*A report for the*

***Office of Energy and Information Technology***

# Analysis of the Relationship Between Improved Energy Sector Governance and the Attraction of Foreign Direct Invesment

Prepared by
PA Government Services Inc.
1750 Pennsylvania Avenue, NW
Suite 1000
Washington, DC  20006

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Bureau for Economic Growth,
Agriculture and Trade
U.S. Agency for International Development
Washington D.C.  20523

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# USAID

## Analysis of the Relationship Between Improved Energy Sector Governance and the Attraction of Foreign Direct Investment

Phase 1 Report

January 30, 2002

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PA Consulting Group
1750 Pennsylvania Avenue
NW Washington
DC 20006
Tel: +1 202 442 2000
Fax: +1 202 442 2001
www.paconsulting.com

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## *LETTER OF TRANSMITAL*

January 30, 2002

Dr. Kevin Warr
USAID Task Manager

Dear Dr. Warr,

This document is the Interim Report 1 mentioned in section IV item 1 of the work order and consolidates the results of the work completed under Task 1 (selection of the countries for analysis based on the status of electric power sector reforms) and Task 2 (quantification of Foreign Direct Investment in those pre-selected countries). Work under Phase II will start once USAID receives comments and feedback from the Department of State on the work completed in Phase I.

We look forward to your comments and remain available to discuss and present in person the approach and results of this analysis.

Sincerely,

Carlos Yermoli

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# 1. INTRODUCTION

## 1.1 OBJECTIVES

The US Government feels that energy and water are two sectors where improved governance has been shown to dramatically improve the ability of developing countries to attract foreign direct investment (FDI) and stimulate broad economic development with benefits for all elements of society. Since over 60 countries have proceeded through some form of electric power sector reform to improve governance, this particular sub-sector could provide information to explore the important linkage between governance and FDI and the benefits accruing to societies as a result of increased FDI.

This report describes the analysis and results of a study of the relationships among improved governance, FDI and benefits to society, based on reforms to governance in the power sectors of a selected sample of countries. This report covers the first of three phases of a broader objective that includes the analysis of the effect of Official Development Assistance (ODA) on the improvement of power sector governance.

## 1.2 APPROACH AND METHODOLOGY

We carefully considered a number of complex issues when designing the approach and methodology of this study.

- Perhaps the most important of these issues is the time element. Changes in governance in the power sectors of different countries have occurred at very different speeds. Further, the response of investors has been related to both the accumulated improved governance and to the speed of its achievement. Undoubtedly, a very thorough analysis of the subject should involve a dynamic correlation spanning several decades, a luxury not afforded by this modest effort. We have therefore focused on the single most relevant static concept: the accumulated change in governance, investment and benefits for the last decade of the 20th century. We have attempted a chronological analysis in only in a few specific cases.

- Another important issue is the very substantial influence of factors external to the power sector. Many of these are of a financial nature, such as sovereign credit ratings and currency convertibility. Others, such as judicial reform and internal security, are more general but equally relevant to a foreign investor. We have chosen to deal with these external factors as possible explanatory factors for specific countries that exhibit behavior substantially different from the general trend. A special section of this report is devoted to such analysis.

- A third issue results from the many motivations that drive investors to look for markets beyond their home boundaries. These are quite diverse and include the regulatory environment in their home markets, the possibility of improving shareholder value by attaining a global image and other elements that often lead to decisions that dilute the impact of unstable conditions in the international market. Some of these issues are discussed at length in a section in which the investor perspective is described and illustrated by the results of interviews with several key players.

- Finally, another major issue is the availability of accurate data. There are a number of sources for databases that track investment in the electricity sectors. PA Consulting has maintained its own independent tracking of this activity in a proprietary database since the beginning of private sector involvement in the electricity sector. While even this thorough effort is insufficient to entirely capture the activity in Dollar numbers, we feel that the PA database provides the most reliable source of detailed data and is the best source of data for this study.

The overall approach to the study is reflected in the structure of the report as follows:

First, a sample of countries was carefully selected to represent a broad spectrum of geographies, economic and social conditions and progress on the road to reform and FDI attraction. For this sample of countries, we determined the status of governance in the power sector at the end of the last decade and we developed a scorecard based upon a wide range of indicators. This is discussed in chapter 2 of the report.

Next, we determined the level and nature of direct investment in the countries of the sample in order to compare with the results of chapter 2 and to identify any general trends. This is discussed in chapter 3 of the report.

We discussed the investors' perspective and the many factors influencing their decisions in chapter 4 of the report. We have illustrated that discussion with specific examples and the results of direct interviews with a number of major players.

In chapter 5, we discussed the benefit accruing to societies as a result of investment in the power sector, including identifying and monitoring relevant indicators through the period of analysis.

Chapter 6 brings together these different analyses in a summary of the results, the identification of key findings and the conclusions of this phase of the study.

# 2. COUNTRY SAMPLE AND SECTOR GOVERNANCE

## 2.1 COUNTRY SAMPLE

The reasons for implementing power sector reforms are quite different depending on the particular conditions of the country seeking the reforms. In developed countries, the main goal is to reduce end-user tariffs through increased efficiency within the sector. In contrast, most developing countries unable to finance power sector infrastructure with state funds wish to privatize state-controlled monopolies in order to attract sufficient private investment to upgrade and expand inadequate power supply infrastructure.

Although the main motivation for power sector reforms has broadly been the same in all developing countries, the initial conditions and the constraints imposed by the particular social, economic and political objectives of each country, yielding in each case a unique approach and timing to the reform process. Moreover, as each country progresses on the road to reform along its own timetable, it has encountered different global or regional crises with an inevitable impact on the level of success.

Therefore, in selecting the sample of countries we resisted the temptation to focus disproportionately on regions where a high level of reform is widespread (Latin America) or where a high level of investment had been observed (South East Asia). Instead, we selected a more balanced group that would reflect many different conditions, even at the expense of a lower volume of statistically significant data.

In consultation with USAID, a list of countries was selected to create a sample from which the relationship between governance and direct investment could be examined. The process of arriving at that sample was as follows: First, we identified specific countries where some form of power sector reform had been implemented during the last decade. Second, we took into consideration the level of multilateral and bilateral donor involvement in promoting power sector reforms. Lastly, we also tried to maintain a minimal level geographical balance in the sample.

The final list of countries chosen for this evaluation is: Argentina, Armenia, Brazil, Chile, Colombia, Egypt, El Salvador, Georgia, Ghana, Guatemala, Hungary, India, Indonesia, Kazakhstan, Laos, Morocco, Nepal, Nigeria, Pakistan, Philippines, Thailand, Tunisia, Turkey.

## 2.2 GOVERNANCE AND POWER SECTOR REFORM

In order to properly undertake this study, it is necessary to define governance and sector reforms, and to apply those definitions to the electricity sector. The U.S. Government has identified six areas that deserve special consideration under the heading of governance:

- Capacity Building, including the development of a favorable, enabling climate investment.
- Institution Building, including public administration, the judiciary and a system of law that protects individual rights.
- Public Access to Information, including environmental information.
- Informed and science-based decision making, reflecting a careful and objective evaluation of available data and rigorous integrated review of policy options.

- Public Participation, Coordination and Partnerships, promoted by laws that facilitate interaction among government authorities, local groups, NGO's and other stakeholders.
- Access to Justice, including effective enforcement of laws, regulations and standards.

Sector reforms are the embodiment of improved governance with respect to a particular sector. Frequently, actions taken to promote one category of objectives have, at least temporarily, an opposite effect on other objectives. At individual sector levels, only a careful interpretation and balance of these six areas over time yield sustainable results.

PA Consulting has developed operating definitions of "electricity sector reform" and "electricity sector governance" for purposes of this study. In doing so, we followed the work produced under the auspices of the World Bank and the United Nations Development Programme's Energy Sector Management Assistance Programme regarding energy sector reforms, but with modifications to address the electricity sector specifically and to deepen the extent of inquiry into individual elements of sector reform. We have concentrated on reforms and governance at the national level, and have not considered conduct that occurs solely at provincial or other sub-national levels.

Governance, in turn, subsumes elements of electricity sector reform. In addition, the concept of governance includes elements that cover political, economic and social issues across a wide range of economic sectors and political institutions. For this reason, the ranking of individual countries does not seek to separately consider broader issues of nation–wide governance generally. Governance issues, instead, have been incorporated into interviews of power sector participants as part of Task 2. This separation is intended to enable the study to identify the subjective relative importance to prospective foreign direct investors of electricity sector reforms as compared with broader national governance issues.

Electricity sector reform encompasses a number of elements, but the common objective of these steps is to increase access by users, increase efficiency of energy services, decrease the cost of energy services and to introduce competition into the sector wherever feasible. Only monopolistic activities would be price - and investment-regulated. The elements of electricity sector reform recognize a sequence of steps towards full private sector involvement and competitive markets. Thus, state-owned utilities would first be commercialized and corporatized. Then, the introduction of private ownership into the sector requires enabling legislation. As a host state moves to private electric utilities and greenfield projects, the regulatory framework to supervise a competitive, privatized sector must be established. The actual transfer of utilities and greenfield projects into private ownership requires unbundling of existing power generation, transmission, distribution and supply activities into separate activities, and authorizing private participation in greenfield development. Once unbundling of state-owned utilities has occurred, the resulting separated entities would then be partially or wholly privatized.

We have therefore consolidated the various elements of sector governance recognized by World Bank and United Nations into six major aspects of reform as follows:

- Legislation Allowing Unbundling and/or Privatization of Existing Assets
- Legislation Allowing private Investment in the Industry
- Existence and Independence of Regulatory Authority

- Corporatization and Commercialization of Existing Utilities
- Privatization of Existing Assets
- Level of Competition in the Marketplace

Each of these elements contains a sizable number of indicators. The elements are described in more detail in Appendix A, and organized in the form of specific questions to be answered in order to arrive at a scorecard of governance in the electricity sector for each country in the sample.

## 2.3 POWER SECTOR GOVERNANCE SCORECARD

Our scorecard for power sector governance involves approximately 80 separate indicators. For consistency, we have focused on reforms at the national level. Therefore, this report does not capture conduct that occurs solely at provincial or other sub-national levels. For each country, each of the indicators was ranked using the following simple scale:

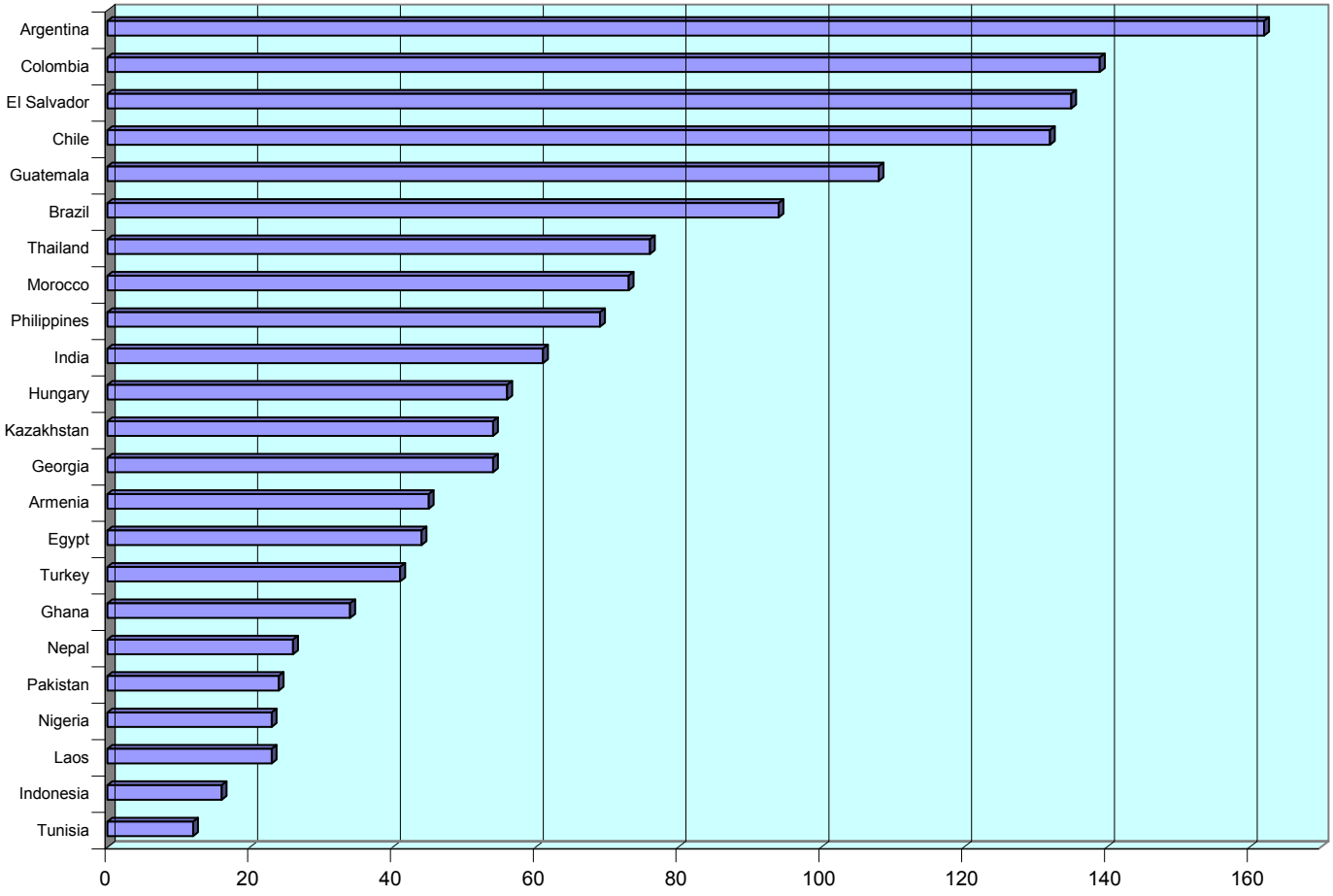
| | | |
|---|---|---|
| N/A 0 or | 0 | Non-Existent or Not Applicable in a Manner Deemed to Negatively Influence Investment Climate |
| | 1 | Low Presence |
| | 2 | Medium Presence |
| N/A 3 or | 3 | High Presence or a Different Condition Deemed to Positively Influence Investment Climate |

The sum of the individual rankings for each indicator provides a score of power sector governance.

To assist the reading in following this method of scoring, the meaning of the scores N/A 0 and N/A 3 (negative and positive inapplicability, respectively) needs to be further explained. In some cases an indicator is not applicable because some other indicator has already established a condition that rendered the first indicator irrelevant. For example, indicators regarding the State-Owned Utility are irrelevant for Argentina, where the industry has already been privatized, but are valid for India. If the condition thus established is one that is deemed to represent an improvement in governance, then the indicator is rated as non-applicable positive (N/A 3). If, on the other hand, the condition thus established is not conducive to improved governance, then the indicator is rated as non-applicable negative (N/A 0).

**EXHIBIT 1**

**Scorecard of Power Sector Governance**




The results of the ranking are shown in Appendix B and summarized in Exhibit 1. Exhibit 1 shows that most of the Latin American countries in the sample rank high in terms of the level of reforms; most of the Asian countries rank in the middle; and the African countries at the bottom. This is of course consistent with the timing of initiation of reform in these regions.

While the main objective of this study is to measure power sector governance, the study itself serves a larger purpose aimed at the effect of overall governance on social and economic welfare. Furthermore, as mentioned above, power sector investment is not immune to the effect of governance issues external to the sector. In order to capture this effect we have adjusted the sector governance scorecard based on the credit rating of specialized rating agencies. The sovereign credit rating at the end of 2001 for each country in the sample is shown below:

| COUNTRY | CREDIT RATING[1] Long-term/outlook/short-term |
|---|---|
| Argentina | SD/NM/C |
| Armenia | Not graded |
| Brazil | BB-/Negative/B |
| Chile | A-Stable/A-1 |
| Colombia | BB/Negative/B |
| Egypt | BBB-/Negative/A-3 |
| El Salvador | BB+/Stable/B |
| Georgia | Not graded |
| Ghana | Not graded |
| Guatemala | BB/Stable/B |
| Hungary | A-/Stable/A-2 |
| India | BB/Negative/B |
| Indonesia | CCC/Negative/C |
| Kazakhstan | BB/Stable/B |
| Laos | Not graded |
| Morocco | BB/Negative/B |
| Nepal | Not graded |
| Nigeria | Not graded |
| Pakistan | B-/Stable/B |
| Philippines | BB+/Negative/B |
| Thailand | BBB-/Stable/A-3 |
| Tunisia | BBB/Stable/A-3 |
| Turkey | B-/Stable/C |

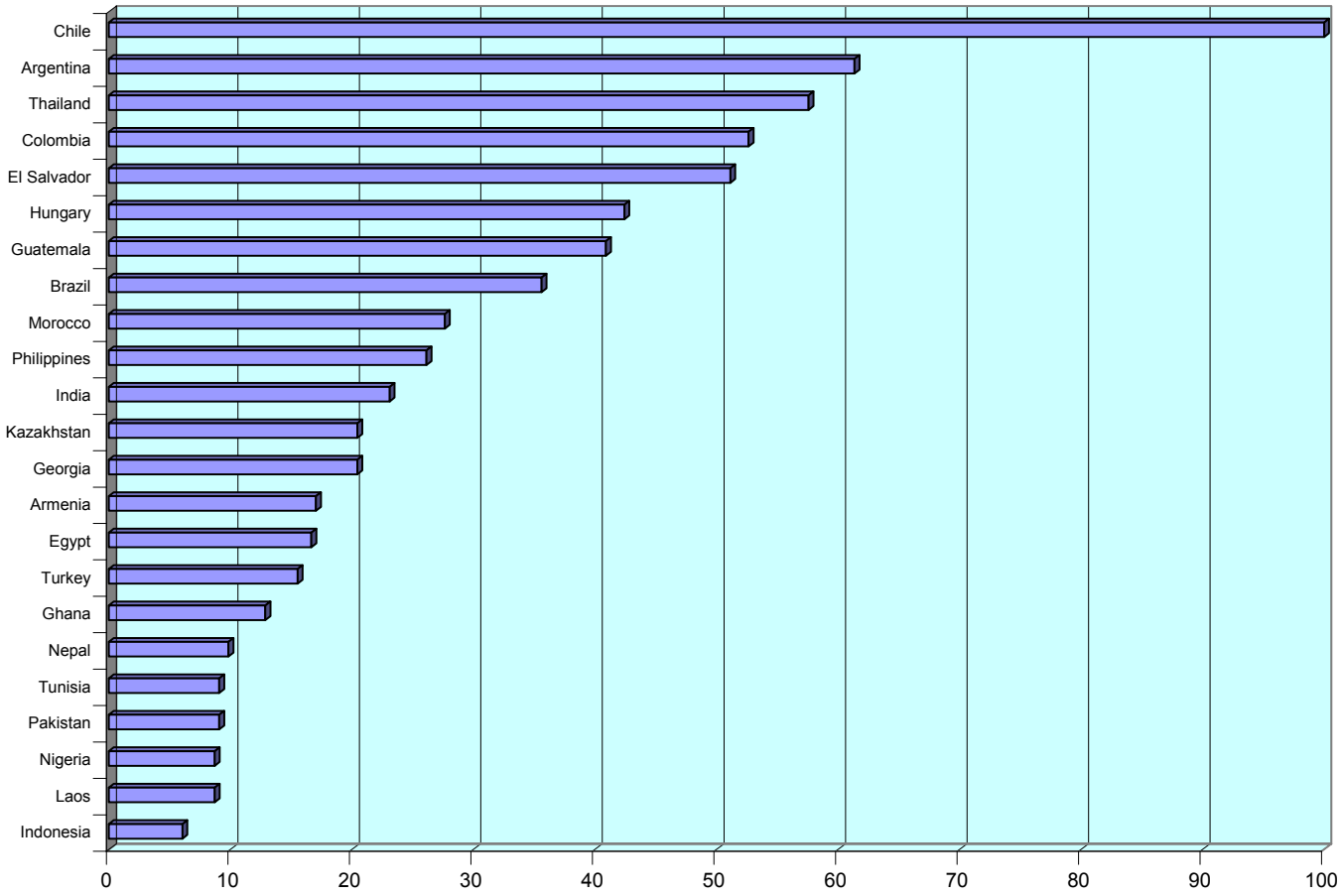
- SD – Selective default
  NM – Not meaningful
- Investment Grade: BBB – or above
- Non-investment Grade: BB+ or below

To introduce this adjustment we have simply granted equal weight to sector reform indicators and to the presence or absence of an investment-grade credit rating of the country. The adjusted scorecard is shown in Exhibit 2.

[1] Source: Standards & Poors, November 2001

**EXHIBIT 2**

**Scorecard of Power Sector Governance Adjusted by Sovereign Credit Rating**




(Normalized Score)

Max = 100

# 3. QUANTIFICATION OF DIRECT INVESTMENT

## 3.1 TYPES AND SOURCES OF INVESTMENTS

To understand the trends of private investment in the power sector it is useful to consider at least three key aspects: type of transaction, type of assets, and source of funds.

The phrase "type of transaction" refers to whether the investment involves the development of new assets, commonly called "greenfield" assets, or whether the investment is an acquisition of an existing asset. In the latter case, the asset may be acquired from an existing private owner or, more commonly, as a result of a privatization in which government-owned assets are sold to the private sector.

The phrase "type of asset" refers to the segment of the industry. Power sector assets are essentially of three types: generation plants, high voltage transmission networks (or "grids") and distribution assets.

The phrase "source of funds" is more complicated. The first issue in this category is the relationship between equity and debt financing. Rarely is an asset bought or developed entirely with equity from the investor. Instead, a portion, often a large portion, of the investment is borrowed from lenders. In this study we do not distinguish between debt and equity investments in analyzing the effects of investment on the local economy. We do, however, explore possible differences in attitudes towards governance issues between equity holders and lenders. The second issue is the location of the source of funds; foreign investment or domestic investment. While in many developing countries the bulk of private investment must come from abroad, there are a few cases where the power sector reform has become an ideal investment target for privatized local pension plans or emerging local stock markets. We believe that the effect of governance improvements is all the more significant when it contributes to the creation of local capital markets. Therefore, this distinction is also not addressed in the analysis.

Finally, there is the issue of investor type. We have divided investors into two major types expected to exhibit different attitudes towards governance. The first category, accounting for the overwhelming majority of investment, is the major player. These are investors with a substantial presence in different markets who have, over the years, developed rational criteria for selecting their investment targets. The second type is the occasional investor, typically based in the same locality as the asset. Such investors may have a more limited span of investment opportunities and an entirely different perspective on local conditions.

## 3.2 SELECTED DATABASE AND PROCESS

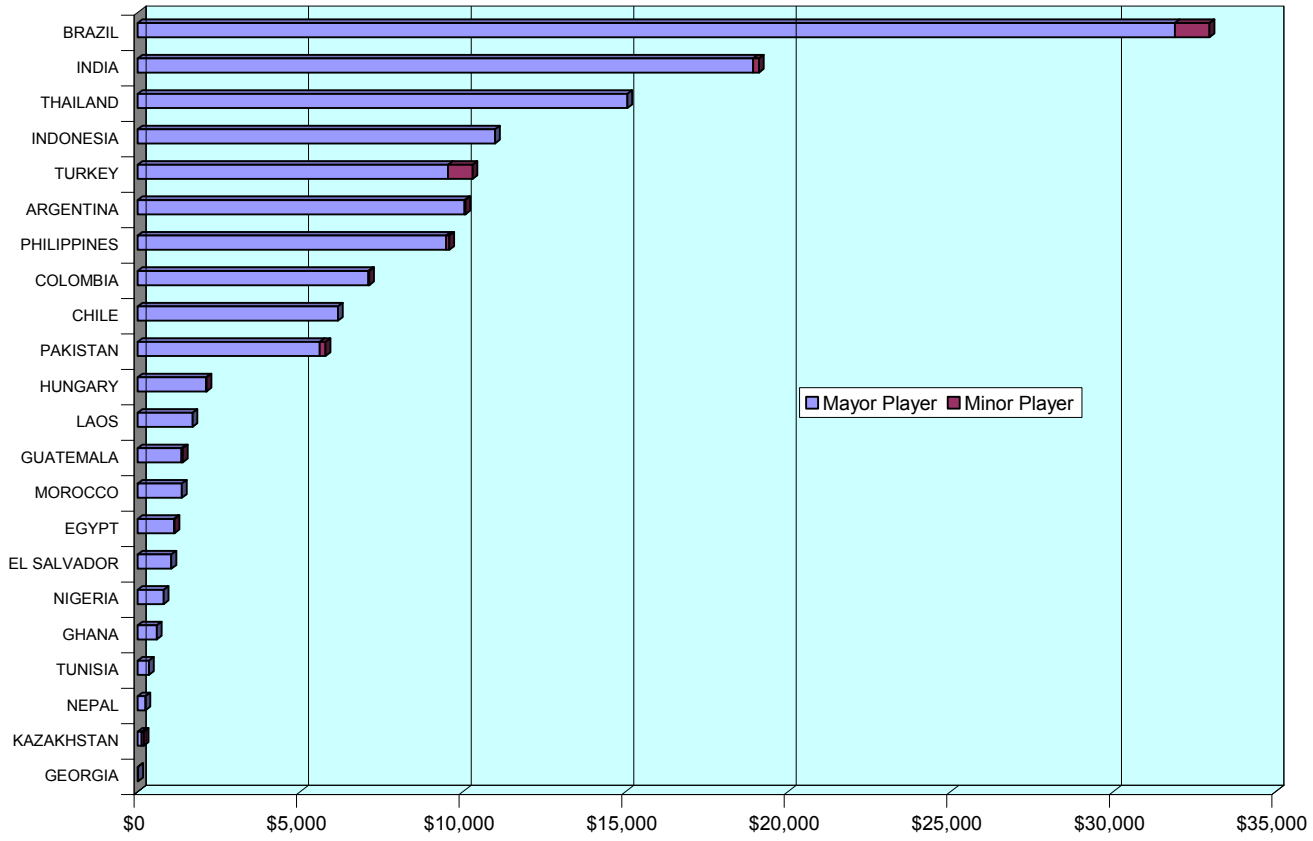
There are a large number of possible sources for data on investment in the power sector, including official records in each country, commercial news services, development agencies and others. For this study we have chosen to use a proprietary database, PA's International Independent Power Database (IIP), that has been kept since 1991 to track the development of private power generation, distribution, transmission and generation projects globally. The database currently highlights over 3,269 active IIP generation projects in over 100 countries outside the United States and Canada.

## 3.3 ANALYSIS AND RESULTS

In this section, we address the total investment in the power sectors of the countries for the sample made during the period 1990-1999. In Exhibit 3 the total investment is shown by type of investor. As the Exhibit demonstrates, the overwhelming majority of investment has been by major international players.

**EXHIBIT 3**

**Total Investment by Source of Funds (US$ Millions)**



The same total investment is shown by type of transaction in Exhibit 4. It can be seen that almost all regions are represented among the ten largest recipients of foreign investment. Only Latin American countries, however, have received a very substantial part of their total investment in the form of acquisitions.

**EXHIBIT 4**

**Total Investment by Type of Transaction (US$ Millions)**

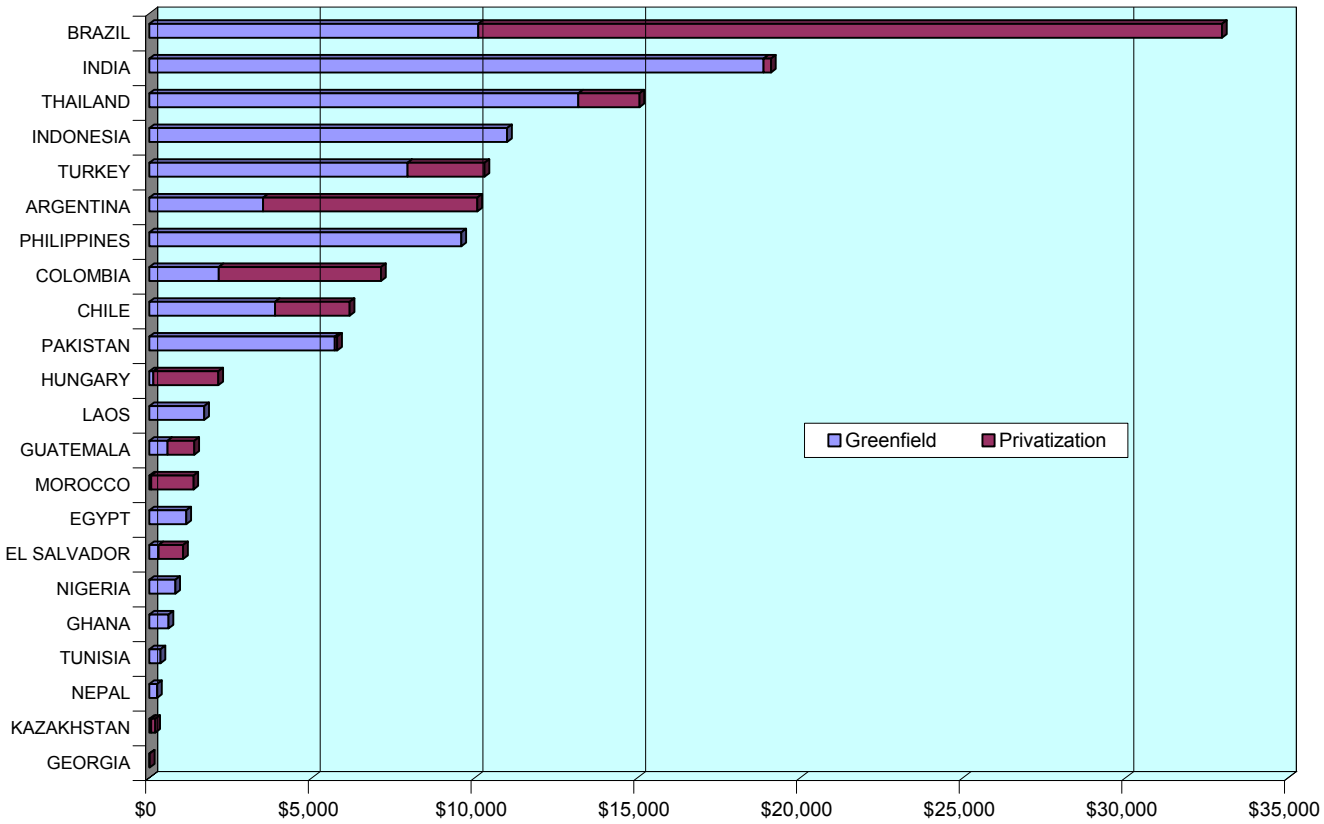
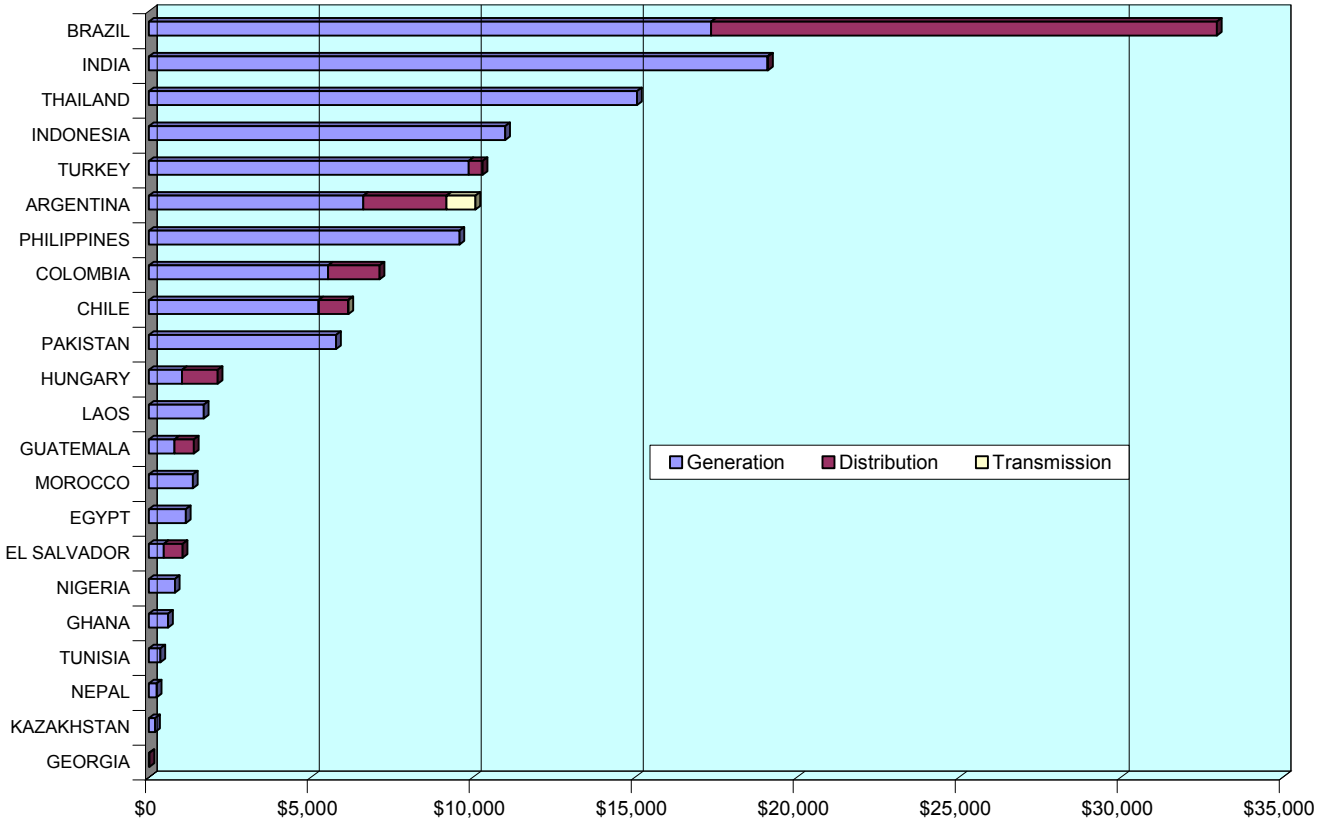


Exhibit 5 shows the same total investment but broken down by segment of industry; generation, transmission or distribution. Generation represents the majority of the investment even in those countries (such as Argentina) where substantial privatization of distribution companies took place. The three notable exceptions to the predominance of generation investments are Brazil, Hungary and El Salvador, and the main reason is that a substantial part of the generation system in each country had not been privatized by 2000.

**EXHIBIT 5**

**Private Investment by Segment of Industry (US$ Millions)**

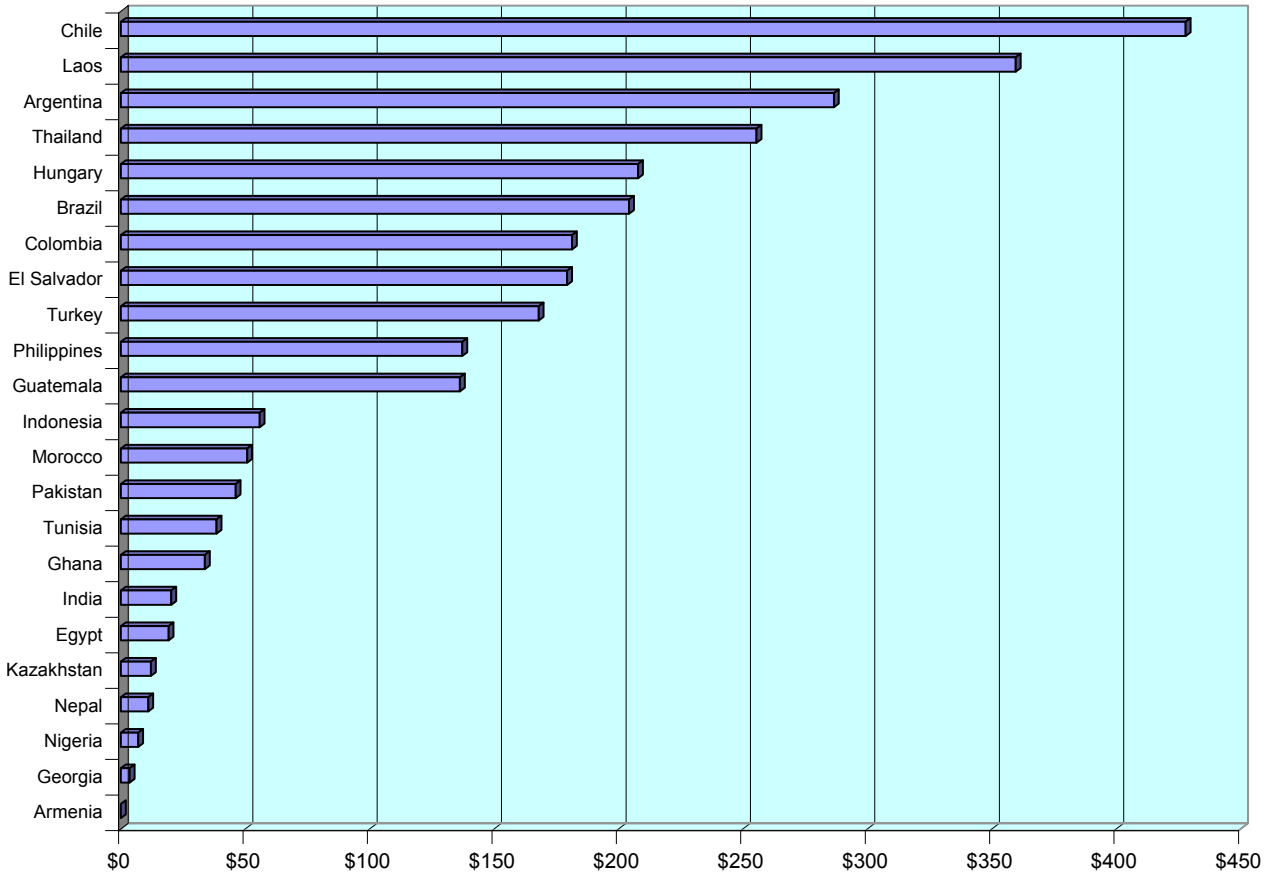


From Exhibits 3, 4 and 5, it is clear that there is a large difference in the scale of investments in different countries. However, for the purposes of this study it is more significant to measure the impact of foreign investment in the society than its absolute value. Therefore, it is useful to eliminate the effect of country size by expressing investment on a per capita basis as shown in Exhibit 6. Three groups of countries can be clearly identified in Exhibit 6. The first group corresponds to countries with investments of under US$ 50 per capita and includes roughly half of the sample. The second group corresponds to investments between US$ 50 and US$ 200 per capita and includes about one quarter of the sample. The third group corresponds to investments of between US$ 200 and US$ 500 per capita and includes the remaining one-quarter of the sample. This distribution reflects to some extent the fact that at least half of the sample is still in the early stages of the reform process.

The very high investment per capita in Laos is regarded as abnormal. The large amount of power sector investment in that country is due to the fact that most of the investment has been made for the purpose of exporting power to Thailand, not for domestic Laotian use. The impact of governance on this type of investment is complex to analyze because the relevant political and regulatory authorities are likely to reside in both the host country and the target country.

**EXHIBIT 6**

**Total Investment Per Capita (US$/Person)**



## 3.4 TRENDS IN THE GOVERNANCE-INVESTMENT RELATIONSHIP

Considering the many factors affecting investments, the unavoidable subjectivity of drawing a scorecard of governance and the time element affecting both reform and investment, it is not surprising that trends in the causal relationship between governance and investment are blurred.

This relationship is shown in Exhibit 7. While this Exhibit does show a definite correspondence between sector governance and FDI, there is a substantial spread in the scoring.

Not surprisingly, the causality effect (high investment per capita and high governance score) is stronger in four Latin American countries (Chile, Argentina, Colombia and El Salvador) that happen to have been among the first to initiate power sector reforms.

**EXHIBIT 7**

**FDI Against Power Sector Governance**

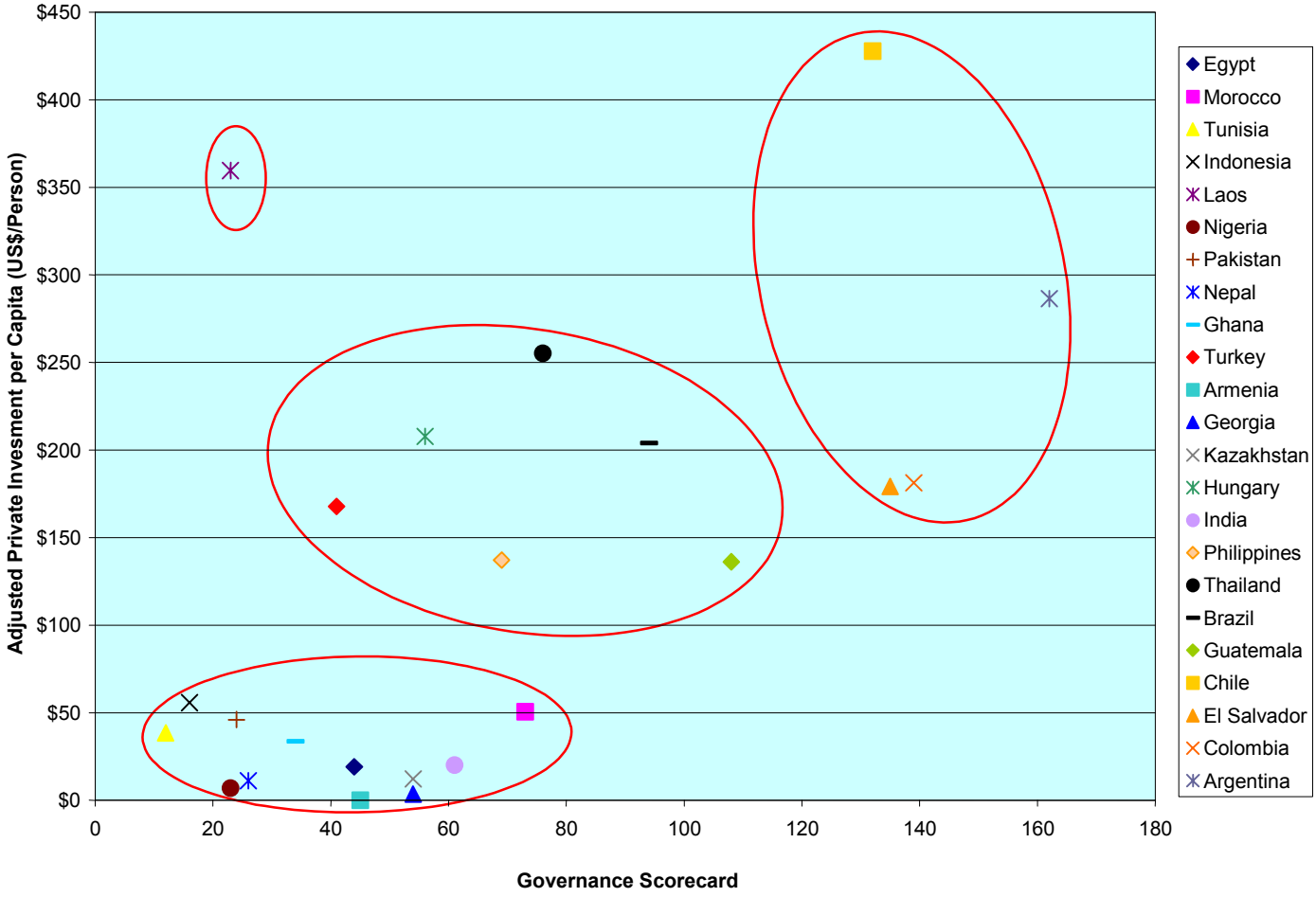
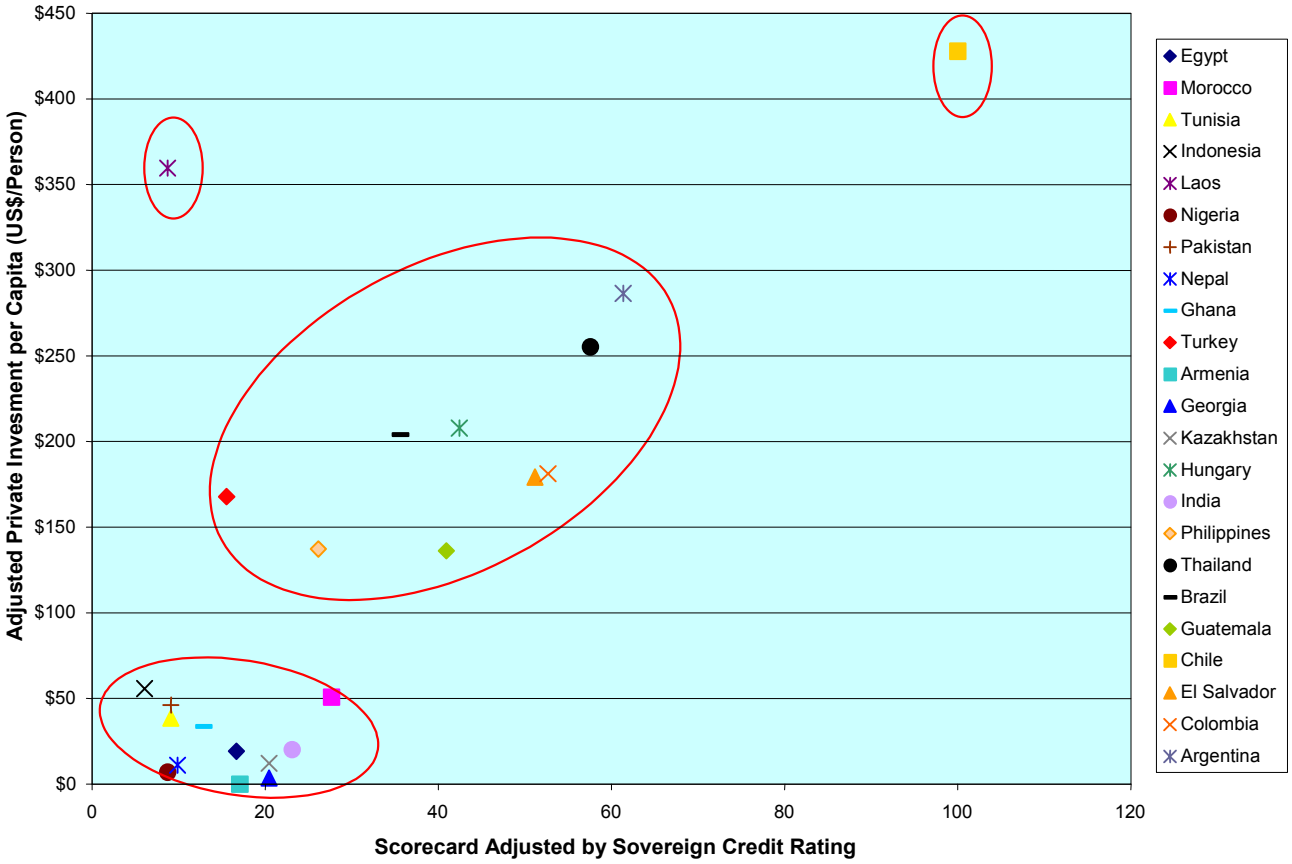


Exhibit 8 looks beyond the power sector by incorporating the effect of external factors; FDI is plotted against the sector governance score adjusted by the sovereign credit rating. Once the credit rating adjustment is introduced, the spread in scoring is much reduced and there are fewer outliers. In fact, only one country, Laos, shows the abnormality of high investment per capita with a low governance score. As noted above, this unusual score is explained by the fact that Thailand, with a much higher governance score, is the real target of power sector investments in Laos.

**EXHIBIT 8**

**FDI against Adjusted Sector Governance by Sovereign Credit Rating**




Apart from the case of Laos, the plot of Exhibit 8 shows three distinct groups. At the top right corner is Chile, which is an excellent example of good governance and its associated investor response. In the center of the diagram are several countries that have made substantial progress in improving power sector governance and have received a proportional response from investors. While there is some spread among those countries, there is no doubt about the correlation in this sample between a country's governance score and power sector investment per capita.

The group at the bottom left corner of the exhibit is intriguing. It consists of countries that have made, for the most part, little progress in governance and therefore received fairly low investment per capita. Let us call this the Low-Low group. Clearly, low investment makes sense if there is little improvement in governance. However, if any trend can be observed from this data it would be an inverse correlation between governance and investment. This intriguing behavior prompted us to examine in more detail the data. Exhibits 8a, b, c and d display the same information as Exhibit 8 itself, except that FDI is broken down by type of investment (privatization or greenfield development) and segment (generation or distribution).

**EXHIBIT 8a**

**Development FDI vs Adjusted Governance Greenfield**

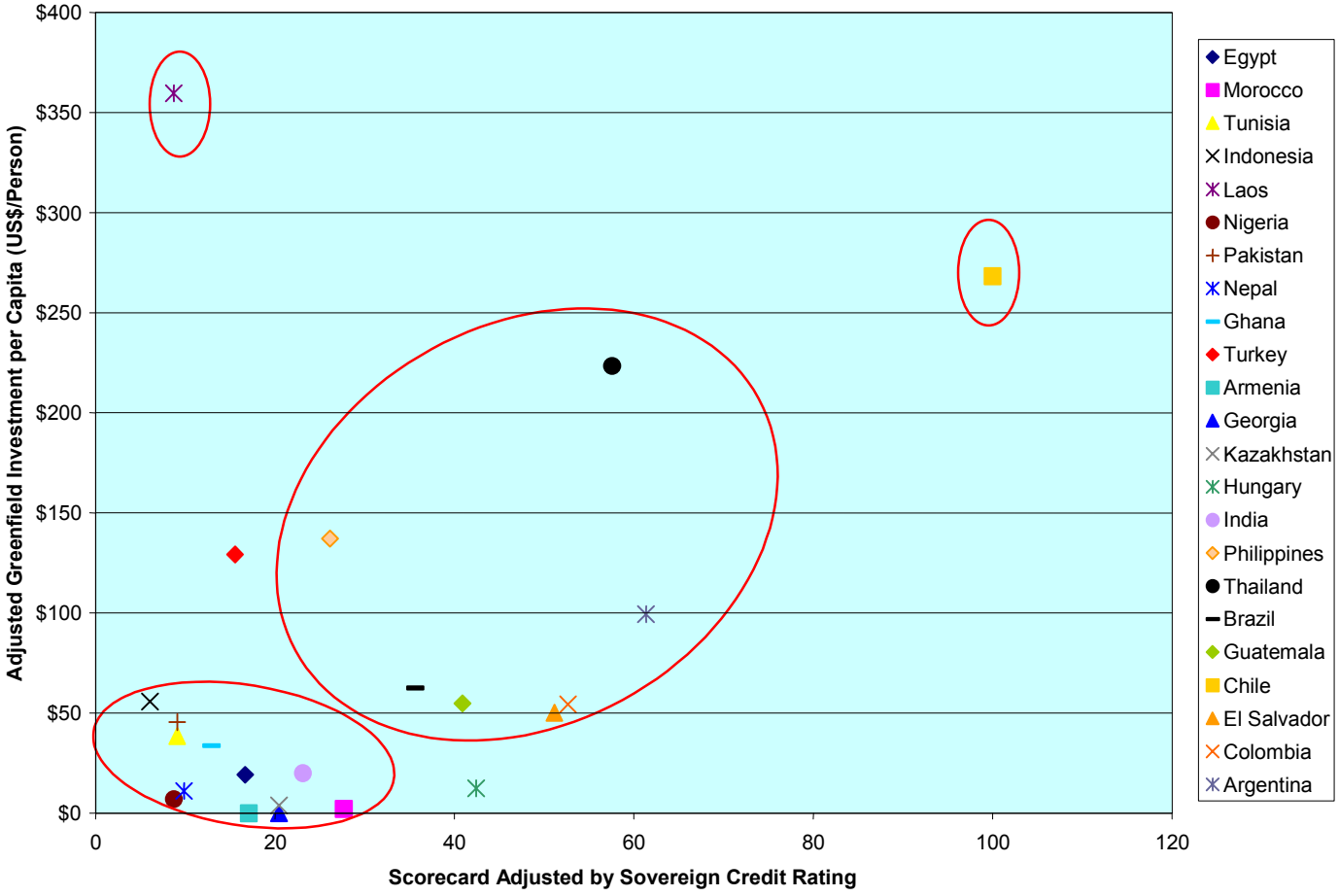


Exhibit 8a examines the relationship between a country's governance score and investments in greenfield projects, which are of course mostly generation plants. It can be observed that the reverse trend continues to exist for the Low-Low group.

**EXHIBIT 8b**

**Privatization FDI vs Adjusted Governance**

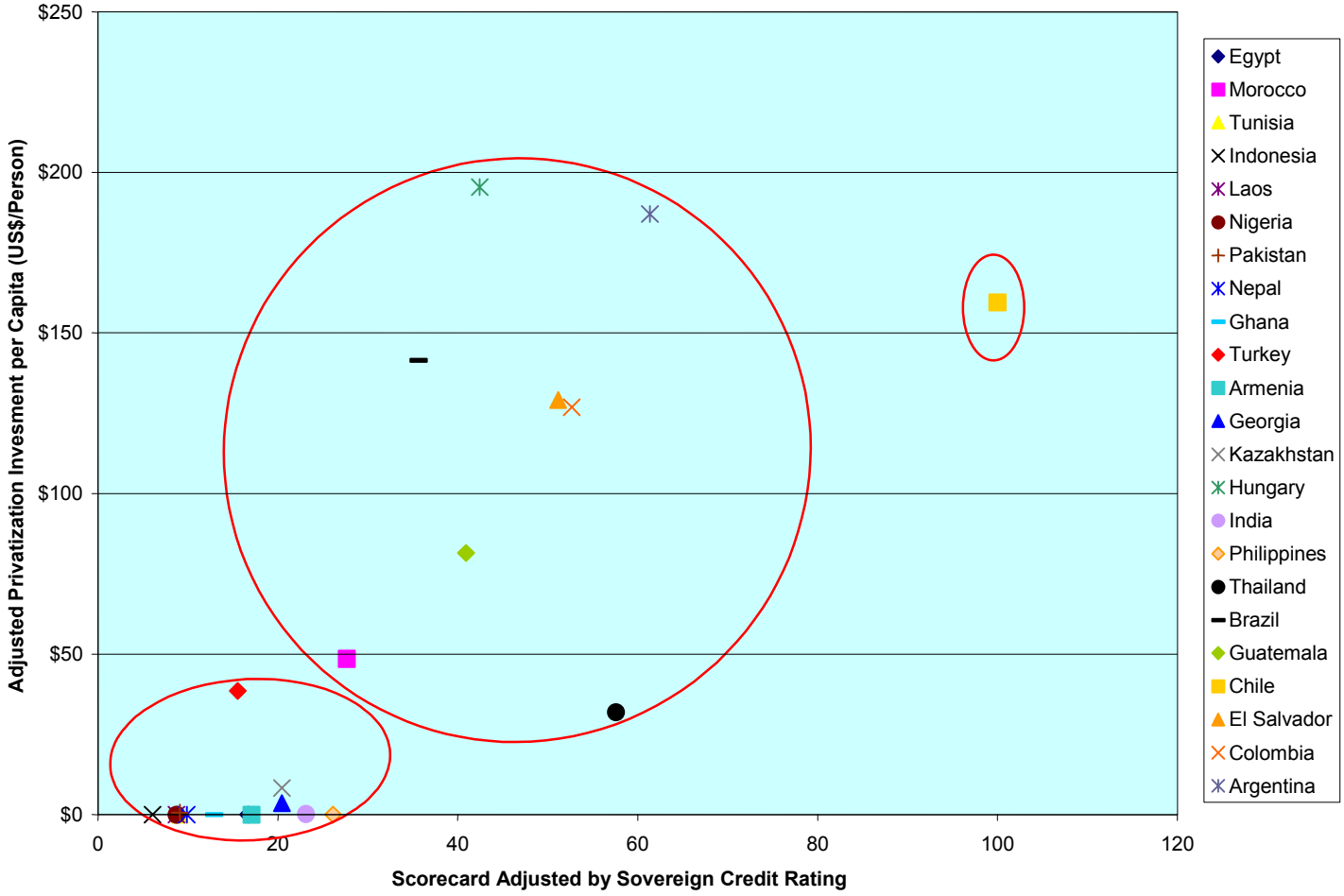



Exhibit 8b examines the relationship between a country's governance score and investments in privatization. It can be observed that the Low-Low group no longer shows the inverse trend. Indeed, no trend is observable since privatization investment per capita for these countries is virtually nil.

**EXHIBIT 8c**

**Generation FDI vs. Adjusted Governance**

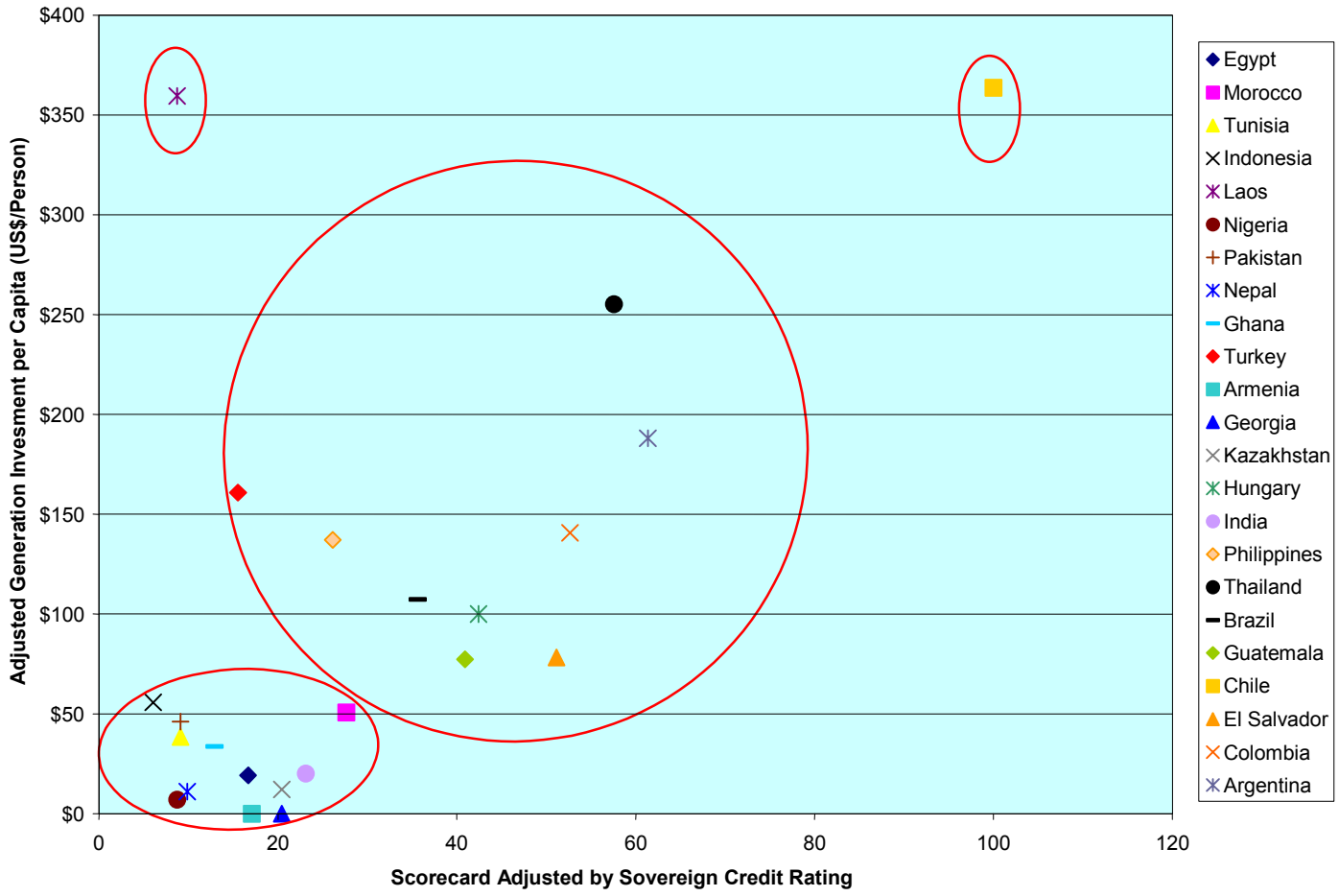



Exhibit 8c shows only investments in generation. The plot of data is very similar to Exhibit 8a, except that in the Low-Low group the reverse trend is less discernible. We therefore developed the following hypothesis on the basis of Exhibits 8a and 8c, which we tested in our interviews with private investors.

FDI in greenfield generation for the period of analysis consisted primarily of investments based on long-term power purchase agreements (PPA's), rather than 'merchant" plants where the plant will compete for sales in an open market environment. As will be discussed later in this report, the impact of poor governance is radically different in one case from the other. Indeed, what the data seems to show is that small investors in greenfield PPA generation may have found fertile ground in countries where governance was at a low level because of limited competition and faster dealflow. We have not done any analysis in this study as to the quality of those particular deals for the recipient country.

**EXHIBIT 8d**

**Distribution FDI vs Adjusted Governance**

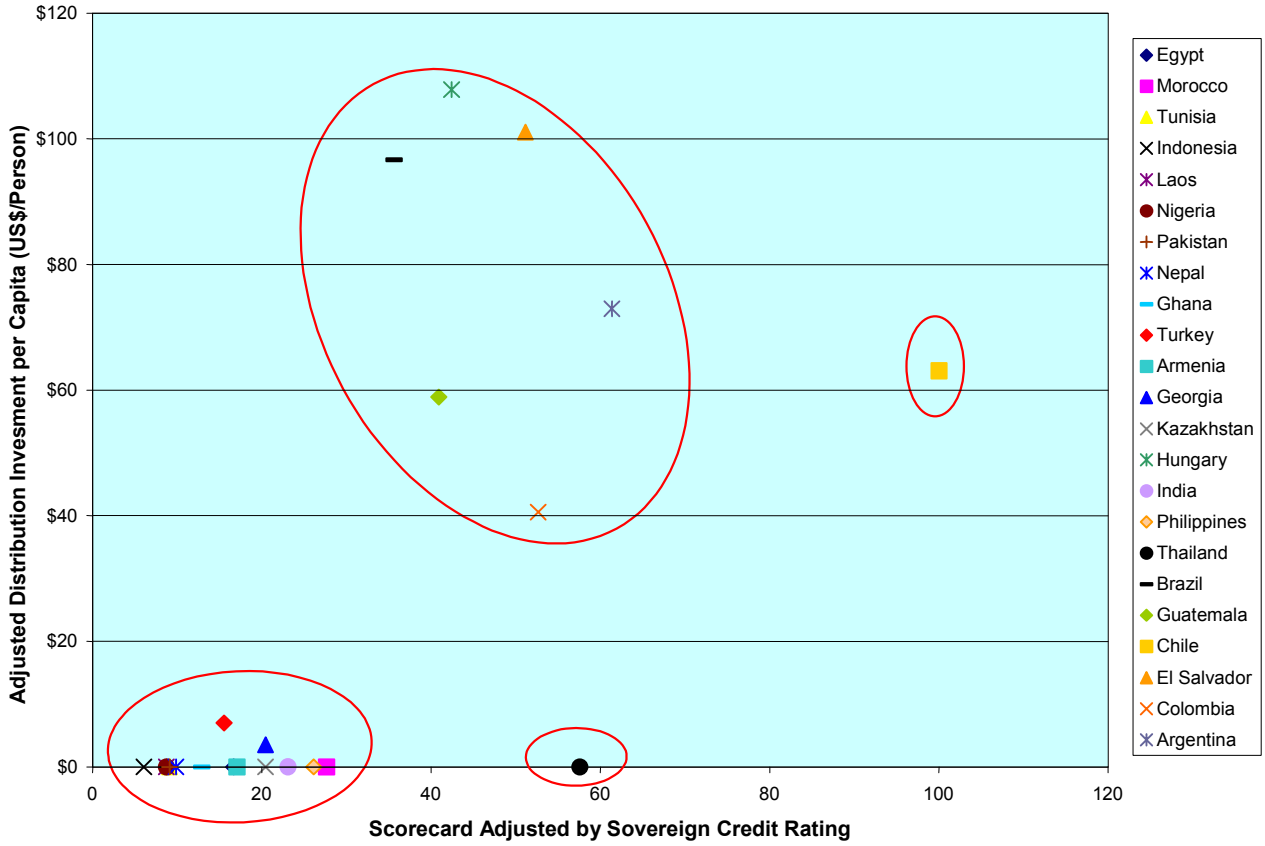



Exhibit 8d displays only investments in distribution. With respect to the Low-Low group, the results are the same as in Exhibit 8b -- no trend and virtually no investment. However, we note that the central group now appears to show a tendency to the same inverse relationship.

## FINDINGS OF THE ANALYSIS

This analysis showed that, based on consolidated data, there is a very strong correlation between governance and FDI. The relationships illustrated by these Exhibits also provide useful insights into the behavior of specific types of investment. Investors in generation, particularly new plants, are much more sensitive to governance issues if their plants will operate in a competitive environment than if they enjoy the guaranteed revenue of a PPA. However, as confirmed by our interviews with major players, most generation investors acknowledge two points that will likely become clear in any future analysis covering data beyond 2000. First, PPA markets are becoming increasingly scarce as sectors move towards competition in generation. Second, investors are concerned about the risks that a PPA may become a significant business liability to the off-taker because of changes in the marketplace. Therefore, even if the terms of a PPA make a project very attractive to investors when

executed, those investors will wish to verify that the project continues to make economic sense in a competitive market should the PPA be terminated early.

Another interesting finding is with regard to distribution investments, which are of course the result of privatization. While it is clear from Exhibit 8d that heavy investment in distribution requires a minimum threshold of governance (about 40 points in our adjusted scorecard system), once this threshold is reached the level of governance seems less significant. This is explained by the fact that distribution is a regulated activity. Therefore, so long as an adequate regulatory framework exists and the credit rating is favorable, the sensitivity to other governance indicators diminishes.

In conclusion, governance improvements are essential to attract substantial investment in the power sectors. However, these improvements in governance do not affect all investments in the power sector in the same manner. Regulated assets like distribution companies and generation plants operating under long-term PPA's may see a fair amount of investment with relatively low improvement in governance. However, investment in new generation, and in particular competitive new generation, is extremely sensitive to governance and reacts markedly to every improvement.

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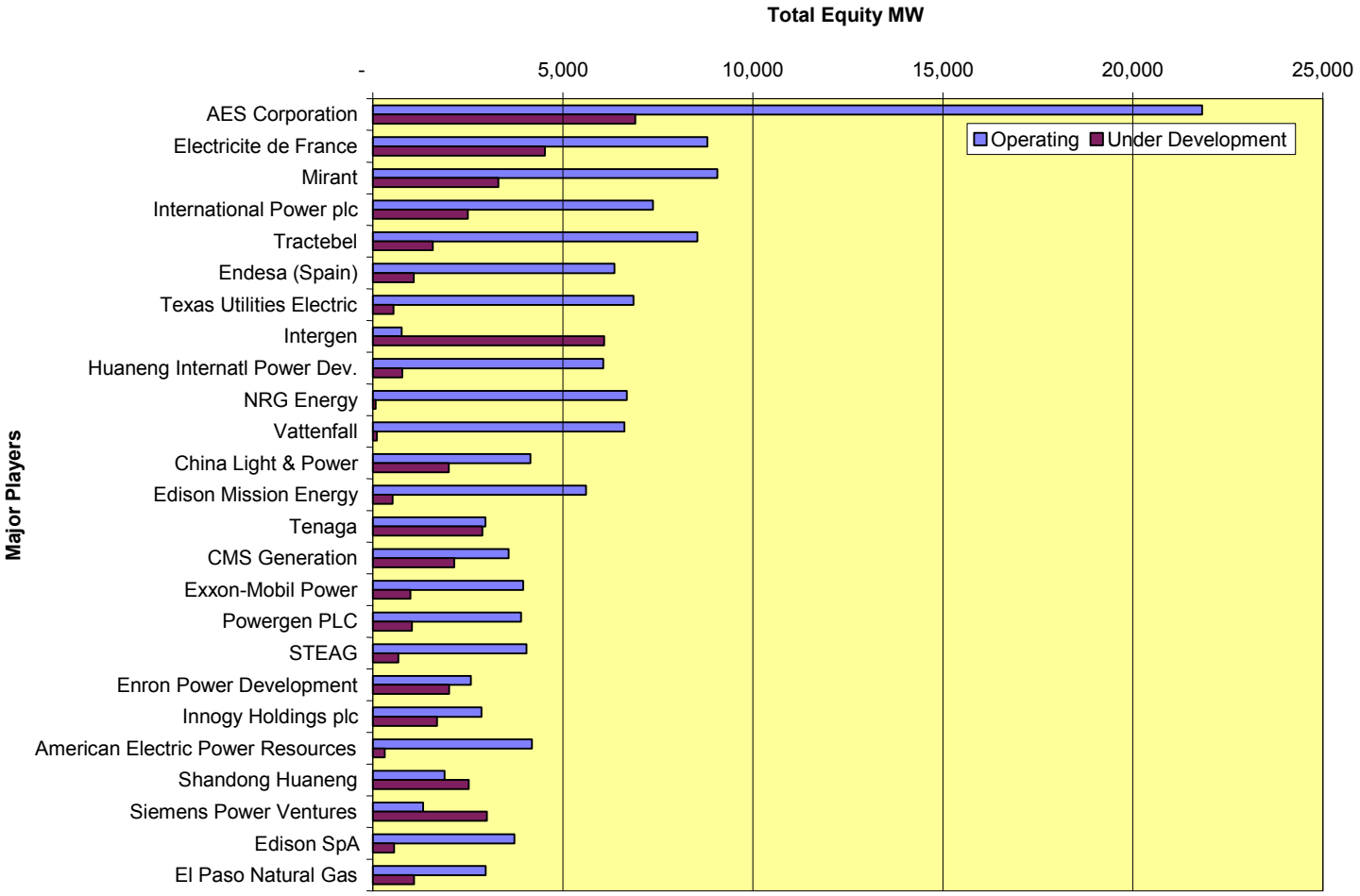
# 4. INVESTORS PESPECTIVE

## 4.1 MAJOR PLAYERS

The community of international investors in the power sector is quite diverse. In terms of geographical origin, prominent investors come mainly from Europe and the US, although several significant investors originate in Asia and Latin America. Their backgrounds include subsidiaries of state owned utilities like ENDESA (Spain) and EDF (France), subsidiaries of private utilities, pure power developers, equipment manufacturers and fuel suppliers. Each, of course, has a different attitude; for example, equipment manufacturers or fuel suppliers may have an interest in the sale of equipment or fuel to the investment project, as well as in the attractiveness of the investment itself. However, and while there are many exceptions, in general terms those subsidiaries in charge of developing power projects are subject by their corporate parents to nearly the same strict investment criteria regarding project performance.

**EXHIBIT 9**

**Major Players in the International Power Sector Interviews**



As part of this study, PA agreed to contact key some of the players in the international electricity sector to discuss how governance issues affect their investment decisions. We have contacted a number of companies, but due to timing of this report just after the end of the year, several interviews are still being arranged. Nevertheless, it is encouraging that, from the limited number of interviews held so far, a very clear picture emerges.

Investors in generation assets are quite sensitive to the shift from long-term power PPA's to "merchant" plants operating in open access competitive dispatch markets. Thus, a different attitude towards governance is observed among investors if they are targeting a PPA market or a merchant market.

In a PPA market, the key issue for the investor is the robustness of the off-taker (the power purchaser), who often is a privately owned distribution company or a State-Owned Utility. Understandably, investors in PPA markets are far more interested in having contractual terms that allow them recourse to the balance sheet of the off-taker and international arbitration, and less interested in other governance issues.

The attitude towards merchant markets is entirely different. A merchant plant relies on its own economic efficiency (so-called "merit-based dispatch") to capture and retain market share. The merit-based ranking on efficiency is only valid, however, if there is no possibility of unfair allocation of utilization in the market to plants of lower performance. Thus, in merchant markets investors are extremely concerned about governance issues that affect the likelihood that the "playing field will be even".

In general, it appears that equity holders and lenders share the same attitude towards PPA markets. In merchant markets, however, equity holders tend to be more focused on the market itself (regulatory autonomy, market power control, price rules). Lenders, however, are more concerned about country risk and credit ratings.

Because most countries are moving to open access competitive dispatch, the trend in the international power markets, acknowledged by all investors interviewed, is definitely away from long-term PPA's and towards merchant markets. This, in turn, generates greater concern about governance issues as a key consideration for investments in this new environment.

Investors in transmission and distribution assets are not much affected by the trend from PPA markets towards merchant markets. Those investors are, however, concerned about moves towards retail competition between transmission and distribution entities that could reduce their customer base. Since transmission and distribution are regulated activities, investors in those assets carefully monitor governance of the power sector, particularly by the principal regulator. In general, such investors look for independence of the regulator from the ever-present risk that retail tariffs may be forced below the economic cost of service and realistic profit margins by political issues.

## 4.2 COMPLICATIONS OF STRATEGIC POSITIONING AND REAL OPTIONALITY

While few will disagree that forecasted rate of return is a key consideration for investment, it is important to realize that this is not the only consideration. Otherwise, it would be impossible to explain the intense bidding competition that took place during privatization of assets in Brazil even before a clear regulatory framework was in place to allow investors to reliably estimate their rates of return.

Major players are as much interested in assets for their full value to the investor's portfolio as for their stand-alone commercial performance. This full value is often difficult to quantify, but could substantially increase the interest of the investor. The following considerations are included:

- ✓ The strategic value of the asset in terms of leveraging the performance of other assets. For example, a generation plant can more easily enter into a lucrative power sales contract with a distribution company owned by a common investor.
- ✓ The asset may be sold later for a greater price than originally paid
- ✓ The asset contributes to a portfolio that by its size and diversity enhances the value of publicly traded stock of the investor

Interestingly, these considerations are as sensitive to governance issues as is the commercial performance of the asset. This result is likely explained by the fact that the added value of these options depends considerably on the long-term view of the market, which in turn is more dependent on the prospect for successful governance of the sector.

## 4.3 HOME COUNTRY ENVIRONMENT AND CRISIS EFFECTS

The growth of economic globalization has created two very important effects on flows of capital to power sectors. First, the globalization of the power industry itself; two decades ago, most electric utilities had little interest in investing outside their domestic territories simply because they enjoyed an attractive regulatory environment and good economic returns at home. As this home environment became less attractive, utilities established subsidiaries to operate as independent power producers or distribution companies abroad. Typically, however, utilities have greater risk tolerance in their own countries, a small improvement in the regulatory or market environment at home, coupled with political or economic uncertainty in international markets, may encourage these utilities to divest their assets abroad and return home for safer returns.

Second, since most of the private capital invested in power sectors as a result of reform is foreign, and much of it comes from investment funds that carry assets in many different countries, there is a high sensitivity of power sector investment to international economic crises. Thus the Asian financial crisis, the Mexican crisis, the Russian crisis and now the Argentine crisis have all had an impact on investor attitudes in other countries. This relationship between events in one country on investments in another country can often explain why the correlation between governance improvement and private investment is not perfect.

# 5. BENEFITS OF DIRECT INVESTMENT

## 5.1 DRIVERS FOR REFORM IN DEVELOPING COUNTRIES

We noted briefly above that there is a marked difference of objectives between power sector reform in industrialized countries and power sector reform in developing countries. Industrialized countries seek lower tariffs through more competition because they perceived that a fully regulated environment does not give consumers the benefit of least-cost power supply. In some cases, the focus on price became so strong that quality (e.g., availability and reliability of services) has been severely compromised, as was the recently case in California.

Developing countries generally seek primarily to improve availability and reliability of service. These countries often assume that, in a post-reform environment, the true economic cost of power will be higher than the previously subsidized power price, but still within reach of the consumer. However, sometimes the economic cost of service provided by the market is more than consumers in developing countries can actually afford. There are at least three reasons for this: (1) competition takes time to lower prices, (2) consumer incomes do not rise at the same speed as subsidies are being eliminated, or (3) the system is driven towards a level of quality that is not consistent with the consumer's ability to pay.

## 5.2 INDICATORS OF ENVIRONMENTAL AND SOCIAL BENEFIT

### Environmental Benefits

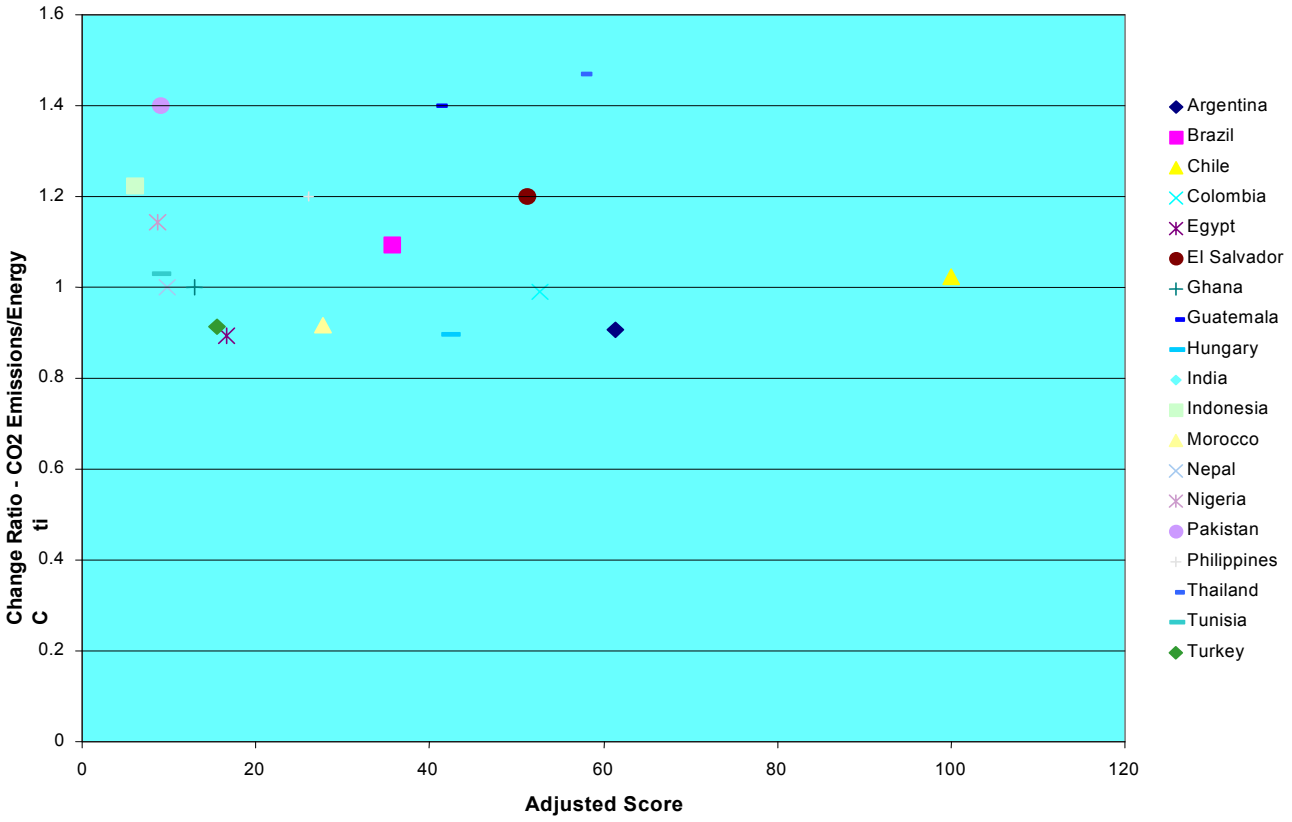
When, by virtue of the first reforms in the power sector, private capital was invited to participate in the electricity supply industry, some observers feared that the environment would have to yield priority to the need to upgrade and expand inadequate power infrastructure. Indeed, many countries that introduced reforms were initially reluctant to enact strict environmental protection legislation for fear of discouraging investment. Fortunately, this has not generally been the case. Instead, power sector reforms have mostly had a favorable, rather than a negative, environmental impact.

The main reason for this result has been that generation investors, ever eager to find the lowest possible up-front capital expenditure, favored natural gas as a fuel that can be burned in lighter and cheaper machines (combustion turbines and combined cycle units). The cheaper and dirtier fuels like coal or residual oil can only be burnt in heavier and more expensive machines (steam turbines and diesel units). The investment shift in favor of natural gas has been pronounced among many countries previously reliant on dirtier fuels. This demand for natural gas in turn has driven the exploration and development of new gas reserves and fields. Moreover, this increase in demand has also driven the rapid expansion of natural gas transportation networks that decades of centrally-planned power governance failed to identify or implement.

In order to evaluate this benefit, we looked at the change in emissions per unit of energy produced in the countries sampled. The results are shown in Exhibit 10.

**EXHIBIT 10**

**C02 Emissions/Energy Consumption – Change from 1987 to 1996**




While a positive trend is arguably observable, the effect is very small. Many of the countries that embarked early on power sector reforms (Argentina, Colombia, Chile, Brazil, Philippines) did so partially because their power supplies were substantially dependent on hydroelectric power. Hydroelectric power projects are very capital intensive to expand. Moreover, such facilities are also prone to periods of drought-driven deficit. Indeed, prolonged droughts often helped to trigger power sector reforms. The reforms were indeed successful in displacing from thermal generation the heavier and dirtier fuels like coal and residual oil in favor of cleaner natural gas. The reforms also coincided with less hydroelectric development, because economically attractive and environmentally acceptable hydroelectric sites are becoming scarce everywhere. Thus, when measured over the entire volume of energy generated, emissions show only a small decrease.

**Social Benefits**

The effects of power sector reform require careful consideration of social benefits, as generally a number of trade-offs take place.

Residential consumers everywhere are usually more interested in low rates than high technical quality (reliability, voltage and frequency variations, etc), except when quality reaches truly low levels (i.e., brownouts or blackouts) and the need for back-up power becomes widespread. For urban residential consumers in particular, the benefits of higher quality are normally only apparent in the form of customer service quality (faster response to complaints, clear bills, easier payment procedures) and, very occasionally, broader options such as time-of-day and two-part tariffs. As a result, urban residential consumers who did not experience truly bad quality before the implementation of reforms are more likely to view rate increases (resulting from removal of subsidies) as the primary effect of reform. Therefore, their opinion of social benefit may in general range from neutral to negative.

Rural residential consumers are more likely to have a positive view of social benefits. Reform is usually associated with incentives to power utilities to provide more extensive coverage. Subsidies in rural areas are often tolerated and passed on as a cost to other consumers.

The attitudes of commercial consumers are complex. Pre-reform policies on commercial rates vary from country to country. In some countries, commercial utilization was subsidized heavily, while in others it was penalized heavily. Thus, the opinion of commercial consumers as to the benefits of reform is likely to vary according to the pre-reform price structure. However, commercial customers are generally the most affected by low quality of service and, in particular, poor street lighting. In many developing countries, an important social benefit of reform is the reduction of street crime and store robberies through better street lighting. Commercial customers are the first to notice this benefit.

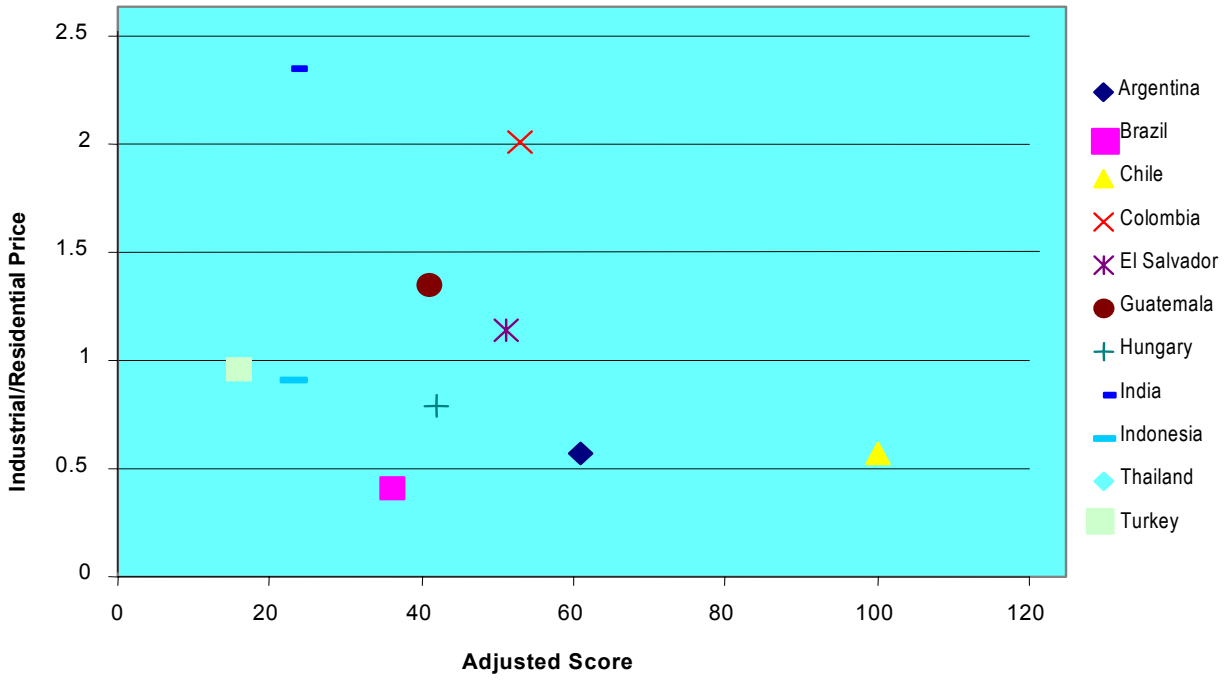
Industrial customers are usually the most likely beneficiaries of reform. In turn, those users actually pass on the greatest benefits of their improved performance to society. Pre-reform policies often forced industry to heavily subsidize residential, and sometimes commercial, customers by carrying a disproportionately high share of the cost associated with distribution at low voltage. Post-reform policies generally provide that each customer pays only for that part of the network it uses. Thus, industrial tariffs tend to drop drastically. Furthermore, most reforms allow large industrial customers to buy their electricity directly from individual power producers, who may offer rates that are even lower than regulated industrial rates.

This drop in the price of industrial electricity is probably the greatest social benefit of power sector reforms. The price reduction makes industry in general more competitive. The entire society thus benefits from higher economic growth and more job opportunities.

In order to analyze the effect of governance on these benefits, we have compared the ratio of industrial to residential tariffs against governance for some of the countries sampled-- those that showed changes in their tariff structures.

**EXHIBIT 11**

**Industrial/Residential Prices vs. Adjusted**



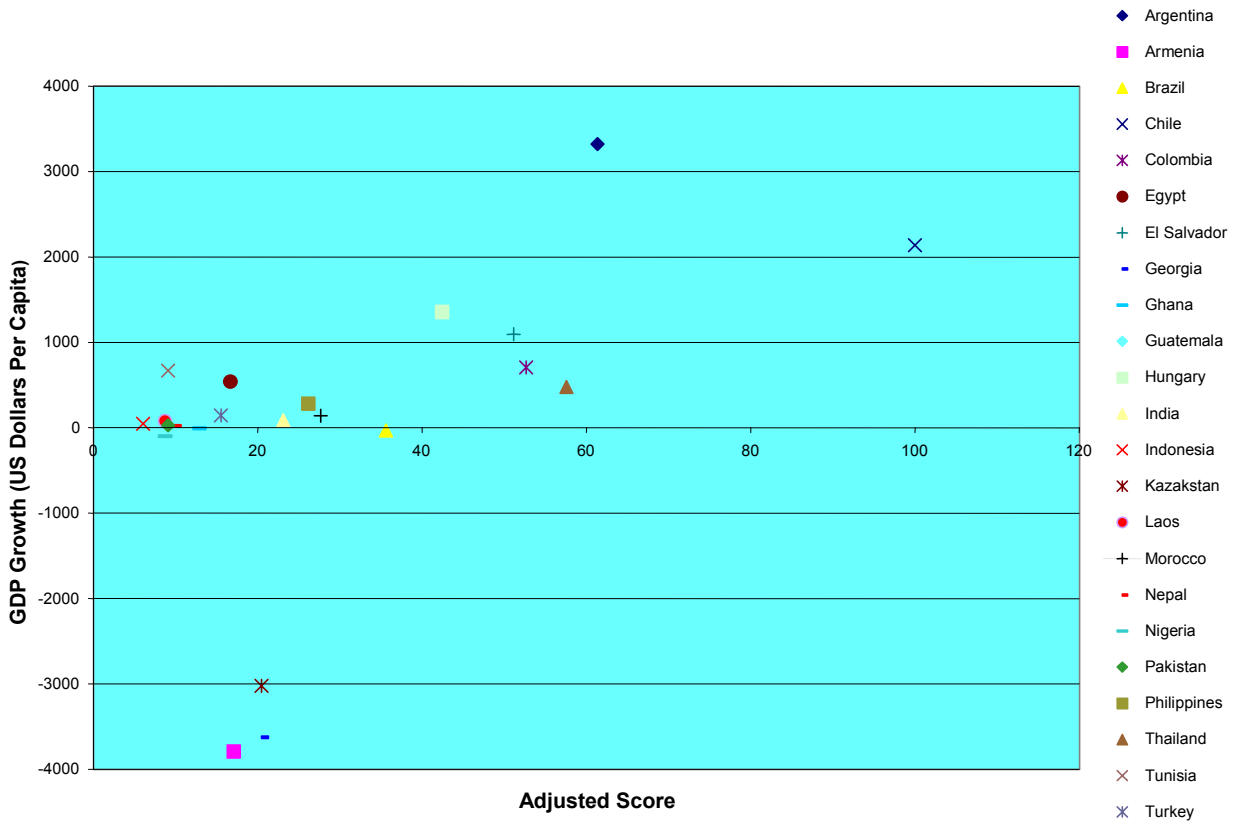

The analysis show on Exhibit 11 is not conclusive. There are an almost equal number of countries that have eliminated cross-subsidies (a ratio of less than 1) as there are countries have not done so. This seems to be unrelated to governance.

Clearly, the elimination of cross-subsidies is a difficult step even for countries that have achieved a high level of governance improvement in the sector, like Colombia. This problem is sometimes perceived as a political one since the elimination of cross-subsidies often makes residential service not affordable by a larger number of consumers. However, the problem is mainly regulatory in nature.

In the relatively young regulatory bodies of countries that reformed their sectors there is not yet a clear understanding of the relationship between cost of service and quality of service and the result is that often the service offered post-reform is of a quality that is beyond the affordability of many consumers.

**EXHIBIT 12**

**GDP Growth Per Capita vs. Adjusted Score**




## Economic Benefits

Power sector reforms take place in the context of substantive reforms in many other sectors. Broad reforms, of course, have profound consequences for the economy of a country. Therefore, it is not feasible to isolate the impact of governance improvements in one area, the power sector, on economic growth in the country generally. Nevertheless, it is important to show that at least power sector governance improvement is not an obstacle to economic growth. It is also valuable to demonstrate that successful economies are associated with good governance in the sector. This analysis is shown in Exhibit 12. That Exhibit demonstrates the significantly higher rates of economic growth enjoyed by all countries with governance scores above 50 points.

## 5.3 COMMENTS ON SOCIAL AND ECONOMIC BENEFITS

This study comes at a time when there is extensive debate over the benefits of the economic models adopted in many countries. A number of those countries included governance reforms among the measures taken to open up the power sector to private investment and competition. Argentina, one of the best examples of highly successful power sector reform, is

at this time undergoing one of the worst economic and social crises in its history. Other countries are also struggling with unemployment, recession and other ills that many in their societies associate with economic reforms initiated in the last decade.

Often, some blame these crises partly on the liberalization of power sectors and other results of improved governance. However, most of the crises experienced by developing countries that underwent liberalization of their economies are the result of inadequate governance, notably social welfare and government finance. These countries often failed to prepare ordinary citizens for the true economic costs of power provided by State-Owned Utilities and the fiscal discipline required once formerly state-controlled economic activities are turned over to the private sector.

# 6. SUMMARY AND CONCLUSIONS

## 6.1 SUMMARY

Governance improvement in the power sector is a relatively recent phenomenon. Therefore, the causal relationship between improved governance and increased FDI is not entirely captured by measuring the accumulated level of reform against accumulated investments. Many countries achieved substantial improvement in governance close to the end of the last decade. This triggered the start of an investment flow, of which only a small fraction can be captured in that timeframe. Other limitations involve the effects of international economic crises, regulatory changes in the home countries of the investors and governance issues outside the power sector.

This study has tried to address these limitations by selecting a balanced sample, representing different regions and including countries with different levels of reform and different volumes of investment. The indicators of governance were carefully selected to include a very large variety of circumstances that could reflect positively or negatively on power sector governance issues. These indicators were then adjusted to reflect the impact of broader factors as viewed by international credit rating agencies. The level of FDI was measured only from known transactions and broken down by type (privatization or greenfield development) and by segment (generation, transmission or distribution) in order to identify differences in trends.

In addition to the analysis of data on governance and FDI, this study has included a survey of private investors with extensive activity in the international power sector. We conducted interviews regarding their views about investment criteria and attitudes regarding governance both within and outside the power sector.

As a last activity, we analyzed the benefits of FDI to society on the basis of economic, social and environmental indicators.

## 6.2 FINDINGS

This study concludes that there is a clear and strong correlation between improvements in power sector governance and FDI. This correlation strengthens when governance in the power sector is adjusted by reference to sovereign credit ratings to reflect broader issues within the country.

Outside the abnormal case of power exports from Laos, the positive relationship between governance and FDI is only unclear in cases where FDI is small and is focused on greenfield development of generation projects. This behavior is associated with generation plants developed on the basis of a long-term PPA. Investments in generation assets in open access competitive merchant markets without long-term PPA's and investments in distribution or transmission are very sensitive to the perception of fairness and transparency, key attributes of good governance. Since the international markets exhibit a trend towards "merchant" markets and away from long-term PPAs, we anticipate this relationship will strengthen in the future.

While the results of improved governance in the power sectors can only be measured over a span of decades, the power sector reforms that took place during the 1990's have had a

marked effect on the attraction of foreign direct investment to the countries. That effect is directly related to the extent of governance improvement.

## *APPENDIX A: ELEMENTS OF ELECTRICITY SECTOR REFORM*

### A.1 HAVE CORE STATE-OWNED UTILITIES BEEN CORPORATIZED AND COMMERCIALIZED?

There is considerable data from many countries demonstrating the development benefits accruing if power utilities are separated from other government functions and exposed to best commercial practices. To test the existence of this element, we have reviewed the listed countries to determine if state-owned utilities have been separated from other governmental functions. Utilities, thus, would be organized as corporate entities separate from the supervising ministry. We also considered the extent to which activities of the utility have been commercialized; have the financial autonomy of the commercialized utility, the ability of the utility to implement cost-recovery initiatives and the ability of the utility to choose among suppliers on market terms. To measure financial transparency and accountability as an aspect of commercialization, we ranked the implementation of internationally recognized accounting and auditing standards. We considered as well the extent of autonomy in employment decisions.

### A.2 HAS THE GOVERNMENT PASSED LEGISLATION ALLOWING UNBUNDLING OR PRIVATIZATION?

Enabling legislation is required to permit transfer of existing electricity assets and greenfield concessions into private hands. As part of our ranking process, we reviewed whether legislation has been enacted that unbundled state-owned utilities into separate generation, transmission, and distribution and supply components. Public access to the privatization process and information about privatization helps develop acceptance throughout the community of this step in electricity sector reform. Therefore, we further considered the legislative framework for the privatization process, including provisions governing the transparency and competitive character of the bidding process and the ability of foreign investors to participate. We also reviewed the legislative approach to central post-privatization issues, whether long-term restrictions continue to exist on commercialization of activities of privatized entities and whether continuing subsides (e.g., for poverty reduction or rural service) are transparent.

### A.3 DOES AN INDEPENDENT REGULATORY AUTHORITY EXIST?

Institution building is a central aspect of electricity sector reform. Privatization of power assets and competitive power markets requires a reordering of the regulatory framework to supervise the restructured electricity sector. The country rankings reflect our review of a number of the elements of an independent regulatory authority: the separation of the regulator from both the energy policy arm of government and state-owned power providers, the financial autonomy and independence of the regulator, the adequacy of the regulator's inspection and supervisory authority, and the ability of the regulator to address anti-competitive circumstances.

## A.4 MARKET CONDITIONS: HAVE THE INCUMBENT UTILITIES ACTUALLY BEEN RESTRUCTURED AND IS THE MARKET COMPETITIVE?

The establishment of a reordered regulatory framework and the introduction of competitive markets and commercial practices into the electricity sector is a preliminary step towards privatization of existing electricity assets. The passage of laws is not of itself sufficient to achieve reforms—actual implementation is the acid test. We analyzed the actual status of commercialization and privatization efforts in generation, transmission, distribution and supply. The country rankings also reflect the status of competition within the privatization process and within each function.

## A.5 IS PRIVATE INVESTMENT PERMITTED IN GREENFIELD PROJECTS?

A number of countries have authorized privatization of greenfield projects, particularly independent power projects, separately from privatization of existing utilities. We therefore included specific items in the ranking process with respect to the status of private ownership in greenfield projects, both as to the extent of private participation in such projects and as to the ability of foreign investors to participate.

## A.6 WHAT IS THE EXTENT OF SUCCESS OF THE PRIVATIZATION PROGRAM?

The final stage in sector reforms is the implementation of privatization. Accordingly, we inquired into the status of privatization efforts for existing generation, transmission, and distribution and supply assets in the electricity sector. We also reviewed the transparent nature of privatizations and whether the process of privatizing existing utilities was open to foreign investors, thereby enhancing both public participation and capacity building.

## *APPENDIX B: STATUS OF POWER SECTOR REFORM SCORE MATRIX*

**Taxonomy - Status Power Sector Reform**

**Please Score with: N/A = 0 (Negative - detrimental to power sector reform), N/A = 3 (Positive - Beneficial to power sector reform), Low = 1, Medium= 2, High = 3**

| | | Argentina | Armenia | Brazil | Chile | Colombia | El Salvador | Georgia | Ghana | Guatemala | Hungary | India | Indonesia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | **Have Core State-Owned Utilities Been Corporatized and Commercialized?** | | | | | | | | | | | | |
| 1 | Has State-Owned Utility been separated from other Government functions into a corporation or other separate legal entity? | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 |
| 2 | Does State-Owned Utility have financial autonomy over revenues, expenditures, investments and financing? | N/A 3 | 0 | 1 | N/A 3 | N/A 3 | 2 | 1 | 1 | 1 | 2 | 1 | N/A O |
| 3 | Is senior management team independent from Government intervention? | N/A 3 | 1 | 1 | N/A 3 | N/A 3 | 1 | 1 | 1 | 1 | 2 | 1 | N/A O |
| 4 | Does State-Owned Utility have ability to implement cost recovery initiatives (e.g., modify tariffs? | N/A 3 | 1 | 2 | N/A 3 | N/A 3 | 2 | 1 | 1 | 1 | 1 | 1 | N/A O |
| 5 | Are State-Owned Utility's financial records required to be consistent with international accounting and auditing standards? | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | N/A O |
| 6 | Can State-Owned Utility choose among competing equipment suppliers? | 3 | 2 | 2 | 2 | 2 | | 1 | 1 | 1 | 2 | 1 | 1 |
| 7 | Can State-Owned Utility choose among competing fuel suppliers and fuel types? | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 8 | Does State-Owned Utility have management autonomy over hiring, retention and termination of employees? | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | N/A O |
| B | **Has the Government Passed Legislation Allowing Unbundling or Privatization?** | | | | | | | | | | | | |
| 1 | Does legislation require that power sector providers be separated into generation, transmission, distribution and supply components? | 3 | 2 | 1 | 0 | 3 | 3 | 2 | 0 | 3 | 2 | 1 | N/A O |
| 2 | Does legislation require that core State-Owned Utilities be fully or partially privatized? | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 2 | 2 | 1 | N/A O |
| 3 | Does legislation require transparent, open bidding, based on objective criteria, in privatizations? | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 0 | 2 | 2 | 2 | N/A O |
| 4 | Does legislation discriminate between domestic investors and foreign investors in privatizations? | 3 | 1 | 2 | 2 | 3 | 2 | 1 | 0 | 3 | 2 | 1 | N/A O |
| 5 | Is privatized utility subject to long-term restrictions on commercialization of activities generally? | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | N/A O |
| 6 | Is any subsidy regime (e.g., poverty reduction or rural service) transparent and pro-competitive (i.e., limited cross-subsidies through tariff levels)? | 3 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | | N/A O |
| C | **Does an Independent Regulatory Authority Exist?** | | | | | | | | | | | | |
| 1 | Is the Regulatory Authority a body separate from the energy policy formulation arm of the Government? | 1 | 1 | 3 | 3 | 3 | 3 | 2 | 0 | 3 | 2 | 2 | N/A O |
| 2 | Is the Regulatory Authority a body separate from the State-Owned Utility? | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 0 | 3 | 2 | 2 | N/A O |
| 3 | Are the senior officials of the Regulatory Authority selected in a manner that insulates them from continuing political influence? | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 0 | 2 | 2 | 1 | N/A O |
| 4 | Is the Regulatory Authority financially autonomous from the Government? | 3 | 1 | 3 | 3 | 2 | 3 | 1 | 0 | 2 | 1 | 1 | N/A O |
| 5 | Is the Regulatory Authority funded in a sustainable manner? | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | N/A O |
| 6 | Does the Regulatory Authority have inspection authority over financial records and physical assets of power sector participants (including any State-Owned Utilities)? | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | N/A O |
| 7 | Are regulatory processes transparent and open to power sector participants? | 3 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 2 | N/A O |
| 8 | Are regulation processes transparent and open to other interested parties (e.g., NGOs and other interested groups)? | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | N/A O |
| 9 | Does the Regulatory Authority have necessary authority over licensing and operations of power sector participants? | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | N/A O |
| 10 | Is the Regulatory Authority subject to adequate independent supervision with respect to transparency, conflicts of interest and anti-corruption issues? | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | N/A O |
| 11 | Does the Regulatory Authority have necessary authority over environmental impact and other externalities of power sector? | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | N/A O |
| 12 | Does the Regulatory Authority posses necessary authority to regulate tariffs and other activities of "natural monopolies"? | 3 | 1 | 2 | 2 | 3 | 3 | 0 | 1 | 2 | 1 | 1 | N/A O |
| 13 | Does the Regulatory Authority possess necessary authority over competition in the licensing/concession process for the power sector? | 3 | 1 | 2 | 2 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | N/A O |
| 14 | Does the Regulatory Authority possess necessary authority over anti-competitive behaivor among power sector participants? | 3 | 0 | 1 | 3 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | N/A O |

## Taxonomy - Status Power Sector Reform

**Please Score with: N/A = 0 (Negative - detrimental to power sector reform), N/A = 3 (Positive - Beneficial to power sector reform), Low = 1, Medium= 2, High = 3**

| | | Kazakhstan | Laos | Nepal | Nigeria | Pakistan | Philippines | Thailand | Turkey | Egypt | Morocco | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | **Have Core State-Owned Utilities Been Corporatized and Commercialized?** | | | | | | | | | | | |
| 1 | Has State-Owned Utility been separated from other Government functions into a corporation or other separate legal entity? | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 0 |
| 2 | Does State-Owned Utility have financial autonomy over revenues, expenditures, investments and financing? | 2 | 1 | 1 | 1 | N/A 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| 3 | Is senior management team independent from Government intervention? | 1 | 1 | 1 | 1 | 0 | 1 | 2 | N/A 0 | 1 | 2 | 0 |
| 4 | Does State-Owned Utility have ability to implement cost recovery initiatives (e.g., modify tariffs? | 1 | 0 | 0 | 0 | N/A 0 | 1 | 2 | 1 | 1 | 1 | 0 |
| 5 | Are State-Owned Utility's financial records required to be consistent with international accounting and auditing standards? | 1 | 0 | 0 | 0 | N/A 0 | 1 | 2 | 1 | 1 | 1 | 0 |
| 6 | Can State-Owned Utility choose among competing equipment suppliers? | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 0 |
| 7 | Can State-Owned Utility choose among competing fuel suppliers and fuel types? | 1 | 0 | 0 | 0 | N/A 0 | 1 | 2 | 1 | 1 | 1 | 0 |
| 8 | Does State-Owned Utility have management autonomy over hiring, retention and termination of employees? | 1 | 1 | 1 | 1 | N/A 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| B | **Has the Government Passed Legislation Allowing Unbundling or Privatization?** | | | | | | | | | | | |
| 1 | Does legislation require that power sector providers be separated into generation, transmission, distribution and supply components? | 0 | 0 | 0 | 0 | 1 | 2 | 2 | N/A 0 | 1 | 2 | 1 |
| 2 | Does legislation require that core State-Owned Utilities be fully or partially privatized? | 2 | 0 | 0 | 0 | 1 | 2 | 1 | N/A 0 | 1 | 2 | 0 |
| 3 | Does legislation require transparent, open bidding, based on objective criteria, in privatizations? | 1 | 0 | 0 | 0 | 1 | 2 | 2 | N/A 0 | 1 | 2 | 0 |
| 4 | Does legislation discriminate between domestic investors and foreign investors in privatizations? | 1 | 0 | 0 | 0 | 1 | 1 | 2 | N/A 0 | 1 | 1 | 0 |
| 5 | Is privatized utility subject to long-term restrictions on commercialization of activities generally? | 1 | 0 | 0 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 2 | N/A 0 |
| 6 | Is any subsidy regime (e.g., poverty reduction or rural service) transparent and pro-competitive (i.e., limited cross-subsidies through tariff levels)? | 1 | 0 | 1 | 1 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | N/A 0 |
| C | **Does an Independent Regulatory Authority Exist?** | | | | | | | | | | | |
| 1 | Is the Regulatory Authority a body separate from the energy policy formulation arm of the Government? | 1 | 0 | 1 | 1 | 1 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 2 | Is the Regulatory Authority a body separate from the State-Owned Utility? | 1 | 1 | 1 | 1 | 1 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 3 | Are the senior officials of the Regulatory Authority selected in a manner that insulates them from continuing political influence? | 1 | 1 | 0 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 4 | Is the Regulatory Authority financially autonomous from the Government? | 1 | 0 | 0 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 5 | Is the Regulatory Authority funded in a sustainable manner? | 1 | 0 | 0 | 0 | N/A 0 | N/A 0 | 2 | N/A 0 | 1 | 1 | 0 |
| 6 | Does the Regulatory Authority have inspection authority over financial records and physical assets of power sector participants (including any State-Owned Utilities)? | 1 | 0 | 0 | 0 | 1 | 1 | 1 | N/A 0 | 1 | 2 | 0 |
| 7 | Are regulatory processes transparent and open to power sector participants? | 1 | 2 | 1 | 1 | N/A 0 | 1 | 2 | N/A 0 | 1 | 1 | 0 |
| 8 | Are regulation processes transparent and open to other interested parties (e.g., NGOs and other interested groups)? | 1 | 2 | 1 | 0 | N/A 0 | 1 | 2 | N/A 0 | 1 | 1 | 0 |
| 9 | Does the Regulatory Authority have necessary authority over licensing and operations of power sector participants? | 1 | 1 | 1 | 1 | 1 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 10 | Is the Regulatory Authority subject to adequate independent supervision with respect to transparency, conflicts of interest and anti-corruption issues? | 1 | 0 | 1 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 11 | Does the Regulatory Authority have necessary authority over environmental impact and other externalities of power sector? | 1 | 1 | 1 | 1 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 12 | Does the Regulatory Authority posses necessary authority to regulate tariffs and other activities of "natural monopolies"? | 1 | 1 | 0 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 13 | Does the Regulatory Authority possess necessary authority over competition in the licensing/concession process for the power sector? | 1 | 0 | 1 | 1 | 1 | 1 | 1 | N/A 0 | 1 | 1 | 0 |
| 14 | Does the Regulatory Authority possess necessary authority over anti-competitive behaivor among power sector participants? | 0 | 0 | 0 | 0 | N/A 0 | 1 | 1 | N/A 0 | 1 | 1 | 0 |

| D | Market Conditions: Have the Incumbent Utilities Actually Been Restructured and is the Market Competitive? | Argentina | Armenia | Brazil | Chile | Colombia | El Salvador | Georgia | Ghana | Guatemala | Hungary | India | Indonesia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Have incumbent Utilities actually been unbundled? | 3 | 2 | 2 | 1 | 3 | 3 | 2 | 0 | 3 | 0 | 1 | N/A O |
| 2 | Do the core State-Owned Utilities employ competitive procedures for procurement of good and services (including new facilities, equipment and fuel)? | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 |
| 3 | Do the core State-Owned Utilities raise financings on commercial terms from private sector lenders with limited Government guarantee? | 3 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 1 | N/A O |
| 4 | Is there "competition for the market" in the generation licensing/concession process? | 3 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | | 1 |
| 5 | Is there "competition for the market" in the transmission licensing/concession process? | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | N/A O |
| 6 | Is there "competition for the market" in the distribution licensing/concession process? | 3 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 2 | 0 | | N/A O |
| 7 | Is there "competition for the market" in the supply licensing/concession process? | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | | N/A O |
| 8 | Is there competition between generation providers? | 3 | 0 | 1 | 2 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | N/A O |
| 9 | Is there competition between transmission providers? | 3 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | | N/A O |
| 10 | Is there competition between distribution providers? | 0 | 0 | 0 | 1 | 3 | 3 | 0 | 0 | 2 | 0 | | N/A O |
| 11 | Is there competition between supply providers? | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | | N/A O |
| 12 | Is there competition between fuel suppliers? | 2 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 1 | N/A O |
| 13 | Is there open access to transmission and distribution on pro-competitive terms? | 3 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | N/A O |
| 14 | Has new capital investment come-in since the lunch of power wholesale market? | 3 | 0 | 3 | 3 | 3 | 3 | | | 3 | | | N/A O |
| 15 | Is there discrimination between State-Owned generation and privately-owned generation? | 3 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | N/A O |
| 16 | Is there discrimination between State-Owned transmission and privately-owned transmission? | 3 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 1 | 0 | | N/A O |
| 17 | Is there discrimination between State-Owned distribution and privately-owned distribution? | 3 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 3 | 0 | 1 | N/A O |
| 18 | Is there discrimination between State-Owned supply Co. and privately-owned supply Co.? | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | | N/A O |
| 19 | Are generation licenses/concessions exclusive or non-exclusive? | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 1 | 2 | 2 | N/A O |
| 20 | Are transmission licenses/concessions exclusive or non-exclusive? | 2 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | N/A O |
| 21 | Are distribution licenses/concessions exclusive or non-exclusive? | 3 | 0 | 2 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | N/A O |
| 22 | Are supply licenses/concessions exclusive or non-exclusive? | 1 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | N/A O |
| 23 | Have monopolies in generation been dissolved? | 3 | 0 | 1 | 2 | 3 | 2 | 1 | 0 | 3 | 0 | 0 | N/A O |
| 24 | Have monopolies in transmission been dissolved? | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 25 | Have monopolies in distribution been dissolved? | 3 | 0 | 2 | 3 | 3 | 3 | 0 | 0 | 3 | 0 | 0 | N/A O |
| 26 | Have monopolies in supply been dissolved? | 1 | | 1 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | N/A O |
| 27 | If "natural monopolies" exist in transmission, are they subject to pro-competitive open-access, tariff and operations regulation? | N/A 3 | 0 | 2 | 2 | 2 | 2 | 0 | 0 | 2 | 0 | 1 | N/A O |
| 28 | If "natural monopolies" exist in distribution, are they subject to pro-competitive open-access, tariff and operations regulation? | N/A 3 | 0 | 2 | N/A 3 | N/A 3 | N/A 3 | 0 | 0 | N/A 3 | 0 | 0 | N/A O |
| E | **Is Private Investment Permitted in Greenfield Projects?** | | | | | | | | | | | | |
| 1 | Are private investors entitled to full ownership or control of greenfield projects? | 3 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 |
| 2 | Are private investors entitled to majority ownership or control of greenfield projects? | 3 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | N/A 3 |
| 3 | Are private investors entitled only to operating control of greenfield projects? | 3 | 0 | 2 | 3 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | N/A 3 |
| 4 | Is there discrimination between domestic investors and foreign investors? | 3 | | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 1 |
| F | **What is the Extent of Success of the Privatization Program** | | | | | | | | | | | | |
| 1 | Have existing generation been privatized? | 3 | 0 | 1 | 3 | 2 | 2 | 2 | 0 | 2 | 0 | 1 | N/A O |
| 2 | Have existing transmission been privatized? | 3 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | N/A O |
| 3 | Have existing distribution been privatized? | 3 | 0 | 2 | 3 | 3 | 3 | 0 | 0 | 3 | 0 | 1 | N/A O |
| 4 | Have existing supply providers been privatized? | 1 | 0 | 1 | N/A 3 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | N/A O |
| 5 | Are privatization procedures transparent and open, and based on objective criteria? | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 0 | 2 | 0 | 1 | N/A O |
| 6 | Was there discrimination between domestic investors and foreign investors in the privatization process? | 3 | 1 | 3 | 3 | 1 | 3 | 2 | 0 | 3 | 0 | 1 | N/A O |
| | Raw score | 162 | 45 | 94 | 132 | 139 | 135 | 54 | 34 | 108 | 56 | 61 | 16 |

| D | Market Conditions: Have the Incumbent Utilities Actually Been Restructured and is the Market Competitive? | Kazakhstan | Laos | Nepal | Nigeria | Pakistan | Philippines | Thailand | Turkey | Egypt | Morocco | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Have incumbent Utilities actually been unbundled? | 2 | 0 | 0 | 0 | N/A 0 | N/A 0 | 1 | N/A 0 | 1 | 2 | 0 |
| 2 | Do the core State-Owned Utilities employ competitive procedures for procurement of good and services (including new facilities, equipment and fuel)? | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 |
| 3 | Do the core State-Owned Utilities raise financings on commercial terms from private sector lenders with limited Government guarantee? | 1 | 1 | 0 | 0 | N/A 0 | 1 | 2 | 1 | 1 | 1 | 0 |
| 4 | Is there "competition for the market" in the generation licensing/concession process? | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| 5 | Is there "competition for the market" in the transmission licensing/concession process? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 6 | Is there "competition for the market" in the distribution licensing/concession process? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | 1 | 0 | 2 | 0 |
| 7 | Is there "competition for the market" in the supply licensing/concession process? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | 1 | 0 | 2 | 0 |
| 8 | Is there competition between generation providers? | 0 | 0 | 0 | 0 | N/A 0 | 1 | 3 | 1 | 2 | 0 | 0 |
| 9 | Is there competition between transmission providers? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 10 | Is there competition between distribution providers? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | 1 | 0 | 0 | 0 |
| 11 | Is there competition between supply providers? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | 1 | 0 | 0 | 0 |
| 12 | Is there competition between fuel suppliers? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | | 1 | 0 | 0 | 0 |
| 13 | Is there open access to transmission and distribution on pro-competitive terms? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 1 | 0 | 0 |
| 14 | Has new capital investment come-in since the lunch of power wholesale market? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 1 | N/A 0 | 0 | 0 | 0 |
| 15 | Is there discrimination between State-Owned generation and privately-owned generation? | 2 | 1 | 1 | 1 | N/A 0 | 2 | 1 | 1 | 0 | 2 | 1 |
| 16 | Is there discrimination between State-Owned transmission and privately-owned transmission? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 1 | N/A 0 | 0 | 0 | 0 |
| 17 | Is there discrimination between State-Owned distribution and privately-owned distribution? | 2 | 0 | 0 | 0 | N/A 0 | 2 | 1 | 1 | 0 | 0 | 0 |
| 18 | Is there discrimination between State-Owned supply Co. and privately-owned supply Co.? | 0 | 0 | 0 | 1 | N/A 0 | 2 | 0 | 1 | 0 | 0 | 0 |
| 19 | Are generation licenses/concessions exclusive or non-exclusive? | 2 | 1 | 2 | | N/A 0 | 2 | 3 | 1 | 0 | 0 | 0 |
| 20 | Are transmission licenses/concessions exclusive or non-exclusive? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 21 | Are distribution licenses/concessions exclusive or non-exclusive? | 2 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 22 | Are supply licenses/concessions exclusive or non-exclusive? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 23 | Have monopolies in generation been dissolved? | 1 | 0 | | | N/A 0 | 1 | 1 | 1 | 2 | 2 | 1 |
| 24 | Have monopolies in transmission been dissolved? | 0 | 0 | | | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 25 | Have monopolies in distribution been dissolved? | 1 | 0 | | | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 2 | 0 |
| 26 | Have monopolies in supply been dissolved? | 0 | 0 | | | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 27 | If "natural monopolies" exist in transmission, are they subject to pro-competitive open-access, tariff and operations regulation? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 1 | N/A 0 | 0 | 0 | 0 |
| 28 | If "natural monopolies" exist in distribution, are they subject to pro-competitive open-access, tariff and operations regulation? | 0 | 0 | 0 | 0 | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 2 | 0 |
| E | **Is Private Investment Permitted in Greenfield Projects?** | | | | | | | | | | | |
| 1 | Are private investors entitled to full ownership or control of greenfield projects? | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 2 |
| 2 | Are private investors entitled to majority ownership or control of greenfield projects? | 2 | 1 | 2 | 2 | N/A 3 | N/A 3 | 3 | N/A 3 | 1 | 2 | 2 |
| 3 | Are private investors entitled only to operating control of greenfield projects? | 1 | 1 | 1 | 1 | N/A 3 | N/A 3 | 3 | N/A 3 | 1 | 2 | 2 |
| 4 | Is there discrimination between domestic investors and foreign investors? | 1 | 1 | 1 | 2 | N/A 0 | 3 | 2 | 3 | 1 | 2 | 2 |
| F | **What is the Extent of Success of the Privatization Program** | | | | | | | | | | | |
| 1 | Have existing generation been privatized? | 1 | 0 | | | 1 | 3 | 0 | N/A 0 | 0 | 1 | 0 |
| 2 | Have existing transmission been privatized? | 0 | 0 | | | N/A 0 | N/A 0 | 0 | N/A 0 | 0 | 0 | 0 |
| 3 | Have existing distribution been privatized? | 1 | 0 | | | N/A 0 | 3 | 0 | 2 | 0 | 2 | 0 |
| 4 | Have existing supply providers been privatized? | 0 | 0 | | | N/A 0 | 3 | 0 | 2 | 0 | 2 | 0 |
| 5 | Are privatization procedures transparent and open, and based on objective criteria? | 1 | 0 | 0 | 0 | N/A 0 | 2 | 2 | 1 | 1 | 2 | 0 |
| 6 | Was there discrimination between domestic investors and foreign investors in the privatization process? | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 | 2 | 0 |
| | Raw score | 54 | 23 | 26 | 23 | 24 | 69 | 76 | 41 | 44 | 73 | 12 |