

DEVELOPING BEST PRACTICES
FOR PROMOTING PRIVATE SECTOR
INVESTMENT IN INFRASTRUCTURE

POWER

The views, conclusions, and recommendations presented here are those of the study consultants, and should not be considered to represent the official views of the Asian Development Bank or its member governments.

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FOREWORD

This report is one of a series of five commissioned by the Asian Development Bank (ADB) to identify and recommend best practices to be followed and specific steps to be taken, by ADB's developing member countries in order to encourage both private sector investment and competition in infrastructure development. The study was financed through a \$600,000 regional technical assistance grant - RETA 5753: *Developing Best Practices for Promoting Private Sector Investment in Infrastructure*. This report focuses on the power sector; the other reports cover the road, water supply, airport and air traffic control, and port sectors.

Electricity is an essential input in the economy; an efficient and competitive power sector is therefore vital to a country's development. This report develops best practices for promoting private sector participation and competition in the power sector. It examines the optimum approaches to achieve benefits for consumers of electricity through restructuring, unbundling and privatization. It is hoped that the report will help ADB's developing member countries attract well managed and cost-effective private investment in the power sector.

The five reports have benefited from the support of and valuable contributions from many individuals, both inside and outside ADB. The reports were prepared by a team of individual consultants: Water Supply - Michael Porter of Tasman Asia Pacific; Power - Elliot Roseman of PricewaterhouseCoopers; Ports - John Arnold, an independent ports specialist; Airports and Air Traffic Control - Ian Jones of National Economic Research Associates; and Roads - Roger Allport of Haicrow Fox. In ADB, Sean O'Sullivan, Senior Public/Private Sector Specialist managed the technical assistance implementation with the help of Marcelo Minc, Project Economist. ADB staff in the Energy; Transport and Communications; and Water Supply, Urban Development and Housing Divisions as well as the Private Sector Group helped in guiding the direction of the study and in reviewing the outputs. In December 1998, a workshop, hosted by ADB as an integral component of the study, provided a forum for the exchange of ideas and experiences. Participation and contributions of delegates from many developing member countries and representatives from the private sector in the workshop were very much appreciated by ADB.

The publication of the five reports is especially timely as it coincides with the introduction of a new strategy for private sector development by ADB.

Vladimir Bohun
Director
Infrastructure, Energy and Financial
Sectors Department (East)

ABBREVIATIONS

ADB	- Asian Development Bank
BNDES	- Banco Nacional de Desenvolvimento Economico e Social (Brazilian Development Bank)
BOO	- build-own-operate
BOOT	- build-own-operate-transfer
BOT	- build-operate-transfer
BPA	- Bonneville Power Administration
CAMMESA	- Compañía Administradora del Mercado Mayorista Eléctrico, S.A.
DISCO	- Distribution Company
DMC	- developing member country
DOE	- Department of Energy
ENRE	- Ente Nacional Regulador de la Electricidad (National Regulatory Entity for Electricity)
ERB	- Energy Regulatory Board
ESP	- Energy Service Provider
FERC	- Federal Energy Regulatory Commission
FTR	- fixed transmission rights
GDP	- gross domestic product
IA	- Implementation Agreement
IOU	- investor-owned utility
IPP	- independent power producer
ISO	- independent system operator
ITF	- inside the fence
LMP	- locational marginal pricing
LOLP	- loss of load probability
MERALCO	- Manila Electric Company
MW	- Megawatt
NEM	- National Electricity Market
NPC	- National Power Corporation
PPA	- power purchase agreement
PRC	- People's Republic of China
PSP	- private sector participation
PX	- power exchange
RFP	- Request for Proposal
ROO	- rehabilitate-own-operate
ROT	- rehabilitate-operate-transfer
RPI-X	- price cap regulation
SPUG	- Small Power Utilities Group
T&D	- transmission and distribution
TNB	- Tenaga Nasional Berhad
UK	- United Kingdom
US	- United States
VPX	- Victoria Power Exchange

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EXECUTIVE SUMMARY

A. Introduction

This report identifies best practices and specific steps that developing member countries (DMCs) of the Asian Development Bank (ADB) can take to encourage both private sector investment and competition in the power sector. Overall, the objective was to identify best practices that would benefit electricity consumers. In addition to power generation, where there has been by far the most private sector investment and competition to date in developing countries, this report evaluates an area that is only minimally present in the DMCs, namely private sector investment in power transmission and distribution (T&D). The important distinction in emerging competitive markets between distribution (the “wires” business) and retailing (marketing to customers) is also covered. T&D investments by the private sector have tremendous potential for increasing the efficiency of the power sector, creating a financially viable industry and benefiting all consumers.

This report does not identify the *minimum* practices required to induce investment, nor the *package* of best practices that may be required to induce private investment in the power sector in a specific country. Private sector investment can, and clearly does, take place without all these practices being in place. However, it is also true that this investment will be more *sustainable* if these best practices are in place.

B. A Vision and Philosophy of Power Sector Restructuring

Five major steps were identified in implementing best practice, together with their order of precedence. To some extent, these steps may proceed in parallel, but they are best to be considered as sequential actions that will lead to the implementation of a competitive power market:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

The guiding principles for achieving meaningful change in the power sector are:

- The need to achieve lasting benefits for customers in the shortest possible time should drive the restructuring process. This should be the *raison d’etre* of restructuring. Actions which do not achieve or are inconsistent with this goal should be rejected.
- The power sector should be completely unbundled into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.
- Privatization should include the sale of power distribution utilities, as well as generation, and should include existing assets, as well as new projects, using a transparent process.

- Open access to transmission and distribution wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.
- In a competitive market, the independent regulator should mainly oversee prices and incentives for the wires (transmission and distribution) businesses.
- Multilateral institutions such as ADB should be partners with the DMCs to help them achieve the maximum benefits for customers through increased private sector participation (PSP).

In defining the means to encourage private sector investment and competition that will benefit consumers, it is important to know what a competitive market would look like, and what its key features would be. A competitive market for power would have the following characteristics:

- Customers can freely choose their supplier of power and many of the characteristics and features of how they receive and use power.
- No one entity can influence the price in the market (i.e., there are many buyers and sellers).
- Information on choices is easily available (through the Internet, power pool, or advertising).
- The monopolistic segments of the industry (T&D) remain regulated, but they are given incentives to perform well.
- The competitive segments (generation and retailing) are regulated only minimally (e.g., for environmental compliance, market power and consumer protection).

In the restructuring process, it is important to recognize the difference between investment and competition. Investment is characterized by a willingness of investors to put their time, effort and money into the purchase or development of power projects. The best practices for investment include activities by DMCs that will encourage investors to expend their resources on one project at a time, and do not take a system-wide perspective. Competition, though, is a set of conditions in which investors vie for the market, and they compete against all other players simultaneously to sell their product. Currently, there is no competition in T&D, because these are by their nature monopoly businesses. However, it is possible to encourage efficiency and improve performance through regulation and setting the right incentives. Competition is a more rigorous set of conditions, and it is harder to achieve than investment.

Of course, involvement of the private sector is not a panacea, and the potential abuses of PSP must be controlled in the process of restructuring the sector. This requires continuing to regulate the T&D segments, and setting clear limits in such areas as market power, environmental compliance and employment impacts in the restructuring process. Restructuring the power industry is not a question of the government versus the private sector, though the two may have different objectives. Rather, it is a cooperative process in which the government and the private sector need to collaborate in order to bring about a satisfying conclusion for both. Over time, the implementation of the best practices discussed below is intended to foster such a “win-win” situation.

In the transition, there will almost certainly be significant impacts on existing employment in the power industry. Increased PSP is likely to lead to lower employment. Also, there is a cultural change that will not be easy for government employees or citizens to adjust to, in that the utility sector will no longer be government owned, and efficiency and profitability will be much more important than in the past. The key is to implement these changes in a balanced manner that captures the private sector benefits, while recognizing and dealing with potential adverse impacts on the society and the individuals.

Before determining how to best restructure and encourage PSP in the power sector, it is important to examine the country's objectives. A plan that a DMC would develop for involving the private sector should include an analysis of the objectives that the country expects to achieve. Potential objectives of PSP are to:

- lower costs and therefore lower both wholesale and retail power prices to customers;
- increase the reliability and efficiency of the power sector, through better management, and in the process, benefit consumers of power;
- provide customers with greater choice;
- lower the costs of transactions and of regulation;
- control monopoly power in areas (i.e., T&D) that remain monopolies;
- reduce the burden of investment that the power sector places on the country's budget, and allow the re-allocation of scarce resources to other purposes;
- improve the overall climate for foreign investment, and stimulate the economy as a whole through improved balance of payments, technology transfer, employment, etc.;
- help develop domestic capital markets;
- stimulate the introduction of new technology;
- extend coverage to citizens not currently supplied with power;
- raise money for the treasury for multiple purposes through the sale of state-owned assets;
- better achieve environmental objectives or comply with environmental laws;
- provide for a better trained and educated workforce; and
- minimize opportunities for corruption and market-distorting practices.

With the exception of lowering rates, it is likely that PSP can allow the DMCs to achieve all of these objectives.

C. The Best Practice, According to the Five Stages of Restructuring

The *best practices* and *second-best practices* for encouraging private sector investment and competition in the power sector are summarized below, in terms of the five stages of restructuring. Within these five stages, the best practices are subdivided, where appropriate,

according to those that are general principles affecting restructuring, generation, and T&D. The best practices are presented in the order that the consultant recommends that they be implemented, though many of these steps are likely to occur simultaneously.

1. Establishing the Investment Framework

- Enhance the country's political and fiscal stability.
- Pursue the restructuring of the power sector in the context of broad economic reform and overall restructuring of government-owned enterprises.
- Establish an unequivocal government commitment and vision in favor of restructuring and eventual competition in the power sector, including the goals of such efforts and an aggressive timetable for action. Establish this commitment quickly and continue this support in spite of changes in government.
- Require full compliance with the government's commitment to restructuring and privatization in the relevant ministries and utilities, and require and approve implementation plans by the ministries and utilities to comply with the government's commitment.
- Establish confidence in the legal system. Including clear commercial law, contract law and property law, and a court system that enforces contracts. In the interim, use alternatives such as third-party arbitration and other country jurisdiction.
- Allow full foreign ownership of assets in the power industry. Do not restrict private or foreign ownership to a minority share.
- Achieve an investment-grade country rating from an international rating agency in order to attract the widest possible array of financing options, including long-term bonds.
 - Second best: Put in place incentives for investment (e.g., grace periods for debt, tax relief) to balance a lack of investment attractiveness for a limited time.
- Ensure that the currency is fully convertible, that the currency can be repatriated, and that sufficient foreign exchange will be available to allow investors to transfer profits out of the country.
- Encourage the development of local capital markets through such techniques as: (i) the removal of subsidies and undue banking controls; (ii) the establishment of pension funds; and (iii) setting up provisional credit entities.
- The government should articulate its commitment to electrification, and its intention to assist in meeting the costs to expand the system to serve non-economic customers.
- Promote the growth of hedging and futures instruments in financial markets that enable buyers and sellers to manage price risk.

2. Determining the Structure of the Power Industry

There are many possible steps and structures towards achieving a competitive market in power, and the specifics of each country will affect those steps. The following principles apply broadly across all such structures:

a. General Principles

- Pass a law to restructure the power sector with a strict timetable, with provisions for: (i) unbundling the sector; (ii) selling existing capacity and distribution utilities; (iii) establishing a regulator and its role, duties and obligations, including a distinction between the policy role of government and the implementing role of the regulator; and (iv) the unbundling of the market, and implementation of wholesale and retail markets.
- Determine, based on the country's resource situation and the government's objectives, whether it makes sense to privatize distribution or generation first, or both together. In Asia, much more attention needs to be placed on privatizing distribution, since this will create a more financially viable entity to which independent power procedures (IPPs) can sell power, and improve the performance for customers.
- Establish a regulatory commission that is separate and independent of the ministry, responsible for tariffs, franchises and performance standards.
- Reconcile differences and clearly establish jurisdictions between federal and local/regional governments through a focused dialogue before the process begins.

b. Generation

- Stimulate the use of domestic fuel sources if it is economical to do so.
- Set goals and a timetable for the use of non-conventional fuels (e.g., renewable energy) and energy conservation, which may be more expensive than conventional power sources, and establish a means for achieving those goals.
- Consider utilizing a "single buyer" (either a single utility or the transmission system) with longer-term contracts for initial projects. However, once a more viable investment climate and industry structure emerges, the country can implement a power exchange (PX) and independent system operator (ISO).
- Support private ownership and operation of the transmission system, as long as appropriate regulatory controls and incentives are in place.
- To ensure competition in generation, the transmission company should have three components: (i) ownership and maintenance of wires, (ii) system upgrade and generation dispatch (i.e., the ISO), and (iii) a PX.
- Shift responsibility for the operation of transmission wires to an ISO, whose role is to facilitate investment in the grid and carry out system dispatch. In larger countries, set up regional ISOs.
- Ensure that the ISO is truly independent.

- The ISO should be a non-profit corporation.
- Make the ISO board answerable to the regulator, which has the final decision on rates.
- Set up an independent organization (e.g., a PX) to manage power transactions between wholesale and retail buyers and sellers, and to handle financial settlements that are separate from the ISO and the ownership of wires.

c. Transmission and Distribution

- Make an absolute commitment to involve the private sector in power distribution, and allow majority ownership and control.
- Require unbundling of the “wires” from the retailing function within a distribution area.
- Mandate open access to the distribution system to allow other retailers to compete freely with the retailer that is affiliated with the local “wires” company.
- Separate completely the parent company from its retail affiliates.
- Allow investors in T&D to provide all utility services, not just power, either in an enclave or a wider distribution area.
- Establish an agreement, in the case of privatization in distribution, between the federal government and the regional or municipal governments, as these agencies may have competing agendas.
- Define clearly the geographic boundaries between cooperatives and concessions.

3. Preparing the Market for Private Sector Investment and Competition

a. General Principles

- Move power generation and distribution companies through a systematic process of commercialization and corporatization.
- Before privatization, the regulator should reduce and remove subsidies and cross-subsidies on power and fuel. In regard to the universal service obligations of the government, it should directly fund the poor and disadvantaged customers from the budget.
 - Second best: Continue subsidies and cross subsidies from government revenues for targeted low-income groups for a limited period of time.
- If assistance is provided to specific customer groups, there should be a process in place to determine that customers need this assistance.
- The regulator should set forth and actively monitor the rules of market participation.
- Train regulatory staff to ensure that proper analytical and industrial oversight skills exist at both the central and regional levels. First, set an example at the central government level, then transfer these regulatory skills to the regional level.

- Improve the operation of existing entities before privatizing them, but only if this can be done expeditiously. Do not delay restructuring and privatization for this purpose. Take into account the cost of improvements, which may be exorbitant.
- Allow the strategic investor to obtain management and operational control whether selling an existing asset or creating a new one. Local firms, or the utility itself, may add value as minority partners of the consortium.
- Ensure and enlist public support for privatization; which may mean an extensive education program, providing the ability to invest, and using a phase-in of higher tariffs.
- Eliminate inconsistencies between the regional and central levels of government with regard to tariffs and investment policies.
- The decision on how to address high levels of debt in state-owned companies slated for privatization should be taken in light of the government's goals for privatization. Mutual debt cancellation may be a good way to clear the books.
- Undertake the transition from government accounting to commercial or international accounting standards on a defined schedule, with adequate training.

b. Generation

- Develop standard contracts for independent power producers (IPPs) that are internally consistent and which meet international standards, including an implementation agreement and power purchase agreement.
- Use flexible resource planning in the early stages or the transition period, to determine what type and amount of capacity to add — allow the transmission entity to establish the level and timing of required capacity. Later, allow the market to determine what capacity to add.
- Use build-own-operate contracts to develop new capacity.
 - Second best: Use build-operate-transfer (BOTs) to get the market for PSP started, and establish clear terms for the conditions of the transfer of the plant back to the government; or use concessions, and grant long concession terms.
- Eliminate as many long-term “take or pay” contracts as financially feasible that were signed with IPPs during the investment period. Use government shares as currency to buy out contracts and facilitate the move to a competitive market.
- As a transition issue, establish a clear mechanism to calculate and compensate the owners of power plants for any verifiable stranded costs.
- Allow and foster wholesale power trading as an important pre-condition for a competitive wholesale and retail market, but be sure to put the conditions in place for such trading first.

- To establish a competitive market for generation, the ISO should establish and enforce a grid code — including a merit dispatch order and open access to the transmission system.
- Set up the pricing system so that wholesale prices for power decrease when there is a surplus of capacity and increase when capacity is short to signal the need to add new generation capacity at the right times and places.
 - Second best: Have the ISO solicit for new capacity as required.
- Allow contracts that generators hold for transmission access and transmission rights to be transferred to third parties, with a ceiling on the price of what the seller paid.

c. Transmission and Distribution

- Establish clear regulatory rules and a process for setting T&D tariffs.
 - Second best: Utilize regulation by contract.
- Carry out detailed transmission planning, remove bottlenecks, and establish a grid that supports the transfer of power between and within regions and between countries.
- Reduce theft and lower levels of collection, and legally ensure that new private owners can crack down on violators.
- Before privatization, the ISO should propose, and the regulator should establish, transmission rates that accurately reflect the cost of service, and take into account the distance over which the power is being transmitted.
- Transmission prices should signal to generators the need for transmission system development to expand access and remove constraints.
- Certain T&D services should be exempted from RPI-X regulation, and the companies should submit proposed prices directly to the commission for approval.
- Performance standards and tariff mechanisms for investors in T&D should not require frequent regulatory approval, so that investors have sufficient time to achieve performance targets.
- Train staff to ensure that good skills for grid operation are in place at the central and regional levels.
- Provide adequate customer data to all retailers equivalent to that available to the utility's affiliate to foster market entry by new retailers.
- Require the retailer affiliated with the local wires company to pay the same price for the use of the distribution lines as all other users.
- Ensure consumer protection in the competitive market through standards, access to information and provision of a standard offer service package.

4. Opening the Market and Carrying Out Privatization

a. General Principles

- Allow investors to optimize the staff required to best meet the competitive challenge and to serve customers, but establish principles for employment in the transition to private ownership. This may include stock ownership, training, early retirement packages, and limits on annual staff reductions.
- Give the private sector the flexibility to assemble the best consortium to bid for the project and operate it. Do not impose conditions such as requiring the use of government suppliers or local firms, or requiring the private sector to pay large fees.
 - Second best: Maintain a favored position for local firms for only a limited period to enable a government owned entity to adapt to new market conditions and also ensure that the acquiring firm trains local staff.
- Unbundle existing assets of government owned integrated power companies (including non-power subsidiaries).
 - Second best: Allow functional unbundling for a period of time.
- Strictly limit cross-ownership to restrict market power.
 - Second best: Allow cross-ownership during a transition period.
- To either obtain investment in new generation, before a competitive market is in place, or to sell existing generation and T&D assets, use a well-publicized, competitive, and open request for proposal (RFP) process.
- Do not predetermine what type or level of financing the winning bidder should use.

b. Generation

- In setting the price for which to purchase power, the buyer should focus on the credibility of the provider and the attractiveness of the price, not on the generators' potential rate of return.
- Organize the sale of existing power plants in a systematic manner — determine which plants will be sold, in what packages (if any), and carry out all sales within a short time.
- Unbundle and privatize existing power plants without granting long-term contracts in order to create competition sooner, along with more opportunities for customers.
 - Second best: Provide contracts for sale for a short period, in order to wean the producers off their captive distribution customers.
- To support the development of new capacity, make available government owned sites with existing power plants that are zoned for power project development.

- Utilize build-own-operate contracts for new projects, which provide fewer complications and a cleaner transaction than BOTs, and use rehabilitate-own-operate rather than rehabilitate-operate-transfer for existing ones.
 - Second Best: Utilize BOTs, and establish clear terms for the conditions of the ultimate transfer of the plant back to the government. Use concession agreements as a third choice, and grant long concession terms.
- Limit financial exposure to IPP contracts, and facilitate the emergence of a competitive market for generation.
- Allow the market, through price signals in the PX and power contracts, to determine when and where merchant plants will be added. Reverse RFPs, in which investors offer to build a plant only if there is sufficient interest, may also be an attractive option.

c. Transmission and Distribution

- Carry out the privatization of distribution systems using a flexible bidding system that accepts bids for one or more companies at the same time.
- Allow investors to provide power and other services (e.g., Internet, water supply and wastewater treatment, and security services) within a distribution enclave or industrial zone.
- The government should provide financing support, including the refinancing or absorption of some debt associated with the existing system.
 - Second Best: Debt can be restructured and left in the company, and purchasers will pay a lower price and can refinance the debt later.
- The ISO or entity other than the owner of the wires should undertake expansion of the transmission system and hold competitive tenders for this work.

5. Implementing the Changes Effectively

a. Generation

- Set government environmental, permitting and other standards for power generation so that investors can determine which types of plants to build.
- Support inside-the-fence or industrial zone generation to encourage other generators to become more reliable and cost-effective, with limited commitment periods.
- After setting up a competitive wholesale market, regulate generation minimally to lower administrative and transactions costs.

b. Transmission and Distribution

- Regulate distribution rates with performance-based (e.g., RPI-X) or benchmark competition, with performance bonuses, to make these entities reliable and financially viable. The commission should not utilize pure rate-base regulation or self-regulation.

- Second best: Set norms for utility performance (as in Philippines and Malaysia) that T&D companies should attempt to meet.
- Pass some efficiency gains in T&D to the consumer while maintaining the utility's incentives to increase efficiency.
- Conduct a pilot customer choice program at the distribution level, and then allow retail choice for all customers at the same time, or the same share of each customer type over time. Include a standard offer or price that small customers will receive if they do not choose to switch suppliers, and allow contracts for differences that limit price volatility.
- Second best: Allow large customers to first have access to a choice of power suppliers, and move the size threshold down to all customers over a relatively short period.
- After establishing a retail market, the regulator should oversee retailers only minimally to lessen administrative and transactions costs.

D. The Role of ADB

ADB can play a key catalytic role in promoting private sector investment and competition in DMC's as follows:

- Providing models and encouraging the passage of legislation demonstrating government commitment to restructuring and privatization.
- Using its influence and regional experience to strongly encourage DMCs to commit to a program of privatization.
- Sponsoring country-specific studies on restructuring the power sector.
- Assisting in developing a legal framework through inviting international legal experts to advise on drafting laws to address issues central to investment in the power sector.
- Supporting the creation of an independent regulatory body.
- Organizing training seminars and long-term in-country advisors with industry expertise to enhance the skills and experience of employees of the unbundled utility and the regulator.
- Using its experience and financial expertise to advise on the privatization process itself.
- Assisting DMC governments in mobilizing capital by setting up facilities for infrastructure development in the power sector, and setting regulations for their lending policies.
- Assisting the DMCs in improving the operation of existing entities prior to privatization in order for the government to realize a higher sale price for the entity.

- Utilize build-own-operate contracts for new projects, which provide fewer complications and a cleaner transaction than BOTs, and use rehabilitate-own-operate rather than rehabilitate-operate-transfer for existing ones.
 - Second Best: Utilize BOTs, and establish clear terms for the conditions of the ultimate transfer of the plant back to the government. Use concession agreements as a third choice, and grant long concession terms.
- Limit financial exposure to IPP contracts, and facilitate the emergence of a competitive market for generation.
- Allow the market, through price signals in the PX and power contracts, to determine when and where merchant plants will be added. Reverse RFPs, in which investors offer to build a plant only if there is sufficient interest, may also be an attractive option.

c. Transmission and Distribution

- Carry out the privatization of distribution systems using a flexible bidding system that accepts bids for one or more companies at the same time.
- Allow investors to provide power and other services (e.g., Internet, water supply and wastewater treatment, and security services) within a distribution enclave or industrial zone.
- The government should provide financing support, including the refinancing or absorption of some debt associated with the existing system.
 - Second Best: Debt can be restructured and left in the company, and purchasers will pay a lower price and can refinance the debt later.
- The ISO or entity other than the owner of the wires should undertake expansion of the transmission system and hold competitive tenders for this work.

5. Implementing the Changes Effectively

a. Generation

- Set government environmental, permitting and other standards for power generation so that investors can determine which types of plants to build.
- Support inside-the-fence or industrial zone generation to encourage other generators to become more reliable and cost-effective, with limited commitment periods.
- After setting up a competitive wholesale market, regulate generation minimally to lower administrative and transactions costs.

b. Transmission and Distribution

- Regulate distribution rates with performance-based (e.g., RPI-X) or benchmark competition, with performance bonuses, to make these entities reliable and financially viable. The commission should not utilize pure rate-base regulation or self-regulation.

- Second best: Set norms for utility performance (as in Philippines and Malaysia) that T&D companies should attempt to meet.
- Pass some efficiency gains in T&D to the consumer while maintaining the utility's incentives to increase efficiency.
- Conduct a pilot customer choice program at the distribution level, and then allow retail choice for all customers at the same time, or the same share of each customer type over time. Include a standard offer or price that small customers will receive if they do not choose to switch suppliers, and allow contracts for differences that limit price volatility.
 - Second best: Allow large customers to first have access to a choice of power suppliers, and move the size threshold down to all customers over a relatively short period.
- After establishing a retail market, the regulator should oversee retailers only minimally to lessen administrative and transactions costs.

D. The Role of ADB

ADB can play a key catalytic role in promoting private sector investment and competition in DMC's as follows:

- Providing models and encouraging the passage of legislation demonstrating government commitment to restructuring and privatization.
- Using its influence and regional experience to strongly encourage DMCs to commit to a program of privatization.
- Sponsoring country-specific studies on restructuring the power sector.
- Assisting in developing a legal framework through inviting international legal experts to advise on drafting laws to address issues central to investment in the power sector.
- Supporting the creation of an independent regulatory body.
- Organizing training seminars and long-term in-country advisors with industry expertise to enhance the skills and experience of employees of the unbundled utility and the regulator.
- Using its experience and financial expertise to advise on the privatization process itself.
- Assisting DMC governments in mobilizing capital by setting up facilities for infrastructure development in the power sector, and setting regulations for their lending policies.
- Assisting the DMCs in improving the operation of existing entities prior to privatization in order for the government to realize a higher sale price for the entity.

- Advising DMCs on establishing a well-publicized, competitive and open RFP process to award the right to develop greenfield projects or sell existing government assets.
- Helping DMCs develop standard IPP contracts that are internally consistent and which meet international standards.
- Funding and assisting in the organization of a program to educate the employees of government owned assets and the public on the need for privatization in the power sector.
- Finally, ADB could improve the investment climate and facilitate better economic decision making that will support private sector investments.

PART ONE

STUDY OVERVIEW

I. INTRODUCTION

An Asian Development Bank (ADB) regional technical assistance was approved with the aim of developing sector specific best practices for promoting private sector participation (PSP) in key infrastructure sectors in ADB's developing member countries (DMCs). The sectors studied included power, water supply, roads, ports and airports and the best practices covered: (i) sector policy issues relating to pricing and competition; (ii) conducive legal and regulatory frameworks; (iii) the unbundling, mitigating, and management of risks; and (iv) mechanisms to reduce transaction costs. Five individual experts were engaged to undertake the study, one for each sector. A two-day regional workshop was held at ADB on 9-10 December 1998 for the experts to present their findings and validate them with an invited group of experienced senior government and private sector individuals, together with ADB staff. These volumes represent the final outputs of the study.

A summary of the expressed views in these volumes in relation to preferred forms of PSP in infrastructure, informed by the currency crisis, is that it is "best practice" to have a customer focus and a well structured regulatory environment around infrastructure projects, in part since this can allow domestic financing. In other words, it is financially and economically sensible to utilize the essential and often monopoly status of efficient infrastructure services in creating, in effect, a *customer finance* model of PSP. Under this customer-focused concession or franchise model, government provides the regulatory and legal framework that can satisfy customer and investor alike, with the securitization of customer accounts (say via an escrow account) or insurance techniques underpinning financing arrangements. Investors will always seek to mitigate uncertainties, but many of the privatization models to date have done so by way of government guarantees which have undermined the process in the longer run.

Regulation by entities appointed by the government is still required in the new model, given that monopoly provision of key network assets is often the only efficient option. For example there is a need to regulate access charges for connection to network assets such as pipelines, high voltage wires and port channels. But where competition can be achieved in the product market, as with electricity generation selling into a power pool, then this competition is generally the best mechanism to achieve good outcomes for customers. Realistically, in much of Asia, there is little experience with these new pro-competitive models of regulation and thus there is an expectation, on the part of the experts, of a substantial phase-in to this regulatory element of best practice in the future.

The challenge as we enter 2000 with its information-rich possibilities, is to learn from the 1990s infrastructure experience on investor-to-government build-operate-transfer (BOT) deals and concession transactions so that DMCs can benefit from the adoption of best practices in the various infrastructure sectors.

The following presents an overview of the study, including a discussion on the growth of private sector infrastructure investment in Asia, a review of the cross-sectoral issues, a summary of the sectoral best practices for each sector and suggestions on the role of ADB in supporting private sector investment in infrastructure. Part 2 comprises the specific sectoral report.

II. THE GROWTH OF PRIVATE SECTOR PARTICIPATION

A. Expansion and Contraction of Private Sector Investment

The last decade, and notably the period to 1996, saw both the rapid expansion of private investment in public infrastructure and a sharp increase in private management of the services associated with this infrastructure. The investment was fuelled by the development of new forms of PSP including varying forms of public/private partnerships: BOT, build-own-operate, build-own-operate-transfer (BOOT), and concessions.

New financial instruments, especially project finance, and the globalization of private investment funds, played a major role in the expansion of the infrastructure sectors in most countries. PSP in infrastructure, and in particular power generation, was supported enthusiastically by the multilateral development banks and bilateral development agencies, as well as by the international financial community. But fewer transactions were completed in the more complex and customer-focused areas such as water, electricity distribution and transport infrastructure. Early successes involved financial transactions without major organizational restructuring; later transactions focused on major infrastructure in mega-cities such as Manila, Jakarta and Shanghai. For example, water treatment plants, bulk water supply, individual power generation units, container terminals, passenger terminals, and airport toll roads.

In the first half of the 1990s, investment requirements for infrastructure in Asia were seen to be on a scale that dwarfed earlier projections and experience. Asian tiger economies were growing rapidly, and demanding massive investments in power, roads, telecommunications and other infrastructure. In most Asian economies, there was also a sense that development was being hindered by bottlenecks in power (e.g., the Philippines), transport (e.g., Thailand), water (most of Asia) and telecommunications. Since government infrastructure spending, international aid, and official sector lending could not be on a scale sufficient to meet requirements, the private sector was the focus of attention.

The new infrastructure investment requirements were estimated by ADB to be of the order of US\$1,000 billion for the 1990s for East Asia. Subsequently, they were estimated by the World Bank to be of the order of US\$1,500 billion for the decade 1995 to 2004. Such projections were useful as a means of highlighting the scale and structure of the huge infrastructure requirements of a growing and increasingly prosperous and urbanized Asia. They helped make clear the need for a major shift of focus towards PSP in infrastructure, to some extent motivated by efficiency considerations, but mainly reflecting the view that public sector financing for this scale of infrastructure requirements was neither feasible nor desirable.

There had also been a shift in views as to the comparative advantages of governments and the private sector in performing the various roles related to the provision of quality infrastructure services. Increasingly, an expanded regulatory and restructuring role was seen for governments, with investment, construction, financing, and management viewed as best opened to competitive PSP. Risks should, under this approach, be assigned to the parties best able to mitigate them, and this meant a greatly expanded role for the private sector.

There was recognition that while many private sector investments of the BOT type were being completed, the assignment of risks in many of these projects left much to be desired. Government guarantees of bulk take-or-pay contracts (between utilities and investors), often

indexed to exchange rates, had created huge contingent financial obligations of the utilities and their governments.

As with many investment trends, optimism, a proliferation of Memoranda of Understanding and glossy investment announcements gradually replaced careful evaluation. Some early successes, under special circumstances, led to the assumption that this BOT approach could be universally applied. The expression BOT had become a shorthand for PSP in many countries by the mid 1990s; but by 1999 BOTs and often the associated power purchasing agreements had also become a shorthand for unacceptable government risk exposure, and of project isolation from customer and market pressures.

This optimism ended with the Asian financial crisis; itself brought on by a lack of sound investment policies, in particular, in relation to government guaranteed power purchasing agreements. The power purchasing agreements had inadvertently converted a shortage of power supply into an oversupply, secured by take-or-pay guarantees. The result of the crisis has been a sharp contraction in private sector investment and a significant exposure of government and private sector investors to contingent liabilities. This contraction not only limits the capacity of governments to stimulate economic growth but also has led to the deterioration or stagnation of many partially completed and privately financed public infrastructure projects. The rise and fall of private sector finance is clearly shown in the private finance data presented in Box 1.

The currency crisis has caused some dramatic revisions both to economic growth forecasts and to infrastructure investment programs. However, as the analysis in Box 1 shows that while forecasts for infrastructure are lower due to lower growth and the expected move to best practice, the magnitude of investment is still huge and efficient PSP will be required.

B. The Challenge for Private Sector Infrastructure Investment

As this difficult period unwinds, it is important to re-consider the comparative advantages of the public and private sectors and the critical role of improved regulation and governance — including transparency, enforcement of contracts, and the adoption of viable commercial tariff structures. There is a need to review, sector by sector, the strengths and weaknesses of the process that has been used to implement these investments. The opportunities and risks of new approaches need to be addressed — e.g., the case for expanding the emphasis on customer focused and privately managed concessions. There is a need to develop bankable versions of these models, ideally backed by the security of customer accounts rather than government guarantees or public sector assurances. This series of volumes addresses these and other sectoral best practice concerns.

There are major challenges for governments and investors alike, emerging from this shift to a new model for infrastructure development. The new best practice model does not mean a total retreat by governments; on the contrary, moving to best or better practice involves a shift to good governance, and requires an upgrade of regulatory, restructuring, and monitoring roles. Without greatly improved governance, the shift to increased PSP could just mean monopoly powers being shifted to the well connected in the private sector. Moreover, without improved governance, PSP would eventually flounder and the demands for infrastructure will not be met, as risks would become unacceptable.

Box 1: Past Project Finance and Future Infrastructure Demand — East Asia

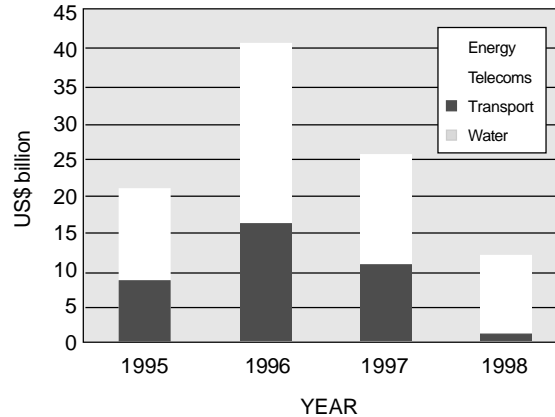
Project Finance — Opportunity and Volatility

Figure 1 draws on a Euromoney (CapitalDATA) database and highlights the dramatic growth, and subsequent decline of infrastructure funded through project finance in selected East Asian countries. The pre-crisis level of nearly US\$41 billion for 1996, contrasts sharply with the estimated level at the end of the 1980s, when the total market for funding projects was less than US\$5 billion per annum, as well as with the crisis figure of US\$12 billion for 1998. Clearly, in the 1990s and well prior to the crisis, the importance of the private sector in infrastructure development was rapidly increasing. As a result of the crisis, the telecommunications sector has shown the most dramatic decline, reflecting the fact that such projects are typically purely privately funded, and bear demand risk in a newly open environment. The energy projects, on the other hand, appear more resilient, but mainly because they have had some form of government support, in the form of guarantees in relation to bulk sales through PPAs.

Future Demand for Infrastructure Investment

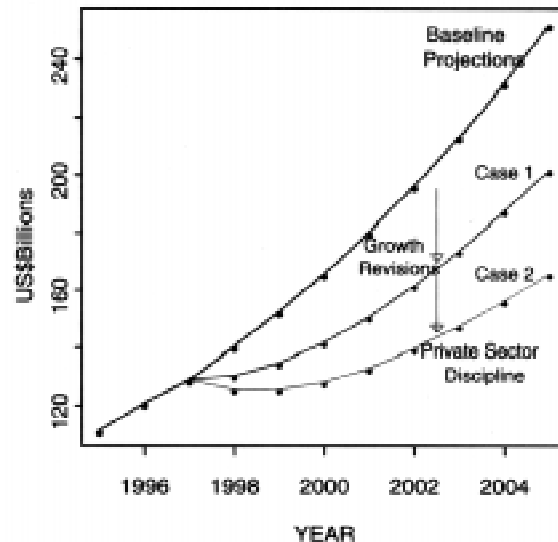
New infrastructure projections for selected East Asian countries: the People's Republic of China (PRC); Indonesia; Republic of Korea; Malaysia; Philippines; and Thailand for the period 1996-2005, adjusted to allow for both the phase-in of private sector market discipline/best practices and reduced economic growth. The revised projections are 23 percent below the pre-crisis (baseline) projections. They are based on establishing the value of the capital stock of infrastructure in each country and projecting infrastructure investments with varying gross domestic product (GDP) growth assumptions and varying infrastructure-to-output ratios. A summary is given in Figure 2. The pre-crisis projections are based on the 1996 GDP growth forecasts. Case 1 is based on the current GDP growth forecasts while Case 2 adds the impact of a transition to a lower infrastructure-to-output ratio and assumes a gradual 25 percent increase in efficiency in each sector in each country. An important factor to note in the projections for this region is that the PRC is assumed to maintain its relatively high GDP growth rate, which accounts for about two thirds of the infrastructure spending in the region. The results for Case 1 indicate a fall of 14 percent from the pre-crisis projections. If the PRC is excluded, the reduction is 33 percent. Case 2, which assumes a transition to best practices, with a resulting change in the underlying infrastructure-to-output and efficiency parameters, indicates further reductions in the level of needed investments. The analysis clearly shows the relative impact of lower growth and the potential benefits of moving to best practice models of infrastructure development. It also highlights the magnitude of investment requirements, in excess of \$120 billion per year, and the need for PSP.

**Figure 1:
Project Finance**



**Figure 2:
1996-2005 Infrastructure Investment Projections**

Scenario	US\$ trillion	%
Baseline	1.78	100
Case 1	1.53	86
Case 2	1.37	77



Source: "Private Sector Participation and Infrastructure Investment in Asia", Asian Development Bank paper prepared for the Finance Ministers Meeting, Asia Pacific Economic Cooperation, May, 1999; prepared by M.G Porter and C. McKinlay (Macquarie Bank and Tasman Asia Pacific).

III. CROSS-SECTORAL ISSUES FOR PRIVATE SECTOR PARTICIPATION

There are a number of cross-sectoral issues relating to promoting private sector investment in infrastructure that were identified during the study. The review of best practices in each of the five sectors highlighted the importance of competition, transparent tendering, and effective regulation. There was broad agreement that:

- Government should specialize in planning, structuring, and regulation while the private sector should specialize in management, investment, construction, and financing;
- The transfer of responsibility to the private sector should be accomplished through deregulation and open competition or well-established contractual arrangements including management contracts, capital leases, concessions, sale of assets and rights to operate;
- Economic regulation should be applied where there is insufficient competition but it should be transparent and predictable while still accommodating the concerns of the affected parties;
- Long-term domestic financing sources must be developed; and
- Commercial risks should be assigned to the private sector but other risks should be assigned according to which party is able to mitigate the risks.

The cross-sectoral issues are discussed in more detail below.

A. The Need for Reform and Role of Government

PSP in infrastructure development still requires the government to play a key role in planning, policy, and regulation. The reason that infrastructure industries have remained so long in the public sector is that they have components that are natural monopolies; e.g., the costs are lower with only one provider and the services are often essential (water, power and transport). These infrastructure monopolies also typically have a relatively high proportion of capital costs, have long-lived assets with low unit variable costs, and exhibit significant economies of scale. It had been a common judgement that state ownership of such monopolies, rather than state regulation of privately owned assets, was likely to deliver the best outcomes.

Existing service providers in these infrastructure areas have also had a considerable competitive advantage over potential new entrants, because of the relatively long time required to construct expensive new networks and to build up the market for their services. The scarcity of land, rights-of-way and airspace suitable for development of the network also act as an additional barrier to competition. Sites for airports and seaports, dams, power plants, and rights-of-way for roads, rail lines and transmission systems had become increasingly difficult to acquire. Another common argument for retaining these industries within the public sector was that they must provide common (or universal) access to their services and that subsidies are required.

It turns out that public ownership and management is neither necessary, nor the best way to ensure universal access. Subsidies can easily be a requirement of a competitive tender or can be directly financed by government. A key advantage of having the private sector provide public services is that it allows public administrators to concentrate on planning, policy and regulation. The private sector, in turn, is empowered to do what it does best (i) invest capital; (ii) manage the businesses; (iii) manage and create appropriate incentives for staff and management; (iv) deal with customers; and (v) improve the efficiency and quality of service; more recently, under the spur of benchmark competition - competition by comparison.

Governments should allow the private sector to provide infrastructure services to the maximum extent possible, with governments concentrating on planning, policy and regulation, and with the private sector on efficiently investing capital and improving the efficiency and quality of such services.

B. Institutional Reform

The organization of the infrastructure sectors (i.e., ministries, regulatory agencies, and utilities) has remained largely unchanged with the introduction of PSP. With financial transactions being the primary mechanism for transferring infrastructure services to the private sector, insufficient attention has been given to the broader issue of institutional reforms. It has been implicitly assumed that the introduction of private management into the ownership or operation of specific assets would obviate the need for such reforms. Instead, the weaknesses of existing institutional structures have limited the effectiveness of the private sector initiatives. In most countries, the piecemeal transfer of infrastructure components has proceeded slowly and the controlling bureaucracies that add overhead costs and often limit improvements in infrastructure performance, have remained relatively unaffected. The currency crisis has emphasized the importance of institutional reforms but government bureaucracies rarely reform themselves. Governments should carefully review the structure, size and responsibilities of state-owned utilities and other entities in the infrastructure sectors and establish special reform units reporting directly to top level ministers to spearhead the necessary reforms.

C. Strategic Planning

Governments' acceptance of private sector investment in infrastructure has been due, in part, to their failure to anticipate future bottlenecks and make timely strategic investments to prevent shortages in capacity. The increased role of the private sector in developing infrastructure has caused many governments to neglect their responsibility for sector planning. Instead, governments have offered assets and public services to the private sector in an *ad hoc* manner, often failing to ensure that individual investments were complementary. In certain circumstances, unsolicited proposals have been used as a surrogate for planning. For its part, the private sector has selected projects that had already been identified in government plans, giving preference to those which offered the highest rate of return, the lowest risk or the greatest short-term benefit. The private sector has had neither the interest nor the capacity to consider the network implications of its proposals. Governments have failed to subject these proposals to rigorous financial analysis to determine their sustainability in the absence of major increases in user charges or government guarantees. Governments have also often overlooked the complementary investment required from the public sector to make the private investments successful. The results have been unsolicited proposals that involved little commercial risk (government guarantees, wrap-around provisions, transfer of existing assets, granting select

rights of way) or politically generated proposals. Governments should maintain and strengthen their role in strategic planning of the infrastructure sectors and in the process identify where PSP should be encouraged and the level of complementary support that should be provided.

D. Legal and Regulatory Framework

The effectiveness of PSP has suffered from the lack of adequate regulatory structures to control both technical and economic performance. Regulation of tariffs and other economic factors is particularly undeveloped. The basic objectives of autonomy, accountability, transparency and predictability have been difficult to achieve. More importantly, the mechanism for consultation between the public and private sector and for dispute resolution between the providers and users of the network has not been fully developed. A further problem has been the failure to separate regulation from administration in order to avoid conflicts of interest. Most countries have been slow to establish autonomous regulatory agencies with independent funding and professional staff.

Unbundling the network into competitive and monopolistic components can significantly reduce the need for regulation. The competitive components can be transferred to the private sector in a way that promotes competition and allows deregulation. The monopolistic components can then be transferred to the private sector once an effective regulatory framework has been established. This regulation should create a situation where the businesses derive their profits from increased efficiency and the attraction of additional demand.

Effective economic regulation covers also deterrence of anti-competitive practices. Most of the developing countries lack laws or agencies for dealing with anti-competitive practices. Economic activity continues to be concentrated in large conglomerates. The currency crisis has provided new impetus for breaking up the monopolies and introducing anti-monopoly laws.

The lack of established legal and regulatory procedures applies to contract law as well. The means for enforcement of contracts and the resolution of disputes are not well established. Political interference in the award of contracts has also been a problem.

PSP without a well-developed legal and regulatory framework increases the level of risk to investors. It also encourages investors to rely on special situations and political relationships rather than their merits as a means for securing and implementing contracts. The transfer of infrastructure services to the private sector should not lead to privileged deals or profits secured by government guarantees. They should be businesses with regulated income streams which derive their profits from increased efficiency and the attraction of additional demand. These income streams should be capable of securing substantial private sector funding, both because their semi-regulated nature makes them much like a government bond, and because the essential and often monopoly nature of the service lowers demand risk. Such assets are also long-lived and thus attractive to pension and similar long-term funds.

E. Unbundling and Introducing Competition

Experience in a number of countries has shown that unbundled infrastructure sectors with individual components managed separately can perform better than centrally-controlled networks. The additional costs of unbundled networks due to increased communications and

transactions among components have been reduced by improvements in technology. At the same time, the unbundled management has been able to better focus on the capacity and productivity of the individual components and their interface with other components.

The unbundling of the infrastructure sectors is an important technique for reducing their natural monopoly and promoting competition. Many parts of the network can support competition. Where it is not possible to create direct competition between suppliers of network services, it is often possible to create competition among providers of complementary network services. For example, in the power sector, many countries are separating the networks into generation, transmission, distribution, and in some cases, a fourth segment responsible for retailing power to customers, with different companies responsible for each segment.

Where competition cannot be created, it is often possible to establish contestable environments e.g., a market for the business. One method is through effective competitive bidding for the sale or lease of assets and licensing or franchising of services. Another is to reduce the period of the contractual agreements or to provide for a periodic review of performance. A third is to introduce performance targets related to the quality of the service, the range of services, the prices charged for the services and overall market share. The ability of the private sector to achieve these targets is then linked to penalties, or provisions that may lead to early termination of the agreement. A fourth method is to require comparable performance vis-a-vis other networks. This may be in the form of requirements for increasing market share relative to other providers of similar services, or requiring a quality of service and price that is comparable to other networks serving similar markets.

Most infrastructure sectors are composed of profitable and unprofitable components. One practical, but not ideal, strategy for transferring the components to the private sector is to bundle profitable and unprofitable components to produce a combination that has an acceptable level of profitability. Another is to tender the profitable components through techniques ranging from operating agreements and franchising to sales of assets and to transfer the unprofitable components using management contracts; in effect, bidding out the government support for that component. A third strategy has been to transfer the profitable components to the private sector and to retain the unprofitable components in the public sector, but under control of local government units rather than the national government.

F. Sources of Financing

Private sector funding of infrastructure usually brings the risk of foreign currency mismatches in the financing package; income is in local currency, but the need to resort to foreign debt and equity markets means that debt service requires substantial foreign currency. The root problem is inadequate depth in capital markets in most DMCs which prevents a tailoring of local currency debt to long-lived assets. The need to resort to foreign debt (and equity) creates substantial risks, which have been exposed in the recent crisis. Few infrastructure consortia can withstand an exchange rate depreciation of 40 to 50 percent, let alone the 80 percent decline experienced in Indonesia when their product is sold for local currency. Hence the priority on programs to deepen the domestic capital market.

In principle, currency matching requires that the bulk of debt funding of infrastructure services such as transport, water supply, electricity and other urban services should be in local currency. In the absence of the necessary capital market reforms, it is hard to see how private

sector provision of infrastructure can proceed on the scale required to meet future demand. A priority, therefore, given the recent experiences, is that international development agencies such as ADB expand their role both in facilitating political risk insurance and in fostering the development of domestic capital markets in Asia, particularly bond markets.

Direct foreign investment will remain an important source of funds for the development of the infrastructure sectors. However, it will take time to restore investor confidence and, given the experience of Indonesia, Pakistan, Philippines, Republic of Korea and others, governments will naturally seek to limit their exposure to these funds in preference to local sources of capital, if possible. The development of domestic long-term capital markets will be critical for private sector investment in infrastructure, but these markets must have much better regulation as well.

G. Risk and Risk Mitigation

In order to reach financial closure, governments have often accepted commercial risks that should have been assigned to the private sector. This includes not only the foreign exchange risk but also demand/traffic (volume) risk. The most obvious example has been the take-or-pay provisions in power purchase agreements. These guarantees have had three negative impacts. First, they have isolated the private sponsors from the influences of the market. Second, they have created a large amount of contingent liabilities for governments that now add to their fiscal problems. Third, they have encouraged price rigidity leading to distortions in the market and reducing the potential of the private sector to improve efficiencies in investment and operations. Other examples are build-lease-transfer agreements and volume guarantees for toll roads, airports and seaports.

Because governments have had limited contract-related knowledge or experience, the private parties have been frequently able to convince them to assume some of the commercial risks. Also, because governments have often not been able to engage suitable legal, technical and financial experts to assist during negotiations, they have been at a disadvantage in arguing with foreign proponents concerning international practices such as take-or-pay contracts, or with international lenders concerning guarantees to protect their loans. Bureaucrats who have gone through a long, often contentious bidding process have been willing to accept some commercial risks during negotiations rather than to face rebidding. Alternatively, private parties frustrated with drawn out negotiations and the continuing renegotiating of clauses have accepted risks that should have been borne by the government.

Governments should build up capacity to negotiate and deal with the private sector. Commercial risks should be assigned to the private sector and other risks should be assigned to the party best able to mitigate them.

IV. SUMMARY OF SECTORAL BEST PRACTICES

The challenge for governments is to encourage an appropriate form of private sector investment in infrastructure. The study has identified significant differences among the infrastructure sectors concerning the appropriate balance between private and public participation in ownership of assets and provision of services. Only some of the sectors have well defined models for PSP. Other best practices are still evolving and the menu will continue to develop as experience grows. The decisions on which infrastructure components should be

transferred to the private sector are of a strategic nature. They depend not only on the characteristics of the sector and the market it serves but also on government objectives. There was consensus among the experts that the primary objective should be to benefit consumers. However there were a number of additional objectives which governments should consider: (i) reduction in national debt; (ii) stimulation of domestic capital markets; (iii) reduction in capital and operating subsidies; (iv) investment in new infrastructure or rehabilitation of existing infrastructure; (v) improvements in the quality of service; (vi) increased range of services; (vii) reduced prices for services; (viii) client-oriented operations; and (ix) more effective marketing.

Governments have at their disposal a number of means for effecting the transfer of infrastructure components to the private sector. The pace and sequence of such a transfer depends on the: (i) size and complexity of the infrastructure sector; (ii) rate of growth in demand and the competitiveness of the market; (iii) options for unbundling by function or geography; (iv) legal regime regarding ownership of land and other critical assets; and (v) capacity for economic regulation. The established mechanisms, which range from management contracts to unregulated competition, are not new and have proven effective. The key is to have a vision of where the sector is going, and to carry through the reforms as quickly as possible so as not to allow the interim change to become the final state of affairs. The findings of the sectoral experts for each sector are summarized below.

A. Power

In the electricity sector, IPPs provided a quick solution (in the Philippines, for example) by offering generation capacity needed for rapid economic growth. However, the costs were often high because the new capacity was not consistent with the least-cost expansion path and the private sector required high rates of return. However, these costs have been decreasing as the IPP market has matured. The focus on production rather than efficient distribution put the public sector in the position of retaining that activity in which it was least effective and restricting the private sector from performing the customer focused activities (distribution and supply) where it had real expertise. At the same time, it isolated the private sector from the market through a combination of regulated pricing and guarantees against commercial risks.

The power sector expert advocates restructuring to achieve a competitive market model with wholesale and retail competition. Such reform will encourage sustainable PSP and maximize the benefits to consumers. The expert suggests five major steps in implementing this approach, and their order of precedence. To some extent, these steps may proceed in parallel, but they should be considered sequential actions that will lead to the implementation of a competitive power market:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

Best practices for power sector restructuring would include the following:

- Create an enabling legal and regulatory environment to support competitive markets in electricity.
- Unbundle the power sector into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.
- Privatization should include the sale of power distribution utilities as well as generation, and should include existing assets as well as new projects, using a transparent process.
- Open access to transmission and distribution wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.
- Operate the generation and retailing markets competitively, with a large number of generators selling into a wholesale electricity market at prices which balance demand and supply throughout the day.
- Operate the transmission network as a concession on the basis of competitive bidding, or privatize it within a tight regulatory framework, controlling rates of return, prices or gross revenue.
- The independent regulator should mainly oversee prices and incentives for transmission and distribution operations.
- Restructuring should proceed at a pace consistent with the development of a competitive and unbundled system.

B. Water

The water sector has moved more slowly towards private sector investment, relative to electricity and telecommunications for example, not least because of the jurisdictional, environmental and sensitive social concerns about water supply, and its affordability. While major private sector involvement has now been achieved in distribution (Manila and Jakarta), the bulk of transactions were BOT models with take-or-pay clauses guaranteed by governments. Adding to these difficulties was the lack of knowledge about the location and condition of the (underground) networks and aquifers in many countries.

The volume on the water supply sector addresses the question of why, given the alternatives, the private sector should seek to invest in a sector with so many uncertainties, natural, governmental and financial. Water, unevenly supplied as rainfall, is often wrongly deemed a free public good, despite the costs of treatment and retail supply. Thus, there is often an ill-informed community constraint against private sector involvement in water supply, which in most countries has prevented the sorts of best practice referred to in this report.

The water expert makes the point that when it comes to best practice in the case of water supply, most of the messages are for government — to install sound and independent

regulatory regimes, catchment management policies and enforceable laws on tariff setting and collections. Once in place, best practices such as water supply concessions can be implemented. If not in place, then best feasible practice may simply relate to contracting out some services under government guarantee, or BOOT bulk supply to public sector water supply companies. It follows from this that since the particular features of the water supply situation and regulatory and privatization policies differ greatly across countries, so, too, will the feasible best practice.

One misunderstanding regarding the scope for bringing commercial practices to water supply is the issue of affordability. The report notes that the poor often pay more for water than the cost from efficient commercial piped supplies. Experience has shown that low-income families will pay for quality water supply — and are not averse to PSP — if it delivers.

The key points recommended were:

- The benefits of PSP in the water sector must be explained to win public acceptance.
- The starting point in any reform process for water supply is to form a high-level reform unit to drive and manage the process. It would be responsible for coordinating and facilitating the entire reform and PSP process. The reform unit may be a cross-sectoral unit.
- While not essential to commence reform, the introduction of tradable water rights leads to efficient use of water, particularly when it is scarce and has alternative uses.
- The water sector should be unbundled to the extent possible. The private sector concession model is most likely to achieve the greatest benefits to the community and the economy as a whole. The government continues to own the network while the private operators lease the long-term right to use the assets and collect revenue from service delivery. The benefits accrue due to strong financial incentives to reduce water losses and expand service.
- If politically difficult, then the next best strategy is to use BOT, BOOT, and rehabilitate-operate-transfer arrangements to bring expertise and finance to urgently required water supply projects. The bidding procedure should be carefully managed to ensure reasonable cost and the contractual arrangements should not constrain subsequent progression to more competitive models.
- Commercialization/corporatization of water supply utilities together with tariff reform is advantageous as an interim step if the introduction of PSP is to be phased.
- Tariff reform to achieve full cost recovery is essential for PSP. Cross-subsidies for the poor can still be considered in a transparent manner.
- Critical to the success of PSP in the water supply sector is for the government to create sound and independent regulatory regimes, catchment management policies, and enforceable laws on tariff setting and collection.

- Risks are likely to vary between countries and even between different water utilities in a country. They should be managed by the party best able to minimize and manage each risk most effectively. Where no party has a clear comparative advantage to manage the risk, it should be shared.

C. Roads

In Asia's roads sector, PSP has been equated with major BOT toll roads. These have been targeted where traffic is greatest – in and near the capital city and sometimes along major inter-city corridors. This private investment has produced some successes but also many failures. After more than a decade of concerted effort, implementation experience has not matched expectations. Indeed, surprisingly little has been implemented outside the PRC.

The road sector expert has advanced three reasons for modest progress in roads. First, governments have not defined their policy, often leaving the private sector to identify projects. Secondly, almost everyone involved has expected such toll roads to be profitable without government support, but this has only rarely proved to be the case (outside the dense PRC market, which is deemed a 'special case'). Thirdly, it has proved difficult to introduce promised tariffs and tariff increases in a sector where roads have become to be regarded as free.

What is clear is that private construction and maintenance of public roads produced better results where there was adequate competition and effective methods for enforcing contracts. Efforts to substitute private sector management for public sector officials in the management of the public network are in their early stages, even in the developed economies, but the preliminary results are encouraging.

Worldwide experience identifies a broad range of PSP modalities, in which BOT is close to being the most difficult to implement. Other modalities include maintenance management contracts, turnkey, operate, and maintain or rehabilitate-operate-transfer concessions. Many of these modalities target improved maintenance, and rehabilitation of the network (rather than solely network capacity expansion). They have potentially much greater application than BOT projects. Looking ahead, the requirements are to both improve the BOT process, and to extend the modalities that are applied. The key points to emerge are:

- Governments must prepare the PSP environment. Institutions may need to be restructured with the objectives of controlling the PSP process in the public interest, and creating a regulatory body, separate from vested interests. A sound legal framework and a predictable regulatory regime are essential.
- Governments must identify priority PSP projects. This will almost always require an independent feasibility study, which focuses on traffic and tariff policy, project staging, network integration issues, risk allocation, finance and implementation issues.
- The best prospects for BOT projects are in middle-income countries (where the willingness-to-pay tolls exist) along existing congested corridors, or where there are missing links (e.g., estuarial/river crossings). A regulated income stream from a tolled public toll road is capable of securing project financing of an appropriate kind (i.e., suitable to pension funds and other long-term investor groups).

- Private sector modalities other than BOT exist, e.g., concessions, and should be applied more widely, as they can address many of the sector problems, and in the process create a new high growth industry for transport management companies.
- Traffic risk is the major risk and may be shared. The core risk being taken by the private sector, with government taking a share of the upside benefit and providing a downside guarantee in the event of low traffic.
- Transparency and competition are essential in the procurement process.
- Government support should be defined upfront as a maximum so that the private sector can prepare realistic bids.

D. Ports

In the port sector, the transfer of cargo-handling activities to the private sector has been, in most cases, extremely successful in replacing inefficient government bureaucracy with commercially-oriented management. Improvements in productivity and maintenance has increased the quality of service. However, where there was no competition, these arrangements were less likely to sustain these improvements. Private investment in port infrastructure has generally been limited to new and existing cargo terminals. Trans-shipment terminals were the most successful, since they were less dependent on local markets and land transport. Greenfield ports were slower to develop because they were further from their markets and the transport access was less developed. Basic infrastructure offered few opportunities for full cost recovery.

The ports sector expert, noted that the private sector has always been actively involved in port affairs. The land and water transport services that use the port are almost entirely private sector. Nearly all of the cargo shipped through ports is privately owned. The private sector provides an array of complementary trade facilitation and logistics services for this cargo. Within the confines of the public port, cargo owners, forwarders, and ship agents actively participate in decisions concerning the handling and storage of cargo. The public sector's role is to own, develop, and manage basic port infrastructure and common-user facilities.

The process of port privatization has rarely involved pure privatization, since land and infrastructure are rarely sold. Instead, the process involves PSP in operations and investment in equipment and facilities. The process is not a monolithic effort because of the diversity and complexity of ports and the services they provide. It can be divided into three components: (i) institutional reform, (ii) divestiture of existing services and assets, and (iii) investment in new facilities and services. These can be implemented individually or in combination. For each port component, there are many possible public-private partnerships. The main points regarding moves to best practice were:

- The bidding process should encourage unbundling not only of the network but also for the services within the ports. Where ports are not financially viable, they should not be bundled with profitable ports, but treated as stand-alone facilities that are turned over to local government or put under management contract using a competitive tender.

- The landlord model is the best structure for promoting PSP because it accommodates different forms of public-private partnership while recognizing that the only fixed responsibility of the public port is the ownership of the site.
- The most effective and efficient procedure for promoting PSP in the port sector is to lease existing facilities with relatively short-term agreements that allow for reorganization and improvement in productivity. Subsequently, concession agreements can be used to encourage private investment in additional capacity. Where this capacity is required immediately, or labor problems make it difficult to lease out existing facilities, then concessions might precede lease agreements.
- Continued public investment will be required, as it is difficult to recover the costs for basic infrastructure in a time period reasonable to the private sector. Public investment may also be required to reduce the barriers to entry. This is important where a new entrant would otherwise have to make a large investment before competing with existing service providers.
- The best form of tariff regulation is market regulation; the second best is through the terms of the contract that identify the non-competitive services requiring regulation, state the maximum rates, the formulae for escalating these rates over time, and the arbitration procedures for discriminatory behavior in excess of that justified by commercial pricing. The third best is the establishment of a regulatory agency outside of the port which would apply a pricing formula related to cost recovery. All of these are preferable to a vague procedure for negotiating future changes in tariffs.
- The private sector should assume all commercial risks. Other risks should be negotiated, based on which party has the capability to mitigate the risk.
- The critical element in any effort to promote PSP is competition, or at least the potential for competition. This can be provided through direct competition between private sector service providers, between public and private service providers or between bidders in the case of an activity that does not allow competition.

E. Airports

For the airport sector, PSP in terminal operations produced significant improvements in financial performance and the quality of service. Private sector investments have increased substantially over the last five years. During the previous twenty years, there was little capital investment in airports, despite a five-fold increase in traffic. The airports coped with the higher levels of traffic through a combination of larger aircraft, better air traffic control, improved runway design, and the addition of second runways and additional terminal space. This period has now ended and most countries need to invest in new airports. These are proving to be costly, complex and often controversial investments.

The key policy questions concern how best to structure airports and groups of airports to obtain maximum customer benefits. The discussion in the volume on airports and air traffic controls indicates that there is little evidence of significant scale benefits flowing from multiple airport operation; equally, however, there is little evidence of significant scale diseconomies. The case for significantly reducing the concentration of airport ownership at privatization

therefore depends on the trade-off between the up-front and visible costs of re-structuring, and the possibly less tangible benefits of increased competition resulting from break-up. The competition benefits in this industry are not clear-cut, primarily because major airports mainly serve distinct regional markets.

In the United Kingdom, the authorities took the view that any potential competition gains from breaking up the British Airport Authority prior to privatization would have been offset by restructuring costs. In Australia, in contrast, the Government has preferred to restructure and reduce industry concentration radically, emphasizing the public policy benefits of inter-airport competition for long haul international traffic. The benefits of fragmented ownership also include those that flow from yardstick competition, enabling regulatory agencies to assess individual operator performance more effectively; and from introducing a limited element of competition by emulation between operators. The airport expert found the benefits from the Australian model to be greater. Key recommendations for the airport sub-sector are as follows:

- Airport privatization will be encouraged by the existence of legislation in the form of a BOT law or similar, signaling the government's recognition of the need for PSP in infrastructure provision. It is also important to ensure that the government is able to demonstrate that any projects offered to the private sector are economically viable.
- Regarding the optimum approach, full privatization based on asset transfer or acquisition through long-term leases is preferable to more restricted forms of PSP (but is also more demanding in terms of legal and regulatory frameworks).
- As to airport industry restructuring, there is no evidence of significant economies of scale in airport operation other than those associated with increased traffic density at a particular location. Hence, PSP can be based on individual airports (although facilities may need to be bundled to assist financing of major new developments or extensions to capacity).
- The existence of unprofitable airports does not justify the maintenance of a highly concentrated industry structure to facilitate cross-subsidies.
- Limited sharing of traffic and revenue risk (between the private sector partner and government) is justifiable in airport BOT or concession contracts.
- Denomination of some, or all, airport charges in US dollars is an effective way of hedging against currency risk and may significantly reduce the risk premium required by private investors;
- The benefits of PSP in airports are likely to be maximized by regulatory frameworks that incorporate good regulatory governance practice. The price-cap approach to constraining airport charges is likely to encourage better performance outcomes than one based on rate of return regulation.
- Competition for the market, whether through sale or leases, or BOT/concessions, will be maximized by transparent bidding/sale processes.

V. THE ROLE OF THE ASIAN DEVELOPMENT BANK

The crisis has focused on the urgent need for institutional strengthening and governance reforms in both the financial and infrastructure sectors, areas where ADB can play a major role. There are a number of ways identified in the study in which ADB can assist in the reforms associated with increased PSP in infrastructure. The most obvious is to provide technical assistance to define policy objectives, develop network master plans, identify and evaluate projects, define the role of new regulatory institutions, and train regulators to handle their new responsibilities, prepare contracts and negotiate with the private sector. ADB's efforts to promote financial sector reform and develop long term capital markets will also be important. This would include efforts to improve the bankruptcy laws, and the regulation of domestic debt and equity markets.

In order for ADB to have a significant role in promoting PSP, it should link this promotion with on-going project lending. ADB can provide support for private sector investment directly through its private sector window and through its guarantee operations. More importantly, ADB should provide sovereign loans to complement but not compete with private sector investment in the form of public-private partnerships. Public sector project lending should also be used to finance basic infrastructure that cannot be packaged into financially viable investments for the private sector but provides significant economic benefits and improves sector efficiency. Program lending is another key modality to promote the necessary reforms where ADB provides financing for the adjustment costs in stages, upon the satisfactory achievement or fulfillment of government actions that will promote PSP and sector restructuring. This modality allows ADB to exercise some leverage on government decisions and actions to support reform. Country strategies should address which areas of development are to be financed by government using sovereign loans, general revenues and government bonds and which are to be financed by private investment and should ensure a coordinated approach to all forms of ADB assistance.

PART TWO

POWER SECTOR REPORT

I. INTRODUCTION

This study was to identify and recommend the best practices and specific steps that developing member countries (DMCs) of the Asian Development Bank (ADB) can take to encourage both private sector investment and competition in the power sector. Overall, the objective was to identify practices that would lead to the benefits that private sector participation (PSP) could achieve for consumers of power. In light of the difficulties being experienced in a number of countries with their Independent Power Producer (IPP) contracts, due to the devaluation of their currencies, this work was quite timely, and several of the best practices relate to ways in which to mitigate or avoid such situations in the future.

In addition to power generation, where there has been by far the most private sector investment and competition to date in developing countries, this report evaluates an area that is only minimally present in the DMCs, namely private sector investment in power transmission and distribution (T&D). This review also covers the important distinction in emerging competitive markets between distribution (the wires business) and retailing (marketing to customers).

T&D investments by the private sector, and the emergence of competition involving these segments have tremendous potential for increasing the efficiency of the power sector, creating a financially viable industry, and benefiting all consumers. Privatizations of T&D around the world are just beginning to grow. For example, Figure 1 indicates the prices that have been paid over time, in constant dollars, for some distribution company investments in both developing and developed countries. Nearly 80 such transactions have been identified to date worldwide, including 56 in developing countries for which investors have paid a total of about US\$26 billion. Clearly, much higher prices per customer have been paid in some countries (e.g., Argentina and Brazil) than in others (e.g., Hungary). However, virtually no private T&D investment has occurred in Asia, a topic that is discussed in detail in this report.

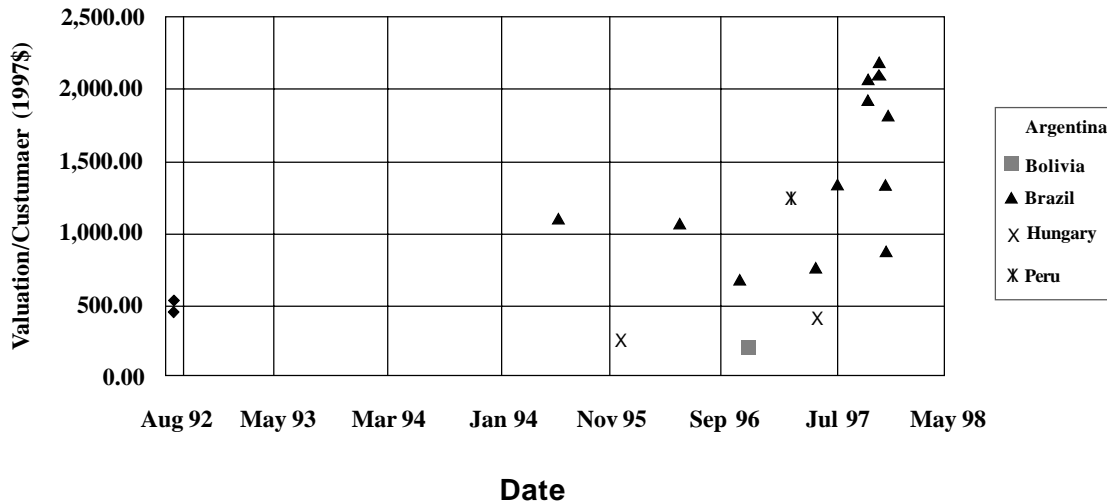
To identify the best practices to stimulate investment and competition in T&D markets, the consultant drew upon its extensive contacts and carried out research worldwide, and also tapped into the knowledge of professional staff in Latin America, California and Eastern Europe. In this report, the consultant explains each one of the best practices in some detail, and often provides examples of where this practice has been tested or proven. In the following sections, there are actions of many types, including those that can be characterized as government and legislative practices; regulatory practices; economic; labor; and financial practices; and practices relating to the privatization process and competition in general.

The report is organized as follows:

- The first section discusses three important topics to provide the context for how the DMCs would apply the best practices identified in the following sections:
 - An overall five-step process of power sector restructuring;
 - A vision of how a fully competitive power sector would be organized, along with its key features; and

- The philosophy of private sector investment and the benefits that such investment can provide. Until recently, ownership and control of the power sector in nearly all DMCs rested in public hands, and in most cases, it still does. This section discusses why this pattern should change.
- The next sections identify and evaluate each best practice that falls within the five steps identified. Each section is subdivided into the main segments of the power industry, including power generation, and T&D. In addition, each section starts with a description of the best practices that apply to all investments in the power sector, no matter which segment. These include all of the macroeconomic practices that countries can adopt to improve the overall investment climate.
- Finally, the report identifies actions that the DMCs and ADB should take to initiate the process of achieving a competitive market for electric power.

Figure 1: Electric Sector Distribution Company Valuation/Customer vs. Time



It is important to emphasize that this report focuses on best practices, and in some cases, second-best practices. That is, this report does not identify the minimum practices required to induce investment, nor the package of best practices that may be required to induce private investment in the power sector in a specific country. Private sector investment can, and clearly does, take place without all these practices being in place. However, it is also true that this investment will be more sustainable (i.e., less likely to result in the kind of difficulties that countries such as Indonesia are now having with IPP contracts) if these best practices are in place.

In spite of IPPs in a number of countries in recent years, the government still owns the vast majority of the power sector in virtually all of the DMCs, in all segments of the industry. As a result, these countries are not yet achieving the potential benefits of PSP. There may be considerable political, psychological, employment, financial, technical, and other concerns to put in place a number of these practices. These considerations, however, in no way mitigate the desirability of carrying them out, over as short a period of time as practical (probably several years) and using them as goals to strive for.

II. THE PROCESS OF RESTRUCTURING AND A VISION FOR THE POWER INDUSTRY

This section contains three sub-sections:

- The five-step, systematic process recommended for restructuring the power industry.
- A vision of how the power industry *could* be structured, once it is fully competitive, and the key features of a competitive power sector.
- The primary potential benefits and costs of PSP (the philosophy of PSP). These subsections lay the groundwork for the discussion of best practices that follows — they provide a context, structure, and rationale for the DMCs to implement them.

A. The Process of Restructuring in the Power Sector

Faced with dozens of best practices, several reviewers and workshop attendees asked “*what should we do first, second or last?*” To assist the DMCs with prioritization, five major steps in implementing best practices, and their order of precedence are presented. To some extent, these steps may proceed in parallel, but they are best to consider as sequential actions that will lead to the implementation of a competitive power market (see Figure 2). These steps are:

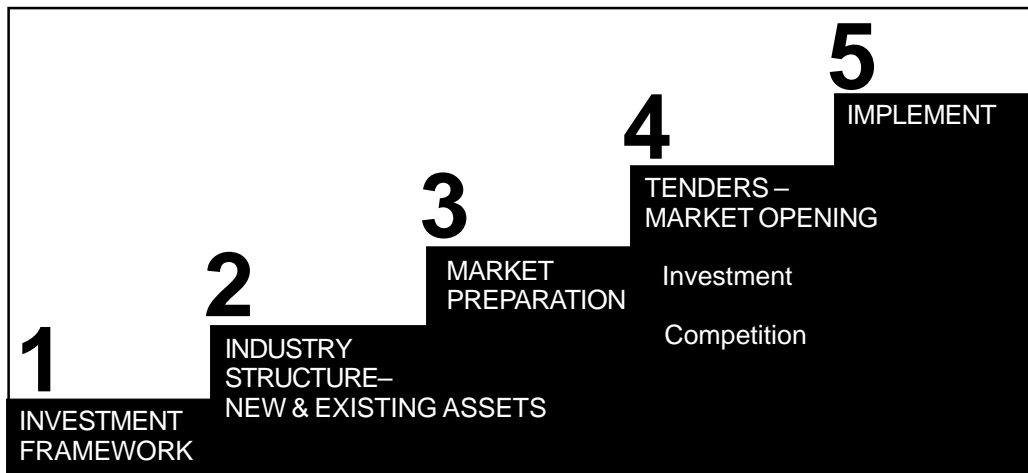
1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

First, a government should *put in place a rational investment framework*. This includes actions such as: (i) establishing a government commitment to a competitive power market; (ii) ensuring ministry and utility compliance with that commitment; (iii) passing a law for restructuring the power sector to be implemented over a fixed period of time; (iv) ensuring that the currency is convertible and foreign exchange is available; (v) strengthening local capital markets; and (vi) setting up a credible legal framework, etc.

Second, a country should *determine how they want the power sector to be structured*, both over the near term and long term, and why. To paraphrase Lewis Carroll in *Alice in Wonderland*: “it is much easier to get there if you know where you’re going.” For example, a DMC may decide that they will ultimately structure the power sector with:

- an independent regulator that oversees power T&D;
- a number of privately owned, competitive generating plants;
- a single regulated transmission system that includes private ownership;
- a number of power distribution companies with incentives for performance; and
- competition for retailing power to end-use customers.

Figure 2: The 5-Step Restructuring Process



If the country has committed to this structure, they are in a much better position to take the steps necessary to achieve those ends, including interim steps as a transition to that final structure. Thailand, for example, has recently issued a privatization plan identifying the final structure of its power sector and the three transition steps required to achieve that structure. Also, if a DMC knows what benefits it expects from restructuring (e.g., lower losses in distribution, higher collections, greater plant reliability, lower prices, money for the treasury, and consistency in regulatory decisions) they will be able to design the restructuring process to maximize the likelihood of achieving these goals.

In this context, it is critical that the DMCs identify the structure they intend to adopt for both *new and existing assets*. Often, some of the greatest gains to customers will be realized from PSP in existing assets, though politically, these may be harder to sell.

Third, it is important to *prepare the players to participate competitively*. This includes such actions as:

- training the regulators so they can operate effectively;
- establishing clear regulatory rules;
- reducing or removing subsidies;
- enlisting public support for the restructuring process;
- reorganizing and preparing the state-owned utility for the new structure and incentives for performance that will emerge;
- developing draft tender documents and contracts; and
- defining a new role for the ministry.

Fourth, the DMCs must *carry out the restructuring or sale of assets*. In Asia, most private sector investments in the power sector to date have been in *new* assets (e.g., to build a new power plant). As mentioned above, to achieve the most benefits of private sector investment and competition, however, the DMCs must be willing to sell the *existing* assets as well, especially in power distribution. The tendering process must be carried out in a transparent and open manner, and should be carried out in a short period of time.

Finally, it is critical that the DMCs *implement all these changes effectively*. It is not sufficient just to have a regulator in place, for example. In addition, that regulator must act according to the principles set out in the legislation that set it up (e.g., performance-based ratemaking) and this may mean not always going along with the state-owned utilities' position. If there is legislation requiring that the utilities reduce their distribution losses according to certain deadlines (as in the Philippines), those requirements must be enforced. If an independent system operator (ISO) is responsible for transmission access and system reliability, then that organization must be properly staffed, funded and managed. Good intentions, and even good legislation, will not achieve the goals of competition in the power sector on their own — good follow-through is necessary as well.

As an additional means of capturing the essence of the best practices, ADB asked each of the sector experts at the workshop in December 1998 to review all the best practices they had identified and select the top six for achieving meaningful change in the power sector. Because the consultant for the power sector identified numerous best practices (89 in all), the top six recommendations involve guiding principles, not just single actions.

The top six are:

- The need to achieve lasting benefits for customers in the shortest possible time should drive the restructuring process. This should be the *raison d'être* of restructuring. Actions which do not achieve or are inconsistent with this goal, such as waiting to try to improve the performance of distribution companies before selling them, should be rejected.
- The power sector should be completely unbundled into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.
- Privatization should include the sale of power distribution utilities as well as generation, and should include existing assets as well as new projects, using a transparent process.
- Open access to T&D wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.
- In a competitive market, the independent regulator should mainly oversee prices and incentives for the wires (T&D) businesses.
- Multilateral institutions such as ADB should be partners with the DMCs to help them achieve the maximum benefits for customers through increased PSP.

In addition, recognizing the dramatic change that some of the best practices may represent to the DMCs, the consultant has also identified "*second-best*" practices in a number of

cases. These are practices that are stepping-stones to the best practices, and ones that will not interfere with the eventual achievement of the best practices. This caveat of “non-interference” is critical. The second-best practices are not ends in themselves, but rather interim steps that the DMCs may be able to put in place while they develop plans to reach the best practices.

B. Vision of the Power Industry

In defining the means to encourage private sector investment and competition that will benefit consumers, it is important to know what a competitive market would look like, and what its key features would be. In other words, in order to achieve the objectives of PSP the government needs to envision the end result and be able to answer the question “how would we know when we have achieved a competitive market?” This section briefly discusses these items.

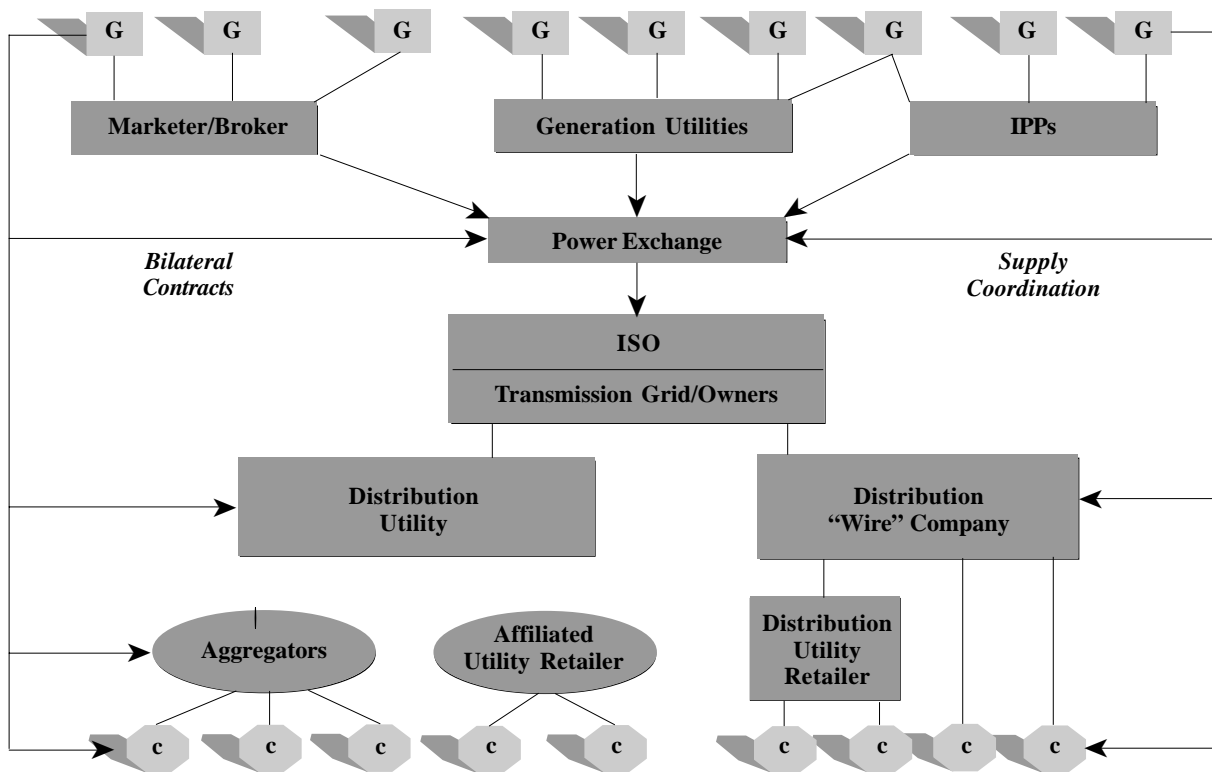
In sum, a competitive market for power operates like other competitive markets. Competition in the power sector refers to one in which:

- Customers can freely choose their supplier of power and many of the characteristics and features of how they receive and use power.
- No one entity can influence the price in the market (i.e., there are many buyers and sellers).
- Information on choices is easily available (through the Internet, power pool, or advertising).
- The monopolistic segments of the industry (T&D) remain regulated, but in which they are given incentives to perform well.
- The competitive segments (generation and retailing) are regulated only minimally (e.g., for environmental compliance, market power, and consumer protection).

To date, only a few countries have achieved or come close to achieving a truly competitive retail market (e.g., only Argentina, Chile, Sweden, United Kingdom (UK), and several states in the United States (US)). Even in those places, some have not yet reached competition for the smallest consumers, while others are operating under competitive wholesale markets (e.g., the state of Victoria in Australia, and other US states/regions). This indicates the challenge of making the transition to competition, however large the potential benefits. It has been much more common for countries to attract investment in generation, and increasingly in distribution.

Figure 3 illustrates a model of a fully competitive power industry, which is one that potentially provides all the benefits of industry restructuring and PSP. The changes that are implied by the emergence of such a model are massive, and should not be underestimated for many DMCs. The changes can be characterized by five key features, as the industry moves from a heavily regulated, state-owned, cost-based business to a competitive, market-based one.

Figure 3: Potential Competitive Market Structure



1. The Industry will be Regulated Differently. Restructuring does not involve deregulation of the whole industry (the terms are not synonymous, though often used that way). Generation will be largely deregulated, but distribution will likely remain a monopoly. The wires portion of T&D business will remain regulated, since these businesses are natural monopolies, but the customer service portion of retail service (retailing) will not. Even for the regulated parts of the system, however, concepts such as rate of return and revenue requirements will fade away, and will be replaced by performance incentives and price caps.

2. There will be New Buyers and Sellers. Under the emerging structure, wholesale and retail entities on the “supply” side, such as marketers, will provide power and related services without owning wires, generation, or distribution. There will be a convergence between electric and gas suppliers to offer energy services related to both fuels through joint ventures or mergers. On the “demand” side, customers will be able to purchase their own power, or join together through load “aggregators” (e.g., New Energy Ventures in California) to try and reduce the cost of electricity. In other words, many new types of buyers and sellers will appear in the market. This will place new demands on wholesale power suppliers, and on the distributors of power, since their customers will have choices, and will exercise them.

3. There will be New Products and Services. The major product that utilities currently sell is electricity, but in the future, the availability and price of power will be more differentiated according to the time, place, and voltage level of the sale. For example, consumers will be able to purchase from one supplier for certain hours at one location, with one

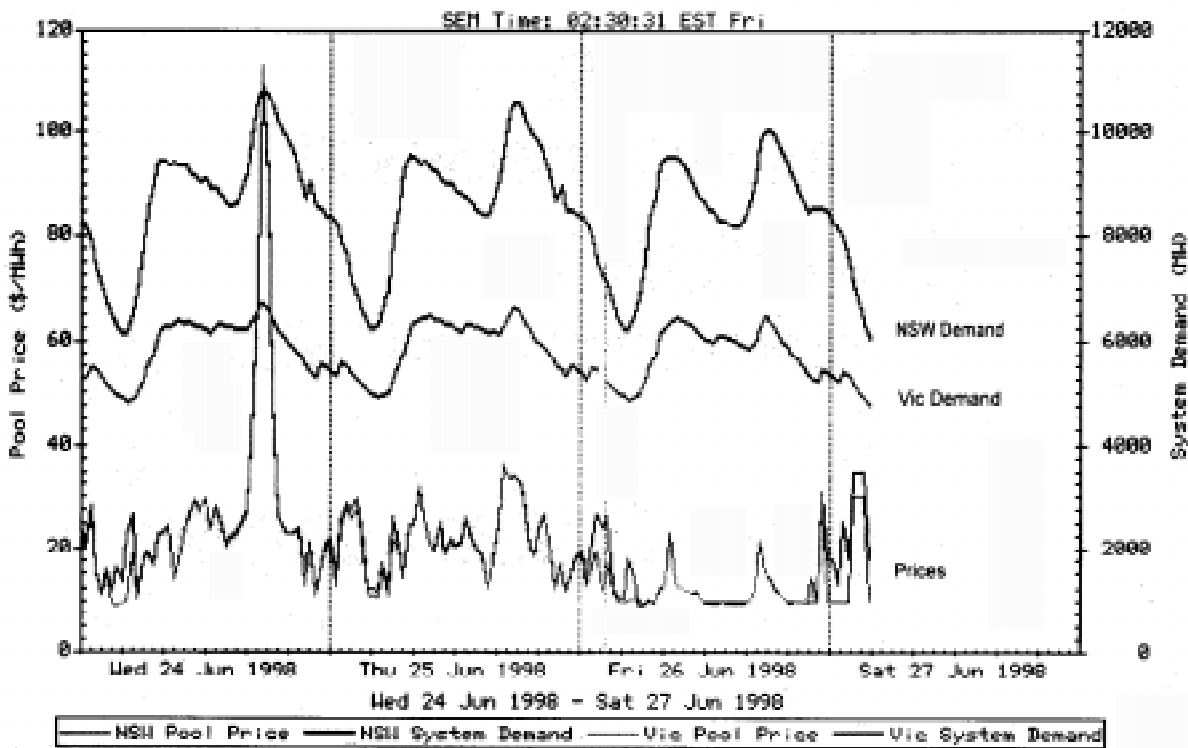
level of reliability, or from a power pool, all at different prices, either with contracts or without. This competition for existing customers will place much more pressure on the customer service, marketing and planning capabilities of utilities to sell these new products, i.e., energy management, load aggregation. New ways will have to be found to attract new customers or retain existing ones.

In terms of operations, utilities are likely to separate the wires aspect of distribution from retail marketing, to focus separately on these different functions, and provide competitive access to customers. In this transition, it will become clearer which facets of the business each utility can do best, and some utilities will exit from those businesses in which they are less competitive. Each utility will be faced with such decisions (e.g., Does it make sense to stay in the power distribution business?).

4. There will be New Trading Arrangements, and Serious Financial Impacts of Such Transactions. This issue concerns who can sell power to whom, how demand and supply are balanced, and how payment is handled. With many types of sellers, buyers and producers, all utilities will need to be much more concerned about how to price power on a real-time basis, and with the physical and financial settlements for different transactions. In a full customer choice environment, there will be no monopoly service territories, since suppliers (which include IPPs, utility generators, and power brokers and marketers) will be able to sell power directly to end-use customers, using the distribution system as a common carrier. Suppliers will sell wholesale power competitively through a power exchange (PX) for short-term transactions, and can also sign longer term contracts, while a transmission operator (also called an ISO) would ensure equal access, proper dispatching and system reliability.

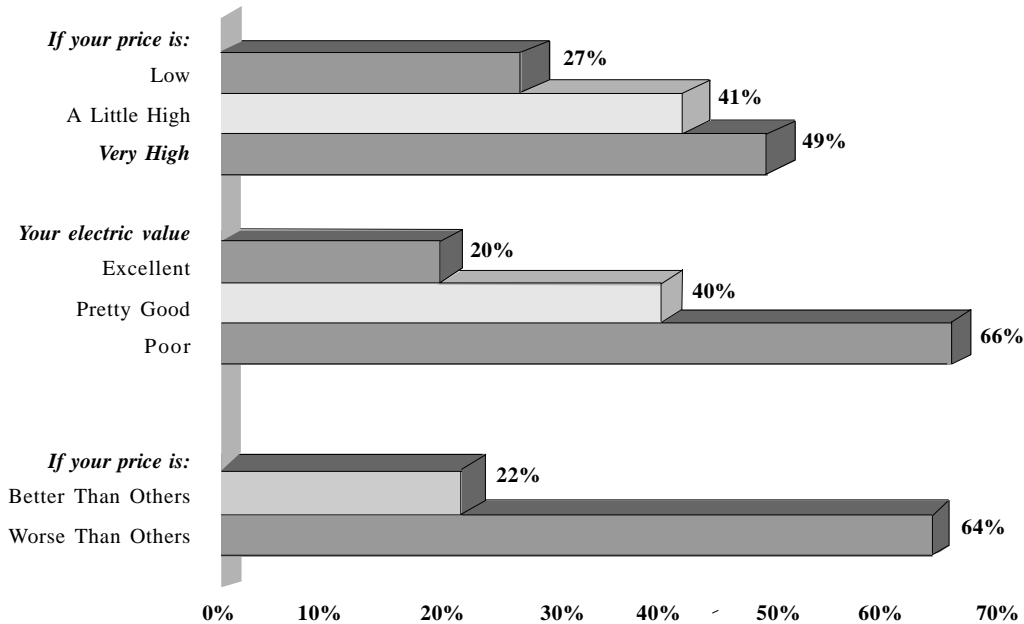
The suppliers would have separate financial arrangements, either long-term or short-term, with wholesale purchasers, or directly with customers. A range of supply options will be available, varying in price, reliability, term, location(s), and more. Hedges and contracts for differences will help manage price and supply risk. In essence, customers' needs will dictate which services are offered; what financial packages make sense; and the margin that can be made on each transaction. Customers will have many more options than at present, and suppliers will compete aggressively for their business. To demonstrate the dynamism of competitive markets, Figure 4 indicates how pricing and power demand varies throughout the day in half-hour segments in the competitive spot markets of New South Wales and Victoria, Australia.

Figure 4: TransGrid: Realtime NSW and Vic Pool Prices and System Demands



Further, it is clear that customers will take advantage of the opportunity to shop around, particularly if they perceive that the differences are significant between the service they receive and the service they desire. Figure 5 indicates the result of a survey in the US of industrial and commercial customers, who were asked about their willingness to change power suppliers if they received a five percent price reduction. While this may not be considered a large amount, it is clear that the survey respondents regarded such a difference as being important. For example, half of the customers indicated that they would change suppliers for a five percent reduction if they perceived their current price to be very high, and almost two-thirds (64 percent) said they would switch for a better price if service was considered to be inadequate. The combination of high prices and inadequate service (value) is a lethal combination. At the other extreme, over one-quarter said they would switch if they could get a lower price, even if current prices are considered to be low. While their responses to a survey may differ from their actions (i.e., fewer may switch in practice), this does indicate the high degree of customer sensitivity to pricing and service, and should serve as a stimulus to power companies to achieve excellent levels of both.

Figure 5: Percentage of Customers That Would Switch Providers if Offered a 5 Percent Rate Reduction



5. There is a Major Issue Regarding Who Should Pay any Transition Cost to a Competitive Market. A number of utilities have high-priced, long term contracts with IPPs that may make it difficult for them to participate on an equal footing in a competitive wholesale market for power. In a number of DMCs, these contracts were necessary to induce private sector investment or to mitigate a power shortage, but they are not consistent with the principles of a competitive market. Also, for other utilities, the book value of their generation assets may be more than their market value, and also more than the cost of new generation. In a competitive market, if utilities cannot collect these above-market costs, they become stranded. In the transition to a competitive market, utilities with such costs would generally like to recover these costs from customers through a transition charge. This raises the question of whether utilities should be entitled to collect 100 percent of such costs, and how payment of such above-market costs should be handled.

In light of all these potential changes in moving to a competitive environment, the next section describes the consultant's approach to identifying the best practices that will move the DMCs in this direction, and also highlights the real potential benefits of doing so.

C. The Philosophy of Private Sector Participation

This section discusses the consultant's approach to identifying the best practices for encouraging PSP in the power sector, and the potential benefits of such activity.

It is important to recognize the difference between *investment* and *competition*. Investment is characterized by a willingness of investors to put their time, effort and money into the purchase or development of power projects. The best practices for investment include

activities by DMCs that will encourage investors to expend their resources on one project at a time. Investment must include some degree of private ownership, which the DMCs can offer through a number of techniques or “modalities” (e.g., issuance of shares on the stock market, build-own-transfer (BOT), build-own-operate (BOO), build-lease-transfer, and others). Investment does not take a system-wide perspective; it focuses on what it will take to bring in private sector capital. Investment may include the need to compete for the right to develop projects (e.g., a number of power generation projects have been awarded on a competitive basis, but once awarded, the owners do not have to participate in a competitive market).

Competition, on the other hand, is a set of conditions in which investors vie for the market as a whole, a market in which they compete against all other players in the market simultaneously to sell their product. In T&D, there is no competition, because these are by their nature monopoly businesses, but it is possible to encourage efficiency and improve performance through regulation and setting the right incentives. Competition is a more rigorous set of conditions and is harder to achieve than investment. This is evident simply from the fact that there are many developing countries that have attracted investment in the power sector (especially in generation), but fewer countries have an emerging competitive market for power, at either the wholesale or retail level.

There is an inherent assumption in the work requested by ADB that more private sector investment and competition is desirable. In fact, the private sector can potentially bring many benefits to the government owned segments of the power sector in the DMCs. These potential benefits are discussed below.

Of course, *the private sector is not a panacea*, and the potential abuses of PSP must be controlled in the process of restructuring the sector. This requires continuing to regulate the T&D segments, and setting clear limits in such areas as market power, environmental compliance and employment impacts in the restructuring process. Restructuring the power industry is not a question of *the government versus the private sector*, though the two may have different objectives. Rather, it is a cooperative process on which the government and the private sector need to collaborate in order to bring about a satisfying conclusion for both. Over time, the implementation of the best practices discussed is intended to foster such a win-win situation.

In the transition, there will almost certainly be significant impacts on existing employment in the power industry, as discussed in more detail below. Increased PSP is likely to lead to lower employment in the power sector. Also, there is a cultural change that will not be easy for government employees or citizens to adjust to, in that the particular utility sector will no longer be government owned, and efficiency and profitability will be much more important than in the past. The key is to make these changes in a balanced manner that captures the private sector benefits, while recognizing and dealing with potential impacts on society and individuals.

Before determining how to best encourage PSP in the power sector, it is important to examine the country’s objectives, and assess whether they are reasonable. A plan that a DMC develops for involving the private sector should also include an analysis of the objectives that the country expects to achieve. A number of potential DMC objectives are to:

- lower costs and therefore lower both wholesale and retail power prices to customers;

- increase the reliability and efficiency of the power sector, through enhanced management, and in the process, benefit consumers of power;
- provide customers with greater choice;
- lower the costs of transactions and of regulation;
- control monopoly power in the areas (i.e., T&D) that remain monopolies;
- reduce the burden of investment that the power sector places on the country's budget, and allow the re-allocation of scarce resources to other purposes;
- improve the overall climate for foreign investment, and stimulate the economy as a whole through improved balance of payments, technology transfer, employment, etc;
- help develop domestic capital markets;
- stimulate the introduction of new technology;
- extend coverage to citizens not currently supplied with power;
- raise money for the treasury for multiple purposes through the sale of state-owned assets;
- achieve environmental objectives or comply with environmental laws;
- provide for a better-trained and educated workforce; and
- minimize opportunities for corruption and market-distorting practices (e.g., nepotism).

Certainly, one could identify other possible objectives. For example, these objectives do not mention the idea of achieving profits for the firms involved in the power industry. This is because profits are not a goal by themselves; rather, they are a result of the conditions being in place for firms to achieve them, and investment will not continue unless adequate risk-adjusted returns are achieved. Overall, these objectives are designed to achieve benefits for customers and the country as a whole by creating a climate in which the private sector can play a major role, both through investment and competition.

Achieving these goals through PSP in the power sector would be a major achievement. Are these objectives realistic? Each one is briefly discussed in turn.

1. Lower Prices

Despite the hopes of government officials, it is *not* clear whether prices will be lower as a result of restructuring and the involvement of the private sector in the power industry. This lack of clarity is for several reasons:

- The cost of building power plants in many DMCs has traditionally been part of the state budget, and therefore, their cost base is quite low. And the amount currently included in rates that is required to recover their cost may be small.
- Tariffs are often subsidized and cross-subsidized, so customers do not see the real cost of providing them with power. The consultant recommends that such tariff

distortions be reduced and if possible, be removed before involving the private sector. Restructuring in preparation for privatization may lead to price increases that are not fully offset by private sector efficiency gains.

- Private investors, particularly foreign investors, may use, to a greater extent, offshore equipment and financing for new projects. This carries the risk of higher repayment costs if the currency is devalued, as has recently occurred in many Asian countries. These costs would need to be passed on to the offiaker, and potentially to the customers.
- The private sector will have higher costs due to higher equity rates of return and rates for commercial financing than government owned entities, which may cost more than state grants or loans
- State-owned enterprises may have advantages over private firms such as the absence of taxes on income and property, and tax-free fuel.

On the other hand, the private sector may be able to reduce costs of staffing (fewer employees to carry out the same job), raise operational efficiency, raise technical efficiency, lower line losses, achieve economies of scale, improve collections, and implement other cost-saving measures that will offset these factors. Also, setting up a competitive market for power (e.g., through wholesale power pools and retail customer choice) should minimize costs and raise levels of service. The end result will be case specific, but a *priori*, it is not clear that involving the private sector will reduce total costs or tariffs to consumers.

2. Increased Efficiency and Reliability

The private sector generally has the capability to improve system operations compared to state-owned utilities in all industry segments, and will do so if incentives, regulations and markets encourage them to do so. For example, if increased reliability and availability of generation will enable an IPP to bid more effectively into a power pool and make a higher return, then they will do so. Furthermore, if lowering losses and increasing customer collections will meet their contractual commitments and regulatory performance measures, and raise returns, then they will do so.

3. Enhanced Customer Choices

As markets become more competitive through the types of best practices described in this report, consumers will benefit from the efforts by private firms to gain an edge over their competitors. In retail power markets, this may involve power companies offering a combination of “network” services, such as a package of electric power, natural gas, Internet access, long distance and home security. It may also involve special rates to attract and keep customers’ business, such as industrial customers receiving help with estimating and controlling peak demand and dealing with environmental problems. Customers may also be able to readily join groups to purchase power jointly through power “aggregators”, and residential customers may receive many more time-of-use charges, billing and metering options. In fact, one of the major hallmarks of competition is that the customer is “in the driver’s seat”, dictating to the suppliers what they want, and how they expect to be charged for different types of service.

4. Reduced Monopoly Power

This is one of the primary objectives of restructuring the power industry, and PSP certainly has greater potential for achieving this goal than keeping the power sector entirely in government hands. The involvement of the private sector *per se* will not guarantee greater competition. In fact, contracting techniques such as long-term power purchase agreements (PPAs) for IPPs may give generators a guaranteed market at a guaranteed price, which retains many of the elements of monopoly. To reduce monopoly power, it is necessary to set up the operation of the market properly, including restrictions on cross-ownership between industry segments, and to regulate those sectors that are not subject to direct competition (such as T&D). These segments must be regulated in a manner that mitigates monopoly power while encouraging high performance at the same time (e.g., through performance-based ratemaking and benchmark competition).

5. Reduced Burden on Government Budget

This is another one of the primary benefits of PSP. The funds that the government formerly spent on building, financing, operating, and maintaining the power system (including generation, T&D) no longer need to be borne by the government. Responsibility for these functions is transferred to the private sector, so the government may then reallocate its resources to other activities. Collectively, throughout the DMCs, the need for capital investment and the cost of operations in these segments of the industry reaches hundreds of billions over the next 10 years, so these savings can be substantial.

6. Increased Foreign Investment

PSP clearly has the potential to increase foreign investment, and to bring in the state-of-the-art knowledge, technologies and methods they may possess. Of course, a government-owned utility could purchase these techniques or hire an operator to utilize these techniques, but this will not be as effective as giving the private sector a direct financial interest in importing them, and doing so in a competitive market. A number of countries have placed restrictions, either formal or informal, on the extent to which foreign firms can participate in the power sector, and these restrictions may have a real consumer cost. A key factor in this debate is whether there is a threat if the government gives up control of “strategic” assets, and whether local firms can also benefit from an infusion of foreign investment. Best practices for utilizing foreign investment are discussed below.

7. Improved Climate for Investment

Successful investment has a cumulative effect. Once there is private sector investment in one industry, it provides momentum for change. It also creates a catalyst for other investments through the confidence that it creates in the country’s regulatory framework, legal and government institutions, and financeability of infrastructure projects in general. It will also bring about an acceptance of foreign ownership in the country.

8. Domestic Capital Markets Development

It has been widely reported that the capital requirements for infrastructure, including the power sector, cannot be satisfied by multilateral institutions and international commercial

banking sources alone. To meet the needs for new power sector facilities and to acquire existing ones, domestic sources must also be tapped. The private sector is comfortable with accessing alternative sources of capital worldwide, and will be better able to stimulate domestic capital markets than the public sector. Moreover, if the private sector creates the pool of capital required for a power project, the public sector does not need to “use up” its ability to finance projects off the government budget, assuming it does not need to offer sovereign guarantees. Countries such as Malaysia, which have traditionally had strong domestic capital markets, demonstrated that if attractive domestic sources exist, then the private sector will make use of and stimulate them.

9. Increased Electrification

Both the government and the private sector can carry out electrification. However, the government is in a better position to pay the incremental cost of doing so to non-economic areas if the private sector operates the existing distribution system and extends service to the areas where it is economic to do so. Thus, PSP will encourage greater electrification because it allows the government to focus just on specific geographic areas, and not on the whole system. Current versions of the “Omnibus” legislation to restructure the power sector in the Philippines discusses the Small Power Utilities Group (SPUG) that would be set up for this purpose. As discussed in Section III.C, the contract or arrangement between the government and the private sector could encourage or set specific goals for electrification in countries where this is an issue.

10. Raise Funds for the Treasury

Clearly, PSP has the potential to raise funds for the treasury that can be used for a variety of purposes. Figure 2 indicates some of the prices that investors paid in recent purchases of distribution companies. A key policy question that the government should ask at the beginning of restructuring the power sector is whether it wants to maximize these funds, since to do so may require the investors to raise the price of power to cover the cost paid for the acquisition.

11. Improved Environmental Performance

Contracts with private sector entities can readily incorporate environmental goals and requirements. While the government can place the same requirements on publicly owned entities, the private sector is more likely to be able to raise the capital to install them. It is also more likely to have the expertise to operate them, and more likely to take advantage of market-based instruments (e.g., sulfur emissions allowances) than the public sector, as long as they are able to recover such costs. In fact, one reason for selling generating plants to the private sector is that the private sector will meet the costs, which are sometimes quite high, for installing pollution control equipment such as scrubbers.

12. Better Trained and Educated Workforce

In general, the private sector will enable employees to raise their knowledge, become more productive, and better realize their potential. Expectations of employees will be higher in private firms, and there will be incentives to perform. The flip side of this benefit is that PSP will

also often lead to less employment, as investors find ways to economize on the use of labor. These effects can be mitigated through working closely with unions and the government.

13. Reduced Corruption

When power projects and contracts are awarded through government fiat (whether through a competitive bid or not), the potential for corruption is high, and there is room for questionable business practices and nepotism, which raises the cost of doing business. On the other hand, a system in which private companies compete for the market, and in which lower costs and higher efficiency are rewarded simply has less room for such activities. Figure 6 below summarizes the above discussion.

Figure 6: Potential for Private Investment and Competition to Achieve Key Objectives in the Power Sector

Objective	Long Term Positive Impact	Short term or Uncertain Impacty
Better system reliability and efficiency	X	
Increased customer choices	X	
Reduced monopoly power	X	
Reduced government financial burden	X	
Increased foreign investment	X	
Improved investment climate	X	
Development of capital markets	X	
Increased electrification	X	
Raise funds for the Treasury	X	
Improved environmental performance	X	
Better trained and educated workforce	X	
Minimize corruption	X	
Lower prices		X
Cultural change for sector employees and citizens		X
Level of employment in power sector		X

III. BEST PRACTICES

The following five sections discuss the specific best practices that the DMCs should implement in order to achieve the benefits of PSP in the power sector. Each section covers one of the five stages of restructuring described above. In each case, the best practices are stated and discussed, and where possible, an example that highlights the point is provided. In some cases, a “second-best practice” that can serve as a stepping stone as a country moves towards the best practice is identified.

A Establishing the Investment Framework

This section addresses the best practices that a government and utilities can take to enhance the opportunities for private sector investment in their country, and to create an environment that is supportive of competition throughout the power sector. These practices are independent of whether the parties are trying to stimulate PSP in power generation, transmission or distribution - they are common across the sector. The consultant has attempted as much as possible to identify how the best practices can be implemented.

It is important to recognize that these are not the minimum practices - that is, investment and even some competition, can certainly occur if all of these practices are not in place (one only needs to look at the evidence in the DMCs to verify this). However, these practices do represent what the parties should do if they want to create the best possible climate that is sustainable and which supports the government's and the private sector's objectives for restructuring the power sector. These are also the practices most likely to lead to the maximum benefits described in the previous section on PSP.

Among the most important of these actions are such best practices as maintaining overall country stability; establishing a real commitment to PSP in power at all levels; carrying out power sector restructuring in the context of a larger privatization effort; allowing majority control and ownership of assets current owned by the state; and allowing full repatriation and convertibility of the currency.

Enhance the country's political and fiscal stability.

Political and fiscal stability are basic conditions for encouraging investment and for fostering competition. Political stability will minimize risks to investors such as expropriation, renegotiation of contracts, and political violence. Fiscal stability will increase confidence in the local currency, lower exchange rate risk, and minimize the risk of default by government agencies. Investment grade sovereign and debt ratings issued by Standard & Poor's and other rating agencies take into account the level of political and fiscal stability and influence the availability and terms of financing, particularly for long-term investments such as power plants.

Certainly, investment has taken place in many countries that cannot be considered politically or fiscally stable, but this does not mitigate the point that it would be better for encouraging investment, and ultimately competition, if they were stable. Indonesia is a good example of a country in which the levels of political and fiscal stability have rapidly decreased, adversely affecting all investors, not just in the power sector. Once hailed as an attractive country for investment in the power sector, the devaluation of the currency and economic crisis have precipitated social unrest and sharply lower forecasts of power needs. Consequently, the government has been forced to reevaluate its fiscal priorities, canceling plans to add 4,000 megawatt (MW) of new capacity and renegotiating several PPAs. This has prompted Standard & Poor's and Moody's rating agencies to downgrade funding facilities for several IPP5.

Pursue the restructuring of the power sector in the context of broad economic reform and overall restructuring of government-owned enterprises.

A successful program of economy-wide reforms lays the foundation for sector-specific reforms, demonstrates government commitment to the reform process, and generates investor confidence. Broader reforms can lay the groundwork for private investment by fostering a functioning court system, respect for the force of law, movement towards a market-based economy, monetary stability, currency convertibility, and tax reform. For example, Thailand is in the process of privatizing several dozen large government owned firms in a number of industries, including companies in the water, power and telecom industries. This package of privatization gives potential investors comfort that the program is a serious undertaking.

Establish an unequivocal government commitment and vision in favor of restructuring and eventual competition in the power sector, including the goals of such efforts and an aggressive timetable for action. Establish this commitment quickly, and continue this support in spite of changes in government.

It is critical to carry out the restructuring process as quickly as politically and economically possible, and to retain momentum for privatization over time, through governmental changes. Such continuity can be achieved through legislative acts or presidential decrees which give the government a mandate to pursue privatization. In this way the momentum for reform depends less on the presence or power of a specific president or minister. The longer the process drags on, however, the more likely partisan politics, job concerns and ministry battles are to enter in.

To develop that commitment, it is important to have a vision of what the industry will look like once it has been restructured. This vision makes it easier to identify potential benefits, draft legislation, and convince parties of the merits of the restructuring. A generic proposal to reform is unlikely to pass muster with any parties concerned. The vision should be concrete. In the section on the features of the electricity industry above, the consultant has provided one such vision for a country that is prepared to go to full retail wheeling.

In Bolivia, for example, the *Capitalization Law* establishing an enabling environment for privatization in the power industry was passed in March 1994, and the last privatization was completed in June 1997. The time taken to enact the core measures to reform the power sector took only seven months: the *Electricity Law* was enacted in December 1994, and the distribution companies were privatized and generation was capitalized by July 1995. On the other hand, in the Philippines, the Omnibus bill for restructuring the power sector and the sale of National Power Corporation (NPC) assets was introduced with much anticipation in 1995. However, as of early 1999, it had not been passed, in spite of support from the new president and recent congressional hearings.

The privatization program in Bolivia is also an excellent example of commitment to reform in the power sector that continued through different governments. The first government began the process by drafting the relevant legislation and carrying out restructuring of sector enterprises. The next administration enacted the necessary laws and regulations and pursued a successful capitalization program for generation and privatization for distribution and transmission, thus attracting private investment. The third administration, which took over in 1997, plans to undertake rural electrification in order to complete the privatization process.

Require full compliance with the government's commitment to restructuring and privatization in the relevant ministries and utilities, and require and approve implementation plans by the ministries and utilities to comply with the government's commitment.

Career bureaucrats in the line ministries and the government-owned utility will have a vested interest in maintaining the status quo. This may be because their jobs depend on it, or because they have been able to profit economically under the current system (e.g., through payments for granting certain approvals or using certain contractors). These individuals may try to subvert the government's objectives or to make the private sector alternative appear less attractive.

To avoid this, government should require the ministry to set up a task force to implement this commitment, develop aggressive plans for putting the necessary changes in place, and submit these plans to the government for approval. Countries such as Bolivia and Australia can serve as models of the speed with which such restructuring can successfully take place.

Establish confidence in the legal system, including clear commercial law, contract law and property law, and a court system that enforces contracts. In the interim, use alternatives such as third-party arbitration and other country jurisdiction.

The appropriate legal framework for successful privatization would include proven commercial law, contract law, and property law. Without these elements, the investor has little recourse in case of disputes, and this is a deterrent to investment. In some countries (e.g., People's Republic of China (PRC)), investors have complained that the right laws are either not in place or not readily available, while in others (e.g., Viet Nam), there is little precedent or history of their being enforced, giving investors little basis for confidence that the courts will enforce them in a consistent and reliable manner. For example, in light of its currency devaluation, if Indonesia does not pay IPPs based on the dollar-equivalent value of their power deliveries for some period of time, it is not clear whether the legal system will enforce the IPP's claims under their PPAs.

While such laws and a legal framework are being established, there are alternatives that may support investment, depending on the risk tolerance of the investor. These include binding arbitration in a neutral country such as Sweden; agreement to use the laws of another jurisdiction such as Singapore or London in case of disputes; and the use of detailed contractual provisions for a specific project to cover what would normally be covered in a legal code.

Allow full foreign ownership of assets in the power industry; do not restrict private or foreign ownership to a minority share.

Some countries have restrictions on the share of ownership that is allowed by foreign firms. In general, the concept is to prevent foreigners from owning a controlling share of the nation's assets. For example, the Philippine Constitution prevents foreigners from owning more than 40 percent of power distribution companies, and in Malaysia, foreigners are prohibited from owning more than 25 percent of assets in the power sector by law. While they may have served a purpose, these policies clearly prevent the country from realizing the full benefits of private sector investment and competition. The removal of these policies does not guarantee foreign ownership, it simply allows foreign participation.

The best practice would be to eliminate such restrictions, and to rely on the regulatory framework to control any abuses that might take place, either by domestically-owned or foreign-owned firms. Also, in the selection criteria for firms to determine who will win the award to develop a project or acquire a distribution company, a government can set criteria that give preference to the consortia that utilize domestic firms. Either of these approaches is preferable to a blanket prohibition on foreign control.

This matter is a question of national policy. A closely related point is the extent to which foreign firms are allowed to participate in bidding for specific assets, and this issue is addressed in Section III.D on opening the market below.

Achieve an investment-grade country rating from an international rating agency in order to attract the widest possible array of financing options, including long-term bonds.

Second best: Put in place incentives for investment (e.g., grace periods for debt, tax relief) to balance a lack of investment attractiveness for a limited time.

The ability to attract the widest possible array of financing is of great benefit to the development of a country's infrastructure. Developing countries should put in place policies that will enhance their overall attractiveness to investors, such as improving their balance of payments, paying their bills and their bonds in a timely manner, minimizing trade restrictions, and others.

A number of developing countries, particularly smaller ones, may have too small a market to attract foreign investment without some extra incentives. Though there is a cost to these measures in terms of lost tax and other revenues, there is a clear potential gain in terms of obtaining investment that would not otherwise occur. Therefore, these countries may want to put in place special measures to attract foreign investment until there is adequate investment in the country. Sri Lanka, for example, offers one of the most wide-ranging and attractive programs of any country in the world.

Ensure that the currency is fully convertible, that currency can be repatriated, and that sufficient foreign exchange will be available to allow investors to transfer profits out of the country.

While convertibility of the currency is a national economic issue, it has an impact on investment in the power sector. Payments for power sold, whether in generation or distribution, will almost always be in local currency, but investors may need to pay for the cost of equipment, fuel and financing in other currencies. The best practice is if there is both a law and a provision in the PPA guaranteeing the ability of the investor to convert the currency, the availability of such currency, and the ability to repatriate it. PPA contracts in Pakistan and India were signed with such provisions. If there are doubts about these provisions, the investor may buy convertibility insurance from Multilateral Investment Guarantee Agency, which can be expensive, or to protect against devaluations, purchase a hedge against the currency in the futures market. In generation, there are several ways to deal with this specific issue, which are discussed in more detail in Section III.C on preparing the market.

Encourage the development of local capital markets through techniques such as the removal of subsidies and undue banking controls; the establishment of pension funds; and setting up provincial credit entities.

Again, this is a question of national policies, and long-term objectives, but the general point is to try and make local capital available and reasonably priced. In Malaysia, for example, a primary source of such capital in the past has been the Employees Provident Fund, a well-funded pension fund which has been used widely to finance infrastructure projects, including IPPs. One recent article in the *Far Eastern Economic Review* called the \$34 billion Employees Provident Fund a “national money box.” A development bank in Brazil, the Brazilian Development Bank (BNDES), has effectively channeled funds to investors to assist in their purchases of distribution companies.

The government should articulate its commitment to electrification, and its intention to assist in meeting the costs to expand the system to serve noneconomic customers.

The expansion of service to areas not currently served raises the question of who will make the initial investment, which can be considerable, to connect non-economic customers. If the government sets increased electrification as an economic and social goal, the best practice would be for the investor to evaluate the cost, and if acceptable, for the government to pay for the incremental costs (i.e., the cost of serving those customers that cannot be recovered in rates) through its budget or low-interest loans. This approach is preferable to having other customers cross-subsidize such service, since that would increase the cost of power and decreases the use of power to other customers. Cross-subsidization is a second-best practice.

In the Philippines, drafts of the Omnibus Bill have proposed to establish a SPUG, that would be responsible for providing T&D to areas which are not connected to the grid and that cannot be economically served by private sector entities. In one recent draft, the SPUG would have independent funding sources, including revenues from its electricity sales, a fee for missionary electrification, and 10 percent of the annual electricity franchise tax receipts, as well as funds it may borrow from other sources. In the past, electrification was funded by low interest loans from the National Electrification Administration.

In Mexico, the sale of gas distribution companies was structured to take system expansion into account. The bids submitted were a combination of tariff price and the number of new customers that would be added over a five-year period. However, to use this kind of bidding, a pre-qualification round is recommended to ensure that the correct criteria, such as improvement of customer service, are used to select the winning bidder. Investors will bid less to reflect the increased expenditures and responsibilities they would bear.

In Malaysia, the IPPs and Tenaga Nasional Berhad (TNB) are now required to contribute one percent of their revenues to a fund that is used in part for electrification. The government believes that the IPPs are making too much money, and this is one way of recovering and using some of the “excess” profits. However, this is a form of cross-subsidization within the power sector. Since the IPPs have no direct responsibility for power distribution, it would be better for the government to tax the IPPs appropriately, and pay for electrification as a separate line item on its budget; however, they have adopted a workable method of paying for electrification that serves a valid social purpose.

In Brazil, the costs of rural electrification are met by several sources, depending on the area in which the expansion is implemented. In a cooperative's territory, the customers would meet the cost. The cooperative may also be eligible for a government grant to meet the costs of system expansion. In other areas, as in the Amazon, the state electric company in the area was responsible for system development, and the state government assisted in meeting these costs. However, if a private concessionaire undertakes system expansion, these costs are met through cross subsidies from other customers. There have also been several cases in which rural cooperatives have worked with concessionaires to jointly meet the costs of electrification.

Promote the growth of hedging and futures instruments in financial markets that enable buyers and sellers to manage price risk.

In large measure, this issue is a question of national fiscal, economic policy, and long-term objectives. However, the general point is that it will be easier for a competitive power market to emerge if there are risk management techniques available to them. These techniques will allow buyers, in a competitive market, to hedge against volatility in purchasing power from the spot market by signing a futures contract or a "contract for differences" that pays the buyer if the price of power in the market is higher than an agreed-upon level.

B. Determining the Structure of the Power Industry

This section identifies the best practices that countries should implement to determine how they wish to structure the power sector. These actions should lead to the development of a step-by-step plan for restructuring the sector, including involvement by the private sector and a clear set of objectives that such restructuring and privatization are intended to achieve.

It is critical that this plan includes an assessment with what to do with both existing utility assets and new assets. In Asia, the involvement of the private sector in power has been limited almost entirely to opportunities to develop new or "greenfield" projects in power generation. However, the greatest benefits to the country and its consumers will be realized through reform and restructuring of the existing system.

This is especially true in power distribution, which provides the financial life-blood of the power system, since it is this segment that is closest to customers and that has more control of the cash flow of the entire industry than any other. In spite of this, however, there have been virtually no power distribution companies sold to the private sector in Asia to date, except for some small ones in Kazakhstan. This imbalance should be corrected. Worldwide, through January 1999, the consultant identified 56 transactions in developing countries for distribution companies, with the private sector purchasers paying a total of approximately US\$26 billion for the shares they have acquired.

This section is divided into three sub-sections: general principles, generation, and T&D. This section also assumes that the country wishes to eventually move to a competitive retail market for power (perhaps beginning with wholesale competition). In general, this section lists the best practices in the order in which they would make sense to carry out, though many of these steps can, and would, overlap in time.

Within this structure, this section describes the best practices that DMCs and utilities should take to determine how best to structure the power sector. Among the most important steps are:

- Passing a law containing key provisions that require the restructuring of the industry.
- Committing to industry restructuring and private sector involvement throughout the industry.
- Establishing an independent regulator separate from the ministry with specific functions.
- Over a reasonable period of time, unbundling the entire power sector, including the separation of distribution from retailing.
- Shifting responsibility for transmission access and dispatch to an ISO, and for wholesale transactions to a PX.
- Allowing access to the wholesale and retail wires.

1. General Principles

Pass a law to restructure the power sector with a strict timetable, and provisions for: (i) the unbundling of the sector; (ii) the sale of existing capacity and distribution; (iii) the establishment of a regulator and its role, duties and obligations, including the distinction between the policy making role of the government and the policy implementing role of the regulator; and (iv) the unbundling of the market, and implementation of wholesale and retail markets.

In general, there should be a legal basis for the restructuring of the power sector. To provide this basis and the momentum for implementing it, the legislature should pass a law identifying the objectives of restructuring and laying out the main parameters of the new structure. A critical aspect of this law needs to be a timetable for carrying out the process; otherwise, the reform will languish due to opposition from those whose livelihood are threatened (e.g., unions and ministry officials). Moreover, the roles and duties of the regulator must be spelled out.

Poland passed a comprehensive law in April 1997, setting up the Energy Regulatory Authority and its functions; setting up a National Transmission Company to oversee a competitive wholesale market for power; providing shares of the regional distributors to cities as a step in the restructuring process; and more. After the passage of this law, there was a high level of enthusiasm in Poland for entertaining private sector proposals and for making the power sector more efficient. In this process, *momentum* is important: as mentioned elsewhere, Philippines has had such a law in draft for years, and needs to pass it soon or the restructuring process could be at risk. In the US, the lack of a national law has led to a patchwork quilt of state laws that are not consistent, and even though there is competition emerging on a state-specific basis, this may not be the most efficient means of restructuring the industry.

Determine, based on the country's resource situation and the government's objectives, whether it makes sense to privatize distribution or generation first, or both together. In Asia, much more attention needs to be placed on privatizing distribution, since this will create a more financially viable entity to which IPPs can sell power, and improve the performance for customers.

There is no hard-and-fast rule or best practice about where to begin the privatization process, but there are guidelines, and the choice is important to the success of the process. It may be easier to privatize generation first because:

- It is a market that is clearly amenable to competition.
- It appeals to the traditional focus of ministries and multi-lateral institutions to carry out large infrastructure projects (metering and collections are less attractive and involve less investment).
- Negotiating contracts for generation compels the utility to come to grips with issues of its own competitiveness in generation, and leads to reform in the existing utility.
- Generation is further from the customer, which gives more time to establish a regulator and determine how to adjust customer tariffs, while gaining experience at the wholesale level.

Most countries (e.g., India, Pakistan, PRC, Philippines, and US) have used this rationale and a generation-first approach. Further, if market rules and a pool operator or an ISO have been established prior to the privatization process, privatizing generation first will establish a competitive wholesale market.

However, privatizing distribution first will ensure greater cash flow into the sector, which is sorely lacking in some developing countries, and will support the stability and development of the entire industry. In addition, in systems that are heavily hydro-based, as in much of Latin America, there is not as much of a basis for competition in generation, so beginning with reforms at the distribution level is likely to yield the greatest results. In Bolivia and Brazil, for example, distribution was privatized first because of the level of hydro generation, and because it was decided that if the largest distribution companies were in private hands the generators would be able to deal with a solvent market. This arrangement helped improve collections and was able to reduce the commercial risk faced by investors in generation.

Establish a regulatory commission that is separate/independent of the ministry, responsible for tariffs, franchises, and performance standards.

The following principles should be applied in establishing the regulatory commission:

- Funding for the commission tied to industry revenues and fees for licenses and permits, and not tied to annual government budgets.
- Commissioners nominated by the government and approved by the legislature for fixed terms, from various professional fields, with staggered terms for continuity.
- The ability to independently determine staffing requirements — civil service salaries should not apply to the commission or its staff.
- Accountability for its actions through open decision making, the publication of decisions and documentation of proceedings.
- The promotion of economic efficiency by providing the correct incentives to market participants through performance-based rates.

- The ability to set and enforce standards of customer service, health, safety, system reliability, and stability related to the construction, maintenance and operation of the electricity sector.
- The authority to issue and revoke licenses which bind the holder (i.e., generation, transmission, and distribution companies) to adhere to the above standards.
- A means to petition if a company or consumer feels it was not treated fairly.

To ensure the autonomy and independence of the commission, it must have an independent source of revenue so it is not beholden to any branch of government or the parliament. An end-use surcharge applied to all end-use consumption and nominal license fees will provide independent funding. The commission should be held accountable for its expenditures to the legislature by submitting annual financial statements. In addition, independent audits could be conducted periodically to ensure that there is no misallocation of funds.

The commissioners should be nominated by the executive and approved by the legislative branches of government to avoid dependence on either branch. It is recognized that this may be politically challenging in some developing countries. The commissioners should represent among them expertise in fields such as electric utilities, economics, finance, and law. Staggered terms will ensure the continuity of the accumulated expertise of the commission.

The commission should be held accountable for its actions through open decision making, the publication of decisions and documentation of proceedings. In addition, there should be a process by which commissioners can be removed from their post in the event of misconduct through an act of the legislature or by the prime minister.

The issuance of licenses will enable the commission to enforce regulatory standards. For example, licenses for distribution and transmission companies can address issues relating to adequate and fair tariffs, adherence to industry and consumer standards, expansion of the distribution or transmission system, reductions in losses and increases in efficiency, and the achievement of social goals. In addition, transmission licenses can address efficient and fair procurement of new generation capacity, dispatch of generation according to merit order dispatch, and operation of the electric system during emergency conditions.

Reconcile differences and clearly establish jurisdictions between federal and local/regional governments through a focused dialogue before the process begins.

It is critical to establish agreement at the federal and local level regarding industry restructuring, and to fix a timetable and procedures to which all parties agree. Privatizations carried out at the provincial level should be in accordance with the principles and goals set at the national level. In Brazil, for instance, some concessions granted by the provincial administrations have not been consistent with recommendations adopted at the national level, and reconciliation may not take place until the end of the 30-year concessions.

The state of Victoria provides a positive example, recognizing that in Australia, individual states have considerable authority under a federalist form of government. In this context, the Council of Australian Governments passed national agreements on increased competition and privatization policy, thus providing a context for reforms at the state level. In addition, the

government set a target date of 2001 for integration, and established the broad objectives of the national electricity market, providing a common goal and context for state-level reforms.

2. Generation

In the following list of best practices relating to generation, many items mention transmission since they are directly related to creating a wholesale generation market. Other items concerning just the transmission system (e.g., transmission pricing) are discussed in the subsequent section – T&D.

Stimulate the use of domestic fuel sources if it is economic to do so.

If the country has a large supply of a certain fuel, but not a clear means or the financial capability to develop the resource, it may wish to require that investors in power generation use that resource until the market is established. This will provide economic benefits to the country by (i) limiting its exposure to foreign fuel sources; (ii) preserving foreign exchange; (iii) generating revenues if there is enough fuel to be exported; and (iv) providing a starting point for that fuel to be used for other domestic purposes (e.g., natural gas for petrochemicals). However, countries should only use this approach if the power that will be generated from those plants will be attractively priced; otherwise, the plant will require an ongoing subsidy or stranded cost payment when the market becomes competitive, and there will be cross-subsidies between one industry and another.

For example, investors in several gas-fired plants were required to negotiate to use natural gas from the offshore fields near Palawan Island in the Philippines; investors proposing to build a plant for the Electricity Generating Authority of Thailand were required to use gas from Petroleum Authority of Thailand and in Lao PDR, investors focus on the development of abundant hydro power, both for the country's own use (which is small) and for export to Thailand and other countries.

Set goals and a timetable for the use of non-conventional fuels (e.g., renewable energy) and energy conservation, which may be more expensive than conventional power sources, and establish a means for achieving those goals.

The government may decide that it is desirable to have renewable energy (e.g., solar, wind, geothermal) as part of the mix, because it has long-term environmental benefits. Yet, on its own, the market will not choose these fuels to generate power, due to their expense or low levels of efficiency. The government can do two things to stimulate such a market (i) find locations where such fuels are economic (e.g., remote windy sites with a village that needs power); and (ii) carry out a solicitation to stimulate the development of renewable or conservation resources.

In competitive markets, it appears that some customers prefer to purchase clean energy, even if it costs more. For example, about 15 percent of Detroit Edison's customers responded in a survey that they wanted their power to come from renewable resources, in spite of the cost. Ontario Hydro carried out an RFP to purchase 80 MW of renewable energy, and Northern States Power purchased 100 MW of wind power. These actions, while just for a small portion of the power required, help to preserve renewable resources as a viable option for the future.

Consider utilizing a “single buyer” (either a single utility or the transmission system), with longer-term contracts for the initial projects only. Do this only until a more viable investment climate and industry structure emerges, and the country can implement a PX and ISO — these entities are described in more detail below.

In the initial stages of restructuring, before a competitive market emerges, it may make sense to use a “single buyer” system to encourage investment. In this system, the transmission company solicits for, and purchases, all the power required, and takes care of providing it to the distribution companies. If the country is large (e.g., PRC, US) this “single buyer” may need to be several regional buyers. A “single buyer” system has the added benefit of making the transition to a competitive wholesale and retail market much easier, because the transmission company can readily become an ISO. Also, if the power industry is unbundled, as recommended above, there will be no integrated utility to which to sell the investor’s power, so the single buyer would be the only real option, until a competitive market is established.

The alternative, which is to have integrated utility companies purchase power on their own, has the negative feature that the financing of a generating plant (assuming the investors use some form of project finance) will rely only on the credit-worthiness of the purchasing utility or the guarantees it can provide. This system is much less efficient than having all the country’s needs assessed and fulfilled on a common basis.

Support private ownership and operation of the transmission system, as long as appropriate regulatory controls and incentives are in place.

Though it is quite uncommon (Argentina and Australia represent two of the only examples), private ownership of transmission will bring the same benefits as private ownership of generation and distribution — namely, greater efficiency, lower losses, lower costs, and better service. However, to make private ownership of transmission effective, the correct incentives, tariffs and industry structure must be in place. As mentioned previously, RPI-X regulation will promote efficiency gains. Similarly, the dispatcher of the transmission system must be separate from the system owners. In this way dispatch decisions and plans for system expansion are made by an impartial body which can offset the tendency that the transmission owners may have to increase investment in the system to increase the rate base.

In California, privately-owned transmission is dispatched by the independent, non-profit ISO. The costs of the transmission owners are regulated by the Federal Energy Regulatory Commission (FERC), and the tariff paid by the users of the system is designed to cover the embedded costs of the transmission owners as submitted in their filings to FERC.

To ensure competition in generation, the transmission company should have three components, (I) ownership and maintenance of the wires; (ii) system upgrade, access and generation dispatch (also called the ISO); and (Hi) the PX.

The separation of transmission functions will counter incentives towards self-dealing or unnecessary asset expenditures. For example, if the ISO is the entity responsible for determining when the transmission system needs to be expanded and holds a competitive tender, the transmission owners will be unable to increase its asset base on its own, which it has an incentive to do under rate-base regulation.

In the state of Victoria (see country profile in the Appendix), the separation of the ownership of transmission assets from the system operator and the PX has been clear and effective. The system operator and market maker is the Victoria Power Exchange (VPX), which is a statutory corporation owned by the Government. PowerNet Victoria, recently purchased by US firm GPU, owns and maintains transmission and is responsible for system reliability. In California, the utilities continue to own the wires, but there is a separate ISO and PX.

Shift responsibility for the operation of transmission wires to an ISO, whose role is to facilitate investment in the grid and carry out system dispatch. In larger countries, set up regional ISOs.

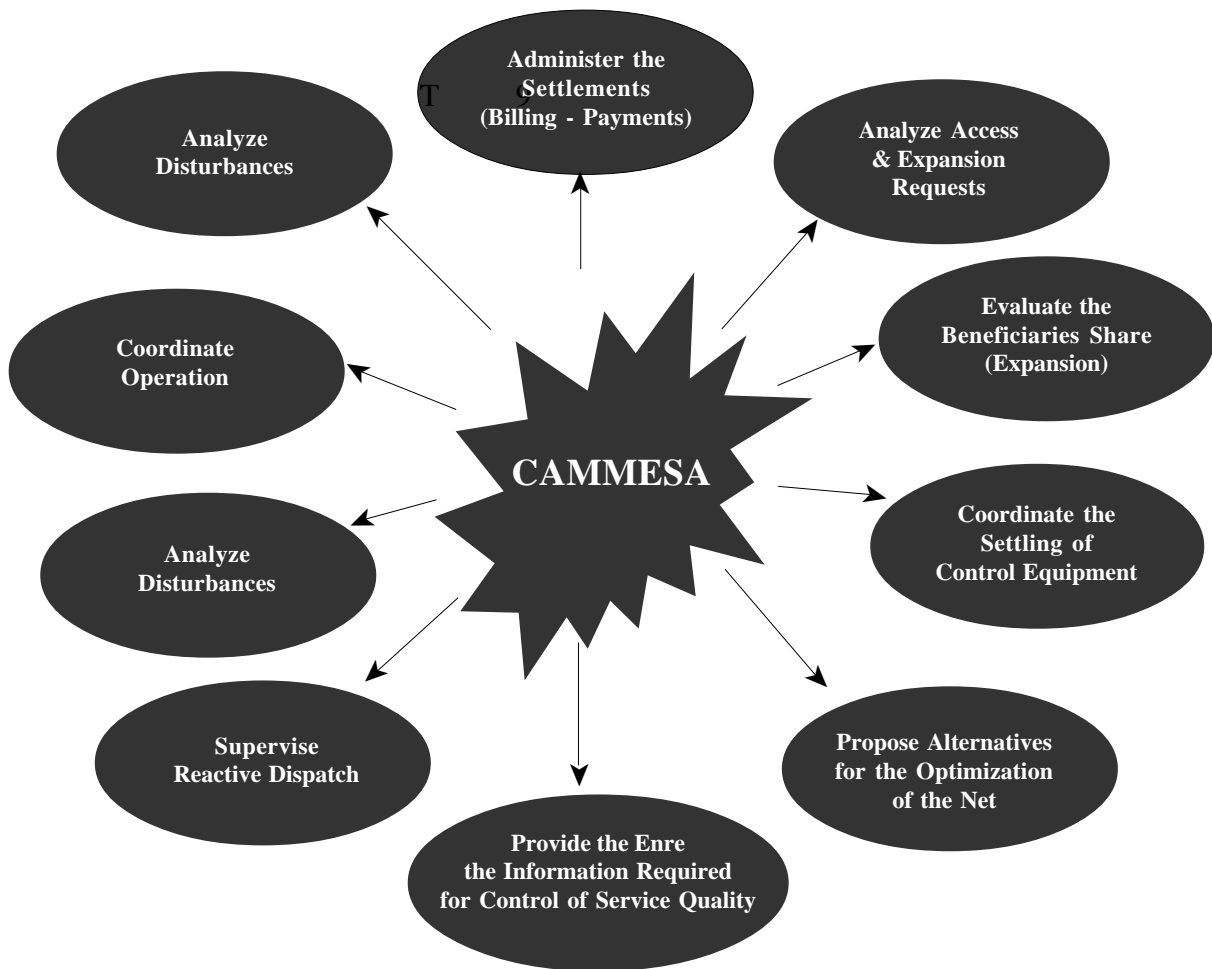
The transfer of operational control of transmission in California was granted through state legislation passed in September 1996, which mandated that the three investor-owned utilities (IOUs) release control, but not ownership, of the long distance transmission wires to the ISO. In return, the IOUs were granted a four year stranded cost recovery program. These transmission assets represent 75 percent of California's power grid, and ownership was transferred through transmission control agreements giving scheduling and control area functions to the ISO. The IOU's do not receive any leasing fees, but they do continue to recover their costs through transmission tariffs just as they would if they, not the ISO, were responsible for the operation of the lines. The utilities file their costs with the FERC, and these costs are covered in the tariffs.

The legislation that mandated the transfer of ownership also guarantees that all non-utility companies generating or trading power in California have open access to the state's grid. The ISO achieves this function by acting as a clearing house for transactions, but without buying or selling any power itself. The ISO conducts three open competition markets in order to maintain system reliability through services such as regulation and voltage support. In brief, the ISO conducts:

- The *Real Time Imbalance Market*, or spot market, adjusting generation to meet demand at any given time.
- The *Ancillary Services Market* which takes place a day ahead and hour ahead of when customers actually use the electricity. This is the market in which services are traded such as spinning reserves, non-spinning reserves, replacement reserves and regulation.
- The *Congestion Management Market*, which allocates scarce transmission to users. Participants submit adjustment bids a day ahead and an hour ahead of when electricity is consumed, to assist dispatchers in managing load on congested lines. If users do not decrease schedule over congested lines, they are charged a congestion management fee.

In the US, about half a dozen groups of utilities have filed with the FERC to create an ISO in their region, and the organization of the ISO depends to some extent on its members and its size. Further, each country that has pursued the development of ISOs tailors the role to that country's context. The roles of the grid operator in Argentina (Compañía Administradora del Mercado Mayorista Eléctrico, S.A. (CAMMESA)) is shown in Figure 7 - CAMMESA fulfills the role of both the ISO and the PX.

Figure 7: CAMMESA's Role in Transmission



Ensure that the ISO is truly independent.

There are several elements which determine the independence of the ISO. As mentioned above, the ISO must be under separate ownership from the buyers and sellers. The ISO should be governed by a board made up of stakeholders (e.g., power generators, distributors, and consumers) in which no one stakeholder group can dominate.

Independence of the ISO can be further achieved if it is prohibited from having an ownership stake in the transmission system. Because the ISO dispatches the system, it must address the problem of constraints and determine where new capacity must be added. For example, in California, transmission owners file annual transmission expansion plans that must be amended or approved by the ISO. If the expansion plan is not approved, a dispute resolution mechanism is used. Consequently, in order to make decisions based on economics and system reliability, the ISO must be separate from the owners of the transmission wires.

The ISO should be a non-profit corporation.

If the ISO is a non-profit organization, it has no incentive to modify system dispatch to increase its own profitability. There is a tradeoff, however. As a non-profit organization, the administrative and capital costs incurred by the ISO will not be met by the ISO itself. Therefore, there may not be incentives for the ISO to operate as efficiently as possible and so the ISO's costs may rise. However, such costs could be regulated, as is the case in California. The administrative costs are included in the fees that the ISO charges to all system users for its services. However, these costs and the resulting tariffs are approved by the FERC. With such regulation, the possibility of excess ISO costs poses less of a threat to the development of competition than the distorted dispatch decisions that could arise if the ISO had a profit motive.

Make the ISO board answerable to the regulator, which has the final say on rates.

The composition of the ISO board should strike a balance between the interests of the various stakeholder groups represented. As an additional check on its decisions, however, it is important to have ultimate responsibility rest with the regulatory commission, especially on issues such as transmission rates. The board of the California ISO is composed of representatives of stakeholder groups and is ultimately answerable to the FERC. The board was initially established by a five-member oversight committee composed of a California senator, a representative in the California assembly, two representatives of the Public Utilities Commission, and a representative appointed by the governor. The oversight committee was phased out after establishing the ISO board, which comprises representatives of all stakeholder groups: transmission owners, generating companies, distribution companies and customer groups.

Set up an independent organization (e.g., a PX) to manage power transactions between wholesale and retail buyers and sellers, and to handle financial settlements, separate from the ISO and the ownership of the wires.

The PX should be an independent agency that will ensure an open, competitive market for power. The PX would determine the market-clearing price for power through an auction on a frequent basis, such as every hour or half-hour. The exchange should take no position itself in the market, and its employees should act under strict guidelines prohibiting conflicts of interest.

The PX should be established under regulations and public guidelines that ensure equal access to the market. Sellers will bid to the PX a schedule of supply from certain sources at various prices, and buyers will bid a schedule of demand and delivery points. This sets the market-clearing price, and the PX then submits a schedule of supply and demand to the ISO, based on the bids that are accepted, and the ISO is responsible for dispatch. The PX is also responsible for settlement functions and credit arrangements.

The PX should be managed by an independent board which represents all the constituencies involved in the market, but does not allow any one constituency undue influence. The rules for the PX should be determined through stakeholder participation, and should be publicly available. It can be funded through one-time application fees and fees for the installation of terminals and the software necessary to participate in the market. Fees should be publicly disclosed, and the regulator should set the fees for the PX's services.

3. Transmission and Distribution

Make an absolute commitment to involve the private sector in power distribution, and allow majority ownership and control.

As pointed out in the introduction to this section, the biggest “gap” in private sector involvement in the power sector in Asia is in power distribution. This is paradoxical, since it is in this segment of the industry that some of the greatest potential for improvement and benefits to customers exists. It is in distribution that there are often high levels of losses, low levels of collections, poor system maintenance and reliability, low levels of electrification, and low levels of customer input. These are all shortcomings that could be solved or alleviated with private sector involvement.

Yet to date, virtually all of the privatization of distribution companies (DISCOs) in developing countries has been in Latin America, and in Asia, only a few DISCOs in Kazakhstan have been turned over to private ownership and operation. Last year, Hawaii Electric Co. also purchased 25 percent of the shares of Cagayan de Oro Electric Power and Light Co., a DISCO in the southern Philippines, but according to its Constitution, investments in power distribution by foreign firms are limited to 40 percent. A few DISCOs in Orissa, India, are in the process of being sold as well, and the rest in Haryana may follow.

Further, DISCO privatization can greatly strengthen the financial viability of the entire power sector. If DISCOs become financially stable and profitable, they will be in a better position to pay for the power from IPPs, to pay for power through the PX, and to aggressively negotiate short-term and long-term contracts for power supply in general. IPPs will no longer require state or central government guarantees that the DISCO will meet its financial commitments. This is one major reason why IPPs in the Philippines have sought aggressively to sell power to the Manila Electric Company, the largest and financially strongest DISCO in the country (its bond rating is limited by the rating of the Philippines’ sovereign debt).

The steps that DMCs need to take to prepare discos for privatization are described in detail in the section below.

Create competition at retail level by mandating open access to the distribution system, with unbundled prices and a retail trading mechanism for customers through the PX.

One of the most critical components of a competitive retail market is the ability of individual customers to trade power and to transport, or wheel power over the wires of the utility that serves them. Thus, opening up the wires to customer use will provide customers with several choices. Whether to:

- purchase power on their own through negotiations with potential suppliers and sign a contract for a period of their choosing;
- purchase power through the PX on a spot basis;
- band with others to purchase jointly or through an agent or “aggregator”; and

- continue to purchase power by default through the utility in whose distribution territory they are located — also called a standard offer.

These options for customers are generically called “retail wheeling” or “customer choice”. Open access to the distribution wires also means that third parties can use this access to make offers to customers to sell power that they have purchased on their own. This will open the entire power industry and potentially all of its consumers to a wave of marketing, promotion and advertising. This has taken place in the UK and a number of states in the US, notably California, and Pennsylvania, and is poised to take place in other major states such as Massachusetts.

In addition, this opening of the distribution wires opens the door to retailers and energy service providers (ESPs) wanting to use this open access to sell other utility-related services, such as Internet access, long-distance telephone, home security, natural gas, and water.

Require unbundling of the “wires” from the retailing function within a distribution area.

The separation of the “wires” from the retailing function will encourage competition by separating the regulated activities in a distribution area from the non-regulated activities, which may take place either inside or outside of the distribution area. Retailers, for example, could decide to pursue other companies’ retail customers, as the affiliates of Southern Energy have done in winning a contract to serve 150 school districts in California. In addition, this separation will limit the advantage the retail affiliate of the incumbent distribution company will have vis-avis its competitors. No cross-subsidies should be allowed between the regulated and non-regulated portions of the business.

Mandate open access to the distribution system to allow other retailers to freely compete with the retailer that is affiliated with the local “wires” company.

As mentioned above, for a retail market to develop, distributors would be required to grant open access to their systems, and to wheel other companies’ power over their lines. Assuming full retail competition, consumers would have a choice among several retailers who might purchase electricity from a number of generators, power aggregators, or brokers, some of which could also be distributors. The relationship with the customer will become a contractual one, as the customer’s recourse in the case of outages and other problems will be delineated by contracts.

There can be problems in introducing retail competition, for example, in California, one regulatory practice appears to impede entrance into the market by new retailers or ESPs, as they are called in California. Utilities are allowed to use customers’ statistical load profiles, which are *generic* profiles of the demand by various customer types, rather than their actual consumption, to determine the generation portion of customer bills. The generation portion of the tariff is what the ESPs can compete for, so the information they receive on this portion of consumption is critical to their ability to compete. Statistical load profiles make it difficult for new ESPs to accurately calculate what savings they could offer customers. The legislation to change this practice has been introduced.

Completely separate the parent company from its retail affiliate.

A potential problem with retail competition will be the use by local distribution companies of their marketing affiliates to limit new entrants in their retail market where they previously had a market share of 100 percent. This is currently an issue in the US natural gas retail market, and regulators have developed standards of conduct to govern the interaction between the long distance carriers and their retail affiliates. The parent company and affiliate should have separate accounts, offices, and staff to ensure that there is no collusion and that the affiliate does not trade on the name of the parent company.

Allow investors in T&D to provide all utility services, not just power, either in an “enclave” or a wider distribution area.

Investors in distribution, in a competitive market, should also have the right to offer more than just “plain vanilla” electric power service to customers. They should have the flexibility to offer a range of services, such as Internet access, home security, long distance telephone, and others to entice customers to sign up with them as part of a package. Customers can then determine whether they want to purchase their electricity as a separate commodity, or in a bundle with other services.

For example, a number of retailers in the US are offering to provide a range of services, particularly to larger customers throughout the country. In fact, one such provider, EnergyOne (a subsidiary of UtiliCorp), has already gone out of business, after complaining that the national market is not quite ready for such an offering. Others, such as Enron and Philadelphia Electric are concentrating on specific regions or service territories.

In distribution privatization, establish an agreement between the federal government and the regional or municipal governments, as these agencies may have competing agenda.

In Brazil, disagreement between federal and state authorities delayed the privatization of a distribution company in the state of Minas Gerais. The utility has been very profitable, and the state wanted to yield only a minority stake, whereas the federal authorities were advocating complete privatization in which control would be given to a private owner. A solution was eventually reached by which the investors acquired a 33 percent voting interest, but were allowed to name the company’s chief operating officer and appoint three members to the board.

Clearly define the geographic boundaries between cooperatives and concessions.

As concessions have grown in Brazil, there have been conflicts over how to regulate these areas and which entity is responsible for serving customers. The geographic boundaries between pre-existing cooperatives and new concessions must be clearly defined in order to avoid conflicts over responsibility for providing service to customers in the border areas. In Brazil, concessions are not exclusive and it is possible to have coops within the borders of the concession areas.

C. **Preparing the Market for Private Sector Investment and Competition**

Before the sale of assets or PSP can begin, the market should be prepared for such investment. The key is to carry out these activities quickly, and not to use them as an excuse for delaying or postponing the involvement of private firms. The objective of “preparing the market” is to lay the groundwork for the sale of assets (see next section), and to ensure that once the entities are sold, the conditions are in place to maximize the chances for success after the sale. As in the section above, it is important to note that privatization can take place if these conditions are not in place, but it is less likely to be sustainable. Further, without these conditions in place, privatization could initially “succeed” (i.e., state-owned assets could be sold), but fail in the longer run, leading to a backlash and a call to slow down or delay the privatization process, even though the private sector may have acted appropriately.

This section is subdivided into general principles; generation and transmission; and distribution. While many of these actions are critical, among the most important are:

- Reducing or removing subsidies and cross-subsidies.
- Setting up a wholesale market for trading power on a competitive basis.
- Allowing control of the assets purchased by private investors, while the regulator controls the investors’ market power.
- Training regulators at both the central and state levels.
- Preparing tenders.
- Conducting a campaign to notify and gain the support of citizens for these changes.
- Planning for impacts on employees of the existing utilities.

1. **General Principles**

Move power generation and distribution companies through a systematic process of commercialization and corporatization.

Commercialization and corporatization of sector enterprises before privatization will help make transparent any inefficiencies in the firm’s cost structure and clearly identify any outstanding debt. Separation of accounts will make cross-subsidies transparent and help eliminate them. Any private investor will want to know this information prior to investing, and the price paid for an enterprise is usually positively correlated with the early identification and solution of financial problems. This restructuring will also introduce a profit motive into management’s business decisions, and encourage efficiency.

In general, the restructuring process for all government-owned entities, and for power sector companies specifically, involves three steps:

- Corporatization, or spinning off these companies into separate legal entities, so that the management, planning, and performance of each company is independent of each other.
- Commercialization, or making these entities responsible for their own profits and losses, and removing government subsidies.

- Privatization, which involves selling or giving all or a portion of the company to private investors, which can include sales on the stock market, voucher programs, or sales to “strategic” companies that have expertise in that aspect of the power industry.

As part of the restructuring process, financial reporting practices consistent with international accounting standards should be introduced. Accuracy and transparency of record keeping will facilitate investment, as the investor will better understand the company’s financial condition.

In Orissa, India, DISCOs experienced financial restructuring as part of commercialization. The company restructured its debt, identified uncollectible accounts, separated accounts for each part of the enterprise, and in some cases, renegotiated debt service. The goal of the process was to ensure that debt did not exceed approximately one-third of the asset value of the enterprise, and that the enterprise’s cash flow was sufficient to meet debt service requirements. Unfortunately, the financial restructuring did not work well, either because tariffs were set too low or projected collections/revenues could not be reached.

The regulator should reduce and remove subsidies and cross-subsidies on power and fuel before the start of privatization. In regard to the universal service obligations of the government, it should directly fund the poor and disadvantaged customers from the budget.

Second best: Continue subsidies and cross-subsidies from government revenues for targeted low income groups for a limited period of time.

The best practice is to make subsidies transparent during the restructuring process, and to eliminate them quickly, if possible, prior to privatization. The general principle is that customers should pay approximately what it costs to provide them with power — which generally means that residential customers pay more than large commercial or industrial customers. If this is not done, the new private investors are likely to be blamed for price increases that are not their fault, and the process of restructuring and privatization could be in jeopardy.

As a second-best measure, if subsidies cannot be eliminated for political reasons, they can be continued through government allocations that would not distort other customers’ tariffs, as cross-subsidies would. This second-best practice is risky for investors, since in the future, the government may decide it no longer wants to subsidize these users, and the new owners will again be blamed unfairly for increasing tariffs. In between these two practices would be an agreement that subsidies and cross-subsidies will be phased out over time.

It is best to deal with subsidies in fuel markets at the same time as for power, since fuel is a major component of the cost of power. For example, the plans in the Philippines to deregulate the cost of oil would be consistent with the best practice. PRC has removed many of the controls on power prices in a number of provinces. A number of the states in India, on the other hand, still provide power to agricultural consumers for free. Customers living in Luzon in the Philippines continue to subsidize customers in the Visayas and Mindanao.

If assistance is provided to specific customer groups, there should be a process in place to determine that customers need this assistance.

Customers should be qualified for assistance (lower rates) on the basis of their consumption. That is, if a customer uses less than some threshold amount of power, per year or per month, they should receive lower, subsidized rates. This approach is subject to abuse, since power theft can make consumption appear to be less than it actually is, but if combined with an aggressive anti-theft and metering program, the private investor should be able to minimize such abuse.

Another approach would be for customers to demonstrate, in accordance with established guidelines, that they cannot pay the power bill, at which time they would receive a certificate which they could give to the distributor, and which the distributor could exchange for cash from the government. This might work in more developed countries, but in countries with millions of indigent citizens, this process could be too cumbersome and easy to manipulate.

The regulator should set forth and actively monitor the rules of market participation.

A comprehensive regulatory framework will address sector-wide issues such as equal access to the market, competition, franchises and licensing, adherence to safety and environmental standards, and consumer protection. With regard to T&D, where “the wires” will remain natural monopolies, the regulator will need to set tariffs to provide the correct signals to consumers and the correct financial incentives to the utility, oversee system expansion, and set performance-based incentives in a more competitive environment.

During industry restructuring, the best practice is for the regulator to be quite active in setting and modifying the tariffs and conditions for investment. In the Philippines, the Energy Regulatory Board has the potential to play a leading role in future industry restructuring (see country profile in the Appendix). The regulator in the UK, the Office of Electricity Regulation was an “activist” regulator and facilitated the development of a competitive market.

Train the regulatory staff to ensure that proper analytic and industry oversight skills exist at both the central and regional levels. Set an example first at the central government level, and then transfer these regulatory skills to the regional level.

Restructuring the power industry leads to changes in the role of the regulator. In some countries (e.g., a number of states in India), the regulator must be established from ground zero, which requires training for staff in the roles that they will be assuming. As the industry unbundles and the private sector plays more of an *investment* role, the regulator must oversee the RFPs that are issued, the contracts that are signed, and the tariffs that are charged. For example, they must know about such items as BOT and BOO contracts, and cost-of-service regulation. In a *competitive* market, they will regulate generation and retailing to only a minimal extent, and focus on T&D from a performance perspective. In a large country such as India or PRC, it may be best to export these skills from the central government to the regional or state level, which requires close cooperation between these levels of government.

Take initial steps to improve the operation of existing entities before privatizing them, if this can be done expeditiously. However, countries should not delay restructuring and privatization for this purpose. Take into account the cost of improvements, which may be exorbitant.

Investors will pay more to acquire well-performing assets. If an asset is performing well, then there are less likely to be problems in its operation, the staff is better trained, the future income stream is more certain, and the acquisition is easier to finance. This higher value of “good” assets has been demonstrated in the market, as better performing assets have commanded much higher prices and premiums over their book value.

Thus, it is better to improve the operations of existing assets, but only if that can be done quickly. Of course, one of the reasons for bringing in the private sector is to help improve operations and thus benefit consumers, as the scope for improvement by the current owners may be limited. Moreover, there is a danger that this reason will be used as an excuse to delay the restructuring process, which would not be the best practice. Therefore, the restructuring of the power sector should proceed in a timely manner, and the regulatory system should be set up to reward performance, so that if investors are able to make substantial improvements to poorly-performing assets, they will make attractive returns.

One reason to not improve operations before a sale may be in cases where the government is imminently facing a major investment to upgrade the facilities. A number of power plants in Eastern Europe, as well as in the US, face expenditures in the hundreds of millions of dollars for each plant to improve their environmental performance to meet new standards. Some have chosen to sell the plants and let the new owners undertake these investments instead. For example, eight utilities recently decided to sell the 1,340 MW Centralia coal plant near Seattle in the US rather than spend up to \$300 million to install scrubbers, and Commonwealth Edison sold the State Line plant for the same reason.

In Australia, investors paid top dollar for generation and distribution companies, in large part because of the good condition and performance of the assets (of course, the country’s stability and regulatory system are also factors). In Brazil as well, distribution assets often commanded a high price, both due to the condition of the assets and to tariff guarantees.

Whether selling an existing asset or creating a new one, allow the strategic investor to obtain management and operational control. Local firms or the utility itself may add value as minority partners of the consortium.

In the sale of government-owned assets, it is generally best to let the investor take a majority or controlling share of the project (e.g., this may mean 50.1 percent, or if a 2/3 majority is required for board approval, it may mean 67 percent). This practice allows the investor to have both management and operational control, motivates them to ensure good performance to a much greater extent than if they are minority shareholders, and leads them to be willing to pay more to own the project. This also makes banks more comfortable with financing the project. This practice applies to active or strategic investors, not passive investors such as equity funds or firms investing small amounts in order to obtain other business (e.g., equipment suppliers).

In addition, most investors prefer to have the flexibility to determine how to divide the shares of the project between their consortium members. Politically, it may be advisable to allow

the government, utility, or employees to keep a minority share (e.g., 10-15 percent) - as a partner, the utility may be a useful ally in obtaining permits, fuel supply and other agreements- or to sell shares to the public.

In El Salvador, the government sold 75 percent stakes in four distribution firms, giving the investors a super majority. This was done to give clear control to the investors, and to give banks confidence in the investors' control over dividends. Also, in Malaysia, 10 to 15 percent shares of several IPPs have been allocated to TNB, the government owned national utility.

Ensure and enlist public support for privatization, which may mean an extensive education program, providing the ability to invest, and using a phase-in of higher tariffs.

A substantial public education program should be put in place to communicate the objectives and benefits of industry restructuring and privatization. As mentioned above, public support may be greater if a minority, non-controlling share of the privatized entity is available to the public, to mitigate the criticism that the country's key assets are being transferred to the private sector (whether foreign or domestic). Even though the country and its citizens will benefit over time through the taxes that the investor pays and the better performance of the utility, these are indirect or longer-term benefits, and to gain public support, selling a 5-15 percent share to the public may be advisable. It is generally believed that the "coupon" method sometimes used in Eastern Europe (e.g., in the Czech Republic) was not ideal, since it neither brought revenues into the company or the government, nor management expertise.

Furthermore, public support will be greater if any increases in tariffs (due to the reduction or removal of subsidies or cross-subsidies) are phased in over time. In Hungary, for example, tariffs were raised between 15 percent and 30 percent every six to nine months, with the intent to raise rates to the level that would allow investors such as Electricité de France and RWE (Germany's largest electricity company) to make about an eight percent return on assets. While the government allowed the first few rate increases, they reneged on the final increase, leading to significant discontent on the investor's part.

Eliminate inconsistencies between the regional and central levels of government with regard to tariffs and investment policies.

It is important that investors have some certainty of the price they will be paid for the power they produce (note: this is different than a competitive market). Their bankers base their lending on the assumption that revenues will be sufficient to cover the debt service, plus a margin. If the regulators change their payment scheme, then the investor may be in default of this "coverage ratio". To encourage investment, the PPA should specify the formula to determine the payment to the IPP. Some costs, such as debt service, will be fixed, while others such as fuel prices and availability can vary.

In PRC, for example, some investors have complained that prices agreed to in their contracts signed in Beijing have not been honored by provincial pricing bureaus. Apparently, the pricing bureaus may only allow price increases that match with the level of inflation in prices that the authorities (also in Beijing) allow for their province as a whole. This level of increase may or may not be consistent with the PPA. Such inconsistencies must be eliminated.

The decision on how to address high levels of debt in state-owned companies slated for privatization should be taken in light of the government's goals for Privatization. Mutual debt cancellation may be a good way to "clear the books".

If the government is not driven by the need to earn a high price for the entity, it may be better to let the investor sort out the debt problem, and indeed, the overall financing of the enterprise, once the entity has been privatized. The investor will have access to various sources of capital that may not be readily available in a developing country, or that the government may not want to allocate its resources to mobilize. On the other hand, if the government wants to receive as high a price as possible for the enterprise, the issue of high debt levels should be addressed prior to privatization.

The practice of mutual debt cancellation, in which companies eliminate each other's debts, may have merit as a positive way to get the company on an even financial keel for the future, even though it brings no new cash into the power sector. This would be possible if the electricity company has outstanding bills (e.g., to pay for fuel), while the company to which it owes money has an outstanding electricity bill. Another possibility, if the debt is not mutual, is to give one debtor shares in the other company. In the Czech Republic, for example, the coal companies were given shares of the power company in the privatization instead of payment for coal, and they were able to sell these shares in the market in exchange for cash.

Truly uncollectable accounts should be written off (in some countries, these accounts are carried on the books practically forever). In Brazil, the government addressed the debt problem before privatizing distribution companies, which increased the prices bid for the distributors.

Undertake the transition from government accounting to commercial or international accounting standards on a defined schedule, with adequate training.

In transition from government to commercial accounting, many practices will need to change. For example, any limitations on collections from government entities should be phased out. Aging of accounts and the ability to write off uncollectible accounts is also critical. However, these changes will require a change of perspective and habits for company accountants, and should be undertaken with clear explication and hands-on training over a defined period.

2. Generation

Develop standard contracts for IPPs that are internally consistent and which meet international standards, including an implementation agreement (IA) and PPA.

There is a framework of contracts that are used worldwide to support the development of investments in power generation by IPPs. The two most common documents are the IA and the PPA. The IA describes the commitments that the government will make to ensure fair dealing with the private investor. This contract often discusses issues such as expropriation, foreign exchange, and the regulatory process, and it serves as an umbrella within which to develop contracts for specific projects. The IA is most common in developing countries, especially for the early IPPs, at which time the country may not have a history of property law, contract law, or regulatory procedures.

The PPA is the contract that lays out the expectations of both the seller/investor and the buyer/offtaker/utility. These include such items as the price to be paid, amounts to be purchased, date of expected operation, government guarantees (if any), and the manner in which the plant should be operated and dispatched to conform to the rest of the country's power network.

Certainly, ADB can play a catalytic role in supporting the development of these documents. For each country, these documents should be developed, using ones developed elsewhere as a starting point that can be modified to take the country's unique legal situation into account. To initially develop these documents takes a considerable effort, but once developed, major changes should not be needed within the same country. For example, the documents used for the Paiton project in Indonesia, which took several years to consummate, were used as the starting point for other IPP projects, though they certainly needed to be modified depending on the fuel and type of project. PRC has developed BOT documents for the Laibin B and Changsha projects that may be applicable for IPP projects elsewhere in the country.

Two additional points:

- All of these documents will be less important in a competitive market — consumers may still want to sign contracts to purchase power, but they will be different than PPA contracts used during the investment period.
- Other contracts, such as fuel supply, transmission interconnection and financing documents are also needed to support private investment in generation through IPP projects.

In the early stages, or the transition phase, use flexible resource planning to determine what type and amount of capacity to add - allow the transmission entity to establish the level and timing of required capacity; later, allow the market to determine what capacity to add.

To encourage investment in generation (prior to the emergence of a competitive market), there needs to be a systematic way of identifying the capacity that should be built and the time frame in which it should be available. The best way to organize this process of adding capacity is to carry out integrated resource planning, as many developing and developed countries have adopted in recent years. Once the need for new capacity is determined (taking into account such factors as demand growth, demographic changes and business formation), the purchaser of power can then solicit for new supplies.

This resource planning is best carried out by an entity that does not have a vested interest in who builds the capacity; and which is not potentially competing with the private sector to build and dispatch the plants; namely, the transmission entity. And the need to unbundle the power sector to foster a positive climate for investment was described above. Doing so would set up a separate, independent transmission company that is in an excellent position to balance the forecast of demand by each distribution company, understand the constraints and needs of the grid, and identify where and when capacity should be added.

In the Philippines, the drafts of the Omnibus bill recognize the benefits of this approach. They make the distribution companies responsible for developing and submitting resource plans, and have them approved by the Department of Energy (DOE), but make the National Transmission Company responsible for developing an integrated plan for the Philippines as a whole that balances these factors.

Furthermore, this need should be flexible, so that in case of the need for capacity changes, the transmission company can modify the date and amount of capacity that will be added. The best way to accomplish this is to sign contracts that allow the buyer to modify the date that the project will come on line to meet the need as the on-line date approaches. While this flexibility will have a small cost, this cost is lower than having excess capacity on line during the investment period. For example, the Bonneville Power Administration (BPA) issued an RFP several years ago that committed BPA to pay the development costs of potential investors in exchange for the right to tell them when to begin construction of the plant, or whether to build it at all. BPA would have to pay the development costs in any case when the plant came on line, so all that was lost was the time value of a small amount of money for a few years. This is a good tradeoff.

Use BOO contracts to develop new capacity.

Second best: Use BOTs to get the market for PSP started, and establish clear terms for the conditions of the transfer of the plant back to the government; or use concessions, and grant long concession terms.

There are a number of potential “modalities” for the contract that an investor will sign to invest in the development, financing, and operation of a power plant (note: these modalities do not apply to a competitive generation market). The most common are some variation of BOT and BOO for new plants, or for existing plants, rehabilitate-operate-transfer (ROT) or rehabilitate-own-operate (ROO). The key difference between these modalities is the “T”, which signifies that at some point in the future, the investor will need to give back the plant to the entity to which it is selling the power.

Investors and bankers generally prefer BOO/ROO contracts to BOT/ROT ones, and these modalities are recommended as best practices for several reasons:

- The power sales contract is much more complicated and harder to negotiate when a transfer is involved (though lawyers may prefer this).
- As the transfer date approaches, there is a natural tendency for the operator to not maintain the plant as well as before, because some of the benefits of such maintenance will be received by the utility to which the plant will be transferred.
- Ownership (BOO) in general is different than renting (BOT), and the former will lead to a more competitive plant.
- There are more options for refinancing later, using corporate rather than project finance, or using bonds, if the BOO modality is in place.
- The BOO is more compatible with a future competitive market, since those contracts can more easily include buyout provisions and other methods for converting long-

- term contracts discussed in the “competition” section below without dealing with the transfer issue.

Figure 8 illustrates the options for PSP, and the sharing of responsibilities that are associated with each option. This makes clear the basis for the private sector’s preference for BOO contracts, due to the fully private nature of both the responsibility and control they have. Note that the sale of shares on the stock market is shown in quotations as private, because even though the use of such an option places ownership and financing in private hands, these hands are qualitatively different hands than if a strategic investor is involved. As discussed above, it may be politically expedient to make some shares available to the public and/or to employees in the sale of government-owned assets.

A BOT or concession is second best, but the investor may be almost indifferent between a BOO and a BOT, if the BOT is granted for a long term. In Bolivia, concessions were usually granted for 40 years, after which they could be renewed through a bidding process. In this model the Government retains some control over the entity as the concession will be rebid, but the investor has a long period in which to realize efficiency gains and retain the resulting profits.

In Argentina, the Government granted investors 95-year concessions for the provincial electric utilities. In Buenos Aires in specific, investors received a 90 percent ownership stake in the EDEN and EDES utilities, and the remaining 10 percent was granted to employees. Concession terms included an inflation allowance and a pass through for power purchases. However, there is a multi-year declining rate tariff schedule according to which tariffs will decrease by a certain percentage each year, but costs will not be reviewed by the regulator for a period of ten years.

Figure 8: Options for PSP

<i>Private Sector/Option</i>	<i>Ownership</i>	<i>Financing</i>	<i>Management</i>
Service Contract	Public	Public	Public/Private
Mgmt. Contract	Public	Public	Private
Lease	Public	Public	Private
Concession	Public/Private	Private	Private
BOT/BOOT/ROT	Private then Public	Private	Private
BOO/ROO	Private	Private	Private
Stock Mrkt/Vouchers	“Private”	“Private”	Public/Private

Eliminate as many long-term take or pay contracts as financially feasible that were signed with IPPs during the investment period; use government shares as currency to buy out contracts and facilitate the move to a competitive market.

One of the most contentious and problematic issues in making the transition to a competitive market for generation is how to mitigate the impact of long-term, take or pay IPP contracts, and their generally higher prices, when the market reaches a competitive stage. These contracts can add a large share of high-priced wholesale power (e.g., five to eight cents a kWh in some developing and developed countries) into a market where prices are falling (e.g., competitive wholesale prices are now in the two to four cent range). A related problem with these contracts, for their entire term, is the foreign exchange risk associated with potential currency devaluations, since both capital expenses (e.g., equipment, financing) and operating expenses (e.g., fuel) may come from abroad, and need to be paid in “hard” currencies. This risk has already produced higher prices for power in local currencies in countries such as Indonesia, the Philippines, and others, due to the Asian financial crisis. In the words of one banker, “cross-border debt has vaporized” for now.

There are several ways to deal with this situation, all of which must be anticipated at the time that the contracts for investment in the power plant are signed:

- Sign as few long-term contracts as possible, only for the initial IPP projects, and limit their terms to 10 years or at most the term of the bank financing.
- Reduce the offtake commitment and capacity payment after the term of the financing expires.
- Provide local currency financing through a development bank, and encourage developers to finance as much of the project as possible in local currency (as was done in Malaysia).
- Include clear provisions in the PPA that specify a means to calculate the price that can be paid for a buyout at any point in time.
- Set up a reserve fund that is paid on a regular basis by all generators to cover the fixed costs of IPPs with contracts that are available but not dispatched.

A combination of these approaches may be required. Positive examples include the following:

- In Australia, the government in Victoria anticipated the emergence of a competitive market, and therefore only sold 51 percent of the 1,000 MW coal fired Loy Yang B plant to Mission Energy under a long-term contract. When a competitive market emerged, the Government simply gave the remaining 49 percent of the plant to Mission Energy (for \$1) in exchange for the developer giving up its take or pay contract, and agreeing to participate in the competitive wholesale market using a contract for differences. In other words, the Government’s share was the currency it used to convert the plant to a competitive market.
- A number of utilities in the US (e.g., Niagara Mohawk and Pacific Gas & Electric) negotiated 10-year contracts or deals to buy out the remaining years of IPP contracts.

- These buyouts are generally at some amount substantially less than the discounted value of what they would have paid to the plant owner if the plant continued to operate for the contract term. The benefit to an investor is that they obtain cash to pay off the debt and use for other purposes right away, and they eliminate the risk of operating the plant in the future.
- In Argentina, all generators pay into a reserve fund that is used to compensate IPPs that have contracts for their fixed costs during the hours that they are available but not dispatched.

One *undesirable* alternative is to renege on the original contract, as Indonesia and Pakistan have been considering recently, since that action has implications for the country's overall credit rating and perception by investors in general, not just in the power sector.

As a transition issue, establish a clear mechanism to calculate and compensate the owners of power plants for any verifiable stranded costs

A highly contentious and complex issue in the transition to a competitive market in developed countries (especially the US) has been so-called stranded costs. These are the above-market costs that utilities incurred to build existing plants that they are not able to recover if their customers switch to cheaper suppliers of power. Most stranded costs are associated with high-cost generation plants (e.g., especially nuclear), whose costs are likely to be higher than those of new, highly efficient combined cycle plants. For example, the high cost of Plant Vogtle in Georgia and the cost incurred to build but *not* operate the Shoreham nuclear plant in New York (each over US\$5 billion) are costs which plant owners must pay for until the debt is retired, but which may be well above the market price.

In addition, stranded costs include the above-market cost of IPP contracts that locked in a price of power that is above the market price. Further, they include the fixed costs that remain for which the utility cannot collect when any large customer decides to change power suppliers, if the utility could not have expected that customer to leave. In the latter category, TVA recently dropped its claim of stranded costs against the city of Bristol, VA, because the city selected another supplier after giving TVA several years notice as required in their supply contract.

The key questions regarding stranded costs are:

- Whether they should be paid?
- If paid, how should they be determined?
- Once calculated, who should pay and collect them?

These questions have absorbed much regulatory and legislative time in countries where such high-cost capacity exists. Moreover, lawsuits have been filed in such states as New Hampshire and Pennsylvania because the regulator has answered these questions differently from the utility.

However, in developing countries that have restructured their power sectors (e.g., Argentina and Chile), such questions have not arisen since there has been generally, a shortage of capacity, and because no costs can be considered stranded if all capacity is used and the actual costs of all plants are being included in rates. However, this report will not try to resolve these issue. The one area of potential stranded cost for DMCs is high-priced IPP

contracts signed by many DMCs. In the next section D, the best practices for minimizing or eliminating these costs are discussed.

Allow and foster wholesale power trading.

To create a competitive market, a fundamental principle is that there must be a vehicle to enable the trading of power, often called a PX. Countries such as Argentina, Bolivia, Australia, UK, and parts of the US have set up PXs, and a number of regions (e.g., Southern Africa, Central America and Mekong River region) are exploring the prospect of setting one up. A PX enables competition in the wholesale generation of power, and facilitates retail trades once the market is opened for customers to choose their supplier.

However, a country cannot simply create a PX. In fact, a wholesale market will fail unless considerable effort is devoted such as:

- Designing and implementing the required computer systems to carry the information required and support the transactions process.
- Ensuring that a settlements system is in place, so that buyers and sellers will have a means of being paid in a timely manner.
- Having sufficient generating units so that real competition can take place (i.e., a PX is probably not appropriate for small countries or small systems).
- Having a transmission system with sufficient capacity that physically interconnects with the access seekers' networks.
- Having a grid code and rules in place for dealing with access to the system and with "must run" units that are subject to transmission constraints.
- Determining how to charge buyers and sellers for the use of the transmission system.
- Resolving the issue of how to deal with existing IPPs and other units with power sales contracts that allow them to sell power at guaranteed prices.

Clearly, a PX (and ISO), is a sophisticated entity that countries must prepare properly to put in place. Countries such as Kazakhstan and Ukraine, have considered PXs, and rejected them (or they failed) due to the lack of one or more of these conditions.

To establish a competitive market for generation, the ISO should establish and enforce a grid code, including a merit dispatch order and open access to the transmission system.

In a competitive market for generation, the ISO must dispatch plants to meet the load in a fixed order. The general rule is that this order begins with the plant with the lowest marginal cost (e.g., hydro), and continues through plants that are progressively higher in cost. This order may change if there is a system constraint or need for voltage support that requires a more expensive plant to be dispatched ahead of a less expensive one. This merit order does not change due to the emergence of a competitive market, but the implementation of this rule shifts to a different organization, the ISO. It is noteworthy that the dispatch order is not affected by the

bids received in the PX - that is, the order of bids received in the PX may differ from the actual order of dispatch.

The ISO must also allow all users to have equal access to the system, and adopt safety standards for generators to interconnect with the system (e.g., require that such interconnections enable each plant to be isolated in case of emergencies that could threaten system stability). These safety standards are likely to be similar to what is already in place in IPP contracts.

Set up the pricing system so that wholesale prices for power decrease when there is a surplus of capacity and increase when capacity is short to signal the need to add new generation capacity at the right times and places.

Second best: Have the ISO solicit for new capacity as required.

In the past, utilities would often maintain a target reserve margin of capacity to ensure the reliability of the system and the adequacy of supplies. In a competitive market, the key to ensuring that system capacity is sufficient is to set up a pricing system that sends market signals to the generators through progressively higher short-term prices as capacity gets short. This provides a good signal for investment in new capacity. Prices for capacity should rise as the excess of supply over demand shrinks. If, as in many developing countries, demand is growing rapidly and there is a deficit of power, then capacity prices in the market should remain high enough to encourage investors to pursue the development of merchant plants until sufficient capacity is committed. To set up such a system requires a considerable amount of data. If, for some reason, the data is unavailable or the market fails, and is not stimulating the development of such capacity, the ISO can issue a Request for Proposal (RFP) to construct a needed plant as a second-best measure.

In England and Wales, the need for additional generating capacity is reflected in the capacity charge that is added to the system marginal price in order to arrive at the pool purchase price. The pool purchase price and an uplift charge compose the pool selling price, which is the price paid by the regional distribution companies. This capacity charge signals to generators the necessity of adding generation capacity, and signals to consumers that their consumption may equal or exceed the generating capacity available in a given load period.

In brief, the capacity charge is calculated by multiplying the value of the lost load by the probability in each half-hour of a supply interruption because generation cannot meet demand. The value of the lost load represents the customer's willingness to pay per kWh to avoid supply interruptions. It was set by the regulator at £2,000 per MWh for 1990 and 1991, and has increased since by the growth in the retail price index. The loss of load probability (LOLP) is the probability of a supply interruption because generation cannot meet demand, and is determined for each half-hour. As excess capacity increases, LOLP decreases. Thus, the greater the amount of excess capacity, the lower the LOLP, and hence, the lower the capacity charge. In this way, excess capacity leads to lower pool purchase prices and thus lower pool-selling price. In developing countries, all this information may not be readily available, but some system can be developed to take their data availability into account.

Allow contracts that generators hold for transmission access and transmission rights to be transferred to third parties, with a ceiling on the price of what the seller paid.

The market for transmission capacity should be allowed to clear. Therefore, if one firm has signed up for the right to access the transmission system, but cannot use it due to the lack of demand by its customers, then the owner of that capacity should be allowed to sell it to a third party. For this purpose, the ISO should conduct a secondary market for the sale of such capacity.

A related point is that no one user should be allowed to dominate the market for transmission capacity and have the potential to earn monopoly rent. That is, there should not be speculation allowed in transmission capacity. There should either be limitations on the share of the available market that one user can control at any point in time, or probably better, limitations on the price for which owners can sell such capacity to a ceiling of no more than the price that they paid.

3. Transmission and Distribution

To speak of preparing T&D for competition is somewhat misleading, because the wires will remain a natural monopoly, and therefore will be regulated. In a competitive market, both T&D should provide open access to all users, and they should both be subject to performance-based regulation that encourages them to operate efficiently. Competition will apply, however, when the distribution wires are separated from retailing, which refers to providing the interlace with the customer (including all marketing, billing and other services). This section discusses the best practices for creating this mixture of a regulated and competitive market. The initial privatization process of T&D will lay the groundwork for this integration by establishing the tariff frameworks and the correct incentives, allowing new players to enter the market, and establishing monitoring techniques to prevent collusion and other abuses of market power.

Establish clear regulatory rules and a process for setting T&D tariffs.

Second best: Utilize “regulation by contract”.

Setting the process by which tariffs will be determined, especially for T&D companies, is a fundamental role of the regulator. Investors and bankers prefer a strong regulator that they can rely on to make consistent decisions. In the Philippines, for example, there are formulas and methodologies for determining the rate base of the distribution companies, and rules regarding the rate of return they will be allowed.

In the absence of a clear regulatory framework, provisions regarding tariffs can be included in privatization contracts. For example, some of the concession agreements signed in the transactions in Brazil contained clauses which fixed retail tariffs for eight years, thus providing some protection to investors and motivating bidders to offer higher prices. This was done so that in the absence of a proven regulatory framework, investors would have a way to mitigate price risk until the regulatory framework was more firmly established.

As discussed in this report, the regulator plays a critical role in setting the incentives for T&D companies to improve their performance over time.

Carry out detailed transmission planning, remove bottlenecks, and establish a grid that supports the transfer of power between and within regions and between countries.

Prior to the establishment of an ISO, the transmission entity must carry out the analysis required to determine when and where to add transmission capacity, and to charge users of the system for the right to use it. Carrying out this analysis will enable the transmission company to make the choices necessary between building a power plant to expand the power available in a region, or removing a transmission constraint, which may achieve the same objective. The transmission company can also decide when to expand the grid to support increased trade between regions and countries. For example, it may make sense to build a power plant in Lao PDR using excess hydro power, and wheel that power to Thailand, rather than build a plant in Thailand.

Reduce theft and lower levels of collection, and legally ensure that new private owners can crack down on violators.

The issue of low collections revolves around three issues: (i) non-payment by consumers; (ii) theft through illegal connections, and (iii) inadequate metering to measure losses. Ideally, these issues should be addressed prior to privatization through public campaigns by the government to encourage payment, by legislation to punish those that steal, and by investing in metering to determine where the power goes. The investor will pay a higher price for the enterprise if these measures have been taken before privatization. Pre-paid meters may be effective tools in the collections campaign, and have been used effectively in countries such as Tanzania. An alternative is to give the private investors responsibility for reducing theft, and allows these investors to keep a portion of the savings that they generate. If the state-owned utility cannot quickly reduce theft, however, they should not delay privatization in order to do so.

To support the reduction of theft, legislation should be enacted to allow disconnection for non-payment. The Anti-Pilferage legislation passed in the Philippines is a good example. Among the worst offenders in some countries are government installations such as military bases. All consumers must be made to understand that power service is not free, and persistent violators should be heavily fined or jailed. If the government is not able or cannot afford to take the above steps prior to privatization, the government should closely cooperate with the investor after privatization to improve collections.

Before privatization, the ISO should propose and the regulator should establish transmission rates that accurately reflect the cost of service, and take into account the distance which the power is being transmitted.

As a wires monopoly, tariffs for transmission should be cost-based, though there can also be a performance-based component in these rates to encourage efficiency (e.g., a higher allowable rate of return in exchange for higher reliability or lower losses). Pricing should take into account the embedded costs of using the system, such as operations and maintenance and depreciation.

One option for transmission pricing is “postage stamp” pricing, which uses embedded costs as the starting point, but charges all comparable users the same amount, no matter how far across the grid their power is being transported. One step better is a system in which prices

vary between regions, but within a region the price is the same for all users with the same load profile type (UK uses a different price for each distribution region). However, this type of pricing hides the real differences in costs and the higher level of system losses associated with moving power over greater distances. Therefore this is not the optimal method for transmission pricing.

Transmission prices can account for distance through methods such as payments based on the location of the load or through locational marginal pricing (LMP). LMP allows prices for power to be calculated at every busbar, or interconnection, in the system, thus reflecting the demand for power at every point in the system where power is taken off the system by users. These prices can be calculated at regular intervals, as frequently as every five minutes. The locational marginal prices affect generation prices, since the system marginal price does not apply at congested points. The price of the power will increase to reflect this congestion. The deliverers of the power will pay this price differential through congestion charges. Of course, distribution charges must be added to transmission prices to cover the full wires charge.

Transmission prices should reflect to generators the need for transmission system development to expand access and remove constraints.

A key issue related to transmission prices is to develop charges that fairly cover the costs of system expansion, and this can be reflected in the congestion charges levied on transmission users. The PJM system in the northeast US offers an example. In this system, the cost for transmitting power on non-constrained lines between any two points is determined by the marginal cost of the last generator to bid into the system at a given time (the system marginal cost). However, on congested lines, the price increases to reflect the constraint, and this higher price is paid by the power deliverer, unless that party has purchased fixed transmission rights (FTRs), which are rights to transmit power on constrained lines. There is a secondary market in which users can bid to FTRs on an hourly, daily, or monthly basis. The holder of FTRs receive a credit in the amount of the congestion charge, should it be levied on them.

However, the PJM system may not necessarily represent the best practice for developing countries. First, it is an extremely complicated system which uses sophisticated computer modeling to calculate the prices at any of the businesses at regular intervals. Second, the models used to calculate LMPs and congestion charges have produced some very high prices at certain points, and some negative prices at other points. While this may not be surprising from an economic perspective, it can create confusion in the market. The regulator of the transmission system may have to be called upon in some cases to compel the transmission entity to relieve the congestion or to lower the congestion charge.

Certain T&D services should be exempted from RPI-X regulation, and the companies should submit proposed prices directly to the commission for approval.

RPI-X regulation may not be appropriate for all T&D services. For example, transmission services that should be exempted from RPI-X regulation may include connection charges, security expenditures, and remote assets rentals. Distribution company services and revenues that should be exempted from RPI-X regulation include connection charges, stand-by tariff charges, and special work orders. Connection charges for small customers and cost parameters

for large customers should be proposed by the distribution companies and reviewed and approved by the commission based on domestic and international norms.

Performance standards and tariff mechanisms for investors in T&D should not require frequent regulatory approval, so that investors have sufficient time to achieve performance targets.

Performance standards and tariff mechanisms should be well conceived and flexible enough to not require frequent regulatory approval. The idea is to give the investor sufficient time to achieve improvements in performance, and to realize potential gains from its efforts and investments. For example, RPI-X regulation requires regulatory review only once every few years. In UK and in Victoria, Australia, reviews are conducted every five years.

Train staff to ensure that good skills for grid operation are in place at the central and regional levels.

In many developing countries, there is a lack of skilled transmission operators able to operate a complex grid. As the power industry is unbundled, the role of the transmission operators will become even more critical. Training is an important element of improved performance and efficiency, and it is also the key to ensuring customer and employee safety standards. Training will not only improve performance, but may also be seen as a benefit to employees from the privatization of the enterprise. This training can be required in the contract to sell the T&D system to private investors.

Provide adequate customer data to all retailers equivalent to that available to the utility's affiliate to foster market entry by new retailers.

As the industry is unbundled into distribution wires companies and retailers, it is important not to give the affiliate of the formerly bundled utility an unfair advantage. The retail affiliate should have the same access to information and data on customer consumption patterns as its competitors, meaning that customer records should be open to all players.

Require the retailer affiliated with the local "wires" company to pay the same price for the use of the distribution lines as all other users.

In order to encourage competition, it is critical that the retail affiliate of the local distribution company not enjoy unfair advantages. One way to ensure that this is not the case, is to charge the same price to the retail affiliate as to other ESPs.

Ensure consumer protection in the competitive market through standards, access to information and provision of a standard offer service package.

While there will be minimal regulation of the retail portion of the electric sector, it is important that basic provisions provide for customer protection. For example, the price for retail services will need to include the costs of generation and T&D, but will ultimately be determined by what the market will bear for provision of a retailer's services. In order to be sure that there is no collusion by retailers, which would lead to prices higher than the customer should pay, retailers must be subject to anti-trust legislation and other legislation that may not have been previously applied to the power sector. Customer's interests can also be protected by requiring

that a minimum bundle of services be provided for a basic price, such that consumers who do not actively choose their retail supplier will still receive electric service at a reasonable cost. This is the standard offer described above.

D. Opening the Market and Carrying Out Privatization

In the previous step, the DMCs will have laid the groundwork for the transfer of ownership and control of assets to the private sector. In this step, the DMCs would actually carry out the sales or auctions of existing state-owned assets and the right to develop new facilities. It is critical that this process be carried out in an open and transparent manner, with no preferences for local firms or contractors, or limitations on rates of return. There are three stages:

- First, the sale of existing generation and T&D assets to private investors. This assumes that previous steps have put in place the desired structure of the industry, as well as the timetable and conditions for establishing a competitive market.
- Second, from that point forward, the market should determine when new generation is required, through the price signals sent through the PX and from customers.
- Third, in DMCs where the need for power is growing rapidly and it may take several years to establish the conditions for a competitive market in generation, it may be necessary, as an interim step, to conduct an auction to award the right to construct new power plants. However, it is critical that this be done with an explicit plan for how to move these new plants into a competitive market once one is established (as was done with the Loy Yang B plant in the state of Victoria, Australia). Otherwise, these plants will likely run into the same problems that countries with long-term, currency-adjusted PPAs are now having.

In that context, this section again differentiates between three types of best practices: general principles, generation, and T&D.

Among the most important of these best practices are:

- Selling assets within a relatively short period of time.
- Giving no preference to government (i.e., existing utility) bidders.
- Allowing bidders/investors to determine how to staff their teams, without requiring them to use local firms, and without limiting their rate of return.
- Using a well-publicized sales process that is as transparent as possible.
- Making explicit plans on how to satisfy employees' concerns.
- Fully unbundling the sector, while limiting the extent to which cross-ownership is allowed.

1. General Principles

Allow investors to optimize the staff that are required to best meet the competitive challenge and to serve customers, but establish principles for employment in the transition to private ownership. This may include stock ownership, training, early retirement packages, and limits on annual staff reductions.

There is no avoiding the fact that the restructuring of the industry will have an impact on employment. In fact, one of the main sources of savings that is cited by power companies that have announced mergers is their ability to reduce labor costs. As the private sector takes over more of the functions of the power sector whether through ownership or just through contract operations, they will want to be able to bring the benefits of their management techniques, critical mass and efficient operations elsewhere to bear on the new project. In fact, this is often one of the government's objectives in initiating the restructuring process to begin with. In any event, the key is to handle the transition openly and with clear communication.

There are a number of ways to handle employment concerns. These include:

- Independent studies of required staffing.
- Agreements to provide training in the skills needed for a competitive market.
- Sales of stock in the privatized entity to employees at low prices.
- Early retirement packages.
- Agreements not to reduce jobs at all or by more than a specified amount per year.

Several of these techniques were used in Orissa, India, by the grid company in the ongoing process of restructuring there. In UK, a deal was negotiated with the coal unions that reduced their contracts, from 70 million tons down to zero during the several-year transition to a competitive market. The incremental cost of these contracts during the transition was paid by the distribution companies so that generators could use a competitive cost of fuel to compete in the wholesale market. Unions can be a formidable opponent or an ally of industry restructuring, and ensuring their support for the privatization can prove complicated.

Give the private sector the flexibility to assemble the best consortium to bid for the project and operate it; do not require the use of government suppliers or local firms, or require the private sector to pay fees that the government does not.

Second best: Maintain a favored position for local firms for only a limited period to enable a government owned entity to adapt to new market conditions; require the acquiring firm to train local staff.

To acquire or develop assets, the bidders should be allowed to put together the team that they feel is most likely to both win and carry out the job effectively. If they are encumbered in assembling their team by political concerns or nepotism, the cost of the job and the performance may suffer, even though they may win the award. Of course, many international contractors will use local firms without being prompted in such areas as engineering, equipment supply, and operations if these firms are qualified, because this practice will tend to win local support and keep the cost of the bid down (local labor costs are usually lower). Therefore, there is little need for favoritism to local firms. As an option, the government can give a modest preference in the decision criteria to consortia that use local firms for a limited period of time.

In Indonesia, before the recent change in Government, it was known that companies affiliated with the close friends or children of the president were assets to any bid for a large infrastructure project, even though private investors have estimated that this added 10-15 percent to the cost of a project. Further, PRC authorities have specified in some bids for power plants that they expect bidders to use local equipment and contractors. These decisions are better left to the market.

There is no case to be made for nepotism, but the case for providing some favoritism to local firms is to enable a country to develop a local capability that can compete on a local and international scale. If a country wishes to develop such talent, which can benefit its economy in the long run, it should grant preferences only for a limited period of time (e.g., two years), and should require in the bids it receives that the international leading firm train the local staff as part of the contract. This requirement will increase the cost of the project, but it is an investment in the country's future. This is an acceptable second-best practice, as long as it is limited in time and scope. As described in the case study on Malaysia at the end of this report, the limitation on ownership by foreigners to 25 percent has benefited local firms, but at the real cost of developing any real competition for the right to develop power generation projects.

Finally, if the government utility does not pay taxes on domestic fuel or import duties on equipment, then the government should not require IPPs or other private firms to do so; to do otherwise discriminates against investment, and makes the market less competitive.

For existing assets, enforce unbundling of government owned integrated power companies (including non-power subsidiaries).

Second Best: Allow "Functional" unbundling for a period of time.

Unbundling, which means the separation of generation from T&D, is the *sine qua non* of restructuring the power market and creating a more competitive power sector. In a number of developing countries (e.g., Philippines, Thailand, and Viet Nam), there is a single company responsible for power generation and transmission, with separate distributors, while in others (e.g., Indonesia and Malaysia), there is one fully integrated firm from the power plant to the consumer. By splitting these functions into separate entities, one can achieve the benefits of competition, since these firms will carry out arm's length transactions and not be able to cross-subsidize each other. Also, this process will enable the utility to best determine whether it has the critical mass required to be competitive in each segment of the industry, or whether it should concentrate on only one segment.

Thus, the first step in the unbundling process for an integrated company is to separate the accounts (also called functional unbundling) of the generation and T&D entities so that it becomes clear what costs and revenues are associated with each aspect of the business. This process should make clear any cross-subsidies between the functions and facilitate their removal, and enable the enterprise to determine how it will become, or remain, financially viable in the future. This financial information will be important to potential investors, and is a critical component of the commercialization process. After this, these companies can be sold (privatization) to realize the full benefits of private sector ownership.

Many utilities in developing and developed countries have carried out actual or functional unbundling in preparation for the process of restructuring. Examples include utilities in Hungary, Philippines, and Poland. Also, a number of utilities in the US have decided to exit from the generation business because of the low margins likely to be realized in a competitive market, and the ability to exercise more control and make a more secure return in distribution.

Strictly limit cross-ownership to restrict market power.

Second best: Allow cross-ownership during a transition period.

In the unbundling process, it is important not to allow one or more entities to dominate the market; otherwise, the government will just replace a public monopolist with a private one. A dominant generator, for example, could strongly influence the spot and contract market for power. Thus, generation companies and distribution companies should be restricted from owning more than a specified share in each other, and they should each be allowed to own either none or a very small share of transmission. The independence of the transmission system is particularly critical, so that no generator or distributor can possibly receive favorable treatment in having its power dispatched or its bids accepted.

For example, in the Philippines, the Omnibus bill being proposed would strictly limit cross-ownership, and in Argentina and Bolivia, generators and distributors must be entirely separate from transmission. In Brazil, it has been recommended that ownership of generation by distribution companies should not exceed 25 percent. In UK, distribution companies are allowed to own only a limited share of generation. Furthermore, UK regulator was highly criticized for allowing just two generators (PowerGen and National Power) to own a dominant share of generation for several years, and to potentially dominate the PX, until the regulator required a sell-off of capacity. In the US, regulators in California required the major utilities to sell half of their fossil-fueled generation, and the two largest voluntarily sold 100 percent. Finally, many utilities in the US (e.g., Boston Edison, Central Maine Power, New England Electric, and Montana Power) are selling all of their generation in order to satisfy regulators that they will not be able to control the emerging wholesale markets, to pay off so-called stranded costs, and to focus on the aspects of the utility business that they believe they are best suited for in the future.

As a transition step, it may make sense to first privatize an integrated utility in order to bring in the benefits of private sector investment, and then require an unbundling at a later stage. For example, it may be easier to sell the Karachi Electric Supply Company, which is an integrated utility owning over 1,000 MW of generation, and then later require the owner to determine whether it wants to remain in the generation or distribution business, but not both.

To either obtain investment in new generation before a competitive market is in place, or to sell existing generation and T&D assets, use a well-publicized, competitive and open RFP process, including such aspects as:

- A clear timetable and time requirements for inter-agency or ministry review.
- Clear criteria for bid evaluation and identification of their relative importance.
- A two-step process that identifies qualified bidders before seeking detailed proposals.
- Allowance for a long-term lease or ownership of land.
- Historical information about the asset provided equally to pre-qualified bidders through a data room or other techniques.
- Minimum bid prices set on the low side to not deter bidders, or not set at all if the number of bidders is likely to be high and the bid a competitive one.

- Allowance in the contract for operating the facilities for investors to pass through costs they could not anticipate (e.g., new environmental requirements).
- A set of proposed contracts that bidders will be asked to sign, attached to the RFP.
- Clear arbitration and *force majeure* procedures.
- For power generation, a BOO-type of contract (second choice: BOT).
- A limited period of fixed prices, if any.
- Allow creativity to negotiate different ownership options or combinations.
- Bids opened in a public forum, if price is the only evaluation criteria.
- A time limit for the winning bidder to reach financial close after a contract is signed, so the process of developing a project does not drag on.
- Use of an international financial advisor to handle the transaction, and an experienced consultant to develop the RFP and support the evaluation process.
- Clear performance standards in the contract to apply to operation (mostly for T&D).

The process of selling existing assets (generation, transmission or distribution) or selecting a developer to develop a new project (usually in generation) is multi-faceted. A number of the best practices in making this process effective are listed above. One aspect worth highlighting is the need to maintain a strict schedule during which the solicitation is carried out, otherwise, the conditions in the market can readily change and affect the bids. All the agencies or ministries that are involved should agree to provide their review according to a strict timetable (as an example, a number of investors have complained in PRC that the approval process for generation projects is hard to determine and has few, if any, time limits). In addition, it is critical to identify the primary criteria that will be used to determine the winning bidder, and if possible, the relative importance of those criteria, so that investors know what to emphasize in their bids.

Next, and not in conflict with the previous point, flexibility in the negotiations process is important. If a potential investor comes up with an innovative idea (e.g., creative financing for a lease rather than a concession or BOT; combining Internet service with utility service; or buying more than one plant or distributor), the evaluators can consider it. Fourth, it should be noted that investors and bankers prefer a BOO contract to a BOT (though both are acceptable, as discussed in the investment section on generation below), in part because the contracting and negotiations are much simpler if the asset does not have to be transferred back.

Finally, the government or utility should minimize the period for which it offers fixed prices (of course, financing may well require some fixed period or fixed component). It is preferable to offer a price tied to some benchmark (example: the price paid to diesel projects in the Philippines must be five percent less than NPC's wholesale price), since this can readily be converted to being tied to the market price when competition emerges. This is far preferable to offering a fixed price in a market where competition could lower prices dramatically, as happened in California when "Standard Offer 4" contracts offered prices that started at one level, and increased with inflation to the range of 8-10 cents per kWh in a market where prices fell to 2-3 cents.

Specific aspects of selling power generation versus T&D companies are discussed below.

Do not pre-determine what type or level of financing the winning bidder should use.

Some countries (e.g., India) have specified the preferred or maximum share of debt or equity that a project can use. This type of restriction impedes the creativity and resourcefulness of investors and financial institutions. Furthermore, it may not lead to the best package for ultimate customers, since bidders may be able to offer a better price or other terms if they have the flexibility to assemble their own financial package using sources such as country-specific export support entities (e.g., US Export-Import Bank, COFACE). As discussed, the country may wish to offer attractively priced financing, and give the investor the option of using it.

If the country is providing a financial guarantee of the debt portion of the project, it is understandable that they may want that portion to be limited. However, placing an artificial limit on the amount of debt a project may use is not the best way to address this issue - instead, the country should work on correcting the need to offer a guarantee in the first place.

2. Generation

In setting the price for which to purchase power, the buyer should focus on the credibility of the provider and the attractiveness of the price, not the generators' potential rate of return.

Some countries (e.g., PRC and India) have, in the past, attempted to limit the rate of return that the private investor would make, presumably to mitigate domestic criticism that foreign investors would make too much money. This approach is not the best one. Instead, the government should focus on whether the power that is being provided is competitively priced, and whether the consortium is the best qualified one to carry out the project. If the investor can provide power at an attractive price, and still make a good return on investment, this should not concern the government. If the competitive process for awarding the power project is properly put together, the profit will be squeezed down to the level consistent with the risk that the investor is required to assume, without the government trying to control the investor's profit as a separate criteria in the selection process.

Countries should organize the sale of existing power plants in a systematic manner, with these features:

- Determine which existing plants will be sold, and when, and set minimum prices, if necessary (see also the privatization process in the section above).
- Determine how to package the plants for sale. The options are to sell the plants individually, package them into groups, or allow bidders to bid on whatever combination they desire. If there are severe transmission constraints, it may make sense to sell the plants in the constrained area as a group.
- Sell all existing plants at once, or within a short period, to minimize competition between government plants with old grants and subsidies, and new owners with a different cost basis and motivation.

When selling existing power plants, it is better to sell all of them (or at least all of it within a region, if the country is large) at the same time, or within a short period. Otherwise, until all capacity is sold, there will be a mismatch between the incentives that motivate the owners of private plants compared to the state-owned plants. In this regard, the Philippines has proposed selling all of NPC's 6,060 MW at the same time, or within a six-month period, if the Omnibus Bill is enacted to restructure the power sector.

In some cases, it makes sense to sell plants individually, allowing bidders to determine which packages to bid on, rather than the country officials trying to guess which groupings of plants will be the most economic or attractive to investors.

The decision about how to package plants depends on several factors. If creating wholesale competition is the primary goal, it may make sense to sell plants individually, as long as there is a sufficient market in which these plants will compete after the sale. This approach has been used in Argentina, Australia, and parts of the US.

On the other hand, if plants are grouped together for sale, the government is deciding for investors which package of plants they can buy, and what groups of plants will be competitive. This may be desirable if the market is small, and the government wants to grant roughly equal power to different owners. This approach can also raise the likelihood that the government will receive bids for plants that may be older or less efficient, since they can be grouped with better-performing ones. This approach may also make sense if there are transmission constraints or market conditions that make it difficult for competition to emerge (such as with the hydro plants in Mindanao in the Philippines).

The government should recognize that this approach limits the bidding to companies that can afford to purchase a group of plants, even if those companies plan to sell off individual plants that are part of that group after the initial purchase. Another argument against this approach is that if a single power plant cannot survive on its own, the government should not try to ensure that it is purchased, unless such plants are required to ensure that sufficient power is available and the system is reliable. In this case, there will almost certainly be several interested buyers for such "must run" plants, as was the case in California.

Finally, the government may allow bidders to choose the package of plants to bid on, giving itself the option of accepting the offer that is best overall for them (i.e., garners the most money for the government, while also keeping the price of power as low as possible). In this case, however, and in the case where they sell individual plants, the government will need to take market power into account so that no individual bidders can dominate the market. To control market power, the regulator in California required the three major utilities to sell at least half of their fossil-fueled generation, and the utilities voluntarily decided to sell 100 percent.

Unbundle and privatize existing power plants without granting long-term contracts in order to create competition sooner, along with more opportunities for customers.

Second best: Provide guarantees of contracts for a short period, in order to wean the producers off of their captive distribution customers.

If the objective is to create competition, then it should not be critical to determine whether the privately-owned generation companies can maintain all of their former wholesale customers, or whether they will be financially viable. Rather, the government should focus on offering the same opportunities and conditions to all firms. The goal of competition is not for all former plants to survive, but rather only the most efficient and cost-effective ones.

In the Philippines, the framers of the drafts of the Omnibus Bill have debated the period for which to grant a contract or guaranteed market to the purchasers of NPC's plants, with the period of 10 years commonly discussed. While this period certainly provides adequate time for a transition, it also seems to be a long time over which to defer the benefits of a competitive market. There may be a better approach, such as one that grants a locked-in market for only a short time, and which makes the transition more gradually.

In New Zealand, there was discussion a few years ago of reducing the amount of the wholesale market that generator ECNZ would be guaranteed over several years, so that in the first year, they might be guaranteed 75 percent of their former market; in the second year, 40 percent; and in the third year, zero. Customers could still buy from ECNZ; they just would not be required to do so. This type of phase-in would require the newly-privatized entities to make a transition to competitive operations that were rapid but not radical, and allow wholesale consumers to benefit from competition in a expeditious manner.

To support the development of new capacity, make available government-owned sites with existing power plants that are zoned for power project development.

If the government already owns sites that are ideal for project development, by virtue of their location - close to fuel supplies, road access, transmission access and proximity to the load - then the transmission entity should issue an RFP that requests bidders to offer their best deal for putting a plant on those sites. For example, the Government of Bangladesh, with support from ADB, conducted a solicitation to locate a plant at Megnaghat, which fulfilled a number of these characteristics, and the resulting prices offered were quite attractive. If a potential investor suggests an alternative site, then the transmission company should consider it.

Utilize BOO contracts for new projects, which provide fewer complications and a cleaner transaction than BOTs, and use ROOs rather than ROTs for existing ones.

Second Best: Utilize BOTs, and establish clear terms for the conditions of the ultimate transfer of the plant back to the government; use concession agreements as a third choice, and grant long concession terms.

As mentioned earlier in Section III.C.2, investors and bankers generally prefer BOO/ROO to BOT/ROT contracts, and these modalities are recommended as best practices for several reasons:

- The power sales contract is much more complicated and harder to negotiate when a transfer is involved (though lawyers may prefer this).
- As the transfer date approaches, there is a natural tendency for the operator to not maintain the plant as well as before, because some of the benefits of such maintenance will be received by the utility to which the plant will be transferred.

- Ownership (BOO) in general is different than renting (BOT), and the former will lead to a more competitive plant.
- There are more options for refinancing later, using corporate rather than project finance, or using bonds, if the BOO modality is in place.
- The BOO is more compatible with a future competitive market, since those contracts can more easily include buyout provisions and other methods for converting long-term contracts discussed in the competition section without dealing with the transfer issue.

A BOT or concession is second-best, but an investor may be almost indifferent between these modalities and a BOT if granted for a long term. In such cases, the government retains some control over the entity as the contracts will be re-bid, but the investor has a long period in which to realize efficiency gains and retain the resulting profits.

Limit financial exposure to IPP contracts, and facilitate the emergence of a competitive market for generation.

One fallacy that some countries have made is to assume that power from the IPPs would always be needed, because demand for power was ever increasing, and that there was no demand risk associated with purchasing such power. This is a risky assumption, even in developing countries, as demonstrated by the Asian financial crisis, and by the current over-supply of power in some provinces in PRC and possibly in the Philippines in a few years. In general, the best practice is to make as few fixed, long-term obligations that require the government, or government-owned utility, to accept demand risk, which is what it accepts if there is a guaranteed offtake or high capacity payments. Also, the initial contracts should contain clear buyout provisions that are not onerous to the government. While they are related to both investment and competition, these factors are discussed in detail in Section III.C.

Allow the market, through price signals in the PX and power contracts, to determine when and where merchant plants will be added. Reverse RFPs, in which investors offer to build a plant only if there is sufficient interest, may also be an attractive option.

In a competitive market, the government or utility does not need to use formal resource planning or an RFP process to determine who should develop new generation assets, since the prices and other conditions in the market will determine when and whether power plants are built.

One innovative approach to the construction of new capacity is called the reverse RFP. This involves a developer soliciting interest in purchasing power from potential customers, including utilities, large customers and others, and if sufficient interest is received and contracts are signed, then the developer builds the plant. The developer first identifies a site, fuel supply, equipment suppliers and a firm financing the package, and then approaches the buyers with an offer to sell power at or below a specific price. One benefit of this approach is that the developer is able to manage demand risk better than a pure merchant plant by getting contracts signed in advance. Several companies are pursuing such plants, including Power Development Company's 265 MW combined cycle plant in Agawam, Massachusetts, US.

In addition, there are several dozen merchant plants now under development, including plants of 300 MW or more in Texas, Illinois, Wisconsin, and North Dakota, among others. One merchant plant, the 169 MW Dighton plant in Massachusetts was recently 100 percent financed with debt, proving the viability of merchant plants when the market is competitive.

3. Transmission and Distribution

Carry out the privatization of distribution systems using a flexible bidding system that accepts bids for one or more companies at the same time.

One alternative for privatizing distribution is to sell the companies one at a time, as is being done in Brazil. This may not maximize the value to the government or provide maximum benefits to customers. It may be better to let investors decide what the best packaging of assets should be, within certain limitations. For example, in El Salvador, four distribution companies were recently sold, and bidders were allowed to bid on any one or combination of companies. In order to allow smaller bidders to participate, a clause was included which stipulated that while investors could bid on all four, it was not possible to win all four. In addition, to ensure that no bidder controlled more than half the market, the government granted the largest and smallest companies to one bidder, and the other two companies were granted to two separate bidders. This system not only ensured a reasonable division of market power, but it also increased the government's overall revenue from privatization by 10-15 percent.

Allow investors to provide power and other services (e.g., Internet, water supply and wastewater treatment, and security services) within a distribution enclave or industrial zone:

- Grant limited-term franchises that allow customers to change suppliers when the market becomes more competitive.
- Set performance standards for reliability.
- For equivalent customer types, power must be provided at a cost no higher than the price of the local distribution firm where the enclave is located.
- Regulate these enclaves using the same regulator as other entities in the power sector, and the local distributor must provide fair rates for backup power.

In a number of countries, private companies have contracted with the federal government or relevant ministry to provide certain areas with a wide range of services, including electric service. These companies own the infrastructure within the zone, and generally commit to provide services that are at least as good, or better, in terms of quality and price as that provided by the utility outside the zone. This is particularly attractive to companies for whom reliable and high-quality service is critical to their operations (e.g., high-technology firms). Examples include more than 70 Economic Zones in the Philippines, administered by the Philippine Economic Zone Authority or PEZA, and about a dozen distribution licensees in Malaysia, including the 440 MW Nur Distribution Company and the 60 MW Wirazone complex at Kuala Lumpur City Center.

These enclaves can provide meaningful competition to the government owned distribution company, and stimulate the emergence of a competitive distribution market, as long as the contracts signed do not lock in the customers in the enclave for too long. In any case, the surrounding distribution company will obtain revenues from wheeling the power to these enclaves through its distribution system, unless the enclaves also build their own generation within the enclave. In this case, the regulator should require the distribution companies to provide reasonable rates for backup power supply. When the distribution sector is eventually privatized, the relationship between the private sector owners and the enclave must be made clear in the purchasing contract. Since these enclaves may offer an array of utility and other services, they will also stimulate the distribution companies to think about how they can competitively offer such services through the “retailers” that will eventually emerge in a competitive distribution market.

The government should provide financing support, including the refinancing or absorption of some debt associated with the existing system.

Second Best: Debt can be restructured and left in the company, and purchasers will pay a lower price and can refinance the debt later.

The very best practice would be if there were sufficient capital available at attractive rates within the country from commercial sources to fund the acquisition of T&D systems. In developing countries, however, this is rarely the case (Malaysia was an exception for IPPs several years ago). Instead, national development banks, such as BNDES in Brazil, can help provide the means to privatize highly leveraged enterprises when attractively priced non-recourse financing is in short supply. In previous distribution sales, BNDES has provided loans for up to half of the minimum bid price, usually with a five-year amortization and one-year grace period. This capital can be used to pay off existing company debts as part of the purchase price. It also allows the country to minimize exchange rate risk, since these loans can be repaid in local currency. In the absence of such government support, the existing debt can be left in the company, thus reducing the price paid for the enterprise, and possibly requiring the investor to refinance this debt later.

The ISO or entity other than the owner of the wires should undertake expansion of the transmission system and hold competitive tenders for this work.

The main role of the ISO is to determine new transmission capacity requirements necessary for system expansion/bottleneck removal, to solicit bids to develop the required capacity, and to take control of the additions upon completion and testing. The ISO will charge the users of the transmission system for the addition, and should have these charges approved by its regulator in advance. These charges will be related to the terms of financing used to support construction of the line(s), and will generally be charged to all users as a flat amount per KW or kWh. A user-specific charge is infeasible, since it is difficult to determine which portion of the transmission lines are being used by specific users (unless there is a DC line or phase shifters).

In its planning, the ISO is expected to take into account the cost and benefits of reliability from increased power trading that could occur as they expand the system to interconnect with regions where the price of power may be lower (which facilitates purchases), or higher (which

facilitates sales). The California ISO, which started on 1 April 1998, is just beginning to deal with this issue.

E. Implementing the Changes Effectively

Once the DMCs have carried out the best practices described in the sections above, including the sale of existing utility assets to the private sector, it is critical that the DMCs implement them effectively. This section describes the best practices for proper implementation. For example:

- The regulatory framework should function well and provide the types of incentives that investors will respond to.
- There should be clear environmental and other standards for plant construction.
- Investors should be allowed to reduce power theft and cut off service from those that are not paying their bills after a reasonable time.

Without a good implementation program, there is the risk that the reforms and best practices carried out earlier will be eroded, possibly leading to the perception that the private sector is to blame for some negative impacts. Of course, the private sector must also do its part to be good corporate citizens, improve service and enhance public welfare, while also making a profit.

As in previous sections, this section includes sub-sections on the best practices to implement PSP in both generation and T&D.

1. Generation

Set government environmental, permitting and other standards for power generation and within this context, allow investors to determine which types of plants to build.

To influence the type of plants that will be built, and what must be done with existing plants, the government must set the environmental and site standards. These standards can either be set on a plant-by-plant basis or a global basis. The former is the traditional method, and is also called command and control, while the latter sets an overall goal and lets the private sector determine how to meet it.

An example of the former is World Bank emissions standards. Countries such as Philippines have their own standards, which in some cases maybe even stricter. As an example of the latter, the 1990 amendments to the Clean Air Act in the US specified the total amount of carbon dioxide that all power plants would be allowed to emit by the year 2000, and allowed plant owners to determine the best way to meet that goal. Options included shutting the plant, investing in scrubbers, buying lower-sulfur coal, or buying emissions allowances, for which the government created a market. An interim goal (1995) was set for the very dirtiest plants to reduce their emissions.

The global approach is preferable, since it requires less direct enforcement and gives the private sector flexibility in compliance. However, it does require sophisticated monitoring techniques to ensure that emissions limits are met which can affect the manner in which plants are dispatched.

Support inside-the-fence or industrial zone generation to encourage other generators to become more reliable and cost-effective, with limited commitment periods. This requires these plants to meet interconnection, environmental and safety standards, the regulator to set fair and reasonable backup rates from the grid, and the regulator to establish provisions for sale of excess power to the grid (to encourage investment) or to other users (to encourage competition).

If power from the grid or the integrated utility is not reliable, companies should be encouraged to set up and operate their own inside the fence (ITF) generation and distribution system (in an industrial zone, there may be many companies to which to deliver power). This will support a country's economic development, and also put pressure on the power generator or distribution company to provide more reliable power (most large/industrial firms prefer not to be in the power business unless the alternative supplier is unreliable). However, as with contracts for IPPs, the length of time of these contracts should be limited, and should provide the customers with flexibility to change suppliers (i.e., take power from the local distributor) with short notice.

These best practices would apply to industrial zones, distribution enclaves or ITF generation in countries such as Indonesia (where up to half of the generation is ITF), the Philippines, and Malaysia. This issue is discussed in more detail in Section III.C.

After setting up a competitive wholesale market, regulate generation minimally to lower administrative and transactions costs.

One of the reasons for setting up a competitive market for generation, in addition to the benefits for consumers, is to reduce the administrative and regulatory burden. If the market signals the need for new capacity, regulators and utility analysts are not required to determine when and what type of capacity to build, what rate of return the utility should be allowed to earn on such investments, or which IPP plants should be approved. Clearly, there is still a role for regulators to set the rules of the game, and ensure that all plants meet minimal standards, including compliance with environmental limitations and lack of market power.

A key component of this change in the role of regulation is the regulators' willingness to change.

The regulatory system can be a bureaucracy like any other, and may seek to protect its own interest and former mission, even as the market becomes competitive. Regulators must be trained to assume new regulatory roles, work for the new ISO and PX entities, or find other private sector jobs as the market for power becomes more competitive.

2. Transmission and Distribution

Regulate distribution rates with performance-based regulation (e.g., RPI-X) or benchmark competition, with performance bonuses, to make these entities reliable and financially viable. The commission should not utilize pure rate-base regulation or self-regulation.

Second best: Set norms for utility performance (as in Philippines and Malaysia) that T&D companies should attempt to meet.

Performance-based regulation using a formula such as RPI-X provides an incentive to the companies to increase efficiency because they are able to retain all or part of the efficiency gains greater than the “X” factor. This is how it works: as in rate-of-return regulation, RPI-X takes embedded costs (i.e., operations and maintenance and depreciation) into account and includes a rate of return in the base price. However, RPI-X regulation goes one step further by factoring in inflation (API) and a productivity factor (X) to arrive at a price cap. If, for example, inflation is three percent and the productivity factor is set at two percent, then the price cap will be set at the initial price plus one percent of the initial price. If the utility’s costs are below this level, then the utility will keep the gains equal to the difference between its costs and the price cap, providing an incentive to increase efficiency. If a utility is not meeting the productivity targets, the regulator can also apply penalties to the utility, in addition to the financial penalty of not recovering all its costs.

In rate of return regulation there is no such incentive to increase efficiency. In fact, there is an incentive to increase costs since the allowed rate of return is calculated based on these costs, and productivity gains are not taken into account to offset this incentive. Another advantage to performance-based regulation is that it requires less cost information in the review process, which puts the regulator at less of an information disadvantage. Finally, the full review process can be carried out less frequently, such as every five years.

There are some problems with performance-based regulation, as demonstrated by the UK’s experience with RPI-X regulation. At the time that the distribution companies were privatized, the regulator set the productivity factor too low, which resulted in large profits for the distribution companies. The regulator then reset the productivity factor before the next review was due and established a windfall profits tax, leading to acrimony and large tax bills for the investors. Setting the right productivity factor is one of the more complicated elements of RPI-X regulation because it must be possible to make forecasts within a very narrow range to account for demand growth. However, the longer this regulation is in effect, the rate of productivity gains will level off somewhat, making forecasting simpler with a smaller margin of error.

In Philippines and Malaysia, the Government has set norms for distribution company performance to determine when the utility is operating efficiently. In the Philippines, a system was developed for scoring the utility based on those norms.

Pass some efficiency gains in T&D to the consumer while maintaining the utility’s incentives to increase efficiency.

With normal RPI-X regulation, the benefits are passed to consumers only when the tariffs are reset every few years. To address the issue of excess profits which, may result from RPI-X,

the regulator could allocate part of the excess profits to consumers. This should allow the government to maintain a balance between the efficiency gains from performance-based regulation, and not allow the perception that the utilities are making too much money, even if rates are coming down. For example, if a 12 percent rate of return was the basis for the original RPI-X formula, the companies could be required to provide some share (e.g., 40 percent) of incremental profits back to customers by lowering rates, once they reach a 15 percent rate of return. This technique also provides insurance against the risk of not setting the “X” factor just right, as described above.

Conduct a pilot “customer choice” program at the distribution level, and then allow retail choice for all customers at the same time, or the same share of each customer type over time. Include a “standard offer” or price that small customers will receive if they do not choose to switch suppliers, and allow “contracts for differences” that limit price volatility.

Second best: Allow large customers to first have access to a choice of power suppliers, and move the size threshold down to all customers over a relatively short period.

In most cases where customer choice has been implemented, the first step has been to implement a pilot program that involves a small percentage of consumers, usually two to five percent. In this way, both suppliers and customers can become accustomed to the competitive market, and data and computing requirements can be worked out. These customers, selected either through lottery or at random, are allowed to choose their own supplier of power from among those retailers qualified to compete in that state. These pilot programs also give retailers a chance to test their marketing appeals. Some retailers specialize in “green” power, or power that uses renewable energy sources, and a number of customers have signed up for such options when offered.

After the pilot program, the best practice is to give all customers choice of power supplier (as in California), or give an equal share of customers from all classes access to choice over time (e.g., one third of each class over the next three years, as in Maryland). In this manner, one customer class does not get access to competitive power supplies before others, such as in the case of industrial customers where they are assumed to have more market power and therefore greater ability to negotiate attractive deals than residential customers.

Note that the competition in a customer-choice program is primarily for the supply of power, since the T&D costs are fixed by the regulator using performance-based rates and they are not directly affected by customer choice. Thus, in New Hampshire, the pilot program for three percent of customers fixed the wires charge at about 11 to 12 cents a kWh, and allowed the selected customer to choose between power suppliers that offered prices in the range of two to three cents per kWh. Pennsylvania is in the process of a pilot program involving five percent of customers.

To protect small consumers, in many states the move to full customer choice includes a standard offer, or default price that the customer will pay for basic service if they decide not to change suppliers. Most retailers use the standard offer as a starting point, and try to offer cheaper power to customers, or else offer more service to justify a higher price. The price of the standard offer turns out, therefore, to be a critical number. Also, a number of states have

mandated that residential and small commercial customers will receive a discount (in California, 10 percent) off their power rates, thus locking in gains for these groups from restructuring, but this makes it much more difficult for retailers to find incremental gains for these customers.

To date, the biggest impact of customer choice (whether in US, Argentina, or UK) has been that large industrial and commercial customers, such as hospitals and schools, have taken advantage of the opportunity to sign contracts that lock in attractive prices. These prices represent a savings over the price that would be available to them in the PX. A number of firms have signed insurance policies, or contracts for differences, that ensure that the price of power will not vary beyond certain limits, even if the price in the market is quite volatile.

It appears that a high percentage of large customers would be willing to change suppliers if given the option. Figure 5 shows the results of a survey of US industrial customers, and their willingness to change suppliers for a mere five percent reduction in the price of power. The survey further indicates that the willingness to switch is quite sensitive to the perception of whether the price of power is high or low, and whether the service provided by the utility is good or bad. Thus, retailers may be able to overcome the need to offer a somewhat higher price than their competitors, but only if they are able to convincingly provide better service to their customers. Of course, what customers say they will do and what they actually do may differ, but these numbers are still dramatic and should be a wake-up call to utilities facing a competitive market.

After establishing a retail market, the regulator should oversee retailers only minimally to lessen administrative and transactions costs.

In a non-competitive market, the regulator would need to closely oversee the service that was provided to customers. In a competitive market, however, the regulator will need only to specify the minimum standards for service, and let the forces of competition lead to improvements in power reliability and prices over time. The regulator must still oversee the T&D sectors closely, though as mentioned above, the RPI-X formula, if properly set at the outset, should only need to be reviewed every 3-5 years. Power generation and retailers should require even less regulation, once the initial conditions for competition are in place. This should save time and money in lower costs associated with the regulator and with the elaborate preparations for regulatory hearings and testimony that would have to be undertaken if a developing country decided instead to implement and regulate using a cost-of-service, integrated utility model.

IV. NEXT STEPS FOR THE DEVELOPING MEMBER COUNTRIES

There are numerous steps that the DMCs can take to promote private sector investment and competition in the power sector. Of course, countries vary widely, so these recommendations may not apply to all DMCs. Based on the best practices outlined in the sections above, there are several areas of emphasis that emerge for the DMCs. DMCs should:

- Establish a government-wide commitment.
- Review investment policies.
- Review the procurement process.
- Improve utility operations.

This section discusses each of the above recommendations and the opportunities they present for the DMCs. It also addresses special issues relating to small countries or small systems, since some of the DMCs fall into this category.

A. Establish a Government-Wide Commitment

The government needs to make an unequivocal commitment to encourage private sector investment and competition, or it is unlikely to happen in an efficient or timely manner. The required actions would include the following:

- Issue a presidential decree, or government policy favoring the transition to a competitive market in the power sector, if possible in the context of an overall economic restructuring.
- Develop and implement restructuring legislation that makes the commitment concrete, and which establishes the conditions for implementing the government's objectives.
- Set up a national panel to gain country-wide agreement and compliance with the commitment, and resolve policy differences between the central government and the regions.
- As part of the restructuring legislation, set up an independent regulator to oversee the industry that is responsible for tariffs, licensing, setting standards for utility performance, and overseeing the procurement process.
- If a commission already exists, enhance its capabilities in ways that are compatible with the emergence of a competitive market (e.g., training in performance-based ratemaking).
- Establish government goals and an approach to electrification.

B. Review Investment Policies

The DMCs can undertake a review of the policies that they have in place for encouraging investment and competition in the power sector. A summary of some of the best practices along with the general areas are presented below:

- Repatriation of the profits of foreign investors (best practice: allow full repatriation).
- Convertibility of funds (best practice: place foreign investment in the highest priority category for conversion).
- Evaluate and determine the incentives that may make sense to attract private sector investment, such as tax holidays (best practice: country-specific).
- Clarify the share of foreign ownership allowed in the domestic power sector (best practice: no restrictions, as long as there is proper regulation and restrictions on cross-ownership).
- Assess financing policies (best practice: no restrictions on the sources or mix of debt and equity that investors should use).

- Implement resource planning, including the way in which they establish the need for new generation capacity (best practice: use resource planning management, such as whether they wish to encourage the use of any domestic fuel resources).
- Determine what policies should be in place with regard to labor and employment in the switch to private sector ownership of government assets (best practice: strike agreements with unions, implement education and training, and establish a transition plan).

C. Review the Procurement Process

In a number of countries, the procurement process to determine how to privatize the power industry is cumbersome and difficult to understand. In other countries, the process is clear, but the implementation is difficult. The DMCs can stimulate investment and competition by reviewing their procurement process to ensure that:

- The evaluation process is open and transparent.
- There has been a decision whether to privatize generation and T&D separately, or at the same time.
- There are clear limits on the amount of time that government agencies can take to review the documents submitted by potential investors.
- Standard PPA and other required contracts are available for potential investors to review as part of the procurement package.
- There is clarity regarding which procurement modalities (e.g., BOO vs. BOT vs. concessions) make the most sense.
- Notice of all solicitations is widely distributed.
- Professional advisors (e.g., international investment bankers and attorneys) are involved.

D. Improve Utility Operations

As mentioned in the sections above, this is an area where caution must be exercised. Utilities that are efficient will command higher premiums in the sales process, but improving their operation should not be an excuse for delaying the privatization process. If it can be done in an expeditious manner, then the DMCs should:

- Develop high standards for utility performance that, if achieved, will improve the profitability of the company.
- Carry out cost-of-service studies, and identify how to reduce or remove cross subsidies.
- Carry out transmission planning to optimize the choices between adding new generation and adding new transmission lines.
- Put in place a program to lower losses and improve collections.

- Initiate the unbundling process, even if only to separate accounts for each segment, and implement a cost-of-service study for different classes of retail customers.

E. Small Countries and Small Systems

Several of the best practices outlined in this report should be applied to small countries and small systems with a few caveats. Small countries are likely to have limited generating capacity and limited demand, which may require modification of the process of unbundling and privatization. Three major principles that apply to small countries and systems are discussed below.

1. Limited generating capacity impedes the development of competition.

Entrance into the generation market by investors or competitors in countries with only one generating company, with few generating units, and a small load could be difficult. In addition, if existing plants are sold separately, and generators face different cost structures due to fuel supply or other factors (e.g., hydro versus thermal plants), then real competition will be difficult to foster. This is also true for small power systems, where the country's load may be substantial, but where there are significant transmission constraints that effectively make one area an island.

For example, the Republic of Georgia has only two major generators which meet the vast majority of demand, and one of the generators is hydro-based, and the other is thermal, making competition impossible. Similarly, it might be difficult to sell the power plants in Mindanao in the Philippines on an individual basis, since there are a number of low-cost hydro plants, and the transmission capacity to the rest of the country is not adequate to compete.

2. Be sure economies of scope and scale are not compromised in vertical disintegration.

As the power sector is unbundled, oversight for the separate functions is divided among the different entities, in some cases curtailing economies of scale and scope. In other words, if there are more than a few distribution companies in a small market, they may not individually be large enough to operate efficiently or to cover their costs with a small base of customers, many of whom may be small, low-load factor customers.

3. Regional cooperation is key to promoting investment and competition in small countries.

In a small market, the market may be too small for investors or countries to develop facilities that can achieve economies of scale. If there is a joint venture or cooperation, however, in meeting the needs of several countries simultaneously, then private sector investment and competition may be much more viable.

For example, ADB and the World Bank have been involved in exploring the opportunities for a multi-country transmission network that would connect countries such as Lao PDR, Malaysia, Thailand, and Viet Nam, and possibly others. If such a line was developed, this would enable investors to locate a plant in Lao PDR, where there is abundant hydro capacity but little demand, and sell the power to countries with higher loads. In fact, such cross-border investment

and power sales already takes place between Lao PDR and Thailand, but the development of such a linkage would greatly expand the scope of potential trade and the opportunities for private investment and competition to emerge.

As another example, the SIEPAC (Sisterna de InterconexiOn Eléctrica de los Paises de America Central) project, which will link Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama by a 230 kV transmission line, has increased interest in investment in the region. Finally, to date, there is competition within the Australian states of Victoria and New South Wales, but not between them. As the country moves to the National Electricity Market, interstate wheeling will increase, leading to stronger competition in generation. Generators in the states of Victoria and New South Wales are already competing directly with each other through the joint operations of the two states' power pools.

Thus, there is much that the DMCs can undertake to promote the process of private sector investment and competition, in a manner consistent with their objectives. As discussed in the next section, ADB can be a close partner with the DMCs in implementing these practices.

V. NEXT STEPS FOR THE ASIAN DEVELOPMENT BANK

A. Introduction

ADB is using its international perspective and regional expertise to encourage the restructuring of power markets in Asia. This section highlights some of the ways ADB can continue and advance this work in the context of encouraging private sector investment and competition in the DMCs. Funding of programs, provision of technical assistance, and financing for various projects must continue to be key elements in ADB's participation to encourage private participation.

The steps outlined below are most important in the context of: (i) establishing the necessary legal and regulatory frameworks, and (ii) facilitating transparent and competitive privatization processes. It is assumed that in preparation for investment, the groundwork for the development of competition in the sector will be laid. Thus, the institutions built during the investment period will be competent and responsible for overseeing the development of competition. For example, the independent regulator will ensure that tariffs are cost reflective and that open access to the market is guaranteed, thus promoting the development of competition in the power sector.

B. Suggested Roles for ADB

The development of an independent regulator and the passage of legislation demonstrating government commitment to restructuring and privatization are key elements in preparing the power sector for private investment. ADB can continue and expand its programs to assist in this process in several ways, such as:

- Use its influence and regional experience to strongly encourage DMCs to commit to a program of privatization. This commitment should:

- be enshrined in an industry restructuring law passed by the legislature (ADB can help sponsor the drafting of the law);
- backed up with implementing rules and regulations from the government (ADB can provide support for this process); and
- contain a specific timetable and strategy to implement the program.
- Sponsor country-specific studies on restructuring the power sector which examine and make clear recommendations with regard to:
 - options and timetables for unbundling;
 - resolving conflicts between federal and local provisions for tariffs, industry standards, the decision-making process, and investment policies;
 - current non-competitive pricing policies and the extent of subsidies and cross subsidies; and
 - instituting incentives for private sector investment.
- Assist in developing a legal framework through inviting international legal experts to advise on drafting laws to address issues central to investment in the power sector such as:
 - establishing environmental, permitting, and other standards;
 - recourse for private owners to cut off non-paying customers; and
 - open access to wholesale and retail markets.
- Support the creation of a regulatory body with responsibilities as described in the best practice sections above. Terms of the support could ensure that:
 - the regulator is independent of other government agencies;
 - funding for the regulator comes from independent sources to preserve its autonomy;
 - sufficient authority is granted to the regulator to allow it to enforce market rules, issues licenses, and make binding decisions regarding rates;
 - the regulator establishes and enforces performance standards and licensing standards for market participants; and
 - the regulator is charged with evaluating and recommending policies with regard to the reduction or removal of cross subsidies in electricity tariffs.
- Organize training seminars and provide in-country advisors to enhance the skills and experience of employees of the unbundled utility and the regulatory body. Including capacity building in:

- the principles of private sector financing for the staff of government owned utility and domestic lending institutions;
- international accounting standards as applied to the power sector;
- performance-based regulation, and in analytical and industry oversight skills for regulatory employees; and
- operational skills such as resource planning, transmission planning and grid operation for utility and regulatory staff.

In addition, ADB could also use its international experience and financial expertise to advise on the privatization process itself. Through the following steps it could assist in developing the elements necessary for a successful privatization such as public education, investment incentives, access to financing, and competitive bidding processes.

- To facilitate private sector investment, and ensure a fair evaluation process for private sector investments, ADB could support the setting up of a panel for infrastructure, or for the power sector specifically, that:
 - provides impartial expert advice to help arbitrate contract disputes between private investors and public officials, or policy disagreements between central government and provincial government officials; and
 - supports bid evaluation for the development of new privately-owned facilities or the sale of existing government-owned assets to encourage transparency and promote investor confidence.
- Assist DMC governments in mobilizing capital by setting up facilities for infrastructure development in the power sector, and setting up regulations for their lending policies. These facilities could provide policy-driven funding with terms that encourage competitive practices. These facilities could also address gaps in commercial funding through the use of guarantees which would cover just the last years of long term loans, thus extending the term, lowering the risk and lowering the loan's cost.
- Assist in improving the operation of existing entities prior to privatization in order for the government to realize a higher sale price for the entity (e.g., provide funding for meters and other investments with relatively low capital costs but high returns; discourage theft through public campaigns on power as a commodity that must be paid for; and promote measures for recourse against non-paying customers).
- Advise DMCs on establishing a well-publicized, competitive and open RFP process to award the right to develop greenfield projects or sell existing government assets, and to establish the price to be paid for power.
- Help DMCs develop standard contracts for IPPs that are internally consistent and which meet international standards, including an IA and PPA that can be readily modified and used on more than one project.
- Support programs to educate the employees of government owned assets and the public on the need for privatization in the power sector, addressing issues such as:

- expected benefits of privatization;
 - timetable for restructuring and privatization;
 - employee ownership or voucher privatization schemes; and
 - expected changes and choices which will affect the daily lives of consumers.
- Finally, there are several ways ADB can improve the investment climate and facilitate better economic decision making that will support private sector investments:
 - stimulate the financial viability of utility companies and the domestic banks that lend to the power sector by financing international rating agencies such as Moody's or Standard & Pools to carry out credit ratings of these institutions;
 - encourage the central banks in the DMCs to place the availability of foreign currency to support the repatriation of funds for infrastructure projects in the highest priority category; and
 - policy dialogue regarding how to prioritize infrastructure investments.

In summary, ADB can play a critical catalytic role in the promotion of both investment and competition in the DMCs. In fact, as the DMCs increasingly explore the prospects for moving from government ownership to PSP in the power sector, ADB has the opportunity to play a lead role in getting it right and promoting the interests of its members.

APPENDIX

COUNTRY PROFILES

This Appendix describes the process of restructuring and the practices that have been implemented to promote private sector investment and competition in four countries:

- Philippines
- Malaysia
- Argentina
- Victoria, Australia

These countries were chosen because they are representative of those that have fully unbundled their power sectors (Victoria and Argentina) and those that have only partially done so (the Philippines and Malaysia). Moreover, all of these countries provide examples of some best practices and second-best practices that can be instructive to the Asian Development Bank (ADB) developing member countries (DMC5).

In addition, there are ways to gauge the progress of different countries towards a fully restructured power sector, even if it is difficult to precisely measure it. Figure Al .1 demonstrates the different levels of progress in power sector restructuring in various countries, and provides an indication, though imprecise, of the country's progress towards a competitive market. First, the vertical axis shows the present degree of private sector ownership *allowed* in the country. This is an indication of the government's *willingness* to utilize private sector investment, even if full privatization has not yet been realized.

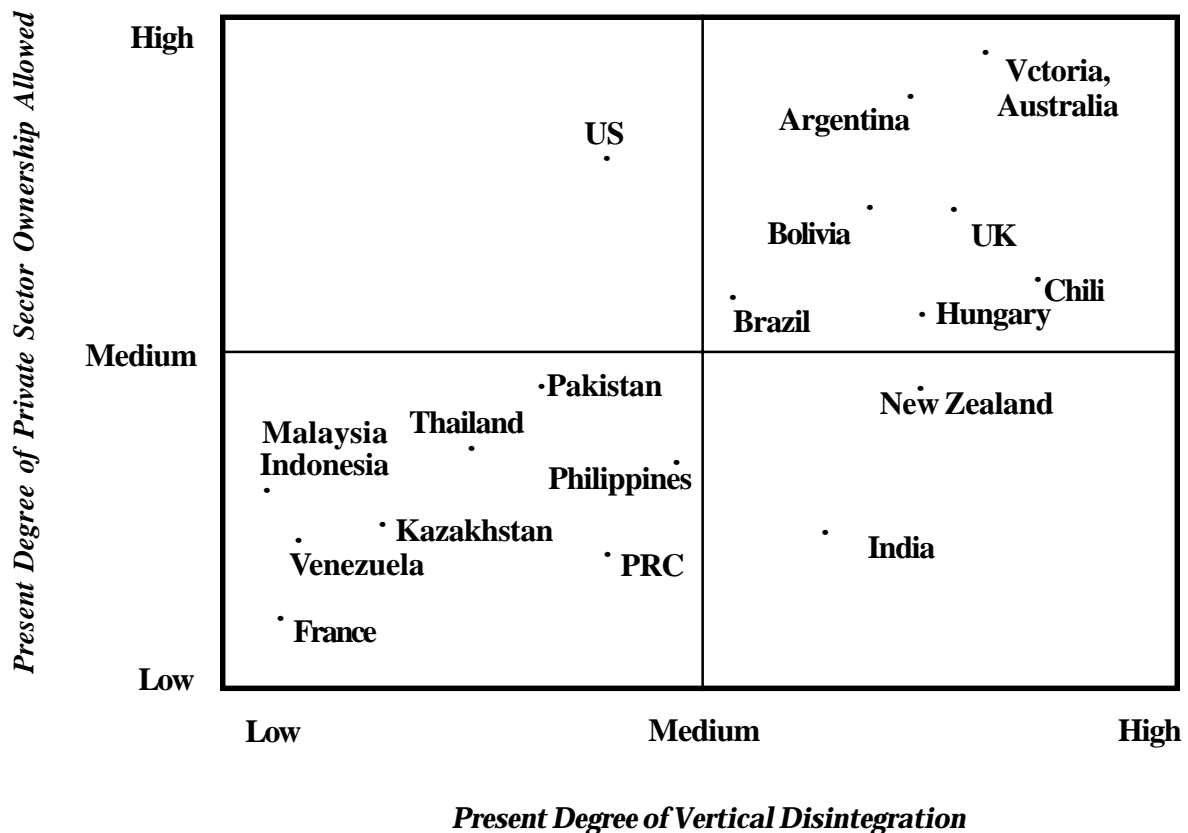
For example, the government in Argentina has made a policy decision to divest much of the generation, transmission and distribution (T&D) segments of the power sector, and has already sold much of it, so Argentina is placed high on the chart by this measure. Indonesia, which has to date allowed private sector participation (PSP) in the generation sector only, is ranked towards the lower end of the scale, and France, which is completely bundled, is at the bottom.

The horizontal axis reflects the present degree of vertical dis-integration or unbundling. As discussed elsewhere in this report, unbundling is one of the key practices or precursors leading to the potential for investment and competition in the power sector. Those countries in which the segments of generation, transmission, and distribution have been separated into different organizations are ranked higher on the scale than those that have not been unbundled.

For example, Chile and the United Kingdom have completely separated the various industry segments; while in the People's Republic of China (PRC), most of the provincial utilities are fully integrated, except for some national power plants, so PRC is further to the left on this scale. Similarly, in Pakistan, even though one of the two major state electrical companies is being sold to investors, most segments of the power industry have not yet been unbundled and so the power sector remains a largely vertically integrated one.

While the measurements along these axes are judgmental, it is in general true that the further a country is located towards the upper right hand corner of the chart, the more unbundled and potentially competitive is the country's power market.

Figure A1.1: Status of International Power Restructuring



A. Philippines

The Philippines is an example of a number of best practices in encouraging private sector investment — more than for most developing countries. At the same time, the picture is clouded by a number of questionable policies and practices that threaten to obviate the numerous strides that the Philippines has made since initiating its Independent Power Producer (IPP) program early this decade. This is a perilous time for the cause of promoting competition in the power sector in the Philippines.

1. Private Sector Investment

By any measure, the Philippines has been successful in attracting private sector investment into the generation part of the power sector, as IPPs now account for 27 percent of installed capacity, and have been financed using a broad combination of equity, bank financing, and bonds:

- To date, eleven IPPs totaling 2,700 megawatt (MW) are on-line, and eight projects totaling 1,800 MW have been awarded to private firms under leases and rehabilitation contracts.

- Six projects totaling 1,800 MW are awarded, including the 1,200 MW Ilijan project; Korean Electric Power Company was third-lowest bidder, but won since it requested only a partial government guarantee.
- The Philippine National Oil Company planned to sell 60 percent of its 1,445 MW of geothermal projects, but this sale was postponed in the third quarter of 1997.
- Plans to sell 6,060 MW of generation now owned by National Power Corporation (NPC) were progressing, but the impetus for the sale requires the passage of legislation (see below). However, several hydro plants (e.g., Bakun) have recently been sold to private investors.
- ADB and World Bank are no longer providing financing for power generation projects because supplies are adequate, and the private sector is strong enough to provide alternate sources of funding.
- In the long term, the Department of Energy (DOE) estimated last fall that 79,160 MW will be needed between 2005 and 2025 and will be available to the private sector (this forecast is being revised downward in light of the Asian financial crisis).

However, nearly all of the contracts to date (except the small diesel projects whose prices are tied to NPC's) guarantee the price and the sale of power from a single seller to a single buyer over a long period (at least 10 years), especially those signed during the energy crisis of the early 1990s. Though these projects constitute real private investment, and they have mobilized capital and efficient power plants that might have been difficult for the public sector to provide, this form of contract cannot be considered competitive. Wholesale prices for power from these IPPs, while they have come down over time, are generally not at the level that would likely be achieved in a fully competitive market, with a wholesale power exchange (PX), and they expose the government to foreign exchange risk. Developers have been competing for projects, but not yet for the market. The Philippines needs to move away from the long-term power purchase agreement (PPA) model of attracting investment in the power sector to realize further gains.

As part of its reform efforts, the Government is no longer signing rehabilitate-operate-lease, rehabilitate-operate-maintain, or build-operate-transfer (BOT) contracts. However, the BOT framework is still available for development of hydro projects and large thermal projects. Moreover, the Government is no longer granting early completion bonuses. Developers are accepting increased risk as the Department of Finance is reducing the Government's role in providing guarantees.

2. Regulatory and Legislative Issues

In the regulatory arena, Philippines has arguably one of the better regulatory and political systems for promoting a viable power sector that involves the private sector of any developing country in Asia. While not perfect, the Energy Regulatory Board (ERB), DOE, and the legislature have successfully fostered investment in the power sector by utilizing some very good practices. For example, together they have:

- Passed legislation (E.O. 215) authorizing investment in the power sector; and developed detailed regulations to implement this commitment.

- Overseen solicitations for developing new power plants, and rehabilitating existing ones; and reviewed and approved the RFP results.
- Regulated the wholesale rates of NPC and the IPPs, and the retail rates of 119 cooperatives, and about a dozen private and municipal utilities using cost-of-service principles.
- Required NPC to file rates for providing open access to the transmission system.
- Sponsored several studies to design the ideal structure of the power industry.
- Reduced or removed many wholesale and retail rate subsidies and cross-subsidies (though they still exist), giving the Philippines the highest power rates in Asia next to Japan's, and sending fairly realistic price signals to those involved in the market.
- Through "anti-pilferage" legislation, established stringent standards for distribution losses that mandate a declining level of losses through the year 2000. These standards are different for private companies and for cooperatives (standards are more strict for private companies). If losses are above these levels, then the utilities are not allowed to collect those amounts in rates. This same legislation establishes high fines for those caught stealing power.
- Established stringent technical and financial operations standards for distribution companies that can be used to score the utility on an objective scale.
- Fostered the growth of over 70 economic zones (Philippine Economic Zone Authorities), some of which utilize several hundred megawatts, which can compete with NPC generation and local distribution companies to serve the customers within specific areas.

At the same time, investors in the Philippines have complained about changes in the Government's policy regarding investment. The Government has, on several occasions, been accused of changing its decision on contract awards after the announcement of the winning bid. The court system offers no relief from this confusion, and has often interfered in business and economic decisions.

The major challenge now facing the Philippines is to make its power system a competitive one, at both the generation and distribution levels, and the major vehicle to initiate this process has been the "omnibus" electric power bills drafted in both houses of Congress. If passed, these bills would take a long step towards creating wholesale competition (retail competition would come later). While the House and Senate's approaches are not identical, in general they each would:

- open power generation (both existing and new) to be purchased by the private sector, and in particular, facilitate the sale of all of NPC's generating assets;
- make distributors responsible for their own power supplies and for resource planning;
- centralize transmission functions into an independent National Transmission Company;
- provide for open access to the transmission system;

- provide for the transfer of NPC's directly-served customers to the distributors, along with the sub-transmission equipment necessary to serve them;
- clarify the role of the DOE and ERB, and transfer the franchise authority for the cooperatives to the ERB from the National Electrification Administration;
- establish and fund a Small Power Utilities Group to deal with customers that are uneconomic to serve and to expand the level of electrification.

Unfortunately, this bill has languished for several years due to the inability of different players to agree, and now that a new president (President Estrada) was elected in May 1998, the fate of this legislation is unclear. The process is bogged down, positions have become entrenched, and strong political leadership is required to shake free this legislation and move forward.

3. Competition

There are some structural impediments to competition in the Philippines. For example, a provision of the Philippine constitution prohibits foreign ownership of more than 40 percent in strategic assets, including power distribution. This provision should be either revised or modified to allow operational control with fewer than 50 percent of the ownership to encourage foreign investment and improve the management of the distribution system. Second, the large number of inefficient cooperative utilities should be consolidated through techniques such as the enforcement of strict performance standards for distribution companies that have been approved by the DOE, and enforcement of the legal limits for acceptable distribution losses.

It is worth mentioning that much of the Philippines distribution system is already private, and some firms are already acting in a competitive manner. For example, the largest distribution utility, Manila Electric Company (MERALCO), accounts for roughly two thirds of the country's electricity supply, and is privately-controlled. MERALCO is quite profitable and has a superb credit rating that is limited only by the Philippines' sovereign rating. Most IPPs would like to sell to MERALCO who can afford to pick and choose. They have instituted a cost control and efficiency program designed to push responsibility for profits and responsiveness to customers down to the lowest possible levels. Within a few years, this major utility could be well on its way to achieving world-class status.

Currently, on the generation side, there is not a competitive market, in the absence of a PX and open access to the transmission system, and there are severe constraints in moving power between the three major areas of the country (Luzon, Visayas, and Mindanao) which multilateral agencies are working to alleviate. NPC continues to have an inherent conflict due to its joint ownership of most of the installed generation and all transmission. The Asian crisis has increased the cost of power from existing IPPs, and this situation will get worse as more plants that have been financed on international markets come on line in the next few years.

In terms of power supply, Philippines is in a favorable situation, at least on Luzon – existing and planned capacity should produce a surplus of power by 2001 or 2002. The 3,000 MW that the government has guaranteed to purchase from gas fields offshore of the island of Palawan has locked in this excess supply situation, unless some other plants are delayed. However, the combination of long-term IPP contracts that are difficult to unwind, and the lack of legislation that would help foster restructuring and a competitive wholesale market will likely deny the Philippines the benefits of competition for the next few years.

B. Malaysia

Malaysia is a relatively small country (less than 20 million people) but with a considerable amount of investment in the power sector. There are several practices in Malaysia that can provide an example to others, though Malaysia may not have realized its full potential with regard to private sector investment or competition.

1. Private Sector Investment

There have been a number of IPPs financed and constructed in Malaysia in the 1990s - nine plants totaling over 4,300 MW are now operating under long term (21 year) contracts, and six projects representing over 5,300 MW are under development. To date, all of the projects have been developed by Malaysian firms, and those projects have been distributed between companies with different ethnic backgrounds. ADB was involved with the first IPP, the 1,200 MW YTL Power International Bhd. (YTL) project, but their share was bought out early in the life of the project.

Most of these projects have been 100 percent funded using Malaysian financing, including the Employees Provident Fund, a US\$34 billion pension fund to which all working Malaysians must contribute. Employees must contribute 10 percent of their salaries, and employers must match this with at least another 12 percent. A guideline for the Employees Provident Fund Employees Provident Fund's operation is that 70 percent of its investments be in government-backed securities, though this has become more difficult as privatization has proceeded in Malaysia, and the government has issued fewer public bonds. In a very real sense, this domestic source of funding has been a highly positive aspect of IPP development in Malaysia. It has eliminated any crisis with regard to making payments in foreign currency, such as has afflicted IPPs in Indonesia, Pakistan, and Philippines since the Asian financial crisis started last year. It has also stimulated the growth of domestic capital markets, and there are several viable domestic banking groups there.

In the distribution area, all load is served by Tenaga National Berhad (TN B), except for 11 licenses that have been issued to firms to serve specific areas that have a total load of more than 600 MW, including the 440 MW Nur Distribution and the 60 MW Wirazone complex at the Kuala Lumpur City Center. These licensees are permitted to offer or contract for a full range of utility services, including water, district cooling, Internet access, telecom and others to serve the area's occupants. The regulator requires that their price be no higher than the price for equivalent service outside of the zone. Some of these areas have raised prices above TNB's by providing additional services, and others have installed cogeneration plants to ensure reliability and serve part of the load.

These areas provide real competition, in that TNB does not derive the same level of revenues from these customers as if they served them directly, so they provide an incentive for TNB to improve its operations so that it can serve these customers in the future. On the other hand, it appears that the licensees have signed contracts with these customers to provide electric power for a long period, so it is not clear that these areas are conducive to the emergence of a competitive market at the retail level. There is also ongoing discussion about TNB taking over the Sabah Electricity Board. There is no private sector investment in the transmission system, except through the 25 percent of TNB that is publicly traded on the stock market.

It appears that there has been little competition in the award of these contracts for investment. There were no formal RFPs issued to determine which company would receive the award, nor were criteria for the award clearly laid out. There is therefore a question about whether foreign companies would have been able to offer better pricing or other benefits compared to the domestic investors, or whether they would have been good teaming partners.

It also appears that these practices have resulted in prices that are high and profits that are large for the initial IPPs. Prices have not been officially disclosed, but have been reported to be as high as 15-16 cents per kWh (the IPP price may include required transmission and other non-generation items), compared to a wholesale generation cost of about eight cents per kWh from TNB. In response, the government has not tried to renegotiate the pricing in the IPP contracts (these costs are still passed through to TNB and to customers). However, it has recently required all IPPs and TNB to contribute one percent of their revenues to an Electricity Trust Fund that is used for electrification, power sector research and development, training and education, and consulting studies in renewable energy.

Furthermore, the development of IPPs in Malaysia was to some extent to send a signal to TNB, the fully-integrated national utility, which was blamed for two severe power outages in 1992 and 1995. Now, a TNB subsidiary is developing the 2,000 MW Janamanjung project, as one official told us, because it is "TNB's turn". While called an IPP, it is difficult to make a sale from an affiliate to a parent company truly "independent." TNB also owns a minority share (generally 10 to 15 percent) of several IPPs. If Malaysia is to proceed from a period of investment to one of competition, as mentioned by several officials, it will have to take a close look at whether these types of policies, and some described below, are conducive to the emergence of competition.

On the other hand, one major benefit of Malaysia's approach is that it has fostered the development of several companies, e.g., YTL and Malakoff, that are now able to pursue project development in the region, as players in the world IPP industry. These companies have attracted international attention, as evidenced by the fact that National Power of UK recently made a bid to acquire 30 percent of Malakoff. If the approval of this deal eventuates, then this will be a milestone in the privatization process in Malaysia.

2. Legislative and Regulatory Framework

There is a functioning regulatory presence in Malaysia through the Director General of Electricity and Gas Supply that is part of the Ministry of Energy, Telecommunications and Post. Tariffs in Malaysia are not subsidized, and are set using a formula that takes efficiency into account. The Director General issues IPP and distribution licenses, and its budget is provided by the Treasury, and must be rejustified each year. The regulator has developed and promulgated a series of 15 performance standards for TNB, which are used to monitor performance, though not to penalize the company if they are not met. In addition, the Economic Planning Unit sets overall investment priorities and determines which projects will move forward. The Economic Planning Unit gets high marks, and economic policy appears to be well coordinated with policy in the power sector.

Malaysia discourages foreign control of its domestic resources, and arguably, foreign investment. For example, foreigners are prohibited from owning more than 30 percent in strategic sectors, including power, though this can be revised to 49 percent on a case-by-case basis. This limits the extent to which the international private sector would have an interest in investing in Malaysia, and potentially reduces the benefits that can flow to Malaysia. There are currently

some IPP projects under development where Malaysia is indicating that this limitation may be flexible.

The government issued a Privatization Masterplan in 1991 that provides strong political and philosophical support for PSP, including the preparation of a Privatization Action Plan that must be updated each year. However, this document also echoes the restrictions mentioned above when it states in Paragraph 53 that “Foreign participation in a privatized entity is limited to a maximum of 25 percent of its share capital.” To deal with the labor issue, this document encourages that employees be given the opportunity to own shares through Employee Share Ownership Programs and Management Buy-Outs and Management-Employee Buy-Outs as stated in Paragraph 56.

3. Competition

There is little effective wholesale or retail competition in Malaysia at this point, except for the distribution licensees mentioned above, and there are no specific commitments to putting real competition in place, though officials did mention the year 2000 as a goal for the emergence of a market. There have been several studies carried out by TNB and by consultants to identify the approach and the model for industry restructuring that might make sense, including a complete unbundling of the power sector and a single buyer model for wholesale competition, but these steps have not been taken. TNB reports that the next IPP contracts that are signed will recognize the potential for industry restructuring in their pricing and offtake provisions.

C. Argentina

Argentina has implemented several best practices in its efforts to increase private investment in infrastructure and to increase economic efficiency in the power sector. These goals have largely been achieved through a successful restructuring and privatization process begun in 1992.

1. Private Sector Investment

A program of economy-wide reform preceded restructuring in the power sector. The broader economic reforms began in 1989 with the passage of the Economic Emergency Law which introduced fiscal and monetary restraint. The Convertibility Law of 1991 indexed the peso to the US dollar in order to introduce a measure of stability to the currency. However, this also limited changes in monetary supply, curtailing the government’s spending and necessitating an alternate form of financing to meet the government deficit. In this context, privatization of federal electric utilities was adopted in order to stop federal spending on inefficient enterprises and also to provide a source of revenue to the Treasury.

In addition to broad economic reform, the necessary legal and regulatory framework for electricity sector restructuring was put in place prior to restructuring and privatization. Attempts were also made to eliminate subsidies and cross subsidies in anticipation of the restructuring process. The Electricity Law was passed in 1992, and the same year the Ente Nacional Regulador de la Electricidad (ENRE), the national electricity regulatory body, was established. ENRE’s purview includes approving expansion of transmission and generation capacity, establishing service standards for distribution companies, and determining the maximum price for T&D services.

The Argentine government also made a concerted effort to attract foreign private investment. In 1992 the Bilateral Investment Treaty was signed with the United States (US), giving US companies the privilege to invest in Argentine enterprises under terms no less favorable than those applied to domestic companies. By 1993, Decree 1853 had removed all remaining restrictions on foreign investment, allowing investors to own as much as 100 percent of privatized entities. In addition, full repatriation of profits was allowed.

Roughly 10,000 MW of Argentina's total installed capacity of 18,300 MW has been sold, leaving about ten power generators under the ownership of federal or provincial governments. Similarly, over 90 percent of Argentina's transmitted power is carried by private entities. Of the six transmission entities, over half have been at least partially privatized, including the primary transmission company, Transener, which was privatized in 1993. Argentina's four large federal electricity companies were also unbundled and a 51 percent share of each of the three resulting federal distribution companies was sold to private investors.

Argentina is also moving ahead with plans to privatize its two nuclear stations, one of which is still under construction. Because the plants were restructured by Argentine Executive Order into one state-owned company, the two plants will be privatized together, which may complicate the transactions. For example, the investor will face higher risk and higher investment spending will be required. There is also the problem of allocating risks associated with the operation and decommissioning of the plants. Furthermore, proposed legislation to privatize the nuclear facilities requires the bidder to have US\$80 million of insurance for nuclear accidents.

2. Competition

Argentina conducted the restructuring process in a way which would facilitate competition in the electricity sector. For example, assets were unbundled through a process which separated the functions of vertically integrated federal electricity utilities prior to their sale. Transmission was separated from distribution, and the wires were separated from the retail function. In addition, cross ownership restrictions were implemented. Generators were legally restricted to a market share of 10 percent or less of the national electricity sales volume. Generating companies were not allowed to own a majority share in any transmission facilities.

The wholesale market was created to establish a competitive market for generation with merit order dispatch such that the lowest cost generator is dispatched first. One entity, Compañía Administradora del Mercado Mayorista Eléctrico, S.A. (CAMMESA), is responsible for dispatch and for settlements. CAMMESA is a non-profit, independent organization. Though it is owned by the government and the power generation companies, it is governed by a board composed of two representatives each from: the generating companies; the national government/Secretariat of Energy; the distribution companies; the transmission companies; and large users. Competition is encouraged by open access to the wholesale market that is guaranteed by law.

Argentina has sold the majority of its transmission assets to private companies. Transener, the privately-owned company which owns and operates the high voltage network, carries as much as 90 percent of Argentina's transmitted power. Open access to transmission assets is also mandated, and owners of transmission assets do not buy or sell electricity, so their revenues come exclusively from regulated prices that they charge. Transmission prices include incentives to increase efficiency through price cap regulation and prices also take distance into account. The market itself is based on a geographic point, and purchases/sales of power are made based on the market price and the geographical distance between the market and the

purchase/sale point, or the “node”. The quality of the link between the market and the node is also incorporated in the node price, or price at the purchase/sale point. In addition, capacity payments provide incentives to limit congestion and keep lines available.

The auction process for federal enterprises was competitive and transparent, and bidders were prequalified prior to the bidding. Then a “two-envelope” process was used in which the technical bids were considered first, followed by financial bids. In order to advance the government’s goal of improved efficiency and service, bidders were required to submit with their bids the minimum level of service standards they would commit to meet. The criteria for selecting the winning bid thus became the highest price for the concession, plus the lowest price for the minimum level of service to be provided.

The use of experienced investment bankers also ensured the timeliness and transparency of the process. Concise, relevant information was supplied to the market through well-timed public announcements. The review periods were sufficient, and the necessary flexibility was allowed. In general, the process was well managed and competitive. In one auction for three separate enterprises, flexible bidding allowed investors to bid on more than one enterprise. In this way, the government was better able to maximize its revenues.

3. Issues Yet to be Addressed

Argentina’s federalist form of government, in which much autonomy is granted to the states, has provided a complicated context for restructuring and privatization. While the privatization of federal electric utilities has been largely successful, privatization at the provincial level has not proceeded as well. Delays in provincial sales have been due to concerns over unemployment and conflicts at the provincial level. In addition, in several cases there have been conflicts between the agendas of the national and state governments that have delayed transactions.

Argentina has also faced a severe unemployment problem as a result of increased productivity, leading individual electricity companies to reduce employment by as much as 40 percent. The country responded in 1994 by signing an agreement to restrain unemployment and to create training programs for redundant workers. The federal government, business organizations, and labor unions signed the agreement.

D. State of Victoria, Australia

Restructuring and privatization of the power sector in Victoria is notable for its success. This success may be attributable to the pace and transparency of the privatization process, but it is also due to the larger national context in which the reforms in Victoria have taken place.

The impetus for reform at the federal level was the need to increase efficiency in the nation’s economy. The dialogue between the federal government and the states began in 1990 with the appointment by the Commonwealth of the Industry Commission, which was tasked with recommending efficiency improvements in the economy as a whole and in the electric sector specifically. The Commission’s recommendations for the power sector included: (i) unbundling functions; (ii) introducing competition into generation; (iii) combining state-owned transmission assets into one national grid; (iv) implementing cost reflective tariffs; and (v) eliminating cross subsidies from urban to rural users.

Six months later the National Grid Management Council was established as an intergovernmental body to develop a National Electricity Code. In 1991 an agreement was reached between the state and territorial governments to introduce a competitive electricity market in the southern and eastern regions of the country. In that context, when the National Grid Management Council prepared a draft of the National Electricity Market (NEM) report in 1994, all the state governments approved the recommendations made in the draft.

In this way, the national concern for increased efficiency led to the creation of a national framework which guided reforms at the state level. Indeed, the national framework is ambitious: to transform the electric industry, previously entirely state run, into a nationally coordinated system with the introduction of a fully competitive market by 2001. Initially, the NEM will include Victoria, New South Wales, South Australia, Queensland, and the Australian Capital Territory.

The agreement between states at the federal level has been critical in facilitating reforms within the states as well. The timetable for implementation of the NEM has influenced the timing of state reforms, and the government's commitment to sector restructuring and competition has been reflected in the states. In particular, the aggressive reforms in Victoria have been carried out within this national context, and have provided a blueprint of how the NEM will work in practice.

1. Investment

The restructuring and privatization of Victoria's power sector was characterized by careful preparation for privatization and a well-run auction process that attracted strong, competitive companies into the market.

Restructuring began in 1994 with the establishment of the Office of the Regulator General and the unbundling of the State Electricity Commission. Generating facilities were further divided into five companies, the 29 distribution companies were restructured into five, and high voltage transmission assets were separated from the dispatch function. The Victoria Power Exchange (VPX) was established to operate and administer the market for spot trading of electricity, to control generation dispatch, and to operate the transmission system. VPX is a non-profit, government-owned organization, and its costs are passed through to the distribution companies. Decisions regarding transmission capacity expansion are taken by VPX, which then holds a competitive auction for the contract. This system prevents the private transmission owner from advocating system expansion to increase its own profitability. Transmission prices are cost reflective and include efficiency incentives.

PX prices are set on a half-hourly basis using bids submitted on a day-ahead basis by generators. Prices paid to generators are based on the actual demand served in each half hour, such that the price generators receive for power produced in any half hour is determined by the actual quantity of power dispatched in that half hour. Because prices are set in real time, it is not known whether supply will meet demand. If demand is greater than supply, the price is set equal to the value of lost load, which is set by the regulator at a certain price per MWh.

Privatization of the assets began in 1995, earning Victoria nearly A\$16 billion. The privatizations were carried out through public auctions, and no restrictions were placed on foreign investors. The bidding for all assets has been spirited and quite competitive, and staggered auctions were held for generation and distribution through 1997. The first entities to be sold were distribution companies, because a higher price could be expected from these lower risk entities,

whereas investors in generation are facing market risk in a fully competitive market. Most of the assets were privatized in a period of only 18 months, and in all cases a premium over the minimum price set by the government was paid for the shares, sometimes a substantial one.

One of the more creative deals that was signed was one in which Mission Energy acquired 51 percent of the 1,000 MW coal-fired Loy Yang B plant, with a contract for the sale of the power from the plant that was contingent on the emergence of a competitive wholesale market. Then, when such a market was implemented in 1997, the state essentially gave Mission the remaining 49 percent in exchange for the investor's agreement to give up its contract and compete on the competitive market. This is one way to deal with the issue of long-term contracts with IPPs that may not be consistent with a competitive market.

In Victoria, most of the assets of the power sector, including transmission, were sold to the private sector - about 3,000 MW still remain to be sold. In all, thousands of megawatts of generation have been sold throughout Victoria, New South Wales, and Queensland. The next step is the privatization of the assets in New South Wales, including over 16,200 MW of generation, six distribution companies, and Transgrid, but there is strong political resistance from unions and the Labor Party, though the state government favors such sales. The competition from efficient privately-owned generators in Victoria is pushing such reforms, since the generators in NSW are finding it hard to compete in the wholesale market with their state-owned plants.

2. Competition

The privatization process has been conducive to fostering competition in the power sector. For example, the effective restructuring process and transparent privatization process attracted strong bidders who are now running competitive enterprises. Competition has also led to a wholesale price decrease of six percent, as well as an improvement in the quality of service to customers.

The restructuring process also promoted incentives to increase efficiency and competition. The CPI-X regulation which is in place encourages efficiency gains, and the regulator sets and enforces performance standards for the distribution companies. The distribution companies retained monopoly rights to serve the customers in their service areas, but retail competition began to be introduced beginning with large customers in 1996, and will increase such that all customers will have a choice of supplier by the target date of January 2001.

The cost of serving rural customers in Victoria is still subsidized, however, so tariffs are not entirely cost reflective. During the current tariff order, which runs from 1995 to 2000, rural users are subsidized by urban users. When the government initially divided Victoria into five areas, three were predominately rural and two were mainly urban. The rural areas had much higher asset values than the urban areas, so the difference was subtracted from the rural areas and added to the asset value of the urban areas, equalizing the current replacement value of the assets. This adjustment allowed all five areas to have similar tariffs across customer classes.

Under the current tariff order, these tariffs can be rebalanced annually, but are subject to a rebalancing constraint such that the tariffs cannot exceed a certain level. The cross subsidies have been made transparent and are being very slowly unwound during the current tariff order, and the next price review in 2000 may lay the groundwork for increases. A factor contributing to

pressure to unwind these cross subsidies is the over-recovery from urban users, which may prove difficult to maintain in the long term.

Reforms in Victoria have provided a testing ground for the national reforms that are in progress. When the NEM is instituted in Australia, it will be based on the same principles of ownership and functional divisions that are currently operating in Victoria, and will be overseen by the NEM Management Company. Currently, the NEM Management Company is administering limited joint operations of VPX and the NSW pool, allowing them to import lower cost generation from each other. In this way generators in both states are already competing directly with one another. When the NEM is fully operational, the VPX and the NSW pool will cease to operate separately. There will also be increased interstate trading of generation, and non-discriminatory access will be ensured for new industry participants in both generation and marketing.