graham, E.Johnson

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Infrastructure Finance Directory 1999	Finance	Feb-99	Inter-American Development Bank	Directory	A.Vives (Editor)
Innovations & Solutions for Financing Water & Sanitation Investments by Accessing Dom.Capital Markets	Finance	Mar-03	USAID	Paper	Planning & Development Collaborations Inc.
Ratings and Structured Finance Pension Funds in Infrastructure Project Finance	Finance	May-99	BRC Investors Inter-American Development Bank	Presentation Technical Paper	BRC Investors A.Vives
Mobilizing Domestic Resources for development in Asia & Pacific	Finance	Nov-01	Asian Development Bank	Work shop paper	ESCAP/ ADB
Mobilizing Domestic Capital Markets for Infrastructure Financing-Intl Experiences and Lessons for China	Finance	Sep-97	World Bank	Working Discussion Paper 377	A.Kuma, rR.D. Gray, M.Hoshkote, S.Klaudy, J.Ruster
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Building Corp Bond Markets in Emerging Market Countries	Finance	Mar-02	World Bank	Presentaiton	A. Harwood
Catalyzing Private Investments Across Asia and the Pacific	Finance	Jan-02	Asian Development Bank	Discussion Paper	ADB Private Sector Operations
Key Factors for Private Sector Investment in Power Distribution	Finance	Aug-01	World Bank	ESMAP Paper	None
What the World Bank Group could do to support investments in developing countries in the present climate	Finance	Jun-02	World Bank	Presentation at June 2002 Energy Forum	R.Musielak
World Energy Investment Outlook 2003	Finance	Nov-03	IEA	Book	IEA Password: noom99
Forex Risk - Allocating Exchange Risk in Private Infrastructure	Foreign Exch	Jun-03		Draft	Philipp Gray

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Does Liberte=Egalite?? A Survey of Empirical links between democracy and inequality with some evidence on the transition economies	Governance	2000	World Bank	Working Paper 2875	M.Gradstein, B. Milanovic
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The Future of Freedom	Governance	2003			F. Zakaria
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IPPs in APEC economies- Issues & Trends	IPP	Jan-00	Asian Institute of Technology	Working paper	T. Lefvre
The Impact of IPPs in Developing Countries – Out of the Crisis and into the Future	IPP	Dec-98	World Bank	Public Policy for the Private Sector	Y. Albouy, R. Bousba
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Catalyzing private finance in the energy sector –The role of the World Bank in Mitigating Risk	IPP	Jun-02	World Bank	Presentation at June 2002 Energy Forum	M.Wormser
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Privatization, Technical Efficiency and Welfare Consequences: The Case of Cote d'Ivoire Electricity Company	Privatization	Exp 1999	World Bank	Article	Plane
Distributive Impact of Privatization in Latin America: An Overview of Four Countries	Privatization	Exp 2002	World Bank	Mimeo	McKenzie, Mookherjee
Argentina Privatization Program: Five Cases	Privatization	Exp 1996	World Bank	Paper	Shaikh
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